US Army Corps
of Engineers ®
Rock Island District

Saylorville Lake Master Plan

May 2014 Draft

PREFACE

The original Master Plan for Saylorville Lake was approved in September of 1984 and was intended to serve as a guide for the orderly and coordinated development and management of all lands and water resources of the project. It presented data on the existing conditions, anticipated recreational use, type of facilities needed to service the anticipated use, and an estimate of future requirements. Over time development along the adjacent shoreline became popular because of the narrow width of public lands to the water's edge.

This updated Master Plan presents an inventory of land resources, how they are zoned, modernizing existing park facilities, an analysis of resource use, anticipated influences on project operation and management, and an evaluation of existing and future needs required to provide a balanced management plan to enhance and preserve the resource.

The format utilized for this plan was outlined in ER/EP 1130-2-550 which is the regulation and pamphlet that deals with Recreation Operations and Maintenance Guidance and Procedures. These are different than the original Master Plan format which was a design memorandum. Saylorville Lake's original master plan can be found in design memorandum 6B.

ACRONYMS

ATV	All Terrain Vehicle
BMP	Best Management Practice
BO	Biological Opinion
CFS	Cubic Feet per Second
EAB	Emerald Ash Borer
EA	Environmental Assessment
EIS	Environmental Impact Statement
ER	Engineer Regulation
EP	Engineer Pamphlet
ESA	Endangered Species Act
GIS	Geographic Information Systems
HPMP	Historic Properties Management Plan
IADNR	Iowa Department of Natural Resources
ISOP	Interpretive Services and Outreach Program
MP	Master Plan
MSL	Mean Sea Level
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
OMBIL	Operations and Maintenance Business Link
OMP	Operational Management Plan
PA	Programmatic Agreement
PCCB	Polk County Conservation Board
PSA	Project Site Area
RV	Recreation Vehicle
SCORP	State Comprehensive Outdoor Recreation Plan
SMP	Shoreline Management Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WDU	Waterfowl Development Unit
WRDA	Water Resources Development Act

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CHAPTER 1
Introduction

1.01. Project Authorization

In 1958, Congress authorized construction of Saylorville Lake on the Des Moines River about 11 miles upstream from the City of Des Moines through the Flood Control Act of 3 July 1958 (Public Law 85-500, 85th Congress, 1st Session) (*see Appendix D*). The drainage area above the dam is 5,823 square miles. The principal purpose of the Saylorville Lake Project is to furnish needed additional storage to supplement the flood control capacity of the downstream Red Rock Dam and to provide flood protection to the City of Des Moines. The permanent conservation pool forms a lake with storage of about 73,600 acre-feet and extends some 24 miles upstream from the dam. The flood storage pool has storage of 641,000 acre feet and extends 54 miles upstream of the dam. The development of recreation facilities at Saylorville was initiated at the direction of Section 4 of the Flood Control Act of 22 December 1944(*see Appendix D*). See Map Appendix 1- Saylorville Lake Project Area.

1.02. Project Purposes

The Saylorville Lake project is a unit of the comprehensive plan for flood control in the upper Mississippi River Basin. Although originally authorized for flood control and for low-flow augmentation, the project is considered a multi-purpose project with additional missions of recreation, fish and wildlife management and water supply storage.

1.02.1 Flood Risk Management (FRM) – The purpose of the Corps' flood risk management reduction mission is to reduce the threat to life and reduce property damages from riverine and coastal flooding. Corps' flood and coastal storm damage reduction projects include structural and non-structural measures. The Corps is an integral part of Nation's efforts to manage flood plains, and maintain and operate aging water resources infrastructure. Execution of the flood risk management program serves to integrate and synchronize programs and activities within the Corps and with counterpart activities of the Department of Homeland Security, Federal Emergency Management Agency (FEMA), other Federal agencies, state organizations and regional and local agencies. Saylorville Lake's FRM structures include the main dam, spillway, Big Creek Remedial Works (diversion dam, diversion channel, terminal spillway, barrier dam and pump station).

1.02.2 Water Supply – The Corps of Engineers has provided water supply storage space in its multi-purpose reservoirs for many years. Based on current data, approximately 9.8 million acre feet of municipal and industrial (M&I) water supply storage space are included in 135 reservoir projects in 25 states. As one of the nation's largest water management agencies, the US Army Corps of Engineers plays an important role in ensuring that Americans have enough water to meet their needs. The Water Supply program currently is capable of providing about 6.5 billion gallons of water per day to allow State and local interests to supply cost-effective water to homes, municipalities' and businesses nationwide. A water supply contract with the State of Iowa has been in place at Saylorville Lake since 1982. This contract allows the State of

Iowa to utilize 18.86% of the usable storage space (estimated to be 14,900 acre feet) in the lake between elevations 812.0 National Geodetic Vertical Datum (NGVD) and 836.0 NGVD. The state has sub-allocated that water to the Des Moines Water Works and Iowa Southern Utilities (Alliant Energy). There are no direct water intake structures in Saylorville Lake, but water is withdrawn from releases made through the Saylorville Dam.

1.02.3 Low Flow Augmentation – Low flow augmentation (water quality) releases from the outlet works are intended to be met 90% of the time as defined in the post authorization report. Water quality objectives are met by maintaining a minimum flow of 200 cfs from the dam to the confluence with the Raccoon River, 270 cfs from the confluence to the sewage treatment plant (Des Moines River mile 199), and 300 cfs below that point.

1.02.4 Fish and Wildlife Management
Numerous Federal laws and executive orders establish National policy for and Federal interest in the protection, restoration, conservation, and management of environmental resources. These provisions include compliance requirements and emphasize protecting environmental quality. They also endorse Federal efforts to advance environmental goals, and a number of these general statements declare it national policy that full consideration is to be given to the opportunities that projects afford to ecological resources. Recent water resources authorizations have enhanced opportunities for Corps involvement in studies and projects to specifically address objectives related to the restoration of ecological resources and ecosystem management. Specific authorities for new individual studies and projects to restore ecological resources have also been provided in legislation. Examples of legislation that broadly supports Federal involvement in the restoration and protection of ecological resources include:

a. Federal Water Project Recreation Act of 1965, as amended.(*see Appendix D*).

b. The National Environmental Policy Act of 1969, as amended. (*see Appendix D*).

c. Water Resource Development Acts of 1986, 1988, 1990, 1992, 1996, 1999, 2000 and 2007. (*see Appendix D*).

d. Coastal Wetlands Planning, Protection and Restoration Act of 1990 (Title III of P. L. 101-646). (*see Appendix D*).

The US Army Corps of Engineers is responsible for the maintenance, restoration, enhancement of natural resource on the flood control projects it owns and manages. A wide variety of habitat types are managed on the 25,515 acres of land and water managed by the Corps, 14,015 acres by the Iowa DNR and 1,769 acres by the Boone and Polk County Conservation Boards. Almost 15,784 acres of the project are leased to the DNR and CCB to facilitate stewardship and expand opportunities. Waterfowl management has been a priority at Saylorville Lake. Every year 50-70,000 migrating

waterfowl use the lake along with large proportions of the nation's water birds such as Gulls, Terns, Pelicans etc. Open water in the tail waters of the dam also attract dozens of Bald Eagles each winter—a major tourism attraction and foundation for the Lakes annual Bald Eagle Days celebration.

1.02.5 Recreation

The Corps is the nation's leading Federal provider of outdoor recreation opportunities. As the host about 370 million visitors a year, the Corps plays a major role in meeting the outdoor recreation needs of Americans. Corps recreation projects contribute economically and socially to the communities in which they are located, providing a natural resource setting for visitors to reap the benefits to their physical, mental and spiritual health from engaging in outdoor activities. The US Army Corps of Engineers is the steward of the lands and waters at Corps water resources projects. Its Natural Resources Management Mission is to manage and conserve those natural resources, consistent with ecosystem management principles, while providing quality outdoor public recreation experiences, to serve the needs of present and future generations. In all aspects of natural and cultural resources management, the Corps promotes awareness of environmental values and adheres to sound environmental stewardship, protection, and compliance and restoration practices. The Corps manages for long-term public access to, and use of, the natural resources in cooperation with other Federal, State, and local agencies as well as the private sector. The Corps integrates the management of diverse natural resources components such as fish, wildlife, forests, wetlands, grasslands, soil, air, and water with the provision of public recreation opportunities. The Corps conserves natural resources and provides public recreation opportunities that contribute to the quality of American life".

At Saylorville Lake a wide variety of facilities including campgrounds, day use and picnic areas, beaches, boat ramps, visitor center and trails are provided by the Corps of Engineers and lessees'. A significant focus of recreation at the lake has been providing facilities for water based recreational activities such as boating, water skiing etc. The Corps leases land for a marina and along with partners provides several boat ramps around the lake.

1.03. Purpose and Scope of Master Plan

The Master Plan provides direction for project development and use. This Master Plan includes guidance for appropriate uses, development, enhancement, protection, and conservation of the natural, cultural, and man-made resources at the Saylorville Lake project. It is a vital tool for the responsible stewardship of project resources for the benefit of present and future generations. A Master Plan is programmatic and identifies conceptual types and levels of activities, not designs, project sites, or estimated costs. All actions by the Corps and the agencies and individuals granted leases to Corps lands (out-grantees) must be consistent with the Master Plan. Therefore, it must be kept current in order to provide effective guidance in Corps decision-making. The most recent Saylorville Lake Master Plan was approved in 1984.

The Master Plan is based on responses to regional and local needs, resource capabilities and suitability and expressed public interests consistent with authorized

project purposes and pertinent legislation and regulations. It provides a District-level policy consistent with national objectives and other State and regional goals and programs. The plan is distinct from the project-level implementation emphasis of the Operational Management Plan (OMP). Policies in the Master Plan are guidelines implemented through provisions of the OMP, specific Design Memorandums, and the Annual Management Plans. This Master Plan supersedes the previous Saylorville Lake Master Plans (project wide MP and Corridor MP), except for any specific requirements in previously signed cost share agreements.

The Master Plan includes:
A comprehensive description of the project resources (Chapter 2);
A discussion of factors influencing resource management and development (Chapter 3);
Resource objectives and identification of existing uses and needed development (Chapter 3);
Land classifications (Chapter 4);
A resource plan for developing and managing project resources to meet the needs of the public and wildlife over a wide range of reservoir elevations (Chapter 5);
Special topics specific to Saylorville Lake and the surrounding area (Chapter 6)
A synopsis of public involvement and input (Chapter 7); and
The environmental analysis for the Integrated EA (Chapter 7).

The proposed land classifications, recreation development, and management practices in the updated Master Plan apply to Corps public lands at Saylorville Lake. The IA DNR Fee Title Lands managed as the Saylorville Unit are included in the Master Plan.

The Corps has the mission of managing, conserving, and improving environmental, cultural, and archeological resources at Corps reservoir projects while providing quality public outdoor recreation experiences to serve the needs of present and future generations. To ensure consideration of natural and cultural resources throughout the Master Plan, the Programmatic Agreement (PA) and a programmatic Environmental Assessment (EA) are integrated into the Master Plan. The functions of the PA and EA in the Master Plan in regard to subsequent proposals for implementation of development or management activities included in the Master Plan are provided in more detail below.

Process
Preparation of this Master Plan was a cooperative effort involving the Corps; tribal representatives; Federal, State, and local governmental agencies; non-governmental organizations; and members of the general public. Listening sessions and scoping comments from government officials and the general public were important for identifying issues that needed to be addressed in the Master Plan. Details regarding the public involvement efforts for the Master Plan are provided in Chapter 7.

The Corps' six-step planning process (*see Appendix F*) was used in developing the Master Plan. Public input was important in identifying significant resources; problems and opportunities; planning objectives and constraints; important features of the project area; and public needs, desires, and concerns.

These factors were taken into account in forming the proposed resource objectives and development needs for the Master Plan and the alternatives evaluated in the EA. The alternatives were assessed in the EA in regard to 1) meeting project purposes and expressed public needs and desires, 2) minimizing adverse environmental impacts, and 3) consistency with relevant laws and regulations and regional needs and plans. The EA recommends a Preferred Alternative (Chapter 7) that provides the most appropriate level of stewardship, management activities, and types and levels of recreation development and use for the Saylorville Lake project. For any conceptual development or management activity proposed in the updated Master Plan, the EA identifies potentially significant impacts on the human or natural environment and indicates how these impacts can be avoided or minimized.

This updated Master Plan/Integrated EA was prepared in accordance with the following guidance:

Engineer Pamphlet (EP) 1130-2-550, Project Operations – Recreation Operations and Maintenance Guidance and Procedures, 15 November 1996. (*see Appendix F*).

Engineer Regulation (ER) 1130-2-550, Project Operations – Recreation Operations and Maintenance Guidance and Procedures, 15 November 1996 (with changes 1 October 1999, 1 March 2002, 15 August 2002, 30 August 2008, 30 March 2009, 30 January 2013, and 30 September 2013). (*see Appendix F*).

Engineer Manual (EM) 1110-1-400, Engineering and Design – Recreation Facility and Customer Service Standards, 1 November 2004. (*see Appendix F*).

ER 200-1-5, Environmental Quality – Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers Environmental Operating Principles (EOP) and Doctrine, 30 October 2003. (*see Appendix F*).

ER 200-2-2, Environmental Quality – Procedures for Implementing the National Environmental Policy Act (NEPA), 4 March 1988. (*see Appendix F*).

ER 1105-2-100, Planning Guidance, 22 April 2000 (with Appendices D and G revised June 2004 and Appendix F revised January 2006). (*see Appendix F*).

1.04. Description of Project and Watershed

Saylorville Lake is located in Polk County on the Des Moines River in central Iowa, approximately 214 miles upstream from its confluence with the Mississippi River. The conservation pool (the Lake) impounded by the dam is within Polk County. The flood pool extends into Dallas and Boone Counties. Major communities proximate to the project are: Des Moines just 10 miles to the south; and surrounded by the growing communities of Ankeny, Johnston and Polk City.

The Des Moines River Watershed basin extends across central Iowa to the southeastern part of Iowa. See Map Appendix 2- Saylorville Lake Watershed. The Des Moines River drains about 98 percent of its 14,802 square miles in this basin. Des Moines, Ottumwa, and Fort Dodge are the largest population centers. This basin contains 9.4 million acres of land and 42,000 acres of water surface. Population growth and economic development are basic factors in determining future resource needs. Urbanization continues at a faster rate in this area than the rest of the state. In a five year period from 2006 to 2011 approximately 14,000 acres were urbanized. The population in the Greater Des Moines area alone has grown from 323,600 to nearly 558,700 between 1960 and 2010. (State of Region Greater Des Moines, The Tomorrow Plan)(*see Appendix G*) and future problems and needs include water supply, water quality, flood damage, limited recreational opportunities, and preservation of the environment. Water resource development in the basin includes Saylorville Lake, Lake Red Rock, several local flood protection facilities, and agricultural levees.

1.05. Pertinent Project Information

The following tables provide pertinent information regarding existing water storage/levels.

Construction	
Began:	1965
Completed:	1977
Cost	
Federal est.	$130,100,000
Reservoir @ Normal Pool	
Length	24 miles
Area	5,520 acres
Storage	73,600 acre feet
Reservoir @ Flood Storage Pool	
Length	54 miles
Area	16,100 acres
Storage	567,000 acre feet
Water Surface Elevation	
Normal Pool	836’ National Geodetic Vertical Datum
	(11.5% total storage capacity)
Flood Storage Pool	884’ NGVD29 (Top of Concrete Spillway)
	890’ NGVD29 (Top of Pneumatic Crest Gates)

Dam	
Type:	Earth Filled Embankment
Length	6,750 feet
Height	105 feet
Top Width	44 feet
Spillway Elevation	884’ NGVD29 (Top of Concrete Spillway)
	890’ NGVD29 (Top of Pneumatic Crest Gates)
Top of Dam	915.5’ NGVD29
Damages Prevented	
1975-2010	$183,665,200* (estimated)
2010	$1,732,900* (estimated)
2008	$1,653,200* (estimated)
1993	$113,466,800* (estimated)
	* (not indexed for 2010 price levels)
Average Normal Inflow	
June	6,000 cubic feet per second (cfs)
July	4,200 cfs
Highest Inflows Recorded	60,600 cfs (June 10, 2008)
Previous Highest Inflows	47,100 cfs (July 11, 1993)
Average Normal Outflow	
June	7,200 cfs
July	6,100 cfs
Highest Outflows Recorded	47,000 cfs (June 12, 2008)
Previous Highest Outflows Recorded	44,500 cfs (July 18, 1993)
Record High Pool Elevations	
July 11, 1993	892.03’ NGVD29
June 12, 2008	891.03’ NGVD29
June 22, 1984	889.25’ NGVD29
July 1, 2010	889.15’ NGVD29
June 11, 1991	888.99’ NGVD29
April 27, 1993	886.17’ NGVD29
April 6, 1979	883.59’ NGVD29
Over Spillway / # Days	
July 1, 2010	7 Days

June 10, 2008	12 Days
June 18, 1993	42 Days
April 24, 1993	7 Days
June 6, 1991	9 Days
June 18, 1984	15 Days
Recreation	
Number of Recreation Areas	25
Beaches	2
Camping Areas	4
Available Campsites	517
Marinas	1
Boat Ramps	7
Total Boat Ramp Launch Lanes	15
Miles of trails	29
Group Picnic Shelters	24
Visitation	
2013 Visitation	1,408,814
2012 Visitation	1,274,000
2011 Visitation	1,246,000
2010 Visitation	1,156,000

*An acre-foot is one acre of water one foot deep. One acre foot is equivalent to 325,851.4 U.S. gallons.
*Cubic feet per second (cfs). The rate of flow past a given point, measured in cubic feet per second. One cubic foot of water equals about 7.5 gallons and weighs 62 pounds.

CHAPTER 2
Project Setting and Factors Influencing Management and Development

2.01. Description of Reservoir

The Saylorville Lake Project consists of a lake impounded by the main dam, outlet works, spillway, Big Creek Remedial Works, the downstream floodway corridor, and public use lands and facilities. The Diversion Dam and Spillway were put into operation in 1972 and the Saylorville Reservoir and Barrier Dams in 1977. Approximately 27,400 acres of land was acquired for the reservoir, downstream floodway corridor and recreation areas. Initially 23,829 acres in fee title and 1,400 acres in flowage easements were acquired to an elevation of 892.0 on public park and non-profit organization lands. The principal features of the Saylorville Project are:

Main Dam, Outlet and Spillway

Embankment

The earth fill structure has a crest length of 6,750 feet and a maximum height above streambed of about 125 feet. The maximum base width is 1,125 feet, and the top width is 44 feet. The crest of the dam is at elevation 915.5 feet. A 2-foot thick riprap layer has been placed below elevation 825.0 feet, and the slope above this elevation is sod with 1 foot of topsoil. The embankment is built of compacted impervious materials. A 4-foot thick horizontal sand drain culminates into a 10-foot thick riser at the centerline of the dam. Total freeboard above maximum design water surface elevation of 908 feet is 7.5 feet. A public access road crosses the top of the dam.

Outlet Works

The outlet works consist of a gate tower, a 22-foot, diameter circular conduit 500-feet long, and a stilling basin. Access to the operating floor of the gate tower is available via a high level service bridge. A low level service bridge provides access to the trash rack and recording gate manhole. Outflow from the dam is controlled by three 8-foot by 19-foot service gates (tractor gates with individual hoisting units) located in the gate tower. In addition to the service gates, a single emergency gate is provided just upstream of the service gates to be used during an emergency or during periodic maintenance and inspection. All four gates have identical controls for raising, lowering, and setting the gates. The emergency gate is operated by a traveling hoist mounted on rails in the operating floor. A jib crane is mounted on the traveling hoist. Slots at the upstream edge of the lower level service bridge are for bulkheads to dewater any outlet passage. There is one bulkhead in the storage yard. Outflow capacity of the conduit at elevation 890.0 is 21,000 cfs. Water regulation manual requires a minimum 200 cfs release.

