

water research organizations, and relevant water user, environmental, and other non-governmental organizations—

(1) to assess the extent to which the conduct of measures of streamflow, groundwater levels, soil moisture, evapotranspiration rates, evaporation rates, snowpack levels, precipitation amounts, flood risk, 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;

(2) 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;

(3) 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;

(4) to consider options for the establishment of a data portal to enhance access to water resource data—

(A) relating to each nationally significant freshwater watershed and aquifer located in the United States; and

(B) 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;

(5) to facilitate the development of hydrologic and other models to integrate data that reflects groundwater and surface water interactions; and

(6) 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.

**(d) Report**

Not later than 2 years after March 30, 2009, the Secretary shall submit to the appropriate committees of Congress a report that describes the review conducted, and the strategy developed, by the panel under subsection (a).

**(e) Demonstration, research, and methodology development projects**

**(1) Authority of Secretary**

The Secretary, in consultation with the panel and the Advisory Committee, may provide grants to, or enter into any contract, cooperative agreement, interagency agreement, or other transaction with, an appropriate entity to carry out any demonstration, research, or methodology development project that the Secretary determines to be necessary to assist in the implementation of the strategy developed by the panel under subsection (a)(2).

**(2) Requirements**

**(A) Maximum amount of Federal share**

The Federal share of the cost of any demonstration, research, or methodology devel-

opment project that is the subject of any grant, contract, cooperative agreement, interagency agreement, or other transaction entered into between the Secretary and an appropriate entity under paragraph (1) shall not exceed \$1,000,000.

**(B) Report**

An appropriate entity that receives funds from a grant, contract, cooperative agreement, interagency agreement, or other transaction entered into between the Secretary and the appropriate entity under paragraph (1) shall submit to the Secretary a report describing the results of the demonstration, research, or methodology development project conducted by the appropriate entity.

**(f) Authorization of appropriations**

**(1) In general**

There is authorized to be appropriated to carry out subsections (a) through (d) \$2,000,000 for each of fiscal years 2009 through 2011, to remain available until expended.

**(2) Demonstration, research, and methodology development projects**

There is authorized to be appropriated to carry out subsection (e) \$10,000,000 for the period of fiscal years 2009 through 2013, to remain available until expended.

(Pub. L. 111-11, title IX, §9506, Mar. 30, 2009, 123 Stat. 1338.)

**§ 10367. Water data enhancement by United States Geological Survey**

**(a) National streamflow information program**

**(1) In general**

The Secretary, in consultation with the Advisory Committee and the Panel and consistent with this section, shall proceed with implementation of the national streamflow information program, as reviewed by the National Research Council in 2004.

**(2) Requirements**

In conducting the national streamflow information program, the Secretary shall—

(A) measure streamflow and related environmental variables in nationally significant watersheds—

(i) in a reliable and continuous manner; and

(ii) to develop a comprehensive source of information on which public and private decisions relating to the management of water resources may be based;

(B) provide for a better understanding of hydrologic extremes (including floods and droughts) through the conduct of intensive data collection activities during and following hydrologic extremes;

(C) establish a base network that provides resources that are necessary for—

(i) the monitoring of long-term changes in streamflow; and

(ii) the conduct of assessments to determine the extent to which each long-term change monitored under clause (i) is related to global climate change;

(D) integrate the national streamflow information program with data collection activities of Federal agencies and appropriate State water resource agencies (including the National Integrated Drought Information System)—

- (i) to enhance the comprehensive understanding of water availability;
- (ii) to improve flood-hazard assessments;
- (iii) to identify any data gap with respect to water resources; and
- (iv) to improve hydrologic forecasting; and

(E) incorporate principles of adaptive management in the conduct of periodic reviews of information collected under the national streamflow information program to assess whether the objectives of the national streamflow information program are being adequately addressed.

### **(3) Improved methodologies**

The Secretary shall—

- (A) improve methodologies relating to the analysis and delivery of data; and
- (B) investigate, develop, and implement new methodologies and technologies to estimate or measure streamflow in a more cost-efficient manner.

### **(4) Network enhancement**

#### **(A) In general**

Not later than 10 years after March 30, 2009, in accordance with subparagraph (B), the Secretary shall—

- (i) increase the number of streamgages funded by the national streamflow information program to a quantity of not less than 4,700 sites; and
- (ii) ensure all streamgages are flood-hardened and equipped with water-quality sensors and modernized telemetry.

#### **(B) Requirements of sites**

Each site described in subparagraph (A) shall conform with the National Streamflow Information Program plan as reviewed by the National Research Council.

### **(5) Federal share**

The Federal share of the national streamgaging network established pursuant to this subsection shall be 100 percent of the cost of carrying out the national streamgaging network.

### **(6) Authorization of appropriations**

#### **(A) In general**

Except as provided in subparagraph (B), there are authorized to be appropriated such sums as are necessary to operate the national streamflow information program for the period of fiscal years 2009 through 2023, to remain available until expended.

#### **(B) Network enhancement funding**

There is authorized to be appropriated to carry out the network enhancements described in paragraph (4) \$10,000,000 for each of fiscal years 2009 through 2019, to remain available until expended.

### **(b) National groundwater resources monitoring**

#### **(1) In general**

The Secretary shall develop a systematic groundwater monitoring program for each major aquifer system located in the United States.

