US Army Corps of Engineers®
Rock Island District

Periodic Basin Management Report 2014

Des Moines River Basin

BUILDING STRONG®

PERIODIC BASIN MANAGEMENT REPORT
2014

DES MOINES RIVER BASIN

EXECUTIVE SUMMARY

The Rock Island District's mission is to provide water resource related services to stakeholders and communities in the District, which includes the Des Moines River Basin. These services extend help to manage flood and ecosystem problems in local communities. The needs of many communities can be met by using a proactive approach that brings solutions to their water resource problems by informing and matching programs.

By focusing at the watershed level, related problems may become more visible and opportunities to solve these problems may become integrated, better addressing social needs while providing economic benefits. Utilizing an integrated water resource management approach could result in a watershed management plan to identify projects and priority areas throughout the Basin. This type of plan could align with interagency missions, provide support for interagency watershed based budgeting, develop a system-wide conceptual model for communication between various parties, develop system-wide hydrologic/water quality models, and develop a system-wide ecosystem services model that could capture environmental scenario analysis and economic analysis tradeoffs.

2014 BASIN STATUS

Des Moines River Basin Fiscal Year 2014 Allocations - Rock Island District

General Investigations	
Upper Mississippi River Comprehensive Study	$50,000
Jefferson County (Planning Assistance to States)	$12,000
Construction	
Des Moines & Raccoon Rivers Project	$2,637,800
Operations & Maintenance	
Saylorville Reservoir	$11,221,670
Red Rock Reservoir	$5,474,217
TOTAL ALLOCATIONS	**$19,395,687**

A series of floods took place on the Des Moines River in 1851, 1859, 1903, 1944, 1947, and 1954. In response to these floods, Congress authorized the Flood Control Acts of 1938 and 1944, which led to a lengthy study of nine sites on the Des Moines River. Two of the sites—Saylorville and Red Rock—were chosen for the construction of dams.

Saylorville Lake is located on the Des Moines River in central Iowa, just north of the City of Des Moines. In 1958, Congress authorized construction of Saylorville Lake by the Corps at a site about 11 miles upstream from the City of Des Moines.

In conjunction with the completed local protection works, Saylorville Lake provides flood risk reduction for the City. Since placed in operation in 1977, it is estimated that by reducing the flows of the Des Moines River below the lake, the reservoir has prevented approximately $181,932,300 in flood damage.

In addition to providing flood control, this 26,000 acre project provides downstream minimum river flow for water supply and water quality during drought periods. Park Rangers actively manage the natural resources, conserving river, woodland, wetland, and prairie habitats. Outdoor recreation includes camping, boating, fishing, hiking, biking, wildlife watching and more.

Lake Red Rock is Iowa's largest lake with over 15,000 acres of water and 35,000 acres of land for your enjoyment. Located on the Des Moines River just 45 miles southeast and downriver from Des Moines, the reservoir collects runoff and drainage from over 12,320 square miles of Iowa and southern Minnesota land. Construction of the Red Rock Dam began in 1960, and the dam was finished in 1969. The primary purpose of the dam is to provide flood risk management along the Des Moines River below the dam, as well as along the Mississippi River further downstream. This protects communities and agriculture lands downstream from the Red Rock Dam. Other lake area benefits include numerous recreational opportunities and natural resources on the water and surrounding public lands.

PERIODIC BASIN MANAGEMENT REPORT
2014

DES MOINES RIVER BASIN

APPENDICES

SECTION I. PURPOSE OF THE PERIODIC BASIN MANAGEMENT REPORT

The intent of this document is to provide a comprehensive reference for all US Army Corps of Engineers (Corps) programs and projects in the Des Moines River Basin. The Corps is responsible for a number of major mission responsibilities within the Basin. This document seeks to integrate these activities regardless of District or Division boundaries or Program restrictions.

The Rock Island District (District) is responding to the region's water resource challenges through integrated water resources management with a watershed (river basin) focus. The benefit of the District's watershed approach is that it requires us to think about water resources development and management in the context of a larger system, rather than a single project, function or business program and thus facilitates the search for comprehensive and integrated solutions to achieve objectives set by all concerned parties. By taking into account a multitude of water uses over a wide area as opposed to concentrating on a single use at one project site, it becomes possible to integrate a complex array of public values, institutional policies and priorities, regulatory procedures, planning criteria, public participation, and private sector business interests. The District has had a historical presence in this basin and is committed to providing future products and services to meet the needs of the region and Nation.

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SECTION II. BUSINESS LINE ASSESSMENT

A. FLOOD RISK MANAGEMENT

The Corps' flood risk management (FRM) system is comprised of three major components—urban levees and floodwalls, agricultural levees and reservoirs. When performance of a FRM system is evaluated, all components must be considered and evaluated as a whole system and not as separate features. As a Federal leader in FRM, it is the District's vision to provide and sustain a comprehensive FRM system within the river basin that reliably manages flood risk to lives and property damage.

Urban levees are built high to protect cities and towns against floods of great magnitude. Agricultural levees are smaller levees that provide relatively lower levels of protection to thousands of acres of cropland against more frequent, less severe floods. Reservoirs provide flood storage capacity to minimize downstream flooding and support other Corps' missions, such as water supply, hydropower, environmental stewardship, and recreation.

Cost-shared Federal levees are built by the Corps and then turned over to the customer/sponsor (state, city, county, levee district) for operation and maintenance. Non-Federal levees are built by public entities or are publicly sponsored without Federal assistance or funding. To qualify for Federal assistance following a flood event, levee systems must be active in the Corps' Public Law (PL) 84-99 (PL 84-99) program. To become active in the program, non-Federal levees must be built to Corps standards and pass an eligibility inspection. Both federally-constructed and privately-constructed levees must pass annual inspections to remain active in the PL 84-99 program.

The system in this region cannot prevent all damages caused by all floods because it is not designed to do so. The Corps has the authority to work with Federal, state, and local officials as well as levee districts and sponsors to study, design and construct solutions for these issues. In addition to building projects, the Corps of Engineers, through its Floodplain Management Services, advises communities, industries, and property owners on FRM measures they can take themselves, such as zoning regulations, warning systems and flood proofing.

Flood risk management efforts range from small, local protection projects to major reservoirs. To address the needs of small, rural communities, the District's Continuing Authorities Program helps sponsors build smaller, cost-shared projects.

For more detailed information, see *Flood Risk Management Fact Sheets.*

B. RECREATION

The Corps of Engineers is the Nation's largest provider of outdoor recreation, operating more than 2,500 recreation areas at 463 projects (mostly lakes) and leasing an additional 1,800 sites to State or local park and recreation authorities or private interests. The Corps hosts about 360 million visits a year at its lakes, beaches and other areas. Supporting visitors to these recreation areas generates 600,000 jobs. Natural and recreational resources at Corps lakes and rivers provide social, economic and environmental benefits for all Americans. By providing opportunities for active recreation, Corps lakes help combat one of the most significant of the Nation's health problems: lack of physical activity. In the Des Moines River Basin, these recreation areas include:

- **Lake Red Rock:** 50,300 acres of fee title lands and 11 recreation area sites (figure II-1) as well as:

1 marina	10 picnic shelter
2 beaches	13 boat ramps
9 campgrounds	29 recreation areas
10 trails	

- **Saylorville Lake:** 25,515 acres of fee title lands and 30 recreation area sites (figure II-2) as well as:

1 marina	18 boat ramps
2 beaches	20 trails
4 campgrounds	24 picnic shelters
10 disc golf courses	28 playgrounds
32 recreation areas	497 picnic sites

o **Neal Smith Trail** is a 26-mile paved multi-use trail allows bicyclists and pedestrians to travel from the Big Creek Beach south along the east side of Saylorville Lake and into Des Moines. The bike trail has many access points within the parks to allow cyclists a trip that will meet their needs. The bike trail also is an excellent area to rollerblade, walk, or run. The trail winds its way down through the Des Moines River valley to the Botanical Center, providing one of the most scenic routes within Polk County. For more information on trails in the area, visit www.americantrails.org.

o **b. Red Feather Prairie** was the original borrow site for the Saylorville Dam. Poor soil conditions made reforestation unfeasible. The Corps began the Red Feather prairie reconstruction project in 1981. Red Feather is Iowa's third largest restored prairie at 170 acres. The Neal Smith National Wildlife Refuge is now the largest restored prairie with over 5,000 acres. Chichaqua Bottoms Greenbelt operated by Polk County Conservation is over 6,000 acres of grasslands. Red Feather has approximately 10 species of grasses and over 40 species of forbes. Saylorville park rangers manage the prairie by burning or haying on a 4-year rotation. The prairie is Saylorville's richest birding area with approximately 142 species including nesting Henslows' sparrows, bluebirds, and bobolinks.

Park Rangers at both recreation areas actively manage the natural resources, conserving river, woodland, wetland, and prairie habitats. Staff, volunteers, and contractors offer quality outdoor recreation including:.

Boating	Picnic Shelters
Fishing	Special Events
Swimming	Hiking Trails
Camping	Visitors Center
Hunting	Water Recreation
Biking	Wildlife Watching

The Corps is the Nation's leading Federal provider of outdoor recreation opportunities. To enhance these opportunities and protect the natural resources, the District provides outdoor recreation facilities including campgrounds, day use and picnic areas, beaches, boat ramps, visitor centers, and trails. A significant focus is providing facilities for water-based recreation activities such as boating and water skiing.

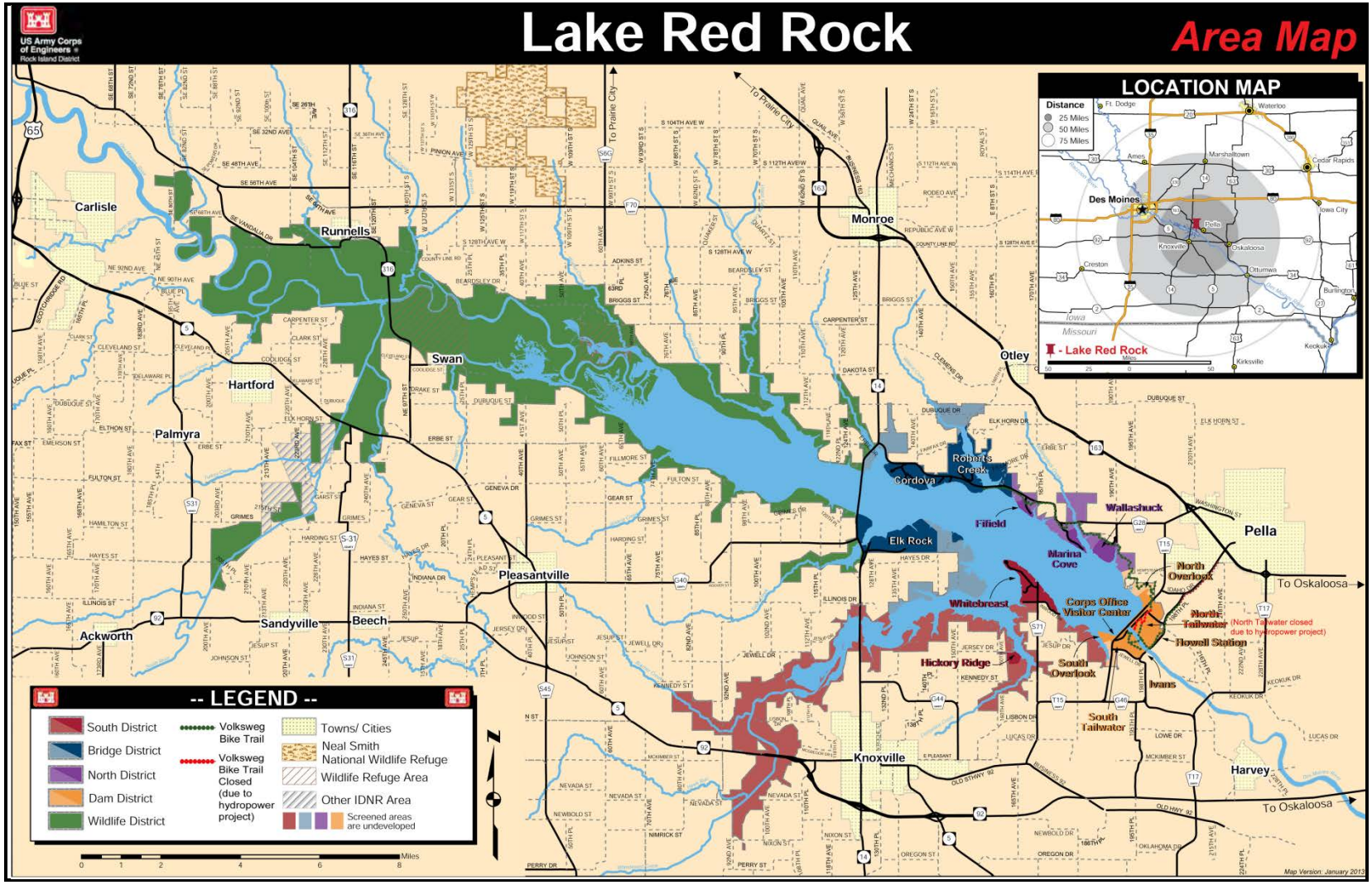

Figure II-1. Lake Red Rock Recreation Area

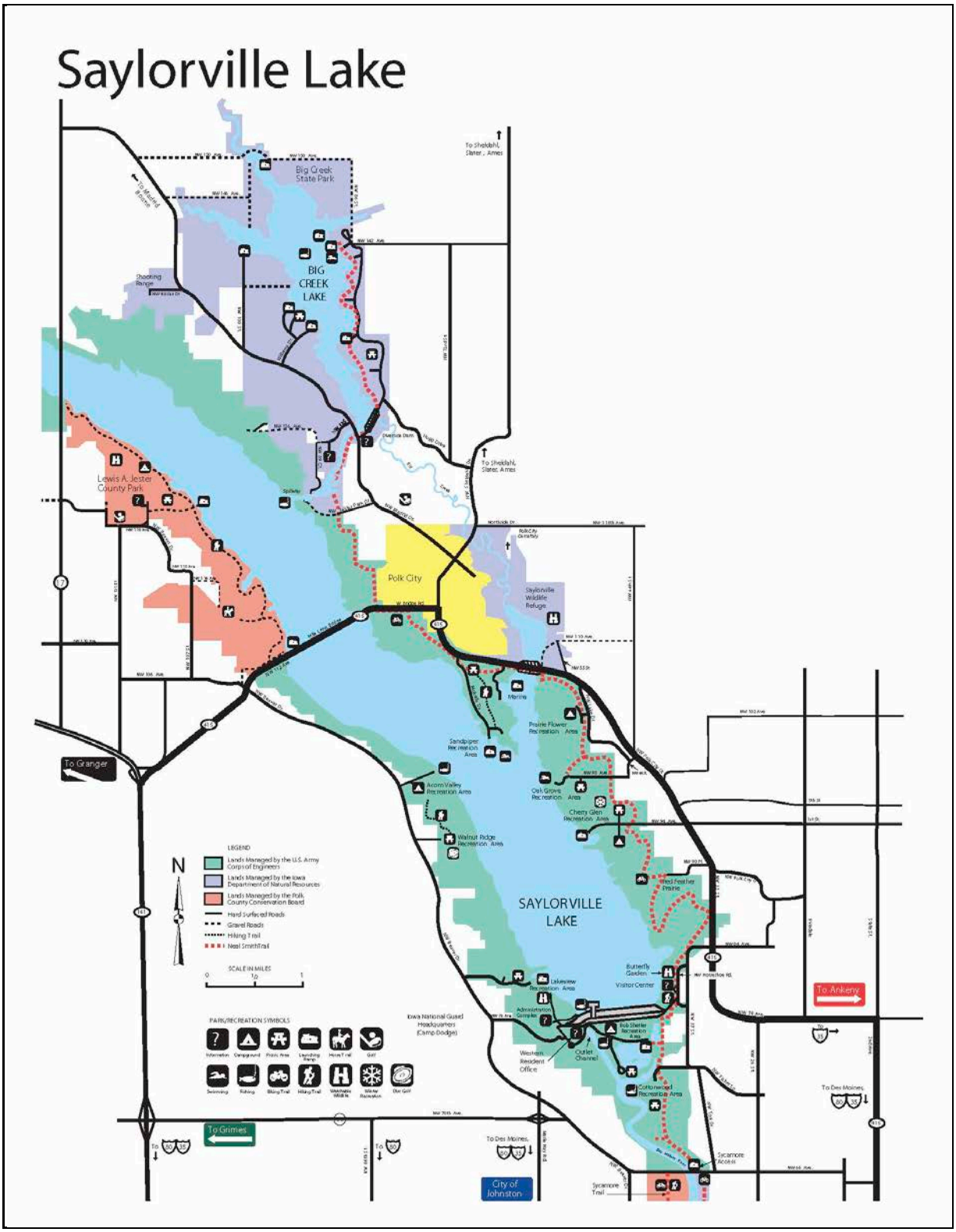

Figure II-2. Saylorville Lake and Recreation Area

C. WATER STORAGE AND DRINKING WATER

The Flood Control Act (FCA) of 1944 and later, the Water Supply Act of 1958, authorized the U.S. Army Corps of Engineers to participate in developing water supplies in connection with water resource improvements for construction, operation, maintenance, and modification of Federal reservoir projects. As one of the nation's largest water management agencies, the Corps plays an important role in helping non-Federal interests ensure they have enough water to meet their needs. The Corps works with non-Federal water management plans and, consistent with law and policy, manages USACE reservoirs to provide municipal and industrial water supply storage in a cost-efficient and environmentally and socially responsible manner.

Saylorville Lake was authorized to contract with the State of Iowa to provide additional water storage for reliable potable water supply and industrial use by utilities in times of drought.

D. ECOSYSTEM RESTORATION

The District's environmental efforts include multiple ecosystem restoration projects, forest management programs, and watershed studies. The District works with local sponsors to aid with ecosystem restoration throughout its five major river basins—Eastern Iowa, Des Moines River, Mississippi River, Illinois River and the Rock River. As an example, under the Upper Mississippi River Restoration - Environmental Management Program, the District plans, designs and builds environmental enhancement projects to restore and create spawning and feeding habitats for fish and wildlife in the backwaters and side channels of the Mississippi and Illinois Rivers. The District's Natural Resources Management mission also manages and conserves natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences. Currently, the District is not implementing any ecosystem restoration projects in the Basin.

E. HYDROPOWER

This refers to electrical power derived from the energy of falling water or running water, which is harnessed for useful purposes. Most conventional hydroelectric power comes from the potential energy of dammed water driving a water turbine and generator. The power extracted from the water depends on the volume and on the difference in height between the source or lake and the water's outflow. This height difference is called "the head". The amount of potential energy in water is proportional to the head, i.e. the more head, the more potential energy that can be used to generate electricity. Although there is no hydropower at Saylorville, Missouri River Energy Services of Sioux Falls, SD, is constructing a hydropower plant at Lake Red Rock.

F. ENVIRONMENTAL STEWARDSHIP

Environmental stewardship is the capacity of an ecosystem to maintain its essential functions and processes, and retain its biodiversity in full measure over the long-term. The District is exploring partnering with The Nature Conservancy on the Sustainable Rivers Program.

The District conducts an annual fall pool raise (hydrometeorologically permitting) for the benefit of migrating waterfowl. The pool raise is from 836 feet up to 840 feet at Saylorville and from 742 feet up to 744 feet at Red Rock.

1. Water Level Management. Water level management (WLM) refers to the management of reservoir water levels and releases for environmental enhancement. Spring WLM for fish spawn at both Saylorville and Red Rock is considered every year on an ad-hoc basis based on weather and hydrologic conditions.
The only other environmental WLM activities in the Basin are the annual fall pool raises which are conducted to enhance water fowl habitat. Fall WLM is included in the water control plans for each reservoir.

2. Water Quality. Water Quality refers to the chemical, physical and biological characteristics of water and it is a measure of the condition of water relative to the requirements of one or more biotic species and/or to any human need or purpose.

The Des Moines River Water Quality Network, managed by Iowa State University under contract to the District performs water quality monitoring on the Des Moines River, including sampling sites within Saylorville and Red Rock reservoirs, and also a site on the Raccoon River. This is the primary water quality monitoring network in the Basin.

G. EMERGENCY MANAGEMENT

Under the National Response Plan, the Federal emergency response to a disaster is divided among different Emergency Support Functions. The Corps has the lead for Emergency Support Function #3, which is Public Works and Engineering. Though the Corps has capabilities to support Federal Emergency Management Agency (FEMA) or other Federal Agencies in a large number of ways, typical activities and mission assignments include:

- Debris Clearance and Removal
- Drinking Water
- Emergency Power
- Ice Distribution
- Structural Safety Assessments
- Technical Assistance
- Temporary Housing
- Temporary Roofing
- Unwatering
- Urban Search and Rescue

Flood fight plans and preparations are updated annually. District flood fight teams are trained and ready to respond to flood emergencies within their flood response areas.

1. Public Law 84-99 (Section 5 of the FCA of 1941)(PL 84-99). The District is prepared to provide all-hazard response and recovery assistance under the authority of Public Law (PL) 84-99 and PL 93-288. All-hazard events include flooding, earthquakes, tornados, etc. On a national basis the District will respond to incidents of national significance such as hurricanes and weapons of mass destruction.

The District's Crisis Management Team consisting of senior staff elements is trained and ready to respond to disasters. Prior to flood season, trained Flood Area Engineer teams conduct annual inspections of the District flood protective systems in coordination with local sponsors. Flood fight supplies are stockpiled and flood fight equipment is serviced. During a flood event, multiple Lead and

Assistant Flood Area Engineers (FAE) are staged in the field and ready to provide technical assistance during a flood event. This technical assistance can vary between advice on techniques, suggested remedies to flood-related structures issues, or a myriad of flood-related issues. The District's Emergency Management Division has available for loan a variety of pumps, sandbags, and other flood fighting products to help reduce losses to public infrastructure. An entity can request these products or technical assistance by passing a request through the County Emergency Management Agency Coordinator or by calling the District at 309-794-5101.

Under PL 84-99, USACE may undertake the following:

- Advance Measures
- Disaster Preparedness
- Drought Assistance
- Emergency Operations
- Emergency Water Assistance Due to Contaminated Water Source
- Rehabilitation Program
- Restoration Program

The FAE serves as the primary point of contact between the local sponsors, community governments and the Corps on all matters pertaining to flooding of municipalities and or FRM Projects. One FAE team is assigned to the Des Moines River Basin (figure II-3). The FAE develops and maintains a flood fight plan and oversees a trained team of Assistant FAEs for the purposes of providing technical assistance and support to local entities on recommended flood fight operations. The FAE monitors flood conditions within their assigned flood area and informs local officials of potential changes. Daily reports are provided to the Emergency Operations Center during flood response operations. The District outreach office will survey flood customers utilizing HQ customer surveys at the conclusion of flood fight activities.

2. Dam Safety Program. Dam safety is the art and science of ensuring the integrity and viability of dams such that they do not present unacceptable risks to the public, property and the environment. It requires the collective application of engineering principles and experience, and a philosophy of risk management that recognizes that a dam is a structure whose safe functioning is not explicitly determined by its original design and construction. It also includes all actions taken to routinely monitor, evaluate, identify or predict dam safety issues and consequences related to failure, and to document, publicize, and reduce, eliminate, or remediate any unacceptable risks. The purposes of a dam safety program are to protect life, property, and the environment by ensuring that all dams are designed, constructed, operated, and maintained safely and effectively. This is accomplished by routine inspection of projects; periodic assessment of risks of each project; emergency planning which includes exercises that involve stakeholders, agencies, local and state government, and emergency responders; interim risk management measures; detailed technical evaluation of potential issues; and monitoring of instrumentation.

The District's Dam Safety Program was adopted to develop balanced and informed assessments of the safety of our dams and to evaluate, prioritize and justify dam safety decisions. The focus is on public safety, but also includes continuous and periodic project inspections and evaluations.