Spillway

The original spillway design consists of an uncontrolled concrete ogee weir flanked with gravity bulkhead sections, 200 feet of paved chute, and about 5,000 feet of unlined trapezoidal chute. The crest of the ogee section is 430 feet long and is at an elevation of 884.0 feet. The slope of the concrete chute is 0.01, terminating at an elevation of 870.0 feet, beyond which the unlined trapezoidal chute is constructed in varying slopes. Currently, the spillway discharge is controlled by pneumatic crest gates that are

attached to and span the entire crest of an ogee weir. With the gates deflated, the minimum crest of the gate is elevation 884 feet. When the gates are inflated the maximum crest is elevation 890 feet. The area downstream of the spillway has eroded several times (1984, 1991, 1993, 2008, and 2010) and was stabilized after each event. In 2010, a concrete cutoff wall was constructed with roller-compacted concrete cap to reduce head-cutting effects near NW 78th Avenue in the unlined spillway channel.

Saylorville Lake

Saylorville Lake is located in parts of Polk, Dallas, and Boone Counties in Iowa. At full flood control pool elevation 890.0, the lake extends 54 miles above the dam and has a water surface area of 16,100 acres. The original conservation pool, elevation 833.0 has been raised to elevation 836.0 for water supply storage and now extends 24 miles upstream and provides a 5,520-acre lake. The 1% chance exceedance elevation is at pool elevation 892.10. Varying operating constraints, including seasonal requirements and stage at downstream control points, for downstream discharge exist for seasonal conditions (16 December through 20 April and 21 April through 15 December). A fall wildlife management pool elevation between elevations 836 and 840 is initiated when hydraulic conditions permit.

Big Creek Remedial Works

Big Creek Remedial Works provides flood protection for parts of Polk City, Iowa, and adjacent Big Creek Valley which are below the full flood pool level. This flood protection system consists of: (1) A barrier dam near the mouth of Big Creek to exclude reservoir waters from Polk City.(2) A pumping station, ponding and gravity outlet to remove interior drainage from the protected area between Big Creek Diversion Dam and the Barrier Dam. (3) An upstream diversion dam across Big Creek diverting Big Creek through a channel to a terminal dam that allows Big Creek to empty into Saylorville reservoir. An 885 acre lake behind the diversion dam has a relatively stable pool elevation of 920.0 controlled by the Terminal Dam Spillway that is unaffected by the Saylorville Lake stages. The diversion dam outlet is set to release a minimum of 3 cfs into Big Creek. The flood protection works for the Big Creek valley are operated and maintained by the Corps of Engineers. The Iowa Department of Natural Resources manages the adjacent lands and Big Creek Lake.

Downstream Floodway Corridor

The downstream floodway corridor extends about 9 miles downstream of the dam and includes approximately 2,500 acres of project lands to convey the increased maximum regulated reservoir flood release rate from 8,000 cfs to 12,000 or 16,000 cfs, depending on the season. Another purpose was to control the land use to prevent recurrent damage from target releases. The elevations outside of the real property rights acquired are flooded when large discharges are passed through the dam or over the spillway. When the corridor was purchased in the mid 1970's the 1 percent exceedance discharge was 21,000 cfs. Recreation development in the floodway includes federal and cost-shared facilities and lands leased by the Iowa Department of Natural Resources, Polk County Conservation Board for lands leased by other agencies, and the City of Des Moines. Project facilities affected include Bob Shelter and Cottonwood Recreation

Areas just below the dam, Sycamore Access, Prospect Park and various trails, parking lots, access roads, and boat ramps. These areas are vulnerable to inundation by high flows resulting from large discharges over the spillway or through a breach in the dam.

Park and Recreation Facilities
The Saylorville Lake project has recreation facilities developed and operated by federal, state, and county agencies and by private organizations. Public use areas associated with the project include a visitor center, nature education area, trails, day use Recreation areas, campgrounds, and boat launching facilities. Some of these areas are immediately downstream of the dam.

2.02. Hydrology and Groundwater

Saylorville Dam is on the Des Moines River, about 214 river miles above its confluence with the Mississippi River and about 11 river miles north of the city of Des Moines. Major tributaries of Saylorville Lake Project are the Des Moines River and Boone River located in Polk, Boone, and Dallas counties. Saylorville Lake is part of a general comprehensive Upper Mississippi River Basin plan for flood control on the Des Moines and Mississippi Rivers in conjunction with the Des Moines Local Flood Protection Project (LFPP) and the Lake Red Rock project. Based upon the flow record 1991 through 2010 the average annual runoff of the Des Moines River at Saylorville, Iowa, is about 3,046,000 acre-feet. The Des Moines River watershed above the dam consists of 5,823 square miles which begins above Jackson Minnesota, in southwestern Minnesota. The total flood storage area of the project is 641,000 acre feet.

The surface bedrock beneath the entire reservoir area is Pennsylvanian. The pre-glacial surface was apparently considerably dissected. These rocks are chiefly shale of various texture, hardness and color. Sandstone and limestone also occur, and occasional beds of coal are found. In the upper reaches of the reservoir, thick sandstones occur in vertical outcrops in the valley walls, such as in the scenic Ledges State Park, a few miles downstream from Boone, Iowa. Borings at the dam site indicate that the bedding of the strata is remarkably horizontal. The soil associations of the area are Clarion-Nicollet-Webster, Hayden-Lester, and Waukegan-Dickinson-Dorchester. The project experiences frequent erosion problems associated with frequent flooding events and issues from adjacent farm land resulting in increased sedimentation that has created mud flats above the Mile Long Bridge.

2.03. Sedimentation and Shoreline Erosion

The rate of sedimentation within the reservoir is influenced by regional and site specific conditions, including annual and seasonal precipitation patterns and associated storm water runoff, as well as river bank erosion and agricultural runoff. Sedimentation is unavoidable for reservoirs like Saylorville Lake due to steep banks, frequent high water events, and wind and wave action. Accounting for sedimentation was included in the design and management of the reservoir; however sedimentation rates have been higher than anticipated. The results of a sedimentation survey of Saylorville Lake conducted in 2007 provide an analysis of the water storage capacity for the water supply contract with the State of Iowa. That data shows that some storage capacity set

aside for water supply has been lost due to sedimentation in the reservoir. In 1982 it was projected that 14,900 acre feet or 18.86 percent of the storage between elevations 812 and 836 would be available for water supply at the end of 25 years. The survey conducted in 2007 indicates that 12,300 acre-feet of storage is now available within that elevation range. Sedimentation will continue to be an area of concern for recreation on Saylorville Lake. The large complex of mudflats provides excellent wildlife habitat for migrating waterfowl but impacts the amount of surface acres available for recreation boating. See map appendix 3 – Saylorville Lake Mudflats.

Shoreline erosion is a problem along the perimeter of Saylorville Lake. Areas with long wave fetch zones and highly erodible soils are particularly susceptible. Some areas have been protected by utilizing rip-rap to stabilize the banks, primarily around the dams, Visitor Center observation deck, and boat ramps. Erosion is also a problem on the river corridor below Saylorville Dam. There are many areas along the river corridor that have been addressed, including some Saylorville recreation areas. The Neal Smith Trail had to be rerouted because erosion was undercutting sections of the paved multi-use trail. Des Moines Water Works has utilized rip-rap to stabilize sections of the river bank in order to protect water intake structures. Adjacent land owners have also gained permissions from the US Army Corps of Engineers to place rip-rap along the river banks to prevent the erosion from spreading onto their property. Normal outflows, wind and wave action and high outflows from flood events will continue to impact the stability of the Des Moines River banks below the Saylorville Dam and future stabilization may be necessary to protect infrastructure.

2.04. Topography, Geology, and Soils

TOPOGRAPHY:

Saylorville Lake is located in central Iowa, within Polk, Dallas, and Boone Counties. The Saylorville Dam and Big Creek Remedial Works Complex of dams, spillways, diversion channel and pump station are all located in Polk County, Iowa. Saylorville is one of the largest lakes in the State of Iowa with 5,520 surface acres of water at elevation 836 NGVD. The lake lies in the physiographic region of the interior planes, central lowlands province. The reservoir is complemented by a combination of broad flood plains, moderately rolling hills, and upland areas.

GEOLOGY:

The geology of the Saylorville Reservoir area is primarily defined by a number of glacial events involving the erosion and depositing of material. The bedrock of the entire reservoir area is sedimentary rock of the Cherokee Group of the Des Moines Series. Floodwaters flowing through the Saylorville Dam Spillway Discharge Channel over several different events have exposed the shale with inter-bedded strata of siltstone, sandstone, limestone, and coal. When these shales are exposed to weathering, it contributes to their high erodability and wave action degradation and may create unstable slopes wherever it occurs.

SOILS:
There are three major soil associations In the main pool area of Saylorville Lake (Polk County): (1) The Clarion-Nicollet-Webster association, (2) the Hayden-Lester association, and (3) the Waukegan-Dickinson-Dorhcester association. Soil mapping is available showing the various soil types, parent material, slope, drainage and fertility characteristics. This information is used to determine resource protection needs, historic biotic occurrence, stability, fertility and drainage characteristics for various uses.

2.05. Resource Analysis
Fish and Wildlife Resources: Saylorville Lake provides a significant fish and wildlife resource both for the state of Iowa and regionally for the Midwest. Constructed on Iowa's largest interior stream, Saylorville Lake represents the only major extension of timber (forest) into North Central Iowa. Well known for its importance as a migratory corridor, Saylorville was deemed globally significant by the American Bird Conservancy in 1998. Iowa ranks 49th in public land ownership and significant tracts of wildlife habitat are uncommon. 26,000 acres of the Saylorville project include 7,000 acres of water, 15,000 acres of forest cover and approximately 4,000 acres in grasslands, crop fields and other open habitat. Large habitat complexes like this project have allowed for the successful reintroduction of once extirpated species from Central Iowa. These include river otter, bobcat, osprey and bald eagle. All of these species now have reproducing populations and stable or growing numbers of individuals. While 12,807 acres of project lands are out granted to the IADNR for wildlife management, almost all lands on the remainder of the project have high wildlife value.

As part of the master plan process, an extensive Multi-species Inventory and Monitoring Program (MSIM) inventory was done on 18 different habitat types identified throughout the project (*see Appendix G*). Originally produced by the U.S. Forest Service and then modified to meet Iowa need, this extensive inventory system was initiated to help us identify our significant resources. Our data collected applied all available protocols and represents the most intensive area study done on a single Iowa watershed. This data will provide a valuable resource to the existing MSIM statewide data base due to the extensiveness of the inventory protocols.

Nineteen species of mammals, 177 species of birds, 20 species of herptiles, 34 species of butterflies, 43 species of dragonfly, 17 species of mussels, were detected during the survey period. Several new county records were identified for central Iowa. Many recordings of Species of Greatest Conservation Need as identified in the Iowa Wildlife Action Plan. These SGCN species include 2 mammals, 40 birds, 3 herptiles, and 1 dragonfly. 5 Federally endangered species are identified as present or potentially occurring on project lands not including Bald Eagle which is now a regular nester. Multiple state endangered species occur or potentially occur on federal lands as identified by the IADNR in their management program. Where identified state listed species and species of greatest conservation need are included in sensitive area determinations.

Pressures on the resource are very significant. Rapid urbanization and resulting land use and vegetative cover changes pose the largest threat. The Tomorrow Plan produced in 2013 by the Greater Des Moines Metropolitan Planning Organization projects extensive growth in the greater metro area with primarily residential urbanization occurring adjacent to project lands. Much of this adjacent land is either in agricultural production or forest cover. All of the problems associated with urbanization will impact wildlife populations and dynamics.

Invasive species continue to pose significant threats to project resources. Forty seven invasive species have been identified on project lands. Many species pose relatively minor risk to altering native systems while others have the potential to greatly impact. Emerald Ash Borer will have tremendous consequences both in actual costs to manage and forest change. A few species including Serecea Lespedeza, Autumn Olive and Crown Vetch cause serious threat and expensive control measures on an annual basis.

Visitation of over one million people a year also has an impact on projects natural resources. Recreation from boating to hiking, geo-caching to mushroom hunting all pose some degree of disturbance to wildlife and natural resources. Human disturbance can be a limiting factor and dense visitation like we experience will have impact much difficult to quantify.

2.06. Cultural Resources

Saylorville Lake is the result of impounding water in a portion of the Des Moines River valley a few miles north of the City of Des Moines, Iowa. The Des Moines River is a deeply entrenched valley located on a till plain known as the Des Moines Lobe that was left after the retreat of the southernmost extension of the Wisconsinian glacial advance approximately 13,000 - 14, 000 before present (B.P.) times. Immediately after the river valley formed was a very active time for valley formation. This was also not a time when people were likely to be in the vicinity due to the relatively recent retreat of the glacial ice.

There is a small amount of evidence that the Des Moines Valley was occupied during the Paleo-Indian period (12,000 – 9,500 B.P.). This is a period believed to be a time of highly mobile groups of hunter –gathers who did not have large permanent occupations. Based on the projected populations and life ways of the time the small amount of evidence could have several explanations. People may not have been present in large numbers; the still active river may have destroyed some of the site locations; or, it could simply be that the sites have not been identified to date. The following period of occupation is known as the Archaic Period (9500 – 2350 B.P.). The Archaic is a long period of time and is often split into Early, Middle and Late sub periods. The Archaic Period represents a time of transition from the highly mobile Paleo-Indian Period to one of settled base camps where groups would meet seasonally and disperse to extraction camps to collect particular resources. Gradually populations began to grow as people began to focusing on exploiting particular plant and animal resources in an area over this long period and the settlement pattern changed to settled villages that interacted with one another exchanging ideas and resources.

The Woodland Period (2350 – 850 B.P.) follows the Archaic and at first the only distinguishing characteristic is the development of ceramics. Once again this long period is generally split into Early, Middle and Late sub periods. As stated above the Early Woodland is lifestyle is very similar to the Late Archaic. Populations continue to increase and the focus of subsistence continues to move from a focus on hunting to plant exploitation. By the Middle Woodland period (2050 – 1550 B.P.) society has become quite complex with interaction spheres bringing in raw materials and finished goods from as far away as the Gulf Coast and the Rocky Mountains. Beginning in the Middle Woodland corn is also found in small amounts for the first time. By the Late Woodland (1550 – 850 B.P.), corn has become a staple food in the diet. Populations have increased substantially and societies have become fairly complex leading to warfare between villages and groups.

The Mississippian Period (850 – European contact) follows the Late Woodland. In some areas society is very complex with people living in what are probably city states like Cahokia near St. Louis, Missouri and the Aztalan site in Wisconsin. In the Des Moines River valley the time period is generally referred to as the Oneota period and probably represents the next level of social aggregation of villages into the next level of social complexity over the Late Woodland lifestyle when most villages were likely operated independently of one another. It appears that during the later portion of the Mississippian or Oneota period the region may have been slowly abandoned. None of the sites from the later portion of the period have "trade goods" that would show evidence of contact with Europeans.

By the mid 1700's the Des Moines valley was occupied by the Sauk & Fox Tribes. Through a series of treaties the land was eventually transferred to the United States. Euro-American settlement greatly increased in the area after Iowa gained statehood in 1846. A fair number of both individual structures and whole towns from the historic period are present on property managed by the US Army Corps of Engineers at the Saylorville Lake Project.

2.07. Recreation Facilities, Activities and Needs

Zones of Influence – The primary area of influence encompasses the Greater Des Moines Metropolitan Area. This region has been utilized as the basis in summarizing the population characteristics of Saylorville Lake. The Greater Des Moines Metropolitan Area in which the lake is located within had a total population of 479,298 in the 2010 census. This region saw a 17% growth in population since the 2000 census. The area has seen an increased pattern of urbanization and accounts for 18.4% of Iowa's total population according to the 2010 census (*see Appendix G*).

Visitation Profile – Saylorville Lake has been found to be one of the most popular recreation locations in Iowa, primarily due to its location in the Des Moines Metro area. The majority of the visitors to Saylorville Lake come from within a 50 mile radius of the metro area. Saylorville Lake provides an "island of green", centered in the middle of suburban sprawl that surrounds the lake. The diverse population consist of campers

who utilize campgrounds around the lake, adjacent residents who live year round around the lake, hunters who utilize Wildlife Management Areas, disc golfers who utilize a nationally known disc golf course, marina customers who utilize the marina on the lake, and day users who picnic, hike, bike and cross country ski. Saylorville Lake is the primary location for water related recreation in Central Iowa. Saylorville provides the public a location for boating, sailing, kayaking, paddle boarding, fishing, and swimming. On average, Saylorville Lake entertains approximately 1.2 million visits per year. The peak visitation at Saylorville Lake occurs between April through September and accounts for 80% of the total visitation.

Recreation Analysis - Saylorville Lake's recreation areas, trails, and water add to the attractiveness, vitality, and appreciation for the outdoors. These areas provide a sense of place and allow a growing population to enjoy outdoor recreation opportunities in an ever growing suburban landscape. While visitation in recreation areas remains strong there are indications that there is new demand for upgraded facilities and non-traditional recreation opportunities. Recreation has evolved into a modernized and high tech activity since the construction of Saylorville's recreation areas. For example, today sewer hookups, 50 amp electrical hookups, concrete sites, and wireless internet are becoming the standard for campers. Technology has changed the habits of modern camping and campgrounds are vital to Saylorville Lake. The popularity of cabins, all season shelters, natural surfaced trails, dog parks, educational centers, and archery ranges have also become apparent in other federal, state, county, and municipal parks in the region. These are examples of unmet recreation demands at Saylorville Lake. The majority of Iowans (59%) believe there are about the right amount of outdoor recreation opportunities available and Saylorville is a large contributor to those opportunities (*see Appendix G*). However, facilities and recreation demands have become more upscale than the facilities typically found in USACE operated parks. There is also an increasing demand for water related recreation. Increased adjacent development and intensive agriculture has not only increased sedimentation into the lake, but has also fueled nutrient loading. These environmental impacts have the potential to make Saylorville Lake water conditions unsustainable and undesirable for water related recreation. The challenge for the future will be improving the water quality and infrastructure to meet the recreation demand.

Trails- Central Iowa has developed a trail system that has become a point of pride. Saylorville Lake has become the backbone of this complex trail network that links multiple communities and counties throughout the Des Moines metro area and beyond. Saylorville Lake offers two National Recreation Trails and several small multipurpose trails. The intertwining of these trail types provide a unique opportunity and enables visitors to create their own special experience.

The most popular trail at Saylorville Lake is the multi-use Neal Smith Trail. The Neal Smith Trail is a 26 mile paved National Recreation Trail that extends from Des Moines through Saylorville Lake to Big Creek State Park. The Neal Smith Trail allows for year round outdoor activities including hiking, biking, running, rollerblading, snow shoeing, and cross country skiing. The trail has become a focal point for connectivity to adjacent

trail systems. Many trail connections are on the horizon to create a regional trail system. The Polk County Conservation Board recently constructed the Oralabor Gateway Trail that connects the Neal Smith Trail to the north end of the Gay Lea Wilson Trail in the City of Ankeny. The City of Johnston currently has plans to construct a trail along Beaver Drive on the west side of Saylorville Lake that would connect to the Neal Smith Trail at the Sycamore Access area. The Polk County Conservation Board also has plans to connect the High Trestle Trail in northern Polk County to the northern reaches of the Neal Smith Trail in Big Creek State Park. The Corps has also considered creating a trail across the Saylorville Lake Dam that would connect the Neal Smith Trail and the Beaver Drive Trail. This trail would not only serve as a trail connection, but would also provide a safe route for pedestrians and bicyclists across the Saylorville Dam. However this trail would need extensive planning and review due to the location on top of a Flood Risk Management structure. Connections are just one aspect for future management of the trail. Several improvements are also proposed to create a high quality experience. Some improvements include health fitness stations, new trail alignments through recreation areas, an additional trail spur, and a cyclo-camping site.