#### **(2) Program elements**

In developing the monitoring program described in paragraph (1), the Secretary shall—

(A) establish appropriate criteria for monitoring wells to ensure the acquisition of long-term, high-quality data sets, including, to the maximum extent possible, the inclusion of real-time instrumentation and reporting;

(B) in coordination with the Advisory Committee and State and local water resource agencies—

(i) assess the current scope of groundwater monitoring based on the access availability and capability of each monitoring well in existence as of March 30, 2009; and

(ii) develop and carry out a monitoring plan that maximizes coverage for each major aquifer system that is located in the United States; and

(C) prior to initiating any specific monitoring activities within a State after March 30, 2009, consult and coordinate with the applicable State water resource agency with jurisdiction over the aquifer that is the subject of the monitoring activities, and comply with all applicable laws (including regulations) of the State.

#### **(3) Program objectives**

In carrying out the monitoring program described in paragraph (1), the Secretary shall—

(A) provide data that is necessary for the improvement of understanding with respect to surface water and groundwater interactions;

(B) by expanding the network of monitoring wells to reach each climate division, support the groundwater climate response network to improve the understanding of the effects of global climate change on groundwater recharge and availability; and

(C) support the objectives of the assessment program.

#### **(4) Improved methodologies**

The Secretary shall—

(A) improve methodologies relating to the analysis and delivery of data; and

(B) investigate, develop, and implement new methodologies and technologies to estimate or measure groundwater recharge, discharge, and storage in a more cost-efficient manner.

#### **(5) Federal share**

The Federal share of the monitoring program described in paragraph (1) may be 100 percent of the cost of carrying out the monitoring program.

#### **(6) Priority**

In selecting monitoring activities consistent with the monitoring program described in

paragraph (1), the Secretary shall give priority to those activities for which a State or local governmental entity agrees to provide for a substantial share of the cost of establishing or operating a monitoring well or other measuring device to carry out a monitoring activity.

**(7) Authorization of appropriations**

There are authorized to be appropriated such sums as are necessary to carry out this subsection for the period of fiscal years 2009 through 2023, to remain available until expended.

**(c) Brackish groundwater assessment**

**(1) Study**

The Secretary, in consultation with State and local water resource agencies, shall conduct a study of available data and other relevant information—

(A) to identify significant brackish groundwater resources located in the United States; and

(B) to consolidate any available data relating to each groundwater resource identified under subparagraph (A).

**(2) Report**

Not later than 2 years after March 30, 2009, the Secretary shall submit to the appropriate committees of Congress a report that includes—

(A) a description of each—

(i) significant brackish aquifer that is located in the United States (including 1 or more maps of each significant brackish aquifer that is located in the United States);

(ii) data gap that is required to be addressed to fully characterize each brackish aquifer described in clause (i); and

(iii) current use of brackish groundwater that is supplied by each brackish aquifer described in clause (i); and

(B) a summary of the information available as of March 30, 2009, with respect to each brackish aquifer described in subparagraph (A)(i) (including the known level of total dissolved solids in each brackish aquifer).

**(3) Authorization of appropriations**

There is authorized to be appropriated to carry out this subsection \$3,000,000 for the period of fiscal years 2009 through 2011, to remain available until expended.

**(d) Improved water estimation, measurement, and monitoring technologies**

**(1) Authority of Secretary**

The Secretary may provide grants on a non-reimbursable basis to appropriate entities with expertise in water resource data acquisition and reporting, including Federal agencies, the Water Resources Research Institutes and other academic institutions, and private entities, to—

(A) investigate, develop, and implement new methodologies and technologies to estimate or measure water resources data in a cost-efficient manner; and

(B) improve methodologies relating to the analysis and delivery of data.

**(2) Priority**

In providing grants to appropriate entities under paragraph (1), the Secretary shall give priority to appropriate entities that propose the development of new methods and technologies for—

(A) predicting and measuring streamflows;

(B) estimating changes in the storage of groundwater;

(C) improving data standards and methods of analysis (including the validation of data entered into geographic information system databases);

(D) measuring precipitation and potential evapotranspiration; and

(E) water withdrawals, return flows, and consumptive use.

**(3) Partnerships**

In recognition of the value of collaboration to foster innovation and enhance research and development efforts, the Secretary shall encourage partnerships, including public-private partnerships, between and among Federal agencies, academic institutions, and private entities to promote the objectives described in paragraph (1).

**(4) Authorization of appropriations**

There is authorized to be appropriated to carry out this subsection \$5,000,000 for each of fiscal years 2009 through 2019.

(Pub. L. 111-11, title IX, §9507, Mar. 30, 2009, 123 Stat. 1339.)

**§ 10368. National water availability and use assessment program**

**(a) Establishment**

The Secretary, in coordination with the Advisory Committee and State and local water resource agencies, shall establish a national assessment program to be known as the ‘national water availability and use assessment program’—

(1) to provide a more accurate assessment of the status of the water resources of the United States;

(2) to assist in the determination of the quantity of water that is available for beneficial uses;

(3) to assist in the determination of the quality of the water resources of the United States;

(4) to identify long-term trends in water availability;

(5) to use each long-term trend described in paragraph (4) to provide a more accurate assessment of the change in the availability of water in the United States; and

(6) to develop the basis for an improved ability to forecast the availability of water for future economic, energy production, and environmental uses.

**(b) Program elements**

**(1) Water use**

In carrying out the assessment program, the Secretary shall conduct any appropriate activity to carry out an ongoing assessment of water use in hydrologic accounting units and