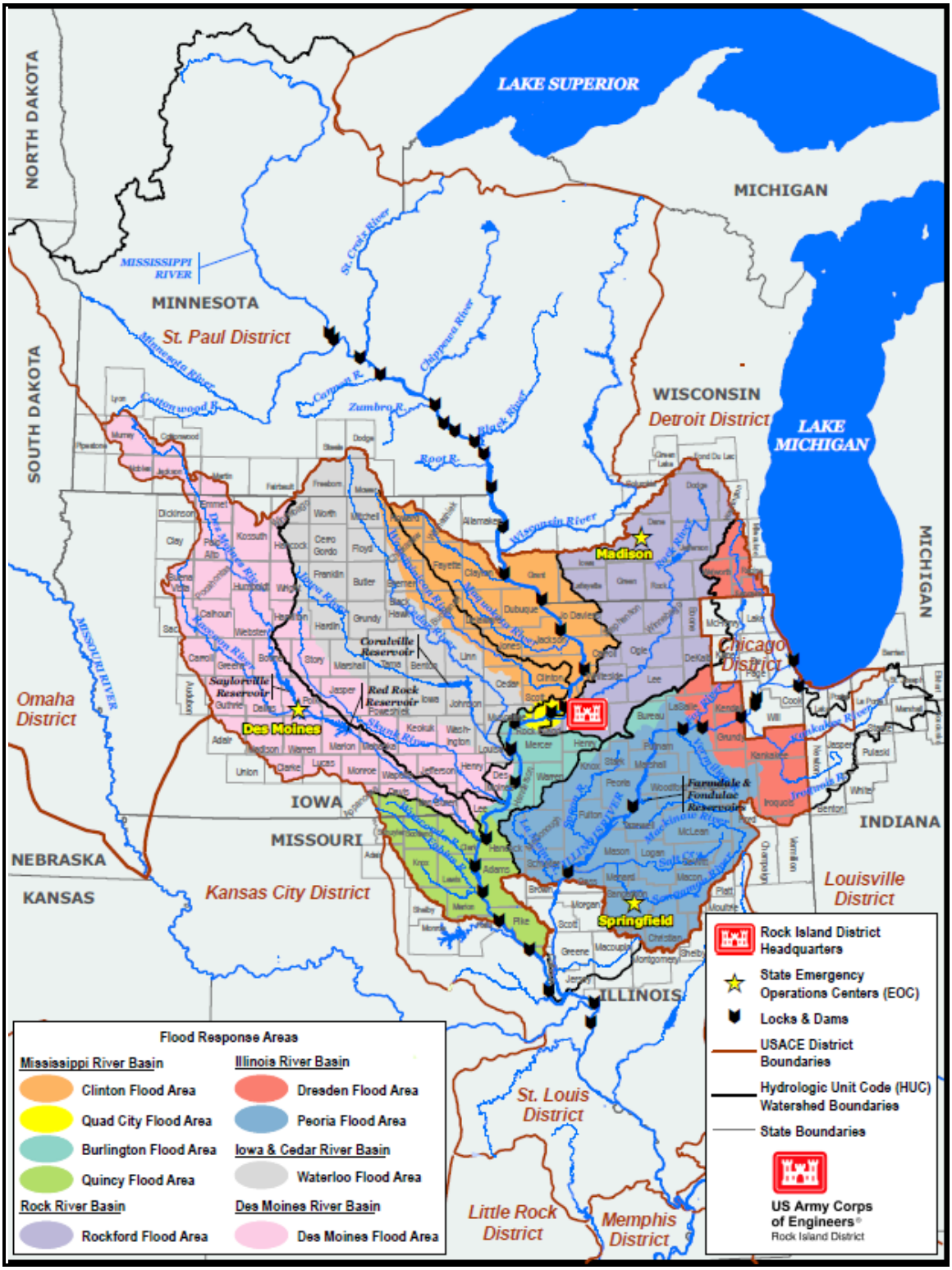

Figure II-3. Rock Island District Flood Response Boundaries

SECTION III. INTRODUCTION TO THE DES MOINES RIVER BASIN

A. EXISTING CONDITIONS IN THE WATERSHED

1. Watershed Perspective Policy. The concept of "watershed" is not new to the Corps. Throughout the history of the Corps, a watershed approach has been, at varying levels, integrated into the process by which water resource systems have been investigated. The geographic "basin" organization of the Corps' Civil Works (CW) programs supports the Corps' historic understanding of the necessity of managing water resource activities within a watershed context.

There is a growing recognition that "locally perceived water resources problems" have regional dimensions and are of concern to numerous, diverse interest groups. Many activities occurring in a watershed are inter-related and, therefore, managing water resources has evolved to more of a holistic, collaborative effort. The Corps has developed its own watershed perspective to guide water resources development, protection, and management within the CW program. This watershed perspective accommodates the multi-objective, multi-purpose planning and investigations necessary for exploring these concerns. It is being adopted to help improve performance, customer satisfaction, and overall program efficiency and effectiveness and to assure use of water resources in a sustainable manner, taking into account environmental protection, economic development, and social well-being.

2. Applicability. The watershed perspective applies to all CW programs through planning, design, construction, operation, maintenance, restoration, rehabilitation, and regulatory activities. The application of this perspective into the CW program encourages opportunities for enhancing the O&M of existing projects, especially the management of the natural resources. In addition, this perspective facilitates the integration of eight Corps of Engineers CW business programs (see Section II) into the identification and development of new Corps initiatives. The perspective recognizes the responsibility of the Corps as a major stakeholder in many of the Nation's watersheds.

3. Definitions. Federal, tribal, state, and local agencies and organizations have varying interpretations of the definition of a watershed, the identification of the range of water resources issues, and the methods of evaluation. They also have differing views on the anticipated purposes and goals of watershed initiatives. These interpretations are based on defining manageable units and specific issues that a particular agency or organization has determined to be appropriate for its individual mission areas and identifying ways to meet its program goals. For the purpose of Corps CW initiatives, the following definitions apply:

- ***Watershed perspective*** is the viewpoint which requires that all activities be accomplished within the context of an understanding and appreciation of the impacts of those activities on other resources in the watershed. The watershed perspective encourages the active participation of all interested groups and requires the use of the full spectrum of technical disciplines in activities and decision making. This viewpoint takes into account 1) the interconnectedness of water and land resources, 2) the dynamic nature of the economy and environment, and 3) the variability of social interests over time. It recognizes that watershed activities are not static, and that the strategy for managing the resources of the watershed needs to be adaptive.

- ***A watershed*** is an area of land within which all surface waters flow to a single point. It encompasses the area necessary to adequately scope, analyze, and manage related water and land resources.

- ***Watershed management*** is the administration of, and potential adjustments to, the level and type of interaction among various human activities and natural processes occurring in the watershed through the application of the watershed perspective. Watershed management includes the planning, development, use, monitoring, regulation and preservation of the water and land resources. It should achieve a desirable balance among multiple, and often competing, watershed goals and objectives.

- ***Watershed studies*** are planning initiatives that have a multi-purpose and multi-objective scope and that accommodate flexibility in the formulation and evaluation process. The outcome of a watershed study will generally be a watershed management plan that identifies the combination of recommended actions to be undertaken by various partners and stakeholders in order to achieve the needs and opportunities identified in the study. It may or may not identify further Corps studies or implementation projects. However, budgetary priority will be given to those studies likely to result in further Corps activities or which will provide benefits to an existing Corps project, the utilization of which is being impaired by activities or conditions within the watershed. Further consideration for funding will be given to Corps involvement in watershed studies of national importance which do not necessarily lead to a Corps project.

4. Policy. The Corps will integrate the watershed perspective into opportunities within, and among, CW elements. Opportunities should be explored and identified where joint watershed resource management efforts can be pursued to improve the efficiency and effectiveness of the CW Programs. The Corps will solicit participation from Federal, tribal, state, and local agencies, organizations, and the local community to ensure that their interests are considered in the formulation and implementation of the effort. Due to the complexity and interrelation of systems within a watershed, an array of technical experts, stakeholders, and decision makers should be involved in the process. This involvement will provide a better understanding of the consequences of actions and activities and provide a mechanism for sound decision making when addressing the watershed resource needs, opportunities, conflicts, and trade-offs.

The watershed perspective encourages collaborative efforts, which advocate the integration of interests in the watershed by identifying, scoping, and developing comprehensive water resources management goals. This approach improves opportunities for public and private groups to identify and achieve common goals by unifying on-going efforts and leveraging resources. The specific roles and amount of involvement by the Corps and other parties will vary depending on the initiative, and the level of involvement may also vary throughout the process. The analytical framework will be founded on factual scientific, social, and economic information, allowing for the assessment, evaluation, and comparison of alternative plans, including positive and negative effects on economic development, the environment, and social well-being. The Corps' CW watershed perspective includes:

- using water resources in a manner that is sustainable, taking into account environmental protection, economic development, and social well-being;
- coordinated planning and management of water and related land resources by the responsible Federal, tribal, state or local government;
- interagency cooperation, including cost-shared collaboration on initiatives that incorporate local, tribal, regional, and national water resources management goals;
- considering of adaptive management of resources in the watershed;

- leveraging resources and integrating programs and activities within and among CW programs—with other Federal, tribal state and non-governmental organizations—to improve consistency and cost effectiveness;
- identifying future local, tribal, regional, and Federal goals water resource use demands;
- using interdisciplinary teams to include a wide range of engineering and scientific expertise, as well as skills in public involvement, geographic information systems, alternative dispute resolution and other skills;
- public input to watershed resources development and management; and
- evaluating the monetary and non-monetary trade-offs to be considered.

5. Implementation. The watershed perspective and principles will be incorporated into the existing guidance for the affected CW programs. Guidelines are being developed to integrate the Corps watershed perspective into each CW mission area. These guidelines will provide a useful tool for developing approaches, ranges of involvement, applications of process, and potential outcomes of CW initiatives using the watershed perspective. The first guidelines will focus on the Corps CW Planning mission. Additional guidelines will focus on the Regulatory Program, Natural Resources Management, Emergency Management, and Water Control Management. *(Policy Guidance Letter #61 – Application of Watershed Perspective to Corps of Engineer CW Programs and Activities)*

B. GENERAL GEOGRAPHY

The Des Moines River Basin is comprised of all or parts of 7 counties in Minnesota, 39 counties in Iowa, and 1 county in Missouri. The basin is approximately 360 miles long and has an average width of approximately 40 miles. The drainage area of the river comprising approximately 14,540 square miles covers some 23 percent of Iowa, 2 percent of Minnesota, and less than 1 percent of Missouri. Agriculture is the principal occupation in the Basin; manufacturing and mining are the major industries. The largest area of the Basin, the Des Moines metropolitan area, has a population of approximately 599,789 (2013 census estimate).

Iowa Counties

Adair	Appanoose	Audubon	Boone
Buena Vista	Calhoun	Carroll	Clarke
Clay	Dallas	Davis	Dickinson
Emmet	Greene	Guthrie	Hamilton
Hancock	Humboldt	Jasper	Jefferson
Kossuth	Lee	Lucas	Madison
Mahaska	Marion	Monroe	Palo Alto
Pocahontas	Polk	Sac	Union
Van Buren	Wappello	Warren	Webster
Winnebago	Wright		

Minnesota Counties

Cottonwood	Jackson	Lyon	Murray
Nobles	Pipestone	Martin	

Missouri County

Clark

C. GEOLOGY AND TOPOGRAPHY

The superficial deposits of the Des Moines River basin are, in general, glacial in origin. The first and second periods of glaciation, the Nebraskan and Kansan, resulted in deposits of glacial till probably over the entire basin. The final glacial period, the Wisconsin, left deposits over practically the entire upper portion of the Basin above the City of Des Moines. Thus, south of Des Moines, the surface deposits are of Kansan till, and loess, an eolian silty material. In that area, the topography is mature and mostly well drained. Above Des Moines, the topography is youthful, the material of the latest stage of glaciation having been so recently deposited that natural drainage is not fully developed.

In the upper portion of the valley, the streambed is commonly a few feet below the surrounding plain. The stream gradually cuts deeper and near Humboldt, IA, where rock ledges are encountered. The stream valley is well defined. In Boone County, ledge and rock outcrops narrow the river. Below Des Moines, the valley is mature; the stream meanders through a floodplain 2 to 3 miles wide, bordered by rounded bluffs. Near Tracy, IA, the stream has cut into limestone. In the reach between Eldon, IA, and the vicinity of the Atchison, Topeka and Santa Fe Railway bridge (about river mile 20), the stream runs through a narrow rock valley. Below this reach, the floodplain becomes wider and is bordered by rounded bluffs until the stream enters the Mississippi River floodplain.

1. Main Stream. The Des Moines River rises in southwestern Minnesota and flows southeasterly 535 miles to its junction with the Mississippi River at a point just downstream from Keokuk, IA (Mile 361.4 above the mouth of the Ohio River).

2. Tributary Streams. The Des Moines River has numerous tributaries, many of them very short and with small drainage areas. The major tributaries are briefly described as follows:

West Fork Des Moines River. The Drainage Area is 1,200 square miles.

Pilot Creek. Located in Pocahontas County, IA, with a drainage area of 96.6 square miles.

East Fork, Des Moines River. This tributary of the Des Moines River has its source in Martin County, MN, flows southeasterly for approximately 120 miles and enters the Des Moines River approximately 14 miles upstream from Fort Dodge, IA. The average slope of the river is 2.6 feet per mile and it drains an area of about 1,290 square miles.

Lizard Creek. This stream with a drainage area of 275 square miles is located in Webster County, IA.

Boone River. This stream has its source in Hancock County, IA, flows southwesterly, and joins the Des Moines River approximately 24 miles upstream from Boone, IA. Its length is approximately 100 miles and it drains an area of about 900 square miles. The average slope of Boone River is 3.0 feet per mile.

Raccoon River. This stream has its source in Buena Visa County, IA, flows southeasterly for approximately 210 miles and enters the Des Moines River within the city limits of Des Moines, IA. Its watershed area is approximately 3,640 square miles. The average slope per mile of stream is 2.6 feet.

Beaver Creek. This creek has a 280 square-mile drainage area.

Fourmile Creek. Fourmile Creek has a 97.7 square-mile drainage area.

North River. The North River has a 349 square-mile drainage area.

English Creek. Located in Marion County, IA, English Creek has a 90.1 square mile drainage area.

Middle River. Middle River has its source in Guthrie County and flows generally in an easterly direction to its confluence with the Des Moines River approximately 17 miles downstream from Des Moines. Its length is approximately 105 miles and it drains an area of about 560 square miles. The average slope of the river is 5.7 feet per mile.

Whitebreast Creek. Has a 339 square-mile drainage area.

Cedar Creek. This creek has a 374 square-mile drainage area.

South River. South River has its source in Clarke County, IA, flows northeasterly to its confluence with the Des Moines River approximately 19.7 miles downstream from Des Moines, IA. Its length is approximately 55 miles and it drains an area of about 590 square miles, the average slope of the river is 7.3 feet per mile.

D. RESERVOIRS

1. Saylorville Lake is operated for FRM while also providing low-flow augmentation, recreation, fish and wildlife management. In 1982, the State of Iowa contracted for 18.86 percent of the usable storage between elevation 812 and 836 for water supply. Two-thirds of this storage was sub-allocated to the City of Des Moines and the remaining third for a downstream utility.

Located 11 miles upstream from Des Moines on the Des Moines River, construction on Saylorville Lake was started in 1965 and completed in 1975. The lake became fully operational in 1977. The top of the main dam is 915 feet NGVD, while the normal pool is kept at 836 feet NGVD. The reservoir is 24 miles in length with 5,520 surface acres. The flood-pool elevation is 890 feet NGVD, which doubles the reservoir's length to 54 miles and triples the surface area to 16,700 acres. Only the West Fork River, East Fork River, Lizard Creek, and Des Moines River affect Saylorville Reservoir inflow. Releases are impacted by flows below the dam on the unregulated Beaver Creek and Raccoon River.

2. Lake Red Rock is Iowa's largest lake and includes the state's largest expanse of public land encompassing over 50,000 acres. Woodlands, rocky bluffs, wetlands, and sandy beaches provide homes to hundreds of wildlife species. Lake Red Rock is affected by the Des Moines River, Raccoon Creek, Fourmile Creek, North River, Middle and South Rivers, and Whitebreast Creek.

Located 45 miles southeast and downriver from Des Moines on the Des Moines River, construction was started in 1960 and completed in 1969. The top of the main dam is 797 feet above NGVD, while the normal pool is kept at 742 feet NGVD. The reservoir is 18 miles in length with 15,250 surface acres. The flood-pool elevation is 780 feet NGVD, which nearly doubles the lake's length to 33 miles and quadruples the surface area to 64,680 acres.

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SECTION IV. HISTORICAL OVERVIEW

A. EXISTING CORPS OF ENGINEERS PROJECTS

The District operates and maintains two existing projects in the Basin—Saylorville Lake and Lake Red Rock—and one existing project that is directly impacted by the Basin, the Upper Mississippi River (UMR) 9-foot Navigation Channel.

1. Saylorville Lake. Saylorville Lake is a multiple purpose project providing primary benefits in FRM and secondary benefits in low-flow augmentation, recreation, fish and wildlife management, and water supply. Conservation pool is 5,950 acres; with a storage volume of 586,000 acre-feet at flood pool level. The dam is located about 11 miles northwest of Des Moines, IA, on the Des Moines River and was completed in 1975.

2. Lake Red Rock. Lake Red Rock is a multiple purpose project providing primary benefits in FRM and low-flow augmentation and secondary benefits in recreation, fish and wildlife management, forest management, and water quality improvement. Conservation pool is 15,600 acres which makes it Iowa's largest lake; and the storage volume is 1,750,400 acre-feet at flood pool level. The dam is located on the Des Moines River southeast of Des Moines, IA.

3. Upper Mississippi River 9-foot Navigation Channel. The navigation project on the UMR was authorized in 1867 and provided for the removal of snags and boulders from Cairo, IL to St Paul, MN. The Des Moines River Basin is not specifically authorized for Federal navigation projects, but as major tributaries to the UMR, there is a direct impact on the District's ability to maintain the 9-foot navigation channel. The Corps maintains the 9-foot channel with dredging operations placing dredged material at suitable sites along the river.

B. CORPS OF ENGINEERS CONSTRUCTED PROJECTS

The Corps has participated in the construction of the following projects in the Des Moines River Basin where local interests own, operate and maintain the projects:

- **Section 14, Emergency Streambank Protection**
  - **North Raccoon River Sewage Lagoons, Perry, IA** – emergency streambank protection to stabilize the bankline and to protect two sewage lagoons from further erosion – ***construction completed 2013***
- **Specifically Authorized Projects**
  - **Des Moines Local Flood Protection, Des Moines, IA** – flood protection for portions of West Des Moines and Des Moines along the Raccoon River, Walnut Creek, and Jordan Creek – ***construction completed 1975***
  - **Raccoon River Construction, West Des Moines, IA -** 100-year plus levee on Raccoon River, west bank of Walnut Creek, and east bank of Jordan Creek – ***construction completed 1999***

- **Des Moines & Raccoon Rivers Study** - Levee at the Water Works, Improving West Des Moines Levee, Levee on Walnut Creek – ***construction completed 2003***

- **Des Moines Recreational River & Greenbelt, IA** – a partnership of local and Federal governments and private interests dedicated to developing ecosystem improvements and recreational opportunities in the Des Moines River corridor. Federal funds were been appropriated to the Greenbelt Program from FY 2003 through FY 2010 and a total of 18 projects have been completed. However, Federal funds have not been appropriated for the Greenbelt program since FY 2010, and all program activities with the exception of closing completed projects have been suspended.

- **Des Moines & Raccoon Rivers Project, Des Moines, IA -** Completion of the authorized project requires the design and construction of nine closure structures to protect downtown Des Moines. Completing the design and construction would have caused the Section 902 Limit of WRDA 1986 to be exceeded. The current Section 902 Limit is $21,046,000. A Post Authorization Change Report was completed in 2013 that requested the authorized project cost be increased to $22,856,000. This report has been reviewed by HQUSACE and was submitted to the ASA(CW) before sending it to Congress on February 12, 2014 with a recommendation to increase the authorized project cost. The Consolidated Appropriations Act, 2014, PL 1113-76 includes language that allows the design and construction of the improvements to the nine existing downtown closures to proceed, provided that all work is completed by September 30, 2015. The authorized project cost was increased to $23,245,000 in WRRDA 2014. The City has requested betterments to the project. The design of the closures is underway and will be completed in December 2014. – ***construction of Birdland Park Levee and the Central Place Levee (figure IV-1) and some Downtown Closures (figure IV-2), Des Moines, IA - completed 2012.***