Saylorville Lake also provides a unique water trail that connects a diverse group of both rural and urban trail users. The Des Moines River Water Trail is a 20 mile National Recreation Trail that runs through the heart of Saylorville Lake and features several accesses to recreation areas, campgrounds, and towns and cities. Interest in the Des Moines River Water Trail has provided a promotional feature for a healthy community along the Des Moines River Basin. The addition of water access points is one area that should be promoted with the increased popularity of the water trail.

In addition to the two National Recreation Trails, Saylorville Lake exhibits trail opportunities for everyone. The Prairie Flower Hiking Trail and the Visitor Center Interpretive Trail have become popular natural surfaced trails for a growing population of trail users. Additional natural surfaced nature trails will be needed to enhance and expand hiking opportunities and to create connectivity between recreation areas.

An abandoned hiking trail along the west side of the Saylorville Lake project has spurred interest for revitalization among several interest groups and the public. The interest in the revitalization of this trail has spawned a need to assess the current conditions of the trail and the feasibility of rehabilitating the existing remnants to meet the public's needs while maintaining a trail that is sustainable and safe.

The Corps also provides trails on outgranted lands. The Sycamore Trail is a 6 mile natural surfaced mountain bike and hiking trail that runs along the bottomlands of the Des Moines River Valley. The trail is outgranted to the Polk County Conservation Board but has an agreement set up with the Central Iowa Trails Association for the management of the trail. The Jester Park Equestrian Center provides eleven equestrian trails for riders to enjoy. These trails are also outgranted to the Polk County Conservation Board.

The importance of trails has grown in not only the region, but nationally and is predicted to grow exponentially in the future. With the growth of trails the Corps will have to integrate trail planning in the future to meet the demands of the public.

Project Site Areas

Saylorville Lake Project has gained in popularity with the outdoor recreation community over the last 35 years and has become a popular destination for the public within Greater Des Moines and nationwide. Greater Des Moines's 2010 census population data was 479,298 persons. Population growth over the past 20 years has significantly outpaced the rest of the state at a 1.1% average annual growth rate, compared to 0.2% for the rest of Iowa. Urban sprawl is growing and will encompass Saylorville Lake Project and is mentioned throughout this master plan. The increase in population density and changing demographics looking to experience outdoor recreation indicates our campgrounds and day use recreation facilities have to evolve to meet the needs of the visiting public. Saylorville Lake Project's managed project site areas are listed below with plans for future recreation area improvements.

Acorn Valley Campground

Acorn Valley campground currently provides 88 campsites of which 66 are tent campsites with no electricity and 28 RV gravel campsites with electricity. This equates to approximately a 2 to 1 ratio in the campground. The campground contains several amenities for campers including shower buildings, playgrounds, a fishing pond and a sewage dump station. Providing a viable tent camping experience is valuable and needed, but the balance in this campground is weighted too much toward the tent camping experience. Based on 2013 NRRS (Reserve America) facility utilization reports, the RV electrical sites usage was 3 times the rate of the tent non electrical camping site usage. Based on these utilization records this area is overdeveloped and underutilized for tent camping. Increased popularity, size and technological advancements in modern motor homes and travel trailers were not anticipated when the US Army Corps of Engineers built this campground in 1982. Restructuring camping options by increasing RV campsites, adding cabins and reducing the number of underutilized tent campsites will bring renewed interest and improve utilization to this recreation area. Additional improvements to this campground include the addition of a group tent camping area, Wi-Fi, concrete campsites, upgrading electrical and adding an amphitheater. The objective for this campground is to change the structure while maintaining and improving existing infrastructure. See map appendix 4 – Acorn Valley Campground.

Walnut Ridge Day Use Area

Walnut Ridge Recreation Area provides 3 Group picnic shelters and an 18 hole Disc Golf Course. This area contains several amenities including comfort station buildings, playgrounds and picnic sites. This day use area is slightly under utilized for picnic activity but has high utilization regarding disc golf participation. Several high profile tournaments have taken place at this premier disc golf site. The course is maintained in partnership with the Des Moines Disk Golf Association. Additional improvements include

an enclosed picnic shelter or large picnic shelter and connection to the City of Johnston's Beaver Drive trail system. The objective for this day use area is to maintain and improve existing infrastructure. See map appendix 5 – Walnut Ridge Recreation Area.

Lakeview Day Use Area

Lakeview Recreation Area provides 1 group picnic shelter, 1 comfort station with a boat ramp. This area has a fee collection building for the boat ramp containing 4 launch lanes with 2 courtesy docks accompanied by 231 parking spaces. This area provides parking and access to the southern entry point for the West Side Trail system. This day use area is underutilized for day use picnic activity, but a highly utilized boat ramp. Adding a parking lot adjacent to the group shelter area would improve access to the shelter and increase usage of this picnic shelter. An automated pay station for collection of boat ramp fees would upgrade and improve the fee collection process. The addition of a fish cleaning station would help boost the appeal of this ramp for fishermen. Additional improvements include removable vault restrooms and redesigning the entrance for the City of Johnston's Beaver Drive trail system. The objective for this day use area is to make some slight modifications while maintaining and improving existing infrastructure. See map appendix 7 – Lakeview Recreation Area

Lakeview High Water Day Use Area

Lakeview High Water is a boat ramp area providing 2 launch lanes with 1 courtesy dock accompanied by 24 car and 89 boat trailer parking spaces. This area is slightly underutilized unless the lake is experiencing high water in which case it is 1 of 2 boat ramps available for use. Lakeview High Water is also the site of an overlook deck which provides a view of wetlands during normal to low lake levels and views of the auxiliary spillway during high water events. Additional improvements include removable vault restrooms. The objective for this day use area is to maintain and improve existing infrastructure.

Bob Shetler Campground

Bob Shetler Campground provides 30 amp electric for 63 RV campsites. The campground amenities include a sewage dump station, shower and restroom buildings, 2 playgrounds, and close access to Bob Shetler day use area (see below). Objectives for this area are to maintain and improve existing infrastructure but also to add to that infrastructure. The addition of an amphitheater, or presentation area would greatly improve the ability to give effective educational programs and programs tailored specifically for the users of Bob Shetler. Another proposed change would be the addition of a small comfort station on the east side of the river for campsites 12-20. Additional improvements would be more concrete campsites, upgrade of electric service, WiFi, and conversion of the small west campground to a second volunteer village. See map appendix 7 – Bob Shetler Recreation Area – Main Campground and appendix 8 Bob Shetler Recreation Area – West Campground and Day Use.

Bob Shetler Day Use Area
Bob Shetler Day Use provides the public with 2 group picnic shelters, 11 single family picnic sites, a playground, fish cleaning station, access to the Neal Smith Trail, a gravel boat ramp to ponds adjacent to the river, and access to the spillway and river below the dam. Bob Shetler Day Use is heavily utilized throughout the recreation season and into the winter as it is a popular fishing and bird watching site. Maintenance and improvement of the existing infrastructure is a main objective but the development of new facilities is also important in this area to help meet the growing demands of the public. Proposed additions to enhance the visitor experience are timber thinning and trail building on the west side of the spillway, wildlife boardwalk and viewing area at the back ponding area which is off the Neal Smith Trail, installation of a fishing pier at the ponding area, upgrade of fish cleaning station, new vault toilets, free archery range, and small single family group picnic shelters. See map appendix 8 – Bob Shetler Recreation Area – West Campground and Day Use and appendix 9 Bob Shetler Recreation Area – Picnic.

Cottonwood Day Use Area
Cottonwood Day Use Area provides 9 Group picnic shelters, 32 Single Family Picnic Shelters, 9 Volleyballs courts, 4 playgrounds, 6 restroom buildings, a universally accessible fishing pier, a fish cleaning station, access to the river, and access to the Neal Smith Trail. This area is utilized heavily during the recreation season, with frequent special events taking place, such as Johnston Public Schools Field Day. Objectives for this area are to maintain and improve the existing infrastructure, but additional recommendations are to remove the fish cleaning station and a portion of the volleyball courts due to infrequent use and the maintenance associated with them. Additions to the current infrastructure are the construction of small single family group picnic shelters with roadside car lots and construction of a Super Shelter. The proposed location for the Super Shelter is the current Picnic Shelter 7 location. This location is preferred over others because there is adequate space for a larger shelter and parking lot, and this location already has a playground and restroom facilities. See map appendix 10 – Cottonwood Recreation Area.

Visitor Center Recreation Area
Visitor Center Recreation Area provides 1 interpretive building with a restroom facility, interpretive hiking trail, overlook deck, butterfly garden and adjacent picnic sites. This day use area is slightly underutilized for picnic activity but is highly utilized for information and educational outreach. Cyclists and birders appear to be the special-interest groups most likely to use the visitor center. Birders use the facility as a meeting/gathering place while cyclists often use it as a rest/water stop and an important launching point for the Neal Smith Trail system. The Visitor Center interpretive exhibits and theater underwent a major re-design in 2010 which upgraded and modernized the informational experience for visitors. Desired additions to enhance the visitor experience would include an outdoor playscape for children, an outdoor amphitheater to improve educational outreach and development of a hiking trail through the timber, linking the butterfly garden and the Visitor Center. This is an important area to maintain

and improve existing infrastructure with some slight additions to meet modern needs for communication and educational outreach. See Map appendix 11 – Visitor Center.

Cherry Glen Campground

Cherry Glen Campground is part of the Cherry Glen Recreation Area, which is made up of the campground, picnic area, and boat ramp. The campground boasts 121 electric RV sites which were upgraded to 50 amp service in 2012. The campground also has 4 restroom and shower facilities, playground, and a sewage dump station. Maintenance and improvement of the facility is a main objective but the area was developed in 1970s when the current demands of recreation were not recognized. Thus additions of a pedestrian trail from the campground to the boat ramp and a theater or presentation area to increase the ability for education and outreach are recommended. If possible redesigning the entrance to the campground is also needed, as today's large RV's do not have enough room to park and register without blocking the Cherry Glen Recreation Area intersection. Other additions include concrete campsites, re-designing or removing poor sites, installing a small playground near site 110, and WiFi availability. See map appendix 12 – Cherry Glen Campground.

Cherry Glen Day Use Area

The Cherry Glen Recreation Area is one of the most heavily used recreation areas at Saylorville Lake because it hosts 3 recreation opportunities in one area. Cherry Glen Day use encompasses the picnic area and boat ramp. The picnic area had 6 group picnic shelters, 32 single family picnic sites, 2 playgrounds, and 4 restroom buildings. The Neal Smith Trail runs directly through the picnic area, as such the picnic area is a popular starting/stopping point or rest area for many trail users. In the winter a sledding hill is graded behind picnic shelter 6 to provide a designated spot for sledding. The objectives for this area are to maintain and improve the existing infrastructure.

The boat ramp is divided into 2 sections, an upper lot which is still usable at high water elevations, and a larger lower lot and an adjacent gravel lot, which are located near the normal pool elevation of 836. The upper ramp has 2 launch lanes, 1 courtesy dock, and a restroom building. The lower ramp has 4 launch lanes and 2 courtesy docks for boaters and the small gravel lot has 2 gravel launch lanes to accommodate personal watercraft (PWC). Total parking for this area is 3 specified vehicle spots at the restroom building and 368 trailer spaces. A modification to this area is to install an automated pay station and remove the fee booth at the boat ramp. The addition of a fish cleaning station at the upper boat ramp and removable vault restrooms at the lower boat are proposed. Placing additional docks on the shoreline is also proposed to alleviate congestion on busy days. See map appendix 13 – Cherry Glen Recreation Area – Picnic and appendix 14 Cherry Glen Recreation Area – Boat Ramp

Oak Grove Day Use Area

Oak Grove Day Use provides the public with 2 Group picnic shelters, 1 Beach, 35 Single Family Picnic Sites, 1 comfort station and 1 playground. This area has a fee collection building at the entrance with 481 parking spaces at the beach and 65 parking spaces at the picnic area. Oak Grove Day Use has low utilization for the picnic area but moderate beach use. The beach area is susceptible to frequent flooding due to the

elevation of the beach area. Plans to decrease selected timber within the day use area will allow for a more open feel giving visitors more opportunities to recreate. Currently the park is overstocked and needs selective thinning not only to improve timber health but meet the needs of the visiting public. Adding shaded picnic shelters would boost the appeal of beach, but shelters must be removable due to frequent flooding of this area. An automated pay station for collection of beach fees would upgrade and improve the fee collection process. Additional improvements to this area include the addition of a wind surfer access, volleyball court, fishing access, picnic tables and grills, new water fountains and rinse showers with a paved sidewalk access and removable vault restrooms The objective for this day use area is to make slight improvements and maintain existing infrastructure. See map appendix 15 – Oak Grove Recreation Area – Beach and appendix 16 – Oak Grove Recreation Area – Picnic.

Prairie Flower Campground

Prairie Flower Campground is one of the more heavily utilized recreation areas at Saylorville Lake. The campground is made up of two sections; a North campground and a South campground. The north campground is made up of 10 wagon circle style electric group camping loops and one loop of traditional style single electric RV sites, while the South campground is made up of 4 camping loops of traditional style single electric RV sites. Overall Prairie Flower Campground offers a total of 245 RV electric sites for use. Both halves of the campground offer shower and restroom facilities, playgrounds, a sewage dump station, and a hiking trail. The hiking trail winds it ways through varying habitat types and offers a scenic tour through the back of the campground. Trail users may hike just a section of the trail that is closest to their RV site or can walk from one end of the campground to the other. Maintenance and improvement of existing infrastructure is an important objective in this recreation area, but several additions are proposed. The construction of a theater space for educational and outreach programs, timber thinning along the hiking trail and adjacent to the pond, expansion of the hiking trail into the prairie area, making one group loop designated for bicyclists, moving the Neal Smith Trail off the shared roadway, construction of a dump station for the North campground, upgrade of electric service, concrete campsites and WiFi are proposed. See map appendix 17 Prairie Flower Campground – North and appendix 18 - Prairie Flower Campground – South.

Sandpiper Day Use Area

Sandpiper Recreation Area provides 1 large group picnic shelter, 1 comfort station, a boat ramp, a beach and 13 full hookup campsites (Volunteer Village) for volunteers/contractors. Additional amenities include a playground, baseball field, a sand volleyball court, a horseshoe pit, 2 picnic sites, vault restrooms and changing station with showers. This recreation area has a fee collection building at the entrance. The boat ramp contains 2 launch lanes with 1 courtesy dock accompanied by 135 trailer parking spaces. Five Parking lots, in this recreation area provide 443 car parking spaces. The day use area receives moderate day use picnic activity with high use of the large group shelter. The boat ramp has moderate to high usage and the beach has low to moderate usage, both of which are dependent on lake levels due to frequent flooding. Possible improvements to enhance and assist the volunteer program would

be to bring WiFi capability, concrete the campsites, asphalt the roadway throughout Volunteer Village, and create a berm to protect campsites from high water. The addition of a fish cleaning station would help boost the appeal of this ramp for sportsmen. Adding shaded picnic shelters would boost the appeal of the beach, but shelters must be removable due to frequent flooding of this area. An automated pay station for collection of beach/boat ramp fees would upgrade and improve the fee collection process. Additional improvements to this area include removal of the changing house at the beach, adding new removable vault restrooms, small removable shade shelters with picnic tables and grills, finish LED parking lot lighting, and redesign the service road and parking lot on roadway access to the fish kettle. The objective for this day use area is to make improvements while maintaining and improving existing infrastructure. See map appendix 19 – Sandpiper Recreation Area – Beach and Boat Ramp and appendix 20 – Sandpiper Recreation Area – Picnic.

Saylorville Dam
The Saylorville Dam spans just over one mile long and provides 4 overlook parking locations adjacent to the roadway. Each of these overlook locations have informational signage, providing interpretive messages for the public. The dam overlooks offer a popular scenic view of Saylorville Lake and the Des Moines River Valley. Additional improvements to this area include a hiking/biking trail adjacent to the south side of the roadway. The objective for this area is to improve and maintain the existing infrastructure.

2.08. Real Estate

The acquisition policy for the Saylorville Lake Project was the purchasing of a fee area encompassing all lands at or below elevation 892.0 feet, m.s.l., which is two feet above the flood pool elevation. Additional lands were purchased above this elevation to support project missions including recreation, fisheries and wildlife management. The total fee title real estate interest at Saylorville Lake is 26,000 acres. The total flowage easement interest at Saylorville Lake is 1,478 acres.

The majority of fee title land is leased to other state and county agencies to manage for wildlife or parks and recreation. The largest single lessee is the Iowa Department of Natural Resources, with over 12,800 acres designated for wildlife management and another 1,200 acres for parks and recreation. Other lessee's include Polk County Conservation, Boone County Conservation, and the City of Des Moines.

CHAPTER 3
Resource Objectives

3.01. Resource Objectives

Resource considerations at Saylorville Lake exist primarily due to user demands on the project. Multiple user types have interests in the project lands, recreation facilities, and waters, and such demands regularly create conflicts. Saylorville Lake is obligated to manage these resources for the overall interest of the general public and not just for a select group of individuals. It is the responsibility of the lake staff and the agency to attempt to provide an environmentally sound balance of these demands today and for future generations. Impacts on the environment will be assessed during the decision making process prior to any change to management plans, strategies or policies. The following objectives are the priorities for consideration when determining management goals and development activities.

NATURAL RESOURCE MANAGEMENT

- Manage and conserve natural resources consistent with ecosystem management principles
- In all aspects of natural and cultural resources management, the Corps promotes awareness of environmental values and adheres to sound environmental stewardship, protection, compliance and restoration processes.
- Promote stable ecosystems through active restorations thus preserving diversity of species for future generations
- Identify and protect remnant ecosystems that were historically present on project lands in the once great tall grass prairie biome
- Protect and maintain the Ding Darling and Des Moines River Greenbelts
- The Corps integrates the management of diverse natural resource components as fish, wildlife, forests, wetlands, grasslands, soil, air and water with the provision of public recreation opportunities

RECREATION

- Provide outdoor public recreation experiences to serve the needs of present and future generations
- Manage the existing natural resource and recreational facilities in compliance with all pertinent laws, regulations and policies.
- The recreation experience will be enhanced by promoting and protecting water quality, promoting non-consumptive use to protect the resource from overuse, maintaining facilities in a safe attractive condition and avoiding private and

exclusive use

- Continue to develop and maintain partnerships, volunteers and community support through programs, personal contacts and the overall outreach program

- Provide recreation with wide access opportunities that contribute to the quality of life for all ages, ethnic backgrounds and those with physical limitations

Implementation of these objectives is based upon time, manpower, and budget. The objectives provided in this chapter are established to provide high levels of stewardship to USACE managed lands and resources while still providing a high level of public service. These objectives will be pursued through the use of a variety of mechanisms such as: Assistance from volunteer efforts, hired labor, contract labor, permit conditions, remediation, and special lease conditions. It is the intention of Saylorville Lake to provide a realistic approach to the management of all resources.

3.02 Shoreline Management in regards to dock permits

Saylorville Lake was constructed after December 13, 1974. In accordance with Title 36 Code of Federal Regulations 327.30 (*see Appendix F*) and ER 1130-2-406 (*see Appendix F*) private shoreline uses are not allowed on projects where project construction was initiated after December 13, 1974 or on projects where no private exclusive shoreline uses existed as of that date, except to honor written commitments made prior to that date.

Current and future management of Saylorville lands and shoreline will be to protect and preserve the existing shoreline from erosion and overuse through natural resource management and cooperation with partners while avoiding private and exclusive use.

