

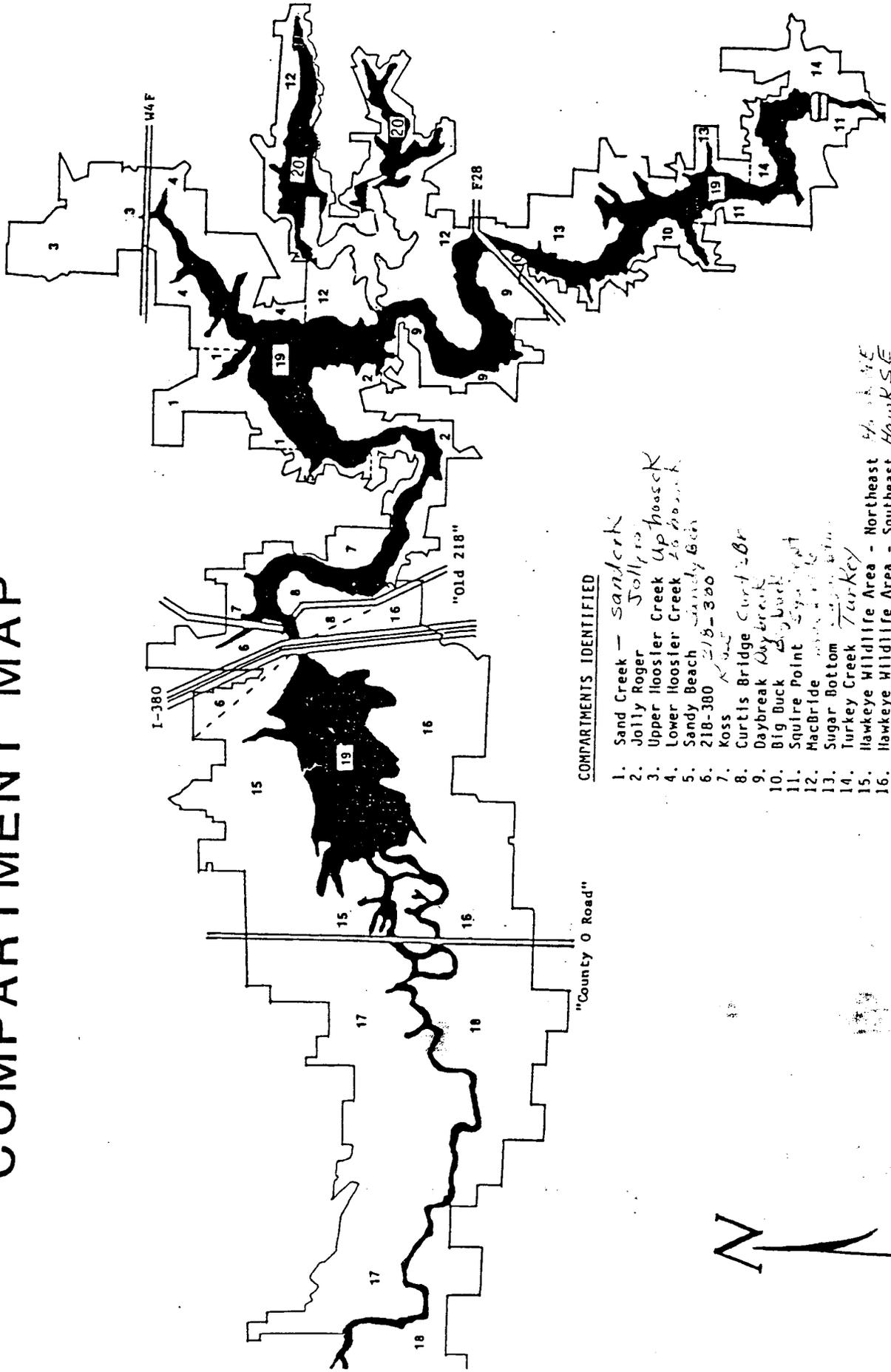
Natural Resource Management

Operational Management Plan I

Coralville Lake

CC.3ALVILLE LAKE

COMPARTMENT MAP



COMPARTMENTS IDENTIFIED

1. Sand Creek - sandcrk
2. Jolly Roger Jollyr
3. Upper Hooster Creek Up Hoosck
4. Lower Hooster Creek Lw Hoosck
5. Sandy Beach Sandy Bch
6. 218-380 218-380
7. Koss Koss
8. Curtis Bridge Curt Br
9. Daybreak Daybrck
10. Big Duck Big Dck
11. Squire Point Sqire Pnt
12. MacBride MacBrd
13. Sugar Bottom Sugar Btm
14. Turkey Creek Turkey
15. Hawkeye Wildlife Area - Northeast Hawk SE
16. Hawkeye Wildlife Area - Southeast Hawk SE
17. Hawkeye Wildlife Area - Northwest Hawk SE
18. Hawkeye Wildlife Area - Southwest Hawk SE
19. Coralville Lake

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**OMP I
NATURAL RESOURCE MANAGEMENT**

1. INTRODUCTION

1.01 Purpose. The Operational Management Plan, Part I replaces the former Master Plan Appendices B (Forest Management), C (Fire Management Plan) and D (Fish and Wildlife Management) for the Coralville Lake project. The purpose of this OMP is to update management prescriptions for the projects natural resources as outlined in the previously approved appendices. This document will serve as a guide in outlining specific operation and administration policies, objectives and implementation plans for natural resource management consistent with the Master Plan dated April, 1977.

1.02 Authorization. Administrative Authority: The Operational Management Plan is required and authorized by ER1130-2-400 Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects, dated 1 Oct 1986. The plan explains the Natural Resource Management Policy and Goals of the Corps of Engineers on Coralville Lake project lands.

The following are consolidated descriptions of Public Laws that describe existing legislation authorizing natural resource management on Federal lands. Copies of all Public Laws and amendments may be obtained from the Rock Island District Office of Counsel. Copies of Engineer Pamphlets, Engineer Regulations, and Army Regulations may be obtained from Rock Island Administrative Services.

Public Law 79-732, Fish and Wildlife Coordination Act of 1946. This act provides for a general plan to be developed with the Department of Interior to use designated Corps project lands and waters for wildlife conservation and management.

Public Law 85-624, The Fish and Wildlife Coordination Act of 1954. This law, amended in 1958, provides that fish and wildlife conservation shall receive equal considerations with other project purposes, and that such considerations be included in other aspects of water resources development programs.

Public Law 86-717, Conservation of Forest Land Act of 1960. This act requires that where applicable, timber resource management be carried out on Corps lands to increase the value of forest areas for timber value aesthetics, wildlife habitat, recreation, and other beneficial uses.

Public Law 89-669, Protection of Rare and Endangered Species Act of 1966. This act provides for the conservation, protection, and propagation of the native species of fish and wildlife, including migratory birds, that are threatened by extinction.

Public Law 93-205, Endangered Species Act of 1973. This act provides for Federal agencies to use their authority to administer programs for the conservation of endangered and threatened species. Federal agencies are to insure that actions authorized by them do not jeopardize the continued existence of such endangered or threatened species that result, in the destruction or deterioration of their habitat.

Public Law 93-251, The Water Resources Development Act of 1974. Section 77 of this act provides a 75-25% cost sharing between the Federal Government and State and local governments to enhance fish and wildlife on project lands as amendment to P. L. 89-72 authority.

OTHER REFERENCES:

16 U.S.C.S. 661 as amended - Fish and Wildlife Coordination Act and
16 U.S.C.S. 663 - Impoundment or Diversion of Waters; ER 405-1-12
Disposal of Standing Timber, Crops, and Embedded Gravel, sand and
stone. (Real Estate Handbook)

2. PROJECT DESCRIPTION

2.01 INTRODUCTION

Authorization for the project is contained in Section 4 of the Flood Control Act of 28 June, 1938 as passed by the First Session of the 75th Congress (Flood Control Committee Document No. 1). Funding was appropriated in 1949 with construction beginning that same year. Construction was interrupted during the Korean Conflict causing completion to be delayed until 1958. The gates in the control structure were lowered for the first time in 1959.

The Coralville Lake Project is a unit of the comprehensive plan for flood control in the Upper Mississippi River Basin. While flood control and augmentation of downstream low flows during periods of drought were the project's original and primary purpose, these objectives have been expanded to include consideration also for management of recreation, watershed, forest and vegetative cover and fish and wildlife resources as well.

The "Project" is comprised of approximately 24,000 acres of land held in fee title by the U.S. Government and as administered by the U.S. Army Corps of Engineers. Of these, approximately 16,088 acres are leased to the State of Iowa for use at the Lake Macbride State Park and Hawkeye Wildlife Area and Refuge. Another 620 acres are leased to the University of Iowa for the Macbride Nature Recreation Area.

2.02 LOCATION

Coralville Lake is situated in the south central part of the Iowa River Basin in east central Iowa. The dam is located approximately 9.0 miles upstream from Iowa City, Iowa, the nearest significantly large population center. The lake forms primarily in Johnson County, but extends also into Linn and Iowa Counties.

The project dam is constructed at mile 83.3 upstream from the confluence of the Iowa and Mississippi Rivers. This location controls runoff from 3,084 square miles of watershed. Major streams flowing into Coralville Lake drain the areas to the north and east of the Reservoir and include: Price, Knapp, Lingle, Plum, Swisher, McAllister, West Hoosier, and Turkey Creeks. Two additional streams (Jordan and Mill Creeks) also drain the eastern shore, but these first enter into 950 acre Lake Macbride which adjoins Coralville Lake on its northeastern corner.

Access to the project area is provided by U.S. highways in close proximity to the lake. Interstate 80 passes over the Iowa River approximately six miles south of the dam (see fig. 2). This highway provides access from the Quad City Area (Davenport, Bettendorf, Rock

Island, and Moline - 55 miles to the east) and Des Moines (116 miles to the west). U.S. Highway 6 crosses the Iowa River in south Iowa City (see fig. 1). State Highway 965 extends north and south across the area near the upper end, and provides the east boundary of the Hawkeye Wildlife Area (see fig. 1). Interstate 380 connects with I-80 approximately six miles west of Iowa City (see fig. 1). This is the primary link between Iowa City and Cedar Rapids, 27 miles to the north. It crosses the lake immediately to the east of Iowa Highway 965. Additionally, state Highways 220, 382, 151 and 1, and others are major transportation routes (see fig. 1). These routes are further supplemented by numerous secondary and farm-to-market roads providing ready access to most of the project area. A north/south county road crosses the lake upstream from Iowa Highway 965 near the middle of the Hawkeye Wildlife Management Area (see fig. 1).

2.03 CLIMATE AND HYDROLOGY

Climate: The climate of the Coralville Lake area is of the extreme mid-continental subhumid type. Spring may range from wet to fairly dry. Wide seasonal temperature differences are typical. Hot winds and periods of prolonged high temperatures and seasonal droughts are characteristic of summer. Occasionally, there are cool spells during the summer. Precipitation in the winter usually comes in the form of snow. During the summer, warm moist air moves in from the south and precipitation is primarily rain showers which are often heavy. The mean annual temperature is 43 degrees fahrenheit. The lowest temperature ever recorded at Iowa City was -24 degrees fahrenheit on January 28, 1963. In the summer, the average daily temperature is 73 degrees fahrenheit with an average daily maximum of 85 degrees fahrenheit. The highest recorded temperature at Iowa City was 101 degrees fahrenheit on July 27, 1955. The average annual precipitation is 34 inches of which 24 inches (70%) usually falls in April through September which encompasses the 160 day growing season. In two years out of ten, the rainfall during this period is less than 19 inches. The heaviest one-day rainfall during the period on record was 6.91 inches on July 14, 1962. The wettest year on record was 1881 with a statewide average of 44.2 inches.

Temperature, rainfall, relative humidity, and length of the frost-free period are significant in determining the kind of vegetation that can be grown on a given area. The rate and intensity of hydrolysis, carbonation, oxidation, and other significant chemical reactions in the soil are influenced by climate.

The influence of the general climate of the region is somewhat modified by local condition. Dry, lighter soils on south facing slopes have a microclimate that is warmer and less humid than nearby soils in different physical environments. Conversely, poorly drained, north facing and low lying sites are more moist and cooler than adjacent dissimilar areas. Such contrasting conditions explain

in part why certain vegetative types compete more successfully on some sites than others within the same general climate and soil region.

Average temperature, precipitation, growing season, and frost date information as recorded locally over a 22 year period are presented on table 1, 2, and 3 on the preceding page.

Hydrology: The basin of the Iowa River is generally long and narrow with an average drop of 1.9 feet per mile. At Wapello, approximately 15 river miles upstream from the mouth, the river has a bank-full capacity of 29,000 cubic feet of water per second. At this point too, the bank-full width of the river is about 740 feet, with a mean depth of 10.7 feet.

There are six U.S. Geological Survey stream gauging stations in operation to provide information to the project. These are: Kalona, Clear Creek, Iowa City, Marengo, Lone Tree, and Wapello.

Most of the forest component in this flood pool has perished as a result of frequent and extended periods of inundation. The result has been a transition from bottomland hardwoods to marsh type areas with much of the land devoid of woody vegetation. Some willows that were large trees at the time of impoundment have survived at elevations of 680 feet - 685 NGVD, even though partially inundated for up to ten months at a time in some areas. There does not appear to be any long-term willow reproduction in these areas and this vegetative component will be lost when the existing trees die. Between 685 and 695 NGVD, perennial vegetation is partially established. It is probable that Silver Maple (*Acer saccharinum*) may become the dominant species in this higher flood level community if it is tall enough to carry on photosynthesis during flood periods.

A 10-year hydrograph plate numbered 1 precedes this page. Frequency of flooding as revealed by the hydrograph indicates feasibility and practicality of implementing resource management practices at elevations below 700 NGVD.

2.04 SOILS AND GEOLOGY

The NRIS inventory system provides data on all project soil types on an individual segment basis with soil types being identified through use of Johnson County Soil Conservation Service survey data. A soils report shall be generated for the project from this data.

The three major soil associations represented at Coralville Lake are Shelby-Lindley, Lamont-Chelsea and Fayette. The Shelby-Lindley Association soils are dark colored, moderately well-drained loams found on strongly sloping to steep, well-dissected slopes (5 to 30 percent slopes). Lamont-Chelsea Association soils developed from

Aeolian sand. They are light colored, well to excessively drained soils found on uplands and stream terraces (1 to 40 percent slopes). Light colored, well-drained silty loams found on gently to strong sloping sideslopes (1 to 24 percent slopes) are representative of the Fayette Association, a soil of loess origin.

There are no recognized unique soil characteristics effecting forest resource management on the project area.

At the base of the stratigraphic section of this region are Precambrian metamorphic and igneous rocks; these are buried by an extensive sequence of nearly flat-lying Paleozoic sedimentary rocks. Overlying the Precambrian are Cambrian dolomites and sandstones, and Ordovician dolomites, sandstones, limestone, and shales. These rocks are not exposed at the surface in this region and are known only through well records.

Sedimentary rocks of Silurian, Devonian, Mississippian, and Pennsylvanian age comprise the bedrock surface in the area. These two systems are composed principally of limestone and dolomite with small amounts of shale. Commonly, these slope at the rate of about 20 feet per mile toward the southwest. Several of the Devonian formations are highly fossiliferous, containing well-preserved brachiopods, bryozoans, and coral. Overlying the Devonian formations are occasional remnants of Mississippian and Pennsylvanian limestones.

Unconsolidated glacial clay, silt, sand, gravel and wind-deposited loess cover most of the project area. The entire Iowa River Basin has been covered by deposits of two early ice sheets, the Nebraskan and the Kansan. In addition, these lobes of younger Wisconsin-Age drift (Iowa substage) extend into northern Johnson County, overlying the older glacial deposits. Stream-deposited alluvium of recent age underlies the flood plain.

The mineral resources of the project area consist of sand, gravel, and limestone. Sand and gravel resources are found in glacial drift or in the alluvial materials of the river flood plain and terraces. Carbonate rocks of Devonian and Mississippian ages are excavated in limestone quarries within the project area.

2.05 TOPOGRAPHY

The topography of the river valley which has been inundated is varied. Elevations in the Coralville Lake vicinity range from 645 NGVD in the river valley to 900 NGVD in the uplands. Downstream from U.S. Highway 218, the lake at all levels occupies a narrow sinuous valley. Upstream from Highway 218, the river meanders through a flat floodplain of from one to two miles wide. This area provides the major part of the lake's floodwater storage capacity.

At maximum flood control elevation, Coralville Lake extends approximately 41.5 river miles upstream on the Iowa River. Including Lake Macbride, the two lakes are encompassed by 100.1 miles of shoreline. At the summer conservation pool level (680 NGVD), Coralville Lake is 21.7 river miles long, and the shoreline of the conservation pool is 68 miles long. At elevation 670 feet msl, the lake is 17.4 river miles in length.

The general shoreline is fairly irregular and broken by several large and many small inlets and coves. Downstream from U.S. Highway 218, there are fairly steep ridges and valley slopes which are partially stabilized with mixed stands of upland hardwoods. Upstream from Highway 218, the terrain is much broader and flatter on the first and second levels of the Iowa River flood plain.

2.06 LAND OWNERSHIP AND OUTGRANTS

Total fee title lands at the Coralville Lake Project include 24,389 acres. Outgrants to other agencies and individuals comprise 88 leases, licenses, easements and permits for a total 17,032.9 acres. An overview of these outgrant leases, licenses and permits may be found in OMP, Part I, Section 3.05.

2.07 FOREST RESOURCES

A compiled list of woody angiosperm and gymnosperms found on the Coralville Project follows:

SPECIES (TREES)

COMMON GROUPING	SCIENTIFIC NAME	COMMON NAME
Maple	<i>Acer negundo</i>	Boxelder
Maple	<i>Acer nigrum</i>	Black Maple
Maple	<i>Acer saccharinum</i>	Silver Maple
Maple	<i>Acer saccharum</i>	Sugar Maple
	<i>Ailanthus altissima</i>	Tree of Heaven
Birch	<i>Betula nigra</i>	River Birch
Hickory	<i>Carya cordiformis</i>	Bitternut Hickory
Hickory	<i>Carya illinoensis</i>	Pecan
Hickory	<i>Carya lacinosa</i>	Shellbark Hickory
Hickory	<i>Carya ovata</i>	Shagbark Hickory
Hickory	<i>Carya tomentosa</i>	Mockernut Hickory
Elm	<i>Celtis occidentalis</i>	Hackberry
Ash	<i>Fraxinus americana</i>	White Ash

Ash	<i>Fraxinus nigra</i>	Black Ash
Ash	<i>Fraxinus pennsylvanica</i>	Green Ash
Ash	<i>Fraxinus quadrangulata</i>	Blue Ash
Locust	<i>Gleditsia triacanthos</i>	Honey Locust
Locust	<i>Gymnocladus dioicius</i>	Kentucky Coffee Tree
Walnut	<i>Juglans cinerea</i>	Butternut
Walnut	<i>Juglans nigra</i>	Black Walnut
Cedar	<i>Juniperus virginiana</i>	Eastern Red Cedar
	<i>Maclura pomifera</i>	Osage-Orange
Apple	<i>Malus ioensis</i>	Prairie Crab Apple
Mulberry	<i>Morus rubra</i>	Red Mulberry
Hophornbeam	<i>Ostrya virginiana</i>	Ironwood
Pine	<i>Pinus banksiana</i>	Jack Pine
Pine	<i>Pinus nigra</i>	Austrian Pine
Pine	<i>Pinus resinosa</i>	Red Pine
Pine	<i>Pinus strobus</i>	Easter White Pine
Pine	<i>Pinus sylvestris</i>	Scotch Pine
Sycamore	<i>Platanus occidentalis</i>	Sycamore
Cherry	<i>Prunus serotina</i>	Blackcherry
Cherry	<i>Prunus virginiana</i>	Chokecherry
Poplar	<i>Populus alba</i>	Silver Poplar
Poplar	<i>Populus deltoides</i>	Cottonwood
Poplar	<i>Populus grandidentata</i>	Bigtooth Aspen
Poplar	<i>Populus tremuloides</i>	Quaking Aspen
Oak	<i>Quercus alba</i>	White Oak
Oak	<i>Quercus bicolor</i>	Swamp White Oak
Oak	<i>Quercus ellipsoidalis</i>	Northern Pin Oak
Oak	<i>Quercus macrocarpa</i>	Bur Oak
Oak	<i>Quercus muehlenbergii</i>	Chinkapin Oak
Oak	<i>Quercus palustris</i>	Pin Oak
Oak	<i>Quercus imbricaria</i>	Shingle Oak
Oak	<i>Quercus rubra</i>	Red Oak
Oak	<i>Quercus velutina</i>	Black Oak
Locust	<i>Robinia pseudoacacia</i>	Black Locust
Willow	<i>Salix amygdaloides</i>	Peachleaf Willow
Willow	<i>Salix interior</i>	Sandbar Willow
Willow	<i>Salix nigra</i>	Black Willow
Linder	<i>Tilia americana</i>	American Basswood
Elm	<i>Ulmus americana</i>	American Elm
Elm	<i>Ulmus parvifolia</i>	Chinese Elm
Elm	<i>Ulmus pumila</i>	Siberian Elm
Elm	<i>Ulmus rubra</i>	Slippery Elm
Elm	<i>Ulmus thomasi</i>	Rock Elm

MAJOR ASSOCIATIONS: By far, the most common association on the project area is oak-hickory. This association is typified by a mix in various ratios of *Quercus alba* and *Carya ovata*. Whereas, the upper slopes, ridges, and hilltops are typically oak-hickory, the more moist, northern and eastern aspect slopes, frequently exhibit a cover comprised predominantly of sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), and basswood (*Tilia americana*). Associated species commonly include, bitternut hickory, (*Carya cordiformis*),

shellbark hickory (*Carya lacinosa*), white ash (*Fraxinus americana*), elms (*Ulmus americana*, *rubra* & *thomasii*), black cherry (*Prunus serotina*), black walnut (*Juglans nigra*), butternut (*Juglans cinerea*), honey locust (*Gleditsia triacanthos*), and others. Except for sugar maple (*Acer saccharum*), most timber stands on the project area typically exhibit an understory consisting primarily of ironwood (*Ostrya virginiana*) with some occasional pagoda dogwood (*Cornus alternifolia*). Sugar maple is the climax species on part of the project area. In a closed canopy stand of sugar maple, there may be no understory because of insufficient sunlight for photosynthesis. If any understory is present, it may be sugar maple or ironwood. Shade tolerant sugar maple is about the only species that can survive in the shade or low sunlight environment found under a sugar maple overstory.

Between elevations 685 NGVD and 712 NGVD, the only tree species in evidence are; eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), boxelder (*Acer negundo*), and black willow (*Salix nigra*). Survival of even these species is determined by the frequency and duration of inundation. Except for some isolated cottonwood and willow, there are no living trees below elevation 685 NGVD. Local tree species cannot tolerate the root oxygen starvation resulting from persistent inundation occurring to the 685 NGVD elevation. Practically speaking, there are no living trees below the 680 NGVD elevation.

The most readily recognized succession occurring on the project is that involving lands previously utilized for agriculture (i.e. crops, grazing, pasture). Such areas are commonly invaded by such pioneer species as honey locust, elms, ashes, juniper, big tooth aspen, and others. Succession on such areas occupied by brome grass however, progresses more slowly because the brome grass releases a toxic substance that inhibits growth of hardwoods. Other woody species associated with succession in these areas are; hawthorn, american plum, chokeberry, gray dogwood, smooth sumac, gooseberry, black-berry, coralberry. These pioneer species will gradually be replaced by oak-hickory as the large seeds of these species provide an energy reserve that enables the seedlings to survive while initially competing with established vegetation. Ultimately, sugar maple, the climax on much of the project area will replace the oak hickory if management practices are not implemented to maintain a subclimax type.