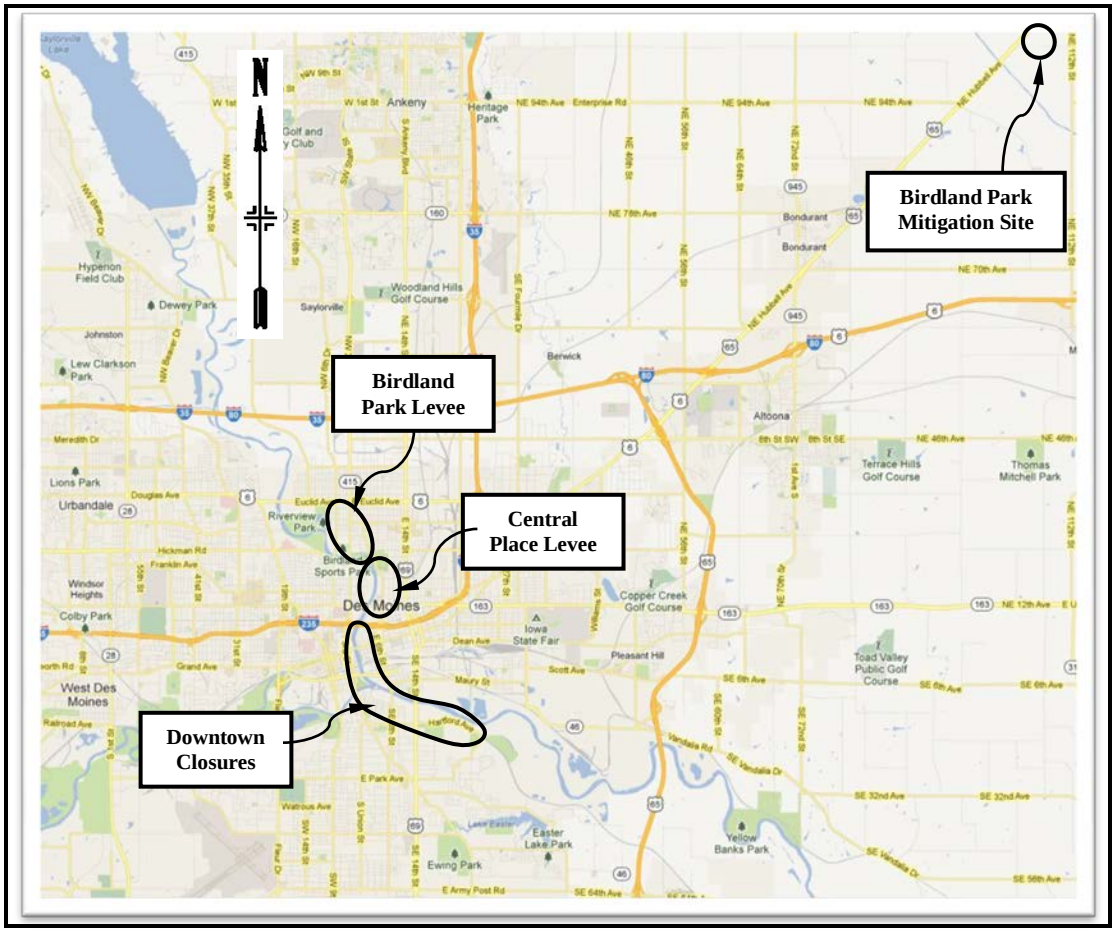

Figure IV-1. Des Moines & Raccoon Rivers Project Location Map

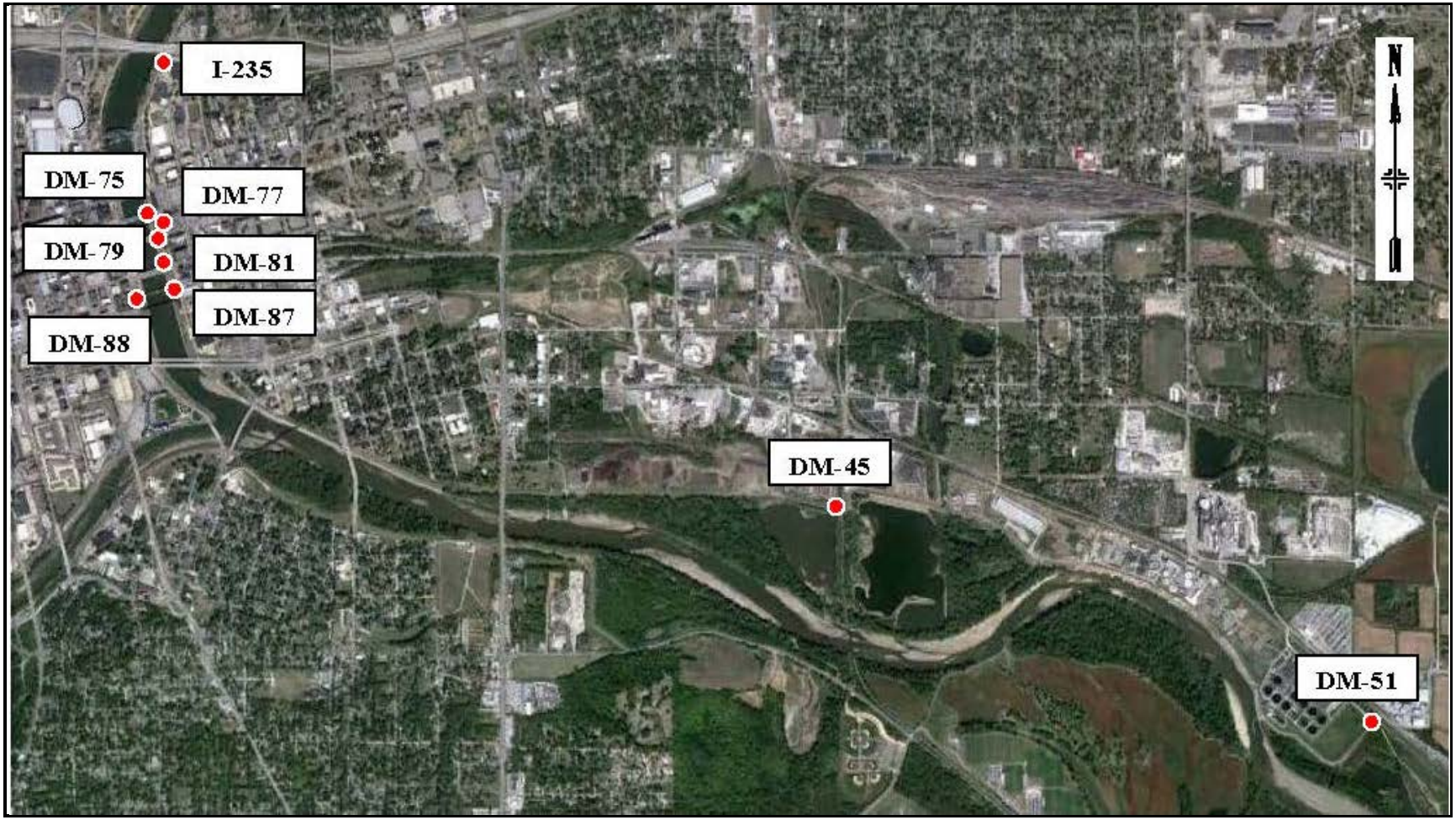

Figure IV-2. Des Moines & Raccoon Rivers Downtown Closures

C. OTHER WATER RESOURCES PROJECTS

Many other non-Federal water resources projects are in the Basin. An extensive artificial drainage network was constructed to drain land for agricultural use and for road drainage. Landowners have drained many wetlands, constructed ditches, and installed thousands of miles of underground drainage tile. Townships and counties have constructed thousands of miles of road ditches, and many bridges and culverts that connect with the agricultural drainage system. Drainage districts have constructed hundreds of miles of legal "judicial" drainage ditches and channelized hundreds of miles of streams. The U. S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS), local watershed districts, and landowners have constructed many smaller flood control impoundments. Townships, cities and counties have constructed a number of dams, fords and crossings in the Des Moines River Basin. The dams vary from low-head rock rubble dams to large dams. Specific information on these dams may be found at http://www.iowadnr.gov/portals/idnr/uploads/riverprograms/dam_chap2.pdf?amp;tabid=878.

D. RECENT EMERGENCY ACTIONS

In the last three decades, the Corps provided emergency assistance during the major flood events of 1993, 1999, 2008, 2010, 2011, and 2013. The primary focus areas during these events was on communities that have FRM systems (Jackson, MN; Des Moines, IA; West Des Moines, IA; Eddyville, IA; and Ottumwa, IA) or communities with higher populations at risks. Some of the higher risk response areas included Greater Des Moines, IA and Eddyville, IA, during these major flood events. Response efforts also assisted many other communities/counties throughout the watershed which are not listed due to the large number.

E. ONGOING CORPS OF ENGINEERS ACTIVITIES

- ***Environmental Stewardship***
    - **Water Level Management - Lake Red Rock and Saylorville Lake - Operations & Maintenance (O&M)**- FCA; Fish and Wildlife Coordination Act; WRDAs; Environmental Operating Principles

- ***Hydropower***
    - **Red Rock Hydroelectric Project** –Federal Power Act, Section 408; constructed by the Missouri River Energy Services, a private developer that holds the Federal Energy Regulatory Commission permit

- ***Flood Risk Management***
    - **Saylorville Lake, IA** - O&M - FCA of 1958
    - **Saylorville Lake Project** - authorized by Congress on December 22, 1944
    - **Red Rock Dam, Lake Red Rock, IA** -O&M - FCA of 1938; Public Law 75-761
    - **Water Level Management - Lake Red Rock and Saylorville Lake -** O&M - FCA; Fish and Wildlife Coordination Act; Water Resource Development Acts (WRDA); Environmental Operating Principles

- **Big Creek Barrier Dam**
  - **Supplemental Pump Station - Authorized as part of Saylorville Lake O&M Project.** The project was constructed according to Saylorville Reservoir Design Memorandum No. 19, Big Creek Valley Remedial Works dated 7 May 1968.
  - **Big Creek Diversion Dam Sluice Gate Replacement** – O&M

- ***Section 22, Planning Assistance to States (PAS)***
  - **Master Planning City of Perry PAS** – Continuing Authorities (CA) Section 22
  - **Big Creek Lake Spillway Fish Barrier Study PAS** – CA Section 22
  - **Saylorville/Big Creek Evaluation of Walleye and Muskellunge Ecosystem Study -** Scope of Work and Partnering Agreement are processing
  - **Fourmile Creek Watershed -** Developing Scope of Work for the Fourmile Creek Watershed Management Authority. The Watershed is located in Central Iowa and includes portions of Polk, Story, and Boone Counties

- ***Recreation***
  - **Des Moines Recreational River & Greenbelt, IA -** Public Law 99-88, Supplemental Appropriations Act, 1985, Joint Explanatory Statement of the Committee of Conference accompanying the Conference Report for H.R. 2577; Section203 of the FCA of 1958 as modified by Section 111 of the WRDA 1976; Section 102 of Public Law 99-500; Section 604 of WRDA1986; Section 122 of Public Law 108-7; Section 14221, FCE&E Act 2008, and Section 115,Public Law 111-85 Energy and Water Development Appropriations Act of 2010.

- ***Water Supply***
  - **Water Storage Space Contract, Saylorville Lake -** Water Supply Act of 1958. This contract is an agreement between the State of Iowa and the United States of America for approximately 14,900 acre-feet of water to be kept in reserve at Saylorville Lake, stored between elevations 812.0 and 836.0 NGVD. The State has the right to withdraw water from this reserve during periods of drought and low flow on the Des Moines River.

- ***Floodplain Management Services Special Program and Silver Jackets/FRM Program***
  - **Iowa Reservoirs Dam Safety Study –** Hydraulic Model of major flood flows from Saylorville and Red Rock reservoirs and their potential impacts to downtown critical infrastructure. Study is scheduled to be completed in FY15.
  - **Iowa Comprehensive Levees Database** – Study purpose is to incorporate all Iowa levees not currently included in the National Levee Database
  - **Des Moines Evaluation of Urban Flooding Scenarios** – While the City of Des Moines is served by their flood protection project, breach scenarios afford the opportunity to explore failure scenarios to inform emergency management planning, including evaluation of evacuation routes and information for evacuation planning and will serve as a readiness measure to reduce future life and safety risks involved with flood events. USACE will use of GIS data available from the Iowa LIDAR Project and

the City of Des Moines for analysis flood inundation modeling. The City and its stakeholders will partner with USACE in order to better understand and plan for potential levee capacity exceedance or levee failure scenarios. Study is scheduled to be completed in FY15.

- **State of Iowa Silver Jackets Interagency FRM Team** – This team consists of multiple state, Federal, and sometimes tribal and local agencies to reduce flood risk. Iowa's State Hazard Mitigation Officer and State NFIP Coordinator, along with the Corps and FEMA, address FRM priorities. In 2012-2013, the District conducted a pilot project in support of the National Flood Risk Management Center's Silver Jackets Program. This pilot developed a georeferenced database of flood risk for each of the communities in the Des Moines River Basin. Information regarding the Iowa Silver Jackets Program can be found at http://www.nfrmp.us/state/factIowa.cfm.

F. PREVIOUS CORPS OF ENGINEERS PLANNING STUDIES

Table IV-1 lists Corps-conducted planning studies and their authorities.

Table IV-1. History of Basin Studies and Projects

Date (Was it Feasible? ▲ ▼)	History of USACE Studies and Project in the Des Moines Basin
1930 ▼ Des Moines River	*Study - Navigation, Irrigation, Water Power, and Flood Control*
1935 ▲ Reservoirs in the Mississippi River Basin	*Study - Flood Control Reservoirs on the Des Moines River*: One Near Howell, IA, and One Near Belfast, IA
1935 ▼ Des Moines River	*Study - Navigation (Potential Tonnage for Water-Borne Transportation Would Not Warrant the Cost of Improvement)*
1938 ▲ Comprehensive Plans for Flood Control for the Mississippi River	*Study - Reservoir on the Des Moines River Near Howell, IA*, was included
1938 ▲ Red Rock Reservoir	Study - Reservoir Red Rock Local Protection for the City of Des Moines
1953 ▲ Saylorville Reservoir	*Study - Reservoir Saylorvill*e
1953 ▲ Des Moines River	Study and Construction - Section 205 Flood Control of the 1948 FCA, Levees, Channels, Drainage Structures, and Appurtenances; Control Okabena Creek at Worthington, MN
1957 ▼ Des Moines River	*Study - Section 205 Flood Control Fort Dodge, IA*
1959 ▼ South Raccoon River	*Study - Section 205 Flood Control Guthrie Center, IA*
1959 ▼ Des Moines River	*Study - Section 205 Flood Control Windom, MN*
1960 ▼ Reservoir at Tunnel Mill Flood Protection at Ottumwa	*Studies* *1. A Reservoir At Tunnel Mill Site on the Boone River for Flood Control and Related Purposes* *2. Local Flood Protection at Ottumwa, IA*
1962 ▲ Des Moines River	*Study, City of Des Moines Interior Drainage Considerations Be Investigated in the Interest of FRM and Plans and Specifications Be Prepared Accordingly*
1963 ▲ Des Moines River	Construction - Flood Control Levees on the south, east and west of downtown Des Moines
1963 ▲ Tributary to the Raccoon River	Study - *Section 205 Flood Control*, channel enlargement and straightening, levees, and provision of drainage facilities. On an unnamed creek tributary to the Raccoon River at Van Meter, IA
1963 ▲ Saylorville Reservoir, Water Quality Control Storage	Study and Construction - *Reservoir Study by the U. S. Public Health Service*, in which it was determined that the minimum flow in the Des Moines River contemplated for release from the Saylorville Reservoir should be increased. The outcome of this investigation was that Saylorville Reservoir should be constructed as originally planned and that the additional low-flow storage should be developed at alternate reservoir sites.
1963 ▲ Boone River	*Study - Section 205 Flood Control Webster City, IA*
1964 ▲ Des Moines River	*Study - Flood Control Levee Along Edison Avenue*, to provide unimpeded drain to a pond area, and add a sandbag closure in the freeboard zone at Hillside Avenue, City of Des Moines
1967 ▲ Des Moines River	Study and Construction - Modifications to the Design of the Flood Protective Works on Fleur Drive, City of Des Moines

Table IV-1. History of Basin Studies and Projects

Date (Was it Feasible? ▲ ▼)	History of USACE Studies and Project in the Des Moines Basin
1967 ▼ Fourmile Creek	*Study - Flood Control Report Reviews Past Proposals and Programs Identifying Feasible FRM and Recreation Features*
1968 ▲ Lake Red Rock Project	Construction – 11-mile long reservoir.
1975 ▲ Des Moines River Local Flood Protection	Construction - 100-year flood protection for portions of West Des Moines and Des Moines along the Raccoon River, Walnut Creek, and Jordan Creek
1975 ▼ Raccoon River	*Study - Flood Control Reservoirs at Jefferson and on Walnut Creek*
1978 ▼ Des Moines and Raccoon Rivers	*Study - Revisited Flood Control at the City of Des Moines*
1988 ▲ Raccoon River	*Study - Section 205,* 100-year levee to protect the mixed residential, commercial and light industrial neighborhood located the area near Valley and Fleur Drives, Built 1995
1988 ▼ Des Moines River	*Study - Section 205, Levee at Birdland Park*
1999 ▲ Raccoon River	Construction - West Des Moines 100-year plus levee Raccoon R. west bank of Walnut Creek, and east bank of Jordan Creek
2002 n/a Des Moines Basin	*Study - Regulated Frequency Curves and Pool Elevation for Des Moines and IA River Basins*
2003 ▼ Des Moines and Raccoon Rivers	*Study - Levee at the Water Works, Improving West Des Moines Levee, Levee on Walnut Creek*
2005 ▲ Des Moines and Raccoon River	*Study - 500-year Levees at Birdland Park and Central Place.* Improve closures on downtown Des Moines levee system
2005 ▼ Fourmile Creek	*Study - Reservoir in the Fourmile Creek Watershed*
2010 ▲ Des Moines River	*Des Moines River Regulated Flow Frequency Study.* **This study updates and replaces the 2002 report listed above**.
2010 ▲ Des Moines River	*Study - Section 905(b) Reconnaissance Report, Humboldt, IA - t*o evaluate the potential Federal interest in features designed to alleviate water resource problems in the Des Moines River, specifically within the section of the river that flows through Rutland and Humboldt, IA
2011 ▲ Coal Creek	*Section 14, Emergency Streambank Protection Project on Coal Creek, County Road 625th Avenue, Monroe County, IA*
2013 Fourmile Creek	*Final Report Fourmile Creek Watershed Study,* Snyder & Associates - Engage the public in watershed management for Fourmile Creek to address water quantity and quality issues; develop new hydrologic and hydraulic models for existing and future conditions; prepare alternatives for flood reduction, water quality improvements, and watershed management
2014 ▲ Des Moines and Raccoon Rivers	Birdland Park Levee - 100-year flood protection homes, businesses, and North High School - **Construction completed in 2012**
2014 ▲ Des Moines and Raccoon Rivers	Central Place Levee - 100-year flood protection for homes and businesses - **Construction completed in 2012** -
2014 ▲ N. Raccoon River	North Raccoon River Sewage Lagoons, Perry, IA - **Construction completed in 2013**

G. STUDIES BY OTHER STAKEHOLDERS

Many stakeholders have conducted land and water resources assessments and planning efforts in the Des Moines River Basin, especially since 2008 when the Basin experienced record flood events in many urban areas. These flood events prompted then Governor Chet Culver to establish the Water Resources Coordinating Council, a collection of state agency and academic professionals, to provide recommendations for actions that may be taken to minimize future flood impacts. As part of that process and in the aftermath of that effort, numerous Federal, state and non-governmental stakeholders including the Iowa Department of Natural Resources (Iowa DNR); Iowa Homeland Security and Emergency Management; Iowa Department of Agriculture and Land Stewardship (IDALS); University of Iowa; Iowa State University; USDA- NRCS; U. S. Geological Survey (USGS); National Weather Service; The Nature Conservancy; and other agencies, counties, and watershed districts responsible for water resource management, have published numerous reports and plans related to water quantity and water quality.

H. A SAMPLING OF OTHER RECENT STUDY EFFORTS

- **USDA-NRCS Rapid Watershed Assessment Studies for the Whole Basin (9 HUC-8 Reports).** These studies used existing data and information to describe the geophysical, chemical, environmental and social watershed characteristics. These studies provide a wealth of reconnaissance level information.

- **TNC Needs Assessment.** This study consisted of holding public forums to gain understanding of the overarching needs in the Basin from education and outreach to types of implementation actions. This effort provided a good basis for understanding the perceived need based on the input received from stakeholder groups and basic GIS analysis.

- **Environmental Defense Fund - Thinking Like a Watershed.** This study effort encompassed the entire UMR basin utilizing an empirically based water quality model and a scenario based approach to explore options for improving water quality related to agricultural production. This study identified the Des Moines River Basin as one of the basins most resilient to continuous corn cropping due to geology and general soil characteristics. This study identified that using a suite of alternative conservation actions throughout a watershed provides more water quality improvement then using similar land area for a targeted singular conservation practice.

- **Earth Economics Ecosystem Services Valuation.** This study effort conducted an economic valuation of non-market goods and services that the ecosystem provides. This assessment was conducted in the Middle Cedar HUC-8 basin.

- **Securing a Future for Fish and Wildlife. A Conservation Legacy for Iowans. The Iowa Wildlife Action Plan (2005, 2012).** This study effort was in response to a Congressional mandate that state fish and wildlife agencies develop a Comprehensive Wildlife Conservation Plan (Plan) by October 1, 2005. The Plan was required to include eight elements associated with data and information about the distribution and abundance of wildlife in Iowa with special emphasis on Species of Greatest Conservation Need (SGCN).

  The study concluded that the greatest stresses impacting Iowa's wildlife today all stem from human decisions about land use. The removal of most permanent vegetation from the

landscape and the degradation of remaining habitats through improper or excessive use have had numerous interrelated consequences, including:

- a lack of adequate habitat for terrestrial wildlife
- reduced habitat quality that limits their use by SGCN
- isolation of populations of less-mobile species
- altered hydrology that removes water from the land too quickly
- streambed degradation
- stream and shoreline alteration
- accelerated erosion of unprotected soils
- excessive siltation of flowing and impounded waters
- excessive nutrient input leading to accelerated eutrophication
- loss of submergent and emergent vegetation
- reduced habitat quality and quantity for aquatic and semi-aquatic organisms and for human use as well
- ecosystems that are being invaded by aggressive exotic species that are displacing native wildlife.

- **Planning for Water Quality. Iowa's Nonpoint Source Management Plan (2012).** The US Environmental Protection Agency (USEPA) requires states to develop an approved Nonpoint Source Management Plan (Plan) that encompasses nine key elements to be eligible for Federal Clean Water Act Section 319 funding. Iowa's Plan serves as a representation of Iowa's vision, goals, objectives and potential action steps to reduce nonpoint source pollution and improve water quality over the next 5 to 10 years. The Non-Point Source Management Plan presents a collaborative approach to achieve a consensus on "The cornerstone of the Iowa Drainage District Association's vision for the future is fishable, swimmable, drinkable, clean water for all Iowans."

  The Plan development was a formal process that included several steps related to stakeholder identification and visioning activities. The outcome was the development of goals and objectives organized by Watershed Collaboration, Outreach, Performance Measures, and Funding.

I. SOME STUDY EFFORTS CURRENTLY UNDERWAY

- **People, Water Climate. Sustainability and Resilience in Agricultural Watersheds.** This effort is a National Science Foundation Grant project at the University of Iowa. The project is related to exploring how social decision making, policies and water resources impacts are interrelated through a cause effect loop. This effort uses a social decision making model and a hydrologic model.

- **Iowa Flood Studies.** This study is a partnership effort between the National Aeronautics and Space Administration and the Iowa Flood Center at the University of Iowa. This project is collecting detailed measurements of precipitation at the Earth's surface using ground instruments and advanced weather radars and, simultaneously, collecting data from satellites passing overhead in an effort to improve capabilities and provide greater understanding of the extent and limitations of using satellite precipitation data for flood forecasting.

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SECTION V. RELEVANT INFORMATION ON RECENT (PAST DECADE) AND CURRENT PROGRAMS

A. FLOOD RISK MANAGEMENT

1. FEMA Definition. According to FEMA:

"The United States has thousands of miles of levee systems—usually earthen embankments designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water to provide some level of protection from flooding. Some levee systems date back as far as 150 years; some levee systems were completed recently or are underway. Some levee systems were built for agricultural purposes, and they provide flood protection and flood-loss reduction primarily for farm fields and other land used for agricultural purposes. Other systems—urban levee systems—were built to provide flood protection and flood-loss reduction for population centers and the industrial, commercial, and residential facilities within them.

Levee systems are designed to provide a specific level of flood protection.[1] Agricultural levee systems provide a level of protection that is appropriate based on the value of the assets being protected. Urban levee systems, because they are designed to protect urban areas, have typically been built to higher standards.

No levee system provides full protection from all flooding events to the people and structures located behind it. Thus, some level of flood risk exists in these levee-impacted areas.

Floods are one of the most common hazards in the United States. Flood effects can be local, affecting a neighborhood or community, or very large, affecting entire river basin and multiple states. However, not all floods are alike. Some floods develop slowly, sometimes over a period of days. Nevertheless, flash floods can develop quickly, sometimes in just a few minutes and without any visible signs of rain. Flash floods often have a dangerous wall of roaring water that carries rocks, mud, and other debris and can sweep away most things in its path. Overland flooding occurs outside a defined river or stream, such as when a levee is breached, but still can be destructive. Flooding can also occur when a dam breaks, producing effects similar to flash floods.

Flood hazards can be an issue no matter where you live, but especially if you live in a low-lying area, near water or downstream from a dam. Even very small streams, gullies, creeks, culverts, dry streambeds, or low-lying ground that appears harmless in dry weather can flood. Every state is at risk from this hazard."

2. National FRM Program. The Corps established the National Flood Risk Management Program in May 2006 for the purpose of integrating and synchronizing Corps FRM programs and activities, both internally and with counterpart activities of the Iowa Department of Homeland Security and Emergency Management, FEMA, other Federal agencies, state organizations, and regional and local agencies. Some specific goals of the National FRM Program are:

[1] Corps policy has shifted from providing "flood protection" to providing "flood risk management."

- providing current and accurate floodplain information to the public and decision makers;
- identifying and assessing flood hazards posed by aging FRM infrastructure;
- improving public awareness and comprehension of flood hazards and risk;
- integrating flood damage and flood hazard reduction programs across local, state, and Federal agencies; and
- improving capabilities to collaboratively deliver and sustain FRM and flood hazard mitigation services to the Nation.

3. Federal FRM Authorities. The Corps has been authorized by Congress to perform FRM. These services can be performed under two different types of authorities. (1) specifically authorized FRM projects, and (2) the Continuing Authorities Program. Both authorities require a study process and a cost-share sponsor before implementing a project.

a. Specifically Authorized FRM Projects. With specific congressional authorization, the Corps can evaluate flood problems, potential solutions, and recommend to Congress whether or not a project should be authorized. This approach is used for larger projects. Typical project features include dams, channel modifications, levees, and other FRM structures.

b. Continuing Authorities Program. This program allows the Corps to plan, design, and construct smaller projects without direct authorization from Congress. The potential sponsor must request the Corps to investigate FRM issues that might fit the program. Once the Corps determines the project fits the program, the Rock Island District will request funds from its headquarters, the Mississippi Valley Division, to initiate a reconnaissance effort to determine potential Federal interest in proceeding to a feasibility study. Following is a list of FRM Continuing Authorities Programs:

- **Sections 1 and 3, 1936 FCA.** The Federal government should participate in improvements(s) for FRM purposes if the benefits to whomsoever they may accrue are in excess of the estimated costs.
- **Section 205, 1948 FCA**. Without specific authorization, the Corps may study, adopt and construct small FRM projects that are under $7 million dollars for the Federal cost share.
- **Section 208, 1954 FCA**. Without specific authorization, the Corps may study, adopt and construct in-stream clearing and snagging projects in the interest of FRM with a $500,000 Federal cost limit.
- **Section 14**. The Corps is authorized to construct bank stabilization and protection projects to protect endangered public and non-profit infrastructure including highways, bridges, approaches and other essential public services such as hospitals, cultural sites and water supply systems from flood and storm damages due to erosion. Privately owned property and facilities are not eligible for protection under this authority. The maximum Federal dollar limit is $1.5 million per project.