3.03 Wildlife and Fisheries Management

Wildlife and Fisheries management is an important component of our resource management program. 12,807 acres of the project lands are designated to wildlife management and managed by the Iowa Department of Natural Resources. Close coordination and partnering occurs between USACE staff and the IADNR to reach management objectives. Hunting and fishing are strong components of our outdoor recreation use. Wildlife management is targeted primarily at White-tailed Deer, Eastern Wild Turkey, waterfowl and mourning doves. Additionally small game hunting and upland bird are managed species but limited by suitable habitat. Non-game wildlife species benefit from habitat provided project wide. Recent Multiple Species Inventory and Monitoring (MSIM) (*see Appendix G*) program data supports the assumption that wildlife and fisheries resources are diverse across a broad spectrum of habitats found on project lands. High value wildlife lands are not limited to managed wildlife lands as discovered in recent MSIM findings. Due to intensive agriculture conversion and lack of public lands in this state, large projects like Saylorville (26,000 acres) play an important role in maintaining fish and wildlife resources in Iowa. The Iowa Wildlife Action Plan document identifies the importance of Saylorville for wildlife. This statewide management plan implemented in 2005 addresses all wildlife resources and identified

needs to protect diversity. Saylorville is located within the prairie pothole joint venture region within the tall grass prairie biome. Saylorville's most significant contribution to wildlife at the state level would be its value as a prominent wildlife migratory corridor. Statewide richness of species including avian, vertebrates, mammals, aquatics, amphibian and reptile data provided by Iowa Gap Analysis exhibits strong values for diversity in Central Iowa. Wildlife value provided by Saylorville is also recognized within the document by The Nature Conservancy, Iowa Audubon, American Bird Conservancy and the Heritage Foundation. All of these organizations identify the important habitat contribution Saylorville Lake as brings to Iowa wildlife resources. Fisheries and other aquatic resources are managed by the IADNR Fisheries Bureau. Work is primarily aimed at maintaining a sport fishery for anglers. Primary management species include Walleye, Wiper and Northern Pike which require stocking due to limited or no reproduction in the lake. Largemouth Bass, Channel and Flathead Catfish, White Bass, Crappie and other pan fish reproduce naturally and only require supplemental stocking when necessary. A commercial fishing license is used to help control overpopulations of Carp and Buffalo by using net capture in the fall. Large quantities of Buffalo are removed annually through this method. Controlling invasive species is a concern for water resource managers. Aquatic plants have difficulty establishing in the reservoir and pose a smaller threat but Zebra Mussel, Big Head Carp and Silver Carp if introduced would cause large detriment to fisheries and the aquatic resource in general.

3.04 Recreation

Recreation falls within two categories and can be identified as either land or water-based recreation. Management objectives for each type vary depending on the location, safety hazards, and the intensity of use. General objectives are provided in this master plan as to the work necessary to meet the public's needs for land and/or water-based recreation, while maintaining stewardship to the resource. Implementation of these objectives will be dependent upon budget, manpower, time, and mother-nature.

Land-based recreation activities include camping, picnicking, biking, hiking, disc golf, shore fishing, hunting, bird and wildlife watching, cross country skiing, sledding, snowmobiling, horseback riding, geo-caching, sightseeing, etc. on or adjacent to USACE land. Land-based recreation areas include campgrounds, picnic areas, overlooks, boat ramps, land access points, and wildlife management areas. Facility types typically found within these recreation areas include campsites, picnic shelters, picnic sites, playgrounds, disc golf courses, equestrian trails, sand volleyball courts, horseshoe pits, ball fields, hunting areas, and hard and soft trails. These recreation areas are managed by several entities, which include USACE, Iowa Department of Natural Resources, County Conservation Boards, and city governments. Land-based recreation objectives will be to continue modernizing and rehabilitating existing recreation areas and providing a justified level of service.

Water-based recreation activities occurring on USACE water managed areas include pleasure boating, fishing, waterfowl hunting, sailing, swimming, canoeing, kayaking, water skiing and tubing, wind surfing, parasailing, paddle boarding, etc. The majority of water-based recreation is managed by USACE with assistance from the Iowa

Department of Natural Resources and Coast Guard Auxiliary. The management objective is to ensure public safety, while providing recreation opportunities on the water. This objective will involve promoting water safety, studying recreation carrying capacity vs. current use patterns, zoning requirements for no-wake or restricted areas, and areas to remain open for public recreation.

Outdoor recreation provides physical, emotional and social benefits to individuals by keeping them healthy, reducing stress and re-energizing the body and mind, and bringing friends and families together. The various recreation activities provide an opportunity for a variety of social events at Saylorville Lake.

Recreation goals should include providing a variety of safe high quality recreation opportunities while utilizing practices that conserve and protect the resource. When planning goals, it is important to be aware of what other agencies and groups in the area are planning for projects to avoid unnecessary duplication. Future goals should also include planning for recreation activities that are low maintenance and are beginner friendly. Lastly, goals and strategies need to be developed to increase the participation of younger generations in outdoor recreation at Saylorville Lake.

The expansion of walking and hiking trails should be a primary recreation goal. Walking, hiking, and mountain biking on soft trails are near the top for most popular outdoor recreation activities in Iowa. Saylorville Lake lacks a trail that meets these needs sufficiently. The development of a soft trail on the west side of Saylorville Lake would satisfy this goal. The addition of water access points for water trails should also be promoted with the increased popularity of kayaking and canoeing. A water access point above the Mile Long Bridge near the area of the mud flats would be welcomed by water users and provide an area to water recreate away from power boaters.

Interpretive programming should be primarily targeted toward youth to increase their interest in the outdoors. By providing programs to children at an early age, they will develop an appreciation for the outdoors and outdoor activities. Programs that allow children to participate generally make the most positive impact with kids. The programs need to be entertaining, while maintaining an educational aspect. New technology can also be incorporated into the programs. Partnering with other agencies and utilizing volunteers should be encouraged to assist with presentations and will expand the outreach of the program.

Saylorville has developed three areas of concern that are impacting recreation quality. These concerns include aging facilities and infrastructure, accelerating sedimentation of the lake above the Mile Long Bridge, and general water quality. Most of Saylorville's Corps managed campgrounds and day use facilities are now over 30 years old and maintenance is an increasing concern. Modernization and repairs to the facilities, amenities, and infrastructure are on-going and will continue to occur as budgets allow.

Potential upgrades and repairs have been indentified include, but are not limited to cabins at Acorn Valley Campground, an enclosed shelter at Walnut Ridge, dump station

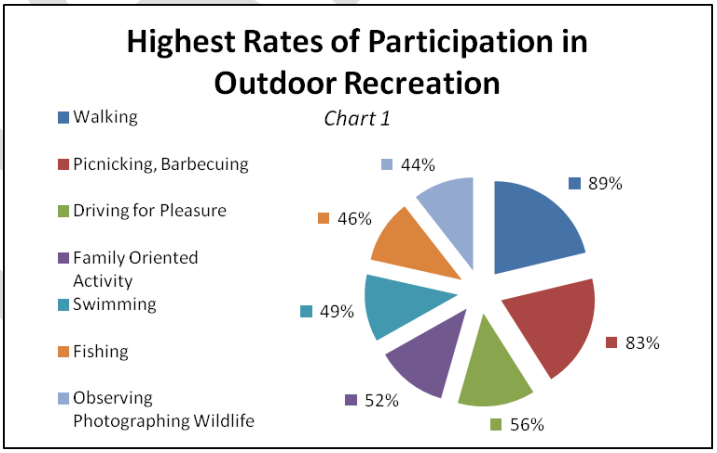
at Prairie Flower North Campground, fish cleaning station and vault toilet at Bob Shetler, replacement of wiring, transformers and electrical pedestals, additional 50 amp electrical service, water and sewer hookups to campsites, ADA compliant and natural playscapes, Visitor Center outdoor modernization, concrete camp sites, fee booth and restroom remodeling, electronic pay stations, electronic campground entrance gates and replacement of picnic tables, fire rings, picnic pedestal grills and shelter grills.

Boating and swimming are both negatively impacted by water quality concerns. Blue green algae blooms and elevated levels of E. coli levels are common water quality issues that hinder the use of the lake. Partnering with others to improve the lake's water quality should be explored. The mud flats that exist above the Mile Long Bridge due to intensive sedimentation continue to increase in size and have created hazardous situations and safety issues for boaters that run aground of these flats. Rescuing individuals from stranded boats that have run aground has proved to be extremely challenging and time consuming. Boating equipment is continually making technological advances and Saylorville Lake staff should continue to research new equipment that would meet these specific needs.

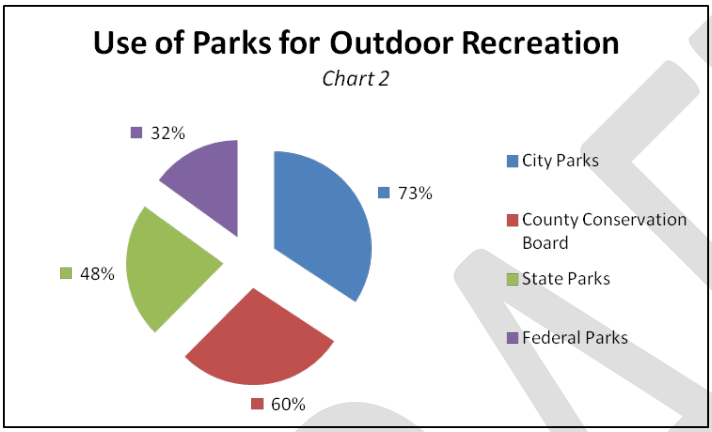
Future funding may make accomplishing these goals and solving these problem issues challenging, requiring new creative means. Partnering and technological innovations should be expanded and explored as methods to attain these goals.

3.05 State Comprehensive Outdoor Recreation Plan

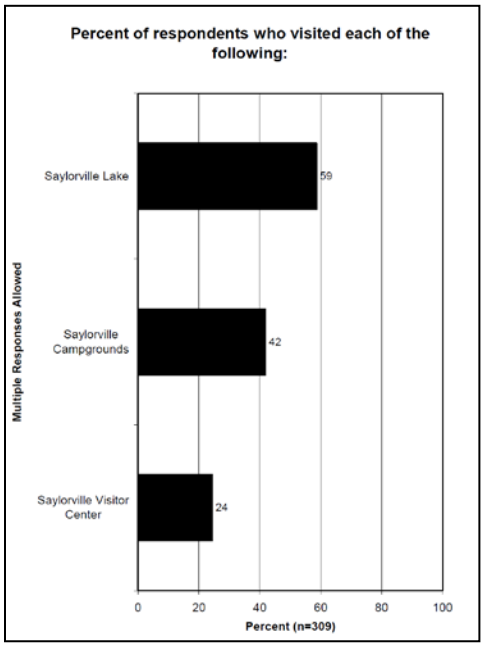
The 2012 Iowa State Comprehensive Outdoor Recreation Plan (SCORP) (*see Appendix G*) surveyed Iowans to determine participation in and opinions on outdoor recreation in Iowa. Demographics for respondents were 51% Female to 49% Male with a median age of 48 years old. 92% were white or Caucasian. Level of education completed indicated the majority had a high school degree 24% or some college or trade school, no degree 24% with 22% having a Bachelor's degree. Household incomes at $40,000-$59,000 led with 17% with $20,000-$39,999 and $60,000-$79,000 at 13% each. The median number of people living in a household was 3. 83% of respondents indicated no member of their household had a physical disability. Respondents considered their place of residence a small city 38%, a large city or urban area 19%, rural area on farm or ranch 15% and rural area not on a farm or ranch 15%. Iowans surveyed indicated that the highest rates of participation in outdoor recreation are, in this order: walking, picnicking or barbecuing, driving for pleasure, family oriented activities other than picnicking, swimming, fishing, and observing feeding or photographing wildlife within 1 mile of home. (*See chart 1)* Respondents felt the top



motivation for interest in outdoor recreation is social and not related to the facilities or opportunities and indicated having more free time (29%) would encourage them to participate more. Respondents that were asked if there were any outdoor recreational facilities or areas they would like added to their communities (35%) stated yes. They commonly named paved bike trails (19%), lakes/swimming/water access (17%), and dog exercise areas/dog parks (16%). Iowans with children in their household (53%) indicated their children have participated in outdoor activities at a multiplex field. Respondents also indicated that within the next 2 years (59%) they will sign up for participation at multiplex fields. Constraints and factors that detract from participation in outdoor recreation showed that a majority of respondents (66%) indicated that nothing took away from the quality of or frequency in which they did the activity, other than weather. A social issue largely beyond the influence of local recreation agencies was the most common reason for lack of participation. Of respondents, (15%) indicated not having enough opportunities for an activity for a reason for lack of participation. Concerning the use of parks for outdoor recreation users indicated they often or sometimes used City Parks (73%), County Conservation Board Parks (60%), State Parks (48%) and Federal Parks (32%) of the time. (*See Chart 2)*



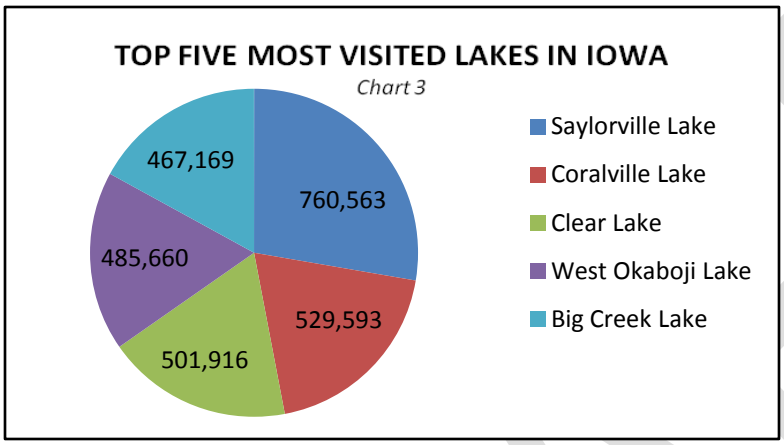
Respondents who had not hunted but expressed interest in hunting indicated they would be very or somewhat likely to participate in free hunting and shooting skills seminars (73%). Nearly half (47%) said they would participate in local shooting competitions and a program to find others to hunt with. Family oriented programs to bring your kids or spouse too, were at the bottom of popularity. Respondents, who had not fished, but expressed interest in fishing, indicated they would be very or somewhat interested in family oriented programs. Programs like, bring your kids fishing day, topped the list at (75%). For those who had not hunted or fished the main reasoning for not doing so was lack of interest, health/age, time obligations, lacking someone to go with, lack of access, lack of equipment, lack of game or fish and cost. Iowans feel the top benefits of parks and recreation areas are cleaner air and water (83%), positive family activities (82%), protecting natural resources (82%) and healthy childhood



development (81%).The majority of Iowans (59%) think that the state agencies and organizations provide about the right amount of outdoor recreation opportunities to Iowa residents; while a third (33%) say there are too few opportunities.

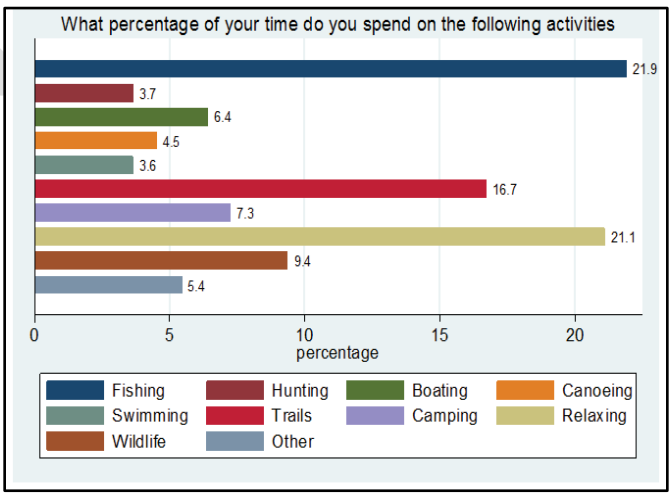
Polk County, Iowa 2012 Survey on Outdoor Recreation:

Saylorville Lake Project partnered with Polk County to fund a portion of their 2012 Outdoor Recreation survey (*see Appendix G*). Several survey questions were specific to Saylorville Lake recreational areas. The survey demographics for respondents were 52% Female to 48% Male with a median age of 44 years old. 84% were white or Caucasian. 78% of respondents had between a high school degree and a Bachelor's degree with which a Bachelor's degree led with 31%. Household incomes were at $40,000-$59,000 with 16% and $120,000 or more at 16%. The median number of people living in a household was 4. 80% of respondents indicated no member of their household had a physical disability. 83% considered their place of residence to be a large city or suburban area. Visitation to three specific locations was examined among all the people and 59% of them indicated they visited Saylorville Lake, 42% visited Saylorville Campgrounds and 24% visited Saylorville's Visitor Center. 50% of people surveys indicated they had used trails in the Polk County within the last 2 years and 33% indicated they had used the Neal Smith Trail.



The Iowa Lakes Valuation Project:

Iowa State University conducted a study jointly funded by the Iowa Department of Natural Resources and the U.S. Environmental Protection Agency. As Iowa tries to balance federal water quality requirements, the economic viability of rural areas, and concerns for the environment, it is more important than ever to understand the value that Iowans place on preserving and restoring lakes. A critical step in this process is to understand the trends in usage of lakes over time. The Iowa Lakes Valuation Project (*see Appendix G*) is an ongoing economic study to advance our understanding of lake visitation patterns and



preferences of Iowans related to over 130 important lakes in the state. The Iowa Lakes project has been tracking Iowans visitation patterns for the major lakes in the state over nearly a decade. Strong correlations between visitation patterns and water quality have been documented. The most recent survey, collecting data for the 2009 calendar year, indicates that Iowans visited lakes in the state substantially more than in any of the base years. The top five most visited lakes by respondents were Saylorville Lake, Coralville Lake, Clear Lake, West Okoboji Lake, and Big Creek Lake, respectively. (*See Chart 3)* Saylorville Lake 2009 Visitation data ranks the highest among all 132 lakes. The study showed Saylorville Lake's per party spending was $132.59, direct spending $100,843,039.00, total expenditure impacts $159,634,530.00, total income affects $25,183,784.00 and total job effects 1,230.

3.06 Interpretive Services and Outreach Program

The Interpretive Services and Outreach Program (ISOP) is an essential part of the Corps Civil Works program. Through this program we can communicate Corps missions and accomplishments, achieve management objectives, and foster environmental stewardship. Reaching diverse audiences and partners, it can improve visitor and employee safety, help with team cohesiveness, and enhance visitor's experiences by providing interpretive resources to meet their needs. It is one of the most effective tools we have to connect with the general public, our user groups, partners and stakeholders.

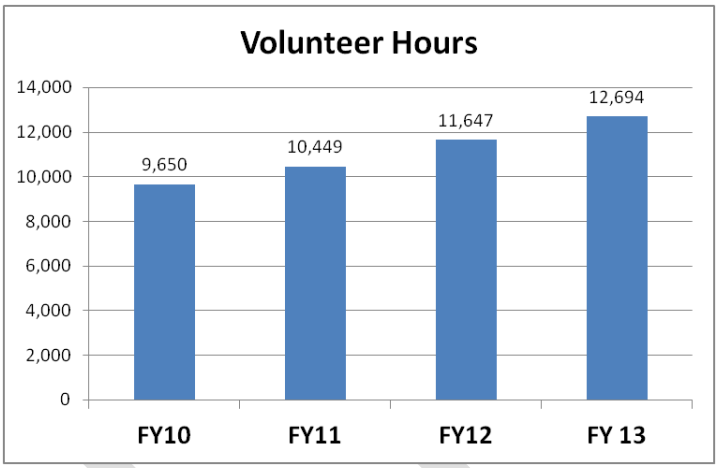
The Corps defines interpretation as "Communication and education processes provided to internal and external audiences, which support the accomplishments of the agency's missions, tell the agency's story and reveal the meanings of and the relationships between natural, cultural, and created environments and their features." The key is to help people connect to and relate to our sites, leading to their involvement and support. This can be done through displays, brochures, visitor center exhibits, and interpersonal contacts, among other ways.