All of the project surface area has been altered or influenced by man's activities. There are no remnant or remaining "virgin" forest areas. Past timber management practices prior to acquisition of project lands by the Corps can best be described as "high grading" (take the best and leave the rest). Such an approach, while producing the highest short term economic gains for the seller (usually the land owner), results in very poor husbandry of the forest resource. High grading typically results in the removal of the highest value, best quality, and formed trees from an area. Although there remains

on the project area some excellent stands of well formed high quality timber, much of the area exhibits low value, poor quality and form, and a less than desirable species composition resulting from past high grading of these areas. High grading was probably accelerated on parts of what are now Corps lands, presumably in anticipation of government acquisition.

Corps lands have not received any forest management from the time of acquisition until 1987. There have been some minor and isolated instances of grazing and timber harvest on Corps lands by encroachment or trespass. To date however, this has not been a problem of major proportion, nor is it anticipated to be. Forest management, either intensive, or extensive has not been applied to the area.

There are no recognized "unique" tree species on the project. There is both existing and a tremendous potential for producing "high quality" sugar maple, basswood, red and white oak, black walnut, hickory, ash, honey locust, hackberry and cottonwood.

2.08 OPEN LAND AREAS AND WETLAND VEG. RESOURCES

Open land areas on the project consist of agricultural fields (currently or historically) and areas subjected to the influence of various levels and periods of time of inundation.

Some upland openings have been seeded to reestablish native prairie plants, others are naturally reverting to brush or exhibiting invasion by certain pioneer tree species. Other agricultural fields are continuing to be used for grain or forage production through the use of agriculture leases or food plot establishment by project personnel. There are approximately 700 acres of project land currently involved in agricultural leases. The number of other upland, open acres will be determined as field inventory work progresses to completion. Some of the upland open areas are in brome grass, while others are being invaded by multi-flora rose, hawthorn, black berries, honey locust, and elm.

The following information is excerpted from a 1972 study by Dr. McDonald and Jerry Hill entitled, "TERRESTRIAL PLANT DIVERSITY-CORALVILLE RESERVOIR FLOOD PLAIN", Preliminary Report.

Common names of species identified were:

Amaranth	Goldenrod
Ragweed	Nettle
Aster	Violet
Beggar ticks	Cocklebur
Sensitive plant	Sedge
Lamb's quarters	Panic grass

Horseweed

Mint

Evening primrose

Smart weed

Willow

Grass (Poa &
Eragrostis sp.)

Foxtail

Silver maple

Poplar

Slough grass

Elevations 681 NGVD and 682 NGVD are both subjected to annual flooding and any artificial changes in the level of the reservoir above 680 NGVD. Lands at these elevations are vegetated with weedy annuals dominated by beggar ticks and smart weed. There are more nutrients at the 682 NGVD probably due to a nutrient influx at this level during spring flooding. The 681 NGVD has a lower productivity rate due to a shorter growing season as a result of increased duration of flooding. This hypothesis is supported by the presence of a third sedge species, and slough grass which are absent from elevation 682 NGVD.

At elevations 694 NGVD and 707 NGVD, which are both well above the annual flood plain, the dominant species are willows and poplars.

Elevation 687 NGVD appears to be dominated by large perennials with only a few small woody plants and the weedy annuals observed at elevation 682 NGVD.

Elevation 690 feet msl has low productivity. Ground cover at this elevation is sparse compared with moderate to heavy ground cover at the elevations below 690.

Productivity and diversity of terrestrial plant communities of the Coralville Reservoir are strongly dependent on two factors: the frequency of flooding and the vertical extent of the flood conditions.

The number of acres in these wetland sites will be determined as the field inventory progresses to completion.

2.09 FISH AND WILDLIFE RESOURCES

The wildlife resources occurring at Coralville Lake represent a tremendous diversity of animal species. It is not the attempt of this section of the project Natural Resource Management Plan to address each species occurring on the project, but rather to identify particular animals and special problems associated with those identified habitats within the confines of the project. Project habitat types defined and listed in the Natural Resource User Manual and the N.R.I.S. include: wetlands, deciduous forest, cultivated ground, deep water, brush, herbs, grassland, savannah, man dominated, prairie, forest plantation, and coniferous forest.

WETLANDS

Introduction: Wetland habitat comprises about 2,580 acres or about 10 percent of the total acreage of the Coralville Lake Project. Representing transitional habitat somewhere between an aquatic habitat and dry land, wetlands are found to be of short duration due to natural filling processes and or drainage into eroding watershed systems. Types of wetlands may vary as seasonal or permanent, always dependent upon basically one environmental factor, water.

Characteristic vegetation: Project wetlands are characterized by plant communities including; solid beds of smartweed (*Polygonum*), cattails (*Typha*), horsetails (*Equisetum*), sedges (*Carex*), spanish needles (*Bidens*), bur reed (*Sparganium*), button bush (*Cephalanthus*), and willows (*Salix*). Some shallow intermittent ponds are often covered with duckweed (*Lemna*) and diatom blooms provide seasonal color changes.

Fish and wildlife: Wildlife species associated with project wetlands include many species of waterfowl and shorebirds, amphibians, reptiles, and mammals. Amphibian species most common to project wetlands include grass frog and bull frog (*Rana*), and seasonal populations of toads (*Bufo*). Aquatic furbearers favoring permanent wetlands include mink, beaver, and muskrat. Reptiles common to project wetlands include painted turtles, snapping turtles, and common water snakes. Fish species utilize the shallow water areas of permanent wetlands adjacent to deep water habitat for feeding and spawning areas with species including bullheads, channel catfish, carp, and buffalo. Transient game bird species using fens and other types of wetland areas include woodcock, Wilson snipe, sora rails, ducks, and geese.

Disturbances: Flooding of project wetlands continues to impact all biotic communities. Duration, degree, and season of flooding often determine the diversity of wetland biotic communities. Draw downs in compliance with Corps hydraulics regulations influences distribution of wetland hydrophytes as well as faunal populations. Man-made wetlands within the project (sub-impoundments) may be impacted during maintenance of dikes or water release structures.

Biological contributions: Project wetlands provide brood habitat for locally nesting ducks, primarily mallards and wood ducks. Wetlands also provide shallow water resting, breeding, and feeding areas for migratory shorebirds. Escape cover is provided for species from other habitats during those seasons which provide excellent conditions for plant growth. Wetlands provide trapping and hunting opportunity, and non-consumptive uses such as bird watching and aesthetic observation.

DECIDUOUS FOREST

Introduction: Deciduous forest habitat comprises about 8900 acres or about 36% of the Coralville Lake project. Prior to habitat modification by farmers, the forested hills surrounding the Iowa River were typically an extension of the central hardwood forest projecting westward into the tall grass prairie region. Except for steep hillsides which remained forested, clearing of the hardwood stands produced open pastureland, cropland, and scattered woodlots prior to purchase by the Corps. Coralville Lake management of forest habitat has historically been lacking. Regardless of this, Corps ownership has resulted in increased acreage of deciduous forest brought about by both "old field" succession and elimination of grazing.

Characteristic vegetation: Major deciduous forest association types have previously been described in Section 2.07. Most wildlife species associated with project deciduous forests favor both a diversity of tree species as well as diversity in age and size class within all forest communities. Monoculture forest communities are not encouraged, nor shall they be perpetuated by reforestation plantings or timber stand improvement.

Wildlife: A large herbivore which was native to the Iowa deciduous forest prior to settlement and timber clearing of the mid 1800's was the elk. Today the largest Iowa herbivore to occupy the former range of the elk is the white-tailed deer. Deer have the mobility to move from one habitat to another with ease and speed as different habitat needs develop. Wild turkey have been reintroduced on project forestland and are again as an important wildlife competent in the forest community. Diurnally active fox, grey, and red squirrels compete with deer, turkey, and eastern chipmunks for hard mast produced by oaks and hickory. Nocturnally active flying squirrels, though uncommon, utilize hard mast, buds, and other forest plant materials.

Mature heavy timber stands meet habitat requirements for summer resident birds including ovenbirds and wood thrushes. Warblers move through the forest canopy feeding on insects during spring, summer, and fall. Cavity prone basswood, silver maple, black cherry, and bigtooth aspen accommodate den sites for tree squirrels, raccoon, opossum, woodpeckers, and flickers. Large cavities in trees provide shelter and nesting sites for barred and screech owls as well as wood ducks. Rodent populations using the forest litter for shelter and food sources include white-footed deer mice and chipmunks. Lowland deciduous species provide a readily available food supply for beaver in the upper end of the Coralville Lake Project.

Disturbances: Man's historical treatment of deciduous forestland prior to Corps ownership has included: trampling and compaction by livestock, attachment of fence to trees, clear-cutting, highgrading, and uncontrolled herbicide damage. These timber treatment practices have impacted the wildlife using the forests. Hunters had extirpated turkey from the project area long before the Corps purchased the present lands. White-tailed deer were nearly extirpated from Iowa also, with a few small herds scattered through Iowa in 1900. Project

lands support a healthy expanding deer herd. Iowa white-tail deer demonstrate high productivity both in terms of high average adult weights. Multiple births including twinning and triplet production are common.

Biological contributions: The habitat offers escape cover, soft and hard mast surplus, and den sites. Furbearer and game species offer hunters and trappers recreational opportunity which results in purchase of licenses, arms, and ammunition. A portion of the money spent on sporting arms and ammunition (Pittman-Robertson Funds) is returned to individual states for wildlife management expenses. Habitat requirements are met for a threatened Iowa carnivore, the grey fox. Aesthetic value of seasonal foliar color change provides much enjoyment to project visitors.

DEEP WATER HABITAT

Introduction: The total number of acres in deep water habitat within the project is about 5,500 acres or 22 percent of the project acreage. The Coralville Lake compartment represents the largest portion of this habitat with 4,888 acres at elevation 683 NGVD. Smaller in size is that portion of Lake Macbride with 479 surface acres; and lastly, the Hawkeye Wildlife Area comprises 146 surface acres at 683 NGVD elevation.

Characteristic vegetation: Aquatic vegetation of this habitat is limited to algal communities including primarily; diatoms (Cyclotella, Navicula), and blue-green algae (Anabena, Oscillatoria, and Chlorella). Presence of submerged, floating, and emergent vascular plants is limited to a few small communities and species including; water lilies (Nelumbo) in Lake Macbride, some duckweed (Lemna) on isolated ponds in the Hawkeye Wildlife Area, and cattail stands (Typha) also in the Hawkeye Wildlife Area. Sampling of benthic invertebrates identifies primarily two groups; chironomid and ephemeral insect larvae which offer a forage base for higher level consumers (fish). Food chains in the reservoir are short, due to the lack of species diversity.

Wildlife and fishery resources: The open water habitat of the upper Coralville Reservoir and Hawkeye Wildlife Area provide habitat for a colony of double-crested cormorants. Large dead snags in the area provide excellent loafing, roosting, and nesting areas for these large piscivorous birds. Belted king fishers also use the area. Other piscivorous migrants which utilize the open water habitat are the common loon and herring gull during spring and fall migrations. Large raptors which utilize the open water area for fishing include migrant bald eagles and osprey. Scavenging and predatory mammals include mink, opossum, broad-striped skunk, raccoon, red fox, and coyote which frequent the shoreline zone in search of food. Aquatic furbearing rodents disperse into the reservoir from outlying feeder streams and wetlands. Each year a number of beaver and muskrat

attempt to establish characteristic bank dens only to be stranded or flooded out.

Fishery resources:

The fishery resources of Coralville Lake offer recreation and in some instances, a source of income for the public. Two categories of fish are generally considered, game fish and non-game fish. The most recent survey of fish species in the reservoir was conducted by Iowa Conservation Commission Fishery Biologists in 1976. Game fish species collected and identified in the survey included:

flathead catfish (Pylodictis)	channel catfish (Ictalurus)
black bullhead (Ictalurus)	largemouth bass (Micropterus)
white bass (Lepibema)	black crappie (Pomoxis)
green sunfish (Lepomis)	bluegill (Lepomis)
northern pike (Esox)	orange-spotted sunfish (Lepomis)
white crappie (Pomoxis)	walleye (Stizostedion)

Game species represented a minority of the total fish sample in the 1976 survey, both in terms of bio-mass and total numbers. Non-game fish species which were collected in the species survey included:

buffalo (Ictiobus)	carp (Cyprinus)
shiners (Notropis)	carpsucker (Carpodes)
redhorse (Moxostoma)	creek chubs (Semotilus)
white sucker (Catostomus)	

Long range goals of fisheries managers at the reservoir have been to increase game fish numbers and growth rate. Several problems have been identified which have controlled the expansion of game fish populations in Coralville Lake including:

1. lack of both quality and quantity of the forage base for game fish predation;
2. extreme water fluctuations created by both seasonal hydraulic regulations and flooding;
3. dissolved oxygen fluctuations created by runoff and changes in lake water volume;
4. turbidity due primarily to suspended materials;
5. inadequacy of spawning areas for specific species;
6. stress created and resulting from crowding by non-game fish;

7. lack of bottom type diversity/structural features due to sedimentation.

Fisheries biologists have attempted to improve game fish populations by addressing these problems. Introduction of commercial fishing was begun in 1973, and has impacted the bio-mass of buffalo, carp, and carpsucker. Catch report data supplied by commercial fishing operations reflected a 307 pound rough fish yield per surface acre. This annual commercial harvest of non-game fish provided opportunity to replace the niche void with the introduction of gizzard shad (*Dorosoma cepedianum*) into the reservoir. Gizzard shad offer a better forage base for predatory game fish than do buffalo, carp, and carpsucker.

Other developments in the Coralville Lake fishery management program have included change in the project hydraulics regulations so that the spring draw down is now to 675 feet msl. rather than 670 NGVD. Stocking of game fish which experience spawning difficulties in the reservoir, particularly northern pike and walleye, has been an prescription implemented on an annual basis. Stocking records since 1975 indicate the following numbers.

**Annual Stocking Efforts at Coralville Lake -
Lake Macbride Fishery Station Annual Reports 1975-1985**

1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
4.9	2.5	*	4.0	2.0	3.0	1.7	4.8	4.9	*	*
mil.	mil.	*	mil.	mil.	mil.	mil.	mil.	mil.	*	*
W-sf	W-sf	*	W-sf	W-sf	W-sf	W-sf	W-sf	W-sf	*	*
5.0	.75	*	.85	.70	*	*	1.0	*	*	*
mil.	mil.	*	mil.	mil.	*	*	mil.	*	*	*
Np-sd	Np-sf	*	Np-sf	Np-sf	*	*	Np-sf	*	*	*

5.0
Thousand
Gizzard Shad-Adults

CHART KEY:

* - Biologist requested sac-fry from fish hatcheries

W-sf - Walleye sac-fry

Np-sf - Northern pike sac-fry

Gizzard Shad as adults

Mil - Million

Problems concerning turbidity, dissolved oxygen levels, and spawning areas continue to be limiting conditions to game fish populations. Change in farming practices in the upstream watershed could help alleviate the extent of these problems in the future.

Commercial fishing, using trammel and gill net equipment, continues to provide a means of income for a few fishermen. Periodic chemical analysis of tissue samples of fish taken from the reservoir did cause closing of the lake to commercial fishing in 1976-1979. At that time, fish tissue samples revealed concentrations of the chlorinated hydrocarbon, dieldrin, to be above tolerance levels for safe human consumption. Periodic chemical analysis of fish tissue acts as a safeguard against consumption of toxic chemicals through biological magnification of food chains. Continued sampling of fish tissue has indicated that assimilation of toxic chemicals does not exceed established tolerance levels for human consumption.

Unplanned introduction of two game fish has recently occurred in the reservoir. Tiger muskellunge (*Esox X* hybrid) and spotted bass (*Micropterus punctulatus*) have dispersed from other stockings in adjacent Lake Macbride by means of an overflow spillway into Coralville Lake. Both species are expected to compliment game fish populations in the reservoir. The hybrid muskellunge is sterile and will share the same niche as northern pike which, in spite of stocking efforts, are currently very scarce in the lake. The spotted bass will be competing with the largemouth bass; but due to the physical characteristics of the reservoir, the largemouth population will not be heavily affected because spotted bass are adapted to waters having much less turbidity and better bottom structure.

Iowa fisheries biologists have several future goals in their management plans for Coralville Lake. For 1986, a thorough fish survey is proposed utilizing the same sampling equipment as used in the 1976 survey. Special effort in survey techniques shall be aimed at sampling every type of aquatic community in the lake to assure identification of all fish species present, including darters (*Ethystoma*) which were not noted in the 1976 survey. Other plans include placement of structures in the reservoir at specific locations to attract and hold game fish. Biologists have expressed a continued concern to encourage a change in hydraulics regulations whereby the summer conservation pool would be raised to 683 NGVD. from the current summer pool of 680 NGVD. Continued efforts to establish greater numbers of walleye and northern pike shall be made through annual stockings. Consideration of game fish species which may find Coralville Lake water conditions very favorable shall continue, including prospects of sauger and hybrids of various species. Commercial fishing shall be continued as an efficient means of removing a portion of the non-game fish populations.

Disturbances: Major water level fluctuations due to frequent flooding and compliance with hydraulics regulations greatly impact all permanent residents of the deep water habitat. Heavy boating recreation on accessible open water areas causes shoreline erosion and increased turbidity of the ecosystem. Accumulation of pesticides through runoff from agricultural lands and industrial waste from within the watershed accumulates in the reservoir and is known to be passed upward through food chains. Lake Macbride doesn't experience the dramatic water level fluctuations that the reservoir experiences. The fact that it is entirely a wildlife sanctuary where neither hunting nor trapping are presently allowed, thereby provides a constant source of game animals for eventual dispersal to other surrounding habitats outside the State Park area.

Biological contributions: The reservoir deep water habitat acts as a barrier to dispersal for many wildlife species. It provides fishery habitat and attracts piscivorous wildlife such as; mink, raccoon, fox, coyote, water snakes, and a variety of waterfowl and shorebirds. The physical appearance of the reservoir serves as a landmark for bird migration. Considerable recreation is associated with this habitat. Both consumptive and nonconsumptive usage is present.

CULTIVATED GROUND

Introduction: Cultivated ground represents about 3,500 acres or 14% of the Coralville Lake Project acreage. At the present time, about 20 acres of land are presently cultivated on an annual basis for food plots and native prairie establishment by the Corps. Cultivation of the remaining land is the result of implementation of agricultural lease outgrants by the project and by the Hawkeye Wildlife Area Unit. The Coralville Lake Project leases about 700 acres, and the Iowa Department of Natural Resources leases about 2,600 acres. Special agricultural land use requirements of leases include; crop rotation, leaving of a portion of the crop for wildlife, prohibited cropping techniques, and pesticide regulation. Long range goals of the project support agricultural leases as an efficient way to provide special food and seasonal habitat for transient wildlife. The Iowa Department of Natural Resource, operating under license from the Corps, uses cash rent from lessees as a means of securing operational funds for wildlife management of the Hawkeye Wildlife Area.

Characteristic vegetation: Cash crop plants used in project rotation plans include hybrid corn, grain, sorghum, soybeans, sunflower, wheat, and oats. Forage crop species include wheat, rye, and oats crops. Dependent upon particular wildlife management goals, field sizes may vary. Generally large fields are being divided into smaller fields for annual rotation to include several crop species, but management of winter wheat fields requires continuance of large fields to assure secure feeding areas for migrant geese. Portions of the crop are left standing near good cover as identified by an individual site by site determination. The two most valuable wildlife food crops appear to be corn and grain sorghum as indicated by

food preferences and suitability cover.

Wildlife resources: Many species of transient wildlife utilize grains unrecovered during harvest or left standing in the fields specifically for consumption by wildlife. Unpicked corn provides excellent escape cover and abundant food for game animals during fall and winter including; cottontail rabbits, bobwhite quail, ring-necked pheasant, wild turkey, raccoon, fox and grey squirrels, and deer. Large canine predators use the standing corn and sorghum fields as escape cover and hunting grounds containing an abundance of rodents and other food species. Winter wheat fields provide forage for resident turkeys, deer, and transient geese during late fall, winter, and spring. Tillage of fields provide an assortment of invertebrate species for summer resident birds including; robins, red-winged blackbird, and grackles. Cover crops characterized by legume-grass mixtures provide early nesting cover for rabbit, quail, pheasant, and eastern meadowlark. Standing food plots and unrecovered grains left in the field after harvest provide good food resources for nongame birds including; mourning doves, black-capped chickadees, slate-colored juncos, cardinals, tufted titmice, goldfinches, bluejays, and several sparrow species. Populations of rodents are highest in cover crop areas with long term rotation management.

Disturbances: Frequent flooding limits production of lowland crop species, and therefore abundance of wildlife on these cultivated areas. Cultivation practices of plowing, disking, pesticide applications, and harvesting season limit occurrence and abundance of wildlife found in an area. Mowing and baling of hay crops cause loss of habitat and nest destruction to ground nesting species in particular; rodents, quail, pheasants, rabbits, red-winged blackbirds, meadowlarks, garter snake, and bull snake. Hunting pressure may cause dispersal of temporary residents from cultivated lands to adjacent habitats which offer better escape cover.

Biological contributions: Habitat diversity is provided by crop rotation plantings. Fall, winter, and spring cover is provided by standing crops. A high energy food supply is provided at selected sites throughout the project for wildlife consumption. Game species are attracted to grain fields which provide hunters quality hunting opportunities.

BRUSH

Introduction: This highly diverse habitat comprises about 700 acres or 3% of the total acreage of the Coralville Lake Project. Nearly all project brushy habitat has originated as a result of "old field" succession.

Vegetation characteristics: As a biological community dominated by shrubs and associated tree species, great diversity of plant and animal life characterizes the habitat. Characteristic shrubs and

young tree associates include; American plum (*Prunus americana*), grey dogwood (*Cornus racemosa*), red-osier dogwood (*Cornus stolonifera*), common alder (*Alnus serrulatus*), multiflora rose (*Rosa multiflora*), red cedar (*Juniperus communis*), hawthorn (*Crataegus*), and berries (*Ribes*). A common woody understory species, poison ivy (*Rhus radicans*) often present as are grapevine (*Vitis*).

Wildlife: Birds which are known to use this habitat for summer nesting include; brown thrasher, catbird, robin, chipping sparrow, bob-white quail, turkey, cardinal, mourning dove, and several other sparrow species. Rodents which occupy the area as permanent residents include; deer mice, voles, and chipmunks. Mammalian insectivores include the pygmy shrew and star-nosed mole. Cottontail rabbits indicate preference for this type of habitat at the Coralville Lake Project. Seasonal weather conditions and hunting pressure may encourage other wildlife to frequent the area for winter or escape cover. Predators which commonly use the habitat include; red fox, grey fox, coyote, mink, skunk, weasel, Cooper's hawk, Sharp-shinned hawk, and buteos as the red-tailed hawk and rough-legged hawk.

Disturbances: Succession brought about by deciduous and/or coniferous tree (red cedar) dominance will eventually eliminate the brush community. Efforts should be made to maintain or create some brushy habitat through elimination of competing trees.

Biological contributions: Brush habitat provides a rich diversity of nesting cover, escape cover, winter cover, and feeding areas for wildlife. It is extremely important as a link between the open grasslands or cultivated deciduous forest habitat. Brush habitat will provide an opportunity for visitors to collect grapes, apples, and berries as they are limited to this habitat.