Flood and floodplain information is also provided to private citizens, corporations, and groups. Flood proofing and general floodplain management guidelines are developed and published. Hurricane Evacuation Studies and Flood Warning Preparedness Studies are conducted jointly with other Federal agencies for states and local governments.

c. Flood Risk Management Measures. The purpose of FRM is to help prevent or reduce flood damage by using either structural or non-structural means or a combination of the two.

- **Structural Measures.** Structural measures are physical modifications designed to reduce the frequency of damaging levels of flood inundation. Structural FRM measures can include dams and reservoirs, channel modifications, levees or floodwalls.
- **Non-Structural Measures.** Non-structural measures reduce flood damages without significantly altering the nature or extent of the flooding by changing the use of floodplains or by accommodating existing uses to the flood hazard. Non-structural measures include modifying homes, businesses, and other facilities to reduce flood damages by elevating the structure or removing them from the floodplain. Remaining land can be used for ecosystem restoration, outdoor recreation or natural open space. Flood warning systems are also considered non-structural measures. The following measures are inclusive of all measures that would reduce flooding. At the end of each measure are listed organizations that could or have authorization to implement these measures.

The following is a comprehensive list of FRM Measures:

Evaluate and Predict Changes in Climate

1. Input to county and city storm-water design criteria *(county, city)*
2. Input to flow models *(Corps, county, city, academia, other Federal agencies)*

Floodplain Zoning

1. Develop floodplain uses, *(state, county, city)*
2. Buy-out floodplain housing *(state, county, city, FEMA, Corps)*
3. Flood-proof infrastructure within floodplain *(state, county, city, FEMA, Corps)*

Increase or Sustain Current Infiltration

1. Track changes in land use *(state, county, city, FSA)*
2. Re-meander of rivers and streams *(county, city, NRCS, Corps)*
3. Mitigate for changes in lands use with retention *(county, city)*
4. Change types of agricultural crops from shallow to deep roots *(NRCS, farmers)*
5. Soil conservation easements *(NRCS)*
6. Develop urban infiltration systems that do not affect foundations *(academia, other Federal agencies, USGS, Corps)*
7. Change street design to include areas for infiltration *(city)*
8. Ecosystem Restoration Projects *(county, city, NRCS, Corps)*

Increase or Sustain Present Retention in Small and Large Reservoirs

1. Storm-water retention ponds *(county, city)*
2. Soil conservation in the watershed; reduce erosion, *(NRCS)*
    a. Farming practices
    b. Types of crops
3. Develop system control methods for retention basins *(county, city, academia, other Federal agencies, Corps)*
4. Dam height at Coralville Lake (Corps)

Construct, Increase, or Improve Levees, Floodwalls and Closures

1. Re-evaluate existing systems *(state, county, city, Corps)*

Increase Interior Storm Water Drainage

1. Increase storm water pump stations within the city *(city, Corps)*

Develop Flood-proofing Standards

1. Develop suitable building code standards *(state, county, city, Corps)*

Reduce River Constrictions

1. Change bridge designs when bridges are replaced *(DOT, railroads)*
2. Widen and/or deepen channels *(Corps)*
3. Remove or reduce other restrictions to flow *(Corps)*

For more detailed information, see *Flood Risk Management Fact Sheets.*

B. RECREATION

The Corps has been authorized by Congress to develop recreation-related facilities in conjunction with water resource projects. Construction of recreation-related facilities requires a cost-share sponsor prior to implementation of a project.

1. Authorities

- ***Section 2804 of PL 102-575 (Reclamation Projects Authorization and Adjustment Act of 1992).*** Projects must be under control of the Army and requires non-Federal cost sharing. If there is no willing cost-share sponsor, the Corps may provide only minimum facilities such as guardrails, gates, barricades, turnarounds, comfort stations and vault toilets for health and safety. The Corps may also provide type "C" visitor centers, handicap access, and operational boat ramps.

- ***Section 313, WRDA 1990.*** Requires non-Federal cost sharing. Recreation benefits shall not influence project formulation. Non-reservoir structural and non-structural projects must attain a benefit/cost ratio greater than unity without recreation. Facilities must be on lands, easements and rights-of-way. Separable lands may be acquired by the non-Federal sponsor for recreation at FRM projects for access, parking and facilities required for health and safety.

  Recreation development costs at structural FRM projects may not increase the Federal project cost by more than 10 percent without approval of the Assistant Secretary of the Army Civil Works [ASA(CW)]. Recreation facilities are not provided at shore protection projects. The Corps must consider recreation benefits in planning, operations, and maintaining projects. The Corps can expend up to $2 million annually to mitigate for the adverse impacts on recreation from the operation, maintenance, repair, rehabilitation, or replacement at a project.

Recreation may be included within ecosystem restoration projects if appropriate in scope and scale, compatible with project purpose, economically justified (stand alone), sponsored and cost shared at 50 percent by a non-Federal entity, and do not increase the Federal project cost by more than 10 percent [except with approval of ASA(CW)].

Ecosystem project lands are not creditable towards cost-sharing credit; non-Federal lands used for recreation purposed may receive cost-sharing credit. Non-Federal sponsors pay 50 percent of the separable costs and all Operations, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R).

For harbor and channel projects, non-Federal sponsors pay 50 percent of the joint and separable costs allocated to recreational navigation and all OMRR&R costs assigned to recreational navigation. The ASA(CW) requires the non-Federal sponsor share be provided during construction.

2. Features

- ***Water, Lakes, Rivers, and Streams***

Boat Launches	Fishing
Beaches	Swimming
Water Recreation	Docks

- ***Land, Reserves, and Parks***

Restrooms	Walking and Bike Trails
Camping	Parking, Trail Head, Facilities
Visitor Centers	Hunting
Cabins	Picnic Shelters

For more detailed information, see *Recreation Fact Sheet.*

C. STORAGE AND DRINKING WATER

Authorities

- ***Water Supply Act of 1958*.** Water supply storage capacity or space may be included in the Corps reservoir to impound water for present and future municipal or industrial use. Not more than 30 percent of the total allocated costs may be for future water needs.

  Modification of existing reservoir, by structural changes or reallocation of existing storage, to add or increase dedicated storage capacity or space for water supply, requires separate Congressional authorization if it would significantly impact existing authorized purposes or involve major structural or operational changes.

  By Army policy, the Chief's discretionary authority for reallocation of existing storage is limited to the lesser of 15 percent of total usable storage or 50,000 acre-feet provided it does not have significant impacts on other project purposes.

- ***Section 6, 1944 Flood Control Act.*** The ASA(CW) may make agreements with states, municipalities, private concerns and individuals—at prices and terms ASA(CW) finds reasonable—to provide surplus water or temporary use of available storage space from Corps reservoirs for domestic and industrial uses, rather than reallocating and granting a permanent right to that storage space.

Saylorville Lake provides water storage for use by local communities.

For more detailed information, see *Storage and Drinking Water Authorities Fact Sheet.*

D. HYDROPOWER

Hydropower is defined as electrical power derived from the energy of falling water or running water, which is harnessed for useful purposes. Most conventional hydroelectric power comes from the potential energy of dammed water driving a water turbine and generator. The power extracted from the water depends on the volume and on the difference in height between the source or lake and the water's outflow. This height difference is called the head. The amount of potential energy in water is proportional to the head, i.e. the more head, the more potential energy that can generate electricity.

For more detailed information, see *Red Rock Hydropower Project Fact Sheet.*

E. ENVIRONMENTAL STEWARDSHIP

Environmental stewardship is the capacity of an ecosystem to maintain its essential functions and processes, and retain its biodiversity in full measure over the long term. The District is looking into partnering with The Nature Conservancy on the Sustainable Rivers Program.

The District conducts an annual fall pool raise (hydrometeorologically permitting) for the benefit of migrating waterfowl. The pool raise is from 836 feet up to 840 feet at Saylorville and from 742 feet up to 744 feet at Red Rock.

- ***Section 206.*** The Corps of Engineers can carry out aquatic ecosystem restoration and protection projects. Such projects generally include manipulation of the hydrology in and along bodies of water, including wetlands and riparian area. A project is adopted for construction only after a detailed investigation determines that the project will improve the quality of the environment and is in the best interest of the public

For more detailed information, see *Environmental Stewardship.*

F. PLANNING ASSISTANCE TO STATES AND TRIBES

The Planning Assistance to States and Tribes Program provides states, counties, local communities and Indian tribes with planning level assistance in addressing water resources issues and planning needs. The studies generally involve the collection of data, data analysis, and development of water resources management plans and other tools. The program provides the sponsor with planning level detail and information needed to support water resources management decisions made by the sponsor. This program is not authorized to produce detailed plans and specifications or implement construction projects.

- ***Section 22 WRDA 1974; Section 605 PL 96-597 and Section 221, WRDA 1996.*** The Corps has the authority to cooperate with states. Corps provides technical assistance to support state preparation of comprehensive water and related land resources development plans, including watershed and ecosystem planning. The Corps assists in conducting individual studies supporting the state plan. Recent legislation has authorized city and county level entities to become a multi-jurisdictional legal entity known as a Watershed Management Authority http://www.iowadnr.gov/Environment/WaterQuality/WatershedManagementAuthorities.aspx .

  There are multiple Watershed Management Authorities in the Des Moines basin that may have interest in or benefit from conducting individual studies with the Corps to support broader state plans. Broader state plans may include the Nutrient Reduction Strategy or Flood Mitigation Strategy.

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DES MOINES RIVER BASIN

FLOOD RISK MANAGEMENT FACT SHEETS

Des Moines & Raccoon Rivers, Iowa Flood Risk Management GRR

Location
Des Moines, Iowa

State(s)
IA

Congressional District(s)
IA-3

Status
In 2010, the City of Des Moines requested a study to evaluate the impacts of the increased flood risk identified in the 2010 Flow Frequency Study, which indicated the system provides lower than 100-year (0.1% annual chance exceedance) level of protection. The City continues to strongly support a study that would evaluate a variety of structural and nonstructural flood risk management measures to increase their level of protection. The study area would include the entire downtown area and the Southeast Des Moines levee which is part of the Lake Red Rock project and is connected to the downtown levee system.

Description
The existing levee system protects much of the city's critical infrastructure, including City Hall, the Police Station, a regional sewage treatment facility, and aviation fuel facilities. Downtown Des Moines is also a national center for the insurance industry. Flooding of these areas would result in extensive flooding of neighborhoods and commericial/industrial areas that could cause serious contamination of Red Rock Reservoir. Approximately 600,000 people would be impacted by the flooding. The Des Moines and Raccoon River was authorized for construction in the Water Resources Development Act (WRDA) of 2007, and funds were appropriated in the Energy and Water Development Appropriations Act of 2010. The project has completed reconstruction of levees at Birdland Park and Central Place as recommended in the 2005 feasibility report and construction of closure improvements in the downtown levee system is scheduled to be completed in 2015. The 2010 Des Moines River Regulated Flow Frequency Study identified a high risk of flooding in the Des Moines area - significantly higher than estimated in a 2005 feasibility report. The resulting hydraulics show that the existing levees in downtown Des Moines do not provide reliable protection against a 100-year flood.

Summarized Project Costs

	General Re-Evaluation Report
Federal Cost	$ 1,500,000
Non-Federal Cost	$ 1,300,000
Total Cost	$ 2,800,000
Federal Allocations through FY 2013	$ 0
FY 2014 Allocations	$ 0

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FY 2015 Budget	$ 0
Balance to Complete	$ 1,500,000

Major Work Item (This Fiscal Year)
None (no funding).

Major Work Item (Next Fiscal Year)
Initiate General Reevaluation study and completed cost share agreement with sponsor, pending funding.

Authority Details
Resolution adopted by Congress on July 1, 1958, following appropriation of funds in the 1998 E&WDAA, also Section 216 of the 1970 Flood Control Act (Public Law 91-611)

Point of Contact: Program Manager
Phone: (309)794-5561
Email: cemvr-pm-web@usace.army.mil

Location
Downtown Des Moines, IA -- Central Place & Birdland Park levees; Downtown Closures

State(s)
IA

Congressional District(s)
IA-3

Status
Construction of the Birdland Park and Central Place levee improvements has been completed. The As Built Drawings and the O&M Manual have been completed and provided to the City of Des Moines. . These two levees constitute approximately 90% of the authorized project. Completion of the authorized project requires the design and construction of nine closure structures to protect downtown Des Moines Iowa. Completing the design and construction would have caused the Section 902 Limit of WRDA 1986 to be exceeded. The current Section 902 Limit $21,046,000. A Post Authorization Change Report has been completed; which requests that the Section 902 Limit be increased to $22,856,000.This report has been reviewed by HQUSACE and was submitted to the ASA(CW) on September 11, 2013 for review and coordination with OMB. The PACR was sent to Congress on Feb. 12, 2014 with a recommendation to increase the Section 902 Limit. The Consolidated Appropriations Act, 2014, PL 1113-76 includes language that allows the design and construction of the improvements to the nine existing downtown closures to proceed, provided that all work is completed by September 20, 2015. The City has requested betterments to the project.The design of the closures is underway and it will be completed in December 2014.

The 2010 Des Moines River Regulated Flow Frequency Study identified a high risk of flooding in the Des Moines area, significantly higher than previously estimated. The resulting hydraulics show that the existing levees in downtown Des Moines do not provide reliable protection against a 100-year flood. A 905(b) Reconnaissance Study is needed to determine if there is a Federal interest in additional Flood Risk Management measures for the Des Moines Area, and if so a subsequent Feasibility Study would determine the best combination of those measures. This folow on study is discussed in a seperate fact sheet.

Description
The DMRR Feasibility Report, approved in 2005, recommended the reconstruction of 2.6 miles of levee systems at Birdland Park & Central Place and the improvement of Downtown Closures in existing Des Moines levee systems. The project was authorized for construction in WRDA 2007 and E&WDAA 2010.

Summarized Project Costs

	CONSTRUCTION	

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Federal Cost	$14,805,050	
Non-Federal Cost	$ 8,154,950	
Total Cost	$22,960,000	
Federal Allocations through FY 2013 including ARRA	$13,014,000	*
Federal FY14 Appropriation	$ 1,791,050	
FY 15 Budget	$ 0	
Balance to Complete	$ 0	

*ARRA Allocations $5,313,000

Major Work Item (This Fiscal Year)
FY 2014:Prepare the As Built Drawings, the Operations and Maintenace Manuals for the Birdland and Central Place Levees. Begin the design of the downtown closure structures, prepare the Levee System Evaulation Reports for the Birdland Park and Central Place Levees.

Major Work Item (Next Fiscal Year)
FY 2015: Award Construction contract and complete downtown closures

Authority Details
Authorized for construction in WRDA 2007, Section 1001; and in E&WDAA 2010, Section 113

Point of Contact: Project Management Branch
Phone: (309)794-5561
Email: cemvr-pm-web@usace.army.mil

Saylorville Lake, Iowa - Operations & Maintenance

Location
Saylorville Lake, Iowa

State(s)
IA

Congressional District(s)
IA-2, IA-3, IA-4

Status
Project in operation.

Description
Saylorville Lake is a multiple purpose project providing primary benefits in flood control and secondary benefits in low-flow augmentation, recreation, fish and wildlife management, and water supply. Conservation pool is 5,950 acres; with a storage volume of 586,000 acre-feet at flood pool level. The dam is located about 11 miles northwest of Des Moines, Iowa, on the Des Moines River and was completed in 1975. Cumulative nominal damages prevented since project became operational (1977) = $186,623,000. The project includes 25,515 acres of fee title lands and there are 30 recreation area sites. FY13 recreation fee receipts and lease revenues were $670,000. Regional FY2013 economic impact is $27,500,000 from an estimated 1,409,000 visits.

Summarized Project Costs

Allocations thru FY 2013	$167,898,000
Budget for FY2014	$11,330,000
House Allocation for FY2014	$10,933,000
House Allocation for FY2014	$11,330,000
FY 2014 Allocation	$11,217,000
Budget Request for FY2015	$6,266,000

Additional Project Information
These numbers represent an illustrative distribution of operation and maintenance activities subject to revision during the course of the year, and therefore individual project estimates should not be considered as budget amounts.

Major Work Item (This Fiscal Year)
Routine Operation and Maintenance.
Repairs to Roads and Parking Areas
Master Plan Update
Design & Begin Gate Replacement at Diversion Dam
Design Remedial Works Big Creek

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Major Work Item (Next Fiscal Year)
Routine Operation and Maintenance
Continue Gate Replacement Diversion Dam
Design Continue/Begin Remedial Works Pump Replacement

Authority Details
Flood Control Act of 1958

Point of Contact: Operations Project Manager, Saylorville Lake
Phone: (515)276-4656 x6504
Email: SaylorvilleLake@usace.army.mil

Red Rock Dam, Lake Red Rock, Iowa - Operations and Maintenance

Location
Lake Red Rock, Iowa

State(s)
IA

Congressional District(s)
IA-2, IA-3, IA-4

Status
Project in operation.

Description
Lake Red Rock is a multiple purpose project providing primary benefits in flood control and low-flow augmentation and secondary benefits in recreation, fish and wildlife management, forest management, and water quality improvement. Conservation pool is 15,600 acres which makes it Iowas largest lake; and the storage volume is 1,750,400 acre-feet at flood pool level. The dam is located on the Des Moines River southeast of Des Moines, Iowa. Cumulative nominal damages prevented since projects inception (1969) = $599,131,000. The project includes 50,300 acres of fee title lands and there are 11 recreation area sites. FY13 recreation fee receipts and lease revenues were $470,000. Regional FY2013 economic impact is $13,000,000 from approximately 633,000 visits.

Summarized Project Costs

Allocations thru FY 2013	$159,082,000
Budget for FY2015	$4,721,000
House Allocation for FY2015	TBD
Senate Allocation for FY2015	TBD
FY 2014 Allocation	$4,948,000

Additional Project Information
These numbers represent an illustrative distribution of operation and maintenance activities subject to revision during the course of the year, and therefore individual project estimates should not be considered as budget amounts.

Major Work Item (This Fiscal Year)
Routine Operations & Maintenance.

Major Work Item (Next Fiscal Year)
Routine Operation and Maintenance

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Authority Details
Flood Control Act of 1938; Public Law 75-761

Point of Contact: Lake Red Rock Operations Project Manager
Phone: (641)828-7522
Email: lakeredrock@usace.army.mil

US Army Corps of Engineers®

Big Creek Barrier Dam Supplemental Pump Station

Location
Des Moines, Iowa

State(s)
IA

Congressional District(s)
IA-3

Status
Approved and funded for design. Plans and specifications are in progress.

Description
The Barrier Dam separates Saylorville Lake from the Big Creek Ponding Area and was completed in 1977. This dam separates Saylorville Lake from the Big Creek Tributary Valley. The Barrier Dam is located approximately 4 miles upstream of the main Saylorville Lake Dam along State Highway 415.

The original design conservation pool level in Saylorville Lake was 836 feet; this level allowed the normal use of a gravity conduit to transmit flow from the Big Creek Ponding Area to the main lake. As a supplement to the gravity conduit, a pumping station was constructed on the protected side of the Barrier Dam to aid in the transmittal of water from Big Creek Ponding Area to Saylorville Lake. The normal pool level in Saylorville Lake was raised in 1983 from 833 ft to 836 ft which limited the effectiveness of the gravity conduit to transmit flow from Big Creek Ponding Area to Saylorville Lake and therefore increased the pumping requirements for the Barrier Dam Pump Station.

The existing pumping station was not designed to handle the current Saylorville Lake levels, nor the increased rainfall in the watershed, nor the increased runoff which results in a significantly longer time to pump the Big Creek Ponding Area down to normal levels and increases the risks of flooding City of Polk City, Iowa.

The construction project will provide a new pumping station located adjacent to the existing pumping station on the Barrier Dam protected side. The new

Updated on 2014-Aug-26

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pumping station will provide an increased the pumping capacity in order to lower the pumping timeframe to be closer to original project design/purpose. The pumping time has increased due to changes in rainfall, development in Big Creek watershed increasing runoff, lessened effectiveness of gravity conduit, and lower pumping efficiency due to Saylorville Lake rise. The existing pumping station, conduit, and outlet structure shall remain in service and receive upgrades and repairs as deemed necessary to accommodate the new pumping station.

Summarized Financial Data

Estimated Federal Cost	$10,600,000
Estimated Non-Federal Cost	$0
Total Estimated Cost	**$10,600,000**
Allocations through FY 2014	$500,000
Budget Request for FY2015	$1,000,000
Balance to Complete after FY 2015	$9,100,000

Major Work Item (This Fiscal Year)

FY 2014: Preliminary design and award of A-E service contract for Hydraulic Modeling and Conceptual Design.

Major Work Item (Next Fiscal Year)

FY 2015: Preparation of plans and specifications. Solicitation and contract award to be determined.

Authority

The Big Creek Barrier Dam Pump Station project is authorized as part of Operations and Maintenance of Saylorville Lake Project. The project was constructed according to Saylorville Reservoir Design Memorandum No. 19, Big Creek Valley Remedial Works dated 7 May 1968. The project is 100 percent federally funded.

Point of Contact: Project Management Branch
Phone: (309) 794-5743
E-mail: cemvr-pm-web@usace.army.mil

Big Creek Diversion Dam Sluice Gate Replacement

Location
Saylorville Lake, Iowa

State(s)
IA

Congressional District(s)
IA-3

Status
Project in Operation

Description
During the 1998 periodic inspection, slanting slide gate was opened and upon closing a section of the mechanism broke 40 feet below the water surface and prevented the gate from closing. An Army National Guard bulldozer was brought in to act as a "dead man" to provide constant pressure of the stem, air intake tube and concrete supports in order to close the gate. The gate has not been opened since. A June 1999 dive report indicates the gate to be closed, but the water leakage is occuring where the structural tube/air vent enters the concrete down tube. Required release downstream into Big Creek is 3 cfs for water quality purposes. The current gate design is flawed. In 2012, a new control tower design was completed and a district quality control review (DQCR) was also completed. Winter 2012/2013, efforts were made to decrease the outflow by lowering sandbags to block to air vent and placing aggregate onto the gate itself. Efforts resulted in reducing the outflow from 13 cfs to approximately 5 cfs. The on-going drought and little to no in-flows to Big Creek Lake also has contributed to Big Creek Lake's historic lows. Summer 2013: USACE provided $6.5M for construction of this project. Value Engineering Study underway; Agency Technical Review planned for Fall; BCOE review planned for November and contract award April 2014 FY14: President's budget $6M for this project May 2014: $9.294M contract awarded to Jensen Construction Company Des Moines Iowa. Coffer dam design work underway. Mobilization and construction expected to begin Spring 2015.

Summarized Project Costs

Federal Cost	$ 11,940,000
Non-Federal Cost	$ -0-
Total Cost	$ 11,940,000
Federal Allocations through FY 2012	$ -0-
Federal Allocation for FY 2013	$ 11,940,000
Balance to Complete	$ -0-

Major Work Item (This Fiscal Year)
Value Engineering Study Agency Techinical Review

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Major Work Item (Next Fiscal Year)
BCOE Contract award May 2014 Construction expected to begin Spring 2015

Point of Contact: Saylorville Lake Operations Manager
Phone: (515) 276-4656 x6504
Email: SaylorvilleLake@usace.army.mil

PERIODIC BASIN MANAGEMENT REPORT
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DES MOINES RIVER BASIN

RECREATION FACT SHEET

Location
From Fort Dodge to Pella, Iowa

State(s)
IA

Congressional District(s)
IA-3, IA-4

Status
There are four priority projects that will be restarted once Federal funds become available; they are:

Fort Dodge Riverfront - Fort Dodge's Riverfront Master Plan calls for the transformation of a former industrial area into a recreational development,which includes multiple use trails, fishing and boating facilities, and other recreation amenities. This recreational development is compatable with the Greenbelt objectives. The Project Partnership Agreement (PPA) was executed on 03 JAN 2012 and the planning, design, and construction for these facilities is being conducted at a 50% Federal 50% Ft Dodge cost share. Construction of Stage I was complete in August 2013 at a cost of $3,100,000. Construction of Stage II is delayed pending the receipt of Federal funds. The cost to design and construct Stage II is estimated at $4,800,000. WRRDA 2014contains a technical correction to the legal description of the Greenbetl boundary which if adopted will allow for the complete comstruction of Stage II.