Interpretive services are usually provided by highly trained, highly motivated Park Rangers. These Park Rangers have the skills to help visitors relate to our sites, promote safety, encourage stewardship, and tell the Corps story. Although Park Rangers traditionally use these skills, every communication between any Corps team member and a member of the public can benefit from interpretive techniques.

Saylorville Lake's Interpretive Services and Outreach Program has been working to communicate to the public through various resources to include self guided signage on trails, guide by cell tours, virtual tour web site and interactive displays throughout the Visitor Center. Reduced personnel and budget constraints have presented many challenges to providing interpretive services to the public. With these challenges the increased popularity of social media and the internet has opened up many new possibilities to reach more people without direct interaction. Moving forward we understand that we must embrace new technologies and ways to connect and communicate with the public to meet our needs. Although there are new ways to reach the masses we cannot forget the face-to-face interaction which can be one of the most effective ways to communicate to the public. Saylorville Lake's 2010 visitor center

remodel updated many of the outdated and aged displays bringing new interest and public involvement to the program.

3.07 Volunteers and Partnerships



In today's financial environment, volunteers and partnering is an essential tool that allows the US Army Corps of Engineers to effectively manage recreation and environmental resources. In order to successfully meet our recreation and stewardship missions, and to foster shared values, vision, and a sense of ownership it is imperative that we work together with volunteers, state governments, private/public organizations, local communities, and other partners to maintain or advance programs from wildlife protection and habitat improvement to recreation facility enhancements. Saylorville Lake has various partnerships which currently include one cooperative agreement, one cooperating association and seven Memorandums of Understanding or Memorandums of Agreements (MOU/MOA) in place during FY13 with a value of $63,859.00. Partnering helps to pool scarce resources, to promote coordination and focus mutual efforts to resolve common problems and missions to avoid unnecessary duplication of effort. The partnership program at Saylorville Lake has embraced this reality and is committed to fully exploring the potential development of new public-private partnerships to leverage limited appropriated funds and human resources.
On July 31, 1983, Public Law 98-63 authorized the US army Corps of Engineers Volunteer Program (*see Appendix D*). At Saylorville Lake, volunteers play an important role in protecting the natural resources and maintaining recreation facilities. Volunteers serve as campground hosts, staff visitor centers, conduct programs, clean shorelines, restore fish and wildlife habitat, maintain park trails and facilities, and more. Corps personnel can recruit their own volunteers or get help from the Volunteer Clearinghouse, www.corpslakes.us/volunteer, (1-800-VOL-TEER or 1-800-865-8337), a national information center for people interested in volunteering at Corps lakes across the country. Saylorville Lake annually averages 75 to 100 volunteers who donate over 10,000 hours of volunteer service.

3.08 Resource Objective Priorities

Saylorville Lake faces many challenges in the execution of resource objectives. The location of Saylorville Lake in the Des Moines Metro area makes it a magnet to the recreating public that enjoys activities such as camping, picnicking, biking, boating, fishing and hunting. However, the popularity of these recreation activities and others are at times in conflict with the stewardship and protection of the natural resource and general public safety.

The highest objective priorities are compliance with all pertinent laws, regulations and policies. Corps ER 1130-2-540, Chapter 2, (*see Appendix F*) establishes the policy for the administration and management of USACE recreation programs and facilities. Corps ER 1130-2-550, Chapter 2, (*see Appendix F*) establishes the policy for the administration and management of natural resource activities. Corps EP 1165-2-316 (*see Appendix F*), is the rules and regulations governing public use of Corps of Engineers water resources development projects. These rules and regulations are covered in Title 36 CFR Chapter III, Section 327.0 – 327.30 (*see Appendix F*) and enforced by Corps personnel with Title 36 citation authority.

Recreation activities should be quality outdoor experiences enjoyed by a diverse public to the largest extent possible, but these activities must to be maintained within the boundaries of public safety and promote a healthful environment that protects the natural resource. An objective priority should be to increase the public's opportunity for high quality recreation experiences. This should be done for water recreation by conducting a recreational boating study to determine the maximum number of recreating boats for Saylorville Lake. Once the boat carrying capacity is determined, Saylorville Lake management can establish and enforce maximum use limitations to prevent overcrowding on the water. Boating safety and quality of boating experience should increase. Estimates and enforcement of maximum use limitations should also occur for any project site areas that suffer frequent overcrowding or site deterioration.

Another objective priority should be to continue to modernize recreation facilities in accordance with USACE recreation facility standards. Improving facilities and amenities will increase visitor satisfaction and quality of their experience. With diminishing funding and work force in future years, this objective is extremely sensitive to time, manpower and budget.

The urbanization of Saylorville Lake has resulted in many more homes now adjacent to public lands. Along with this urbanization use conflicts occur more frequently. Areas around the lake that were once considered to be rural are now a more urban like setting. Conflicts have developed specifically in recent years between hunters and new adjacent land owners along the west side of Saylorville Lake. The land owners have concerns for their safety due to the close proximity to these hunting areas or may not care in general for the sport of hunting. The land owners have legitimate concerns, but private and exclusive use should be avoided. An objective priority should be to continue to provide public access to these lands while maintaining a safe environment for adjacent land owners. The existing public hunting lands should remain open to hunting, but should be evaluated annually to determine if changes need to be made for the type of hunting (shot shell, bow, etc.) allowed and managed accordingly.

CHAPTER 4
Land Allocation, Land Classification, and Project Easement Lands

This chapter presents the land use plan for the Saylorville Lake Project area. In the plan, specific parcels of land are zoned into land use categories based on resource capability. The land use plan provides a conceptual guide for use, management, and development of all project lands.

The Saylorville Lake Project lands are divided into management areas. Division of the project into individual areas was an integral part of the planning process and facilitated identification of the most appropriate land and resource uses of the various project areas. The boundaries of the management areas are based on physical, administrative, and operational characteristics.

4.01. Land Allocation

Land allocations identify the authorized purposes for which project lands were acquired. There are four categories of allocation identified as: Operations, Recreation, Fish and Wildlife, and Mitigation. The entire 26,000 acres at the Saylorville Lake Project was allocated for Operations. Operations lands are those lands acquired to provide safe, efficient operation of the project for its authorized purposes. Project purposes include flood risk management, water supply, low flow augmentation (water quality), environmental stewardship and recreation.

Mitigation: These are lands purchased for the specific intention of offsetting the losses associated with the creation of the project. Under the initial authorization there were no lands Congressionally authorized for the purpose of Mitigation however, 2100 acres were purchased in the downstream corridor to accommodate increased outflows. This was due to court and Congressional action to mitigate for impacts to Ledges State Park.

4.02. Land Classification

All lands acquired for project purposes are further classified to provide for development and resource management consistent with authorized project purposes and other Federal laws. There are six categories of classification identified as: Project Operations, High Density Recreation, Mitigation, Environmentally Sensitive Areas, Multiple Resource Managed Lands, and Water Surface. The classification process refines the land allocations to fully utilize project lands and considers public desires, legislative authority, regional and project specific resource requirements, and suitability. Land Classification indicates the primary use for which project lands are managed. Maps showing the various land classifications can be found in Map Appendix 21 and 22 – Saylorville Lake Land Classification Land Classifications.

- Project Operations: This classification includes lands required for the dam and associated structures, powerhouse, operations center, administrative offices, maintenance compounds, and other areas that are used to operate and maintain the Saylorville Lake project. Where compatible with operational requirements, Project Operations lands may be used for wildlife habitat management,

recreational use, or agricultural activities. Licenses, permits, easements, or other out-grants are issued only for uses that do not conflict with operational requirements.

- High Density Recreation: These lands are designated for intensive levels of recreational use to accommodate and support the recreational needs and desires of project visitors. They include lands on which existing or planned major recreational facilities are located and allow for developed public recreation facilities, concession development, and high-density or high-impact recreational use. In general, no uses of these lands are allowed which would interfere with public enjoyment of recreation opportunities. Low-density recreation and wildlife management activities compatible with intensive recreation use are acceptable, especially on an interim basis. No agricultural uses are permitted on those lands except on an interim basis for maintenance of scenic or open space values. Permits, licenses, and easements are not issued for non-compatible manmade intrusions such as pipelines; overhead transmission lines; and non-project roads, except where warranted by the public interest.

- Mitigation: Mitigation lands were acquired or designated specifically to minimize adverse environmental effects to Ledges State Park. Saylorville Lake has approximately 2,100 acres of mitigation lands.

- Environmentally Sensitive Areas: This classification consists of areas where scientific, ecological, cultural, or esthetic features have been identified. Development of public use on lands within this classification is normally prohibited to ensure that the sensitive areas are not adversely impacted. Agricultural or grazing uses are not permitted on lands with this classification. See map appendix 23 and 24 for Saylorville Lake Sensitive Lands.

- Multiple Resource Management Lands: This classification includes lands managed for one or more of the following activities.

    - Low Density Recreation. These lands are designated for dispersed and/or low-impact recreation use. Development of facilities on these lands is limited. Emphasis is on providing opportunities for non-motorized activities such as walking, fishing, hunting, or nature study. Site-specific low-impact activities such as primitive camping and picnicking are allowed. Facilities may include boat ramps, boat docks, trails, parking areas and vehicle controls, vault toilets, picnic tables, and fire rings. Manmade intrusions, including power lines, non-project roads, and water and sewer pipelines, may be permitted under conditions that minimize adverse effects on the natural environment. Vegetation Management, including agricultural activities that do not greatly alter the natural character of the environment, are permitted for a variety of purposes, including erosion control, retention and improvement of scenic qualities, and wildlife management. Where not in conflict with the safety of visitors and project personnel, hunting and

fishing are allowed pursuant to tribal or State fish and wildlife management regulations.

- Wildlife Management General. These lands are designated for wildlife management. They contain valuable wildlife habitat components that are maintained to yield habitat suitable for a designated wildlife species or group of species. These lands may be administered by other public agencies under a lease, license, permit, or other formal agreement. The Corps supports these objectives. Private use of wildlife lands is prohibited except for agricultural activities undertaken to improve wildlife habitat. Licenses, permits, and easements are not allowed for such manmade intrusions as pumping plants, pipelines, cables, transmission lines, or non-project roads. Exceptions to this policy are allowable where necessary for the public interest. Wildlife lands are available for sightseeing, wildlife viewing, nature study, and hiking. Consumptive uses of wildlife, including hunting, fishing, and trapping, are allowed when compatible with the wildlife objectives for a given area and with Federal and State fish and wildlife management regulations.

- Vegetation Management. Management activities in these areas focus on the protection and development of forest resources and vegetative cover.

- Future or Inactive Recreation Areas. This sub-classification consists of lands for which recreation areas are planned for the future or lands that contain existing recreation areas that have been temporarily closed. There are no project lands with this classification at Saylorville Lake.

- Water Surface. If a project administers a surface water zoning program, then it will be included in the Master Plan. There are four possible sub-classifications. See map appendix 25 Saylorville Lake Water Zoning.

  - Restricted. Water areas restricted for project operations, safety, and security purposes.

  - Designated No-Wake. To protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and or public safety.

  - Fish and Wildlife Sanctuary. Annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning.

  - Open Recreation. Those waters available for year round or seasonal water-based recreational use.

Table 4.1 Land Classification Acres	
CLASSIFICATION	**ACRES**
Project Operations	359
High Density Recreation	1,797
Environmentally Sensitive Areas	To be Determined
Multiple Resource Managed Lands Low Density Recreation	3,169
Multiple resource Managed Lands Wildlife Management	14,836
Multiple Resource Managed Lands Vegetative Management	0
Multiple Resource Managed Lands Future/Inactive Recreation Areas	0

4.03. Project Easement Lands

These are lands on which easement interests are held but no fee title ownership. These are two different classifications identified as roadway easement and flowage easement. There are 1,486 acres of easement lands at Saylorville Lake.

This classification consists of lands for which the Corps did not acquire fee title but did acquire the right to enter onto the property in connection with the operation of the Saylorville Lake project and the right to occasionally flood the property. Planned use and management of easement lands will be in strict accordance with the terms and conditions of the easement estate acquired for the project.

- Flowage Easement: These are easements purchased by the Corps of Engineers giving the right to temporarily flood private land during flood risk management operations. There are 1,478 acres of flowage easement lands located at Saylorville Lake. The purpose of these easements is to provide adequate storage for flood waters.

- Roadway Easements: The Corps of Engineers owns several roadway easements. Generally roadway easements allow the government to operate and maintain a roadway and sometimes utility corridor to allow government and public access to government owned lands. In certain situations it may be in the interest of the Government to acquire roadway easements as fee owned lands that would allow the government to more effectively manages access to government lands. Examples of roadway easements include the entrance road

to Walnut Ridge Recreation area and a portion NW 78th Avenue which provides access to Saylorville Dam and Bob Shetler Recreation Area. There are 8 acres of roadway easements at Saylorville Lake.

4.04 Outgrants

The Corps of Engineers leases federally owned lands at Saylorville Lake to state and local agencies for recreational purposes. These leases specify what types of activities are allowed on federal lands and all federal regulations still apply. Outgranted lands provide additional recreational opportunities to the general public. Examples of outgranted recreational lands include Big Creek State Park managed by the Iowa Department of Natural Resources, Jester Park Equestrian Center and Sycamore Trail managed by Polk County Conservation, Prospect Park managed by Des Moines Parks and Recreation, and Swede Point Park managed by Boone County Conservation. See map appendix 26 and 27 Saylorville Lake Managing Agencies.

CHAPTER 5
Resource Plan

5.01. Classification and Justification

This chapter describes the management plans for each area of classification within the Master Plan. The classifications which exist at Saylorville Lake are; Project Operations, High Density Recreation, Environmentally Sensitive, Multiple Resource Managed Lands and Water Surface. The management plans identified are in broad terms of how these project lands will be managed. A more descriptive plan for managing these lands can be found in the Saylorville Lake OMP.

5.01. A. Project Operations:

This land is classified for security reasons pertaining to project operations. This would be land associated with the dam and related facilities. There are 133 acres of lands under this classification which are managed by the USACE. The management plan for this area is to continue providing physical security necessary to insure continued operations of the dam and related facilities. Public access to these areas will be restricted. Authorization for the public to moor private floating facilities and/or the modification of land form and vegetation are not permitted within this area. The goal for these classified lands is to continue operating as done historically in order to insure project operations.

5.01. B.High Density Recreation

This land is designated for recreation areas around Saylorville Lake with intensive recreational activities and use by the visiting public. The facilities in these areas will accommodate the recreation needs of visitors in concentrated numbers while also offering open space lands for the purpose of providing more complete and attractive recreation areas. There are numerous areas around Saylorville Lake that are classified as High Density Recreation. Descriptions of high density recreation are provided in two separate areas: areas that are managed and operated by the USACE and secondly those high density areas that are leased to another agency/entity for management and operation.

USACE operates and manages numerous areas designated as high density recreation. Table 5.1 shows the areas currently managed by USACE.

Table 5.1 Area Sub-Type & Management Goal

Recreation Area	Total Acres	Area Sub-Type & Management Goal
Cherry Glen Campground	41 acres	Campground/Maintained Facility
Cherry Glen Picnic Area	65 acres	Day Use/Maintained Facility
Cherry Glen Boat Ramp	41 acres	Day Use/Maintained Facility

Oak Grove Picnic Area	12 acres	Day Use/Maintained Facility
Oak Grove Beach	33 acres	Day Use/Maintained Facility
Prairie Flower Recreation Area	225 acres	Campground/Maintained Facility
Sandpiper Recreation Area	144 acres	Day Use/Maintained Facility
Acorn Valley Recreation Area	67 acres	Campground/Maintained Facility
Walnut Ridge Recreation Area	60 acres	Day Use/Maintained Facility
Lakeview Recreation Area	30 acres	Day Use/Maintained Facility
Bob Shetler Recreation Area	288 acres	Campground and Day Use/Maintained Facility
Cottonwood Recreation Area	245 acres	Day Use/Maintained Facility
Visitor Center Recreation Area	19 acres	Visitor Center and Day Use/Maintained Facility
Saylorville Lake Scenic Viewing Area	9 acres	Scenic Viewing Area/Maintained Facility
Control Tower Fishing Access	5 acres	Land Access Point/Maintained Facility
Lakeview High Water Boat Ramp	38 acres	Water Access Point/Maintained Facility
Big Creek Upper Spillway	10 acres	Land Access Point/Maintained Facility
Big Creek Lower Spillway	17 acres	Land Access Point/Maintained Facility
Highway 210 Access	5 acres	Water Access Point/Maintained Facility

There are several areas currently classified as high density recreation which are leased to other organizations for operation and management. USACE does not provide any maintenance within any of these locations but there are times when we provide support to the managing agency. USACE has to provide review of requests and make sure they are in accordance with applicable laws and regulations for the proposed activity within an area zoned high density recreation. The goal for these areas is to work with USACE partners to assure recreation areas are being managed in accordance with resource objectives identified in Chapter 3. The areas currently leased to other agencies can be found in table 5.2.

Table 5.2 Recreation Area Managing Agency		
Recreation Area	Total Acres	Managing Agency
Big Creek State Park	1143 acres	Iowa DNR
Sycamore Access	4 acres	Iowa DNR
Equestrian Center	10 acres	Polk County Conservation Board
Lincoln Access	38 acres	Polk County Conservation Board
Polk City Sports Complex	13 acres	City of Polk City
Prospect Park	12 acres	City of Des Moines
County Road E57 Access	5 acres	Iowa DNR
Highway 30 Access	7 acres	City of Boone
Sportsman Access	10 acres	Iowa DNR
Sub 1 Access	9 acres	Iowa DNR
Swede Point Park	12 acres	Boone County Conservation Board
Saylorville Marina	58 acres	Private Concessionaire

The areas identified as Land or Water Access Points receive services such as park cleaning, refuse collection, and mowing, but at a reduced level of service. Management goal for these areas is to keep them open for public use while meeting the resource objectives identified in Chapter 3.

The areas shown as maintained facility under the management goals are parks that were constructed and managed for high density use. These areas still provide services such as water, electric, mowing, refuse collection, cleaning, maintenance and improvements. The plan is to provide a justified level of service by updating camp sites to accommodate larger camping units with 50-amp electrical service, expand the number of concrete camp pads and water hydrants available for camper hook-up, modernize restrooms to a sufficient standard to service the public, and replace remaining non-ADA compliant playgrounds with modern ADA compliant ones. With minor exceptions, all operations and maintenance activities are performed by the USACE employees, contractors, volunteers, and other various methods. The ultimate goal of this program is to ensure the safety of our visitors and to provide a wide range of opportunities for outdoor recreational enjoyment while concurrently meeting the resource objectives in Chapter 3. Users have a diverse range of activities at Saylorville Lake and satisfying these demands will be a constant challenge. The mandatory HQ Corps Visitor Comment Card Program and the Saylorville project in-house comment card program will be utilized to identify user desires and preferences. These comment cards will assist in future management strategies and potential changes to accommodate these demands.

5.01. C. Environmentally Sensitive Area

These are areas where scientific, ecological, cultural, and aesthetic features have been identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the ESA, the NHPA, or applicable State statues. These areas must be considered by management to ensure they are not adversely impacted. Designation as sensitive area limits development and can limit public use. Designation as sensitive includes quality wetlands, cultural sites, sensitive flora and fauna. These areas include threatened and endangered species, species identified with significant conservation need. Locally rare or unique communities can be determined to be sensitive. Rarer communities like Oak Savanna remnants may be classified as sensitive despite their degraded condition because of their ability to recover through restoration effort. Many of these sensitive areas require aggressive management to maintain the ecology of the site. Disturbance factors like bison and fires are gone from the landscape that played a significant role in maintaining these areas. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie and savanna restoration. There are many areas at Saylorville Lake that fits this description. They range in size from very small to large tracts of land. Each area provides unique challenges to maintain. Fragmentation by development and invasive species pose significant threat to all of our sensitive areas. The importance of managing and protecting these resources plays a major role in protecting resource diversity.

5.01. D. Multiple Resource Management Lands

These are areas where predominate use is that of the classification. However, there are other compatible uses which may occur on these lands without impacting the predominant use. These lands can be divided into four sub-categories for the purposes of this master plan. These categories are; Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. The following is a description of each sub-categories resource objectives, acreages, and description of use.

5.01. D.1. Low Density Recreation

Although Saylorville is a largely urban lake there are areas that remain undeveloped and are considered areas of low density recreation. Low density recreation classifies lands with minimal development or infrastructure that support passive public use. Natural conditions preclude intensive public use development because extensive alteration of natural systems would be required. Difficult access also is a factor indicating low-density use as most appropriate for these lands.

This zone may be appropriate when a conflict exists between public use and wildlife habitat. Private or long-term exclusive group use of these lands will not be permitted. Management practices leading to habitat improvements for the benefit of wildlife are encouraged. No licenses, permits, or easements will be issued for such non-compatible manmade intrusion as underground or exposed pipelines, cables, overhead transmission lines, or non-project roads. Exceptions to this restriction may be made where necessary to serve a demonstrated public need in those instances where no

reasonable alternative is available. Hunting and agricultural uses are permitted on this land.

The majority of project land zoned for low density recreation use is located between the Iowa Highway 17 Bridge and the Mile Long Bridge. Other areas include the satellite recreation areas, the land bordering the west shoreline of Big Creek Lake, areas between the Walnut Ridge Recreation Area and the dam, and the area south of Cherry Glen and the dam. These areas are both comprised of upland and transition zone areas and are either vegetated with uneven-aged mixed forest stands or transition zone species.

Operations: Recreation Low Density Use		
U.S. Army Corps of Engineers	4,277	
Other Federal Agencies	0	
State	160	
Local Public Agencies	978	
Private	0	5,415 Total

5.01. D.2. Wildlife Management

Wildlife Management lands are designated for the management of wildlife resources. Wildlife management is conducted by USACE, the Iowa Department of Natural Resources (IDNR) and Polk County Conservation (PCC). There are currently 12,807 acres of land licensed to the IDNR and 286 Acres to Polk County Conservation for wildlife management areas. The majority of designated wildlife management land is located at the north end of the reservoir and extending north along the Des Moines River corridor into Dallas and Boone County. The primary strategy in these areas is to manage game species with the understanding that those actions benefit both game and non-game species.

In addition to the IDNR and PCC licensed areas, USACE has 1370 Acres of land that is directly managed for wildlife. These lands provide public hunting opportunities for both big and small game. The management plans will include common wildlife management practices such as: planting of food plots, maintaining public access, implementing a nesting box program.

Non-game species are also managed for by USACE. Special attention is given to Species of Greatest Conservation Need (SGCN). These species are identified as having small or declining populations. SGCN's will continue to receive attention to assure they are managed in accordance to their habitat needs and parameters identified in a biological opinion. Other wildlife enhancement programs, such as blue bird and kestrel nest box monitoring and planting of non-game food plots, support a variety of non-game species on USACE lands.

5.01. D.3. Vegetative Management:
There are two vegetative communities that are the primary focus of restoration efforts at Saylorville Lake. These two communities are Oak Savanna and Tallgrass Prairie, and are among the rarest of all ecosystems in North America.

Savanna is the transition between areas of forest and prairie and is comprised of large open grown oak trees with a variety of shade tolerant grasses and forbs making up the ground cover. Remnant Oak Savanna is found across project lands, but with the absence of fire the savanna is slowly converting to closed canopy forests. Through combinations of mechanical thinning and prescribed fire, Oak Savanna is being restored on government owned lands. Land managers at Saylorville Lake work closely with state, county, and private entities to coordinate efforts to restore Oak Savanna to the Iowa landscape.

Tallgrass Prairie once covered over 80% of Iowa's landscape, today less than 0.1% of that original prairie remains. Small tracts of remnant prairie are located on government lands and are being actively managed with the use of prescribed fire. Red Feather Prairie is Iowa's second largest restored Prairie at over 170 Acres. This area was the original borrow site for Saylorville Dam and poor soil conditions made reforestation unfeasible. This prairie now boasts 10 species of grasses and 40 species of forbs and is one of Saylorville's richest birding areas with approximately 142 species including Henslows' Sparrows, Bluebirds and bobolinks.

Invasive species pose a significant threat to the Saylorville landscape. The vegetative management program spends over 30 thousand dollars annually on invasive species management. Vegetative threats include Reeds Canary Grass, Sericea Lespedeza, Emerald Crown Vetch, Garlic Mustard, and Honeysuckle. All of these species have the ability to significantly alter native ecosystems. Trees are very susceptible to invasive species. Emerald Ash Borer threatens Ash trees, Gypsy Moth threatens oaks, 1000 Canker threatens Walnut trees, and the list continues. Diligent monitoring and swift reaction are key to successful invasive species management. Forty Seven invasive species have been identified on project lands; all pose threats to different plant communities. Eradication is rarely attainable but control is critical to managing invasive species.

5.01. D.4. Future/Inactive Recreation Areas
These are areas that were classified for recreation but were never developed. There are no locations at Saylorville Lake that match this description.

5.01. E. Water Surface
This is in reference to water surface management needs which the project utilizes to ensure project operations. There are multiple surface water recreation and conservation practices at Saylorville Lake. Additionally there are two restricted areas where only shoreline access to the edge of the water is allowed. Areas prohibited for boat traffic are located on the upstream portion of Saylorville Lake's main dam near the

control tower inlet and the Big Creek upper spillway of which both are delineated with buoys. Additionally there are prohibited entry locations on both the downstream sides of the dams in accordance with ER 1130-2-520 (*see Appendix F*) of which signage is posted for the restriction. The purpose of these restrictions is to limit public access, and ensure the security of the structures and public safety. Along with recreational boating usage the area north of Saylorville Lake's mile long bridge is very shallow, providing a unique opportunity for small paddle craft in an area heavily managed for shallow water habitat and wildlife management. The goal for the water surface is to continue managing to provide the optimal recreational experience for the user groups while still providing high levels of public safety to all use types.

CHAPTER 6
Special Topics

6.01. Competing Interests on the Natural Resource

Saylorville Lake is a large multi-use project with five authorized purposes (flood risk management, low-flow augmentation, recreation, environmental stewardship, water supply). The authorized purposes have industries and/or user types which have developed over time and are reliant on their provided benefits. These benefits are critical to the local and regional economies and are of great interest to the public. Due to these interests, competing desires on the natural resources develop. It is very difficult to balance these interests so the customer can benefit while insuring there are no adverse impacts. It is the intention of this document to outline a plan, which when executed, provides customer service and appropriate natural resource management.

6.02. West Side Trail

Saylorville Lake has recently seen an increase in trail advocates seeking natural surfaced multi-use trails that offer a sense of remote solitude. Due to the altered landscape in Iowa, limited public lands, natural area fragmentation, and urban growth specifically in Central Iowa, there are limited opportunities to enjoy remote natural surfaced trails. This has spurred interest in the revitalization of a 3.5 mile abandoned hiking trail along the rugged west side of Saylorville Lake. This trail is historically known as the West Side Trail. The trail was originally built and maintained with the assistance of the Boy Scouts of America, but over time the partnership fell apart and management of the trail fell back to the Corps. The Corps was presented with several challenges in maintaining the trail due to frequent high-water events, severe soil erosion, rugged terrain, accessibility limitations, maintenance costs, and lack of manpower. Eventually the flood of 1993 proved to be too much for the trail. The sustained high-water from the lake and severe erosion from torrential rains damaged the trail beyond feasible repair at the time. The flood event compromised the safety and sustainability of the trail. Several bridges also became a concern due to damage and the cost for regular inspections and maintenance. The combination of all of these challenges caused the inevitable closure of the trail and present day abandonment. Due to the challenges presented with the trail a planning process will have to be implemented to understand the feasibility of reconstructing the trail. A review of the existing trail will need to be performed. Prior to developing a trail reconstruction proposal an extensive current conditions assessment needs to take place. Once the assessment has been performed a trail proposal should be generated to understand the following:

- Background and perceived need for the trail.
- Overall trail purpose.
- Intended users.
- Scope of the reconstruction.
- Timing of the development of the trail.
- Any possible partnership support.

After the proposal is generated a conceptual design will need to be created. Research of similar trails and discussions with trail groups will need to take place to develop a trail design. Following the design work a funding plan will need to be made to investigate the trail's economic viability. Finally a maintenance and management plan will need to be developed. The plan should outline the items that need to be maintained, by whom, how often, and costs involved. Once these planning steps are completed the proposed trail will have a final evaluation to assure the trail maintains a holistic approach so that it continues to offer value as the public's needs, standards, attitudes towards the outdoors, technology, and funding shift in the future.

6.03. Need for Carrying Capacity Study

Significant urban growth of the Des Moines metro and specifically the cities of Johnston, Ankeny, and Polk City have increased visitation to Saylorville Lake. Recent studies from The Tomorrow Plan have projected that the current population of 479,298 in Des Moines metro will nearly double to 745,000 within the next 25 years (*see Appendix G)*. This rapid population growth has already impacted Saylorville Lake, with very high levels of boating traffic on the lake and at boat ramps. With the expected growth rate of the Des Moines metro, Saylorville Lake management felt a Recreational Boating Study (RBS) was necessary to make future operational decisions with regards to boating access and boating use at Saylorville Lake for the safety of the public. However, high-water conditions on the lake in 2013 prevented the Recreational Boating Study from being conducted. A RBS is still planned to help guide future recreation and land management decisions at the lake. Saylorville Lake experiences frequent high-water events that inundate and limit the availability of boat ramps and parking lots. During these periods, open boat ramps can become overcrowded, but due to the lack of available land these conditions will likely continue. Saylorville Lake's land based recreation areas are highly visited with some portions more heavily used than others. Saylorville Lake occupancy rates at Corps operated parks are found to be much higher on weekends compared to weekdays. Despite these periods of heavy use in the parks, overcrowding is not an issue at this time. We will continue to evaluate the carrying capacity of the recreation areas as the surrounding population increases.

6.04. Need for Additional Recreation Facilities

While Saylorville provides over 500 campsites, with amenities such as concrete sites, 50 amp service, water and sewer hookups, there are no Corps managed areas that currently provide cabins. Acorn Valley Campground would be a prime location to fill this niche. There are numerous tent sites at Acorn Valley Campground that are underutilized and these tent sites could be converted to cabin sites. There is a growing segment of the outdoor recreating community that are not tent campers or who use RV's, but still want to experience camping at a park like Acorn Valley Campground. Cabins are becoming increasingly popular and more county, state and federal parks have been adding cabins. The addition of cabins would replace an underutilized facility with one that should be in high demand.

Prairie Flower Campground is Saylorville Lake's largest campground and one of its most popular, filling up most weekends and the holidays. It has been voted as a Top

100 campground to visit in the U.S. The campground has one dump station that is located in the south area of the campground that is insufficient for this amount of demand. Due to the high usage and the location of the dump station, RVs line up to empty their holding tanks and can take a significant amount of time and create traffic flow issues. A second dump station is recommended for the north area of the campground. The addition of a north dump station will relieve the pressure on the south dump station, speed up the dumping process and eliminate most of the traffic flow issues.

Soft trails for walking, hiking and biking is one of the most predominately mentioned facilities that should to be added to the Saylorville Lake Corps managed areas. A soft trail once existed along the west side of the lake, but had to be abandoned due to safety issues with the bridges. Outdoor recreation involving trails is on the upswing and soft trails are extremely popular. Based on focus group research, the addition of a soft trail at Saylorville Lake would be well received by the public. The west side of Saylorville between Lakeview Recreation Area and Acorn Valley Campground would remain the logical location for a major trail. Shorter trails should also be considered for the Bob Shetler Recreation Area, along the west side of the Des Moines River downstream of the main dam outlet and a trail between the Cherry Glen Campground and Cherry Glen Boat Ramp. Both of these locations receive heavy foot traffic by fishermen, boaters and sightseers. The use of water trails is also becoming more popular, especially with kayakers and canoeists. The addition of more water access points would increase trail usage and encourage beginner's that may be hesitant to use the trail due to their lack of experience.

The steady increase of visitation at Saylorville Lake over the years has created problems with overcrowding at many recreation areas. The high frequency of significant pool fluctuations during flooding events magnifies the problem by inundating facilities, in particular boat ramps and parking areas. During periods of high pool levels, available boat ramps and trailer parking are reduced to high water ramps. These ramps include the Cherry Glen Upper Boat Ramp and the Lakeview High Water Boat Ramp. Each ramp parking lot provides 70 and 45 parking spaces respectively. An additional parking lot could be constructed east of the Cherry Glen Upper Boat Ramp parking lot. This area is currently used as a grass overflow lot and could be converted to a permanent paved lot. This lot could provide an additional 25 parking spaces.

Campgrounds are a common location for summer interpretive programs. All four of Saylorville's campgrounds lack an amphitheater or some type of theater space. The addition of this type of facility to the campgrounds would provide a centralized location with seating and increase attendance of campers and other park uses. Attractive site locations would also be aesthetically pleasing to the audience and would enhance the presentations and the user experience.

The addition of individual picnic sites with overhead shading would welcome more small groups of 2 – 10 people to Saylorville Lake. The few sites currently at Bob Shetler are well utilized on weekends and holidays. Additional sites could be added along the river

in this area. Other recreation areas for consideration for shaded picnic sites are the beaches at Oak Grove and Sandpiper Recreation Areas.

6.05. Urban Sprawl/Adjacent Development

Lands within Polk County, bordering Saylorville Lake, are experiencing rapid urban development. The main body of the lake is nearly surrounded by the cities of Ankeny, Johnston, and Polk City. More rural areas within a few miles of the lake are also being parceled up into larger residential lots. This development near the lake has many impacts on the ability of Saylorville Lake to meet its missions. See map appendix 28 Saylorville Lake Urban Sprawl.

As adjacent populations increase so will visitation to USACE lands. Limited resources will begin to experience increased use and in turn apply pressure to the recreation facilities. Overuse of project lands can cause the resource to degrade and impacts negatively on the overall quality of the recreation experience.

Neighboring urban development will have a significant impact on local wildlife populations. A majority of the lands being converted to residential and commercial purposes were primarily forested, row crop agriculture, or pasture. Forested and agricultural lands provide a higher wildlife habitat value than urban landscapes. This reduction in habitat will place more demand on remaining ecosystems found on USACE lands. An increase in the urban/parkland interface will also create more opportunities for human conflict with wildlife that inhabits parklands adjacent to housing developments. (i.e. Raccoons, White-tailed Deer, and Opossums).

Increased urban sprawl complicates management of natural resources on USACE lands. One of the most preferred ways to manage both grasslands and timber resources at Saylorville Lake is by prescribed fire. The use of fire is much more difficult adjacent to urban development due to the care and site preparation that must be taken to ensure that private lands and structures are not placed at risk. Even if the prescribed fire is a significant distance from private lands the smoke from the fire can impact visibilities on roadways and irritate health problems in local residents. The development of adjacent lands will certainly affect ability to manage natural resources with prescribed fire.

Historically adjoining developments have also increased stormwater runoff or concentrated flows, causing increased erosion and damage to USACE lands. With stormwater also comes pollution in the form of nutrient and chemical runoff. Once insufficient stormwater infrastructure is in place it is very costly to correct these problems. A concerted effort from neighbors, developers, cities, counties, and USACE to review early in the process adjacent developmental plans will go a long way to reduce or eliminate impacts to USACE lands and waters.

6.06. Siltation Concerns & Water Quality Concerns

The management of erosion and sedimentation in the Des Moines River watershed will remain a major environmental issue for many years to come. It is widely acknowledged

that erosion and sedimentation is the number one environmental problem in the watershed, as it leads to degraded water quality and aquatic habitat. However, there is no comprehensive management plan to deal with the problem.

Most streams experience some form of bank erosion (including wind and wave erosion). In cases where vegetation has been removed from the stream bank leaving them unprotected, bank erosion is excessive. Many channelization projects and river crossing structures such as bridges tend to increase the streambank erosion potential. Erosion of stream banks is a natural process within the river system. Due to human development within the floodplain over the last 200 years, the erosion process has accelerated, increasing the sediment load of the river and the turbidity of the water.

Agricultural runoff is a difficult problem to solve and the source is off USACE lands. Agricultural runoff can introduce tremendous amounts of sediment into the river system. The runoff from livestock feedlots add nitrates and other nutrients to the system, which effects dissolved oxygen and other water quality parameters which in turn affect the aquatic habitat and other uses of the water. Agricultural field runoff also introduces additional agricultural chemicals into the system, such as inorganic fertilizers. Some of these chemicals settle out and are incorporated into the bottom substrate. Other chemicals join the water column and course down to the Mississippi River to the Gulf of Mexico. The high concentration of nitrates within the water column is a primary cause of the hypoxia phenomenon, the so called “Dead Zone”, in the Gulf of Mexico. This Dead Zone is increasing in size and is the object of intense study.

6.07. Ding Darling Greenway Designation/DSM Greenbelt Designation

Designation of the “Ding Darling Greenway” was requested by the Iowa Department of Natural Resources in 1998 and the area was so designated by Polk County Conservation 9 December 1998 and the City of Des Moines 24 May 1999. The Corps of Engineers recognized the designation and participated in a formal dedication ceremony at Prospect Park on 23 June 1999. This greenway provides environmental focus on public lands from Sycamore Access on NW 66th Avenue south to Grand Avenue in Des Moines. See map appendix 29 – Ding Darling Greenway.

The Des Moines Recreational River and Greenbelt was established by Public Law 99-88 (*see Appendix D)* to establish a partnership of local and Federal government and private interests in developing ecosystem improvements and recreational opportunities in the Des Moines River corridor. The greenbelt boundaries are essentially Fort Dodge to Pella, Iowa and they include large federal tracts of land including Saylorville Lake, Lake Red Rock and the Neal Smith Wildlife Refuge. Projects executed within the greenbelt authorization have totaled to date over $83 million Federal cost and $43 million non-Federal. See map appendix 30 Des Moines River Greenbelt.

6.08 Need for Educational Building for Public Use

Saylorville Lake is a large multi-use project with numerous public user groups who often request a location for specific interest groups to hold meetings. Currently, Saylorville Lake does not offer an open space for the public to utilize. The current facility, the

Visitor Center, is insufficient as it lacks open space and can only accommodate groups of 30 or less in a classroom setting. Utilizing the Visitor Center also interferes with the public's ability to tour exhibits and watch videos in the movie theater.

Two proposals have been identified: the first would be to remodel the current Construction Office and expansion of the parking lot located at the west end of the Saylorville Dam. Prior to the becoming the Construction Office this building was known as the Oak Woods Learning Center (OWL Center) and was frequently used by the public as a meeting location. In order to meet the needs of various user groups, it would require extensive remodeling, electrical and plumbing upgrades, universal accessibility improvements. A second or alternative proposal is to construct a new building in the Walnut Ridge Recreation Area near Shelter #2. Either one of these options would meet the needs of the various user groups.

6.09 Major Utility Corridor Considerations

According to Engineering Pamphlet (EP) 1130-2-550, Recreation Operations and Maintenance Guidance and Procedures (USACE, 1996a) (*see Appendix F*), special programs are programs or situations that should be identified and discussed in a Master Plan but are not covered in other sections of the plan. The potential and suitability for utility corridors was identified as the special consideration at the Project.

The Energy Policy Act of 2005 (PL 109-58) (*see Appendix D*) directed the Secretaries of Agriculture, Commerce, Defense, Energy and Interior to identify corridors for oil, gas, and hydrogen pipelines and electrical transmission and distribution facilities on Federal lands and to schedule prompt action to identify, designate, and incorporate the corridors into the applicable land use plans. In 2009, the USACE issued a Non-Recreational Outgrant Policy (USACE, 2009a) (*see Appendix G*), which states that the primary rationale for authorizing any future non-recreational outgrant request for use on USACE lands or waters will be (1) no viable alternative to the activity or structure being located on Civil Works land or waters or (2) a direct benefit to the government. Public utilities including power lines and gas and fuel pipelines are past examples of outgrant requests USACE has received. A designated corridor is defined as “A parcel of land with fixed boundaries that has been identified in the Project Master Plan or Operational Management Plan as being the preferred location for future outgrants or proposed modifications to existing outgrants suitable to accommodate compatible types of outgrants” (USACE, 2009a).

Although there is currently no proposal for either an underground or above ground utility line through the Saylorville Lake Project, such proposals may be put forth in the future..

A. Land Use Compatibility and Site Suitability Considerations.

Developing an alignment for a utility transmission line or pipeline is a complex undertaking and must take into account numerous engineering and environmental issues as well as acquisition of rights-of-way and easements. The focus of this section is to evaluate the USACE land area relative to resource suitability, recreational uses, and presence of sensitive environmental resources to identify constraints and criteria to

designate utility corridor(s) that minimize impacts on environmental and recreational resources.

As noted above, the focus is on identifying existing corridors and sharing these corridors for multiple utilities. Local utilities are also included in this utility corridor program. Early coordination with Saylorville Project Manager in the earliest stages of utility planning is essential. Land use request process policy and the non-recreation outgrant lease policy of 1996 clearly address USACE policy in regards to use of government lands. These policies are included in this document. Reference appendix.

If there are no reasonable and feasible alternatives to avoid USACE lands, initial consideration should include existing disturbed corridors such as existing highways and utility corridors.

B. Existing Roadways.
Roadways are present throughout the Saylorville Lake Project to provide access to USACE lands and waters and allow residents to traverse through the area. These roadways have already been removed from recreational use and have disturbed/impacted the natural environment. Placing utility corridors adjacent to primary existing roadways, i.e., state and county arterial and collector roads, not small access roads within USACE recreation areas, could potentially decrease the recreational and environmental impacts.

Three primary roadway corridors, generally traversing north-south, parallel Saylorville Lake. These are State Highway 17, State Highway 415, and Beaver Drive.

There are several primary transportation corridors that bisect the USACE lands on either side of the lake. These are from North to South, State Highway 30, County Road E-57, County Road E-62, State Highway 210, Portion of State Highway 17 and Euclid Avenue.

C. Existing Utility Corridors.
The use of existing utility corridors should be evaluated to determine whether the proposed utilities can be placed along the same corridor. Using an existing corridor could cause less disruption to USACE lands than constructing a new corridor. Grouping utilities into an existing utility corridor could reduce the recreational and environmental impacts.

There are five existing utility corridors for transmission lines and pipelines identified which traverse USACE lands from an east-west perspective, which are generally located in the southern portion of the Saylorville Lake Project

D. Intensive-Use Recreation Areas and Recreation Facilities.
One of the primary objectives of Saylorville Lake is recreational use. Development of a utility corridor through recreation areas and near recreation facilities could disrupt the use and enjoyment experienced by the recreating public. The southern portion of the

lake has the highest intensity recreational use. Avoiding recreation areas should be a prime consideration in identifying utility corridors.

In addition to direct impacts on recreational use, utility corridors may affect the natural beauty of the USACE lands. If a utility corridor does not cross an intensive-use recreation area, it may impact visitors using the recreation areas. For example, an overhead transmission line crossing the lake may impair the view of the landscape. Therefore, the visual impacts to area that have intensive recreational use should be evaluated and considered.

E. Environmentally or Culturally Sensitive Areas.
A number of environmentally and potentially culturally sensitive areas are located throughout USACE lands including wetlands and archeological resources areas are unique and should be maintained; therefore, potential utility corridors should avoid these areas. See map appendix 23 and 24 Saylorville Lake Sensitive Lands.

Forested habitats represent a unique resource on Saylorville Lake due to the decline associated with the rapid spread of development in the area as well as the large amount of open agricultural lands. Avoiding or minimizing impacts to these forested habitats should be given strong consideration when selecting a potential utility corridor due to the rarity of such habitats in the region. While these areas are not designated as critical habitat for threatened and endangered species, the uniqueness of the habitat increases the potential for any threatened and endangered species in the area to utilize this habitat. Before any utility related corridor work is undertaken a survey of the potentially impacted area should be performed to verify the absence of any designated sensitive areas to include cultural resources, wetlands, threatened and endangered species, steep slope and habitats vulnerable to fragmentation.

F. Footprint on USACE Lands.
The width of the Saylorville Lake Project varies throughout the Des Moines River corridor. If a proposed utility corridor alignment cannot avoid USACE lands, options that minimize the utility footprint should be a strong consideration.

The location of the utility footprint is also important in relation to topography, soils, and stream/waterway crossings. Areas with slopes of over 15 percent shall be avoided due to the high erodibility of some of the soils. This is also important in terms of stream crossings and riparian zones. Stream crossings shall be avoided and/or minimized where possible. In the event that a stream cannot be avoided a buffer of vegetation could be left in the riparian zone to reduce the potential for erosion and increased sediment in the water body.

Once a formal proposal is received, an evaluation shall be conducted using the factors above to identify potential impacts and alternatives to minimize impacts. Mitigation will be required for both temporary and permanent resource degradation. Vegetative management plans are critical to resource protection within the utility corridors and must be approved in the evaluation process. Recommendations for alternative utility corridor

locations shall be based on the evaluation. See map appendix 31 Saylorville Lake Utility Corridors.

6.10. Partnership Archery Range

Saylorville Lake is well known as an outdoor recreation destination for all types of activities. Archery has become an activity of high interest in recent years and the lack of local outdoor facilities has brought interest for an outdoor range in the area. The area east of the Bob Shetler Recreation Area and west of the Saylorville Gorge would make a suitable location to introduce an archery range. This area currently would require minimal change in becoming an archery range. The proposed area has in the past filled the need of a staging area for the spillway and road construction project. The area is flat with a small tree planting and has an existing parking lot. East of the proposed area is a soil embankment which would isolate the area from other user groups. Proper signage could be placed to safely identify the area as an archery range. The fence lining the gorge on the west portion of the proposed area needs repair and movement to ensure visitor safety. The archery range would require a partnership with a volunteer group or organization to assist with management of the range. Possible range activities include a 3-D shooting course, elevated shooting stands, distance shooting out to 100 yards and proficiency shooting for the urban deer hunt.

6.11. Iowa National Guard Memorandum of Agreement

In June of 2002 a Memorandum of Agreement (MOA) was created between the Iowa National Guard (IANG) and The US Army Corps of Engineers (Corps) at Saylorville Lake. This working document at the time was the gateway to allow the IANG to hold minimally invasive training exercises on Corps lands and waters. Annually the Corps grants permissions to the IANG to hold numerous trainings on different tracts of land and water. The IANG has assisted the Corps in flood debris cleanup from previous high water events as well as granted the Corps permission to access IANG lands for an annual Wheelin' Sportsman's Turkey Hunt.

With troops returning from oversees and funding levels decreasing both the IANG and the Corps understand that this partnership has very high potential for future resource sharing. Communication between the Corps and the IANG is critical for the partnership to be successful. Both the IANG and the Corps understand the importance of this agreement and will continue to utilize and possibly expand this MOA for new and innovative ways to partner in the future.

6.12. Energy Conservation/Sustainability

In July 2007, the U.S. Army Corps of Engineers (Corps) issued Commander's Policy Memorandum #4 (*see Appendix G*). This policy formally introduced the Corps' path forward in implementing sustainability practices in everything the agency does. The Corps Environmental Operating Principles (*see Appendix F*), guides the agency to integrate sustainability practices into operations in an effort to recycle, reduce waste and meet or exceed energy efficiency goals. With these principles, the Corps can implement the Energy Policy Act of 2005 (*see Appendix D*) and the President's Executive Order 13423 "Strengthening Federal Environmental, Energy and

Transportation Management." (*see Appendix G*). On October 5, 2009, Executive Order 13514 further directed Federal agencies to increase energy efficiency and laid out goals for agencies to achieve. (*see Appendix G*).

As the Corps moves forward with energy sustainability, Saylorville Lake continues to implement sustainability efforts in daily operations. Over the last several years, Saylorville staff has taken actions towards energy efficiencies to include: energy audit provided by energy provider Mid-American Energy, replaced the administration office HVAC with a high efficiency, high SEER heat pumps, replaced office lights with T8 light fixtures, installed external LED fixtures on buildings and on recreation area street lights. LED lights have also been installed in some interior facilities with more installations planned. Additional actions taken include the use of occupancy sensors in strategic locations in the main office building and this type of technology will be incorporated in public buildings in the future. The vehicle fleet that staff uses has also seen a dramatic shift in numbers. Ranger patrol vehicles are smaller SUVs that utilize flex-fuel which allows greater mileage per gallon of fuel. With changes in technology, new heavy equipment vehicles that have been purchased have become more efficient and create fewer emissions than previous models. Policies in operations have also contributed to Saylorville's sustainability and energy efficiency efforts. During the off-season when parks are closed, electricity is turned off which eliminates any use of power, including security lights. This simple change in operating policy has saved thousands of dollars annually and reduced energy usage. The barrier dam pump station policy calls for the sluice gate to remain open allowing water to gravity flow into the main lake when conditions are right. This change has not only permitted greater efficiencies in flood risk management, but from a energy perspective has resulted in thousands of dollars in electrical use savings on an annual basis. For many years as a part of our waste disposal contract, we provide recycling containers in Saylorville's four campgrounds. Year around recycling occurs at the Administration Complex to include, paper, plastic and metals. A routine maintenance practice of recycling old grills, picnic tables, aluminum signs and other materials continues on an annual basis. Since 2005, we have been purchasing "green" cleaning products to provide to our service contractors who perform custodial and janitorial services in recreation facilities. These products are less damaging to the environment, but still maintain the ability to safety and adequately clean and sanitize public facilities.

As Saylorville Lake continues to seek innovative and sustainable solutions in operating and maintaining all facilities and structures, sustainability and energy efficiency will be incorporated into decision making, material and equipment purchases and policy development where feasible and applicable. New technology and innovative ways of doing business can and should be implemented to meet all of our authorized missions and provide a sustainable future for many years to come.

6.13 Natural Playscape

A relatively new type of playground is becoming increasingly popular in parks. These playgrounds are commonly referred to as natural playscapes, naturescapes, or natural playgrounds. These playgrounds use natural materials as much as possible for its play components. Common materials used include solid and hollow logs, tree limbs,

boulders, rocks, rock structures, grasses, sand and soil. Often some type of water feature is also incorporated into the play environment. An advantage of natural playscapes is their open-ended spaces that allow children to use their imagination and creativity. Natural playscapes also have fewer injuries caused from falls than traditional playgrounds because of their design. Most of the components of natural playscapes have an elevated height no more than 3 feet, reducing the risk of an injury from a fall.

The Butterfly Garden near the Visitor Center would provide a natural setting for a natural playscape to blend comfortably into the surroundings. The Butterfly Garden is in close proximity to the Visitor Center via the Neal Smith Trail. The garden attracts numerous parents, children and school groups with its multiple beds of colorful flowers, herbs, native plants and the butterflies, moths and hummingbirds that feed on the nectar they provide. The playground would be an attractive addition to the Butterfly Garden area.

6.14 Connectivity to Municipal Sewer

Saylorville Lake provides recreation and administration facilities that include waste disposal systems of various design. Both gravity and pressure sewers drain to: lagoon systems, "Wisconsin Mound " systems, conventional septic systems and holding tanks. These systems continue to work resonably well, but as facilities age and visitation increases there may be other options for treatment such as connection to Metropolitan Wastewater Reclamation Authority or through adjacent municipalities. Saylorville Management will continue to investigate all options and availability for each system.

6.15 Emerald Ash Borer

Emerald Ash Borer (EAB) poses a significant threat to natural lands and developed recreation sites throughout the Saylorville Lake Project. The entire state of Iowa has been placed within a forest products quarantine zone and EAB has been confirmed in six Iowa counties (as of May 2014). The time line for EAB infestation is unknown but preparations must begin. The purpose of the Emerald Ash Borer Policy (*see Appendix G*) is to provide the Saylorville Lake staff with a general scope of guidelines related to the Emerald Ash Borer (Argrilus planipennis) infestation impacting the project.

Ash is a significant component of two common forest associations that dominate the 13,000 acres of forest cover on USACE lands. Elm, Ash, and Cottonwood associated systems are common and Ash is a significant component. Loss of Ash coupled with Elm Disease impacts will alter this forest cover but significant other species like Hackberry, Mulberry and Cedar will fill the voids created by Elm and Ash loss. Oak Hickory associations have significant numbers of Ash trees and are home to less common Ash species in Central Iowa, Blue and Black Ash. While the diversity of our forests will be able to absorb the loss of Ash component, impacts that occur may include the following:

- 282 species of arthropods rely on Ash trees for food and shelter. 44 species feed exclusively on Ash trees and are at risk of extinction.
- Woodpeckers will temporarily respond positively to infestation sites as food source and nesting sites dramatically increase.

- Generated dead wood on forest floor can significantly impact forest soil ecology including pH, soil moisture mineral content.
- Significant changes to fire risks are anticipated with increased fuel loads complicating all fire issues in our urban interface environment.
- Loss of large canopy trees and the corresponding additional sunlight hitting the forest floor will tend to favor invasive species which infect all of our forested lands. Invasive plants and native poison ivy will respond positively to loss of Ash across the spectrum.
- The impact to Oaks is unknown. Saylorville Lake lands suffer from poor regeneration but anticipate Oak not being able to take advantage of canopy changes. Ash is a primary pioneer species on naturally reforesting lands around the project and perhaps oak can become a more consistent pioneer through natural reproduction.

6.16 Saylorville Corridor

The Downstream Corridor Master Plan supplement of 1975 contains two important components that are being captured in the new Master Plan. First is the expansion of both fee title lands and flowage easements downstream of the dam to accommodate increased outflows from a change in the water regulation plan. This change was a result of a court action involving anticipated flood damage to Ledges State Park in Boone County by the operation of Saylorville Lake as a flood control reservoir. Three changes were completed to mitigate damages to Ledges State Park. To mitigate for damages to lower elevations within the park, the Corps purchased a 385 acre tract along the north east boundary of the park and transferred ownership to the state of Iowa in 1981. The second term of mitigation was to provide funds to move low lying recreation facilities to higher elevations above the maximum storage elevation. The third term of mitigation required the Corps to increase outflow maximums during non-emergency flood situations to lessen the impact and duration of flooding in the lower reaches of Ledges State Park. To accomplish this mitigation requirement the Corps of Engineers altered their water regulation manual to accommodate discharges of 12,000-16,000 cubic feet per second. Additional 18 acres of fee title lands were purchased along with 67 acres of flowage easement. The corridor expansion and subsequent proposed greenbelt represents a significant greenway running deep into the city of Des Moines.

The second component of the Corridor Master Plan Supplement recognized ecological value of this greenbelt. Much of this newly expanded corridor was set aside as wildlife refuge or forest preserve. In the supplement document environmentally sensitive areas were identified and significant tracts were to be avoided for high density recreation development and preserved. The Neal Smith paved trail on the east side of the river was designed to be a link for Des Moines residents and the Saylorville Lake project. Two major Corps recreation areas were constructed under the 1975 supplement plan. They were Bob Shetler Recreation Area and Cottonwood Recreation Area. Small parking lot accesses are available to trail users and others at Sycamore access, Morningstar Drive and the Sycamore Mountain Bike trail which traverses the west side of the river. This large riparian zone contains approximately 3,120 acres of fee title and 218 acres of flowage easement. The area is dominated by wetland oxbows, forested

wetlands and rich wildlife diversity. Several wildlife and plant surveys have been conducted over time reflecting the richness of species. Outflows from the dam keep water open throughout the winter season; this area has developed as an important wintering bald eagle area. Eagles are regularly seen along the river in the very urban environment of downtown Des Moines. This same open water condition has attracted large numbers of wintering waterfowl. Both ducks and geese are annually surveyed during midwinter national survey dates and numbers are commonly over 10,000 birds. This area was also identified through breeding bird studies and input from Iowa ornithologist Union, and Audubon as being sensitive for bird species with conservation concern. The Multi-species Inventory and Monitoring Survey (*see Appendix G*) also identified this zone as being under the highest threat from identified human related stressors, changing the land use classification to wildlife refuge along with proper management can depreciate some of the stressors identified within the analysis provided. The area lends itself to significant restoration potential as portions of this landscape currently farmed can be reforested, planted to wet prairies or restored wetlands.

The vision of the 1975 Saylorville Corridor recognized the unique opportunity for visitors to enjoy a significant wild tract of land embedded in the metropolitan complex. Much of the area is accessible through trail systems for both biking, hiking, canoeing, kayaking which all are low consumptive uses of the resource. The original master plan identified sites for additional small parks and athletic fields to be constructed by the managing agencies. These recreation facilities were never constructed. The new master plan changes these parcels from high density use areas in the 1975 supplement to appropriate wildlife refuge. These once open previously farmed areas have reverted to young riparian forest.

The difficulties in maintaining this resource are significant. Four agencies are involved in the management of the corridor: US Army Corps of Engineers, Iowa Department of Natural Resources, Polk County Conservation Board and Des Moines Parks and Recreation. Stressors to the resource are mostly urban in nature and the metro's rapidly growing population only exacerbates the problem. Pollution, fragmentation pressures, water quality issues and invasive species all play a role in diminishing the quality of the resource. It is imperative that for this greenbelt corridor to flourish into the future and a strong course of protection will need to persist among all partners.
From the Saylorville Dam south to the 6th Avenue Bridge all USACE owned lands will be classified as wildlife refuge. It is the intent of this master plan to develop this refuge in partnership with the United States Fish and Wildlife Service (USFWS) under a program titled "Urban Wildlife Refuge Initiative" (*see Appendix G*). The goals under this program attempt to protect valuable wildlife landscapes within urban areas while assuring public access to the resource. All agencies involved in the management of Corps lands within this corridor will continue to manage the resource with the assistance of USFWS. The Urban Wildlife Refuge Initiative program attempts to connect urban populations with nature through natural settings. Close proximity of this greenbelt to many Des Moines city residence including schools, makes the Saylorville Lake Corridor an ideal resource. Public hunting will continue to be promoted and serves purpose in providing urban

residence a close area to pursue hunting as a sport. The trails within the proposed refuge offer plenty of access for persons interested in being out in nature. This proposal to become an urban wildlife refuge will take significant amount of time and agency coordination.

This master plan also identifies and recommends expansion of the greenbelt corridor from south of 6th Avenue to the Lake Red Rock Project boundary. The advantages to having continuous contiguous corridors from wildlife and a human standpoint are well documented. This concept would require coordination with the city of Des Moines and other interest groups and the benefits gained are significant.

6.17 Surface Water Zoning

Certain surface waters have restriction on use around the reservoir. For public safety no boating or swimming is allowed within 600 feet of the control tower on the west end of the dam.

Boaters have distance restrictions at Oak Grove and Sandpiper swimming beaches to reduce risk to swimmers. Areas of heavy boat traffic including the marina and Commodores Cove north of the Visitor Center are zoned no wake for public safety.

This plan proposes zoning the very shallow upper reaches of the reservoir locally identified as the “mud flats” to a “No Motorized Vessel” zone. This shallow water island complex is listed as a sensitive area in our master plan and is the largest contributor to Saylorville Lake’s globally significant designation as a bird conservation area by the American Bird Conservancy. Motorized vessels are highly disruptive to thousands of birds that forage and rest in this shallow water environment. The area is highly visited by birders and is a primary stop on the Makoke Bird Trail. The proposed restriction is from 1 April through 31 August. After 1 September the motor restriction is lifted to allow waterfowlers access to these mudflats for the waterfowl hunting seasons. The fall pool may be incrementally raised to optimize waterfowl habitat. The lake may be raised up to four feet in the fall per the current water regulation manual. During periods of flood storage this motorized vessel restriction may be lifted until the lake returns to conservation pool. See map appendix 25 – Saylorville Lake Water Zoning.

By restricting motorized vessel during the spring and summer boating safety will be significantly enhanced. The effort of Corps personnel, local rescue squads and other agencies involved in the rescue of boaters and recovery of grounded vessels is expensive, time consuming and potentially dangerous. This shallow water condition continues to expand through silt deposition and shifting substrate bottoms. Public safety is an important consideration in this restriction.

SCORP data supports the growing popularity of kayaking in central Iowa. These vessels are allowed to boat within this zone and separating these small craft from large power boats should further enhance safe boating on the reservoir. Kayaks and canoes can easily operate in shallow water conditions and enjoy a safer open water experience in

an enjoyable setting. Float trips that commonly occur on the river can terminate at the small ramp located within this section of the reservoir and avoid having to cross large open water.

CHAPTER 7
Agency and Public Coordination

7.01. Agency and Public Coordination

On June 8, 2012, the Saylorville Lake Project announced its plan to revise and update the Master Plan which was last updated in 1984. The Corps has involved the public, coordinated with Tribes, Federal, State, local agencies and communities in the update process.

The Corps held public and agency scoping meetings in the summer, fall, and winter of 2012, 2013 and spring of 2014. Many different means were used in order to obtain public and agency input into the master planning process, these included:

- Web Page – the Saylorville Lake Project Master Planning Page invited comments using an online questionnaire, fact sheets were posted along with a copy of the previous master plan.
- Focus groups - Letters were sent to sent out letters to local groups, agencies, Congressional representatives and local governments inviting participation in various focus group meetings
- News releases were sent out to local and State newspapers and radio stations in June 2012 and May 2014 in preparation for the public meeting.
- Comment Boxes and One-on-One Communication – questionnaires and master planning fact sheets were handed out to the public at the Saylorville Lake Visitor Center, interpretive programs, Corps managed campgrounds, boat ramps, and day use areas.

Public scoping was conducted from June 2012 through October 2013. Comments were submitted in writing, by email, or online to the Saylorville Lake project office. All written and verbal comments received at the meetings are provided in Appendix B. Comments were received on a wide range of topics including:

- Concerns about Urban Sprawl and Development
- Pollution (Runoff, Siltation)
- Campsite Improvements
- Improving/Restoring Habitat
- Adding Dump Stations
- Increasing Accessibility (Camping, Fishing, and Trails)
- Improving Restroom Facilities
- Controlling Invasive Species

AGENCY SCOPING MEETINGS

The Corps held an initial scoping meeting with state and local agencies directly involved with managing Corps project lands at Saylorville Lake. On May 30, 2012, the Corps held a meeting at the project office with members of the Iowa Department of Natural Resources (Fisheries, Big Creek State Park, and Saylorville Wildlife Unit) and Polk

County Conservation Board. Boone County Conservation Board members were also invited but were unable to attend. This meeting focused on announcing the intent to update the master plan, purpose and need for revision, the Corps master planning processes, and expectations and concerns of partners.

A second agency meeting was held on February 6, 2014 in which the Corps met with the IA DNR, Polk County Conservation Board, Iowa State University, and IA Audubon in order to define and discuss preliminary locations of environmentally sensitive areas located on project lands.

TRIBAL COORDINATION

In April 2014, the Corps contacted ten tribes who had expressed an interest in Polk, Boone and Dallas Counties of Iowa on the Tribal Directory Assessment Tool, a website managed by the U.S. Department of Housing and Urban Development regarding the updating of the Programmatic Agreement (PA) for management of cultural resources at Saylorville Lake. In the letter regarding the updating of the PA the Corps mentioned that the master plan was also being updated. The tribes were subsequently provided a letter regarding the updating of the Saylorville Lake Master Plan in May 2014.

In addition, consultation with the tribes will be on going after the master plan and PA are completed based on the need for their input as individual cultural resources are addressed.

PUBLIC MEETING

USACE employees hosted a public meeting on May 15th, 2014. Participants were asked to sign-in at a table where personnel provided the participants with information regarding the structure of the public meeting, comment forms, and were asked to submit any other comments via the Saylorville Lake website. After signing in, participants were directed to an area where topic-specific information tables were set up. Large-scale boards were displayed at each table to convey information about the following topics:

- The Master Planning Process and Timeline
- Recreation Area Improvements
- Natural Resource Management
- Real Estate Issues and Concerns
- Land Classifications

At each of the information tables and throughout the meeting room, USACE employees were available to answer questions and receive comments. Interested persons had the opportunity to comment about the project using a variety of methods, including the following:

- Filling out a comment form at the open house;
- Giving verbal comment;

- Submitting a comment using electronic mail.

Comments were received from concerned citizens, interest groups, partner agencies, other government agencies, and businesses. In total, ____ comments of some form were received. All of the received comments were considered a proposal for review in making changes to the SMP and MP. These proposals were then integrated into the review process for the Environmental Assessment. Each proposal was analyzed for potential impacts to the environment should they be approved.

PUBLIC REVIEW AND COMMENT ON THE DRAFT MASTER PLAN/EA (see appendix B)

*****PLACEHOLDER – COORDINATION ONGOING*****

The Draft Saylorville Lake Master Plan/EA was distributed to interested agencies, organizations, and individuals in _____ of 20__. The public comment period was ___ days long and closed on _____DATE_____. This comment period provided the public with an opportunity to review and comment on the Draft Master Plan with Integrated Environmental Assessment. The Draft Master Plan/EA incorporated, as appropriate, review comments received on the preliminary draft from tribal members and representatives of State, Federal, and local agencies.

APPENDIX A

NEPA Documentation

If approved and a FONSI signed by the Rock Island District Commander, a CD copy of the Saylorville Lake Master Plan with Integrated EA would be placed in this section.

Under construction.

APPENDIX B

Summary of Comments

Under construction.

APPENDIX C

Approval Documentation

This section would contain a copy of the request to the Rock Island District Commander for approval of the Master Plan. A copy of the response (APPROVAL) memorandum would also be included in this section.

UNDER CONSTRUCTION

APPENDIX D

Applicable Federal Statutes

This Master Plan has been reviewed and determined to be in compliance with the statutes listed in this master plan.

The following public laws are applicable to Saylorville Lake.

D.1 Public Law 59-209, Antiquities Act of 1906. - The first Federal law established to protect what are now known as "cultural resources" on public lands. It provides a permit procedure for investigating "antiquities" and consists of two parts: An act for the Preservation of American Antiquities, and Uniform Rules and Regulations.

D.2 Public Law 74-292, Historic Sites Act of 1935. – Declares it to be a national policy to preserve for (in contrast to protecting from) the public, historic (including prehistoric) sites, buildings, and objects of national significance. This act provides both authorization and a directive for the Secretary of the Interior, through the National Park Service, to assume a position of national leadership in the area of protecting, recovering, and interpreting national archeological historic resources. It also establishes an "Advisory Board on National Parks; Historic Sites, Buildings, and Monuments, a committee of eleven experts appointed by the Secretary to recommend policies to the Department of the Interior".

D.3 Public Law 78-534, Flood Control Act of 1944. – Section 4 of the act as last amended in 1962 by Section 207 of Public Law 87-874 authorizes the Corps to construct, maintain, and operate public parks and recreational facilities in reservoir areas and to grant leases and licenses for lands, including facilities, preferably to Federal, State or local governmental agencies.

D.4 Public Law 85-500, River and Harbor Act of 1958. – This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.

D.5 Public Law 85-624, Fish and Wildlife Coordination Act 1958. - This act as amended in 1965 sets down the general policy that fish and wildlife conservation shall receive equal consideration with other project purposes and be coordinated with other features of water resource development programs. Opportunities for improving fish and wildlife resources and adverse effects on these resources shall be examined along with other purposes which might be served by water resources development.

D.6 Public Law 86-717, Forest Conservation. - This act provides for the protection of forest cover for reservoir areas under this jurisdiction of the Secretary of the Army and the Chief of Engineers.

D.7 Public Law 87-874, Rivers and Harbors Act of 1962. – This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.

D.8 Public Law 88-578, Land and Water Conservation Fund Act of 1965. - This act established a fund from which Congress can make –appropriations for outdoor recreation. Section 2(2) makes entrance and user fees at reservoirs possible by deleting the words "without charge" from Section 4 of the 1944 Flood Control Act as amended.

D.9 Public Law 89-72, Federal Water Project Recreation Act of 1965. - This act requires that not less than one-half the separable costs of· developing recreational facilities and all operation and maintenance costs at Federal reservoir projects shall be borne by a non-Federal public body. An OCE/OMB implementation policy made these provisions applicable to projects completed prior to 1965.

D.10 Public Law 89-90, Water Resources Planning Act (1965). - This act established the Water Resources Council and gives it the responsibility to encourage the development, conservation, and use of the Nation's water and related land resources on a coordinated and comprehensive basis.

D.11 Public Law 89-272, Solid Waste Disposal Act, as amended by PL 94-580, dated October 21, 1976. – This act authorized a research and development program with respect to solid-waste disposal. It proposes (1) to initiate and accelerate a national research and development program for new and improved methods of proper and economic solid-waste disposal, including studies directed toward the conservation of national resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid waste; and (2) to provide technical and financial assistance to State and local governments and interstate agencies in the planning, development, and conduct of solid-waste disposal programs.

D.12 Public Law 89-665, Historic Preservation Act of 1966. – This act provides for: (1) an expanded National Register of significant sites and objects; (2) matching grants to states undertaking historic and archeological resource inventories; and (3) a program of grants-in aid to the National Trust for Historic Preservation; and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires that the President’s Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which adversely affects properties listed, nominated, or considered important enough to be included on the National Register of Historic Places.

D.13 Public Law 90-483, River and Harbor and Flood Control Act of 1968, Mitigation of Shore Damages. – Section 210 restricted collection of entrance fee at Corps lakes and reservoirs to users of highly developed facilities requiring continuous presence of personnel.

D.14 Public Law 91-190, National Environmental Policy Act of 1969 (NEPA). – NEPA declared it a national policy to encourage productive and enjoyable harmony between man and his environment, and for other purposes. Specifically, it declared a "continuing policy of the Federal Government... to use all practicable means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations and public law of the United States shall be interpreted and administered in accordance with the policies of the Act.

D.15 Public Law 91-611, River and Harbor and Flood Control Act of 1970. – Section 234 provides that persons designated by the Chief of Engineers shall have authority to issue a citation for violations of regulations and rules of the Secretary of the Army, published in the Code of Federal Regulations.

D.16 Public Law 92-463, Federal Advisory Committee Act. - The Federal Advisory Committee Act became law in 1972 and is the legal foundation defining how federal advisory committees operate. The law has special emphasis on open meetings, chartering, public involvement, and reporting.

D.17 Public Law 92-500, Federal Water Pollution Control Act Amendments of 1972. – The Federal Water Pollution Control Act of 1948 (PL 845, 80th Congress), as amended in 1956, 1961, 1965 and 1970 (PL 91- 224), established the basic tenet of uniform State standards for water quality. Public Law 92-500 strongly affirms the Federal interest in this area. "The objective of this act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters."

D.18 Public Law 92-516, Federal Environmental Pesticide Control Act of 1972. - This act completely revises the Federal Insecticide, Fungicide and Rodenticide Act. It provides for complete regulation of pesticides to include regulation, restrictions on use, actions within a single State, and strengthened enforcement.

D.19 Public Law 93-81, Collection of Fees for Use of Certain Outdoor Recreation Facilities. This act amends Section 4 of the Land and Water Conservation Act of 1965, as amended to require each Federal agency to collect special recreation use fees for the use of sites, facilities, equipment, or services furnished at Federal expense.

D.20 Public Law 93-251, Water Resources Development Act of 1974. - Section 107 of this law establishes a broad Federal policy which makes it possible to participate with local governmental entities in the costs of sewage treatment plan installations.

D.21 Public Law 93-291, Archeological Conservation Act of 1974.- The Secretary of the Interior shall coordinate all Federal survey and recovery activities authorized under this expansion of the 1960 act. The Federal Construction agency may transfer up to one percent of project funds to the Secretary with such transferred funds considered non-reimbursable project costs.

D.22 Public Law 93-303, Recreation Use Fees. - This act amends Section 4 of the Land and Water Conservation Act of 1965, as amended, to establish less restricted criteria under which Federal agencies may charge fees for the use of campgrounds developed and operated at Federal areas under their control.

D.23 Public Law 93-523, Safe Drinking Water Act. - The act assures that water supply systems serving the public meet minimum national standards for protection of public health. The act (1) authorizes the Environmental Protection Agency to establish Federal standards for protection from all harmful contaminants, which standards would be applicable to all public water systems, and (2) establishes a joint Federal-State system for assuring compliance with these standards and for protecting underground sources of drinking water.

D.24 Public Law 94-422, Amendment of the Land and Water Conservation Fund Act of 1965. - Expands the role of the Advisory Council. Title 2 - Section 102a amends Section 106 of the Historical Preservation Act of 1966 to say that the Council can comment on activities which will have an adverse effect on sites either included in or eligible for inclusion in the National Register of Historic Places.

D.25 Public Law 98-63, Supplemental Appropriations Act of 1983 - The act authorized the Corps of Engineer Volunteer Program. The United States Army Chief of Engineers may accept the services of volunteers and provide for their incidental expenses to carry out any activity of the Army Corps of Engineers except policy making or law or regulatory enforcement.

D.26 Public Law 99-662, The Water resources Development Act. - Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.

D.27 Public Law 99-88, Supplemental Appropriations Act of 1985 – The act authorized the partnership of local and Federal government and private interests to develop ecosystem improvements and recreational opportunities in the Des Moines River Corridor.

D.28 Public Law 101-646, Coastal Wetlands Planning, Protection, & Restoration Act. – Provides authorization to carry out projects for the protection, restoration, or enhancement of aquatic and associated ecosystems, including projects for the protection, restoration, or creation of wetlands and coastal ecosystems.

D.29 Public Law 109 – 58, Energy Policy Act of 2005. - Directed the Secretaries of Agriculture, Commerce, Defense Energy and Interior to identify corridors for oil, gas, and hydrogen pipelines and electrical transmission and distribution facilities on Federal lands and to schedule prompt action to identify, designate, and incorporate the corridors into the applicable land use plans.

APPENDIX E

Design Memorandums

Under construction.

APPENDIX F

Engineer Regulations, Pamphlets & Manuals

F.1 Engineer Regulation (ER) 200-1-5, Environmental Quality – Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers Environmental Operating Principles (EOP) and Doctrine, 30 October 2003.

F.2 Engineer Regulations (ER) 200-2-2, Environmental Quality – Procedures for Implementing the National Environmental Policy Act (NEPA), 4 March 1988.

F.3 Engineer Regulations (ER) 1105-2-100, Planning Guidance, 22 April 2000 (with Appendices D and G revised June 2004 and Appendix F revised January 2006).

F.4 Engineer Regulations (ER) 1130-2-406, Shoreline Management at Civil Works Projects, 31 October 1990.

F.5 Engineer Regulations (ER) 1130-2-520, Navigation and Dredging Operations and Maintenance Policies, 29 November 1996.

F.6 Engineer Regulations (ER) 1130-2-540, Environmental Stewardship Operations and Maintenance Policies, 4 November 2002.

F.7 Engineer Regulation (ER) 1130-2-550, Project Operations – Recreation Operations and Maintenance Guidance and Procedures, 15 November 1996 (with changes 1 October 1999, 1 March 2002, 15 August 2002, 30 August 2008, 30 March 2009, 30 January 2013, and 30 September 2013).

F.8 Engineer Pamphlet (EP) 1130-2-540, Project Operations – Environmental Stewardship and Maintenance Guidance and Procedures, 15 November 1996.

F.9 Engineer Pamphlet (EP) 1130-2-550, Project Operations – Recreation Operations and Maintenance Guidance and Procedures, 15 November 1996.

F.10 Engineer Pamphlet (EP) 1165-2-316, Rules and Regulations Governing Public Use of Corps of Engineers Water Resource Development Projects, 1 May 2000.

F.11 Engineer Manual (EM) 1110-1-400, Engineering and Design – Recreation Facility and Customer Service Standards, 1 November 2004.

APPENDIX G

Supporting Historical Information

G.1 Commander's Policy Memorandum #4, July 2007.

G.2 Emerald Ash Borer Policy, February 2014.

G.3 Final Report; The Tomorrow Plan, November 2013.

G.4 Fish and Wildlife Service Urban Wildlife Refuge Initiative, April 2012.

G.5 Iowa Lakes Survey 2009, May 2011.

G.6 Iowa Survey for the State Comprehensive Outdoor Recreation Plan (SCORP), July 2012.

G.7 Land Use Review Evaluation Process for Fee and Easement Lands, May 2014.

G.8 Multiple Species Inventory and Monitoring Report, Date TBD.

G.9 Non-Recreational Outgrant Policy, March 2009.

G.10 Outdoor Recreation Trends and Futures: A Technical Document Supporting the Forest Service 2010 RPA Assessment, March 2012.

G.11 Polk County, Iowa: 2012 Survey on Outdoor Recreation, July 2012.

G.12 Presidential Executive Order 13423, January 2007.

G.13 Presidential Executive Order 13514, October 2009.

G.14 Saylorville Lake 1984 Master Plan, September 1984.

G.15 State of the Region Greater Des Moines; The Tomorrow Plan, March 2012.

APPENDIX H

Maps

1- Saylorville Lake Project Area
2- Saylorville Lake Watershed (Not Complete)
3- Saylorville Lake Mudflats
4- Acorn Valley Campground
5- Walnut Ridge Recreation Area
6- Lakeview Recreation Area
7- Bob Shetler Recreation Area – Main Campground
8- Bob Shetler Recreation Area – West Campground and Day Use
9- Bob Shetler Recreation Area – Picnic
10- Cottonwood Recreation Area
11- Visitor Center
12- Cherry Glen Campground
13- Cherry Glen Recreation Area – Picnic
14- Cherry Glen Recreation Area – Boat Ramp
15- Oak Grove Recreation Area - Beach
16- Oak Grove Recreation Area – Picnic
17- Prairie Flower Campground – North
18- Prairie Flower Campground – South
19- Sandpiper Recreation Area – Beach and Boat Ramp
20- Sandpiper Recreation Area – Picnic
21- Saylorville Lake Land Classification – 1
22- Saylorville Lake Land Classification – 2
23- Saylorville Lake Sensitive Lands – 1 (Not Complete)
24- Saylorville lake Sensitive Lands – 2 (Not Complete)
25- Saylorville Lake Water Zoning
26- Saylorville Lake Managing Agencies – 1
27- Saylorville Lake Managing Agencies – 2
28- Saylorville Lake Urban Sprawl
29- Ding Darling Greenway
30- Des Moines River Greenbelt
31- Saylorville Lake Utility Corridors