GRASSLANDS

Introduction: Grassland habitat comprises about 550 acres or 2% of total acreage of the Coralville Lake Project. Much of the total current acreage can be linked to seeding down of crop fields at the time of purchase by the Corps of Engineers. Other grasslands have remained after elimination of grazing and deletion of hayfields from the agricultural lease program.

Characteristic vegetation: Three predominant genera of grasses which are most common, include; brome grass (*Bromus*), bluegrass (*Poa*), and fescue (*Festuca*).

Wildlife: Open grasslands provide diverse food chains when associated with adjacent cultivated lands or brush habitat. The most numerous herbivores are rodents. Thirteen-lined ground squirrels find this open habitat ideal. Plains pocket gophers mark the area with deposits of soil taken from underground runways beneath the sod.

Voles also find the area suitable. Burrowing insectivores find the sod rich in insect larvae. Mammalian predators include badger, red fox, coyote, raccoons, and skunks including spotted skunks which are a threatened status species in Iowa.

Avian summer residents which nest on project grasslands include: bobolink, killdeer, red-wing blackbird, meadowlark and some ground nesting sparrows. Eastern kingbirds frequent the area in search of insects. Predatory birds which frequent open grasslands are the sparrow hawk and red-tailed hawks. Winter species that frequent short vegetation areas include Lapland longspur and horned lark which often are observed in small flocks.

Disturbances: Mowing, violent storms, and vehicle traffic through areas may remove or flatten grasses. Drift of agricultural chemicals from nearby areas may cause habitat destruction. Encroachment by invading woody trees and shrubs will become the habitat. Grasslands need to be mowed periodically to eliminate the establishment of trees and shrubs.

Biological contributions: Cool season grasses (bromegrass, bluegrass) in a productive state offer excellent nesting habitat for a variety of wildlife, including a variety of game species. Consumptive recreational usage is provided on grasslands in the form of hunting and trapping. Nonconsumptive uses would include nature study, hiking, and sightseeing.

PRAIRIE

Introduction: Prairie habitat comprises about 150 acres or 1% of total acreage of the Coralville Lake Project. The majority of prairie stands have resulted from reestablishment of warm season grasses on deleted agricultural land or upon conversion of brome sod fields. A few small patches of native prairie are known to occur on the project and may be true remnants of the original tall grass prairie; but more likely, these small plots were probably private plantings prior to purchase of the land by the Corps.

Characteristic vegetation: Several tall grass prairie grasses have recently been planted on prepared sites including: big bluestem (Andropogon), little bluestem (Andropogon), side-oats gramma (Bouteloua), Indian grass (Sorghastum), and switchgrass (Panicum).

Wildlife: Prairie habitat is used by a number of ground nesting birds during the summer season, including ring-necked pheasants. Cottontail rabbits and pheasants use standing prairie for winter cover and escape cover throughout the year. Rodent populations include voles and mice. Insectivorous shrews utilize insect populations during spring and summer. Mammalian predators which frequent prairie include red fox, coyote, mink, skunk, and badger.

Disturbances: The only major disturbance to prairie plants and wildlife is wildfire. Tall grass prairie does not have prolonged regeneration ability unless subjected to occasional burning. Without fire, prairie species can not compete with woody species that eventually threaten to take over the habitat. Prescribed periodic burning is used to destroy woody invaders and thereby maintain prairie species.

Biological contributions: From both a historical and natural beauty position, prairie habitat has certain aesthetic value to project visitors. Native prairie plants stand better to extreme wind and precipitation than cool season grasses. This characteristic allows prairie to provide excellent winter cover. Hunting as a recreational activity is provided by prairie habitat.

FOREST PLANTATIONS

Introduction: Forest plantations comprise about 160 acres or 1 percent of total acreage of the Coralville Lake Project. After original purchase of lands by the project, prescriptions for reforestation of open fields were implemented on various locations. Both coniferous and broadleaf plantings were made utilizing a machine planter.

Characteristic vegetation: Prior to 1980, coniferous plantations contained mixed jackpine, white pine and red pine; and broad-leaved plantations included plantings of sycamore, black walnut, and cottonwood. Reforestation plantations planted since 1980 have attempted to increase species diversity in the plantings including mixed oak species, black cherry, silver maple, chinese chestnut, and hickory.

Wildlife: Wildlife game species observed to frequent coniferous plantations include deer, pheasant and turkey, especially during extreme weather conditions. The coniferous stands offer modification of climatic conditions such as wind and precipitation. A non-game bird in Iowa which uses the pine stands as preferred nesting cover is the mourning dove. Crows and common grackles find pine stands to be excellent nest sites as well. Nocturnal raptors including great-horned and barred owls often spend daylight hours in the protection of the dense pine stands where harassment from passerine birds is less common.

Deciduous plantations offer greater habitat diversity to wildlife than do pure coniferous plantings. As the plantation trees take over dominance from the grasses, understory shrub and encroaching tree species appear to complete the transition from grassland to forest habitat. Good escape and feeding areas develop at this stage for both predator and prey populations. Rodent populations are high in young plantations as the diversity of understory species increases. Cottontail rabbits frequent young plantations. Voles, moles, and shrews move into plantations during the early stage of plantation

development. Soaring seasonal insect populations provide feeding grounds for blackbirds, warblers, wrens, chickadees and eastern kingbirds. Predatory birds frequent the young forest including sharpshinned hawk and Cooper's hawk. Other predators frequenting these plantations include; mink, weasel, red fox, badger, coyote, skunk, and raccoon. Deer often utilize buds of young trees at this early stage of tree development as a choice food supply.

Disturbances: Rodent damage to tree seedlings may be a problem, especially if the understory remains in dense grass and forbs which provide cover for protection of these herbivores from predation. Insect damage to young seedlings is more apparent in plantations than in naturally established seedlings. Trees planted by man usually suffer from stress for several years following planting, and these weakened trees are readily attacked by insects. Deciduous plantings in particular are attacked by tent caterpillars or webworm. Buck deer frequently damage individual saplings by rubbing antlers on tree trunks just prior to and during the "rut" season. Mechanical or chemical practices employed to control competition in plantings may destroy ground nesting species.

Biological contributions: Plantations result in more rapid change of habitat from open field to forest than would similar changes through the natural succession process. Plantations can create dense stands of trees which can be thinned to provide optimum conditions to stimulate individual tree development. Such thick stands provide a type of micro-environment for transient wildlife during threatening weather. Plantation establishment provides a visual change in the landscape, with aesthetic impacts apparent to and experienced by project visitors.

CONIFEROUS FOREST

Introduction: This habitat type is of natural origin, and occurs on about 9 acres and represents .1% of the total acreage of the Coralville Lake project. The soils on these sites are extremely sandy and steep sloped with a south aspect. On the Coralville Lake project, the cedar stands have advanced beyond the brush habitat seral stage of succession and become dominant species.

Characteristic vegetation: The dominate species of conifer in this habitat is red cedar (*Juniperus virginiana*). Competition with other tree species is occurring, and the present cedar stand will be eventually replaced by broadleaved species. Competing trees in the cedar stands include: American elm (*Ulmus americana*), cherry (*Prunus serotina*), and honey locust (*Gleditsia triacanthos*). Other associated shrubs present include (*Ribes*), dogwood (*Cornus*), and plum (*Prunus*).

Wildlife: This habitat provides excellent winter and escape cover for deer, rabbit, quail, and pheasant. Non-game bird species which

utilize the cedar trees for nesting, winter protection, and food sources include: cedar waxwings, juncos, bluejays, cardinals, mourning doves, robins, titmice, and a variety of sparrow species. Rodent populations are limited due to lack of food and ground cover with white-footed deer-mice the most abundant rodent. Predatory birds such as owls use the protective cover of cedars to escape harassment from passerine birds.

Disturbances: The appearance and eventual dominance of encroaching broadleaf tree species will eventually replace these small coniferous habitats. Grazing by livestock on the area and the practices of cutting cedar trees for use as fence posts limited the abundance of cedar trees in the past. The elimination of these practices on the project will encourage cedar tree establishment on brushy type habitat.

Biological contributions: Coniferous forest habitat provides good escape and winter cover for wildlife. Cedar trees act as alternate hosts for a rust fungus that often injures apple trees on public and private lands within range of the fungus spores. Coniferous forest provides hunting, trapping, and nature study opportunity for the public. The presence of evergreens in the landscape enhances the aesthetic values of project scenery.

MAN-DEVELOPED HABITAT

Introduction: This habitat comprises about 300 acres and represents 2% of the project acreage. This habitat type is limited to maintained recreation areas, around boat ramps, and operations, maintenance and administration areas.

Characteristic vegetation: Maintained grasses (Poa) are characteristic of project man-dominated habitat. Landscape plantings include a diversity of shrubs for screening, aesthetics, and delineation of space. The selection of shrubs planted in recreation areas consider the value to wildlife. Species that are planted include: highbush cranberry (Viburnum), autumn olive (Elaeagnus), honeysuckle (Lonicera), arrowwood (Viburnum), and dogwoods (Cornus). Wildlife value was also a consideration in the selection of broadleaf trees that were planted in recreation areas including; crabapples (Malus), mountain ash (Sorbus), red and swamp white oak (Quercus), green and white ash (Fraxinus), linden (Tilia), and maples (Acer).

Wildlife: Thirteen-lined ground squirrels are permanent residents of the grassy recreation areas, especially where frequent mowing keeps grasses short. Insectivores as shrews and moles find grubs in the large sod areas of campgrounds. Summer resident birds which nest and feed in the man-dominated areas include; robins, catbird, chipping sparrow, Northern oriole, European starling, and house sparrow. Nocturnal mammals like the broad-striped skunk and raccoon search for insects and garbage when recreational usage is low. Raptors frequent the open recreational area in the fall and spring with red-tailed

hawks being a very common species.

Disturbances: Flooding of low elevation recreational areas causes displacement of rodent populations to higher elevations, and causes destruction of established vegetation. High density recreational use limits both diversity and abundance of wildlife. The trimming of trees and shrubs and routine mowing of grasses limits wildlife use.

Biological contribution: These man-dominated areas are subject to high density usage by man. Sightings of wildlife afford a positive recreational experience for project visitors. Landscape vegetation provides food for transient songbirds. Rodent populations disperse into surrounding habitat, thereby providing an abundance of food for predators.

SAVANNAH

Introduction: This type of habitat comprises about 770 acres or 3% of the total project acreage. The majority of this habitat has resulted from the termination of grazing on pastureland and typically contains a few scattered trees.

Characteristic vegetation: Predominant grasses include bluegrass (Poa) and brome grass (Bromus). A portion of the area is characterized by scattered trees including; bur oak (Quercus), honey locust (Gleditsia), cottonwood (Populus), cherry (Prunus), and elm (Ulmus).

Wildlife: Species represented in this habitat are the same or similar as those found in the project grassland habitat.

Disturbances: Succession will eventually allow this habitat type to convert to deciduous forest unless grasslands are maintained by mowing to eliminate brush and invading tree species.

Biological contributions: The savannah habitat provides good perching and hunting areas for raptors as well as interesting scenery for visitors.

FORBS

Introduction: This habitat comprises 470 acres or about 1.9% of the total acreage of the Coralville Lake Project. Most of the forb habitat is found within the flood pool and is therefore subjected to frequent, total and extended inundation.

Characteristic vegetation: Forb genera which characterize this habitat type on the Coralville Lake project include: pigweed (Amaranthus), ragweed (Ambrosia), aster (Aster), beggar tick (Bidens), lambs quarter (Chenopodium), horseweed (Erigeron), smartweed (Polygonum), goldenrod (Solidago), foxtail (Setaria), and slough grass

(Spartina).

Wildlife: During the dry season, forb production provides excellent feeding and escape cover for a great diversity of transient wildlife.

Dry springs and summers allow heavy plant growth, accompanied by extensive insect and spider population increases. Young turkey poults need a high protein diet most specifically provided by spiders. Insectivorous birds, shrews, and moles quickly disperse from adjacent habitats into forb fields under dry conditions. Furbearer populations which utilize such habitat includes skunk, red fox, coyote, raccoon, and mink. Smartweed, lamb's quarter, and beggar ticks provide heavy seed production and optimum escape and loafing cover and feeding areas for dabbling ducks when the area is flooded during the fall season. Principal waterfowl species utilizing flooded forb areas include; mallard, pintail, teal, gadwall and widgeon. White-tail deer utilize the larger growing forbs during fall and winter during dry years as forb species provide good escape and loafing cover.

Disturbances: Prolonged flooding of this habitat precludes establishment of other plant species. Large accumulations of dead vegetation pose a fire problem, particularly in spring at which time fire may eliminate all flammable vegetation. Fire and flooding cause wildlife from within the forb habitat to disperse into adjacent habitats.

Biological contributions: No other vegetation will tolerate inundation followed by periods of dry soil conditions. Forbs will continue to dominate these areas as long as flooding continues. Where forbs are dominant vegetation on upland habitat, as on fallow cropland, succession will rapidly replace this habitat to brush and later deciduous forest at Coralville.

3.01 Introduction

The Corps of Engineers maintains primary administrative authority over all fee title lands and waters acquired for construction and operation of the Coralville Lake Dam and reservoir pool. The Corps has the responsibility and authority to manage the Natural Resources on Corps fee title lands which include forest, fish and wildlife, water, aesthetic and the vegetative resources of the project. The Corps is directly responsible for the implementation of natural resource management activities except where those responsibilities have been out-granted to others. The mission of the natural resource management program is to provide support to the nation by managing the natural resources at Corps of Engineers Water Resource Projects in accordance with authorizing legislation and sound management principles. (ER 1130-2-540) The following section describes the policies by which the Corps manages those resources through the multiple use concept.

3.02 Corps Policy

The good stewardship of natural resources on Civil Works projects is an important mission of the Corps of Engineers. Recent policy statements clearly show the increased concern and emphasis in active management of our natural resources. The following are examples of this commitment:

Letter, DAEN-CWO-R, Stewardship of Natural Resources on Corps Civil Works Projects, 2 Sept 1986: Major General H.J. Hatch:

"At the request of Mr. John O. Marsh, Secretary of the Army, a team of private sector experts reviewed the Army's Military and Civil Works natural resources management programs. The review team (Blue Ribbon Panel) concluded that the Army had initiated a number of actions to improve the management of natural resources on public lands it holds in trust; however, total program philosophy and management effectiveness needs to be strengthened. The review team provided several recommendations to help ensure effective management of natural resources. The nineteen recommendations have been reviewed for incorporation in existing natural resource management programs in the Rock Island District.

Memo from, Secretary of the Army (Civil Works), Mr. John O. Marsh to Assistant Secretary of the Army (Civil Works), Mr. Robert K. Dawson. Secretary Marsh states "Good stewardship of natural resources at Civil Works projects is in the nations best interest and must be carried out efficiently and effectively."

1. In accordance with P.L. 86-717, project lands, "shall be developed and maintained so as to encourage, promote, and assure fully adequate and dependable future resources of readily available timber through sustained yield programs, reforestation and accepted conservation practices, and to increase the value of such areas for conservation, recreation and other beneficial uses... compatible with other uses of the project." And also that the Corps of Engineers "shall provide for the protection and development of forest or other vegetative cover and the establishment and maintenance of other conservation measures.... so as to yield the maximum benefit and otherwise improve such areas."

2. Proper management techniques will be applied wherever the opportunity exists to improve vegetation conditions for wildlife, recreation, scenic value, timber, wildfire prevention, pest control, watershed protection or for use on the project. Specific management objectives will be based on land uses designated in the project Master Plan and OMP.

Develop communication channels between project resource management personnel and outside agency professionals to maintain a cooperative exchange of management philosophies and ideas to maximize benefits as a result of implementation of these practices to explain management intentions and to solicit their input. Coordination will also be made with the news media well in advance of and during implementation of various practices to promote the Corps intentions through positive media exposure to the general public. The implementation of natural resource management will be done so in a safe manner so as to assure the well being of members of the public using the project.

3.033 Project Established Goals and Objectives.

Goal 1: To improve and expand existing forest habitat for deep woods or interior bird species.

Objective 1: Incorporate the Wildlife Habitat Appraisal Guide (WHAG) into the natural resource program by evaluating 20% of all forest tracts of 50+ acres. The Wood Thrush and Pileated Woodpecker will be the target species used to determine habitat potential.

Task 01-27 WHAG Sugar Bottom S-06

Objective 2: Reforest project lands to develop travel corridors between unconnected tracts of forests and to extend existing forest boundaries.

Task 01-28 Plant deciduous and or coniferous tree seedlings onto Upper Hoosier Creek S-01.

Task 02-28 Plant deciduous and or coniferous tree seedlings onto Upper Hoosier Creek S-14.

Task 01-29 Replace tree seedlings lost to mortality and mow or treat the plantations with herbicides.

Task 02-29 Mow or treat the plantations with herbicides.

Task 03-29 Mow or treat the plantations with herbicides.

Task 04-28 Plant deciduous and or coniferous tree seedlings onto LHC S-13, 16, 30, 44.

Task 04-29 Mow or treat the plantations with herbicides.

Task 05-29 Mow or treat the plantations with herbicides.

Goal 2: To protect, improve, and expand the prairie resource found on project lands.

Objective 1: Protect existing prairie remnants located in 218-380, Upper Hoosier Creek, Jolly Roger, Koss, Lower Hoosier Creek, Sugar Bottom, Squire Point, and Daybreak natural resource compartments and the existing established prairies through a regimented burn cycle and woody vegetation removal program.

Task 01-31 Prescribed burn Day Break S-02, 03

Task 01-34 Prescribed burn UHC S-41, 42

Task 02-31 Prescribed burn Squire Point S-03, 09

Task 02-41 Prescribed burn Jolly Roger S-27

Task 03-31 Prescribed burn UHC S-07, 10, 43, 47; Koss S-36; Sugar Bottom S-02

Task 04-31 Prescribed burn UHC S-10, 12, 39, 40, 41; 218-380 S-24, 25

- Task 01-45 Reinstall and then remove the stoplog weir along the ephemeral stream found in Upper Hoosier Creek S-17, 18.
- Task 02-45 Reinstall and then remove the stoplog weir along the ephemeral stream found in Upper Hoosier Creek S-17, 18.
- Task 03-45 Reinstall and then remove the stoplog weir along the ephemeral stream found in Upper Hoosier Creek S-17, 18.
- Task 04-45 Reinstall and then remove the stoplog weir along the ephemeral stream found in Upper Hoosier Creek S-17, 18.
- Task 05-45 Reinstall and then remove the stoplog weir along the ephemeral stream found in Upper Hoosier Creek S-17, 18.

Goal 4: Manage the natural resources located on lands within designated recreational areas for aesthetic values and visitor safety.

Objective 1: Plant and maintain 100 balled and burlapped trees and shrubs within the Sugar Bottom, Sandy Beach, and Dam Complex recreational areas to replace those plants lost to mortality.

- Task 01-50 Maintenance of transplants will include mulching, watering, and pruning
- Task 02-50 (Resource segments Sugar Bottom 12, Sand Creek 17, Turkey Creek 39,
- Task 03-50 42, and Squire Point 08.)
- Task 04-50

Objective 2: Evaluate the stability/soundness of the shade trees located within the day use and campground areas using the hazard tree analysis.

- Task 01-52 Reevaluate all risk areas identified within Squire Point S-08, Turkey Creek S-39 & 42, Sand Creek S-17, and Sugar Bottom S-12.
- Task 01-53 Identify and remove unsafe trees within the recreational areas (Sugar Bottom, Turkey Creek, Sand Creek, and Squire Point natural resource compartments)
- Task 02-52 Reevaluate all risk areas identified within Squire Point S-08, Turkey Creek S-39 & 42, Sand Creek S-17, and Sugar Bottom S-12.
- Task 02-53 Identify and remove unsafe trees within the recreational areas (Sugar Bottom, Turkey Creek, Sand Creek, and Squire Point natural resource compartments)
- Task 03-52 Reevaluate all risk areas identified within Squire Point S-08, Turkey Creek S-39 & 42, Sand Creek S-17, and Sugar Bottom S-12.
- Task 03-53 Identify and remove unsafe trees within the recreational areas (Sugar Bottom, Turkey Creek, Sand Creek, and Squire Point natural resource compartments)
- Task 04-52 Reevaluate all risk areas identified within Squire Point S-08, Turkey Creek S-39 & 42, Sand Creek S-17, and Sugar Bottom S-12.
- Task 04-53 Identify and remove unsafe trees within the recreational areas (Sugar Bottom, Turkey Creek, Sand Creek, and Squire Point natural resource compartments)
- Task 05-52 Reevaluate all risk areas identified within Squire Point S-08, Turkey Creek S-39 & 42, Sand Creek S-17, and Sugar Bottom S-12.

Goal 7: Increase the winter food available for upland wildlife.

Objective 1: Annually plant wildlife food plots of corn.

Task 01-80 Maintain wildlife food plots on Turkey Creek, Upper Hoosier Creek Lower
Task 02-80 Hoosier Creek
Task 03-80
Task 04-80
Task 05-80

Goal 8: To incorporate the geographic information system ArcView into the natural resource program at Coralville Lake.

Objective 1: Begin implementation of a GIS/GPS Programming into the natural resource management program.

Task 03-90 Begin mapping prairie and tree plantations using GIS/GPS
Task 04-90 Continued mapping of resource and facility features.
Task 05-90 Continued mapping of resource and facility features.

Goal 9: Develop a local corps of volunteers who will assist the Corps with a variety of natural resource projects (i.e. prairie burns, wildlife surveys, acorn collection, tree plantings and vegetation surveys)

Objective 1: Make contact with 15 local environmental organizations in the Iowa City area.

Task 01-01 Utilize volunteers to accomplish the prescribed burns.
Task 02-01 Utilize volunteers to accomplish the prescribed burns.
Task 03-01 Utilize volunteers to accomplish the landscaping in the campgrounds.
Task 04-01 Utilize volunteers to accomplish the landscaping in the campgrounds.

3.04 INVENTORY OF PROJECT LANDS

3.041 INTRODUCTION

The project is subdivided into management units called compartments. The Coralville Lake area is comprised of twenty such units. Each compartment is a contiguous land area identified by a name usually associating it with a location, use, resource, physical feature or local name of the area. Compartment boundaries are imaginary lines depicted by delineation on frosted acetate overlay utilizing the 1984 infrared aerial photos as a base. Compartment boundaries will normally coincide with such ground features as roads, streams, drainage basins, property boundary lines, ridges, vegetative type changes or some other identifiable feature. The aerial photographs are an integral part of any office or field resource management activity. Even though they are not in stereo pairs, they still yield a wealth of information regarding size of the area, aspect, timber size class, access, cover types and more. Every compartment as delineated on the acetate overlay is further divided into "segments" (stands). Segments are identified by individual numbering of the segment. A segment is identified and delineated because of recognized physical characteristics of the area that differentiate it from the adjacent dissimilar area(s). While segments vary in shape and size, none

Forest management will be accomplished by "area" management. This approach is the most commonly used method in forest land management. Ten percent of the project's area will be examined on the ground annually by a forester or forestry trained personnel for the purpose of accomplishing an extensive inventory. By adhering to such a schedule, the entire project will be extensively surveyed every ten years and prescriptions updated on ten percent of the project's area annually following completion of the initial inventory (1 July 1991).

3.042 RESOURCES AVAILABLE

All inventory work shall be directed through and with assistance of the District Forester. The Coralville Lake project shall continue to utilize the consulting services of State wildlife biologists, fishery biologists, and foresters as the need arises. Cooperative extension services at Iowa State University offer additional expertise in providing information concerning questions which arise. Managers of outgrant lands have offered services of personnel whom are familiar with the geographical and vegetative habitats of lands which they manage. Cooperation and information are provided by Johnson County Soil Conservation Service concerning soils and natural resource management. Infrared aerial photographs are obtained from the District Office, and provide valuable information for resource management.