Des Moines Riverwalk - The City of Des Moines and The Principal Financial Group developed a Des Moines Riverwalk Master Plan that includes a 1.2 mile multipurpose trail loop with more than 2 miles of connecting trails, bridges, parks, promenades, and related facilities. Construction of Stage I was completed in 2013 at a cost of $16,654,000 excluding land and in kind services provided by the City. The cost to construct Stage II is estimated at $3,700,000. Construction of Stage II is suspended pending the apprpriation of Federal funds and the City has decided to complete the construction using City funds. Construction id expected to start in 2016. These facilities increase interaction with the river and create opportunities to connect adjacent development, neighborhoods, and other trail systems and venues. The Principal Financial Group has provided resources to the City of Des Moines to help fund a significant portion of this development. Planning, design, and construction to develop authorized recreational facilities are being conducted at a 50% Federal cost share.

Marion County Cordova Center on the Rock - The Marion County Conservation Board, Iowa Department of Natural Resources, Iowa Central College and the U.S. Army Corps of Engineers are developing the Cordova Center on the Rock. Proposed components of the project include environmental learning center, amphitheater, trails, outdoor interpretive facilities, picnic facilities, and entrance road relocation. All of these facilities are to be located on Federal lands. The cost estimate for the Cordova Center development is approximately $36 million. The design and construction of cost-shared facilities will require that a Project Partnership Agreement be signed for a 50% non-Federal cost share. Note that the

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environmental learning center is not a cost shared element. Preparation of an EDR will begin when additional funding is received. Marion County is conducting research regarding non-Federal funding sources for the non-Federal cost share requirements for the project.

Red Rock Volksweg Trail Segment 4B - This four mile long trail segment connects the North Overlook Campground and the City of Pella with the Cordova area. A trail bridge and a portion of the trail have been constructed and the remainder of the trail is designed and awaiting funding to resume construction. The cost to complete is estimated at $4,800,000. Construction was completed on approximately 1.25 miles or about 30 percent, of the Red Rock 4B Trail in Spring 2014. This trail segment is being constructed by the private developer of the hydropower generating station at the Lake Red Rock Dam and is an excellent example of public private partnering and team work, to accomplish the overall goals of the Greenbelt Program.

Description

The Des Moines Recreational River & Greenbelt is a partnership of local and federal governments and private interests dedicated to developing ecosystem improvements and recreational opportunities in the Des Moines River corridor. Federal funds have been appropriated to the Greenbelt Program from FY 2003 through FY 2010 and a total of 18 projects have been completed. However, federal funds have not been appropriated for the Greenbelt program since FY 2010 and all program activities with the exception of closing completed projects has been suspended.

Summarized Project Costs

SUMMARIZED FINANCIAL DATA:	CONSTRUCTION
Estimated Federal Cost	$83,750,000
Estimated Non-Federal Cost	$43,066,000
Total Estimated Cost	$126,816,000
Federal Allocation through FY 2013	$37,039,000
Federal Budget for FY 2015	$0
Federal Balance to Complete after FY 2015	$46,711,000

Major Work Item (This Fiscal Year)

On hold pending the receipt of Federal Funding

Major Work Item (Next Fiscal Year)

The following projecets could be completed pending the availability if funds.

Complete design and award construction contract for Stage II (4.8M)

Des Moines Riverwalk: Begin construction of Stage 2. ($3.7M)

Marion County Cordova Center: Continue EDR, continue design. ($1.5M)

Red Rock 4B Trail: Continue construction . ($4.8M)

Program Management: Prepare and publish Annual Program Management Report. ($0.2M)

Authority Details

Public Law 99-88, Supplemental Appropriations Act, 1985, Joint Explanatory Statement of the Committee of Conference accompanying the Conference Report for H.R. 2577; Section 203 of the Flood Control Act of 1958 as modified by Section 111 of the Water Resources Development Act (WRDA) 1976; Section 102 of Public Law 99-500; Section 604 of WRDA 1986; Section 122 of Public Law 108-7; Section 14221, FCE&E Act 2008, and Section 115, Public Law 111-85 Energy and Water Development Appropriations Act of 2010.

Point of Contact: Greenbelt Program Manager
Phone: (309) 794-5561
Email: cemvr-pm-web@usace.army.mil

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DES MOINES RIVER BASIN

STORAGE AND DRINKING WATER AUTHORITIES
FACT SHEET

Saylorville Lake, Water Storage Space Contract

Location
Saylorville Lake, Iowa

State(s)
IA

Congressional District(s)
IA-3, IA-4

Status
Contract is ongoing.
The contract was originally entered into May 26th, 1982. The State of Iowa has paid the joint-use construction costs. Annual O&M costs are still required from the State of Iowa.

Description
This contract is an agreement between the State of Iowa and the United States of America and allows the state 18.86% of usable storage space between 812 NGVD and 836 NGVD for approximately 14,900 acre-feet of water to be kept in reserve at Saylorville Lake, stored between elevations 812.0 and 836.0 National Geodetic Vertical Datum. The State has the right to request water from this reserve during periods of drought and low flow on the Des Moines River. 2007 sediment survey indicates that 12,300 acre feet of storage is now available within the elevation range of 812-836. However computer simulations indicate that water supply reliability of 99% is still maintained, but with a slight decrease in the ability to meet downstream water quality targets.

Additional Project Information
In May 2007, Des Moines Water Works submitted several questions related to the process involved to consider a pool raise for increased water supply storage. These questions were reviewed by OC and EC and a response to their questions was provided back to Des Moines Water Works. 2011: Based on ER 37-2-10 and changes in the miscellaneous receipts statue, a recent OC HQUSACE opinion resulted in all O&M payments from the State of Iowa will now be deposited into the US Treasury. Since 1982, these payments have been returned to the Saylorville Project and were expended for specific O&M use on specific areas impacted by the permanent pool raise. Saylorville has never received water supply funding in the normal appropriations. Beginning in FY14, a larger water supply budget request package will be submitted.

Major Work Item (This Fiscal Year)
~~Sediment survey. LiDAR and Bathy~~metric data collected. Final sedimentation report expected September 30, 2014.

Authority Details
~~Water Supply Act~~ of 1958

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Point of Contact: Operations Project Manager, Saylorville Lake
Phone: (515)276-4656 x6504
Email: SaylorvilleLake@usace.army.mil

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DES MOINES RIVER BASIN

HYDROPOWER FACT SHEET

Location
Des Moines River, Lake Red Rock, Pella, Marion Co., IA

State(s)
IA

Congressional District(s)
IA-3

Status
This project is authorized and permited by the Federal Energy Regulatory Commission, (FERC) under the Federal Power Act. As part of the license agreement, the hydropower developer, Missouri River Energy Services, (MRES) is required to obtain USACE approval for the project under Section 408. This approval includes technical reviews of the project design, review of the operating plan, review of the water quality protection & monitoring plan, review of fishing access designs, review of the avian protection plan, review of the Indiana bat protection plan, cultural resources protection consulatition, review of the hazmat spill emergency action plan, review of the system safety management plan, review of the emergency operations plan, and general oversight of construction. The USACE review team includes technical experts from the Rock Island District, Mississippi Valley Division, USACE Headquarters and USACE Risk Management Center. The USACE review occured simultaneously with an Independent External Peer Review conducted by a team of experts from across the country. FERC technical experts also reviewed the proposed hydroelectric project. The developer's 408 submittal was recived on August 27, 2013 and the Rock Island District completed its review in October 2013. HQUSACE has also completed its review and the Director of Civil Works approved the Section 408 Modification on March 7, 2014. The contractor, Ames Construction from Burnsville MN began construction on August 4, 2014. Ms. Jo-Ellyn Darcy participated in the groundbreaking ceremony that was conducted on August 13, 2014. Construction is scheduled to be completed in April 2018.

Description
The project will upon completion generate 36.39 MW of electricity, which will be transmitted to the power grid in Pella IA by a combination of underground and overhead transmission lines. The construction of this facillity will require the penetration of the existng Corps dam impounding Red Rock Lake. Additionally a powerhouse will be constructed at the downstream toe of the dam.

Major Work Item (This Fiscal Year)
Review of various submitals from MRES in support of the ongoing construction. Once construction begins MVR will provide administrative overview, quality assurance and construction observation.

Major Work Item (Next Fiscal Year)
MVR will continue to provide administrative overview, quality assurance and construction observation services during construction.

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Authority Details
Federal Power Act, Section 408

Point of Contact: Project Manager
Phone: 309-794-5561
Email: cemvr-pm-web@usace.army.mil

PERIODIC BASIN MANAGEMENT REPORT
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DES MOINES RIVER BASIN

ENVIRONMENTAL STEWARDSHIP
FACT SHEET

Water Level Management - Lake Red Rock and Saylorville Lake

Location
Lake Red Rock and Saylorville Lake (Central Iowa)

State(s)
IA

Congressional District(s)
IA-3

Status
No additional funds are needed to implement the water level management strategy. However, annual MVD approval is necessary due to a slight deviation in the Regulation Plans for each reservoir. In 2003, the Iowa DNR suggested a spring water level management regime, which was successfully implemented once at Saylorville Lake in May 2006 due to favorable weather patterns. The Iowa DNR will be surveying fish by species and size class over the coming years to determine if the species age class has improved as a result of the May 2006 effort. The results will not be known for several years because the fish must grow to a size capable of being caught in the DNR survey nets. Further study has shown that a spring rise of only 3' is not viable at Saylorville. However, studies continue at Lake Red Rock to determine if a 3' rise increases productivity of the fishery. Continued studies may prove that natural spring rises effectively do the job.

Description
In Dec 2003, the Iowa Department of Natural Resources requested consideration of 3 different water level management scenarios for improved fish spawning during the spring at Lake Red Rock and Saylorville Lake. After inter-district and division discussion and subsequent meetings with the Iowa DNR fisheries and wildlife staff, we concluded that the Corps could implement Option 2 (hold pool at the target elevation) or Option 3 (release water to achieve the target elevation) at either reservoir subject to appropriate weather and inflow conditions. The target elevation is 839 NGVD at Saylorville and 745 NGVD at Lake Red Rock. In other words, if the reservoir was at or above the target on May 5th, the pool would be held or water would be released to get to the target elevation. If the reservoir was below the target elevation on May 5th, the reservoir water level would not be raised to achieve the target elevation. The target period for the implentation of Option 2 or 3 would be from May 5th until May 28th. After May 28th, water would be released by no more than 0.5 foot per day to achieve an elevation of 836 at Saylorville and 742 at Lake Red Rock, by June 4th. The May timeframe affords an opportunity to increase fish spawning and egg/young survival due to appropriate water temperature and increased acres of inundation. Rapid decreases in water level must be avoided during this time period for the management regime to be successful. The DNR understands that the opportunity to manage water levels in this fashion will likely occur only one year in fifteen based on historic records. Secondly, implementation at both reservoirs in any one season is unlikely due to hydraulic factors and potentially different weather patterns The DNR's proposed Option 1 of raising the lake level to the targeted elevation from April 15th to June 14th, was eliminated from consideration because it is not consistent with the existing regulation plans. Additional funds, NEPA compliance, and public meetings would be required prior to implementing the Option 1 scenario.

U.S. ARMY CORPS OF ENGINEERS - ROCK ISLAND DISTRICT
CLOCK TOWER BLDG. - P.O. BOX 2004 - ROCK ISLAND, IL 61204-2004
www.mvr.usace.army.mil

Major Work Item (This Fiscal Year)
FY 2014: Fall water level raise targets were achieved this FY.

Major Work Item (Next Fiscal Year)
FY 2015: Fall water level targets will be implemented if possible. Spring water level management could include implementation of option 2 or 3 at Lake Red Rock. The target elevation is 745 at Lake Red Rock. Implementation timeframe is from May 5th to May 28th, dependant on weather conditions and inflow to the reservoir. MVD approval will be requested prior to implementation.

Authority Details
Flood Control Act, Fish and Wildlife Coordination Act; Water Resource Development Acts, Environmental Operating Principles

Point of Contact: Project Manager, Economic and Environmental Branch
Phone: (309)794-5573
Email: cemvr-pm-web@usace.army.mil

SECTION VI. STAKEHOLDER ROLES IN THE WATERSHED

A. CITY PLANNING AND DEVELOPMENT DEPARTMENT

The following is an example of a city planning and development department mission statement:

> "Within a city's organizational structure, a Planning and Development Department provides professional services related to planning and zoning. In addition, the Department is responsible for the developing and implementing various long-range plans, reviewing and approving development proposals for new construction, and creating and administering many capital improvement projects.
>
> Responsibilities also includes administration of subdivisions and similar platting matters; administration of street and alley vacation; variances and conditional uses; preparation and administration of grant applications; assistance to existing and new businesses for the purpose of economic development; and development and implementation of the City's comprehensive plan." *(City of Marion, IA Planning and Development Department)*

B. CONSERVATION DISTRICTS OF IOWA

Conservation Districts of Iowa (CDI) is a nonprofit 501(c) 3 organization devoted to providing educational programs on the conservation of soil, water, and other natural resources. In 1937, as the Dust Bowl focused attention on soil erosion, President Roosevelt sent a model law to governors recommending legislation that would allow landowners to form voluntary soil conservation districts. It was recognized then, as now, that local, voluntary efforts are most effective in getting land conservation practices established. The legislation was adopted by Iowa's legislature in 1939 and the first conservation district was formed in three Marion County townships in April 1940. By 1952, all of the land in Iowa was served by Conservation Districts. Since that time, CDI has been working with the 100 soil and water conservation districts in Iowa to promote sustainable agricultural practices for the protection of soil and water resources. Today, work is also being done in urban settings, promoting conservation practices for homeowners, developers, and communities.

1. How Conservation Districts Work. Conservation Districts in Iowa are managed by five commissioners elected on the general ballot in each county. Each of the five commissioners serve four-year terms and only one commissioner may reside in any single township. With assistance from the USDA Natural Resources Conservation Service and Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation, commissioners address the natural resource issues that are most critical in their districts.

2. Conservation Districts' Role. Soil and water conservation districts are legal subdivisions of state government. Commissioners are responsible for carrying out state laws and programs within district boundaries. These include:

- sediment control law;
- conservation cost-sharing;
- conservation revolving loan funds;
- water quality protection projects;
- conservation planning; and

- resource enhancement and protection Districts also play a key role in carrying out Federal programs including, but not limited to:
    - the Conservation Reserve Program
    - the Environmental Quality Incentives Program
    - Conservation Compliance
    - the Wetlands Reserve Program

Districts serve as local sponsors for watershed projects, resource conservation and development areas, and soil surveys as well.

Conservation Districts of Iowa
PO Box 801
1711 Osceola Ave - Suite 205
Chariton, IA 50049

Telephone: (641) 774-4461

C. COUNTY PLANNING AND ZONING

The following is an example of a county Planning and Zoning Department mission statement:

"The Zoning office is responsible for the enforcement of the Zoning Ordinance. The Zoning Ordinance is the tool used to implement the County's Comprehensive Plan. The purpose of the Comprehensive Plan is to provide a program for the orderly and efficient growth and development of the County. The Plan is concerned with the effective use of land, structures and open space (both public and private) to make the County a desirable place in which to live and work. The Zoning office is where you can obtain applications for building permits, variances, conditional use permits, rezoning, and subdivisions. Filing fees vary for these applications.

As an example, the studies used to prepare the Comprehensive Plan for the unincorporated area of Woodbury County include analysis of population trends and characteristics, economic factors, existing use of land and structures, public utilities and roads, recreational and educational facilities and the financial condition of the County.

The formulation and development of the Plan was guided by land use goals and objectives. The first goal is to provide for the orderly growth and development of the County while encouraging the preservation of existing agricultural resources. The second objective is to provide for varied residential areas to serve the diverse housing needs of the County population. Another purpose is to promote sound economic growth through the proper allocation of land for agricultural, commercial and industrial development. An additional goal is to provide for an adequate transportation system for safe and efficient movement of goods and people. In addition, the intent is to preserve public and private open space including wooded areas, streams and floodplains recognizing these areas as resources to be conserved rather than developed. The final objective is to allocate sufficient land for parks and recreation to meet the needs of the present and future population."
(*Woodbury County, IA Planning and Zoning Department*)

D. COUNTY CONSERVATION DEPARTMENTS

The following is an example of a county Conservation Department mission statement:

> "To promote and preserve the health and general welfare of the people. To encourage the orderly development and conservation of natural, historical, and cultural resources in Dallas County. To cultivate good citizenship through environmental education by providing natural, historical, cultural, and recreational programs to the public. To plan, acquire, develop, maintain, and make available to the inhabitants of the county, public parks, preserves, parkways, playgrounds, recreation centers, county forests, wildlife, and other conservation areas." *(Dallas County, IA Conservation Board)*

E. FARM SERVICE AGENCY

The primary mission of the USDA's Farm Service Agency (FSA) is to help Iowa's farmers and ranchers secure the highest possible financial assistance from USDA programs and play a vital role to the economic survival of Iowa's rural communities. The FSA administers and manages farm commodity, credit, conservation, disaster and loan programs as laid out by Congress through a network of Federal, state and county offices.

These programs are designed to improve the economic stability of the agricultural industry and to help farmers adjust production to meet demand. Economically, the desired result of these programs is a steady price range for agricultural commodities for both farmers and consumers.

Iowa State Farm Service Agency
10500 Buena Vista Court
Des Moines, IA 50322-3782

Telephone: (515) 254-1540
Fax: (515) 254-1573
Email: ia-fsa-pubinfo@one.usda.gov
http://www.fsa.usda.gov/FSA/stateoffapp?mystate=ia&area=home&subject=landing&topic=landing

F. FEDERAL EMERGENCY MANAGEMENT AGENCY

The mission of FEMA is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.

FEMA leads and supports the Nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery and mitigation.

Federal Emergency Management Agency
U.S. Department of Homeland Security
500 C Street SW
Washington, DC 20472

General Operator: (202) 646-2500
Register for Disaster Assistance: (800) 621-3362 / TTY (800) 462-7585
http://www.fema.gov/

G. IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP

The mission of the Iowa Department of Agriculture and Land Stewardship (IDALS) is to provide leadership for all aspects of agriculture in Iowa, ensure consumer protection and promote the responsible use of our natural resources.

Land stewardship is central to the work of the IDALS. The Division of Soil Conservation provides farmers with expertise and funds to help them install practices that preserve the state's highly productive soil, prevent erosion, and protect critical waterways. The IDALS is focused on making sure future Iowans can experience the same high quality of life that past generations have enjoyed in the State of Iowa.

The IDALS is responsible for a wide variety of consumer protection and agriculture promotion programs. This includes regulating meat processing, commercial feed and fertilizer, pesticide application, and dairy production and processing. The Weights and Measures Bureau makes sure both buyers and sellers are treated fairly at the gas pump, grocery store or grain elevator.

The State Climatologist, Entomologist, and Veterinarian are also all part of the IDAL. Other areas of responsibility for the Department include Agriculture Statistics, Homeland Security, and the Iowa Horse and Dog Breeding program.

The Department helps promote the more than 170 farmers markets located across the state and administers the Farmers Market Nutrition Program for seniors and residents participating in the Women, Infants and Children program.

The Century and Heritage Farm program, which recognizes farms that have been in the same family for 100 or 150 years, is run by a partnership between the Department and the Iowa Farm Bureau.

In all of these areas, the IDALS mission is to provide leadership for all aspects of agriculture in Iowa, ensure consumer protection and promote the responsible use of the state's natural resources.

Iowa Department of Agriculture and Land Stewardship
Wallace State Office Building
502 E. 9th Street
Des Moines, IA 50319

Telephone: (515) 281-5321
http://www.iowaagriculture.gov/default.asp

H. IOWA DEPARTMENT OF NATURAL RESOURCES

The mission of the Iowa DNR is to conserve and enhance the State's natural resources in cooperation with individuals and organizations to improve the quality of life for Iowans and ensure a legacy for future generations.

With 71,665 miles of streams and rivers and more than 161,000 acres of lakes, ponds and wetlands, it seems as if Iowa is rich in water resources. However, less than 1percent of the State's land area is covered with water. It is vital that this limited resource, both above and below ground, be protected from pollution and available for Iowans to use for drinking water, recreation and industries.

Protecting the safety of Iowans and the quality of Iowa's waters are the two main goals of the Iowa DNR's Water Quality Bureau. The Bureau sets standards for the quality of the District's surface waters; issues permits to limit pollution; provides technical assistance and training to communities, industries and homeowners; and provides funding for projects that enhance water quality. When an emergency such as flooding occurs, the Bureau assists Federal, state, and local authorities to protect public safety and provide disaster aid.

Many of Iowa's programs are based upon Federal laws administered by the USEPA. In these cases, the Federal government has delegated responsibility for implementing those programs to the Iowa DNR. The Iowa DNR's Aquatic Education Program publishes a resource guide, "Conservation Education Resources in Iowa" that provides a listing of resource agencies available in the region (Appendix A).

Iowa Department of Natural Resources
502 E. 9th Street
Des Moines, IA 50319-0034

Telephone: (515) 281-5918
http://www.iowadnr.gov/

I. IOWA DEPARTMENT OF TRANSPORTATION

The mission of the Iowa Department of Transportation is to advocate and deliver services that support and promote a safe and comprehensive transit system in Iowa to enhance Iowa's access to opportunities and quality of life. Iowa's on-going planning process, known as Iowa in Motion, provides the direction for planning and developing the transportation system needed to help move the State productively and prosperously into the future.

The continuing Iowa in Motion process has led to the development of a State Transportation Plan, approved by the Iowa Transportation Commission on July 15, 1997. This plan guides the development of transportation in Iowa. Policies developed as a result of the plan guide investments in the transportation system that respond to the needs of customers in Iowa and the Nation from now through the year 2020.

Iowa Department of Transportation
Office of Systems Planning
800 Lincoln Way
Ames, IA 50010

Telephone: (515) 239-1669
Fax: (515) 239-1639
http://www.iowadot.gov/index.html

J. IOWA HOMELAND SECURITY & EMERGENCY MANAGEMENT

The mission of the Iowa Homeland Security & Emergency Management is to lead, coordinate, and support homeland security and emergency management functions in order to establish sustainable communities and ensure economic opportunities for Iowa and its citizens.

Planning for emergencies ensures that emergency services, local authorities and other organizations better communicate and coordinate efforts, improving disaster response and post-disaster recovery.

Federal, state and local requirements are concerned with providing safety and security for the public under threat of a full spectrum of potential disasters.

Section 29C of the Iowa Code provides the authority for and lists the responsibilities of the Iowa Homeland Security & Emergency Management and the County Emergency Management Commissions to plan for emergencies. In addition, the following Federal laws and regulations shape emergency planning:

- Emergency Planning and Community Right-to-Know Act of 1986
- Robert T. Stafford Disaster Relief and Emergency Assistance Act
- Homeland Security Act of 2002
- National Flood Insurance Reform Act
- Criteria published by the Nuclear Regulatory Commission and the FEMA for preparing Radiological Emergency Response Plans

Iowa Homeland Security & Emergency Management
7900 Hickman Road, Suite 500
Windsor Heights, IA 50324

Telephone: (515) 725-3231
Fax: (515) 725-3260
http://homelandsecurity.iowa.gov/

K. IOWA NATIONAL GUARD

The mission of the Iowa National Guard is to train, mobilize, deploy, sustains and reconstitute units, providing ready forces in defense of our nation, state, and community. The Guard provides units and equipment to protect life and property and come to the aid of Iowans in a time of need, to preserve peace and order, and to ensure public safety for the citizens of Iowa.

Office of The Adjutant General of Iowa
Joint Forces Headquarters
7105 NW 70th Avenue
Johnston, IA 50131-1824

L. NATURAL RESOURCES CONSERVATION SERVICE

The mission of the USDA's NRCS is to improve the health of our nation's natural resources while sustaining and enhancing the productivity of American agriculture. They achieve this by providing voluntary assistance through strong partnerships with private landowners, managers, and communities to protect, restore, and enhance the lands and waters upon which people and the environment depend.

Since 1935, the NRCS (originally called the Soil Conservation Service) has provided leadership in a partnership effort to help America's private land owners and managers conserve their soil, water and other natural resources. NRCS employees provide technical assistance based on sound science and suited to a customer's specific needs. The NRCS provides financial assistance for many conservation activities. Participation in their programs is voluntary.

The Conservation Technical Assistance program provides voluntary conservation technical assistance

to land users, communities, units of state and local government, and other Federal agencies in planning and implementing conservation systems.

The NRCS reaches out to all segments of the agricultural community, including underserved and socially disadvantaged farmers and ranchers, to ensure that its programs and services are accessible to everyone. In addition, the NRCS manages natural resource conservation programs that provide environmental, societal, financial, and technical benefits. The science and technology activities provide technical expertise in such areas as animal husbandry and clean water, ecological sciences, engineering, resource economics, and social sciences.

The NRCS provides expertise in soil science and leadership for soil surveys and for the National Resources Inventory, which assesses natural resource conditions and trends in the United States. In addition, the NRCS provides technical assistance to foreign governments, and participates in international scientific and technical exchanges.

The NRCS/Corps Partnership Agreement, signed July 7, 2005, promotes a long-term working relationship to improve the management of water and related natural resources under the missions and authorities of NRCS and the Corps. The agencies have pledged to work together in:

- Watershed planning
- Wetlands creation, restoration and enhancement
- Natural disaster recovery
- Activities related to Wetlands Conservation and Regulatory Compliance (The "Swampbuster" Provision of the Farm Bill and Section 404 of the Clean Water Act) will also be coordinated.

State Conservationist
210 Walnut Street, Room 693
Des Moines, IA 50309

Telephone: (515) 284-6655
Fax: (515) 284-4394
http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/
http://www.nrcs.usda.gov/wps/portal/nrcs/site/ia/home/

M. RESOURCE CONSERVATION AND DEVELOPMENT

The purpose of the USDAs Resource Conservation and Development (RC&D) program is to accelerate the conservation, development and use of natural resources, improve the general level of economic activity, and to enhance the environment and standard of living in designated RC&D areas. It improves the capability of State, tribal and local units of government and local nonprofit organizations in rural areas to plan, develop, and carry out programs for resource conservation and development. The program also establishes or improves coordination systems in rural areas.

Current program objectives focus on improvement of quality of life achieved through natural resources conservation and community development which leads to sustainable communities, prudent use (development), and the management and conservation of natural resources. RC&D areas are locally sponsored areas designated by the Secretary of Agriculture for RC&D technical and financial assistance program funds.
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ia/about/?cid=nrcs142p2_011865

N. UNITED STATES DEPARTMENT OF AGRICULTURE

The USDA's mission is to provide leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on sound public policy, the best available science, and efficient management.

The vision of the USDA is to be a dynamic organization that is able to enhance agricultural trade, improve farm economies and quality of life in rural America, protect the Nation's food supply, improve the Nation's nutrition, and protect and enhance the Nation's natural resource base and environment. USDA employees will be guided by the following principles as they address challenges in food, agriculture, resources and related issues: strong ethics; service; teamwork; inclusive decision-making; and fiscal responsibility.

To achieve the USDA's strategic goals and implement its management initiatives, this plan emphasizes results based on teamwork across agencies. As part of this plan, the USDA will improve both the short-term and long-term leadership abilities needed to carry out public policy effectively. All actions will be consistent with equal opportunity and civil rights responsibilities. The USDA will act in a manner both inclusive and open to public scrutiny.

Boone Service Center
1602 Snedden Dr
Boone, IA 50036

Telephone: (515) 432-4320
Fax: (515) 432-6864

Humboldt Service Center
1301 6th Ave N Humboldt, IA 50548-1150

Telephone: (515) 332-2456
Fax: (515) 332-3961
http://www.usda.gov/

O. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

The mission of the USEPA is to protect human health and the environment—air, water, and land. The USEPA, state, local and tribal agencies work together to ensure compliance with environmental laws passed by Congress, state legislatures and tribal governments. The USEPA leads the Nation's environmental science, research, education and assessment efforts. Since 1970, the USEPA has been working for a cleaner, healthier environment for the American people.

Region 7 (IA, KS, MO, NE)
Environmental Protection Agency
901 North 5th Street
Kansas City, KS 66101

Telephone: (913) 551-7003
Toll free: (800) 223-0425
http://www2.epa.gov/aboutepa/epa-iowa
http://www.epa.gov/region07/

P. UNITED STATES GEOLOGICAL SURVEY

The mission of the U.S. Geological Survey (USGS) is to

- serve the nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

The USGS provides reliable, impartial, timely information that is needed to understand the nation's water resources and actively promotes the use of this information by decision makers to:

- minimize the loss of life and property as a result of water-related natural hazards, such as floods, droughts, and land movement;
- effectively manage ground-water and surface-water resources for domestic, agricultural, commercial, industrial, recreational, and ecological uses;
- protect and enhance water resources for human health, aquatic health, and environmental quality; and
- contribute to wise physical and economic development of the Nation's resources for the benefit of present and future generations.

Iowa Water Science Center
P.O. Box 1230
Iowa City, IA 52244

Telephone: (319) 337-4191
Fax: (319) 358-3606
Email: dc_ia@usgs.gov
http://www.usgs.gov/

Telephone: 515-252-4211/4582
Fax: 515-252-4656
Email: paoia@ng.army.mil
http://www.iowanationalguard.com

Q. WATERSHED PLANNING ADVISORY COUNCIL

The Watershed Planning Advisory Council (WPAC) was established by the 2010 Iowa Legislature (House File 2459) to assemble a diverse group of stakeholders who would review research and make periodic recommendations to state and Federal agencies regarding methods to best protect water resources in Iowa, assure an adequate supply of water, mitigate and prevent floods, and coordinate the management of the state's water resources in a sustainable, fiscally responsible, and environmentally conscientious manner.

The WPAC consists of mostly non-governmental organizations and associations that were involved in the 2008 Watershed Quality Planning Task Force (WQPTF). (http://www.iowaagriculture.gov/WPAC/pdf/_finallegislativereport2007.pdf). That task force made recommendations to the Iowa Legislature in 2009 on how to improve watershed planning effectiveness, and led to creation of the WRCC.

The WPAC seeks to continue its original work of the WQPTF by consulting with other governmental or non-governmental organizations in the development of its future recommendations for watershed planning and implementation effectiveness, and advise the WRCC member agencies and the legislature as necessary on these matters. The current roster of the WPAC can be found at http:///www.iowaagriculture.gov/ WPAC/pdf/WPACRosterupdatedJanuary2014.pdf.

Watershed Planning Advisory Council
Wallace State Office Building
502 E. 9th Street
Des Moines, IA 50319

Telephone: (515) 281-5321
http://www.iowaagriculture.gov/WPAC.asp

R. WATER RESOURCES COORDINATING COUNCIL

The purpose of the Water Resources Coordinating Council (WRCC) is to preserve and protect Iowa's water resources, and to coordinate the management of those resources in a sustainable and fiscally responsible manner. In the pursuit of this purpose, the council uses an integrated approach to water resource management, recognizing that insufficiencies exist in current approaches and practices, as well as in funding sources and the use of funds.

The integrated approach used by the council attempts to overcome old categories, labels, and obstacles with the primary goal of managing the state's water resources comprehensively rather than compartmentally. The WRCC has established nine priority watersheds in the State of Iowa, two of which lie within the Eastern Iowa Basins. A map of the designated watersheds can be found at http://www.iowaagriculture.gov/WRCC.asp. The current roster for the WRCC can be found at http://www.iowaagriculture.gov/WRCC/pdf/WRCCRoster2013.pdf.

Water Resources Coordinating Council
Wallace State Office Building
502 E. 9th Street
Des Moines, IA 50319

Telephone: (515) 281-5321
http://www.agriculture.state.ia.us/WRCC.asp

PERIODIC BASIN MANAGEMENT REPORT
2014

DES MOINES RIVER BASIN

APPENDIX A

IOWA DEPARTMENT OF NATURAL RESOURCES
RESOURCE GUIDE

Conservation Education Resources in Iowa

Aquatic Education Program
Iowa Department of Natural Resources
2014

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Accessibility

This information is available in alternative formats by contacting the DNR at 515/281-5145 (TYY users - contact Relay Iowa, 800/735-2942) or by writing the DNR at 502 East 9th Street, Des Moines, IA 50319-0034.

Equal Opportunity

Federal regulations prohibit discrimination on the basis of race, color, national origin, sex or handicap. State law prohibits discrimination on the basis of race, color, creed, sexual orientation, gender identity, religion, national origin, or disability. If you believe you have been discriminated against in any program, activity or facility as described above, or if you desire further information, please write to the Iowa DNR, Wallace State Office Building, 502 E. Ninth St., Des Moines, IA 50319.

Funding for development and printing of this publication provided by Sport Fish Restoration monies.

Federal Agencies

National Park Service – NPS

www.nps.gov

The National Park Service preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world. The web site includes educator resources.

NPS Sites in Iowa

Effigy Mounds National Monument
Harpers Ferry, IA
www.nps.gov/efmo

Hebert Hoover National Historical Site
West Branch, IA
www.nps.gov/heho

Natural Resource Conservation Service – NRCS

www.ia.nrcs.usda.gov

The National Resource Conservation Service works through 100 field offices to provide technical assistance to landowners, farmers, communities, groups, and other agencies to help them protect the state's natural resources including soil, water, and wildlife habitat. Most offices have publications on soil and water conservation, habitat establishment, and more that can be requested in bulk for students. NRCS provides advice to farmers on soil conservation measures and cost-share incentives; soils information for public use; and watershed programs for urban and rural communities. NRCS oversees several programs that provide cost share and other incentives for conservation practices to protect or enhance natural resources on private land. Information is available on their web site. Resource Conservation and Development (RC & D) areas help communities improve their economic base through training, seed money, and guidance. NRCS works through local Soil and Water Conservation Districts (SWCD) overseen by locally elected boards.

Iowa League of Resource Conservation and Development Councils – RC&D

http://iowaleaguercd.org/councils

RC&D Councils are multi-county units. Direction and leadership comes from local citizens within the area. Specifically, an RC&D is a local project in which residents work together with other organizations in woodland management, alternative crop development, and other areas of local interest. There are 12 RC&D Councils in Iowa.

U.S. Army Corps of Engineers – COE

Rock Island District
Rock Island, IL
www.mvr.usace.army.mil

Omaha District
Omaha, NE
www.nwo.usace.army.mil

Kansas City District
Kansas City, MO
www.nwk.usace.army.mil

The Corps of Engineers is responsible for maintaining navigation on the Mississippi and Missouri Rivers and managing four flood control reservoirs – Coralville, Rathbun, Red Rock, and Saylorville Lakes. They maintain recreation areas for public use and provide public educational programs about protecting natural resources (e.g., eagle watches, camper programs, junior ranger programs). The Rock Island District encompasses approximately the eastern two-thirds of Iowa and publishes a quarterly

newsletter, the *Mississippi River Review*. The remainder of the state is under the jurisdiction of the Omaha and Kansas City Districts.

COE SITES IN IOWA

Note: Information about reservoirs and locks and dams is located on the websites for each of the Districts.

Coralville	**Lake Rathbun**	**Lake Red Rock**	**Saylorville**
Iowa City, IA	Centerville, IA	Knoxville, IA	Johnston, IA

Mississippi River
L&D #11, Dubuque, IA
L&D #14, Pleasant Valley, IA
L&D #15, Mississippi River Visitor Center, Rock Island, IL
COE, Mississippi River Park Rangers, Thomson, IL
L&D #16, Muscatine, IA

Missouri River
Omaha, NE Office

U.S. Environmental Protection Agency – US EPA

Region 7 (IA, KS, MO, NE)
www.epa.gov/region07/

EPA's mission is to protect human health and safeguard the natural environment — air, water, and land. EPA works with other federal agencies, state and local governments, and Indian tribes to develop and enforce environmental regulations. EPA researches and sets national standards for environmental programs and delegates to states and tribes responsibility to issue permits, and monitor and enforce compliance. The Agency also administers voluntary pollution prevention programs and energy conservation efforts. Several educational resources are available on their web site.

USDA Forest Service – USFS

www.fs.fed.us/r9/

The Forest Service manages public lands in national forests and grasslands. It is the largest forestry research organization in the world and provides technical and financial assistance to state and private forestry agencies. Region Nine's web page provides an eastern region fall color report, roadless area maps, wildlife, fish, and rare plant updates, and lists of recreational opportunities and events in National Forests. Naturewatch lists nature viewing opportunities, encourages safe and sound viewing ethics, and helps local communities' economics. (http://www.fs.fed.us/outdoors/naturewatch/)

U.S. Fish and Wildlife Service – USFWS

www.fws.gov/midwest/

USFWS is responsible for conserving, protecting, and enhancing the nation's fish and wildlife and their habitats for the continuing benefits of people. Major responsibilities include: migratory birds, endangered species, certain marine mammals, and freshwater and anadromous fish. The USFWS manages six national wildlife refuges totaling 109,843 acres in Iowa. Over 1 million people visit refuges each year to hunt, fish, participate in interpretive programs, and view wildlife.

REFUGES IN IOWA

Desoto National Wildlife Refuge
Missouri Valley, IA
http://www.fws.gov/refuge/desoto/

Driftless Area National Wildlife Refuge / Upper Mississippi River National Fish and Wildlife Refuge
Macgregor, IA
http://www.fws.gov/refuge/driftless_area/
http://www.fws.gov/refuge/upper_mississippi_river/

Iowa Wetland Management District / Union Slough
Titonka, IA
http://www.fws.gov/refuge/iowa_wmd/
http://www.fws.gov/refuge/union_slough/

Neal Smith national Wildlife Refuge
Prairie City, IA
http://www.fws.gov/refuge/neal_smith/

Port Louisa National Wildlife Refuge
Wapello, IA
http://www.fws.gov/refuge/port_louisa/

U.S. Geological Survey – USGS

www.usgs.gov
The USGS stands as the sole science agency for the Department of the Interior. The USGS focuses on four major areas: natural hazards, resources, the environment, and information and data management. USGS provides a host of informational and educational resources available through their web site.

IOWA WATER CENTER
Iowa City, IA
http://ia.water.usgs.gov/

COOPERATIVE FISH & WILDLIFE RESEARCH UNIT
Ames, IA
www.cfwru.iastate.edu

State Agencies

Iowa Department of Education – DE

www.educateiowa.gov
The Department of Education has information about conservation education opportunities on their website.

Area Education Agencies – AEA

http://www.iowaaea.org/
The state's education system also includes nine Area Education Agencies (AEA's) that loan materials and provide training opportunities to educators. The contact for conservation education in most AEA's is the science consultant.

Iowa Department of Natural Resources – DNR

http://www.iowadnr.gov/Education.aspx

The Iowa Department of Natural Resources is responsible for ensuring the proper management and protection of Iowa's natural resources while actively encouraging public use and enjoyment of these resources in a manner consistent with sound management principles. DNR provides public assistance and educational materials and programs, and is involved in environmental regulation and enforcement. DNR produces many publications including a bi-monthly magazine, the *Iowa Outdoors*.

Public Universities

Iowa State University

IOWA STATE UNIVERSITY EXTENSION

www.extension.iastate.edu

ISU Extension provides outreach in agriculture and natural resources, business and industry, communities, families, youth, and extended and continuing education. Contact your county office, or visit their web site for a complete listing of available publications. ISU Extension and Iowa Association of Naturalists have published several series of informational booklets for educators.

LEOPOLD CENTER FOR SUSTAINABLE AGRICULTURE

www.leopold.iastate.edu

The Center offers conferences, workshops, tours, and youth camps. Some examples include: Iowa Master Conservationist Program, networking opportunities for Iowans involved in food systems and value added projects, Center-sponsored investigators, and presentations at educational in-service training sessions, conferences, field days, and other events.

University of Iowa

HYGIENIC LABORATORY

www.shl.uiowa.edu/

The Environmental Health Program performs diverse sample testing of everything from air to wastewater, including clinical specimens, fish, foods, soil and sediment, and water.

DIVISION OF RECREATIONAL SERVICES

www.recserv.uiowa.edu

The University's Division of Recreational Services offers environmental education programs, maintains a raptor rehabilitation and education center, and has facilities for outdoor activities at the University of Iowa Macbride Nature Area.

University of Northern Iowa

CENTER FOR ENERGY AND ENVIRONMENTAL EDUCATION – CEEE

www.uni.edu/ceee/

The Center for Energy and Environmental Education promotes actions at the local level that have global implications. CEEE's work focuses on energy use, land use, materials use, and consumption and population growth.

IOWA ACADEMY OF SCIENCE – IAS; IOWA SCIENCE TEACHERS SECTION – ISTS

www.iacad.org/

ISTS is the largest membership component of the Iowa Academy of Science. It advocates for excellence in Science Education by promoting professionalism, influencing policy, and enhancing learning. ISTS holds an annual fall conference to disseminate new teaching techniques and resources. IAS sponsors *Project WET* – water related activities for all grade levels. Its web page has downloadable activities and science links.

County Conservation Boards – CCB

www.mycountyparks.com

County conservation boards own and manage public areas (museums, parks, preserves, parkways, playgrounds, recreation centers, forests, wildlife, and other conservation areas) in their counties. Many of these areas are good field trip destinations. CCB naturalists often assist with school programs and/or help locate other volunteers. Every Iowa county has a CCB.

Conservation Organizations

Bass Angler Sportsman Society – B.A.S.S.

www.iabass.com

B.A.S.S. has more than 2,800 clubs nationwide dedicated to the future of bass fishing. They promote catch-and-release, encourage community involvement, lobby, introduce youth to fishing, and conduct tournament creel census reports.

Bass Federation – Student Angler Federation

http://www.highschoolfishing.org/

SAF promotes the formation of fishing clubs and outdoor activities within schools. A byproduct of SAF efforts is the creation of competitive fishing in club tournaments and events between neighboring schools.

Conservation Districts of Iowa – CDI

www.cdiowa.org

Soil and water conservation districts are legal subdivisions of state government managed by a board of five elected commissioners. Commissioners carry out state and federal laws and programs. They also serve as local sponsors for watershed projects, resource and development areas, and soil surveys. The National Association of Conservation Districts publishes materials for educators on soil and water conservation.

Ducks Unlimited, Inc. – DU

www.ducks.org

Ducks Unlimited's mission is to fulfill the annual life cycle needs of North American waterfowl by protecting, enhancing, restoring, and managing important wetlands and associated uplands. Since 1937, DU has raised money for conservation of prime wildlife habitat in all fifty states, each of the Canadian provinces, and key areas of Mexico. Downloadable materials are on their web site.

Hawkeye Fly Fishing Association – HFFA

www.hawkeyeflyfishing.com

HFFA is a non-profit organization of Iowa anglers and conservationists dedicated to promoting fly-fishing and associated activities. HFFA is an affiliate of the Federation of Fly Fishers (FFF), an organization devoted to promoting all types of fly-fishing and protecting fly-fishing waters and their inhabitants. HFFA has worked on trout stream improvements in northeast Iowa, publishes a newsletter, and sponsors events around the state each year including introductory fly-fishing and fly tying clinics.

Iowa Association of Naturalists – IAN

www.iowanaturalists.org/

The Iowa Association of Naturalists promotes the development of skills and education within the art of interpreting natural and cultural resources in Iowa. IAN publishes a newsletter, *The Web*, educator information, and a *Guide to Environmental Education and Interpretive Services in Iowa,* and sponsors a junior naturalist program and continuing education workshops.

Iowa Conservation Education Coalition – ICEC

www.iowaee.org/

ICEC strives to ensure a healthy environment in Iowa by improving environmental literacy. ICEC promotes innovative educational methods and strategies; develops diverse partnerships; facilitates networking; provides access to information, research and trends; and embraces a balanced perspective on environmental issues.

Iowa Environmental Council – IEC

www.iaenvironment.org/

The Iowa Environmental Council is an alliance of diverse organizations and individuals working together to protect Iowa's natural environment.

Iowa Natural Heritage Foundation – INHF

www.inhf.org

INHF builds partnerships and educates Iowans to protect, preserve, and enhance Iowa's natural resources for future generations. Several educational publications are available online.

Iowa Ornithologist Union – IOU

www.iowabirds.org

The Iowa Ornithologist Union is a nonprofit group organized to promote enjoyment and study of birds.

Iowa Prairie Network – IPN

www.iowaprairienetwork.org

The Iowa Prairie Network sponsors guided hikes, work projects, and education programs designed to learn about, teach, enjoy, and protect Iowa's prairie heritage. It provides technical advice on prairie management and prairie preservation methods and technical publications.

Izaak Walton League of America, Iowa Division – IWLA

http://iowaikes.org/

A nonprofit conservation organization formed nationally in 1922, the Ikes are dedicated to protecting the air, land, and water resources. Priority issues include water quality, manure management, and energy issues. Check for a local chapter in your area.

Loess Hills Alliance
www.loesshillsalliance.com/
The Loess Hills Alliance provides grassroots, broad-based representation for land use management and stewardship in the Loess Hills region. The Alliance communicates, cooperates, and coordinates conservation efforts in the Loess Hills.

National Arbor Day Foundation
www.arborday.org
The National Arbor Day Foundation is the world's largest tree-planting organization. It provides more than 8 million trees for planting throughout America each year. Their web site has many ideas for celebrating Arbor Day and youth education materials are available.

National Audubon Society (Iowa Audubon)
www.audubon.org
The National Audubon Society's goal is to restore ecosystems so other birds and wildlife can flourish and enrich the diversity of life on Earth.

National Wild Turkey Federation – NWTF
www.nwtf.com
NWTF is a grassroots, non-profit organization with 390,000 members in 50 states, Canada, and 11 foreign countries. It supports scientific wildlife management on public, private, and corporate lands as well as wild turkey hunting as a traditional North American sport. NWTF helps sponsor many educational events around the state.

National Wildlife Federation – NWF
www.nwf.org
The National Wildlife Federation is a grassroots, non-profit organization founded in 1936 by editorial cartoonist J.N. "Ding" Darling. NWF's main goal is to encourage people of all ages to conserve and protect the environment. Hands-on nature programs, educator resources, activities, and lesson plans are available.

Nature Conservancy, Iowa Chapter
www.tnc.org/iowa
The Nature Conservancy is an international, nonprofit environmental organization committed to the protection of biodiversity. Its mission is to preserve plants, animals, and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive.

Pheasants Forever – PF
www.pheasantsforever.org
Pheasants Forever is a nonprofit conservation organization dedicated to protection and enhancement of pheasant and other upland wildlife populations through habitat improvement, public awareness and education, and land management that benefits farmers and wildlife. Most Iowa counties have chapters and local contacts.

Practical Farmers of Iowa – PFI

www.practicalfarmers.org

Practical Farmers of America promotes the interests of Iowa farmers by encouraging, sponsoring, and conducting research and educational activities designed to improve land productivity and enrich the health, environment, and economic well-being of farm families.

Saving Our Avian Resources – S.O.A.R

www.soarraptors.org/index.html

SOAR is a non-profit organization that supports wildlife rehabilitation and education in western Iowa.

Trees Forever

www.treesforever.org

Trees Forever's mission is to facilitate planting and care of trees and conservation and restoration of forests through action-oriented programs, education, and public awareness.

Trout Unlimited – TU

www.tu.org

TU is a national organization with more than 150,000 members in about 400 chapters supported by about 30 offices across the country. TU is at the forefront of fisheries restoration work at the local, state and national levels.

Whitetails Unlimited – WTU

www.whitetailsunlimited.com

Whitetails Unlimited is a national conservation organization dedicated to the betterment of the whitetail deer and its environment. WTU supports educational programs, habitat conservation, and preservation of the hunting tradition.