It is estimated that it will take approximately one man year annually to perform a field inventory and update the NRIS for ten percent of this project area. An additional man year is anticipated to be needed to mark each year, those areas identified for timber stand improvement, commercial timber harvest, contract preparation, sale or project area layout, fuel wood harvest and contract administration and reforestation supervision. In most instances it should be possible and cost effective to contract out of most project forestry work (i.e. commercial timber or fuel wood harvest, timber stand improvement, planting site preparation, inventory, reforestation, etc.). It is recognized that in some instances, because of small size or limited access, it may be preferred to accomplish some project work with project personnel. Such opportunities will be considered on a case by case basis. The U.S. Department of Agriculture, Forest Service Timber Management Field Book will serve as a guide in those situations to estimate needed man hours for project accomplishment.

3.043 INVENTORY UPDATES

The initial inventory of all project lands was completed in July, 1992. The schedule for compartment inventory completion to include ground truthing, entry of data in NRIS computer system, and updating of data shall meet the following program.

Examination will be cursory on areas exhibiting little change. Areas experiencing rapid growth or other significant changes will be ground truthed (more intensive inventory) on an as needed basis every 10 years. All new data or changes shall be noted on the field notes form, entered on the project computers in the NRIS program, and all update information submitted to the District Office each year prior to the 1 April OMP Update deadline. Changes requiring modification of aerial photographs shall be noted on the appropriate section of the NRIS computer program and updated paper prints submitted to the District Office.

3.	Macbride Nature Rec Area/Stainbrook Preserve/ State Quarry (License) DACW25-1-90-4018 Contact Person: Warren Slebos Asst. Director of Recreation	456	The Director, Rec Services, Room E216 Fieldhouse, U of I Iowa City, IA 52244 319/335-9293	25 yrs. 2014
4.	National Science Foundation (Lease) DACW22-4-86-4171 Contact Person: Don Wilkins Property Administrator	18	National Science Foundation, Room 248 1800 G Street NW Washington D.C. 20550	09/29/2021

PRIVATE OUTGRANTS

1.	Camp Daybreak Scout Area	106	UNKNOWN AT THIS TIME	
2.	Jolly Roger/Harper's (Marina Lease) DACW25-1-77-2058 Contact Person: David Harper Manager	39.6	1850 Scales Bend Road N.E. North Liberty, IA 52317 319/626-3266	15 yrs. 2007
3.	G.S. Marine (Marina Lease) DACW25-1-95-4052 Contact Person: Geoffrey Scholl Manager	22.3	G.S. Marine, Inc. 2860 Prairie du Chien Rd. NE Iowa City, IA 52240 319/351-8343	20 yrs. 2014
4.	Midriver Marine (Marina Lease) DACW25-1-87-4042 Contact Person: Rick Chase	6.5	Mid River Marine 2988 Mid River Marine Road, NE North Liberty, IA 52317 319/626-3625	2001 Under Consideration
5.	Agricultural Leases	476.20	Current lessee listing in Appendix A	1-5 yrs.
6.	Wildlife Food Plot Permit	53.7	Current Permit listing in Appendix B	1-3 yrs.

UTILITY SERVICE OUTGRANTS

1.	Central Iowa Power Corp.		P.O. Box 2517 Cedar Rapids, IA 52406 319/366-8011	50 yrs. 2034
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lake. Two commercial concessions, including a supervised beach and a boat rental, are leased and supervised by the Iowa Department of Natural Resources personnel. Several boat ramps provide opportunity for day use within the park area. Maintenance of the campgrounds, day use area, and boat ramps is provided by Iowa Department of Natural Resource personnel. A state fisheries biologist station is located within the park. The biologist monitors and provides stocking of game fish within the reservoir and Lake Macbride in an effort to increase fisheries potential.

4. Macbride Nature Recreation Area. This area lies along the south side of Lake Macbride State Park. It offers diverse educational and recreational opportunities under the direction of the Recreational Services Department of the University of Iowa. A boat ramp, sailboat rental, and large parking area provide access to Lake Macbride. A unique raptor center is located on this lease property. Several pine plantations and reestablished prairie sites have added habitat diversity.

5. Camp Daybreak. Operated by UNKNOWN AT THIS TIME, this forested area provides educational experiences and recreational opportunities to youth groups. This area is characterized by dense pole size stands of oak and hickory.

6. National Science Foundation. Radio observatory equipment on the land under this lease provides much data about outer space. Operated under lease by the National Science Foundation, major discoveries regarding astronomy and satellite tracking are being made possible by this lease. The University of Iowa still maintains a tracking dish on the site.

7. Hawkeye Wildlife Area. A large part of this lease area is wetland habitat, and is operated by the Iowa Department of Natural Resources as a major waterfowl management area. Some excellent upland habitat exists on a portion of the lease. Wildlife management at this location is directed toward upland game and non-game wildlife. A number of agricultural leases are administered by the Iowa Department of Natural Resources to provide optimum food sources and habitat. An annual report of monies received from the outgrants, and state monies expended in management are made each year to the Corps of Engineers. An annual management plan must be presented to the Corps of Engineers for review and approval.

8. Agricultural Leases. Agricultural leases currently number 11, see Appendix A. Some leases will be combined to facilitate greater efficiency of administration as well as farming operation. Total acreage will change as field sizes change due to future implementation of the OMP. As stated in Regulation ER 1130-2-520, agricultural leases are not considered as a project purpose, but rather as a tool to implement wildlife management and other related project goals. Currently, agricultural leases are offered to the highest bidder, except where the Corps made a commitment at the time of acquisition of the land to lease the land directly to the former owner or tenant for his/her lifetime. The former owners or tenants do not bid competitively in obtaining a lease on a certain tract of land, are allowed to renew a lease based upon the fair market rental value of the land.

A typical five year lease follows a six year crop rotation program which allows three years of cash crop (corn, beans, and sorghum), followed by three years of a cover crop (new seeding, legume-grass mixture, wheat). Special requirements on a lease by lease basis are made to create habitat most advantageous to wildlife for both game and non-game species.

9. Wildlife Food Plot Permit areas. These permits provide for prescriptive planting of grain at select sites where access across private property would otherwise prohibit use of conventional agricultural leases. Permit holders are required to leave a percentage of the standing crop each year for wildlife in lieu of cash rent. Conditions of the permit restrict the acreage involved to five acres or less.

conditions of an area to meet satisfaction of the Project Manager. Cancellation of the outgrant may also occur due to noncompliance. Approval of project recommendations regarding action to be taken on noncompliance shall be sought from the Real Estate Division. All correspondence concerning real estate outgrants shall be routed through Operations and Real Estate Divisions.

Approximately 550 acres of agricultural leased lands are annually under direct management of the Coralville Lake Project. The Iowa Department of Natural Resources, operating under Corps license, utilizes 2,800 acres of agricultural leased lands incorporated into their total management package.

3.07 ROADWAYS AND ACCESS MANAGEMENT

The management of roadways on government tracts of land where traffic is allowed to flow that are not located in recreation areas generally falls on the responsibility of the Johnson County secondary roads crew. The grading and/or closing of these roads are reactionary to existing conditions, such as high reservoir levels. Road closed signs and/or blockades with chevron striping are posted to warn motorists. There are specific lease areas where roads are maintained by the leasee:

1. HAWKEYE WILDLIFE AREA. Managed by the Iowa Department of Natural Resources, this area contains several dirt/gravel roads that are maintained/closed by the Iowa Department of Natural Resources with their own equipment. Also contained within the lease area are county roadways subject to impasse and are maintained or closed by Johnson County crews.

2. MACBRIDE STATE PARK. The majority of the roadways in the park are owned by the State of Iowa. However, there are two sections of roadway contained in the lease area that should be mentioned. On the roadway to the Fisheries Station, one of the curves of roadway falls on Corps ground. This section of road is maintained by a tractor with blade owned by the Iowa Department of Natural Resources. Another section of roadway in the lease area is the causeway on the lower arm of Lake Macbride, which is maintained by Johnson County. The road continues north and curves left toward the Cottage Reserve Area. The section of roadway between the causeway intersection and the reserve area is also maintained by Johnson County.

3. MACBRIDE NATURE RECREATION AREA. Leased to the University of Iowa, this area contains access roads to a sailboat marina, raptor center, and to picnic and camping areas. The University is responsible for hiring a maintenance man to grade and keep these roads open with their own road grader as conditions warrant.

4. NATIONAL SCIENCE FOUNDATION RADAR TRACKING STATION. This site contains dishes for tracking satellites and radio-astronomy gear for space studies. The entrance road is maintained by the University.

5. CAMP DAYBREAK. UNKNOWN AT THIS TIME, maintains the roadway from the gate at the government boundary line down to their facilities.

6. OTHER ROADS. There are also many roads in housing developments adjacent to the reservoir which dead end at government ground. There are also old sections of highway which dead end on Corps areas. These sections of road are the responsibility of the U.S. Army Corps of Engineers to either maintain as access points or to barricade with guardrail and post with signs stating the areas are closed and prohibited to off road use of motor vehicles. Each situation is judged by the park manager and actions taken are dictated by existing conditions at the site.

APPENDIX B TO SECTION 3

CORALVILLE LAKE WILDLIFE FOOD PLOTS

<u>Lease Holder Name</u>	<u>Tract Number</u>	<u>Number of Acres</u>	<u>Last Year of Contract</u>
Crosheck, George	A-28	5.0	2000
Upmier, Verne	D-318	5.0	2001
Shima, Kevin	D-336	9.0	2001
Shima, Kevin	D-337	9.5	2001
Smyth, Mark & Roy	D-339	10.0	2001
Smyth, Mark & Roy	D-339	5.2	2002
G.F. Miller Farms LTD.	D-339	10.0	2001
Totals:		53.7	

4. IMPLEMENTATION OF MANAGEMENT PLANS

4.01 INTRODUCTION:

The long term management goals and objectives addressed in sections 3 and 5 will be met through implementation of the priority list of tasks in the five year plan. The NRIS will serve as a functional tool to develop those prescribed tasks for the project. The following section describes policy and procedures for implementation of natural resource management plans on project lands.

4.02 NATURAL RESOURCE MANAGEMENT PLAN:

District personnel responsibility: The District Forester, Natural Resource Management Branch is responsible for providing professional natural resource management advice and information as needed throughout the District for purposes of planning and operation of facilities under District jurisdiction. The District Forester assures that all Project Natural Resource Management programs are planned and implemented in accordance with applicable regulatory and policy guidelines and overall District objectives. OD-R telephone, (309)788-6361, ext. 6561.

Project personnel responsibility: The Coralville park ranger assigned responsibility for coordination, development, update, and implementation of the Project OMP, Part I, shall act as liaison between the District Office and the Project Office concerning matters of natural resource management. All matters concerning project policy shall be discussed with the project chief ranger and park manager prior to communication with OD-R. Other project personnel shall be assigned by the project manager such natural resource management duties as needed according to professional training, experience, and personal initiative.

Origin of management plans: Development of management plans originates in the field inventory phase on an individual segment basis. During ground truthing, prescriptions are noted on the field segment inventory form. Continual review of project natural resource goals and the NRIS data help define segment needs which are grouped in task packages. Task packages are prioritized according to urgency of prescriptive needs, logistical coordination, and regulatory functions requirements.

Review of plans: Annual plans are discussed with coordination from other natural resource specialists both within house as well as outside agencies. The preliminary annual plan shall be reviewed with the project park manager for acceptance or modification. The project shall then submit the annual plan to OD-R prior to the 1 April

deadline each year. OD-R shall have 30 days to review, comment, or modify the original annual plan. After this time the plan shall be added in accepted form to the project OMP, Part I.

4.020 NATURAL RESOURCE MANAGEMENT PRESCRIPTIONS

Natural resource management prescriptions provide the means by which project objectives may be achieved. Those prescriptions adopted for use in the Rock Island District may be found as a list and accompanying description in the NRIS User Manual on file at the project office and in the OMP Part I Addendum I. Continuing evaluation and improvement of project natural resource management may require future additions to those prescriptions presently in use.

4.021 ANNUAL MANAGEMENT MEETINGS WITH OTHER AGENCIES

In accordance with ER 1130-2-400 project personnel are required to meet annually with officials from non-federal agencies that have a vested interest in the management of project resources. The purpose of the working meetings are to reach agreements on specific management programs, that address both Corps implemented plans for resource management and annual plans of the other agency. The park manager or designated representative will chair the meeting to assure those established objectives are met.

Outgrants requiring annual management plans include the Hawkeye Wildlife Area, Lake Macbride State Park, and Macbride Recreation Nature Area. Managing agency personnel directly involved and having a vested interest in management of natural resources at the project shall be invited to attend the annual meetings. Other officials requested to attend include: District Forester (Corps), District Forester (State), Real Estate Division (Corps), Fishery Biologist (State), Conservation Officers (State), Outdoor Recreation Planner (Corps), Department of Recreational Services, Director (University), District Wildlife Biologist (State), Park Rangers (State), Coralville Lake Park Rangers (Corps), and Coralville Lake management. The list of participants may be expanded as needs require.

Annual meetings shall be held within the first two weeks of February, prior to an agency's deadline for submittal of annual management plans to Real Estate Division. Comments generated at the annual meetings may be considered and incorporated into finalized annual plans. Annual meetings shall be held at the Coralville Lake project office. A conference room is available as well as basic audiovisual equipment.

Topics of discussion at annual meetings will include: review of participating agencies' annual management plans; identification and statement of Project natural resource management objectives and plans; review of current research or recognition of research needs

concerning any natural resources at the Project; and coordination of management plans which concern rare or endangered species at the Project.

Invitations for meeting participants will be sent out providing time, place, and the purpose of the meeting. An after meeting memorandum will be prepared and copies furnished to OD-R. Following the meeting annual management summary letters will be written and sent out with the Chief of Operations Division signature to all participating agency directors for final sign off or comment on practices agreed upon at the meetings. A cut off date for returned comments will be set and implementation of practices can proceed after all comments have been received and any necessary changes made.

4.022 COORDINATION IN HOUSE

Formal initial inquiries or requests for action are out-lined in a memorandum and routed through OD-R to the appropriate district element. Replies are routed back through OD-R so it is known a reply has been made. All leases, press releases and other formal documents are routed to OD-R for approval and forwarding to the appropriate office.

Informal coordination is normally done by phone directly with the appropriate element, unless the subject is a priority issue, in which case coordination is done through OD-R.

4.023 COORDINATION WITH OTHER AGENCIES

PERSONNEL RESPONSIBILITY: Project administration has assigned areas of responsibility to project park rangers including but not limited to; boundary survey and inspection, interpretation, outgrants, lakeshore management, forestry, fish and wildlife management, contract inspection, pest management, news media coordination, landscape, and NRIS responsibilities.

COMMUNICATIONS PROCEDURES: Inquiries received at the project or directed to individuals are routed to the ranger responsible for that area of operations. Communications between outside agencies and the project are most frequently the result of phone calls. When the nature of communications requires policy interpretation, regulations, or commitment of equipment or personnel, the matter shall be resolved as directed by the project manager. Written correspondence in reference to natural resource management is routed to the responsible ranger. If written response is needed to complete communications, the park manager shall approve and sign the communication. Copies of all written correspondence shall be sent to OD-R for information and appropriate action.

DOCUMENTATION: Dependent upon the nature of interagency phone conversations, a record of the call may be made using Government Form DA-751, and the document filed at the project office. Copies of all written correspondence shall be made and filed at the project office.

4.024 REPORTS:

The NRIS will be the vehicle for the District Office to receive updated information from the field. Firewood permit sale dollar receipts will be monitored as before with the mid-January suspense for ledger sheets to be sent in to the District Office. OD-R staff will glean information on timber sales, reforestation, timber stand improvement expenditures, prairie establishment, wildlife practices, etc., from annual updates to the NRIS and the OMP Part I - Five Year Plan. The project manager may request reports from the project natural resource personnel anytime.

4.025 MONITORING AND SPECIAL STUDIES:

The research projects that are authorized on the reservoir are not direct studies to monitor Corps practices, but indirectly may provide information and data for future Corps policy decisions. The following areas are listed as research sites with a description of each:

1. **Macbride Nature Recreation Area.** Located approximately fourteen miles north of Iowa City, this area is open year-round for public use during the posted hours of operation. While the majority of users are engaged in recreational activities, there are also opportunities for individuals and groups to pursue biological research. Zoology and botany graduate and undergraduate students use the area either partially or completely for their PhD research or honors thesis projects, in addition to on-going faculty research projects. University of Iowa courses that utilize the area include psychology, biology, mycology, field botany, field ecology, general ecology, field biology, quantitative methods in field ecology, and Invertebrate and vertebrate zoology. Nearby private and public schools, scouting organizations, and civic groups use it as an outdoor classroom. Leased to the University of Iowa, Macbride Nature Recreation Area is administered by the Department of Recreational Services. They are solely responsible for the area. Changes in facility design and programs are coordinated between Recreational Services, RE, OD-R, and OD-RC.

2. **Tracking Station.** Located five miles northeast of North Liberty, this tract contains 18 acres of land leased to the National Science Foundation for a satellite tracking and radio astronomy station. All equipment, personnel, maintenance, and costs of operations are the responsibility of the National Science Foundation.
3. **Water Quality Testing Program.** Initiated in 1964, this project has continued without interruption since that time. The purpose of the study has been the determination of the effects of a flood control reservoir on the water quality and biological characteristics of its parent river. Performed by the University of Iowa's Institute of Hydraulic Research, the study involves taking water samples on a weekly basis from four stations, two upstream of the dam and two downstream. The samples are analyzed for temperature, turbidity, conductivity, dissolved oxygen, carbon dioxide, alkalinity, Ph, orthophosphate, ammonia, nitrate, and plankton. The University of Iowa is responsible for providing the equipment and personnel necessary to conduct the study by contract with the U.S. Army Corps of Engineers. The results of these tests are tabulated and a monthly report is furnished to the Coralville Lake park manager for reference and filing.
4. **Coralville Lake Fisheries Management.** The Iowa Department of Natural Resources requires all commercial fishermen on the reservoir to submit monthly catch reports to the DNR office. These reports in turn are compiled into an annual report and are provided to the park manager for policy decisions. All personnel and costs are the responsibility of the Iowa Department of Natural Resources. In addition, fish stocking and shocking programs are conducted by the State of Iowa. These programs provide fish density figures and pesticide level monitoring information. Although not performed by reservoir personnel, results of these practices can influence annual resource management decisions for the Corps of Engineers.

4.03 Special Administrative Tools

4.031 Timber Sales

A. POLICY. The park manager will initiate proposals to dispose of timber on civil works project lands. Individual timber disposal (timber sale) proposals at civil works projects will be based on the need to remove timber:

1. Incident to construction and operation requirements of the project, or

2. Incident to recreational development or management of public park and recreational areas, or wildlife management areas, or
3. Specific timber management proposals that are contained in and approved by this OMP, or
4. Specific timber management proposals that have been approved under a separate timber disposal plan.

All proposed timber must be compatible with the planned use of areas for which they are allocated (or zoned) in the approved project Master Plan land use supplement and this OMP. Timber will be disposed of by sale under a competitive bid process.

B. INTRA-OFFICE COORDINATION. After preliminary field investigation work has been completed, the park manager will initiate a memorandum through OD-R to Planning Division, Environmental Analysis (PD-E), and Real Estate (RE), asking for comments on the proposed disposal.

1. **PD-E** - The memorandum to PD-E will contain a detailed description of the disposal site, to include location, topography, vegetation, any other pertinent information concerning endangered species use of the area or existing habitat, and a detailed description of the work to be performed. A description of any tree harvesting operation provided in the memorandum should include a map of skid trail locations and harvesting areas, and also describe treatment of stumps, allowed dates for activity, and season of access for retrieval of timber. The memorandum should also describe any known cultural resources located in the vicinity of the timber sale or harvesting area. The memorandum must ask PD-E to furnish comments regarding the environmental coordination requirements (Endangered Species Act of 1973, preparation of EIS or EA, etc), and cultural resource considerations.

2. **RE-M** - The memorandum will contain a map adequate to identify the proposed sale site, an estimate of the volume of the timber involved in the proposed disposal, the proposed date of the disposal activity, an estimate of the acreage of the proposed disposal site, etc. The memorandum should also indicate that either:

- a. The disposal is covered under the approved OMP, or
- b. A separate disposal plan must be prepared.

c. The memorandum must ask for comments regarding:

1. Any known problems (such as lack of legal access to the proposed sale site, rights reserved by former landowners etc).

2. Whether or not there are any outgrants (leases, licenses, easements, permits) issued to other parties at the sale site.

3. Whether or not the Corps of Engineers has adequate rights on the land to proceed with the proposed sale.

4. Any other pertinent information.

3. **OD-S** - Proposed timber disposal activity will be coordinated by the District Forester, OD-R to assure compliance with Section 404 of the Clean Water Act.

4. **OTHER OFFICES** - OD-R District Forester will serve as liaison and will coordinate all project timber sales with internal Rock Island District functions to include the Chief of Natural Resource Management Branch, Chief of Operations, Public Affairs Office, and other interested or affected offices.

C. MARKING OF TIMBER - Following completion of consultation procedures the marking of timber may commence. Prior to actual painting of trees to be harvested, definite unit boundaries must be established. On outgranted areas, coordination with the managing agencies is required. Solicit coordinating agencies involvement in all field work.

Timber sale boundaries will be walked and ribboned, prior to paint marking. Adjacent property owners will be advised of the sale area boundary marking at the time work is being performed to see if they concur with property boundaries as being marked. Field work maps will have the boundary lines drawn prior to ribboning. Actual acreages may later be determined from the aerial photos using a dot grid, planimeter, or other means. Red ribbon will be used to temporarily identify the sale area boundaries. In areas where flooding is likely, always ribbon and paint mark trees above the expected water level.

Actual marking of timber should follow color codes consistent from sale to sale. Boundaries will be marked with red paint, with the paint on the side of the tree facing into the sale area. Trees to be left standing

within a clearcut or seed tree cut will be marked with blue paint below stump height. Trees to be harvested will be marked with yellow or orange paint. Trees to be harvested will be marked with paint at ground level (below stump height), and at eye level (and higher if the area is subject to flooding). The ground level marks (below stump height) are necessary to monitor compliance of the logger with contract specification (i.e. to assure that unmarked or "leave" trees are not cut).

Individual tree marking of trees to be cut will not be necessary on clearcut areas. On clearcut areas, trees meeting merchantability specifications may be designated for cutting and removal without marking each individual tree. Specific conditions (i.e. salvage or sanitation cuts) will require modifications to marking procedure.

While using the single tree selection method of harvest, the volumes will be estimated at the same time as marking. The log rule used for calculating volumes will be specified in the contract. (i.e. Doyle, International, Scribner Decimal C). For clearcuts, point sampling will be used for estimating volumes, unless all trees are individually marked.

D. APPRAISAL - After the timber has been marked for sale, the park manager will furnish Real Estate an appraisal, prepared by a forester, of the fair market value of the timber. The appraisal will indicate the number and size of each species, the estimated board feet in log scale measurement; and amount of cord wood. The appraiser should indicate in the appraisal report what, in his opinion, should be acceptable as a minimum price for different types of timber, as well as total or lump sum estimate for the whole.