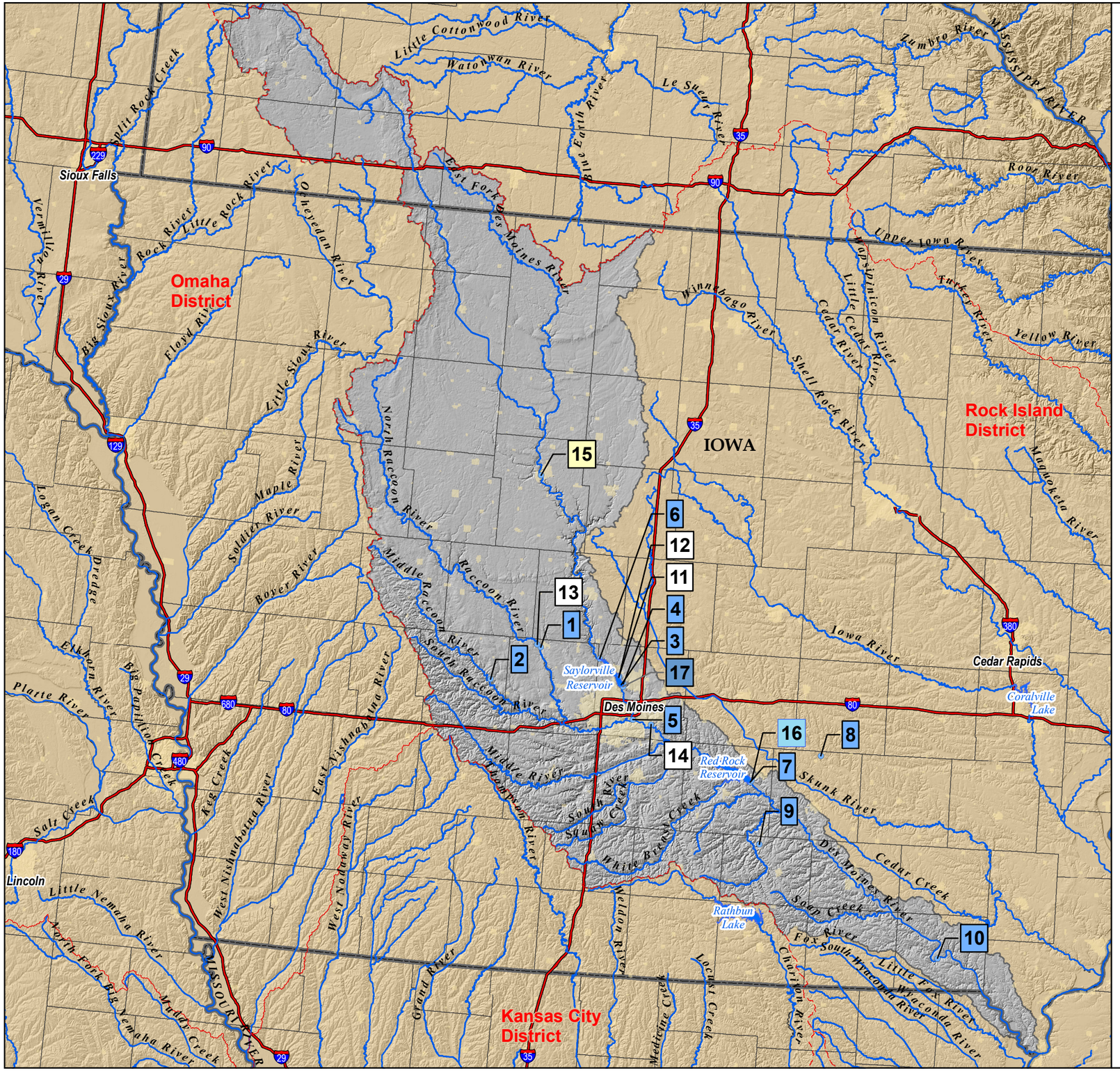
PERIODIC BASIN MANAGEMENT REPORT
2014

DES MOINES RIVER BASIN

APPENDIX B

BASIN MAP

Des Moines River Basin Projects - USACE 2014



Map ID	Project	Program
	Flood Risk Management	
1	North Raccoon River, Perry, IA	SEC 14
2	Raccoon River Panora, IA	SEC 14
3	Saylorville Lake Water Level Mgt	WSA
4	Saylorville Lake & Dam	O&M
5	Des Moines & Raccoon Rivers	FRM; Rec
6	Big Creek Barrier Dam	FRM
7	Red Rock Dam & Lake	O&M
8	North Skunk River Poweshiek Co	SEC 14
9	Coal Creek, Monroe County, IA	SEC 14
10	Des Moines River, Keosauqua, IA	SEC 14
	Planning Assistance to States (PAS)	
11	Big Creek Spillway Fish Barrier Study	SEC 22
12	Saylorville/ Big Creek	SEC 22
13	Master Planning City of Perry, IA	SEC 22
14	Fourmile Creek Watershed	WMA
	Recreation	
15	Des Moines River Recreation & Greenbelt	PL 99-88
	Hydropower	
16	Red Rock Hydroelectric Project	SEC 408
	Water Supply	
17	Water Storage Space Contract Saylorville Lake	WSA 1958

Des Moines River Basin

MVR District Boundary

Flood Risk Management

Planning Assistance to States (PAS)

Recreation

Hydropower

Water Supply

US Army Corps of Engineers
Rock Island District

0 10 20 40 60 Miles
0 10 20 40 60 80 Km

1:1,800,000
Map Produced: Oct. 2014
By: USACE MVR GIS

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PERIODIC BASIN MANAGEMENT REPORT
2014

DES MOINES RIVER BASIN

APPENDIX C

PROGRAM OVERVIEW FACT SHEETS

Location
NONE PROVIDED

State(s)
IA,IL,MN,MO,WI

Congressional District(s)
IA-1, IA-2, IA-3, IA-4, IL-11, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-2, IL-3, MN-1, MN-7, MO-6, WI-1, WI-2, WI-3, WI-5, WI-6

Description

U.S. Army Corps of Engineers
Civil Works Program

Army involvement in works "of a civil nature" goes back almost to the origins of the United States. Over the years, as the nation's needs have changed, so have the Army's Civil Works missions. Those missions today fall in four broad areas: water infrastructure, environmental management and restoration, response to natural and manmade disasters, and engineering and technical services to the Army, DoD and other Federal agencies.

At Corps of Engineers Headquarters in Washington, DC, the Directorate of Civil Works oversees the program. Civil Works projects are located throughout the United States.

Funds for the Civil Works program come from the annual Energy and Water Development Appropriations, not the Defense appropriations. Add to that the cost-sharing funds supplied directly by non-federal sponsors for specific projects, and the total civil program is about $5 billion a year.

The process for developing Civil Works projects begins when citizens see a need for flood protection, navigation, or other water-related infrastructure and ask Congress for help. Congress will direct the Corps to do a study to see if a project is warranted. Corps studies are usually done in 2 phases: an initial reconnaissance to determine if a feasible solution is likely, then a feasibility study to examine alternatives and select the project that best meets national and local needs. Most feasibility studies are cost-shared with a local sponsor. If the conclusion is positive, before any construction, Congress must authorize the project and then appropriate funds. Most projects are built with a combination of federal funds and contributions by non-federal sponsors. Depending on project purpose, the Corps then either operates and maintains the completed project, or turns it over to local authorities.

Annual Budget Development
&
Appropriations Process

While many people are familiar with the key events in the annual Civil Works budget and appropriations cycle - the release of the President's budget and the enactment of Congress' appropriations legislation into law - few are as familiar with the year-round budget process

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engaged in by the Corps and other federal agencies.

U.S. Army Corps of Engineers Civil Works funding is a two-year development process that can be generally summarized as a develop-defend-execute program cycle. The Corps budgets and executes its mission on a Fiscal Year basis. The fiscal year begins October 1 and ends September 30 the following year. Using January 2010 (FY10) as a starting point, the schedule for development of the FY12 budget is as follows:

JAN 2010	Office of Management and Budget (OMB) provides budget guidance for FY12.
MAR/APR 2010	U.S. Army Corps of Engineers headquarters provides FY12 budget limits and program guidance within the Corps based on the OMB and additional ASA(Civil Works) guidance.
MAY/JUL 2010	U.S. Army Corps of Engineers field offices develop FY12 program requirements based on the U.S. Army Corps of Engineers guidance.
JUL 2010	U.S. Army Corps of Engineers headquarters reviews the field-developed FY12 requirements.
JUL/AUG 2010	The U.S. Army Corps of Engineers-developed FY12 budget is worked with the Secretary of the Army.
SEP 2010	The Army's FY12 budget program is submitted for OMB review.
SEP-NOV 2010	OMB reviews with and then tells Army and the U.S. Army Corps of Engineers what its budget will be for Civil Works program planning in FY12. This is referred to as the OMB passback.
DEC-FEB 2010/11	The President's budget for FY12 is finalized and submitted to Congress. It provides the U.S. Army Corps of Engineers with the specific budget details needed to plan FY12 Civil Works program execution.
FEB-MAY 2011	Congress conducts appropriations (and, if necessary, authorization) hearings to discuss and ask detailed questions about the President's FY12 budget submission. The Assistant Secretary of the Army (Civil Works) and U.S. Army Corps of Engineers leadership testify before subcommittees to address Congressional concerns about the President's budget for the FY12 Civil Works program.
JUN-SEP 2011	Appropriations bills for FY12 are developed and approved by Congress.
SEP/OCT 2011	President signs the FY12 appropriations legislation into law. The legislation provides the U.S. Army Corps of Engineers with specific Civil Works program execution guidance by funding category and specifically authorized projects and studies.

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OCT/DEC 2011	U.S. Army Corps of Engineers headquarters allocates FY12 funds within the Corps for fiscal year execution.

In the absence of congressional passage of an agency-specific appropriation, Civil Works annual funding is generally included in an all-encompassing "omnibus" bill .

Key legislation that serves as the "baseline" for the Corps' Civil Works program is Congressional passage of the Water Resources Development Act, expected every two years. The WRDA is a comprehensive legislative package that provides for the conservation and development of water and related resources. It authorizes the Secretary of the Army, through the Chief of Engineers, to conduct studies and to construct projects and research the various activities that lead to improvements of rivers and harbors of the United States. The WRDA is strictly an authorizing document; it does not include funding. The funding of WRDA-authorized studies and projects is accomplished separately as part of the annual appropriations process.

Congressional committees and subcommittees that oversee the Corps and normally meet on an annual basis to address Senate and House member concerns about the President's budget and the need for additional Authorizations for the Civil Works program include the Senate Environment and Public Works Committee, the Senate Energy and Water Development Appropriations Subcommittee, the House Transportation and Infrastructure Committee, and the House Energy and Water Development Appropriations Subcommittee.

Point of Contact: Chief, Corporate Communications
Phone: (309) 794-5274
Email: cemvr-cc@usace.army.mil

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Location
Rock Island District, Nationwide

State(s)
IA,IL,MO

Congressional District(s)
IA-2, IA-3, IA-4, IL-11, IL-13, IL-16, IL-17, IL-18, IL-2, IL-3, MO-6

Status
“Federal Guidelines for Dam Safety” was published in June 1979. The purpose of these guidelines is to enhance national dam safety and to encourage high safety standards in the management procedures and technical activities of Federal agencies. The guidelines require the head of each Federal agency having responsibility for design, construction, operation and regulation of dams to establish a dam safety office (officer), which reports directly to the head of the agency. The Interagency Committee on Dam Safety (ICODS) was established in 1980 to promote and monitor Federal and State dam safety programs. The Corps of Engineers is the Department of Defense representative on ICODS. The Rock Island District Dam Safety Program is administered and monitored by the District Dam Safety Committee, comprised of Division and Branch Chiefs including the Dam Safety Officer and Dam Safety Program Manager. The Rock Island District Dam Safety Program presides over 28 Corps and 8 Non-Corps structures. Dam failure hazard categories of the 28 federal locations are; 11 high, 16 significant, and 1 low. Of the 8 non-Federal locations, 5 are high and 3 are low hazard. The program is implemented by quarterly committee meetings to discuss and resolve issues. Meeting minutes are composed by the Dam Safety Program Manager, approved by the Dam Safety Officer, reviewed by the District Commander, and submitted to Division. The Rock Island District has no authority to modify, improve, or enforce repairs on dams outside of the Federal Dam Safety Program.

Description
Dam safety is the art and science of ensuring the integrity and viability of dams such that they do not present unacceptable risks to the public, property, and the environment. It requires the collective application of engineering principles and experience, and a philosophy of risk management that recognizes that a dam is a structure whose safe functioning is not explicitly determined by its original design and construction. It also includes all actions taken to routinely monitor, evaluate, identify or predict dam safety issues and consequences related to failure, and to document, publicize, and reduce, eliminate, or remediate any unacceptable risks. The purposes of a dam safety program are to protect life, property, and the environment by ensuring that all dams are designed, constructed, operated, and maintained as safely and effectively. This is accomplished by routine inspection of projects, periodic assessment of risks of each project, emergency planning which includes exercises that involve stakeholders, agencies, local and state government, and emergency responders, interim risk reduction measures, detailed technical evaluation of potential issues, and monitoring of instrumentation.

Summarized Project Costs

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FY10, FY11: $450,000 (est), FY12: $880,000. Funding originates from existing O&M projects. Separate budget packages were submitted for the FY13 budget.

Major Work Item (This Fiscal Year)
Interim Risk Reduction Measures Reports – Lagrange, TJ O'Brien, Lock & Dam 11, Saylorville/Big Creek Barrier and Diversion Dams, Amana Remedial Works, Mississippi River Dams 12, 13, 14, 16, 17, 18, 20, 21, 22, Illinois Waterway Peoria Dam. Emergency Action Plan Updates/Dam safety exercise – Lock and Dam 19, Coralville Reservoir Periodic Assessments – T.J. O'Brien Lock and Dam, Lock and Dam 18, Red Rock Dam Periodic Inspections – Brandon Road Lock and Dam, Lock and Dam 17 Dam Safety Instrumentation Operation and Maintenance

Major Work Item (Next Fiscal Year)
Emergencay Action Plan Updates/Dam safety exercises Periodic Inspections/Periodic Assessments – Marseilles Lock and Dam, Lock and Dams 19, 21, 22, Saylorville/Big Creek Reservoirs Dam Safety Instrumentation Operation and Maintenance

Authority Details
Interagency Committee on Dam Safety (ICODS), WRDA 1996, Federal Guidelines for Dam Safety published June 1979, Executive Order 12148

Point of Contact: Dam Safety Program Manager
Phone: (309)794-5290
Email: cemvr-ec@usace.army.mil

Location
Throughout the Rock Island District

State(s)
IA,IL,MN,MO,WI

Congressional District(s)
IA-1, IA-2, IA-3, IA-4, IL-1, IL-11, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-2, IL-3, IL-4, IL-7, MN-1, MN-7, MO-6, WI-1, WI-2, WI-3, WI-5, WI-6

Status
The Rock Island District's Floodplain Management Services (FPMS) program has been very successful in assisting other agencies (Federal and State), counties, local communities and individuals with addressing their floodplain management and flood risk reduction needs. A growing demand exists for the District's floodplain management services and related technical assistance capabilities due to: land use/land cover changes; climate change; floodplain development pressures; enhanced public understanding of and interest in floodplain functions and floodplain management; an expanding commitment to reduce flood damages through better floodplain protection and flood risk management options; and FEMA's ongoing flood insurance rate map modernization program as well as its many oher flood risk reduction and management initiatives, programs and projects.

Description
The Floodplain Management Services (FPMS) Program provides a full range of technical services and planning guidance in support of effective floodplain management and flood risk reduction. The program develops or interprets site-specific data on obstructions to flood flows; flood formation and timing; flood depths or stages; floodwater velocities; and the extent, duration, and frequency of flooding. For more complex floodplain issues, the program provides assistance in the form of Special Studies for all aspects of floodplain management and flood risk reduction planning. Some of the most common types of Special Studies include: floodplain delineation/flood hazard evaluation studies; dam break analysis and dam removal studies; flood warning/preparedness studies; regulatory floodway studies; comprehensive floodplain management studies; urbanization impact studies; sedimentation effects studies; and stormwater management studies. Although most Program services are provided without charge, based on available funding, certain services are provided only on a reimbursable basis.

Summarized Project Costs
The FPMS program funds are provided through four separate accounts: Management Services Unit; Technical Services, General; Quick Responses; and Special Studies. Section 202 authorizes the voluntary contribution of funds for the purpose of expanding the scope of an ongoing FPMS activity or Special Study. .

Major Work Item (This Fiscal Year)
FY 2013: Provide technical data and information and other assistance in support of effective floodplain management and flood risk reduction to Federal agencies, States, Native American tribes, local

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governments, and private individuals. Certain activities are accomplished on a cost-reimbursable basis. Initiate 4 new Special Studies: Evaluation of Urban Flooding Scenarios (Cedar Falls, IA); Maquoketa and North Fork Maquoketa River Hydrologic and Hydraulic Modeling; Community Based Hydrologic Warning System for Indian Creek, Linn County, IA and: Non-structural Land Use Change Impacts on Structure Losses in Cedar River (IA) Communities; advance 2 ongoinig Special Studies: Iowa Reservoirs Dam Safety Study and IA Comprehensive Levees Database; complete 3 Special Studies: Iowa River at Wapello, IA; MonMaq Dam Removal and Floodplain Planning, Monticello, IA and: Evalution of Urban Flooding Scenarios (Muscatine, IA).

Major Work Item (Next Fiscal Year)

FY 2014: Continue to provide technical data and information and other assistance in support of effective floodplain management to various Federal agencies, States, Native American tribes, local governments, and private individuals. Certain activities accomplished will be on a cost-reimbursable basis. Complete one Special Study: Iowa Reservoirs and Dam Safety; Advance five ongoing Special Studies: Evaluation of Flooding Scenarios and Emergency Planning Assistance for Urban Levees (Cedar Falls, IA); IA Comprehensive Levees Database; Maquoketa and North Fork Maquoketa River Hydrologic and Hydraulic Modeling; Community Based Hydrologic Warning System for Indian Creek, Linn County, IA and: Non-structural Land Use Change Impacts on Structure Losses in Cedar River (IA) Communities; There are currently no FY14 new start Special Studies identified.

Point of Contact: Project Management Branch, Planning, Programs, and Project Management Division
Phone: (309) 794-5605
Email: cemvr-pm-web@usace.army.mil

Location
Nationwide

State(s)
IA,IL,MN,MO,WI

Congressional District(s)
IA-1, IA-2, IA-3, IA-4, IL-11, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-2, IL-3, MN-1, MN-7, MO-6, WI-1, WI-2, WI-3, WI-5, WI-6

Status
The Levee Safety Program has been implemented as a nationwide Corps Initiative. The Rock Island District has stood-up the district level component of the Levee Safety Program with the creation of the senior level multidiscipline Levee Safety Committee led by the Levee Safety Officer and the Levee Safety Program Manager. As required in the National Levee Safety Act, the Corps is undertaking the inventory of levees under the National Levee Database (see separate fact sheet). The Corps continues its annual and periodic inspections and notification of levee project owners/sponsors and the appropriate local, state and federal agencies of a project with Satisfactory, Minimally Acceptable and Unacceptable inspection ratings.

To provide quality assurance of the uniform applicability of the national standards the Corps has decided to contract with external engineering firms and to obtain assistance from other USACE Districts to perform the Periodic Inspections to ensure that an independent set of eyes looks over the elements of safety for the PL-84-99 levees. The Rock Island District is utilizing a combination of ICW and special supplemental funding to perform the levee Periodic Inspections.

As of September 2013, five task orders ($4,967,000) have been awarded to perform inspections of 52 Levee Systems. An additional $4,852,000 has been allocated for USACE performance of these Periodic Inspections. The remaining levee systems will be undertaken as funding is available. The order of performance was two fold. Initial ICW funding used proximity of the levee to the Rock Island District such that supervision of the contractor was facilitated. ARRA and Centrally USACE funded task orders have been prioritized based on population at risk behind the levee with a secondary supervision logistical consideration. Funds were used to implement Periodic Inspections of levees selected based on risk by HQ.

Through the Routine and Periodic inspections the District is currently working with levee sponsors to ensure maintenance requirements are being met by the Sponsor and that the levees will continue to be operated by the Sponsor in a manner that is protective of life and property. The Corps inspection program however, is finding many departures from best maintenance practices and USACE required operational procedures. The Corps is statutorily prohibited from funding corrective measures for these deficiencies. Additionally, coordination with the State Emergency Management entities and the Federal Emergency Management Agency (FEMA) is occurring to work on methodology to assist Sponsors in their O&M responsibilities. The National Flood Insurance Program is a separate program; from the Levee Safety Program. However, Levee data and inspection reports will be available for

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sponsor levee certification efforts, complying with FEMA's National Flood Insurance Program requirements.

Description

The U.S. Army Corps of Engineers flood damage reduction mission began with the 1917 Flood Control Act. The act gave the Corps a significant role in flood activities nationwide, to include the protection of life and property behind federal program levee systems. Hurricane Katrina's and Rita's devastation in 2005 brought levee safety to the forefront of public awareness. The findings of subsequent investigations into the flood damage reduction system's performance in New Orleans clearly pointed to the need for a comprehensive and risk-informed approach to national levee safety, including periodic reassessments. Subsequent to that event, Congress enacted the National Levee Safety Program with passage of the 2007 Water Resources Development Act, Title IX. The Corps' Levee Safety Program emphasizes the role of levees in flood damage reduction to avoid loss of life and property damage. The program will help achieve three goals:

1) Reduce risk and increase public safety through an informed public, empowered to take responsibility for its safety; 2) Develop clear national levee safety policies and standards; and 3) Maintain sustainable flood damage reduction system that meets public safety needs.

Congress appropriated limited funds for the Corps to initiate a national levee inventory and assessment program to determine the status and condition of the federal program levee systems in the nation. The inventory will cover only high priority levees, which is approximately .0003% of the entire inventory of Levees in the Rock Island District. The District is currently creating an inventory of levees that may have a limited federal construction role and will seek HQUSACE interpretation of the legislative mandate to inventory "federally constructed" levees. Including all currently questionable identified levees may add approximtely 100 additional levees into the Levee Safety Program which are yet to inventoried in the National Levee Database and assessed through the Periodic inspecxtions and Levee Risk Screening.

The American Recovery and Reinvestment Act (ARRA) of 2009 provided $90 million for the Corps of Engineers to conduct Periodic Inspections of levees covered by the Levee Safety Program. Supplemental appropriations this year (beginning in FY12) are allowing additional Periodic Inspections and levee Risk Screenings.

The data gathered from these inventories will help identify risks associated with levee systems across the nation.

USACE Levee Safety Program - The program is divided into three areas: 1) Levee Inventory 2) Technical Risk Assessments 3) Revised Inspection of Completed Works Procedures.

Levee Inventory - The Corps completed an initial survey of federal program levee systems in July of 2006 and developed a national database (National Levee Database) to capture

information about each levee, including the location and last recorded inspection rating.

The initial nationwide Corps NLD survey included approximately 2,000 levees (approximately 50 levees in the District), encompassing approximately 13,000 miles, in the Corps Inspection of Completed Works (ICW) and Rehabilitation and Inspection (RIP) programs. Many of these projects were authorized by Congress for federal construction and later turned over to state and local sponsors to operate and maintain. The levees included in this initial survey are those USACE program levees which currently maintain "active" status. The Rock Island District Federal interest levees include approximately 700 miles of levees out of approximately 21,000 miles of Levees in the Rock Island District (0.0003%). Additional levee may be determined to fall under the category of federally constructed raising the district total for the 2007 legislative criteria.

Technical Risk Assessment - In the USACE LSP Risk is defined as the probability of a loading event occurrring times the probability of non performance of the systemtime the consequences (lives and property behind the levee). The USACE proceedures are to undertake levee risk screenings that will identify where higher risks may justify the more complex risk assessments. Currently the District has approximately 92 risk screenings in various stages of completion. In the coming years the Corps intends to assess all of the levees in the inventory. The assessment is expected to takean additional five years to complete and was begun in 2008. The program continues to be implemented as funds are appropriated. The Corps is currently refining an analytical methodology to evaluate the risk associated with levees in the national database. The levee risk screening it is being tested for accuracy and effectiveness with results being released to to the levee local sponsors.