E. DISPOSAL PLAN - If the proposed timber disposal is not contained in the approved OMP, a disposal plan must be prepared by the park manager and sent through OD-R for approval. The disposal plan should contain:

1. Sufficient information to permit preparation of specifications for inclusion into a timber sale, bid invitation or contract.
2. An explanation of the reason(s) why the timber must be removed.
3. An appraisal (see previous paragraph).
4. Any other pertinent information and/or desired special sale terms.

F. SALE PROCEDURE - Upon approval of the disposal plan by Real Estate, the timber can be sold. If the value of the timber exceeds \$1,000 (or \$10,000 in any one year), Real Estate will prepare and process an invitation for bids for sale of the timber to the highest bidder (whose bid meets or exceeds the minimum appraised value). If the value of the timber is less than \$1,000 (\$10,000 in one year), the park manager may proceed to obtain informal bids, in writing, for sale of the timber to the highest bidder (who's bid meets or exceeds the minimum appraised value). If only one informal bid can be obtained, the proposed sale will be publicly posted for a period of ten days. A copy of the contract will be furnished to Real Estate Division.

G. INSPECTIONS OF TIMBER SALES - Several inspections should be made to determine the timber buyer's compliance with all terms of each sale contract. Inspections will be made by project personnel. A written report will be made for each inspection visit and a copy of each inspection will be placed in the sale contract file.

For sales where RE-M has issued the sale contract (over \$1,000 or \$10,000 in one year) a copy of each inspection report will be furnished to RE-M for the sale contract file.

Upon completion of work by the timber buyer, a final inspection will be made jointly by RE-M and project personnel.

H. TIMBER SALE PROCESS - Throughout the timber sale process, close coordination between the park manager's office and RE-M must be maintained. The following is a list of general responsibilities in order of occurrence for each office in disposing of timber by sale.

PARK MANAGER'S OFFICE

Determines each area of timber for sale by following the Project's Operational Management Plan and following agreements made at annual coordination meetings for timber activities. Obtain outside agency sign-off (USFWS, State Conservation Agencies, County Conservation Boards). The timber on outgrant areas remains the property of the U.S. Government. A decision to allow proceeds from a timber sale on an outgrant area to be given to or retained by the state is possible on a sale by sale basis at the discretion of the District Engineer. Project managers proposing to allow the state agency to sell U.S. Government owned timber on an outgrant area and to keep the proceeds for their wildlife program must get prior approval from RE-M through OD-R.

Coordinates the prospective sale of timber with RE-R in regards to access availability, effect on other areas grantees (USFWS, States, cottage sites, etc).

Coordinates the prospective sale with, and obtains written concurrence through NCR District Forester in regards to compliance with Endangered Species Act, cultural and archeological preservation, wetlands preservation, and Department of the Army permit requirements.

Coordinates prospective sale with the general public and special interest groups through various media (i.e. newspaper articles, slide programs).

Determines amount of timber and prepares a formal appraisal of the timber, considering pertinent factors (such as market value, access, special restrictions, etc).

Maintains contact with industry and governmental forestry personnel regarding market conditions, bidder interest, prospective bidders, etc., and coordinate that information with RE-R.

1. Special procedures based on timber value - if the value of the timber is estimated to be less than \$1,000 (total sales not to exceed \$10,000 in any one year), the park manager's office will:

- a. Document value of timber by providing a copy of the appraisal in the project sale file.
- b. Offer timber by informal sale to the public.
- c. Maintain a separate file for each individual sale conducted by park manager's officer.
- d. Issue public notice of sale.
- e. Furnish copy of notice to the District Forester OD-R, and affected local, state and Federal resource personnel.
- f. Open informal bids and notify each bidder of acceptance or rejection of his/her bid.
- g. Issue minor forest products sale contract.
- h. Furnish copy of contract to District Forester OD-R and to RE-R.
- i. Monitor sale contract compliance and contractor activities.

2. If the value of the timber is in excess of \$1,000 (or total sales in excess of \$10,000 in any calendar year), the park manager will:

- a. Furnish RE-R with all pertinent information regarding the amount, species, location, special sale condition, special harvest restrictions, etc., of the proposed sale.
- b. Furnish general location map and site map of sale area.
- c. Furnish copies of all concurrences to RE.
- d. Furnish formal appraisal of the timber in regards to all pertinent factors (market value, access, special restrictions, etc.).
- e. Conduct prebid meeting and sale area showing as needed.
- f. Coordinate with RE in monitoring contractor activities in regard to timber practices and compliance with special restrictions and sale conditions.

NCR REAL ESTATE:

Maintains a mailing list of timber buyers (prospective bidders list) through the assistance of the park manager. If the value of the timber is less than \$1,000 (\$10,000 per calendar year), RE will:

- a. Provide information to park manager regarding Government ownership (and restrictions thereon), access, possible problems, other grantees in areas, etc.
- b. Provide mailing list of timber buyers, etc.
- c. Provides general guidelines and advice for issuing minor timber sales and contract conditions.

SPECIAL PROCEDURES BASED ON TIMBER VALUE:

If the value of the timber is more than \$1,000 (\$10,000 per calendar year), RE will:

- a. Prepare and send out advanced notice of the sale to all prospective timber buyers (park manager will supply RE with information).

- b. Review draft bid invitation/sale contract obtained from the park manager, through the District Forester, for approval.
- c. Send out final bid invitations to prospective bidders.
- d. Maintain a separate file for each individual sale conducted by RE.
- e. Open bids and notify each bidder or acceptance or rejections of their bid.
- f. Issue formal contract.
- g. Furnish district forester/park manager copy of contract.
- h. Coordinate with the district forester/park manager's office in monitoring contractor activities in regard to compliance with the sale contract.

4.032 FIREWOOD SALE PROGRAM

The selling of firewood to the public, for personal use, is one method of managing timber resources within the Rock Island District.

From a resource management point of view, a firewood program allows for the removal of undesirable tree species of limited quality and merchantability.

By selling a permit to the public for a nominal fee, resource managers on a project level can use firewood sales as an effective tool for overall forestry management.

Reasons for marking trees for fuelwood usually fall within the following categories. They are: dead or diseased; pose a safety hazard; are undesirable species; small trees of little shade value, or thinning to promote better growth; or trees within the bounds of a vista clearing. Trees posing a hazard to the public or possibly a danger to firewood cutters are dropped by Corps personnel prior to being made available to the public.

Firewood sales may on occasion also be used to support other forest management objectives to include thinnings, TSI and sanitation cuts.

OPERATION OF A FIREWOOD PROGRAMS:

Due to time and manpower constraints, the firewood program is usually run during the fall and early winter months, when staff workloads are generally less. Prior to the firewood cutting season trees scheduled for removal are marked with tree marking paint. The rangers marking the trees then estimate the number of permits the marked area can provide. A permit is estimated at approximately 1/2 of a standard cord (1/2 of 4' x 4' x 8' or 64 cubic feet). Depending on project policy, drift-wood permits may also be available to the public; these would allow the public to gather driftwood and other flood debris at specified locations at no charge or only a nominal fee. Access to firewood areas are generally available by roads within recreation areas or roads on Corps-managed lands. Access to other project lands, if necessary, are gained by obtaining full permission of the private landowners involved.

Prior to the commencement of a firewood sale, news releases and advertisements are issued to inform the general public of the availability of firewood at the project. Permits are issued through the project administration office. The permit is issued using NCR Form 36, MINOR FOREST PRODUCT SALES CONTRACT. The contract is issued to interested wood cutters for a nominal fee. Information on the purchases as well as location of wood, dates approved for cutting, special provisions and general terms of program are all contained within the contract. The form is in triplicate: the permittee has his copy in possession while cutting; a second copy is maintained for accounting records; and the third copy is forwarded to the District Forester for accounting purposes. Additional guidance for use of NCR Form 36 can be found in the Minor Forest Product Sales Contract Guide, District Memorandum 420-1-1.

Project personnel will assist permit holders in locating the area from which they may remove material and instruct them on what to cut on an as needed basis.

Depending on demand, an individual may obtain additional fuelwood permits entirely depending on the amount of wood available (but not to exceed 10 standard cords in any one calendar year).

Personal checks are accepted and should be made payable to: FAO, USAED, Rock Island.

Fees collected will be transmitted to the Finance and Accounting office, Rock Island District, as outlined in District Memorandum 37-2-1, at least once a week and more often when collections total \$100 or more for fee collectors and \$1000 or more for fee cashiers.

* Copies of NCR Form 36, Minor Forest Product Sales Contract and corresponding regulation, can be found in Section 4.037 of this document.

4.033 Agricultural Food Plot Permits

Agricultural leases are written to contain special provisions that aid in providing winter food for wildlife. This source is often unreliable since most crop fields are below the maximum flood control pool level and are often not grown because of high lake levels. Providing sufficient food plots utilizing Corps personnel is often difficult because of monetary and manpower restraints.

After careful review to determine the need for a winter food source in an area, that is not provided by other means, a special Wildlife Food Plot Permit may be negotiated with an adjacent landowner/farmer. Where access to the area is across private land the permit should be granted to the person controlling that access. Where access is via Corps land the permit should be granted, whenever possible, to the farmer who farms the adjoining land. This will help maintain good neighbors and promote cooperation between the Corps and landowners.

Permission to use these Special Wildlife Food Plot Permits was granted in March of 1982 under the authority of Title 36 CFR Section 327.14. A set of special provisions was established at that time to provide operating guidelines and protect the integrity of the program. These provisions will be strictly adhered to. These provisions are as follows:

1. No area over five acres in size will be the subject of a minor wildlife planting permit.
2. The normal Government/permittee split of the crop will be 80% permittee - 20% Government except that the wildlife food plots left in the field will always be one-half acre or larger, i.e.:

5 acres = 4 acres farmer - 1 acre wildlife
4 acres = 3.2 acres farmer - .8 acre wildlife
3 acres = 2.4 acres farmer - .6 acre wildlife
2 acres = 1.5 acres farmer - .5 acre wildlife
1 acre = .5 acre farmer - .5 acre wildlife
3. The crop will normally be corn. Soybeans, grain sorghum, and milo maize crops will be considered where appropriate
4. The boundaries of the fields will be marked in the field using steel fence posts. The posts cannot be moved by the permittee.
5. Any one farmer will be limited to no more than five special permit fields or a total of 15 acres, whichever is less.

6. Special permits will normally run for a three year period; however, either party can cancel the permit at the end of the growing season upon 30 days' notice. Permit can be canceled for non-compliance with permit conditions or in the best interest of the Government.

7. To retard soil erosion, the permittee will plow all sloping cropland on the contour and row crops will be planted on the contour. The design and layout of the fields will be determined by the ranger issuing the permit.

8. Fall tillage of any kind will be prohibited.

9. All crops left standing, unharvested for wildlife foods will have the same soil preparation and treatment as the cash crop. In addition, no row crop residue, such as corn stalks, will be removed from the fields. Any unharvested crop remaining in the field the following spring could be harvested by the permittee prior to spring planting, if he so desires.

10. The grazing of livestock should not be permitted on any Government-owned land at the reservoir.

11. The use of fire to clear cropland of debris or crop residue will not be permitted except as authorized by the District Engineer.

12. The permittee can, at his option, mow existing grass waterways in their minor wildlife planting area once after 15 July.

13. If a permittee decides not to cultivate a field for one season, the field must be mowed once between 15 July and 15 September.

14. All wildlife areas and grass or weed borders outside of the permit area will be left undisturbed. These areas will not be used as travel lanes or as a turning place for equipment. These areas may not be mowed or treated with chemicals.

15. All seed, fertilizer, and herbicide containers will be promptly removed from Government property.

16. The permit area will remain available for public use, including hunting.

17. The permittee is subject to citation and fine for failing to comply with the terms or conditions of the permit.

Additional special provisions may be included in the permit where appropriate. Such provisions might include: (a) Permittee provided access to government land for management activities and

inspections; (b) Ground preparation/planting or other farm operations performed by the permittee for the government at no cost; (c) Crop or field rotation plans.

Properly used the food plot permit program greatly expands the wildlife management capability of the project management staff. It can also improve public relations by involving members of the public/landowners/neighbors in active wildlife management program.

Wildlife food plot permits will be inspected at least twice annually to insure compliance with permit provisions and measure program success. These inspections will normally be completed during the spring planting season and fall harvest season. A Wildlife Food Plot Permit Inspection Report form will be completed for each inspection.

4.034 Volunteer Labor

Volunteers are a viable resource to supplement Corps personnel in accomplishing natural resource management work. Such volunteers should be utilized whenever possible and must be consistent with the Corps (CERV) program as detailed in ER 1130-2-432 and Rock Island District policies and regulations.

Groups and/or individuals that have or could be expected to volunteer at Coralville Lake are:

- a. Boy Scouts
- b. Girl Scouts
- c. College Fraternities & Sororities
- d. Future Farmers of America
- e. Izaak Walton League
- f. Ducks Unlimited
- g. School classes
- h. Service Organizations
- i. Court ordered public service
- j. College students and instructors
- k. Local farmers
- l. Experts in various resource fields

4.035 Fire Break Permit

Purpose: The purpose of the fire break permit is to provide authority to private landowners adjacent to government land to mow and remove highly flammable grassy vegetation to protect residential structures. Permits are issued for a two year period at no cost to the permittee and they allow the landowner to mow on government land within specified limits between 15 September and 1 May.

Responsibility: The Park Manager is responsible for approving permits, however the handling of requests, preparation of permits, and compliance inspection is to be delegated to other natural resource management personnel.

Administration: The procedures for issuance of fire break permits and for administering the program are as follows:

An assigned project employee is to meet on-site with the permit applicant to discuss the provisions and restrictions of a fire break permit. If the landowner feels that a permit would provide the desired protection, a proposed area of mowing is measured, marked and diagrammed.

A Fire Break Permit, NCR Form 6 is completed at the project office. The form is to be numbered to indicate the Project, calendar year, and sequential permit number. (eg COR-86-01). A diagram of authorized mowing is to be included on the reverse of the permit form. The Park Manager reviews and signs the permit as the authorizing official.

The project employee is to meet with the permittee to review the completed permit and secure a signature as required and initials by the diagram. Distribution of the forms include one to the permittee, one for the Project Real Estate Management File and one to the responsible employee.

A compliance inspection of active permits is conducted three times annually. The first inspection is conducted between 1-10 May, the second during mid-summer and the final inspection between 15-30 September. Additional inspections may be necessary for non-compliance.

Permit holders are to be contacted by letter prior to the expiration date of the permit. They should be informed the permit is due to expire and it will be their responsibility to inform the designated project employee if they wish permit renewal.

Non-compliance with the fire break permit is to be resolved by letter, written warning or citation under Title 36 of the Code of Federal Regulations, Section 327 or by permit revocation as appropriate to the violation. All cases of non-compliance are to be documented.

4.036 Agricultural Leases

Agricultural leases are to be used as "interim" management tools within the resource management plan. Resource management programs will be initiated at the earliest possible dates on lands under the A&G program. As leases expire and new leases are prepared, outgrant

instruments will incorporate land management conditions in the interest of resource management. The crop leases may vary in life from one to five years and are coordinated at the project level. Crop rotation on all lease lands is an integral part of the system. The make-up of this rotation is dependent on soil types and site location of the particular land parcel.

Benefits received from such leases include:

1. Ability to actively manage large acres of land with minimal Corps personnel and funding;
2. Providing a source of income to the Corps and respective counties within the lease agreement;
3. Provide all essential elements necessary to maintain good wildlife populations;
4. Provide erosion control by means of a green crop on lands subject to inundation due to periodic flooding, leaving land devoid of vegetation;
5. Discourage rapid succession of fallow lands while providing
 - A. weed control
 - B. control of woody vegetative growth
 - C. good soil preparation for future permanent grass or prairie or reforestation sites
 - D. a high level of diversity and increased amount of edge habitat vital to wildlife.

Implementation of the Agricultural Lease System

At the project level various tracts of land are inspected for the potential benefits of incorporating agricultural leases within the tract. Influencing factors include future management prescriptions, site ability to support agricultural lease, existing wildlife populations, terrain, and accessibility.

Once site locations have been determined, a management plan is devised which takes into account size of tracts designated agricultural lease, desired length of lease, and actual terms of the lease required in regards to preparation, planting, and harvest.

After the terms of the lease are finalized at the project level, the lease is prepared for public bid by the NCR Real Estate office. An invitation for bid is submitted to the public and leases awarded to the highest bidder. The successful bidder is allowed to pay his

cash rent in two equal installments, on 1 March and 1 September of each year if the rent exceeds \$500 per year. Payment is made directly to the Finance and Accounting office, Rock Island District. By law, 75% of all money collected from leasing at civil work project lands is returned through the state, to the county where the property is located.

The actual execution of the lease is directed by the Real Estate office with ranger personnel assisting in the monitoring of the terms of lease. Any infraction regarding planting, herbicide use, or harvesting is reported to the Real Estate office. There is an after harvest evaluation performed to evaluate the effectiveness of the lease and other problems associated with the lease.

Potential Wildlife Value of the Program

Many species of wildlife benefit from a well devised agricultural lease program. Approximately ten percent of the grain crops are left unharvested to provide winter food for many species of wildlife. Those lease lands that are planted in the hay or clover phase of crop rotation provide ideal nesting and brood-rearing cover. Cutting on hay ground is not permitted before the 15th of July to provide an optimum nesting season for central Iowa ground nesting species.

Agricultural lease lands lend themselves to maintaining highly diversified habitats capable of ensuring adequate food, nesting cover, winter cover and brood-rearing areas. Maintaining this diversity is best accomplished by creating a network of ag lease lands within a specified area. Through crop rotation, all necessary elements can exist for maintaining wildlife populations. By manipulating crop makeup, one can be species-specific in wildlife management goals.

Other steps are incorporated into agricultural lease development and implementation that insure wildlife value and soil conservation. These include various prohibitions on fall tilling, cutting for application of herbicide and other chemicals.

4.037 CONTRACTS

Due to the size of the job, timing, or practicality, many resource management tasks can be accomplished most efficiently through the use of contracts. Some of the areas in which contracts can be effectively utilized are: (1) commercial timber harvest; (2) timber stand improvement (TSI); (3) reforestation (tree planting machine or hand); (4) plantation release; (5) precommercial thinning; (6) pruning; and (7) fuel wood permits.

Contracts for commercial timber harvest (sale) as shown in OMP Section 4.031 will specify at least the following: species, minimum specifications for material to be harvested and removed, penalties for failure to remove required material, map of the area to be operated in, route of access, when operations will be conducted, maximum stump height, allowable skidding method(s), slash disposal, manner in which material to be harvested will be identified (i.e. merchantability specifications or paint marked), delineation of sale area boundary, method of payment (always in advance of cutting), stumpage rates for various contract products, soil and watershed protection, protection of certain identified wildlife (game and nongame) species nests, dens, burrows etc., fire prevention, protection of trees to be retained, penalty for cutting of unauthorized material, method of scaling, authorization for removal of harvested material from sale area, duration of contract and terms for extension of time, performance bond requirements, and EEO compliance.

TSI contracts would include a map of the area to be treated, route of access, method or specifications of treatment, method or basis upon which payment will be made, when work will be conducted, species, size etc. to be treated and how they are identified, how area to be treated is actually delineated on the ground, and duration of contract.

Reforestation contracts will specify conditions for care and handling of planting stock prior to planting, map of area and access to area(s) being planted, spacing, depth of planting, and proper techniques for assuring the elimination of voids around roots. Plantation release will specify what species of competition are targeted for eradication and how this will be accomplished, i.e. herbicide, girdling, duration of contract, drift prevention measures when using herbicide, a map of the area to be treated, route of access, and basis for making payment for work accomplished.

Precommercial thinning contracts will include a map of the area to be treated, route of access, basis for payment, manner in which trees to be removed are identified, penalties for removing unauthorized material, penalties for failure to remove required material, duration of contract

Pruning contracts will include a map and route of access to the area to be treated, height on bole to which all limbs are to be removed, manner in which slash is to be disposed of, pruning techniques to reduce or eliminate tearing of bark on main stem, wound treatment, penalties for failure to perform required work, how area to be treated is delineated on the ground, duration of contract, and when work is to be performed.

Fuel wood permits (contract) will provide a map of the area from which the fuel wood is to be removed, route of access, how area to be worked is identified on the ground, category or species of material

to be removed, how material to be removed is identified, authorization for removal, soil and watershed protection measures, duration of permit, when operations may be conducted, amount(volume) of material that is authorized for removal, and basis for payment.

All contracts will include provisions for performance bonds and EEO requirements.

5.01 FIRE PLAN

5.011 PURPOSE AND AUTHORIZATION

PURPOSE. The Fire Protection Plan will serve as a guide for the prevention and suppression of forest, grass and structural fires on fee title lands at Coralville Lake. The fire protection plan presents procedures to follow in case of fire and indicates the location of available fire suppression equipment. The major function of Corps personnel at the time of a fire will be to protect the public and property until the arrival of the fire fighters assigned by the county dispatcher.

AUTHORIZATION. The Fire Plan is prepared in accordance with the requirements of ER 1130-2-400, dated 28 May 1971. The fire plan is part of the Master Plan for the development and management of Coralville Lake. The Coralville Lake Project is protected by four fire protection districts: North Liberty, Solon, Swisher, and Oxford. The lands adjacent to Corps property include holdings of State and private property. If a fire threatens government lands, the Corps of Engineers will respond as requested in a cooperative effort with the other agencies to protect its boundaries.

5.012 POLICY AND RESPONSIBILITIES

ADMINISTRATIVE RESPONSIBILITIES. Coralville Lake lands include approximately 24,000 acres; 16,088 acres are leased to the State of Iowa for Lake Macbride State Park and the Hawkeye Wildlife Area and Refuge. These areas are under the fire control policy of the Iowa Department of Natural Resources, Forestry Section. Four hundred twenty-five acres are leased to the University of Iowa for use as the Macbride Nature Recreation Area. Fire protection for this area would be provided by the Solon Fire Department.

In addition to fire control for State and private property, local fire districts have the responsibility to protect Federal Government holdings. North Liberty, Solon, and Swisher fire districts provide protection for Corps of Engineers operated recreation areas and the Oxford fire district provides protection for the southern half of the Hawkeye Wildlife Area. See Attachment A for a breakdown of fire districts.

POLICY STATEMENT. The Corps of Engineers permits open campfires under Title 36, Chapter III, Part 327.10(b), "Fires shall be confined to those areas designated by the District Engineer, and shall be confined to fireplaces, grills or other facilities designed for this purpose. Fires shall not be left unattended and must be completely extinguished prior to departure." Authorized burning may also be approved on a case-by-case basis by the Park Manager when an adjacent landowner requests permission to dispose of debris or vegetation. Any other fires set either intentionally or unintentionally on the project will be dealt with under the procedures listed in Section 5.015.

When Corps personnel are requested to fight a fire, the following concerns are listed in priority of importance:

1. Protect lives.
2. Protect property.
3. Assist in fire suppression.

4. Fight fires.
5. Reporting.
6. Provide corrective measures--inspections, firebreaks, etc.

COOPERATIVE AGREEMENTS. The Corps of Engineers at Coralville Lake has no written contracts or agreements for fire protection with any agency. The Iowa Department of Natural Resource, however, provides fire protection for tracts which include Lake Macbride State Park, and the Hawkeye Wildlife Area. Local fire departments, by law, must provide protection for those areas included in the boundaries of their responsibility. See Attachment A.

PAYMENT FOR LOCAL FIRE PROTECTION. Public Law 93-498, Section 11, provides for reimbursement of costs for fire fighting on Federal property incurred by fire services outside the Federal Government. Claimants will be advised to direct their claim to the Administrator of the National Fire Prevention and Control Administration in accordance with this public law. This applies to project land that is under direct Corps of Engineers jurisdiction. On land leased to the State, the State assumes responsibility for fire fighting under the terms of the lease.

5.013 FIRE PREVENTION

EDUCATIONAL MATERIAL AND INFORMATION. It is estimated that 97% of all eastern U.S. forest fires are due to acts of human carelessness. Understandably, it is important to contact people in our recreation areas (camping, picnicking, and undeveloped areas) and on the outside as well. The posting of signs; placement of information on bulletin boards; interpretive programs; and visits to local schools, community organizations and clubs, enlist the help of the public toward preventing both structural and forest fires.

IDENTIFYING HAZARDS. Identifying natural and man-made fire hazards is the first step in fire prevention. Common fire hazards include:

NATURAL HAZARDS

Excessive accumulation in wooded areas and grasslands of flammable material such as dead leaves, dead trees, dry brush, dry grasses, etc.

Dry forests due to prolonged dry spells, high winds, and dry air.

Inaccessible forest areas with no roads or trails.

Electrical storms with little or no rain.

MAN-MADE HAZARDS

Improperly constructed and untended campfires in camping and picnicking areas.

Fires thought to be extinguished, but still smoldering.

Improper or careless use of matches and smoking materials in or near forests and along roads and trails.

Excessive accumulation of cut brush, dead leaves and branches, snags, rubbish, and other flammable debris in or near fields and forests or within 25 feet of public roads.

Outdoor fireplaces, trash burners, refuse piles, etc., around private dwellings and outbuildings near forests.

Building construction or other commercial operations conducted near grass or forested areas.

Improper burning procedures.

Improper storage of flammable liquids.

Off-road operation of motor vehicles.

The best way to handle a fire hazard is to remove it, however in some cases this not possible. Since SOME fire hazards will always exist on the project, it is very important that the public be conscious of fire safety. Ranger discussions with campers and picnickers, the timely use of signs, and enforcement of Corps regulations can effectively prevent many potential fires on project lands.

OBSERVATION. A major phase in our fire prevention program is observation. This leads to constant alertness for fire hazards and fire conditions and taking immediate and positive action to eliminate them before they cause a fire. Fire detection is a part of each routine park ranger patrol.

Efforts will be extended toward building a reliable network of neighbors who will keep a constant lookout for wildfires. These area residents then take action by reporting fires they observe to the project office.

FIRE ACCESS ROADS AND TRAILS. No fire access roads or trails are maintained at Coralville Lake. Access to fires on project land is by public roads, project roads, boat, and foot. The roads are shown on project brochures and maps displayed in the project office.

LAW ENFORCEMENT. Fire prevention is effective when a combination of service, education, and law enforcement is used to keep people aware of the fact that carelessness, negligence, and maliciousness are unlawful and dangerous. When approaching anyone on the project, whether it be in woods or a developed recreation area, be open, direct, and friendly. Try to put people at ease in your presence. If you come upon violations of fire laws or good fire practices, act firmly within your authority using your best judgement as to the degree of authority necessary. Issue a citation under Title 36 if necessary. If corrective or punitive action beyond this is required, contact local law enforcement officers. Remember, the malicious use of fire is a criminal offense under State law. See Attachment G.

5.014 PRESUPPRESSION PROCEDURES

Presuppression planning is aimed at preparing an efficient fire control organization that is well-equipped, instructed and supervised. In addition to the project's fire fighting force, coordination will be planned with the Forestry Section of the Iowa Department of Natural Resource, and the local fire departments toward suppressing wildfires on Corps lands.

PROJECT FIRE ORGANIZATION. The project fire organization will be prepared by the lake manager and regularly kept up to date. As of this date, the fire organization is as follows:

CORPS FIRE BOSS. The Supervisory Park Ranger is responsible for insuring preparations have been made for dealing with fires prior to their occurrence, and for controlling and coordinating personnel and materials through communication channels at the time of an actual fire.

ALTERNATES. The Project Forester may assume the above responsibilities.

FIRE FIGHTERS. The park rangers, maintenance foreman, and other maintenance workers are responsible for physically extinguishing fires with materials assigned to them by the designated fire boss or crew chief (selected from this group for leadership at the site of the fire).

DISPATCHER. The park clerk or other assigned office personnel will serve as the radio dispatcher. The dispatcher maintains communications between the fire crews, and other agencies involved.

DOZER AND GRADER OPERATORS. The operator shall be a maintenance worker with a valid operator's permit. Responsible for supplying heavy equipment to build fire lines or clear debris when required by the fire boss.

FIRE EQUIPMENT STORAGE AND MAINTENANCE. This will be done by park rangers as assigned. They are responsible for maintaining structural and wildfire equipment in sound working order, ready for use when needed.

All personnel (permanent, seasonal and temporary), as assigned by fire boss, may be called to firefighting duty. The Corps fire boss may turn over the direction of crews under his control to the fire chief of the responding fire department.

PROJECT FIRE EQUIPMENT AND LOCATION. The motorized equipment will be available for fire suppression and kept in the maintenance area when not in use. Smaller hand equipment for fire use only is located in the fire cache in the vehicle storage building, and in the storage areas at Sugar Bottom and Sandy Beach.

Attachment B includes maps of buildings on the Coralville Lake Project. It displays locations of fire fighting equipment, gas pumps, and safety equipment for each building.

WILDFIRE PROCEDURES. Any wildfire on or threatening project land will be immediately reported to the Corps fire boss.

The Corps fire boss will immediately initiate action to manage the fire following this procedure.

1. Contact by telephone the Johnson County Sheriff's office. The county dispatcher will then alert the appropriate firefighters.
2. If the fire is located on lands leased to the State of Iowa, contact by telephone:

A. Hawkeye Wildlife Area	857-4645	
B. Lake Macbride State Park	644-2848	or 644-2200
3. If the fire is located at the Macbride Nature Rec Area, contact by telephone: Ed Wainwright at 644-2452.
4. If the fire is on or immediately threatening Corps property, a minimum crew of two people will be dispatched to the fire by the Corps fire boss. A Corps crew will be dispatched whether or

not the fire is responded to by State or local agencies. Additional people and material may be sent if deemed necessary by the crew chief at the fire.

5. The dispatcher will remain in contact with all Corps fire crews until they have returned, the Corps fire boss declares the fire under control, or when relieved.

STATE FIRE ORGANIZATION. Federal lands leased to the State of Iowa, Iowa Department of Natural Resources, plus those lands owned by the State of Iowa, are covered by a fire protection plan derived generally from the Forestry Section and more specifically carried out by each State area unit. These units include the Hawkeye Wildlife Area and Lake Macbride State Park. The State plans include persons responsible, equipment and its location, procedure, and local cooperative groups.

MACBRIDE NATURE RECREATION AREA. Federal lands leased to the University of Iowa as the Macbride Nature Recreation Area are not covered by a University fire protection plan. Fire protection for the area is provided by the Solon Fire Department.

LOCAL FIRE ORGANIZATIONS. The fire districts for the local fire organizations are displayed in Attachment A. There are four districts serving the Coralville Lake Project. The list includes North Liberty, Solon, Swisher, and Oxford Volunteer Fire Departments. Attachment F includes a list of fire telephone numbers.

TRAINING. Biannual fire training session will be held by an individual designated by the Supervisory Park Ranger before the spring fire season for all permanent personnel. The session will involve familiarization with fire fighting methods. Included will be fire reporting procedures, situations arising on the fire line, how to make good use of terrain and natural barriers, how to use available equipment properly, traffic control, and most importantly, how to work together as a team to effectively extinguish a fire.

5.015 SUPPRESSION PROCEDURES

Fire suppression will have priority over all other activities. Wildfires spread rapidly. Therefore, it is extremely important to have fast suppression action. It is much easier to suppress a small fire with a few people immediately than it is to try controlling a large fire with many people later. The major objective of any plan should be to bring the wildfire under complete control before the next daytime period.

SMALL FIRES. The method of attack will be to deal with the fire immediately upon arrival. The vehicle fire extinguisher, fire rake, or whatever is available is used to put out the fire. In all circumstances, the person reaching the fire first should report the fire location by the most effective means, and the number of persons and equipment that will be needed to fight the fire.

FIRES NEAR OR INVOLVING GOVERNMENT BUILDINGS. All available personnel will report immediately to the fire location to provide the assistance necessary. Personnel will not enter the burning building, but valuable items may be removed from a building threatened by fire. The following is a list of priorities for removal of items, by building:

1. Administration Building:

- A. Administrative files
- B. Computers

- C. Radio equipment
- D. Audiovisual equipment
- E. Typewriters
- F. Copy machines
- G. Furniture - begin with that nearest the fire.

2. Ranger Office and Vehicle Storage Bldg:

- A. Vehicles and boat
- B. Map files
- C. Radio equipment
- D. Tools

3. Maintenance Shop and Storage Yard:

- A. Vehicles and wheeled or tracked equipment
- B. Files
- C. Radio equipment
- D. Movable tools and equipment beginning with that nearest the fire.

FOREST FIRES. Upon receiving a report of a fire on lake lands or immediately adjacent to them, the Corps fire boss will immediately initiate action to suppress it as prescribed in the Wildfire Suppression section. When a Corps of Engineers crew is dispatched, the following will apply:

1. A suppression crew of two to four firefighters, properly equipped, under leadership of one of the people on the Corps fire boss list will be dispatched to the fire as soon as possible.
2. Upon arrival at the fire, the crew chief will inform the Corps fire boss of his arrival and then make an inspection of conditions and decide on the best method of attack. The crew chief will determine whether he needs more personnel and/or equipment during his inspection. If additional personnel or equipment are necessary, they will be provided if possible. The crew chief will be in charge of the fire site until replaced at the fire by someone designated by the Corps fire boss. In most cases during a fire involving a fire department, a fire boss from that department will take charge.
3. Whether a direct or indirect method of attack is used will be determined by the type of fire, rate of spread, size of fire, terrain, size of crew, equipment, weather conditions and forecast. A direct attack may be used on small, slow burning fires where the fire can be suppressed relatively quickly. The indirect method or fire line (firebreak) will be used for larger fires. A firebreak is a line formed ahead of and around the leading edge of a fire where all combustible material is removed by raking, sawing, or bulldozing. The width of the line will be not less than three feet, but may be larger depending on the type of fire. The fire boss will determine what method will be used, where the effort will be directed, and what equipment will be used, where the effort will be directed, and what equipment will be used to assure maximum safety of personnel, and minimum damage and cost. Firebreaks will be constructed far enough ahead of an advancing fire to permit completion prior to the arrival of the fire. During all fire fighting efforts, fire fighters will work in pairs or teams and a route of escape will be predetermined. One member of the fire crew will be assigned to patrol the break once it is constructed.
4. A fire will be attended until it is mopped up to a point of absolute safety. Night mop-up work is desirable when a fire is alive. An unsafe line will be attended overnight. A sufficient patrol force

will be posted on a live line so all of it is in direct sight at all times, except for sectors bounded by barriers such as rivers, lakes, or highways. If burning conditions do not exist at night because of heavy dew or frost, patrols are not required as a precautionary measure even if some smoldering embers exist near a well-constructed line.

5. A fire will be attended until the last burning material is cool. The fire area will be checked for a minimum of two more days to assure the fire is dead. After sufficient checks satisfy the fire boss that no more smoke will appear, the fire may be classed "out" and can be abandoned.
6. On fires responded to by the State of Iowa on lands leased or owned by them, the State personnel will be in charge of the fire control operation. Corps personnel will take orders from the person in charge of the State fire areas. The Corps fire boss will keep the project headquarters informed of the progress of the fire and will remain on the scene until it is controlled.

5.016 PRESCRIBED BURNING

Prescribed burning is the intentional use of fire as a management tool. Fire can be used to eliminate both live and dead vegetation or to insure future domination of a certain species. In the case of native prairie management, fire can release dormant seeds and stimulate existing plants. It effectively halts the invasion of the prairie by woody plants and inhibits growth of cool-season grasses, in addition to recycling nutrients.

COORDINATION. The decision to burn is based on many factors, including but not limited to: weather conditions, existing firebreaks, possible hazards and adjacent land conditions. Constant monitoring of National Weather Service forecasts with special attention to wind, temperature, and humidity is very important. These conditions can influence the type of firebreak needed to contain the fire. Firebreaks can be mowed buffer strips around the area to be burned, soil strips turned with the aid of a tractor and plow or disc, carefully preburned blackline strips, or firebreaks can simply be natural or man-made objects such as streams, ponds, roads or plowed fields.

Hazards can result from the smoke produced at a burn. When smoke blows across roadways, vehicular visibility is impaired. Coordination with the Johnson County Sheriff may be necessary in addition to Corps ranger vehicles to adequately warn traffic. If possible, this situation should be avoided.

Contacting adjacent landowners and homeowners shall be policy when the prescribed burn is close to private property. Burns shall not be conducted near high voltage power lines, as the carbon particle clouds produced in smoke are capable of conducting electricity and dangerous conditions result.

When a date for a burn has been set, the burning regulations and state variance applications will be reviewed to determine if a special permit is required. The Johnson County Sheriff's Department and the fire department responsible for the protection of the area in which the burn lies, will be notified of the intended times of the burn, the location, and the size of the area to be burned. If in the event of the fire getting out of hand, the Corps crew chief will instruct the Corps dispatcher as to the necessity of more Corps people or fire department assistance. The crew chief will have in his possession at all times a portable radio capable of contacting both the Corps dispatcher and the Johnson County Sheriff's dispatcher for assistance when needed.

PROCEDURES. When all of the above conditions have been considered and a burn is to take place, it is the responsibility of the Corps fire boss to designate a crew chief and assign other personnel and the

equipment needed. The location and vegetation types, size of the area, and site conditions will most influence these decisions.

The equipment needed for a prescribed burn includes the items used for combating wildfires. In addition, the fire swatters, rakes, and Indian backpack pumps from the fire caches are useful. Also, a drip torch is very effective in dispensing burning fuel quickly to control the pace and direction of the fire.

The pattern of fire selected can make the difference between a successful prescribed burn and a disastrous wildfire. It is most desirable to start the fire by using the backburn or backfire method - burning the fuel against the wind. Only after a safe portion of the area has been burned (approximately one third), should a headfire, flank fire, or spot fire be used to complete the burn. Personnel and equipment will be dispensed around the perimeter to safely contain the fire. All personnel will be in either radio or visual contact with the crew chief at all times. The method of attack and suppression should be limited to maintaining the firebreak in a successful burn. When more intense fire fighting is required, the procedures outlined in Section 5.014 will be used. At all times, proper safety procedures outlined in Section 5.017 will be adhered to.

5.017 FIRE SAFETY AND CREW WELFARE

The first responsibility of the Corps fire boss will be the well-being of his fire crew during all phases of any wildfire attack. This includes their safety, welfare, and physical health. The following points of safety will be followed:

1. When traveling to a fire, all traffic regulations will be observed. No safety regulations will be broken because of a wildfire.
2. When walking in the woods, crews will travel in single file with an interval of at least five feet between individuals. All tools will be carried at the point of balance and carried at the side of the body with cutting edges turned down and out. Handled tools will never be carried over the shoulder and, if possible, a guard will be placed over the cutting edges. At night, lamps or flashlights will be used.
3. All tools will be sharp and in good shape. Workers using axes and brush hooks will keep a safe distance around them so as to avoid hitting other crew members. Members felling snags and trees will take extreme care to be sure the area in which the tree falls is clear of all personnel.
4. Crews will not be exposed to excessive heat, smoke, or flame. Every crew leader will always plan a possible line of escape for himself and his crew, and will make every individual aware of what is to be done.
5. All fire personnel will have and use necessary equipment. Minimum safety equipment will include hard hats and safety shoes for all personnel, one first aid kit per crew, chain saw chaps for people using chain saws, and lights for night work.
6. Proper clothing will include lace style safety boots, cotton fire resistant long-sleeved shirts and gloves. Night crews should have jackets for night work.
7. Crew leaders will make sure all crew members have plenty of drinking water at all times. If the attack lasts for more than five hours, food will be provided to crew members.

8. No fire crew should work continuously for long periods of time without relief. Frequent breaks should be taken during periods of strenuous work unless the situation is critical. Crew members will be rotated from one job to another to prevent unequal distribution of difficult work. Under no circumstances will a crew be kept on a fire line for more than a 12-hour shift.
9. No person should be taken on a fire crew unless he/she is physically fit.
10. In no case will fire fighters work alone.
11. Each crew will be equipped with portable radio equipment.

5.018 FIRE REPORTS

Within one month of a fire, a fire report will be prepared for every fire on the project lands whether administered by the Corps or leased to the State of Iowa. These reports will be prepared by the Corps fire boss. See Attachment C for the form to be used. A copy of the report will be sent to the Natural Resource Management Branch in Rock Island, Illinois within one week of occurrence.

INSPECTIONS AND REVEGETATION. Periodic inspections will be made of areas that have burned. In areas of normal visitor use, dead trees and dead limbs will be removed. In all areas, inspections will be made to determine the extent of natural revegetation.

Small, less than one-half acre fires will be allowed to revegetate naturally. If a large area does not revegetate naturally or if erosion becomes a problem, the area will be seeded.

UPDATE OF PLAN. This Fire Protection Plan will be examined annually by the lake manager and updated as needed. Special attention will be given to the sections on prevention problems, State, local, and Corps fire organizations, fire training, and fire telephone numbers.

5.019 ATTACHMENTS

- A. Fire Protection District Map
- B. Buildings and locations of Fire Equipment
- C. Fire Report
- D. Reporting a Fire
- E. Iowa State Arson Law
- F. Fire Telephone Numbers

ATTACHMENT C

CENCR-OD-RC (1130-2-400)

DATE

MEMORANDUM FOR: OD-R, Hardison

SUBJECT: Fire Report.

1. The following information is furnished in connection with:

SEGMENT: TRACT:

TOTAL ACRES BURNED:

REPORT BY:

DISCOVERED BY:

ARRIVAL TIME:

FIRE OUT TIME:

CAUSE OF FIRE:

TYPE OF AREA (IN ACRES):

DAMAGE ESTIMATES:

FIRE SUPPRESSION COSTS:

LABOR, TOOLS & EQUIPMENT:

VEHICLE MILEAGE:

REMARKS:

PARK MANAGER

ATTACHMENT D - REPORTING A FIRE

Call Dispatcher as soon as a fire is sighted (by radio or telephone).

**RADIO: WUD 730 - Office
 7450 - John Castle
 7451 - Randy Haas
 7459 - Terry Escher
 7454 - Gene Walsh
 7455 - Scott Ford
 7458 - Kathy Soska
 7480 - Omer Kemp**

TELEPHONE: 338-3543 or 354-4467

If those listed above are off duty or not in contact, call the Johnson County Sheriff by radio or by telephone. Also, call one of the above at home.

RADIO: Johnson County

TELEPHONE: 356-6020

Give this information about the fire:

- 1. Give the location.**
- 2. Size of the fire.**
- 3. Description ie. grass, forest or structural.**
- 4. Is the fire threatening? eg. property boundaries or facilities - private, State or Federal Government.**
- 5. What is needed to fight the fire - number of men and equipment?**

5.02 INTEGRATED PEST MANAGEMENT

A formal integrated pest management program for this District has not been established. A pesticides control program is established and is monitored by the District Pesticide Coordinator. The United States Department of Agriculture Forest Service is responsible for initiating and/or monitoring pest management problems on Corps of Engineer lands. They are also responsible for providing certain training sessions and information based on their own budget constraints and priorities. The first steps in establishment of an organized pest management program is to identify our needs, and those resources that are available to us.

5.021 PESTICIDES

The use of pesticides on Corps lands is regulated by an existing Corps Pest Control Program, updated 1 June 1985 Pest Control program for Civil Works Project as directed by ER 1130-2-413. Procedures for planning, approval, and use of pesticides on project lands are covered in this regulation. It also provides information on training and certification of pesticide applicators, medical surveillance, and record keeping. The Pest Control Program Regulation is included in this section of the OMP, Part I, for further reference.

5.022 INSECT PESTS AND DISEASES

There are no serious insect or disease problems occurring at the projects to date. Oak wilt, introduced pine sawfly, autumn olive die off (stress related), river birch dieback, and columbiana beetle (silver maple) are a few of those problems that have had some impact on trees and shrubs. Insects and other arthropods have created some problems in project recreation areas during spring, summer and fall, namely, bees/wasps, woodticks, and webworms/tent caterpillars.

Bumble bees and yellow jackets are social insects which readily attack and sting animals including man when disturbance of nest sites occurs. Rangers shall be alert for nesting colonies of these bees in recreation areas and shall warn visitors in the near vicinity of nest sites. Immediate destruction of nest sites and occupants shall proceed at night when all members of the colony are together in the nest. Contact poisons of a volatile type shall be used. Entrances to ground nests shall be saturated with insecticide and tightly plugged with earth in order to fumigate trapped bees. Playground equipment and picnic table supports have been observed to offer shelter for nesting bees so these areas should be occasionally checked by patrol rangers.

Honeybee swarms have been noted to occur in high density recreation areas during the summer. Rangers shall warn all recreation users in the vicinity of a swarm, and local bee keepers shall be immediately notified by phone to come and pick up a swarm. No bee trees are known to presently occur in developed recreation areas, and development of a bee tree in these areas shall immediately require corrective measures to prevent establishment. A local beekeeper, Merlin Sorrenson, 1539 Plum, Iowa City should be contacted when a swarm is found. Phone (319)351-3123 or 356-2544 for Mr. Sorrenson.

Brown dog ticks in large concentrations have occurred on and near showerhouses at Sugar Bottom during spring and early summer. As a known vector for diseases, visitors expressed much concern over the large number of wood ticks in this area. Interpretation of the wood tick problem and encouragement to check oneself for ticks at this time of year is a good way to handle the situation in the campgrounds. Grounds maintenance to include keeping grass mowed closely and landscape plantings closely trimmed near the showerhouse is also a good deterrent as the wood ticks seek shade

from direct sunlight and drying winds. As dry summer weather normally replaces the wetter spring season, wood tick populations decline.

Webworms and tent caterpillars have caused problems by defoliation of shade trees planted in recreation areas. These insects in larval form cause concern when climatic conditions are favorable, namely a wet, cool summer. Under most natural conditions, climatic and biological controls keep populations down and forest damage is insignificant. Heavy populations of larval webworms and or tent caterpillars may cause stunting, setback, and death of shade trees which are already in stress due to recent planting, replanting, pruning, or nutrient deficiency.

Rangers shall note the presence of defoliators upon young trees in recreation areas during midsummer, and upon detection, shall report such infestations to the project resource management personnel. Good control has been achieved in the past by spraying infested trees with *Bacillus thuringiensis* bacterium suspension. A cultural practice to be used as an alternative control includes selection of shade trees which are not commonly utilized by defoliators. Susceptible species of trees showing much damage from webworm and tent caterpillar defoliation on the project include; lindens (American), pin oak, European mountain ash, crabapple, and cherry.

5.023 WILDLIFE PROBLEMS

Several minor problems generated by wildlife at the project have been noted in the past to include: woodpecker damage to wooden siding of showerhouses; broad-striped skunks frequenting campgrounds creating a nuisance; beavers cutting shade trees in recreation areas; deer rubbing antlers on small trees in recreation areas and plantations; raccoons creating nuisances in campgrounds; and thirteen-lined ground squirrels taking residence in campgrounds.

Red-headed woodpeckers have been noted to visit a particular showerhouse in spring on a daily basis, and problems occur when male woodpeckers proceed to drill large holes in the cedar siding. This is an individual bird problem in which a particular male is using the building as a means of displaying courtship and territorial behavior. This has been observed only once on the project, and drilling activity ceased by summer. Choice of siding may be a requirement where this activity becomes a regular problem.

Broad-striped skunks have been known to create a nuisance in several project campgrounds during spring and summer recreation seasons. Several pets have been sprayed causing concern and clinging nauseous odor. Concentrations of skunks in recreation areas can be prevented by educating campers to clean up campsites daily and not leave pet food outside at night. As skunks are highly susceptible to harboring the rabies virus, the appearance of skunks in large numbers should be monitored and care taken to note unusual behavior of individuals. A conservation officer or sheriff deputy should be immediately summoned if an animal is suspect of unusual behavior, at which time the animal may be dispatched by the officer and removed from the area. The park ranger in charge of the project resource management program shall be immediately advised of incidents concerning apparently diseased wildlife, and information surrounding the incident shall be presented to him as a written report pending further action.

Beavers have created problems only in that they take up bank dens near a recreation area and begin felling trees near the water during the fall season. In Coralville Recreation Areas nearly all cottonwoods and willows near the lakeshore have been dropped by beavers which were subsequently trapped. By following fall, the dispersal of beaver from other areas results in occupation of old den sites. Tree cutting then continues as before with the new beaver looking for trees near the water. One solution to the problems of beaver damage is not to plant trees near the lakeshore. Another alternative is to

replace lost trees with trees species which have limited value to beaver, namely evergreens as pine, spruce, and fir. Hardwoods which offer beaver greater preference may be protected by wrapping the base of trees with heavy plastic or better yet, metal sheets to a height of at least four foot from the ground.

Deer damage to trees and shrubs at Coralville Lake annually occurs in the fall when bucks start to rub and mark out territory. Most damage occurs in hedgerows and shelter-belt plantings where plants have reached a five or six foot height. A chemical deer repellent can be sprayed on trees and shrubs subjected to rubbing. Hunting pressure is also an effective method to reduce concentrations of deer. Monitoring hedgerow, shelterbelts, and plantations in the fall will reveal buck deer damage. Direction of archery deer hunters to these areas where hunting is allowed will often reduce deer activity in these areas.

Raccoon nuisance problems occasionally occur in recreation areas during the summer season. Problems emerge when raccoons climb into or tip over unsecure garbage cans. Proper sanitation maintenance will prevent this problem. Raccoon hunting and trapping at the Coralville project restricts raccoon population levels in the area.

Thirteen-lined ground squirrels have found the open mowed areas of project campgrounds very suitable for meeting their habitat requirements. Two problems generated by the presence of the rodents include: ground squirrel predators (badgers and dogs) move into the areas and attempt to dig out the prey, thereby creating large holes; ground nesting bees utilize the holes for nest sites. No major problems have yet been encountered; but if control of the rodents becomes necessary, distribution of rodenticide treated grain can be made directly into the burrows for rodent consumption and direct removal.

5.024 NOXIOUS WEEDS

Each project has varying degrees and types of noxious weed problem due in part to geographical location. Multiflora rose is a noxious weed found throughout the State of Iowa that has become of such importance that a state committee was organized to monitor its control. Purple loose strife has become a pest in certain wetland areas in the District.

Complaints from the public concerning noxious weed problems on project lands shall initiate followup field investigation by project natural resource management personnel. The extent of the problem created by weeds shall be evaluated and appropriate action taken. Return correspondence concerning project policy and action to be taken shall be communicated to the complainant. For recent information concerning particular species of noxious weeds, consultation with Johnson County Extension Service shall be sought. Telephone number of the Extension Service is (319)337-2145.

This supplemental sheet replaces Appendix A
in your copy of ER 1130-2-4

APPENDIX A

District Pesticide Coordinator and Assistant Coordinator

DISTRICT PESTICIDE COORDINATOR

**Address: USAED, Rock Island
Clock Tower Building
PO Box 2004
ATTN: CENCR-OD-R, Feavel
Rock Island, IL 61204-2004**

Telephone: (309)788-6361 extension 5561

Responsibilities:

- a. Overall coordination of pest control program.**
- b. Preparation of Annual Pesticide Program report, regulations and policies.**
- c. Assist field activities in Iowa, Missouri, and Wisconsin by providing technical advice on pesticides, training, reporting procedures, disposal of surplus pesticides, and applicator certification.**

ASSISTANT DISTRICT PESTICIDE COORDINATOR

VACANT

Responsibilities:

- a. Assist field activities in Illinois by providing technical advice on pesticides, training, reporting procedures, disposal of surplus pesticides, and applicator certification.**
- b. Provide first review of all Illinois facilities requests for pesticide use, applicator training and certification. Forward to District Coordinator.**

APPENDIX B

INSTRUCTIONS FOR DISTRICT PEST CONTROL PLAN
Pest Control Data (ENG Form 4768-R)

GENERAL

Paragraph 4a of reference 2a, directs that Districts will prepare and submit to Division detailed descriptions of anticipated use of pesticides for review and approval by the appropriate Division Engineer. District project offices shall submit for approval a list of all pesticides anticipated to be used in the upcoming calendar year.

ADDRESS

Complete address boxes as follows:

TO: Commander
USAED North Central Division
ATTN: NCDCO-MO

FROM: Commander USAED-Rock Island
ATTN: District Pesticide
Coordinator
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois
61204-2004

PART I

- 1a. DISTRICT CONTACT FOR PROGRAM: District Pesticide Coordinator
- 1b. TELEPHONE NUMBER: ~~515/828-7522~~ 309/788-6361 EXT. 561
2. LIST OF CERTIFIED APPLICATORS ON PROJECT: List only those individuals who have been formally certified by NCD.
3. CANDIDATES FOR CERTIFICATION AS APPLICATORS: List those individuals who need to be trained and certified in order to properly implement recommended pesticide programs.

PART II

Part II must be completed for EACH PESTICIDE recommended for use.

1. PROJECT OR INSTALLATIONS: Indicate where the recommended pesticide will be used.
2. TARGET PEST: Identify by common name the pest to be controlled. When necessary for clarity, include scientific names. Include stage in life cycle for insects (larvae, nymphs, or adults) or stage of growth for plants (pre or post emergent) at time of treatment. The target pest(s) must be clearly identified in order to justify the USE and CHOICE of pesticides.

f. NUMBER AND TIMING OF APPLICATIONS: Self explanatory.

g. SPECIFIC DESCRIPTION OF SITES: Indicate the type of area(s) to be treated. Example: "Upstream rock face of dam."

6. CAUTIONS: Based on guidance on label, identify specific areas in or near the application site that must be avoided. Example: "This product will kill fish. Keep out of lake."

7. APPLICATION: Indicate whether pesticide will be applied by Corps personnel or by contractor.

8. JUSTIFICATION STATEMENT FOR RESTRICTED-USE PESTICIDE: If application of restricted use pesticide is recommended, attach a justification statement with the following items of information:

a. Provide specific reasons why a general-use pesticide cannot achieve an acceptable level of control.

b. Document technical guidance sought from other businesses and/or agencies in the selection process. Indicate specific people contacted and recommendations received.

c. Indicate specific actions that will be taken to insure that proper safe guards are employed in the application of the restricted-use pesticide.

PEST CONTROL DATA
(ER 1130-2-413)

CALENDAR YEAR

DATE

FROM:

PART I

1a. POINT OF CONTACT

b. TELEPHONE NUMBER

2. **CERTIFIED APPLICATORS**

NAME	JOB TITLE	DUTY STATION	DATE CERTIFIED

CANDIDATES FOR CERTIFICATION AS APPLICATORS

NAME	JOB TITLE	DUTY STATION

PART II

4. PROJECT OR INSTALLATION

5. TARGET PEST

6. OBJECTIVE OF CONTROL OF TARGET PEST

7. **PESTICIDE TO BE USED**

a. TRADE NAME

b. COMMON NAME

MANUFACTURER

c. FORMULATION

APPENDIX C

Pesticide Products Not Requiring Approval Prior to Use

(NCR Regulation 1130-2-4 Paragraph 5)

PESTICIDE USE	BRAND NAME	EPA REGISTRATION NO.	FORM APPLIED	MFG. NAME
Lawn Maintenance	Scotts Turfbuilder Plus 2 26-3-3	538-28	Granules	O.M. Scott & Sons Maryville, Ohio
	Scotts Super Plus 31-4-4	538-167	Granules	O.M. Scott & Sons Maryville, Ohio
	Scotts Turfbuilder Plus Halts	538-155	Granules	O.M. Scott & Sons Maryville, Ohio
	Scotts Starter Fertilizer with Crabgrass Preventer 16-21-5	538-60	Granules	O.M. Scott & Sons Maryville, Ohio
	Scotts Insect Control Plus Fertilizer 28-6-4	538-92	Granules	O.M. Scott & Sons Maryville, Ohio
	Ferti-lome Weed Killer Plus Lawn Fertilizer	2217-603-7401	Granules	Voluntary Purchasing Group, Bonham, Texas
	Ferti-lome Lawn Food Plus Diazinon 20-3-3	7401-222-10159	Granules	Voluntary Purchasing Group, Bonham, Texas
	Super Vertigreen Weed & Feed 25-3-3	2217-559-3442	Granules	Agri-Chemicals
	Ortho Weed-B-Gon Jet Weeder	239-2334-AA	Aerosol	Chevron Chem. Company, San Francisco, California
Ortho Poison Oak & Poison Ivy Killer	239-2335-AA	Aerosol	Chevron Chem. Company, San Francisco, CA	
Rodent & Insect Control	Fumarin Hub States #147 Rat & Mouse Control	5602-129	Bait	Hub States Corp, Indpls, Indiana
	d-Con Mice & Rat Prufe	3282-9-ZB	Bait	d-Con Co., New York

Raid House & Garden Bug Killer	4822-38-AA	Aerosol	Johnson & Sons Racine, Wisconsin
Raid Wasp & Hornet Killer	4822-267	Aerosol	Johnson & Sons, Racine, Wisconsin
Spectracide (Roaches, Ants, Flies, etc.)	100-625	Aerosol	Ciba-Geigy Corp.
Black Flag Triple Active Bug Killer	475-210	Aerosol	Boyl Midway Inc.
Deet (Insect Repellent)	901-48	Aerosol	McLaughlin Gormley King Co., Mnpls, Minnesota
Cutter Insect Repellent Spray	121-21	Aerosol	Miles Lab., Chicago
Off Insect Repellent	4822-10-AA	Aerosol	Johnson & Sons Racine, Wisconsin
d-Con Jet Stream Wasp & Hornet Spray	9688-49-3282	Aerosol	d-Con Corp. Montvaie, NJ
Warpath Roach	3282-18	Ready to Use Hand Held Spray	d-Con Corp. Montvaie, NJ
Spectracide Professional Home Pest	100-625	Ready to Use Hand Held Spray	Ciba-Geigy Greensboro, N. Carolina
Raid Indoor Fogger	4822-135	Ready to Use Hand Held Spray	Johnson & Sons, Racine, Wisconsin

Only those products specifically named may be purchased and used. The EPA Registration Number must be checked on each product purchased and must be identical to the number on this list. This list is not an endorsement of these products or a statement of their efficiency. Other similar products may be used; however, formal approval via ENG Form 4768-R must be obtained prior to use.

APPENDIX D

Testing Program for Pesticide Applicators
Who Apply
Cholinesterase Inhibiting Pesticides
(Organophosphates & Carbamates)

(1) The preplacement or baseline examination should include a medical and work history; a physician-administered physical examination, with particular attention to the cardiovascular and respiratory systems to evaluate the employee's ability to use respiratory protective equipment; an examination of the hepatic and renal systems to insure that employees will not be unusually susceptible to ill effects from pesticides or solvents; a chest x-ray; spirometry with determination of Forced Vital Capacity (FVC) and Forced Expiratory Volume at one second (FEV-1); a complete blood count; liver function tests, such as Serum Glutamic Oxalacetic Transaminase (SGOT) and Lactic DeHydorgenanse (LDH); and renal function tests, such as creatinine or blood urea nitrogen (BUN). The examination should also include the determination of a baseline cholinesterase value in red blood cells and in plasma, defined as the average value of three separate measurements obtained during a 9 to 14 day period. In subsequent examinations, one cholinesterase measurement (in red blood cells only) suffices. All cholinesterase determinations shall be performed in accordance with TB MED 292, Determination of Cholinesterase Activity: Manual and Automated Methods, 30 May 1975.

(2) A periodic examination of the same scope as the preplacement or baseline examination should be given on an age-related basis according to the following schedule:

under 40 years:	every 4 years
between 40 and 49 years:	every 2 years
50 years and over	annually

In addition, the liver and kidney function tests, the complete blood count, and the red blood cell cholinesterase measurement should be performed annually regardless of age. If other occupational exposures exist, such as high noise levels from vehicles or aircraft used for spraying, appropriate medical surveillance (audiograms in this instance) should also be provided.

(3) It should be noted that for persons under 50 the annual check includes only the liver and kidney function tests, the complete blood count, and the cholinesterase measurement. It is not necessary to take a complete physical except on the timetable as established in paragraph (2) above.

(4) A synopsis of this program would be as follows:

BASELINE EXAM

Bloodtest 851 -- includes CBC, SGOT, LDH, BUN
Cholinesterase Bloodtest - RBC, Plasma
Chest X-ray
Forced Vital Capacity - FVC
Forced Expiratory Volume - FEV-1
Physical (Doctor)

PERIODIC EXAM

Bloodtest 851
Cholinesterase Bloodtest
Chest X-ray
FVC
FEV-1
Physical (Doctor)

ANNUAL EXAM

Bloodtest 851
Cholinesterase Bloodtest

APPENDIX E

Testing Program for Pesticide Applicators Who Do Not Apply Cholinesterase Inhibiting Pesticides

(1) The preplacement or baseline examination should include a medical and work history; a physician-administered physical examination with particular attention to the cardiovascular and respiratory systems to evaluate the employee's ability to use respiratory protective equipment; an examination of the hepatic and renal systems, to insure that employees will not be unusually susceptible to ill effects from pesticides or solvents; a chest x-ray, spirometry with determination of Forced Vital Capacity (FVC); Forced Expiratory Volume at one second (FEV-1); a complete blood count; liver function tests, such as Serum Glutamic Oxalacetic Transaminase (SGOT) and Lactic Dehydrogenase (LDH); and renal function tests, such as creatinine or blood urea nitrogen (BUN).

(2) A periodic examination of the same scope as the preplacement should be given on an age-related basis according to the following schedule:

under 40 years:	every 4 years
between 40 and 49 years:	every 2 years
50 years and over	annually

In addition, the liver and kidney function tests and the complete blood count should be performed annually regardless of age. If other occupational exposures exist, such as high noise levels from vehicles or aircraft used for spraying, appropriate medical surveillance (audiograms in this instance) should also be provided.

(3) It should be noted that for persons under 50 the annual check includes only the liver and kidney function tests and the complete blood count. It is not necessary to take a complete physical except on the timetable as established in paragraph (2) above.

(4) A synopsis of this program would be as follows:

BASELINE AND PERIODIC EXAMS

Bloodtest 851 - includes CBC, SGOT, LDH, BUN
Chest X-ray
Forced Vital Capacity - FVC
Forced Expiratory Volume - FEV-1
Physical (Doctor)

ANNUAL EXAM

Bloodtest 851

PESTICIDE APPLICATION RECORD SHEET

DATE _____

Project _____ Address _____ Phone _____

Contractor _____ Address _____ Phone _____

Applicator _____ Address _____ Phone _____

Crop or other target treated _____

Number of acres or other units treated _____

Pest(s) controlled and developmental state _____

Severity of infestation, infection, etc. _____

Stage of crop growth (if applicable) _____

Date and time pesticide was applied _____

Soil Condition (if applicable) _____
(wet, dry, cloddy, etc.)

Temperature _____ Humidity _____ Cloud Cover _____ Wind Direction & Speed _____

Pesticide used _____ EPA Reg. No. _____
(name of product & formulation)

How pesticide mixed (if applicable) _____
(i.e., 1 gallon in 50 gallons water)

Application equipment used _____

Pesticide application rate _____
(active ingredient per acre or other unit treated)

Total amount of pesticide applied _____
(gallons or pounds)

Specific location of application (if applicable):
Tract No. _____ Area _____

Map of treated area (if applicable):

6.01 INTRODUCTION

The objectives of the Coralville Lake Natural Resource Management Plan shall be met by implementation of those prescriptions most suited to the requirements of the resource needs. This continually advancing five year plan shall be used as a means of coordinating and prioritizing needs on an annual basis over the next five years.

PLANTING ACTIVITY. Those prescriptive practices associated with planting type activities which the project shall use, include:

1. Reforestation plantings.
2. Shelterbelt and hedgerow plantings.
3. Shade tree plantings in recreational areas.
4. Under planting stock in an existing stand.
5. Seeding of mixed-grass prairie.
6. Planting of wildlife food plots consisting of grains.

REMOVAL, ALTERATION, MODIFICATION OF HABITAT. The prescriptive practices which alter, remove, or modify habitat that the project shall employ include:

1. Site preparation prior to actual planting efforts designed to limit competition
2. Timber stand improvement which may include chemical or mechanical destruction of undesirable trees and shrubs in a timber stand.
3. Mechanical or chemical treatment to retard or set back succession to an earlier ecological community.
4. Clear cut commercial forestry operations designed to provide continual regeneration of mast producing hardwoods.
5. Selective cutting as a forestry practice to remove single trees marked by the forester for commercial removal.
6. Release cutting in order to improve growth of young stands of even aged stock.
7. Salvage cutting as limited to areas in and around high usage areas or other areas exhibiting disease or storm damage before deterioration of wood occurs.
8. Shelter wood cutting as a commercial operation shall provide for regeneration of mast producers in areas where clear cuts may create considerable aesthetic alteration of landscape.
9. Thinning of several pine plantations as designed to lower basal areas and stimulate growth of remaining stand.
10. Mowing and chemical treatment to maintain an early several stage of "old field" succession.

11. Use of fire to maintain vigor of newly established or existent prairie.
12. Creation of dead trees which will function as roosting sites for raptors and large wading birds as well as woodpeckers.

WETLANDS MANAGEMENT. Prescriptive practices to be implemented shall include:

1. Excavation of depressions through fertilizer blasting techniques as a means of setting back processes that reduce project wetlands to dry land communities.
2. Sub-impoundment development shall be used as a means of enlarging marsh areas at selected sites through controlled obstruction of creeks.
3. Upland ponds shall be constructed to meet needs for stable water levels as required by residents of aquatic ecosystems.

ARTIFICIAL NEST STRUCTURES. Construction, placement, and upkeep of nesting boxes shall be provided to increase populations of wood ducks, bluebirds, barred owls, American kestrels and screech owls.

POSTING OF NON-HUNTING LANDS. Public lands where hunting shall not be allowed shall be posted for identification purposes. Conservation officers for the Department of Natural Resources shall be notified by the project manager when areas are posted as "No Hunting" lands.

Prescriptive plans shall be grouped into task packages which in turn shall receive priority ratings. Implementation of the task packages shall be dependent upon budgetary constraints.

6.03 EQUIPMENT AND TOOLS

Project owned equipment meets the immediate needs for implementation of the natural resource management plans. To increase effectiveness and efficiency of implementation, the project shall consider the future purchase of:

1. Truax Seed Drill
2. Deciduous Tree Planter

6.04 UPDATES AND REVIEW

The park ranger(s) responsible for the annual revision of the OMP I shall update the following subsections each year:

- 3.05, Outgrant Areas
- 6.02, Priority List (5 Year Plan)
- 7.00, Completed OMP-1 Tasks
- 8.00, Coordinating Agency Personnel Listing
- Compartment Reports
- Compartment Overlays

By 1 February of each year the project will receive a description of what additional sections of the CMP, if any, have been selected for revision by OD-T. By 1 April each project will submit to OD-T their annual OMP revision.

The revision will be reviewed and finalized by 1 May after which copies of the revised sections will be distributed.

7. COMPLETED OM I TASKS

04/01/2000

7.01 Finished Work Tasks (Listed By Date)

Date Completed	Task Number	Task Description	Comments	Actual Cost
Oct 1992	92-29	Mech. Control (Tree Plantations)		\$4,015
May 1992	92-31	Prescribe Burn		\$1,400
October 1992	92-50	Landscaping in Recreation Areas		\$10,670
CANCELLED	92-09		Task was not completed due to labor and budget constraints.	
May 1993	92-32	Site Preparation & Prairie Establishment	Upper Hoosier Creek S-37	\$3,100
May 1992	92-53	Pine Thinning	Sugar Bottom S-18	\$19,000
CANCELLED	92-33	Forb Planting	Task not completed due to budget constraints.	
July 1992	92-24	Nesting Bird Survey		\$2,500
April 1992	92-26	Securing Access		\$168
Fiscal 1993				
July 1993	93-24	Nesting Bird Survey	120 Corps person hrs were spent planning and conducting surveys. 300+ volunteer hrs were dedicated to the project.	\$2,520
March 1993	93-26	Secure Access		\$210
November 1993	93-27	Habitat Appraisal	2 person days devoted to the project.	\$336
CANCELLED	93-28	Site Preparation & Reforestation	Rewritten as task package 95-76.	
September 1993	93-30	Plant Inventory		\$1,200
April 1993	93-31	Prescribed Burns	Upper Hoosier Creek S-12, 39, & 40 were burned on April 26th by a crew of 6 people. 8 hrs were spent planning the burn. 3 hrs per person or 18 total hrs were spent on the fire. 1 hr (3 total) was spent by 3 people mopping up.	\$700
November 1994	93-32	Prairie Establishment		\$14,500
May 1993	93-33	Forb Planting	\$200 in labor and \$500 in planting material. Forbs planted into Upper Hoosier Creek S-12 & S-40.	\$700
September 1994	93-35	Maintain Firebreak		
November 1993	93-36	Prescribed Burn		\$750
November 1993	93-37	Prairie Restoration	32 hours of Corps labor.	\$700
November 1993	93-38	Prairie Restoration		\$9,500
January 1993	93-39	Prairie Maintenance	Noel's Tree Service was hired for	\$1,945

			\$1,735 to remove 100+ trees and shrubs. Corps labor \$210 (planning & inspecting the project).	
October 1993	93-50	Pruning & Tree Planting		\$11,500
July 1993	93-51	Planting Nursery Stock		\$550
May 1994	93-53	Pine Pruning & Thinning		\$22,000
October 1992	93-70	Controlled Burn		\$1,200
FISCAL 1994				
July 1994	94-24	Nesting Bird Survey	80 Corps person hrs were spent planning & conducting the surveys. 200+ volunteer hrs were dedicated to the project.	\$1,680
March 1994	94-26	Secure Access		\$210
May 1994	94-28	Site Preparation & Reforestation		\$5,840
September 1994	94-29	Mechanical Weed		\$12,250
October 1993	94-31	Prescribed Burns		\$1,250
CANCELLED	94-32	Prairie Est.	Project will be completed under task package 95-32.	
October 1993	94-35	Prescribed Burn		\$700
November 1994	93-38	Prairie Restoration		\$14,000
July 1994	94-45	Maintain Subimpoundment		\$180
October 1994	94-50	Pruning & Tree Planting		\$3,100
July 1994	94-51	Planting Nursery Stock		\$550
October 1994	94-80	Wildlife Food Plots		\$170
CANCELLED	94-81	Turtle Protection		
FISCAL 1995				
July 1994	95-24	Bird Surveys		\$2,000
May 1995	95-25	Forest Under Planting		\$1,725
May 1995	95-26	Secure Access		\$210
October 1995	95-27	WHAG		\$475
Spg-Fall	95-29	Spraying		\$4,400
CANCELLED	95-30	Vegetation Removal		
May 1995	95-31	Prairie Burns		\$3,000
May 1995	95-33	Forb Plantings		\$100
April 1995	95-35	Firebreak Maintenance		\$250
May 1995	95-36	Prairie Burn		\$2,200
November 1995	95-40	Erosion Survey		\$1,200

July 1995	95-45	Pothole Maintenance		\$1,000
June 1995	95-50	Landscaping		\$15,000
October 1995	95-52	Hazard Tree Survey		\$600
November 1995	95-53	Tree Maintenance		\$4,500
October 1995	95-70	Prairie Burn		\$1,500
Incomplete	95-71	Prairie Burn		\$1,700
CANCELLED	95-75	Pine Thinning		
May 1995	95-76	Reforestation		\$4,500
May 1995	95-80	Foods Plots		\$350
November 1995	95-81	Turtle Surveys		\$2,000
August 1995	95-82	Bat Surveys		\$1,400
August 1995	95-83	Cormorant Structure		\$700
July 1995	95-90	ELC		\$1,700
FISCAL 1996				
May 1996	96-01	Site Tour		\$250
May 1996	96-15	Shoreline Reveg.		\$150
July 1994	96-24	Bird Survey	Completed in FY 94	
Incomplete	96-27	WHAG	Incomplete due to labor and budget restrictions.	
June 1996	96-28	Site Preparation & Reforestation		\$7850
July 1996	96-29	Plantation Maint.		\$1000
July 1996	96-30	Prairie Veg. Removal		\$200
September 96	96-31	Prairie Burn		\$400
September 96	96-32	Prairie Est.		\$6000
May 1996	96-33	Forb Planting		\$1775
June 1996	96-35	Mow Firebreak		\$200
October 1995	96-36	Prairie Burn		\$500
October 1995	96-37	Prairie Burn		\$400
Deferred	96-38	Prairie Est.		
August 1996	96-39	Brush Clearing		\$150
July 1996	96-45	Weir Maint		\$150
March 1996	96-50	Campground Tree Maint.		\$800
March 1996	96-52	Hazard Tree Anal.		\$1750
March 1996	96-53	Tree Maint.		\$400
Incomplete	96-70	Woodland Burn	Incomplete due to labor and budget restrictions.	
June 1996	96-75	Pine Thinning		\$1500
May 1996	96-80	Foods Plots		\$200
September 96	96-81	Turtle Surveys		\$1600
June 1996	96-83	Cormorant Structure		\$275
Incomplete	96-90	ELC	Incomplete due to labor and budget restrictions.	

FY 1997				
June 1997	97-01	Volunteer Coordinator		\$460
June 1994	97-24	Bird Surveys	Completed in June 1994	
November 1996	97-26	Release Cutting		\$2093
Deferred	97-27		Deferred due to labor and budget restrictions	
September 1997	97-28	Site Prep and Reforestation		\$7020
November 1996	97-29	Chemical Control for Reforestation Projects		\$1148
October 1996	97-30	Acorn Collecting		\$115
March 1997	97-31	Prescribed Burns		\$920
April 1997	97-32	Prairie Establishment		\$5383
May 1997	97-33	Forb Planting		\$3036
August 1997	97-34	Exotic Weed Control		\$466
October 1996	97-35	Prescribed Burn		\$552
March 1997	97-36	Prescribed Burn		\$368
October 1996	97-37	Maintain Firebreak		\$115
September 97	97-38	Prairie Establishment		\$5580
March 1997	97-39	Brush Removal		\$276
Incomplete	97-40	Shoreline Revegetation	Incomplete	
March 1997	97-41	Prescribed Burn		\$552
July 1997	97-45	Subimpoundment Maintenance		\$138
September 1997	97-46	Tree Removal		\$473.50
May and September 1997	97-50	Shade Tree Planting		\$6287
December 1996	97-52	Hazard Tree Analysis		\$460
September 1996	97-53	Tree Maintenance		\$840

May 1997	97-70	Woodland Burn		\$460
April 1997	97-71	Timber Stand Improvement		\$2496
March 1997	97-72	Tree Removal		\$575
April 1997	97-80	Wildlife Food Plots		\$368
September 1997	97-81	Turtle Surveys		\$276
Deferred	97-90	Ecological Land Classification	Deferred due to labor and budget restrictions	
FY 1998 (Labor @\$30/hr)				
April 1998	98-01	Volunteer Coordination (Burn)		No Costs Incurred
May 1998	98-28	Site Prep. and Reforestation	Area was planted to prairie instead due to frequency of flooding	\$7500
Fall 1997 Summer 1998	98-29	Mechanical and Chemical Weed Control for Reforestation Projects	Areas were sprayed with Pendulum and Oust in the fall after leaf drop and then the areas were mowed in the Summer	\$2294
April 1998	98-31	Prescribed Burn		\$800
April 1998	98-32	Prairie Planting	UHC S-42 & S-43	\$7500
Spring 1998	98-33	Forb Planting		\$2000
April 1998	98-35	Prescribed Burn		\$800
Fall 1997	98-36	Fall Burn		\$400
November 1997	98-37	Mow Firebreak		\$360
FY 1997	98-38	Prescribed Burn		\$300
July 1998	98-45	Subimpoundment Maintenance		\$200
FY 1998	98-46	Tree Removal		\$10,000
FY 1998	98-50	Shade Tree Planting		\$2500
December 1998	98-52	Hazard Tree Evaluation		\$1500

September 1998	98-53	Tree Maintenance	This and Task 98-46 costs were divided due to the large amount of storm damage to trees and the maintenance and removal of a large number of trees and branches	\$10,000
Fall 1998	98-70	Prescribed Woodland Burn	Firebreak was established, but burn never took place	\$60
Fall 1998	98-71	Prescribed Woodland Burn	Firebreak was established, but burn never took place	\$60
Spring 1998	98-80	Wildlife Food Plots	Renewed current ones and added several new ones	\$90
Spring 1998	98-81	Turtle Surveys	Found Several Turtles in the 218-380 Area	\$1000

Several changes were made to 98-29 and 99-29: Lower Hoosier Creek S-04 & S-19, Koss S-22, 218-380 S-04, Daybreak S-42 & S-50 and Upper Hoosier Creek S-01, S-30, S-31 were removed from the task packages. 218-380 S-26 was added to all four packages and Upper Hoosier Creek S-07 & S-08 were added to 99-29.

Under task package 98-28 Curtis Bridge S-06 was removed.

FY 1999

Deferred	99-28	Site Prep. and Reforestation	Project deferred. Compartment in an Agriculture Lease until 2004	
Summer 1999	99-29	Mechanical and Chemical Weed Control for Reforestation Projects	Jolly Roger S-34 and Sand Creek S-16 done. Other compartments incomplete due to wet conditions, unable to get equipment into areas.	\$ 250
Incomplete	99-31	Prescribed Burn	Incomplete due to labor and budget restrictions.	
Incomplete	99-33	Forb Planting	Incomplete due to labor and budget restrictions.	
Incomplete	99-37	Maintain Firebreak	Incomplete due to labor and budget restrictions.	
August 1999, December 1999	99-45	Subimpoundment Maintenance		\$175
Incomplete	99-46	Forb & Sedge Planting	Incomplete due to labor and budget restrictions.	
FY 1999	99-50	Pruning & Single Tree Planting		\$5,000
FY 1999	99-52	Hazard Tree Evaluation		\$1,500
FY 1999	99-53	Tree Maintenance		\$500
Fall 1998	99-70	Understory Burn	Prescribed burn in Turkey Creek - S-32	\$1,000
Spring 1999	99-80	Wildlife Food Plots		\$100
Incomplete	99-81	Turtle Surveys	Incomplete due to labor and budget restrictions.	
August 1999	99-82	Bat Surveys		\$2,450

8. COORDINATION - AGENCY PERSONNEL LISTING

04/01/2000

The project shall promote informal and formal communication with other agencies and special interest groups having interest in the management of natural resources at Coralville Lake. These groups include but are not limited to: Iowa Department of Natural Resources; Iowa Department of Water, Air and Waste Management; Iowa Geological Survey; Iowa State Historical Society; Iowa National Guard; University of Iowa; Johnson County Offices; and special interest groups. Addresses and contact persons are in the following list along with geographical responsibilities when known.

1. Iowa Department of Natural Resources

Iowa Department of Natural Resources
Wallace State Office Building
502 East 9th Street
Des Moines, IA 50319-0034

515/281-8693

Conservation Officer

Susan Hager (C-352)
711 10th Ave.
Coralville, Iowa 52241

Home: 319/338-6003
Cell: 319/330-9710

Conservation Officer

Tim Dorr (Cedar County)
42 Greenview, Rt. 2
West Branch, IA 52358

Home: 319/643-2624
Cell: 319/357-1813

Conservation Safety Officer

Craig Jackson (Southeast Iowa - District IV)
313 East 4th
Tipton, IA 52772

319/886-2203

Fisheries Biologist

Paul Sleeper
Lake McBride Station
3475 Highway 382 NE
Solon, IA 52333

319/644-3615

State Park Ranger

Gwen Prentiss
Lake MacBride State Park
3525 Hwy 382 N.E.
Solon, IA 52333

319/644-2200

Wildlife Biologist

Tim Thompson
238 Stevens Drive
Iowa City, IA 52240

319/354-8343

Iowa City Bird Club
Ed Allgood, President/Treasurer
3122 Alpine Court
Iowa City, IA 52245

319/338-8090

Izaak Walton League
Johnson County Chapter
4044 Izaak Walton League Rd., S.E.
Iowa City, IA 52240

319/351-3680

Four Seasons Garden Club
Joyce Trott
6 Cottage Grove Drive N.E.
Iowa City, Iowa 52240

(WK)319/351-7242

(HM)319/351-4697

9. ENVIRONMENTAL REVIEW

04/01/93

PURPOSE: To provide an orderly flow of work tasks through appropriate district and division elements to enable timely review and approval prior to the work's commencement.

RESPONSIBILITY: It will be the responsibility of the park ranger in charge of the Project Natural Resource Management Plan to assure that the five year plan and any special work task are submitted as required.

The Natural Resource Management Branch is responsible for coordinating review within the District Office.

PROCEDURE: The annual revision of the five year plan will be prepared by the responsible park ranger and submitted to the park manager for approval. The completed five year plan will be forwarded to the Natural Resource Management Branch from where it will be routed through Operations Division (CENCR-OD), Real Estate (CENCR-RE-R), Hydraulics Branch (CENCR-ED-H) and Planning Division (CENCR-PD-E) for review and approval. Annual submission of the five year plan will occur on or before 1 April.

10. LETTERS OF COORDINATION

11. GLOSSARY OF TERMS

04/01/93

- Aspect** The direction that a piece of land faces.
- Biomass** The total plant and/or animal material in a given environment.
- Buteos** Raptors which have short brood wings adapted for soaring as red-tailed hawks.
- Brachiopods** Any of various marine invertebrates of the phylum Brachiopoda.
- Bryozoans** Any of various small aquatic animals of the phylum Bryozoa.
- Buffer Strip** Vegetative barriers serving to reduce negative assaults on the senses of from noise, visual aesthetics, or wildlife habitat.
- Calcareous** Soil containing enough calcium carbonate to effervesce visibly when treated with cold, dilute hydrochloric acid.
- Cambrian** Geologic time period of 575 million years ago during the Lower Paleozoic Era.
- Climax Species** That species of vegetation that will reproduce itself in its own shade and will continue to occupy the site indefinitely (i.e. Sugar Maple).
- Closed Canopy** Tree crowns forming a solid umbrella allowing little if any sunlight to strike the forest floor during the growing season.
- Concession** A commercial enterprise operated by a person or persons under authority from the U.S. Army Corps of Engineers to provide a service to the public on Corps administered land.
- Coniferous** Cone bearing trees - usually evergreens, with needle like leaves.
- Coral** Any of numerous, chiefly colonial marine coelenterates of the class Anthozoa, characterized by calcareous skeletons massed in a variety of shapes and often forming reefs or islands.
- Cord** A standard cord is a volumetric measurement for wood, usually measured in a pile measuring 4' x 4' with individual sticks being 8' in length (4' x 4' x 8' will equal 128 cubic feet.)

Deciduous Those species of trees (mostly broad leafed) that annually shed their leaves.

Defoliators Insects or insect larva that totally consume or cut of tree leaves.

Devonian Geologic time period from the Upper Paleozoic Era 416 million years ago.

Diurnal Refers to animals active during the daylight hours (i.e. ground squirrel).

Edge The environment existing where woody stemmed plants (trees or shrubs), such as a wooded area borders an opening (i.e. open field, pasture etc.).

Encroachment The act of an adjacent property owner (or user) illegally extending personal use of land across property boundary lines onto federal land.

Erosion The wearing away of the land surface by water, wind, ice or other geologic agents by such processes as gravitational creep, and the seeking of attaining the angle of repose (that slope where movement ceases).

Fee Title Lands Project lands purchased and deeded to the U.S. Government.

Fen Lowland commonly covered with water characterized by woody species including willow and button bush.

Forbs Herbaceous plants other than grasses, especially those growing in fields and meadows.

Forest Management (extensive) The treatment and management of a forested area with little if any treatment, and with few or minimal production goals.

Forest Management (intensive) Those cultural practices, plans and treatment of a forested area resulting from detailed and goals and optimum production objectives.

Glacial Drift Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Ground Truthed The physical act of going to an area on the ground (or water) and actually observing, measuring and recording what is there.

Hard woods A general classification of deciduous broad leafed species of trees (this designation has no relationship to the physical properties of the wood).

Holistic All encompassing, emphasizing the importance of the whole and the interdependence of its parts.

Hydrolysis The decomposition of a chemical compound by reaction with water.

Integrated Pest Management (IPM) A pest control program that evaluates and incorporates a combination of techniques to control a pest including biological, mechanical, cultural, chemical, and species selection control measures.

Inundation The condition of being covered with water, flooded. Being overwhelmed as when flooded.

Macroclimate The climate characterized by a large geographic area.

Mast Nuts, seeds, etc. that fall to the ground from trees and shrubs and which serve as a valuable wildlife (game and non-game) food source.

Merchantability That portion of a tree containing material generally recognized as having commercial value.

Mississippian Geologic time period in the Upper Paleozoic Era of 367 million years ago (also called the Carboniferous Period).

Monoculture Vegetative cover type lacking in diversity (i.e. pine plantation).

Nocturnal Refers to animals active during night time (i.e. owls).

Out Grant Leases Fee title lands leased to others for a variety of purposes consistent with the overall management objectives of the Corps.

Ordovician Geologic time period from the Lower Paleozoic Era 508 million years ago.

Oxidation The combination of a substance with oxygen. A reaction in which the atoms in an element lose electrons and its valence is correspondingly increased.

Paleozoic Geologic time era from 575 million years ago to 289 million years ago.

Parent Material The unconsolidated organic and mineral material
from which soil forms.

Passerine All birds belonging to the order Passeriformes, including
robins, warblers, cardinal, also know as the perching
birds.

- Pennsylvanian** Geologic time period in the Upper Paleozoic Era of 289 million years ago (also called the Permian Period).
- Photosynthesis** The process by which chlorophyll containing cells in green plants convert incident light (sunlight in the forest field) to chemical energy and synthesize organic compounds from inorganic compounds especially carbohydrates from carbon dioxide and water with the simultaneous release of free oxygen.
- Pioneer Species** Those tree species that are first to appear on a disturbed site or open area, e.g., cottonwood, honey locust, aspen, red cedar.
- Piscivorous** A diet predominantly dependent upon fish.
- Pre-Cambrian** Geologic time period four to six billion years ago, preceding the Paleozoic Era.
- Raptors** Birds of prey which are carnivorous and capture their prey with their talons.
- Scaling** The science of measuring and determining the volume of wood in harvested (cut) trees (logs) and piles of wood products.
- Sere/seral** Any particular stage in the process of ecological succession.
- Silurian** Geologic time period from the Lower Paleozoic Era, 446 million years ago.
- Sub-Climax Type** Any individual species or collection of species occupying a site which, unless artificially altered, eventually and naturally will change to a species or type that will perpetually occupy the site.
- Succession** The natural occurrence of one or more species gradually displacing or replacing preceding species.
- Target Species** That species which is of primary or particular interest.
- Unconsolidated Material** (soil components) that has no structure or cohesiveness.
- Understory** Those tree species existing beneath the larger trees which comprise the major component of the stand structure.

12. BIBLIOGRAPHY

04/01/93

Carlander, Kenneth. 1971. Freshwater Fishery Biology. 11th Ed. University of Michigan.

Fowells, H.A., Chief Branch of Silviculture. 1965. Silvics of Forest Trees of the United States. Agriculture Handbook No. 271. U.S. Department of Agriculture

Giles, Robert H., Jr., PhD, Associate Professor. 1969. Wildlife Management Techniques. 3rd Ed. The Wildlife Society. Washington, D.C.

Harlan, James R. 1951. Iowa Fish and Fishing. Event Speaker. 4th Ed. Iowa Conservation Commission.

Iowa Conservation Commission. 1972. Iowa Fisheries Research. Technical Series No. 72-3.

Little, Elbert L., Chief Dendrologist, U.S. Forest Service. 1980. The Audubon Society Field Guide to North American Trees-Eastern Region.

Logeler, Karl. 1971. Freshwater Fishery Biology. 11th Ed. University of Michigan.

McDonald, Donald B. Associate Professor. 1972. Terrestrial Plant Diversity - Coralville Reservoir Flood Plain - Preliminary Report. University of Iowa.

Middendorf, Robert. 1973-85. Inland Commercial Fisheries Statistics for Iowa. Annual Reports. Lake Macbride Fisheries Station.

Schemnitz, Sanford D., Professor, Dept. Head, New Mexico State University. 1980. Wildlife Management Techniques Manual. 4th Ed. The Wildlife Society. Washington, D.C.

NATURAL RESOURCE MANAGEMENT PRESCRIPTIONS - CORALVILLE LAKE

The Coralville Lake Project anticipates implementation of many natural resource management prescriptions. A prescription code as used in the N.R.S.I. and definition of each prescription follows.

- Ref Reforestation: The planting of trees in non-forested areas other than developed recreation areas such as expired ag lease areas, pasture land, grass land, or mud flats old fields supporting shrubs or herbaceous growth.
- Und Underplanting: The planting of seedling or sapling size trees in an existing stand.
- Shb Shelter Belts: The planting of deciduous and evergreen trees and/or shrubs along boundary lines and across open fields.
- Hgr: Planting of hedgerows.
- Clu: Planting of trees or shrubs in separate clumps.
- Mpl: Maintenance planting.

Silvicultural Systems in Forest Management

(1) Even-aged systems

- Clc Clearcutting: Removal of entire stand in one cutting, reproduction obtained artificially or by natural seeding from adjacent stands or from trees cut in the clearing operation.
- See Seed Tree: Removal of old stand in one cutting, except for a small number of trees left singly or in small groups, or narrow strips, as a source of seed for natural regeneration.
- She Shelterwood: Establishment of a new, essentially even aged, stand from the release, typically in a series of cuttings, of new trees started under the old stand. The new stand is established naturally or artificially before the last of the old one is removed. Involves a series of 2-3 cuttings.

(2) Uneven aged system. Stands created or maintained include three or more distinctly different size classes.

- Sel Selection Method: System designed to create or maintain uneven

aged stands. Usually removes old trees in groups or in strips wide enough to allow new trees to start and remain free to grow in height. Can also be done by removing large individuals in the single - tree selection method (This method should not be confused with "selective cutting" which is not a technical forestry term).

- (3) Intermediate cutting: Are treatments conducted to modify or guide the development of an existing stand of trees but not to replace it with a new one.
- Rel Release cutting: Operations designed to regulate the species composition or improve the growth of very young stands, ordinarily not past the sapling stage. Refers to clearings, liberation cutting, weeding.
- Imp Improvement cutting: Partial non-regenerative cutting in stands older than sapling stage. Mostly done in mixed stands that are being put under management for the first time.
- Thi Thinnings: Partial cutting in even-aged aggregation of trees. Designed to improve future growth by regulating stand density. Either commercial or precommercial thinning.
- Sal Salvage cutting: Harvest of dead, dying, damaged or deteriorating trees primarily to put the wood to use before it loses all market value.
- San Sanitation cutting: Removal of the same kind of trees as in "sal" but for the purpose of reducing the spread of biotic pests.
- Tsi Timber Stand Improvement: T.S.I. refers to non-commercial improvement of the composition and quality of a stand by a variety of methods to include herbicide injections, chainsaw girdling, and cutting or treatment of vines.
- Pru Pruning: Pruning of limbs from bole of trees to improve quality of product at time of harvest. usually done in higher quality young stands (i.e. walnut, pine).

Recreation Areas

- Rtr Tree Maintenance: The pruning, topping or removal of single trees with a recreation area for the purpose of aesthetics, safety or other management purposes.
- Rvi Vista: Thinning of forested area to a density suitable for scenic values.
- Rsh Shade Selective: Removal of certain trees for the purpose of

providing shade qualities in the remaining stand.

Rsc Screening: Planting of trees or shrubs in a recreation area to screen out certain features, reduce noise, and provide privacy.

Rsi Single Tree Planting: Planting of trees or shrubs singly or in groups for purposes of creating improved recreational experience (i.e. wildlife plantings, aesthetics, shade, etc).

Other Practices

Bur Burning: Burning of slash (tree tops and limbs), scattered, in windrows or in piles after logging operations.

Pre Prescribed Burning: Controlled burn of open prairie, grassland, or understory in certain forested areas to maintain existing conditions or promote growth or regeneration of seedlings.

Sta Stand mapping: A detailed mapping and data gathering in a particular compartment down to 2 acres, obtaining all information included in stages 2 and 3 of the Natural Resource Inventory.

Spm Special Management: Area designated for predetermined special treatment different from surrounding area management as a result of a unique characteristic or adjacent unique condition. (i.e. buffer zone or longer cutting rotation along a water way, endangered species habitat)

Mai Maintenance of open area: Clearing of trees or shrubs from an existing open area to maintain in early succession.

Svc Transformation of an area to that of an earlier successional stage.

Fop Food Plot Planting: Planting of agricultural crops or other food producing plants for wildlife.

Dea Creation or maintenance of dead trees for wildlife.

Nat Allowing natural succession to occur

Bru Creation of brush piles

Che Chemical control of competing vegetation.

Mec Mechanical control of competing vegetation.

Arn Construction or placement of artificial nest boxes, platforms or other nesting structures.

- Prm Establishment of native prairie plant species.
- Prc Collection of prairie seeds.
- Lom Seeding of water tolerant grasses or grain crops on mud flats or other lowland areas for the purpose of establishing a temporary food source for waterfowl.
- Por Establishment of a pond or pothole.
- Mar Implementation of a practice to encourage development or protection of marsh or wetland habitat.
- Hay Establishment of an existing open area to alfalfa-brome grass or other legumes and grasses.
- Rki Wildlife roadkill survey
- Mph Marking Public Hunting Areas. Marking by signs of project boundaries open to public hunting.
- Sga Service Government Access; acquire ingress-egress easements from private property owners for the purpose of gaining access to project lands for implementation of natural resource management prescriptions.
- Ppa Provide Public Access; development of parking lots in wildlife management areas.
- Spr Site preparation; preparation of sites prior to planting which may include removal or modification of existing vegetation.

Monitoring Practices

- Mam Small mammal population census or survey.
- Lma Large mammal population census or survey.
- Bir Bird population census or survey.