Revised Inspection of Completed Works Procedures - The Corps is in the process of consolidating guidance and will incorporate risk assessments into the current Inspection of Completed Works program. The information from the technical risk assessments will clearly identify reporting requirements to local communities, states, and other federal agencies. This phase is ongoing.

Summarized Project Costs

Federal costs for PI and Risk determination of current levee inventory	$17,664,100
Non-Federal Cost	$0
Total Cost	$17,664,100
Federal Allocations through FY 2013	$9,967,000
Scheduled Federal Allocation for FY 2014	$4,350,000
Balance to Complete without additional levees	$4,350,000

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Financial information presented is for a one time periodic inspection- The cost for a continuing program is expected to occur every five years.

Additional Project Information
For additional information, please visit the Corps web-site:

http://www.mvr.usace.army.mil/Missions/FloodRiskManagement/LeveeSafetyProgram.aspx

Major Work Item (This Fiscal Year)
Routine Inspections, Periodic Inspections and Risk Screening of Levees active in the Corps Programs.

Major Work Item (Next Fiscal Year)
Routine Inspections, Periodic Inspections, Risk screening

Authority Details
National Levee Satety Act of 2007 contained in 2007 WRDA Title IX

Point of Contact: Program Manager
Phone: (309)794-5165
Email: cemvr-ec-web@usace.army.mil

Location
Rock Island District

State(s)
IA,IL,MO

Congressional District(s)
IA-1, IA-2, IA-3, IA-4, IL-11, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-2, IL-3, MN-1, MN-7, MO-6, WI-1, WI-2, WI-3, WI-5, WI-6

Status
Field surveying and database development for ~437.1 linear miles of qualifying levee systems along the Upper Mississippi River has been completed.

Description
The need to develop a comprehensive national levees database was recognized as FEMA's nation-wide digital flood insurance rate map (DFRIM) modernization program advanced. The criticality of this need was brought to the forefront by Hurricane Katrina. Subsequent Congressional action, specifically FY06 supplemental FCCE funding, provided the Corps with the resources necessary to design and build a National Levee Database (NLD). An initial levees survey instrument was fielded to quantify the magnitude of this effort. A USACE Project Development Team (PDT) was then tasked with development of the data model. PBS&J, the national surveying and database development firm, has been contracted to provide support to all aspects of the NLD project. 5 pilot Districts were designated to field test the data model, including development of standard operating procedures for data collection and populating the database. The initial development of the NLD included only those levees active in the Corps' P.L. 84-99 program. There are approximately 829.9 linear miles of levees within in the Rock Island District that qualify for NLD development.

Summarized Project Costs

Federal Cost	$1,585,600
Non-Federal Cost	$0
Total Cost	$1,585,600
Federal Allocations through FY 2014	$1,585,600
Scheduled Federal Allocation for FY 2015	$0
Balance to Complete	$0

Major Work Item (This Fiscal Year)
FY2014: No funding was available for NLD update and database maintenance in FY 13 or FY14. Through the auspices of the Levee Safety Program critical elements of the NLD is updated with Program developed work products including: Annual and Periodic inspection Reports, Executive Summaries for Levee Systems and corrections to “protected areas” behind the levees. QA/QC refinements of the database include correction of extent of sponsor ownership of levees segments as

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well as inclusion of design documentation through the Levee Screening Tool submissions.

Major Work Item (Next Fiscal Year)

FY2015: The critical elements of the NLD to Levee Safety Program will require update of the NLD with Program developed work products. The USACE is charged in WRDA 2007 with creating an inventory of federally constructed levees. The 2013 discovery of archived documents from the 1940's indicate federal involvement in construction of potentially several hundred miles of levees under the Works Progress Administration. These levees are not currently enrolled in the PL84-99 program. To fulfill the mandate contained in WRDA, USACE is researching the potential and policy implications for the NLD survey, and subsequent inspection and levee risk screening tasks of the Levee Safety Program and under what authority will the surveys be undertaken. Costs if required to conduct the NLD survey of these levees are likely to approach the FY 2012 allocation.

Authority Details

Flood Control & Coastal Emergencies (FCCE) , P.L. 84-99

Point of Contact: Project Manager
Phone: 309-794-5165
Email: cemvr-pm-web@usace.army.mil

Location
Throughout the Rock Island District

State(s)
IA,IL,MN,MO,WI

Congressional District(s)
IA-1, IA-2, IA-3, IA-4, IL-1, IL-11, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-2, IL-3, IL-4, IL-7, MN-1, MN-7, MO-6, WI-1, WI-2, WI-3, WI-5, WI-6

Status
The Rock Island District's Planning Assistance to States and Tribes (PAS&T) program has been very successful in assisting other agencies, States, counties, local communities and theSac & Fox tribe with water resources planning. A growing demand exists for engaging the District's technical expertise and planning capabilities to assist with: water supply, water quality, water conservation, storm water management, watershed analysis, wetlands evaluation/studies, dam safety and removal, floodplain management, flood risk reduction, and harbor and port studies.

Description
The Planning Assistance to States and Tribes (PAS&T) Program provides States, counties, local communities and Indian tribes with planning level assistance in addressing a water resources issues and planning needs. The studies generally involve the collection of data, data analysis, and development of water resources management plans and other tools. The program provides the sponsor with planning level detail and information needed to support water resources management decision making by the sponsor. This program is not authorized to produce detailed plans and specifications or implement construction projects.

Major Work Item (This Fiscal Year)
FY 2013: Physically complete and financially close out 2 studies: Moline-Rock Island, IL, Water Systems and Lake Koshkonong, WI Comprehensive Plan; Initiate 4 studies: Sac & Fox Tribe, IA and Moline, IL; Rock and Mississippi Riverfronts Master Planning; Iowa Watersheds Planning and; Bi-State (IA-IL) Freight Commodity Efficiency Study; continue to advance 2 studies: Horicon Marsh, WI Master Planning and Jefferson County, IA, Floodplain Work Map. Develop SOWs and partnering agreements for several new studies. Complete financial close out of completed studies.

Major Work Item (Next Fiscal Year)
FY 2014: Pending funding complete 2 studies: Sac & Fox Tribe, IA; and Jefferson County, IA Floodplain Work Map; continue work on 4 studies: Horicon Marsh, WI Master Planning and Moline, IL Mississippi and Rock Riverfronts Mater Planning; Iowa Watersheds Planning and; Bi-State (IA-IL) Freight Commodity Efficiency Study; initiate 2 new studies: Peoria Lakes Comprehensive Plan and Yeloow Creek and Pecatonica Rivers, IL Flood Risk Management

Point of Contact: Project Management Branch, Planning, Programs, and Project Management Division
Phone: (309)794-5634

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www.mvr.usace.army.mil

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Section 204 Overview

Location
United States

State(s)
IA,IL,MN,MO,WI

Congressional District(s)
IA-1, IA-2, IA-3, IA-4, IL-11, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-2, IL-3, MN-1, MN-7, MO-6, WI-1, WI-2, WI-3, WI-5, WI-6

Description
AUTHORITY AND SCOPE Section 204 of the 1992 Water Resources Development Act, as amended, provides authority for the Corps of Engineers to restore, protect, and create aquatic and wetland habitats in connection with construction or maintenance dredging of an authorized navigation project. **CASH CONTRIBUTION** The initial study and all planning costs are 100% federally funded. Design and construction costs above the "Base Plan" are cost shared 65% Federal and 35% non-Federal. The "Base Plan" represents the dredging placement work that would have occurred without the proposed 204 project. The sponsor cost share can be a contribution of cash, lands, easements, rights-of-way, relocations, and disposal areas (LERRDs). No work-in-kind is allowed. **LOCAL COOPERATION** Formal assurance of local cooperation must be furnished by a local sponsoring agency. The sponsoring agency must normally agree to the following: a. Provide without cost to the United States all LERRDs necessary for the construction and subsequent maintenance of the project; b. Maintain and operate the project after completion without cost to the United States; and, c. Assume responsibility for all costs in excess of the Federal cost of $5 million. **HOW TO REQUEST ASSISTANCE** Investigations of an environmental improvement project under Section 204 can be initiated upon receipt of a request from a prospective sponsoring agency. Section 204 project requests should be directed to Mr. Hank DeHaan.

POINT OF CONTACT

U.S. Army Engineer, Rock Island District
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois 61204-2004
(309) 794-5853
cemvr-pm-web@usace.army.mil

Point of Contact: Program Manager, Project Management Branch
Phone: NONE PROVIDED
Email: cemvr-pm-web@usace.army.mil

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Location
United States

State(s)
IA,IL,MN,MO,WI

Congressional District(s)
IA-1, IA-2, IA-3, IA-4, IL-11, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-2, IL-3, MN-1, MN-7, MO-6, WI-1, WI-2, WI-3, WI-5, WI-6

Status
Informational only.

Description
AUTHORITY AND SCOPE Section 206 of the 1996 Water Resources Development Act, as amended, provides authority for the Secretary to carry out an aquatic ecosystem restoration and protection project. Such projects will usually include manipulation of the hydrology in and along bodies of water, including wetlands and riparian areas. A project is adopted for construction only after a detailed investigation determines that the project will improve the quality of the environment and is in the best interest of the public, and clearly shows the engineering feasibility and economic justification of the improvement. Each project is limited to a Federal cost share of not more than $5 million. The Federal limitation includes all project-related costs for feasibility studies, planning, engineering, construction, and supervision and administration. **CASH CONTRIBUTION** The initial study is 100% federally funded up to $100,000. All planning costs after the first $100,000 are cost shared 50/50. Design and construction costs are cost shared 65% Federal and 35% non-Federal. The sponsor cost share can be a contribution of cash, lands, easements, rights-of-way, relocations, disposal areas (LERRDs), or work-in-kind. Work-in-kind may be provided subsequent to the execution of the Project Partnership Agreement (PPA), and the value may not exceed 80% of the non-Federal share. **LOCAL COOPERATION** Formal assurance of local cooperation in the form of a Project Cooperation Agreement (PCA) must be executed with the local sponsoring agency. The sponsoring agency just normally agree to the following: a. Provide without cost to the United States all LERRDs necessary for the construction and subsequent maintenance of the project. b. Provide without cost to the United States all necessary alterations of buildings, utilities, highways, bridges, sewers, and related and special facilities.

c. Hold and save the United States free from damages due to the construction and subsequent maintenance of the project, except damages due to the fault or negligence of theUnited States or its contractors. d. Maintain and operate the project after completion without cost to the United States. e. Prevent future encroachment, which might interfere with proper functioning of the project. f. Assume responsibility for all costs in excess of the Federal cost limitation of $5 million. g. Provide guidance and leadership in preventing unwise future development of the flood plain by use of appropriate flood plain management techniques to reduce flood losses. h. If the value of the sponsor's contribution above does not equal or exceed 35 percent of the project cost, provide cash contribution to make the

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sponsor's total contribution equal to 35 percent. **HOW TO REQUEST ASSISTANCE** Investigations of an environmental improvement project under Section 206 can be initiated upon receipt of a request from a prospective sponsoring agency. Section 206 project requests should be directed to Mr. Hank DeHaan.

POINT OF CONTACT

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cemvr-pm-web@usace.army.mil

Point of Contact: Program Manager, Project Management Branch
Phone: NONE PROVIDED
Email: cemvr-pm-web@usace.army.mil

Section 1135 Projects (Project Modifications for Improvements to the Environment) - Overview

Location
United States

State(s)
IA,IL,MN,MO,WI

Congressional District(s)
IA-1, IA-2, IA-3, IA-4, IL-11, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-2, IL-3, MN-1, MN-7, MO-6, WI-1, WI-2, WI-3, WI-5, WI-6

Description
AUTHORITY AND SCOPE Section 1135 of the 1986 Water Resources Development Act, as amended, provides authority for the Corps of Engineers to determine the need for project modifications in the structures and operations of existing Corps of Engineers projects for the purpose of improving the environment in the public interest. Measures at other locations that have been affected by the construction or operation of the project can be undertaken, if such measures do not conflict with the authorized project purposes. **CASH CONTRIBUTION** The initial study is 100% federally funded up to $100,000. All planning costs after the first $100,000 are cost shared 50/50. Design and construction costs are cost shared 75% Federal and 25% non-Federal. The sponsor cost share can be a contribution of cash, lands, easements, rights-of-way, relocations, disposal areas (LERRDs), or work-in-kind. Work-in-kind may be provided subsequent to the execution of the Project Partnership Agreement (PPA), and the value may not exceed 80% of the non-Federal share. **LOCAL COOPERATION** Formal assurance of local cooperation, a Project Cooperation Agreement (PCA), must be furnished by a local sponsoring agency. The sponsoring agency must normally agree to the following:

> a. Provide without cost to the United States all LERRDs necessary for the construction and subsequent maintenance of the project; b. Maintain and operate the project after completion without cost to the United States; Assume responsibility for all costs in excess of the Federal cost limitation of $5 million; d. "Work-in-kind" contributions from the sponsor may be negotiated; and, e. If the value of the sponsor's contribution above does not equal or exceed 25 percent of the project cost, provide cash contribution to make the sponsor's total contribution equal to 25 percent.

HOW TO REQUEST ASSISTANCE

An environmental improvement project under Section 1135 can be initiated upon receipt of a request from a prospective local sponsor. Section 1135 project requests should be directed to Mr. Hank DeHaan

POINT OF CONTACT

U.S. Army Engineer, Rock Island District
Clock Tower Building
P.O. Box 2004

Section 1135 Projects (Project Modifications for Improvements to the Environment) - Overview

Rock Island, Illinois 61204-2004
(309) 794-5853
cemvr-pm-web@usace.army.mil

Authority Details
Section 1135 of the 1986 Water Resources Development Act

Point of Contact: Program Manager, Project Management Branch
Phone: NONE PROVIDED
Email: cemvr-pm-web@usace.army.mil

PERIODIC BASIN MANAGEMENT REPORT
2014

DES MOINES RIVER BASIN

APPENDIX D

LAKE RED ROCK BACKLOG OPERATIONS AND MAINTENANCE REQUIREMENTS

US Army Corps of Engineers
Rock Island District

Information Paper
Analysis of Flood Risk Management Benefits

FY13 MVD FLOOD RISK MANAGEMENT – O&M BACKLOG PROJECTS

Contacts
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Ph. (309) 794-5386; fax. (309) 794-5710
Scott.D.Whitney@usace.army.mil

OVERVIEW
FRM PRIORITY: District: Not Ranked
DISTRICT: Rock Island District
FEM WO#: 13-35053
P2 #:
TYPE: 8.01 Studies and Surveys
PROJECT: Lake Red Rock
RISK: DSAC
REPAIR:
EST. REPAIR COST: $400,000

Damage Assessment: The current estimate of flood control benefits derived from the Red Rock Dam is based upon outdated economic and population data. The Iowa Bioprocessing Center is a 2.4 billion dollar agricultural investment 30 miles ds of the dam. The Des Moines River runs through the City of Ottumwa (25K population and 48 mile ds).

Risk and Consequence: Ottumwa has multiple industries and services (John Deere, Cargill, power plant, water works, etc) which are routinely protected by flood damage reduction effort. The Bioprocessing Center is a major agricultural enterprise and employer.

Critical Repairs: N/A

Special Considerations: N/A

Schedule: N/A

Acquisition Strategy:

US Army Corps of Engineers
Rock Island District

Information Paper

Comprehensive Iowa Regulation Plan Study – Developed

FY13 MVD FLOOD RISK MANAGEMENT – O&M BACKLOG PROJECTS

Contacts
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OVERVIEW

FRM PRIORITY: District: Not Ranked
DISTRICT: Rock Island District
FEM WO#: 13-34937
P2#:
TYPE: 8.01 Studies and Surveys
PROJECT: Lake Red Rock
RISK: DSAC
REPAIR:
EST. REPAIR COST: $1,056,000

	Lake Red Rock Release		
Flood Event Probability	Previous Value	New Value	% Change
0.02 (50-year)	50,800 cfs	68,700 cfs	35 %
0.01 (100-year)	70,300 cfs	93,600 cfs	34 %
0.005 (200-year)	94,800 cfs	137,100 cfs	44 %

Damage Assessment: Following flood of 2010, Governor of Iowa requested a regulation plan study to determine if water control procedures could be improved to handle increase in frequency of large river flows. A HEC flow frequency analysis has revealed a significant increase in river flows at 0.02 and lower probabilities.

Risk and Consequence: Failure to evaluate and adjust water control constraints per new RFF data, could result in catastrophic flood damage to Corps and private infrastructure as well as threatening lives.

Critical Repairs: N/A

Special Considerations: N/A

Schedule: N/A

Acquisition Strategy:

Last Update: 12 November 2014

US Army Corps of Engineers
Rock Island District

Information Paper

Tainter Gate Mechanical Systems and Support Platform Painting and Corrosion Control

FY13 MVD FLOOD RISK MANAGEMENT – O&M BACKLOG PROJECTS

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OVERVIEW

FRM PRIORITY: District Rank # 6
DISTRICT: Rock Island District
FEM WO#: 13-35049
P2#:
TYPE: 2.05 Dams – Outlet Structure
PROJECT: Lake Red Rock
RISK: DSAC
REPAIR: Paint Tainter Gates.
EST. REPAIR COST: $2,500,000

Damage Assessment: Change in Package. Mechanical component upgrade completed, but need contract to fully fund painting Tainter gates. Machinery and deck painted. Metal components of structure exposed to winter road salt. Surface rust has advanced in locations to where there is potential loss of section of Tainter side seal gate strapping. High potential of loss of section on Tainter gate behind strap and seal.

Risk and Consequence: Largest controlled spillway in MVD. Tainter gate function as emergency spillway will be compromised by failure of any drive train components.

Critical Repairs: Tainter gates.

Special Considerations:

Schedule: P&S are complete.

Acquisition Strategy: Construction Contract.

US Army Corps of Engineers
Rock Island District

Information Paper

Mitigate Effects of Deep Scour Hole in Des Moines River Adjacent to SEDM Concrete Levee Wall

FY13 MVD FLOOD RISK MANAGEMENT – O&M BACKLOG PROJECTS

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OVERVIEW

FRM PRIORITY: District Rank # 2
DISTRICT: Rock Island District
FEM WO #: 13-34938
P2#:
TYPE: 5.05 Levees - Floodwalls
PROJECT: Lake Red Rock
RISK: DSAC
REPAIR: Repair scour holes adjacent to concrete levee flood wall.
EST. REPAIR COST: $1,400,000
* Partially completed; re-assessing plan to complete.

Damage Assessment: Change in package. Approximately 250' of scour hole filled with rip rap. An additional 800 feet of scour to be filled. Deep channel bed scour holes have potential to undermine concrete floodwall. Same wall was undermined in flood of 1993 resulting in collapse of 250 feet of floodwall. Underseepage and monolith movement occurred in 2008 flood and was repaired.

Risk and Consequence: Concrete floodwall protects 540MW power plant and Magellan pumping hub and storage facility for 2 million barrels of petroleum products stored on site. Homeland Security rates this as a strategic point of business.

Critical Repairs: Southeast Des Moines Levee flood wall.

Special Considerations:

Schedule: P&S are complete.

Acquisition Strategy: Construction Contract.

Last Update: 12 November 2014

US Army Corps of Engineers
Rock Island District

Information Paper
Analysis of Flood Risk Management Benefits

FY13 MVD FLOOD RISK MANAGEMENT – O&M BACKLOG PROJECTS

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OVERVIEW

FRM PRIORITY: District: Not Ranked
DISTRICT: Rock Island District
FEM WO#: 13-35053
P2 #:
TYPE: 8.01 Studies and Surveys
PROJECT: Lake Red Rock
RISK: DSAC
REPAIR:
EST. REPAIR COST: $400,000

Damage Assessment: The current estimate of flood control benefits derived from the Red Rock Dam is based upon outdated economic and population data. The Iowa Bioprocessing Center is a 2.4 billion dollar agricultural investment 30 miles downstream of the dam. The Des Moines River runs through the City of Ottumwa (25,000 population and 48 mile downstream).

Risk and Consequence: Ottumwa has multiple industries and services (John Deere, Cargill, power plant, water works, etc) which are routinely protected by flood damage reduction effort. The Bioprocessing Center is a major agricultural enterprise and employer.

Critical Repairs: N/A

Special Considerations: N/A

Schedule: N/A

Acquisition Strategy:

Last Update: 12 November 2014

US Army Corps of Engineers
Rock Island District

Information Paper

Comprehensive Iowa Regulation Plan Study - Initial

FY13 MVD FLOOD RISK MANAGEMENT – O&M BACKLOG PROJECTS

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OVERVIEW

FRM PRIORITY: District Rank # 8
DISTRICT: Rock Island District
FEM WO#: 13-34936
P2#:
TYPE: 8.01 Studies and Surveys
PROJECT: Lake Red Rock
RISK: DSAC
REPAIR:
EST. REPAIR COST: $250,000

	Lake Red Rock Release		
Flood Event Probability	Previous Value	New Value	% Change
0.02 (50-year)	50,800 cfs	68,700 cfs	35 %
0.01 (100-year)	70,300 cfs	93,600 cfs	34 %
0.005 (200-year)	94,800 cfs	137,100 cfs	44 %

Damage Assessment: Following flood of 2010, Governor of Iowa requested a regulation plan study to determine if water control procedures could be improved to handle increase in frequency of large river flows. A HEC flow frequency analysis has revealed a significant increase in river flows at 0.02 and lower probabilities.

Risk and Consequence: Failure to evaluate and adjust water control constraints per new RFF data, could result in catastrophic flood damage to Corps and private infrastructure as well as threatening lives.

Critical Repairs: N/A

Special Considerations: N/A

Schedule: N/A

Acquisition Strategy:

US Army Corps of Engineers
Rock Island District

Information Paper
SEDM/SWPH Concrete Wall and Apron

FY13 MVD FLOOD RISK MANAGEMENT – O&M BACKLOG PROJECTS

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OVERVIEW

FRM PRIORITY: District: Not Ranked
DISTRICT: Rock Island District
FEM WO#:13-34939
P2#:
TYPE: 5.05 Levees - Floodwalls
PROJECT: Lake Red Rock
RISK: DSAC
REPAIR: Repair concrete wall and apron.
EST. REPAIR COST: $350,000

Damage Assessment: Concrete apron at base of 1100' concrete flood wall has severe spalling. Rebar is exposed. Apron takes the brunt of Des Moines River flow in a constricted portion of channel. Spalls need repair.

Risk and Consequence: Failure of apron may result in undermining and failure of flood wall. Flood wall protects 540 MW power plant and Magellen pumping hub and storage facility for 2 million barrels of petroleum products stored on site. Homeland Security rates this as a strategic point of business.

Critical Repairs: Southeast Des Moines Levee flood wall.

Special Considerations:

Schedule: P&S needed.

Acquisition Strategy: Construction Contract.

Last Update: 12 November 2014

US Army Corps of Engineers
Rock Island District

Information Paper

SEDM/SWPH Levee Crown Improvements

FY13 MVD FLOOD RISK MANAGEMENT – O&M BACKLOG PROJECTS

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OVERVIEW

FRM PRIORITY: District: Not Ranked
DISTRICT: Rock Island District
FEM WO#: 13-35048
P2#:
TYPE: 5.05 Levees - Floodwalls
PROJECT: Lake Red Rock
RISK: DSAC
REPAIR: Raise height of levee.
EST. REPAIR COST: $100,000

Damage Assessment: Six mile corps owned/operated levee has lost 3 feet of freeboard due to construction of a state highway across Des Moines river flood plain. Gravel surface applied to 7000' of levee would greatly assist in future flood fight within prime area of vulnerability revealed during 2008 flood. Road will also assist with routine OM of levee.

Risk and Consequence: Levee protects over one billion dollars worth of area business for City of Des Moines, including power generation, sewage treatment and petroleum storage. Over topping of levee could over whelm pump station capacity.

Critical Repairs: Southeast Des Moines Levee.

Special Considerations:

Schedule:

Acquisition Strategy: