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NRCS Natural Resources Conservation Services

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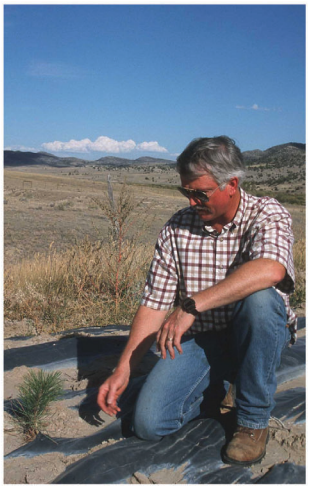
Aquatic and Terrestrial Habitat Resources

National Biology Manual



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Preface

The National Biology Manual: Aquatic and Terrestrial Habitat Resources (NBM) is a subdivision of the Natural Resources Conservation Service (NRCS) directives system, of which it comprises parts 510 through 514. The format allows flexibility for additions and updates.

The National Biology Manual describes policy within the Natural Resources Conservation Service (NRCS) and complements the General Manual.

All references to the Soil Conservation Service or SCS by Public Laws, Memoranda, or other documents stated herein have been changed to the Natural Resources Conservation Service or NRCS, respectively.

All policies and responsibilities relating to Fish and Wildlife Resources, Aquatic and Terrestrial Habitat Resources, or biology previously assigned to the Soil Conversation Service are carried forward in full to the Natural Resources Conservation Service unless otherwise noted or amended in this manual.

Acknowledgments

The National Biology Manual was developed in part by the Natural Resources Conservation Service (NRCS) National Fish and Wildlife Resources Manual and Handbook Development Team. The principal author is **Mike W. Anderson**, national wildlife biologist, NRCS, Washington, D.C. The NRCS National Fish and Wildlife Resources Manual and Handbook Development Team provided substantial assistance in the development and critical review of the Manual. These members were:

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National Biology Manual

Aquatic and Terrestrial Habitat Resources

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United States
Department of
Agriculture

**Natural
Resource
Conservation
Service**

National Biology Manual

Aquatic and Terrestrial Habitat Resources

Part 510 Operations and Management

Part 510 Operations and Management

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Part 510 Operations and Management

510.0 General

510.00 Mission and objectives

The mission of the Natural Resources Conservation Service (NRCS) is to provide leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment. Toward this end, NRCS is committed to improving biological resources by maintaining a high level of expertise in planning, using, and conserving soil, water, animals, plants, air, and related human resources.

510.01 Purpose

The National Biology Manual (NBM) contains policies and procedures for biological resource activities within NRCS.

510.02 Supplementing the manual

Some supplemental manual material may be required at the state level to provide additional clarification and to comply with specific State and local laws, regulations, and authorities. Supplements must be in accordance with the NRCS directives system. Copies of all state level supplements will be provided to the Director of Ecological Sciences Division at National Headquarters.

510.03 Relationship to the National Biology Handbook: Aquatic and Terrestrial Habitat Resources

The National Biology Handbook: Aquatic and Terrestrial Habitat Resources (NBH) will be a companion document to NBM.

The NBH contains methodology, procedures, and related reference materials that assist NRCS personnel to implement NBM policy in biological resources technologies. The NBH consists of parts 610, 611, 612, 613, and 614 that complement parts 510, 511, 512, 513, and 514, respectively. Materials prepared for the NBH will be numbered based on the predominant relationship to specific paragraphs in the NBM.

NBH material may be supplemented at the state administrative level. The originating state is responsible for administrative and technical support of such materials placed in the NBH.

510.04 Quality assurance

Appraisals of biological resource activities are performed in conjunction with normally scheduled conservation program appraisals. Appraisals are in accordance with GM–330, part 405. The checklist in exhibit 510–10 may be used as an example of common appraisal elements for NRCS biological resource activities.

Quality assurance reviews are conducted in each state as prescribed in the General Manual and according to the applicable quality assurance plan.

510.1 Policy

510.10 NRCS policy

The policy of the Natural Resources Conservation Service (130–GM, part 406) (see exhibit 510–1) is to provide ecosystem-based assistance to our customers for the integrated management needed to sustain natural resources. Ecosystem-based assistance policy requires NRCS to use biological sciences to:

- Develop and improve soil, water, animals, plants, air, and related human resources that maintain biological resources as integral components of all ecosystems, such as forest, range, cropland, and aquatic ecosystems,
- Protect the habitat of threatened and endangered species of plants and animals,
- Restore and safeguard unique ecosystems, and
- Develop and maintain an esthetically pleasing, high quality environment.

510.11 Biological resources objectives

NRCS policy has the following specific objectives concerning biological resources and their habitats:

- To restore, create, maintain, or enhance terrestrial and aquatic habitat that can attract, support, or produce wildlife and aquatic organisms.
- To conserve the habitats of wildlife and aquatic organisms and to minimize or avoid damage to habitat from changes in land use or from installation of soil, water, animals, plants, air, and related human resource conservation measures.

510.12 Means to accomplish policy objectives

NRCS shall:

- Inform land users, conservation districts, project sponsors, and others of the ecological, educational, scientific, economic, recreational, social, esthetic, and environmental values of wildlife and aquatic organisms and their importance to the farm, ranch, community, state, and nation.
- Use ecological principles and the best available science in developing and improving soil, water, air, plants, animals, and related human resources.
- Integrate ecological functions into all present and future NRCS programs.
- Acquire the technology, knowledge, and information resources necessary to implement ecosystem-based fish and wildlife habitat restoration and management.
- Provide ecologically based technical assistance to restore, create, maintain, or enhance wildlife and aquatic habitats.
- Provide, to conservation districts and others as appropriate, resource inventories and evaluations of the current status and potential management opportunities of aquatic and wildlife habitat.
- Encourage conservation districts to incorporate aquatic and wildlife objectives in their programs and work plans.
- Establish and maintain effective partnerships with State, Federal, nongovernmental, and academic institutions and organizations engaged in research and teaching in plant and animal ecology and in fish and wildlife management.
- Coordinate NRCS activities and technical recommendations with those of State and Federal fish and wildlife agencies, state technical committees, and nongovernmental organizations.
- Train NRCS and partner personnel in fish and wildlife habitat restoration and management and principles of ecology.
- Not support the introduction of non-native aquatic or terrestrial animals that (1) are new to a state without first clearing the recommendation with the proper state agency; (2) would lead to the further stocking of species opposed or prohibited by the appropriate agency; or (3) would populate unique, isolated, or confined habitats of Federal listed endangered or threatened species or state species of concern.
- Not support the use of plants listed as invasive species or noxious weeds for the area of intended use. See Executive Order 13112, dated February 3, 1999.

- As priorities permit, provide landowners and operators high-quality, ecosystem-based technical assistance in planning, constructing, and maintaining habitat associated with commercial wildlife and fish enterprises.

510.2 Authorities

510.20 General

The Natural Resources Conservation Service was established pursuant to Public Law 103–354, the Department of Agriculture Reorganization Act of 1994 (7 U.S.C. 6962), which combines new authorities with the authorities of the former Soil Conservation Service. The mission of NRCS is to provide leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

The NRCS biological resources program activities are provided through authorities charged to the Secretary of Agriculture and delegated to the Chief of the Natural Resources Conservation Service. The following is a partial listing of those authorities that require or give opportunity for biological resources input into the program. A brief description of each authority is included. States may supplement these authorities with additional authorities that provide a substantial biology workload.

510.21 Biological resources authorities

(a) Conservation operations, technical assistance, soil surveys, and plant materials centers

Conservation operations of the Natural Resources Conservation Service are authorized by Public Law 74–46 (16 U.S.C. 590a–f, 590q), April 27, 1935, and the Soil and Water Resources Conservation Act of 1977 (16 U.S.C. 2002–2009). The Agency provides technical assistance through conservation districts for the protection of public and private land resources against soil erosion and related resource damage. It also provides basic authority for plant materials centers, natural resources inventories, and soil surveys.

NRCS provides biological resources assistance to the plant materials programs. The NRCS state staff biologist serves on the State Plant Materials Committee to advise on matters relating to biological resources. See part 604 of the National Plant Materials Handbook.

NRCS biologists provide fish and wildlife habitat interpretations for the National Cooperative Soil Survey program in their state. See part 512 of this manual.

(b) Conservation Reserve Program (CRP)

The Food Security Act of 1985, as amended, authorizes the Conservation Reserve Program (CRP). CRP is administered by the Commodity Credit Corporation through the Farm Service Agency. The program is governed by regulations published in 7 CFR, part 1410.

CRP is a voluntary program that offers annual rental payments, incentive payments for certain activities, and cost-share assistance to establish approved cover on eligible cropland. CRP encourages farmers to plant permanent covers to improve soil, water, and wildlife resources. The duration of contracts is between 10 and 15 years.

The Conservation Reserve Enhancement Program (CREP) is a unique state and Federal partnership that allows States to combine state funds and state programs with the CRP to solve a particular natural resource problem. The combined effort allows landowners to receive incentive payments along with increased cost share and rental payments.

CRP Continuous Signup or Buffer Program is another variation of CRP that targets the establishment of buffers on cropland and marginal pastureland. Many acres of riparian buffer have been established on marginal pastureland.

NRCS, Cooperative State Research, Education, and Extension Service, state forestry and wildlife agencies, and local soil and water conservation districts provide program and technical support. NRCS biologists provide technical assistance to clients in improving, restoring, and maintaining wildlife and aquatic habitats.

(c) Emergency Watershed Protection (EWP) and flood plain easement option

This program is authorized by Section 216, of Public Law 81–516 [33 U.S.C. 701b–1] and Sections 403–405, of Public Law 95–334 [16 U.S.C. 2203–2205], and Section 403 of the Agriculture Credit Act of 1978, Public Law 95–334 [16 U.S.C. 2203], as amended by Section 382 of the Federal Agriculture Improvement and Reform Act of 1996, Public Law 104–127.

The EWP program and flood plain easement option provide assistance to reduce hazards to life and property in watersheds damaged by severe natural events. The program provides for technical and financial assistance as well as the purchase of flood plain easements.

NRCS biologists provide technical assistance and inputs into the environmental assessment and other documents, provide environmental considerations and alternatives for the emergency work, and coordinate input from other fish and wildlife agencies.

(d) Endangered Species Act (ESA)

Public Law 93–205, Endangered Species Act of 1973 (as amended) declares that, all Federal agencies shall in consultation with and with the assistance of the Secretary of the Interior, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered and threatened species listed pursuant to the Act. The Secretary of Interior determines which species are covered and regulates the program for their protection. Extensive cooperation with States is called for to ensure maximum compliance with the program.

Section 7(a)(2) of the Act requires that Federal agencies, in consultation with and assistance of the Secretary of the Interior, ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or destroy or modify the critical habitat of such species.

NRCS state staff biologists consult with the U.S. Fish and Wildlife Service (FWS) under section 7 for any actions in the state that may affect threatened or endangered species or their habitat. The NRCS General Manual in Title 190, Part 410 provides specific guidance on the implementation of this law.

(e) Environmental Quality Incentives Program (EQIP)

EQIP was authorized by section 334 of the Federal Agriculture Improvement and Reform Act of 1996, Public Law 104–127, (16 U.S.C. 3839). This program provides technical and financial assistance to farmers/ranchers to protect/improve soil, water, and related natural resources, including grazing lands. The program absorbed the Agriculture Conservation Program (ACP), Colorado River Basin Salinity Program, Great

Plains Conversation Program, and the Water Quality Incentives Program.

NRCS biologists provide technical assistance on fish and wildlife habitat creation, enhancement, restoration, and management.

(f) Fish and Wildlife Coordination Act (FWCA)

The FWCA, as amended, proposes to assure that fish and wildlife resources receive equal consideration with other values during the planning of water resources development projects. FWCA requires consultation with the FWS prior to the implementation of projects affecting diversion or modification to waterbodies.

State staff biologists represent NRCS at the State Conservationist's request during negotiations or discussions of water resource projects with FWS.

(g) Highly erodible land compliance, sodbuster, swampbuster

These farm bill activities were authorized by Subtitles A, B, and C, Title XII of the Food Security Act (FSA) of 1985, Public Law 101–624 (16 U.S.C. 3801 *et seq.*). This Act makes certain highly erodible land and wetland conservation compliance (swampbuster) requirements a condition of eligibility for certain USDA program benefits.

The State Conservationist has overall responsibilities for swampbuster implementation within the state and may delegate the following activities to the state staff biologist(s):

- Conducting of training on wetland determinations and coordination of wetland determinations with the Army Corps of Engineers (COE), Environmental Protection Agency (EPA), and FWS on matters relating to the Agricultural Memorandum of Agreement.
- Implementing wetland functional assessment procedures for minimal effect and mitigation exemptions.
- Maintaining quality control of the wetland determination process.

(h) National Environmental Policy Act (NEPA)

The National Environmental Policy Act of 1969 (Public Law 91–190) was passed to encourage conditions in which people and nature can exist in productive harmony. NEPA promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humans, and to enrich the understanding of the ecological systems and natural resources important to the Nation.

NEPA requires that Federal agencies use a systematic, interdisciplinary approach in planning and decisionmaking that may impact the human environment. The Act calls for Federal decisionmakers to consider the environmental impacts of their actions before implementing them.

The White House Council on Environmental Quality (CEQ) is charged with implementing NEPA government wide. The CEQ regulations (40 CFR 1500–1508) apply to all actions subject to Federal control and responsibility. An Environmental Impact Statement must be prepared before any major Federal action is taken significantly affecting the quality of the human environment. Actions that are not categorically excluded and for which no EIS will be prepared are to be supported by an Environmental Assessment. Federal agencies must at least consider the environmental impacts of proposed actions, as well as alternative actions and measures that may mitigate such impacts.

Although NEPA does not affect an outright prohibition against Federal projects that involve adverse environmental impacts, it does provide information about the potential adverse impacts of such projects to decisionmakers and to the public. Procedures for implementing NEPA including, but not limited to, document format and content, timing, public involvement, and coordination among Federal, State and tribal agencies are in the CEQ regulations, NRCS regulations (7 CFR Part 650), and in the NRCS General Manual (Title 190, Part 410).

(i) Resource Conservation and Development Program (RC&D)

Authorized by section 102 of the Food and Agriculture Act of 1962, Public Law 87–703 [7 U.S.C. 1010–101] and sections 1528–1538 of the Agriculture and Food Act of 1981 (Public Law 97–98), as well as section 383

of the Federal Agriculture Improvement and Reform Act of 1996 [16 U.S.C. 3461].

The program is regional and encompasses multiple communities, various units of government, municipalities, and grassroots organizations. The program serves as a catalyst for these civic oriented groups to share knowledge and resources in a collaborative process to solve common problems and seek opportunity for their region. The RC&D program offers aid in balancing environmental, economic, and social needs of an area.

State staff biologists provide technical assistance in RC&D plans for fish and wildlife habitat restoration and coordination with FWS or state fish and wildlife agency as appropriate.

(j) Rural Abandoned Mine Program (RAMP)

Authorized by Section 406 of the Surface Mining Control and Reclamation Act of 1977, Public Law 95–87 [30 U.S.C. 1236]. The program provides technical and financial assistance under contracts with landowners to reclaim surface coal mine sites in rural areas.

NRCS state staff biologists provide technical assistance to develop RAMP plans for fish and wildlife habitat restoration and coordinate with FWS or state fish and wildlife agency as appropriate.

(k) Small Watershed Program

The Watershed and Flood Prevention Act, Public Law 83–566, as amended (16 U.S.C. 1001–1009) authorizes this program. This program provides NRCS technical and financial assistance to local sponsors, state agencies, and other public agencies in the installation of planned works of improvement and land treatment measures in approved watershed projects.

The NRCS biologists' responsibilities for the Small Watershed Program include a fish and wildlife habitat assessment, an endangered species assessment, input into the project alternatives, and an environmental assessment and other environmental documents as required. NRCS biologists coordinate with the state fish and wildlife agency, FWS, and other appropriate groups and agencies.

(l) Wetlands Reserve Program (WRP)

This Farm Bill program was authorized by Section 1237 of the Food Security Act of 1985, Public Law 99–198, as amended [16 U.S.C. 3837]. The primary objectives of the program are to preserve and restore wetlands, improve wildlife habitat, and protect habitat for migratory birds.

NRCS staff biologists, as assigned, provide technical and program assistance to WRP participants and coordinate with partners and other agencies for planning, practice installation, and monitoring. Duties may be delegated to NRCS field biologists, state agency biologists, or partner biologists if available.

(m) Wildlife Habitat Incentives Program (WHIP)

Authorized by Section 387 of the Federal Agriculture Improvement and Reform Act of 1996 [16 U.S.C. 3836a]. The program provides technical and cost-share assistance for landowners to apply practices that restore and manage habitat for upland wildlife, wetland wildlife, threatened and endangered species, fish, and other types of terrestrial and aquatic wildlife.

NRCS state staff biologists provide technical and program assistance to WHIP participants as assigned, coordinate with partners and other agency biologists as needed for plan formulation, practice installation, and monitoring. Duties may be delegated to NRCS field biologists, partners, or agency biologists if available.

510.3 Cooperation with other agencies

510.30 General

NRCS cooperation and coordination with other conservation agencies and groups is vital to the delivery of dependable fish and wildlife conservation technology to our clients and to the subsequent implementation of that technology. Included in this section are the principle agencies that NRCS works, coordinates, and cooperates with nationwide. A brief description of each agency's mission is included along with a description of the working relationship that NRCS biologists have at the various administrative levels.

510.31 U.S. Fish and Wildlife Service (FWS)

(a) Department level

The mission of the FWS is to work with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people. NRCS shall maintain a working relationship with the FWS to provide policy interpretation for ESA, wetland activities, and fish and wildlife programs and activities.

(b) National level

NRCS biologists at national headquarters along with biologists at centers and institutes will maintain contact with their counterparts in the FWS concerning programs and technical issues regarding NEPA, ESA, wetlands, and fish and wildlife issues at a regional or national level.

(c) State level

The state conservationist will cooperate with the FWS on NEPA, wetland activities, and ESA issues within the state relative to NRCS fish and wildlife activities and impacts. NRCS and FWS will coordinate and cooperate on programs of mutual interest, such as Farm Bill programs. The state staff biologist will provide technical support to the state conservationist.

(d) Local level

If available, FWS personnel will assist the NRCS district conservationist or representative with fish and wildlife technical and program assistance for wetland activities and Farm Bill programs.

(e) Authorities to work with NRCS

FWS has congressional authority to participate in various aspects of the following programs: Small Watershed Program (Public Law 566), Emergency Watershed Program, Swampbuster and other Farm Bill programs, including CRP, WRP, and WHIP. Detailed information on the extent of these authorities is in the handbooks/manuals for those programs.

510.32 Forest Service (USFS)

(a) Department level

The USFS manages public lands in national forests and grasslands. It is also the largest forestry research organization in the world and provides technical and financial assistance to State and private forestry agencies. The mission of the USFS includes managing the national forests for multiple uses and benefits and for the sustained yield of renewable resources, such as water, forage, wildlife, wood, and recreation.

USDA Fish and Wildlife policy and guidance on interagency coordination of fish and wildlife related activities are in Departmental Regulation Number 9500-4, dated August 22, 1983. (See exhibit 511–1 in section 514.) NRCS shall maintain a working relationship with the Forest Service to coordinate fish and wildlife activities of mutual interest.

(b) National level

NRCS biologists at national headquarters along with biologists at centers and institutes shall maintain contact with their counterparts in USFS and represent NRCS on technical fish and wildlife issues.

(c) State level

The state conservationist will cooperate with the USFS on issues of mutual interest within the state relative to NRCS fish and wildlife activities. The state staff biologist will provide technical support to the state conservationist.

(d) Local level

The district conservationist or representative will coordinate natural resource activities with the Forest Service district ranger for areas that overlap jurisdictions.

510.33 Farm Services Agency (FSA)

(a) Department level

FSA is committed to help promote America's high quality, affordable, varied, and abundant food supply and sound stewardship of the land. FSA has USDA leadership for land retirement programs, such as the Conservation Reserve Program (CRP). FWS and NRCS biologists provide technical assistance to these programs.

(b) National level

NRCS biologists will provide technical expertise to the appropriate NRCS Program Manager and to the Director of the Conservation and Environmental Program Division of FSA for land retirement programs and other programs as required.

(c) State level

The NRCS state staff biologist will provide technical support to the state conservationist for land retirement programs and other programs as required.

(d) Local level

NRCS and partner biologists assist the NRCS district conservationist or NRCS representative by providing technical assistance to participants of FSA programs.

510.34 Other Federal agencies

(a) National level

Headquarters biologists, including biologists at institutes and centers, will maintain contact with research, regulatory, and land management agencies. They will represent NRCS on technical matters and emerging issues and in coordinating activities nationwide.

(b) State level

The state conservationist is responsible for maintaining relations and ensuring the activities are closely coordinated with research institutions and with regulatory, research and land management agencies. The NRCS state staff biologist will provide technical support to the state conservationist. The state staff biologist will incorporate pertinent new technical information released by these institutions and agencies into the Field Office Technical Guide.

(c) Local level

NRCS biologists will assist the district conservationist or representative when activities of research agencies or institutions or land management agencies require coordination with the field office.

510.35 State fish and wildlife agencies

(a) National level

Headquarters biologists, including biologists at institutes and centers, will maintain contact with the International Association of Fish and Wildlife Agencies (IAFWA). They will represent NRCS on technical matters, emerging issues, and programs, and coordinate activities nationwide. IAFWA was founded in 1902 as a quasi-governmental organization of public agencies charged with the protection and management of North America's fish and wildlife resources. All 50 state fish and wildlife agencies are members.

(b) State level

The state conservationist is responsible for maintaining relations with the state fish and wildlife agency and coordinating agency involvement in programs and activities of both agencies. The state staff biologist will assist in program implementation and training of state agency personnel involved in NRCS programs and activities. The state staff biologist will coordinate training received from the state agency biologists to NRCS staff.

(c) Local level

NRCS district conservationists or representative will work closely with state agency biologists assigned to assist the field office with program implementation, fish and wildlife planning, and practice implementation.

510.36 Conservation districts

(a) National Level

Conservation districts are represented at the national level by the National Association of Conservation Districts (NACD). NRCS biologists at national headquarters and the national centers and institutes are responsible for cooperating with the NACD Natural Resources Committee on matters pertaining to NRCS fish and wildlife activities and programs that relate to conservation districts nationwide.

(b) State level

Conservation districts are typically affiliated with a state association or a federation that is recognized statewide. Each state association will be encouraged to have a fish and wildlife committee. The state staff biologist will work with this committee to ensure participation in fish and wildlife activities and programs.

(c) Local level

NRCS district conservationists or representative will work with conservation districts to include fish and wildlife activities in the district conservation program and annual work plan. Conservation districts often administer state cost share programs to implement fish and wildlife practices. NRCS biologists work with the district conservationists and state agency biologists in this effort.

510.37 State technical committees

The Food Security Act (FSA) of 1985 as amended by the Food, Agriculture, Conservation, and Trade Act (FACTA) of 1990 and the Federal Agriculture and Improvement Reform Act (FAIRA) of 1996 authorized formation of the State Technical Committee to assist in the development of technical considerations relating to the implementation of the conservation provisions. The State Technical Committee advises on program decisions including the updating of the technical guides for the implementation of all conservation programs, offering recommendations on the technical aspects of wildlife habitat and wetland protection, habitat and wetland restoration, and wetland mitigation requirements. The NRCS state conservationist is the chair of this committee. The state staff biologist will provide technical and program input to the committee and participates on the fish and wildlife subcommittee (if formed).

510.38 Other agencies, officials, committees, councils, advisory boards, and groups

NRCS biologists at any level may be called on to consult with officials, councils, and groups of various agencies. The purpose of such contacts is usually to evaluate specific items of ongoing fish and wildlife legislation and programs or to give input on proposed projects or initiatives. The form of consultation may be by phone, correspondence, or a work detail.

Biologists providing information will apprise their supervisor and the state conservationist on the nature of the consultation. NRCS biologists draft, as appropriate, information bulletins and issue papers to inform NRCS administrators and affected staffs.

510.4 Cooperation with non-government organizations

510.40 General

This section describes NRCS cooperation with non-government natural resource organizations.

510.41 Non-government organizations

(a) Fish and wildlife, animal ecology, and conservation biology departments at colleges and universities

NRCS biologists at national headquarters, national centers, institutes, NRCS regional and state offices, and other appropriate state staff personnel coordinate with fish and wildlife, animal ecology, and conservation biology departments at schools for purposes of employee recruitment, technology transfer, establishing research needs, and assisting with ongoing research and teaching.

(b) State and national fish and wildlife organizations and associations and other conservation organizations

National and state biologists participate with fish and wildlife organizations and associations and apprise them on NRCS activities. Some state and national fish and wildlife organizations and associations participate in NRCS conservation programs with technical and financial assistance. NRCS biologists at national headquarters and the centers and institutes maintain relations with national fish, wildlife, and other conservation organizations.

State and field biologists are encouraged to maintain working relationships with all state and local fish, wildlife, and conservation organizations active in their respective states. This is important to facilitate transfer of information between NRCS and these groups. The contact and information transfer aid in developing working partnerships with all conservation groups to maintain and improve all biological resources in their respective states.

Memorandums of Understanding (MOU) are developed between the organizations and NRCS to document cooperation and mutual activities aimed at benefiting the mutual goals and objectives of each organization. An MOU may be developed at the national, regional, or state level with these organizations. An MOU is not a fund obligation document. A Cooperative Agreement is required to provide funds to these organizations or groups. Examples of several National MOU's and a Cooperative Agreement are included in the exhibits in Part 514. These exhibits can be used as guidance in developing state level MOU's or Cooperative Agreements.

Existing active National MOU's and Cooperative Agreements will be maintained on an NRCS server or electronic directive system for agency access and reference.

(c) Professional and technical societies and organizations

NRCS biologists participate with professional and technical societies and organizations to ensure technology exchange and cooperative activities. Such groups include but are not limited to The Wildlife Society, American Fisheries Society, Society of Ecological Restoration, Society of American Foresters, Society of Range Management, Society of Wetland Scientists, and the Soil and Water Conservation Society.

NRCS biologists are encouraged to present papers of findings at the various meetings of the professional and technical societies and organizations. NRCS biologists are further encouraged to take an active role in these organizations and become certified by a professional society or group. Biologists are to discuss activities, such as serving as an officer, with their supervisor before any commitment of government time is made.

510.5 Fish and wildlife biologists within NRCS

510.50 General

This section describes biologists positions in NRCS, steps in career development, training guidelines, and dissemination of technical materials and information.

510.51 History

(This section will be added at a later date.)

The transcript of a 1935 speech by Agency Chief Hugh Hammond Bennett is exhibit 510–2 in part 514, Exhibits. It was included to illustrate the importance of fish and wildlife resources at the beginnings of this Agency.

510.52 Fish and wildlife biologist positions

(a) National level

The NRCS will have fish and wildlife biologists at national headquarters and national centers and institutes to represent NRCS nationally and provide national leadership in activities and issues related to the biology of all nondomesticated fish and wildlife species and development and maintenance of their habitat

(b) State level

State conservationists will have a state staff biologist or a designated staff fish or wildlife specialist. These positions have technical responsibility for fish and wildlife conservation matters for NRCS programs within the state.

(c) Area and field levels

Where needed, state conservationists will have area and field biologists or designated biology specialists. Area and field office biologists provide assistance on biology-related operations within their administrative area.

510.53 Career development

Biologists at all levels will pursue continuing education and on the job training to maintain technical expertise. Biologists will encourage qualified employees and others to consider biologist positions within the NRCS.

510.54 Performance benchmarks

The training guidelines for soil conservationists, biologists, and other disciplines involved in planning for aquatic and terrestrial wildlife resources are in GM–360, Part 410. Additional guidelines are in exhibit 510–11 of part 514.

510.55 Technology transfer

(a) Acquiring and maintaining technical materials

Biologists acquire or maintain access to technical materials for the administrative area they serve. All materials acquired or developed at the state level will be in accordance with State policy and comply with GM–450, Part 401.

(b) Disseminating technical information

Biologists will issue technical information at the area, state, or national level. This may include original information, research notes or papers, or excerpts of such material. Biologists are encouraged to submit articles for publication or presentation at professional meetings.

Information will have appropriate technical review and include crediting of information source(s).

(c) Training

Biologists will receive and provide training necessary to maintain technical competency at all administrative levels. Training includes, but is not limited to National Employee Development courses, workshops, conferences, and university courses. Other Federal and State agency sources of training and training materials should be considered and used if available.

510.56 Technical guides

State staff biologists develop and review Field Office Technical Guide materials and ensure materials are technically correct, comprehensive, and useful to others. NRCS policy on preparing and maintaining technical guides is in Title 450–GM, part 401, and is summarized in part 511 of this manual.

United States
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**Natural
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National Biology Manual

Aquatic and Terrestrial Habitat Resources

Part 511 Conservation Planning

Part 511 Conservation Planning

Contents:

Part 511 Conservation Planning

511.0 General

511.00 Introduction

NRCS personnel provide fish and wildlife habitat assistance to landowners and land users as provided by USDA Departmental Regulation Number 9500–4, dated August 22, 1983.

USDA policy directs NRCS to provide technical and financial assistance to assist landowners to apply and improve management practices for fish and wildlife, as they are valuable products of agricultural, forestry, and range management activities on private lands. The Department will work to achieve such recognition by private landowners and land users. See exhibit 511–1 in Part 514, Exhibits.

NRCS further defines the Agency policy for delivery of fish and wildlife habitat assistance to landowners and operators in its Ecosystem-Based Assistance Policy in 130–GM, part 406, dated June 1994. Exhibit 510–1 is a copy of this fundamental policy. Ecosystem-Based Assistance (EBA) is the process the Agency uses to provide technical assistance to our customers for the integrated management needed to sustain our Nation's natural resources.

Part 511 describes the parts of EBA policy that directly relate to the delivery of aquatic and terrestrial habitat resource guidance to landowners and land users. This resource-oriented process is accomplished through the NRCS Planning Process described in part 511.05. Part 511.04 describes the contents of the Field Office Technical Guide (FOTG) as it relates to aquatic and terrestrial habitat resource planning and development.

511.01 NRCS planning process

General Manual 180, Part 409, Planning Policy, establishes NRCS policy, which guides NRCS employees as they provide assistance to clients for planning and implementing resource conservation plans.

The NRCS National Planning Procedures Handbook, amendment 2, provides guidance on the “how to” of the planning process as related to the planning policy established by the General Manual. See part 511.05 for policy on the use of this handbook for the planning of aquatic and terrestrial habitat resources.

For many years NRCS (formerly SCS) has recognized the following policy statements that provide the foundation for delivery of sound aquatic and terrestrial habitat resource information to our clients through our Agency or our partners.

- Any land is used within its capabilities when properly treated and managed to provide fish and wildlife habitat,
- Fish and wildlife are agricultural products and their production can be a primary land and water use,
- Fish and wildlife supported or produced on farm or ranch lands are related to and inseparable from soil, water, plants, animal, and air resources management and are therefore integral components of all Resource Management Systems, and
- Introducing invasive plant and animal species carries the danger of establishing a pest or seriously interfering with desired native species.

The General Manual 450, Part 401, Technical Guides, establishes NRCS Field Office Technical Guide Policy. The local FOTG has the technical information needed to assist clients in the development and application of conservation plans. It also has general resource information about the field office area, soil and site information, and quality criteria to be met in Resource Management Systems. Guidance documents depicting the resource management planning thought process, practice standards for all practices applicable to the local field office area, and examples of the Conservation Effects Decisionmaking Process are included in the FOTG.

See Part 511.04 for specific guidance on biology-related technical contents of the FOTG.

511.02 Biology objectives

NRCS assists people to make informed ecosystem-based management decisions regarding their natural resources including aquatic and terrestrial habitat resources. Management considerations normally include information on the current and desired conditions of the soil, water, air, plant, and animal

resources. Information is also provided on human resources and values, such as recreation potential, cultural values, economic viability, and aesthetic values. In this way fish and wildlife receive consideration as integral components of the ecosystem.

Precisely defined objectives are essential for developing fish and wildlife habitat management plans. Baseline inventory and evaluation data for any planning area are the benchmark from which fish and wildlife objectives are formulated, limiting factors are identified, needed habitat management actions are selected, and the results of applied management are evaluated.

NRCS must be capable of providing technically sound advice to resource users on how best to manage aquatic and terrestrial habitat resources as a primary objective or to manage them in harmony with other management objectives.

511.03 Biology inventory procedures

Refer to the NRCS Biology Handbook for detailed information and guidance for aquatic and terrestrial habitat resource inventory and evaluation procedures, monitoring procedures, and other methodologies.

511.04 Contents of FOTG

This part provides policy on the types of biology-related technical material that may be included in the various sections of the FOTG. See 450–GM, Part 401.3, Contents of Technical Guides, for more information.

The FOTG contains sections I through V, as identified below, and appropriate subsections.

(a) Section I—General resource references

This section includes available aquatic and terrestrial habitat resource inventories and appraisals, fish and wildlife habitat maps, native vegetation maps, wildlife migration route maps, and fish and wildlife planning documents, such as waterfowl joint venture plans or species recovery plans. It should also have documents produced by the Wildlife Habitat Management Institute, such as the Fish and Wildlife Habitat Management Leaflets appropriate to each field office.

(b) Section II—Natural resources information

This section includes all information, lists, photos and maps relating to Federal and State threatened and endangered plant and animal species. Wildlife and wildlife habitat information, interpretations, or maps related to soils and ecological site descriptions are also in section II.

When threatened and endangered species are identified per section II, planning actions and procedures will conform to laws and established policy. See the Threatened and Endangered Species of Plants and Animals policy in 190-GM, part 410.22, for additional information and guidance.

(c) Section III—Resource management systems and quality criteria

Resource Management Systems (RMS) will be developed for wildlife (animal's) habitat considering food, cover or shelter, and quantity and quality of drinking water. For these items a minimum of 50 percent of the habitat potential for the species of concern is achieved regardless of land use, based on the approved Habitat Evaluation Procedure for your state. When the plan under development has fish and wildlife as a **primary objective**, then the habitat potential for the species of concern needs to achieve a higher percent of habitat potential for an RMS. Minimum quality criteria for wild animals may be set higher at the state's discretion, especially when wildlife habitat management is the primary goal of a client. Quality criteria should be correlated between adjacent states.

Wildlife habitat conservation practices will be designed and management planned so that wild animal populations do not exceed the habitat's carrying capacity.

(d) Section IV—Practice standards and specifications

Section IV contains conservation practice standards applicable in each field office. It may also include specifications guide sheets developed for use with the standard. Fish and wildlife habitat and wetland standards and specification guide sheets are typically developed and maintained by the state staff biologist. The standards establish the minimum level of acceptable quality for planning, designing, installing, operating, and maintaining practices. Practice specification guidance, developed by each state, establishes and

lists terms and conditions and explains how the practice standard will be made site-specific.

(e) Section V—Conservation effects

Conservation effects provide indicators of the impact fish and wildlife conservation practices and systems have on the natural and cultural resources. They are based primarily on empirical data and field experience with practices and systems of practices. The effects are listed for each individual practice. Case studies that show practical results of conservation treatment may be included in this section.

See 450–GM, Part 401.23 Quality Criteria.

511.05 National Planning Procedures Handbook (NPPH), Amendment 2

Conservation planning is a natural resource problem-solving and management process. The process integrates economic, social (cultural resources are included with social), and ecological considerations to meet private and public needs. This approach, which emphasizes desired future conditions, helps improve natural resource management, minimize conflict, and address problems and opportunities.

Conservation planning helps clients, conservationists, and others view the environment as a living system of which humans are an integral part. Conservation planning enables clients and planners to analyze and work with complex natural processes in definable and measurable terms. The conservation planning process, as described in the NPPH, consists of nine steps divided into three phases. This process considers people and the resources they use or manage. Conservation planning is based on a desired future condition that is developed by the client for an individual conservation plan, or by the client and stakeholders, in the case of an areawide conservation plan or assessment encompassing a watershed or other defined area.

The planning process used by NRCS is a three-phase, nine-step process. Although the nine steps are shown in sequence, the process is dynamic. The process could start with any of the first three steps or even step nine. Cycling back to previous steps is often necessary. For example, step one and two may not be finalized until step four is completed. Some planning activities may overlap planning steps, and some activities may not necessarily occur in a particular planning step each time.

The NPPH describes the planning process in detail and provides guidance on carrying out each planning step. However, the process itself must be preceded by preplanning activities, which play a critical role in the outcome and effectiveness of plan development.

Maps, including work and plan maps, are critical tools in the planning process. Native vegetation maps and maps of critical wildlife habitats as well as threatened and endangered species should be gathered or reviewed prior to field reconnaissance. All available habitat and species information for the area of concern should be reviewed before beginning the planning process. Consider the use of conservation partners for preplanning information or as a member of the interdisciplinary planning team.

511.06 NPPH planning steps

Phase I—Collection and analysis

Step 1—Identify problems and analysis

Identify resource problems, opportunities, and concerns in the planning area. The interdisciplinary planning team needs to consider any aquatic and terrestrial habitat problems or concerns in the planning area. An NRCS biologist or partner biologist should participate on the planning team.

Step 2—Determine objectives

Identify and document the client's objectives. The client should be given the opportunity to develop fish and wildlife objectives if the resources are available.

Step 3—Inventory resources

Inventory the natural resources and their condition, and the economic and social considerations related to the resources. This includes onsite and related off-site conditions. A Habitat Evaluation Procedure or other similar procedure will be used to evaluate aquatic and terrestrial habitat resources. Identification of any threatened or endangered species will be made in accordance with ESA.

Step 4—Analyze resource data

Analyze the resource information gathered in planning step three to clearly define the natural resource conditions, along with economic and social issues related to the resources. This includes problems and opportunities. During this step there should be a clear analysis of all resources inventoried and the cause or conditions that resulted in resource problems.

Phase II—Decision support

Step 5—Formulate alternatives

Formulate alternatives that will achieve the client's objectives, solve natural resource problems, and take advantage of opportunities to improve or protect resources conditions. Alternatives that protect or enhance aquatic and terrestrial habitats need to be presented.

Step 6—Evaluate alternatives

Evaluate the alternatives to determine their effects in addressing the client's objectives and the natural resource problems and opportunities. Evaluate the projected effects on social, economic, and ecological concerns.

Special attention must be given to those ecological values protected by law (ESA) or Executive Order (wetlands). Consider alternatives that may provide economic returns to the client from managing or restoring aquatic and terrestrial habitats.

Recommend the use of the CPA–52 Environmental Evaluation, or similar document, to record biological and environmental considerations during the planning process. Because of various laws and Executive Orders, documentation is critically important to protect our clients, Agency, and ourselves from litigation.

Step 7—Make decisions

The client selects the alternative(s) and works with the planner to schedule conservation system and practice implementation. The planner prepares the necessary documentation. Documentation needs to be developed showing that NEPA concerns have been addressed during the planning process.

Phase III—Application and evaluation

Step 8—Implement the plan

The client implements the selected alternative(s). The planner provides encouragement to the client for continued implementation. Fish and wildlife conservation practices implemented with NRCS technical assistance will be installed according to NRCS standards and specifications.

Step 9—Evaluate the plan

Evaluate the effectiveness of the plan as it is implemented and make adjustments as needed. Consider the impacts upon aquatic and terrestrial habitat resources or wildlife populations and modify the plan as necessary. Documentation of actual impacts should be included in the Case Studies in Section V, FOTG.

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National Biology Manual

Aquatic and Terrestrial Habitat Resources

Part 512 Soil-Related Fish and Wildlife Interpretations

Part 512 Soil-Related Fish and Wildlife Interpretations

Contents:

Part 512 Soil-Related Fish and Wildlife Interpretations

512.0 General

512.00 Introduction

Part 512 describes policy for the collection of data and development of soil-related interpretations to assist with fish and wildlife resource planning, management, and restoration activities. Soils influence wildlife populations primarily through the kinds of vegetation and other habitat components they support. Wildlife habitat generally can be produced on all soils. Wildlife productivity is directly related to the productivity of the soils.

Fish and wildlife resource interpretations are to be included in field office technical guides, published soil surveys, and other documents where appropriate.

512.01 Policy

NRCS policy is to make fish and wildlife resource interpretations for all areas in which they have a presence or potential land use and/or fish and wildlife practices are a present or potential practice. NRCS uses the soil-vegetation-wildlife relationship as a foundation for wildlife habitat management.

512.02 Responsibilities

(a) National level

Fish and wildlife specialists at national headquarters and the national centers and institutes have national responsibility for assisting state conservationists in developing and maintaining soil-related fish and wildlife resource interpretations. Interstate coordination is part of this responsibility.

These fish and wildlife specialists coordinate resource assessment activities that are national in scope with the Directors of Soil Survey and the Ecological Sciences Divisions and others as appropriate.

(b) State level

State level biologists work jointly with Major Land Resource Area Project Office (MO) leaders and state soil scientists to provide technical guidance and leadership to the states in developing and maintaining soil-related fish and wildlife resource interpretations and assist in the preparation of soil survey manuscripts.

(c) Field level

Field level biologists work jointly with resource soil scientists and/or soil survey project leaders to collect the data needed for soil-related fish and wildlife resource interpretations and soil survey manuscripts.

When field level biologists are not available, other fish and wildlife-trained staff may be utilized. Such staff persons must be approved by the state biologist.

512.03 Basic unit of interpretation and forms of information display

(a) Basic unit of interpretation

The basic geographic or land unit for interpretation of fish and wildlife resources may be the soil component, the soil map unit for a detailed soil map or a general soil map, or an ecological site description. The use of the NASIS Soil Interpretation Module for making soil interpretations allows local criteria for specific kinds of fish and wildlife interpretations to be prepared for soil survey reports and the FOTG.

A combination of national, state, and local objectives may be used to determine the types of fish and wildlife interpretations needed for the local soil survey report or the FOTG.

(b) Forms of information display

Soil map unit descriptions, wildlife habitat suitability interpretations, and ecological site descriptions are the three major forms of display used to describe resource information and interpretations known about individual soil components. Soil map unit descriptions and wildlife habitat suitability interpretations usually show the anticipated behavior or limitations of each soil component included in the map unit.

An ecological site description relates a unique vegetative assembly of plants with underlying soil resources on the landscape. It has characteristic hydrology, soils, plant communities, herbivory, and fire regime. Ecological site descriptions show group-level interpretations for soil components that behave similarly and, where necessary, include component-level interpretations for individual soil components. For example, a

group of similar soil components may have the same interpretation for overstory tree species, but have differing erosion hazard ratings. A group-level interpretation, when used and appropriate, allows for simplification of database relationships and forms of display.

512.04 Use of soil-related information and interpretations

NRCS collects and develops soil-related fish and wildlife resource information and interpretations alone or jointly with other agencies and organizations under cooperative agreements. Cooperating organizations that help during the collection and development phases are to have access to such information. These organizations must be apprised of NRCS policy and procedures in the use of such information.

When NRCS receives a request for unpublished information and interpretations, the state conservationist will consult with the Directors of the Ecological Sciences and the Soil Survey Divisions regarding the request. The state conservationist is to release the material with the understanding that the data are subject to change. If the NRCS is to be cited as the source of the data furnished, NRCS will review the materials in which the data are used before the materials are published in any report, magazine, or journal (professional or nonprofessional).

512.1 Data collection, analyses, and interpretations

512.10 General

Certain data must be collected, analyses made, and evaluations performed to accurately describe the behavior and limitations of soil components for the purposes of fish and wildlife resources. Interpretations associated with each soil component are

- developed from the raw field data and subsequent analyses,
- inferred from historical data, maps or anecdotal information, or
- derived from criteria based on soil characteristics, soil-moisture relationships, and other associated attributes.

Certain interpretations are highly dependent on the analyses of field data, e.g., introduced and native plant cover, species, and composition for the various Wildlife Habitat Suitability Groups.

Other interpretations are inferred from historical data and maps, or from expert criteria or rating guides. Examples include Native Vegetation Maps; Fish and Wildlife Resources and Habitat Descriptions; Threatened and Endangered Species; Critical Habitat Maps; Migration Maps; and the various criteria-based interpretations, such as Conservation Tree/Shrub Suitability Groups and forage suitability groups. These interpretations are usually not field-data dependent and can be derived from available reference materials or criteria. As such, they are approximations or expectations of an individual soil component's behavior and limitations. See exhibits 512–1 and 512–2 in Part 514, Exhibits, for examples of fish and wildlife background information and of fish and wildlife interpretations for a soil survey document.

512.11 Organization of interpretations

Fish and wildlife resource interpretations are organized into two subparts:

- **Part 512.2, National Soil Information System (NASIS) Interpretations**—Presents the policy, definitions and requirements for basic fish and wildlife interpretations normally published in soil survey map unit descriptions and tables.
- **Part 512.3, Ecological Site Information System (ESIS) Interpretations**—Defines the policy when ecological sites are created and described. Ecological site data elements and descriptions typically require additional staff effort and analyses. They require the aggregation of information about soil components that behave similarly into group-level interpretations.

Policy and requirements for field data collection to support NASIS and ESIS interpretations are within these two parts.

512.2 National soil information system (NASIS) interpretations

512.20 General

This section presents definitions and requirements for basic wildlife habitat interpretations normally published in soil survey map unit descriptions and interpretative tables. The use of NASIS Soil Interpretation Module for making soil interpretations allows local criteria for specific kinds of fish and wildlife interpretations to be prepared for soil survey reports and the FOTG.

512.21 Wildlife habitat suitability

Wildlife habitat suitability interpretations provide a tool for habitat management. Soils vary in their capacity to produce various plants for use as wildlife habitat and are used as habitat by specific animal species. The ratings are for the soils in their natural condition and do not consider present land use, existing vegetation, water sources, and the presence or absence of wildlife in the area. Site evaluation and planning, however, should consider these items.

The important habitats should be identified and a list made of the native or introduced plant or animal species that are adapted to each of the broader habitat elements. The list may be subdivided according to species adaptation to soil features.

Groups of soil components or map units can be made for each wildlife habitat element. Similar suitability ratings or soil features can be grouped for common habitat elements. Ratings and restrictive features aid in the selection of sites for wildlife habitat management.

Soils may be rated for two or more habitat elements when they are used in developing transitional habitat. Ratings reflect the suitability of the soil for specific wildlife habitat elements. Restricting soil features guide the user in predicting how the soil will respond to management. Management of wildlife habitat may involve part or all of one or more soil components.

Habitat areas may need to be long and narrow strips, patches, large blocks, or other variations depending upon the selected wildlife species.

The steps to successful planning are as follows:

- Identify important habitat elements adapted to the local area.
- Identify the map units and soils for the area under consideration.
- Obtain the soil ratings and restrictive soil features for each habitat element.
- Compare the soil ratings and restrictive features with the list of locally or regionally adapted subgroup plant or animal species. The lists are developed and maintained in the Field Office Technical Guide.
- Depending upon the habitat element desired, the species adapted to each soil interpretation can be identified and selected. Decisions can be made to implement management based on the possibility for success of each specific habitat rating.
  - » For example, the locally or regionally adapted species, referred to above, may be one for which the broad category rating for riparian shrubs, vines, and tree habitat element is **poorly suited**. The restrictive feature is a water table that is at a depth of more than 5 feet during the growing season. The desired habitat species is cottonwood trees. A review of the list of subgroup species for this broad category noted the following:
  - » If the soil is rated **well suited**, the water table is close enough to the soil surface and flooding is sufficient to promote natural regeneration of cottonwood where seed sources are available and grazing management is implemented. Planted rootstock and poles can also be used to establish a stand. The stand will be maintained by the water table.
  - » If the soil is rated **suited**, the water table is at a depth that limits soil moisture and thus natural regeneration of cottonwood will not occur. However, if rootstock or poles are planted at or near the water table, the moisture supply is sufficient to maintain the stand.
  - » If the soil is rated **poorly suited**, cottonwood is not capable of regeneration and planted rootstock or poles will require irrigation at least until the roots reach the water table, if it is within a depth of about 8 to 10 feet. The cottonwood may require irrigation for the life of the stand.

The above procedure gives the user the necessary tools for identifying alternatives and making management decisions regarding habitat suitability.

512.22 Wildlife habitat suitability categories available

The categories listed below are not all-inclusive, and others may be developed to better portray your local requirements.

- Grain and seed crops for use as food and cover for wildlife habitat
- Irrigated grain and seed crops for use as food and cover for wildlife habitat
- Domestic grasses and legumes for use as food and cover for wildlife habitat
- Irrigated domestic grasses and legumes for use as food and cover for wildlife habitat
- Upland wild herbaceous plants for use as wildlife habitat
- Desertic herbaceous plants for use as wildlife habitat
- Riparian herbaceous plants for use as wildlife habitat
- Upland shrubs and vines for use as wildlife habitat
- Riparian shrubs, vines, and trees for use as wildlife habitat
- Upland desertic shrubs and trees for use as wildlife habitat
- Upland deciduous trees for use as wildlife habitat
- Upland coniferous trees for use as wildlife habitat
- Freshwater wetland plants for use as wildlife habitat
- Irrigated freshwater wetland plants for use as wildlife habitat

- Saline water wetland plants for use as wildlife habitat
- Irrigated saline water wetland plants for use as wildlife habitat
- Sedge-grass tundra for use as wildlife habitat
- Herbaceous tundra for use as wildlife habitat
- Tussock tundra for use as wildlife habitat
- Upland shrub tundra for use as wildlife habitat
- Soil used as burrow wildlife habitat component for burrowing mammals and reptiles
- Soil used for crawfish aquaculture
- Upland mixed deciduous-conifer trees for use as wildlife habitat

512.3 Ecological site information system (ESIS) interpretations

512.30 General

This part defines the policy for use of and input to ecological site descriptions. Ecological site interpretations and descriptions for all landscapes are developed from data elements that are in ESIS and NASIS. Populating the ESIS data elements and preparing ecological site interpretations and descriptions typically require additional staff effort and analyses above and beyond the requirements for NASIS Interpretations. See Part 512.2, National soil information system (NASIS) interpretations.

An ecological site is the product of all the environmental factors responsible for its development, and it has a set of key characteristics that are included in the ecological site description. These sites have characteristic soils, plant communities, and hydrology that have developed over time. Influences upon these principal ingredients include climate, living organisms, topography, and fire.

An ecological site is recognized and described on the basis of the characteristics that differentiate it from other sites in its ability to produce and support a characteristic plant community.

Ecological sites and their descriptions are prepared from group-level interpretations (ESIS) that represent the behavior of similar soil components, and component-level interpretations (NASIS) for individual soil components that occur on the site. For example, a group of similar soil components will have the same interpretation for climax vegetation and composition in ESIS, but individual soil components may have somewhat differing criteria-based interpretations in NASIS.

ESIS and NASIS are the official repositories of data elements to prepare ecological sites and descriptions. Coordination between the biologist, forester, grazing lands specialist, and other disciplines is required to assure technical adequacy of the plant and animal data and descriptions.

512.31 Ecological site descriptions

Ecological site descriptions provide the basic data for planning the use, development, rehabilitation, and management of ecological sites.

Forest land and rangeland ecological sites are separated based on the historic climax plant community. An ecological site type of forest land is assigned and described where this historic vegetation was dominated by a 25 percent overstory canopy of trees, as determined by crown perimeter-vertical projection. A tree is defined as a woody-stemmed plant that can grow to 4 meters in height at maturity on the site being described. Refer to the National Forestry Manual for details on developing ecological site descriptions for forest land ecological types.

An ecological site type of rangeland is assigned where overstory tree production was not significant in the climax vegetation. Refer to the National Range and Pasture Handbook for details on developing ecological site descriptions for rangeland ecological types.

Soil is the basis for determining, correlating, and differentiating one ecological site from another. Soils with like properties that produce and support a characteristic native plant and animal community and that respond similarly to management are grouped into the same ecological site.

512.32 Ecological site description characteristics

An ecological site description will be prepared for each ecological site that is fully supported by ESIS and NASIS data. ESIS will have the capability to produce automated descriptions by using information in the ESIS, NASIS, and climate databases.

Ecological site descriptions will include the site information listed below. Depending upon the type of ecological site (rangeland verses forest land), the heading name may vary. See exhibit 512–3 in section 514 for an example of a grazing lands ecological site description.

Ecological site characteristics:

- Site type
- Site name
- Site ID
- Major Land Resource Area
- Precipitation or climatic zone

Physiographic features:

- Landform
- Aspect
- Elevation
- Slope
- Water table depth
- Flooding
  - — Frequency
  - — Duration
- Ponding
  - — Depth
  - — Frequency
  - — Duration
- Runoff Class

Climatic features:

- Frost-free period
- Freeze-free period
- Mean annual precipitation
- Mean annual air temperature
- Climate station(s)

Influencing water features:

- Wetland description (Cowardin system)
- Stream type (Rosgen system)

Representative soil features:

- (18 or more features or characteristics may be described)

Plant communities:

- Ecological dynamics of the site
- State and transitional model diagram
- Plant community composition and group annual production
- Plant community narratives
- Plant growth curves
- Transitions or pathways leading to other plant communities

Ecological site interpretations:

- Animal community
- Wildlife
- Livestock
- Plant community production
- Hydrology functions
- Recreational uses
- Wood products
- Other products
- Other information
- Plant preference by animal kind (livestock and wildlife)

Supporting information:

- Associated sites
- Similar sites
- Inventory data references
- Site correlation
- MLRA
- States
- Type locality
- Field offices
- Relationship to other established classifications
- Other references

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Part 513 Information Systems

Part 513 Information Systems

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Part 513 Information Systems

513.0 General

513.00 Introduction

Various software applications are available that aid biologists and managers in the restoration and management of landscapes and ecosystems for fish and wildlife resources. In general, these applications fall into one of the following categories:

- Database information systems
- Decision support systems
- Utility software

The following sections in this part describe several software applications in each of the above categories. Some of the applications described are mandated for use by NRCS (Soil Data Warehouse and ESIS). Other applications are described for informational purposes and their inclusion is not an endorsement of their use.

NRCS line officers determine the use of non-NRCS software applications within their administrative jurisdiction.

513.1 Database information systems

513.10 General

Database information systems are primarily designed as a repository for data. Users, depending upon their authorizations, can enter, edit, or retrieve data from these systems. The user, however, must normally perform analysis of the data, either manually or with the aid of other software applications, such as decision support systems.

513.11 Soil data warehouse

Soil Data Warehouse is the official repository for NRCS soil-related data. It is the official NRCS information system for managing the National Cooperative Soil Survey data. Soil Data Warehouse is mandated for use in collection of soil data at NRCS project soil survey offices; the management of soil data at the NRCS area, state, and MLRA levels; and the dissemination of soil information at the regional and national levels.

It is also the

- official NRCS vehicle for delivery of soil data to NRCS field offices for use by the Customer Service Toolkit and other applications.
- official source of soil data for use by several NRCS software applications, including Vegetative Practice Design (VegSpec) and Grazing Land Application (GLA), and
- official source of soil data and criteria used in the development of fish and wildlife soil-related interpretations.

For detailed information on the use of Soil Data Warehouse, refer to the Soil Data Warehouse Web address:

http://nasis.nrcs.usda.gov/documents/briefing/bn_mar01_1.pdf

513.12 National plants information system (PLANTS)

PLANTS is the official repository for NRCS plan-related data. It is the source of taxonomic and plant attribute data used in other database information systems (Soil Data Warehouse and ESIS) and in decision support system software (VegSpec and GLA).

PLANTS is the official NRCS vehicle for delivery of plants data to NRCS field offices for use by the Customer Service Toolkit and other applications. It provides plant information to NRCS, partners, clients cooperators, and the public through the World Wide Web at

http://plants.usda.gov.

513.13 Ecological site information system (ESIS)

ESIS is the official repository for ecological site data used in the development of ecological site descriptions for rangeland and forest land, and culturally managed (hay, crop) ecological sites.

Part 512.21 describes those data elements in ESIS used in the development of ecological site descriptions. For details on the entry, edit, and retrieval of ESIS data, refer to the World Wide Web at

http://plants.usda.gov/esis/index.html

513.14 National resources inventory (NRI)

The NRI is a multiresource inventory of land cover and use, soil erosion, prime farmland, wetlands, and other natural resource characteristics on the non-Federal land in the United States (79% is non-Federal). The NRI provides a record of the Nation's conservation accomplishments and provides a basis for evaluating future program needs. It was authorized by passage of the Rural Development Act of 1972 and the Soil and Water Resources Conservation Act of 1977. Inventories have been conducted at 5-year intervals since 1982 and smaller special inventories have been done annually. A continuous inventory cycle began in 2000. NRI data can be used to evaluate both spatial and temporal (or trending) patterns in the status, condition, and trends in the use of soil, water, and related resources.

The National Resources Inventory provides information for many natural resource data elements on the Nation's non-Federal land. Consequently, it has been used to evaluate the influence of land use patterns on wildlife populations and habitat. While many factors affect wildlife abundance, land use is often considered the most important determinant of base population levels in agricultural environments. The NRI provides a good description of land-use patterns and has been used to study range-wide patterns in the abundance of species (e.g., northern bobwhite), patterns of avian diversity, and habitats, such as the distribution and density of wetlands, rangelands, and forests. Some additional data elements were added to the 1997 NRI to collect information on the composition and configuration of habitat at NRI sample points. Techniques are under development to make statistically rigorous estimates of land use patterns or conditions for small areas and unique resources. The NRI has great potential for evaluation of resource conditions for watershed projects, river basin studies, or other studies of similar scale. A Web-based or online analysis system is available for making queries of the NRI data at

http://www.nhq.nrcs.usda.gov/NRI/.html

513.15 NRCS database administration

(a) National level

The assigned Natural Resource Database managers and computer specialists are responsible for the overall system operation and maintenance of the various databases. The biology discipline leaders at NRCS national centers, institutes, and national headquarters are responsible for the overall administration and maintenance of the fish and wildlife related data elements in NASIS, PLANTS, and ESIS. The national wildlife biologist is responsible for ensuring the accuracy and compatibility of the fish and wildlife related data in NASIS and ESIS across state and regional boundaries.

(b) State level

The biology discipline leaders at this level are responsible for the quality of the fish and wildlife-related data entered in NASIS and ESIS. They are also responsible for the administration and maintenance of locally developed wildlife soil-related interpretations and associated soil criteria in NASIS.

513.2 Decision support systems

513.20 General

Decision support systems are software applications that managers and biologists can use to develop and evaluate ecosystem planning alternatives.

These systems analyze the available ecosystem data and produce outputs based on defined rules. The data used by decision support systems for analysis can be internal to the program, supplied by the user, supplied from external sources like PLANTS, Soil Data Warehouse, ESIS, or any combination of these.

The quality of the alternatives and evaluations produced by these decision support systems is directly related to the quality of the data supplied and the accuracy and validity of the rules used to analyze the data.

513.21 Vegetative practice design (VegSpec)

VegSpec is a decision support system developed to assist land managers in the planning and design of vegetative establishment practices.

VegSpec is a Customer Services Toolkit application and uses soil, plants, and climate data to select plant species that are site-specifically adapted, suitable for the selected practice, and appropriate for the purposes and objectives for which the planting is intended.

The application also employs a set of expert rules and criteria to aid in the design and implementation of a number of vegetative establishment practices.

513.22 Grazing lands applications (GLA)

GLA is a decision support software package developed for the grazing land planner or operator to aid in the inventory of land units, calculate stocking rates, calculate multiple-species stocking rates (livestock and wildlife), determine nutritional requirements for grazing livestock, and analyze the economic value of treatment alternatives.

513.23 Instream flow incremental methodology

Instream Flow Incremental Methodology (IFIM) is a decision support system based upon the relationship between streamflow at different flow regimes and the aquatic habitat expected at each flow level. IFIM examines the following variables: water velocity, minimal water depths, instream cover, bottom substrate, water temperature, dissolved oxygen, total alkalinity, turbidity, and light penetration. This decision support system consists of several software programs available as shareware from the following USGS Web site at the Midcontinent Ecological Science Center (MESC):

http://www.mesc.usgs.gov/products/software/software.asp

The IFIM software programs at this site include:

- Physical Habitat Simulation System (PHABSIM)
- Stream Network and Stream Segment Temperature Models (SNTEMP and SSTEMP)
- Time Series Library (TSLIB)
- Salmonid Population Model (SALMOD)

Consult the Web site for detailed information about these programs and information about training courses.

513.24 Moist-soil management advisor (MSMA)

The MSMA software located on the MESC Web site above provides a tool to assist wetland managers in the development of annual management plans for a moist-soil complex composed of several individual units. For each unit in the complex, decisions are required concerning time of drawdown in spring, what (if any) manipulations are required to control vegetation or salinity problems, and time of flooding in the fall. The goal of the program is to provide, in a usable format, pertinent biological information necessary to develop an ecologically sound plan for moist-soil management that contributes to the overall habitat objectives.

513.25 Habitat evaluation

The philosophy behind habitat evaluation is that an area can have various habitats, and that these habitats have different suitabilities for species that may occur in that area. Further, the suitabilities can be quantified (via Habitat Suitability Indexes); the different habitats have measurable areal extents. The overall suitability of an area for a species we postulate can be represented as a product of the areal extents of each habitat and the suitability of those habitats for the species.

(a) Habitat evaluation procedures (HEP)

HEP is an important tool for land use managers as they can quantify the effects of alternative management plans over time and provide for mitigation and compensation that can allow fair use of the land and maintain healthy habitats for affected species. The HEP accounting program uses the area of available habitat and Habitat Suitability Index (HSI) to compute the values needed for the Habitat Evaluation Procedures. The Ecological Services Manual (ESM 102) provides further information. PC version 2.2 of the Habitat Evaluation Procedures (143K bytes) and documentation are available as shareware from MESC/USGS.

(b) Habitat suitability index (HSI)

The HSI software is a system of programs that uses mathematical models to compute an HSI value for selected species from field measurements of habitat variables. The development and use of HSI models are described in the Ecological Services Manual (ESM 103). HSI Modeling Software Version 2.1 and documentation are available as shareware from MESC/USGS.

(c) HSI models for selected fish and wildlife species

The U.S. Fish and Wildlife Service has developed a series of HSI models for selected fish and wildlife species. These models may be used with various habitat-based evaluation techniques, such as the Habitat Evaluation Procedures and the Instream Flow Incremental Methodology. These techniques are designed for inventory, impact assessment, and the development of fish and wildlife habitat management plans. Related publications on standardized field sampling techniques for habitat variables and the use of wildlife guilds to evaluate impacts on wildlife communities are also available. The MESC Web site lists several sources for the HSI models.

513.26 Blossom statistical analysis package

Blossom is an interactive program for analyzing data with several powerful, distribution-free statistical tests recently developed at Colorado State University. The Windows 95 and later versions of Blossom and user manual are available as shareware from MESC. Information is provided on running this program from a Windows operating system.

The listing and description of the above MESC software is for informational purposes and does not indicate an NRCS endorsement. Other software may be available and its use should be considered.

513.3 Utility software

513.30 General

Utility software applications are computer programs that are generally limited in scope. They are primarily devoted to one task, such as word processing, mathematical calculations, and graphic arts. While these types of programs are quite useful, they do not offer the analytical capabilities of decision support systems or the comprehensive data storage and retrieval capabilities of database information systems.

513.31 Utility software use

NRCS does have policy relating to the use of non-NRCS developed or purchased utility software as well as decision support systems and comprehensive databases. Consult with your local IRM office for information on the use of non-NRCS developed or purchased utility software, decision support systems, and comprehensive databases.

United States
Department of
Agriculture

**Natural
Resource
Conservation
Service**

National Biology Manual

Aquatic and Terrestrial Habitat Resources

Part 514 Exhibits

Part 514 Exhibits

Contents:

Exhibit 510–1 NRCS Ecosystem-Based Assistance Policy

130 GM – Part 406 Ecosystem-Based Assistance

PART 406 ECOSYSTEM-BASED ASSISTANCE

406.0 Purpose

The purpose of this part is to establish the broad policies for and to begin the process of Soil Conservation Service (SCS) implementation of ecosystem-based assistance (EBA) in its activities and programs.

406.1 Background

(a) The SCS Strategic Plan states that the agency will "provide ecosystem-based assistance to our customers for the integrated management needed to sustain natural resources."

(b) This quality enhancement to the SCS planning process includes the following goals that support the Strategic Plan:

1. strengthen organizational attitudes, structures, and processes to support ecosystem-based assistance.

2. develop, use, and adapt science-based tools to strengthen ecosystem-based planning.

3. provide leadership for development of policies, regulations and legislation that promote an ecosystem approach.

4. identify indicators that can be used to measure the results of conservation systems and programs in terms of ecosystem health.

5. develop and implement comprehensive education and marketing strategies for ecosystem-based assistance.

6. implement broad-based, interdisciplinary activities to help farm, ranch, and urban customers maintain the long-term productivity of the resource base and quality of the environment.

406.2 Definition

EBA is the appropriate integration of ecological, economic, and social factors through the SCS planning and assistance process in order to maintain and enhance the quality of the environment to best meet society's current and future needs.

(130–GM, June 1994)

Part 406 Ecosystem-Based Assistance
406.3

406.3 Policy

(a) It is SCS policy to provide ecosystem-based assistance to all our customers to help them improve ecosystem health, restore damaged ecosystems, and sustain natural resources.

(b) SCS will provide natural resource conservation assistance based on ecosystem principles to help the customer make informed decisions on the integrated management needed.

(c) Ecosystem-based assistance applies to all planning units, regardless of scale. Although program legislation, agreements, political boundaries, and other factors may set planning unit boundaries that do not necessarily fit natural boundaries, the ecosystem-based assistance concept is always to be incorporated into the planning process. EBA applies to natural changes through time.

(d) SCS will work closely with USDA and other Federal agencies, state agencies, conservation districts, industry, and interested groups to coordinate ecosystem-based assistance with applicable policies and programs addressing natural resource management and to utilize available resources and expertise.

(e) SCS will identify and acquire the expertise necessary to implement EBA. It is the goal of SCS to acquire the technology, knowledge, information resources, and trained workforce necessary to support the science and planning of ecosystem-based assistance for use by SCS, other agencies, interest groups, and the private sector.

(f) Training in EBA principles and concepts will be developed and provided to all SCS and partnership employees.

(g) EBA will be implemented through the SCS planning process described in the National Planning Procedures Handbook (NPPH) and will use the guidelines located in the Field Office Technical Guide (FOTG).

(h) In addition to the NPPH and FOTG, all SCS policies, handbooks, and manuals will be reviewed and changed, as necessary, as a part of the action plan to achieve implementation of EBA.

(i) SCS will begin the multi-year process of implementing ecosystem-based assistance.

406.4 Responsibilities

(a) National Headquarters. The Deputy Chief for Technology will provide leadership for implementing the "Action Plan for Ecosystem-Based Assistance for the Management of Natural Resources." This will include phasing this concept into organizational structures and working collaboratively with other agency leaders to achieve EBA goals in a timely manner.

(b) National Technical Centers. Directors of National Technical Centers will work cooperatively with National Headquarters leadership and with State Conservationists to implement the Action Plan items and to coordinate training, technology development, and information transfer among states.

(c) State Conservationists. State Conservationists will lead needed revisions in State-level technical and programmatic materials to ensure incorporation of EBA science and procedure. They will ensure adequate training and acquisition of needed expertise to achieve EBA through all planning assistance.

(130-GM, June 1994)

Exhibit 510–2 Talk by Chief Hugh H. Bennett on Wildlife and the Soil Conservation Service Program, February 9, 1938

(The following is provided as a historical perspective of the biology emphasis early in the Agency's history. It contains statements, phrases, and terminology that are not consistent with current civil rights policies.)

WILDLIFE AND THE SOIL CONSERVATION SERVICE PROGRAM

By Hugh H. Bennett
Chief, Soil Conservation Service

I am very glad to add a word of personal welcome to you on the occasion of your second conference in Washington. It was just two years ago, I believe, immediately following the organization of the Wildlife Section, that I met most of you here. I notice one or two new faces. This I take as evidence that we are gradually completing our wildlife organization.

When Ernest Holt asked me if I would say a few words to you this morning, I at first demurred. I asked him how he could expect me to talk about biology, but he said, "Biology is about the last thing those fellows need to hear from you. Why don't you clear up once and for all some of the misconceptions that still persist in the Service regarding the wildlife phase of the program? Why not tell the boys why we have a wildlife program in the first place, and what you expect of them? And certainly every last one of us would like to know where we are going."

I could see that Holt was right, for notwithstanding the fact that I have made my attitude toward the wildlife program a matter of public record on several occasions, I do realize that some field officers are still lukewarm toward wildlife management. After all, when we come to think about it, this may not be so surprising. It took some of our men a long time to come around even to stripcropping, but they have come around. And perhaps it may be better so, for when a man convinces himself that a certain practice is right he becomes a stronger advocate for that practice than he could ever have been made through coercion.

Well, let us consider some of these questions that Holt tells me have been worrying some of our folks in the field. Just why was wildlife work included in the Soil Conservation Service program? As a matter of fact, measures for the conservation and restoration of farm wildlife were considered right in the beginning when the soil conservation program was first formulated. But why should wildlife conservation have been considered a legitimate part of soil conservation? The answer to that one is relatively simple.

I first started studying soils 35 years ago, and during the intervening years I have, with increasing alarm, watched our topsoil being washed away at a constantly accelerating rate. I have also noticed, as the main reason for it, the accelerated destruction of the natural vegetative cover of the land. And I have watched with regret the disappearance of farm wildlife along with the vegetation. I am not a biologist, but almost as far back as my memory goes I have found great enjoyment in hunting quail. And while disclaiming any responsibility, for I seldom hit one, I do know that they have become increasingly hard to find.

Now it seems to me there is a definite correlation here. With stripping off of the natural vegetation we have lost both the soil itself and the wildlife that found food and refuge in the vegetation. If that be so, then it is perfectly logical that the only real, permanent cure for erosion is a coordinated plan of land treatment, with heavy reliance on vegetation, and that the proper handling of vegetation for the control of erosion will in a large degree restore conditions suitable for wildlife.

To attain anything like adequate control of soil erosion we have to study the entire operations of the particular farm concerned, and make more or less drastic changes in tillage practices and cropping systems. In other words, we have to work out a land use plan for each farm on the basis of the needs and adaptability of each acre of land in that farm. As the Secretary of Agriculture has pointed out, wildlife has a definite stake in a national land use program. Certainly a soil conservation program, concerning itself as it does with the most basic of our natural resources, implies a definite obligation toward resources dependent upon the soil. The Soil Conservation Service has accepted this obligation in respect to the welfare of the wildlife of the farms on which we operate.

Exhibit 510–2 Talk by Chief Hugh H. Bennett on Wildlife and the Soil Conservation Service Program, February 9, 1938 —Continued

It has been said that the Service can do a perfectly good job of erosion control without giving any thought whatsoever to wildlife. It is also contended by some that a farmer need give no thought to wildlife in order to make a living on his farm. And on these premises the question has been asked whether the Service is not placing itself in the position of a simple benefactor of wildlife by making provision in its program for wildlife welfare when this is not absolutely essential to the attainment of its primary objective of soil and water conservation.

The answer is, No.

Whether the farmer realizes it or not, the wildlife of his farm has a very real value. I don't mean that any one farmer can expect to derive any great amount of money from his quail, or pheasants, or ruffed grouse, as the case may be, although some farmers through proper management have earned a pretty penny from such sources. Nor am I thinking of the stupendous sum that the hunters and fishermen of the country spend each year in pursuit of their sport, and how this money will cease to flow into the channels of trade if our wildlife slips much farther down hill.

How many of you who were reared on farms do not find that your most cherished memories are in some way connected with the wild creatures about the old place? How many of you can conceive of a farm home without birds and squirrels and rabbits and other small animals? I don't know a single farmer who doesn't want some wild things around him just for the pleasure of seeing them occasionally. The enjoyment of wildlife is one of the expressions of a fuller human life and as such is above price.

More basic than all, however, is the biologic value of wildlife. We have numerous examples, known to all of you, of the disastrous results that have followed thoughtless destruction of certain animal populations. Animal life not only is intimately interrelated with plant life, but with the soil itself, and our knowledge of ecology is still insufficient for us to assume that we can afford to eliminate any species completely from our fauna or flora. It is only the part of common sense, therefore, to try to maintain the best biologic balance that may be attained under agricultural conditions. That in itself is reason enough for the wildlife phase of our program.

Of course, all of you understand that whatever we do as a Service must be justified on the basis of its contribution to the conservation of soil or water. Some of you may have felt that this basic requirement has kept you from doing a complete job of wildlife management. That may in a measure be true. Perhaps there are other things we would like to do, such as to control hunting pressure, for example, but those things can be accomplished usually through state conservation departments or by the banding together of groups of cooperators. Your big job is to see that the operations of the Service accomplish the maximum restoration of favorable physical environments for wildlife. In this respect the Service stands in a position unparalleled by any other agency. The farmers of this country absolutely control the future of all wildlife except the waterfowl and the relatively small wildlife populations living in forests.

The Biological Survey has made wonderful strides toward saving waterfowl from destruction; the Forest Service has long concerned itself with scientific management of the wildlife on its holdings; but the six million farms of the country heretofore have been almost wholly neglected.

True, the Extension Service has employed a few biologists, and some of the more progressive state conservation departments are now turning their attention to the reconstruction of farm habitats, but by and large the farmer, who has supplied the recreation for the great majority of the hunters of the country, has received little constructive attention. This is our great opportunity. We have now in force cooperative agreements with more than 53,000 farmers and by virtue of this intimate relation we are in a position to accomplish what no other agency possibly could do. Already wildlife organizations all over the country are recognizing the Soil Conservation Service as potentially the most powerful factor for the conservation of farm wildlife in the United States. This recognition has won to the support of the Service large groups of city people who otherwise would have only an academic interest in soil conservation. It is up to you to see that we do not fail to live up to our prospectus.

I would like to think that you will make of our six million farms six million wildlife refuges—not all closed to hunting, of course, for that would deprive me and a lot of fellows like me of our favorite sport. Perhaps it would be better to call them wildlife ranges. I wouldn't attempt to tell you how to do it any more than I would try to write specifications for the engineers or management plans for the foresters. Yours is a biological job, and we have employed biologists because we want the job done in the best possible manner. I

do think, however, that you have to "sell" a real appreciation of wildlife to our own staff and to the farmers, and I think that you must also "sell" an appreciation of vegetation to them.

There is certainly need for more concession to wildlife in our general farm philosophy. Notwithstanding the high price of land, as in the corn belt, for example, I am convinced that farms would be better places to live if they had a little vegetation about them and a little wildlife to enliven the farm scene.

I know that there are opposing views on so-called "clean farming", but I also know that we cannot have wildlife unless there is vegetation in which it may live and find food. We want more wildlife on our farms, and if it is necessary to make concessions to get it we should do so. I for one am convinced that it is a pretty niggardly farmer who is not willing to allow a few quail coverts to persist here and there, or who won't leave a narrow strip of shrubs and trees along his fences when he understands that these things are essential to wildlife. Perhaps, the idea of conceding something to wildlife should begin right with our own staff. Even some of our own people believe that fence rows and stream banks should be devoid of all vegetation. In some places we are actually pulling out hedges in order to facilitate stripcropping. This is all very well, but what are you doing to see that the men who are writing these provisions in the farm plan are also specifying the reestablishment of those lanes of vegetation by planting the fences relocated on the contour?

I have been tremendously impressed with some of the wildlife work I have seen in the field, particularly where raw, red clay gullies have been converted into patches of wildlife food and cover, and I have been much interested to see how quickly the quail have taken up headquarters in these places. This has shown me how admirably soil conservation and wildlife encouragement can be accomplished by the same operation, and bears out my original conviction that our revegetation program can easily be modified to the benefit of wildlife without the least sacrifice to erosion control. The technical modifications necessary to encourage wildlife are your responsibility, and in this, as well as in all other phases of soil conservation, I have thought it best that the program should be developed in the field rather than in the Washington office. Of course, the Washington office must always determine ultimate policies, but a program developed in the field to meet the needs of the particular region involved is bound to be a better one than we could devise here at our desks. It is your function, therefore, to develop the techniques necessary to an adequate program. The only limitations are the Acts of Congress under which the Service operates, and the necessity of maintaining a proper balance between the different technical phases of our integrated program.

Holt tells me that requests I have made of him for specific data regarding wildlife increases resulting from our operations have sometimes resulted in kickbacks from the field. Perhaps this is one of the misconceptions he was talking about. It seems to me that we must know what results we are getting in our work. These results must be measured, not guessed at. You men must develop the yardsticks, and if the wildlife census is the best one to employ, then I see no reason why it should not be used on selected areas. If we think of censusing in this way, and not as one of the principal functions of the project biologist, then I am sure that there will be no room for misunderstanding, any more than there is for misunderstanding the foresters' timber cruise.

As for where we are going, that is a question much more difficult to answer. In the immediate future our greatest development will certainly be along district lines. This will broaden our influence many, many fold and enable us to spread the gospel of conservation on an unprecedented scale. It is up to you to see that wildlife management is given its proper place in the districts programs. Wherever we go as a Service you may rest assured that our integrated coordinated program of soil and water conservation goes with us. Wildlife management is definitely a part of that program.

Source: This talk was given to the Soil Conservation Service Regional Biologists assembled in annual conference at Washington, D.C., February 9, 1938.

Exhibit 510–3 MOU Between NRCS and Bat Conservation International

NRCS A-3A75-2-47

MEMORANDUM OF UNDERSTANDING

BETWEEN THE

DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

AND

BAT CONSERVATION INTERNATIONAL

This Memorandum of Understanding (MOU) is entered into between the Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), and Bat Conservation International, Inc. (BCI).

I. AUTHORITIES

This MOU is entered into in accordance with the:

- Soil Conservation and Domestic Allotment Act, as amended [Public Law 74-46,49 Stat. 163, 16 U.S.C. 590 b-f];
- Commodity Credit Corporation Charter Act as amended [15 U.S.C. 714c];
- Food Security Act of 1985 as amended [16 U.S.C. 3841 et. Seq.];
- Food, Agriculture, Conservation and Trade Act of 1990 [Public Law 101-624]; and
- Federal Agriculture Improvement and Reform Act of 1996 [Public Law 104-127].

II. INTRODUCTION

NRCS provides planning, technical and financial assistance for the conservation and sustained ecological health of the Nation's natural resources on private lands. Wildlife is an important resource concern of NRCS in their ecosystem-based approach to conservation. Many species of wildlife, including bats, have specific habitat requirements that must be met to ensure their continued existence. In recent years, increasing numbers of landowners and partners have asked for our assistance to protect and improve bat habitat. This includes forest, cave, and mine habitats, as well as bat houses, bridges, and other structures. Maintenance of appropriate food and water resources is also an important concern of landowners. Through USDA conservation programs such as the Wildlife Habitat Incentives Program (WHIP), Rural Abandoned Mines Program (RAMP), Backyard Conservation Program, Conservation Reserve Program (CRP), Wetlands Reserve Program (WRP), Buffer Initiative, Conservation Reserve Enhancement Program (CREP), and Integrated Pest Management, the NRCS helps protect, restore and enhance essential wildlife habitats.

The mission of BCI is to protect and restore bats and their habitats worldwide by teaching people to understand and value bats as essential allies. BCI advocates protecting critical bat habitats; advancing scientific knowledge about bats, their conservation needs, the needs of the ecosystems that rely upon them; and facilitating non-confrontational approaches that help both bats and people.

III. PURPOSE

The purpose of this MOU is to establish a framework of cooperation between NRCS and BCI relative to maintaining and enhancing the productivity of bat and other wildlife habitats on private and public lands. Such activities include, but are not limited, to habitat conservation projects, provision of technical assistance, delivery of information and educational materials, and collaboration on habitat and wildlife research, and development of habitat enhancement techniques.

IV. RESPONSIBILITIES

A. BCI agrees to:

1. Provide NRCS with expertise for the implementation of agreed-upon inventory, monitoring, habitat projects, education, outreach, or research efforts; information regarding the status of bat populations; and progress of implementing mutual bat conservation objectives.

2. Inform the general public about bat and associated wildlife conservation projects conducted cooperatively with NRCS.

3. Assist in the training of NRCS personnel relative to bat conservation and management.

B. NRCS agrees to:

1. Identify, define, and consider undertaking various projects that will facilitate bat conservation on private lands including, but not limited to, the following:

(a) Analysis and assistance in the development of program criteria and tasks to effectively manage bats and their habitats, including the protection, enhancement, and restoration of bats and their habitats, consistent with the sound principles of resource conservation carried out by NRCS on private lands.

(b) Consider the conservation of bats and their habitat in the development of NRCS national practice standards and specifications and other technical materials.

(c) Development of programs or technical materials to inform private landowners of the beneficial aspects of conserving and attracting bats to private lands, including topics in integrated pest management, pollination, local bat population identification, and habitat protection and enhancement.

(d) Provide training, to NRCS staff on bat and other wildlife conservation through technical bulletins, conferences, and training sessions using technical sources and information from BCI and the NRCS.

2. Assist BCI in identifying activities that facilitate the development and implementation of bat conservation and habitat improvement programs by:

(a) Utilizing the NRCS public information program to inform private landowners about bat and associated wildlife conservation practices and programs, including topics in integrated pest management, pollination, local bat population identification, and habitat protection and enhancement.

(b) Informing private landowners about practices, technical information, programs, and financial assistance information available through BCI.

C. It is mutually agreed upon by both parties:

1. Collectively identify and develop cooperative projects and programs conducted under this MOU that advance bat habitat conservation with private landowners and operators.

2. Periodically review the progress of programs or projects developed under this MOU and plan future program direction as appropriate

3. Provide recognition of NRCS, BCI members, and the general public on all projects or pro grams conducted under this MOU.

4. That this MOU is neither a fiscal nor finds obligating document. Any endeavor by either party that involves the reimbursement, contribution of finds, transfer of anything of value between the parties will be handled in accordance with applicable laws, regulations, and procedures. Such endeavors shall be outlined in separate agreements, shall be made in writing by representatives of both parties, and shall be independently authorized by appropriate statutory authority. This MOU does not provide such authority.

5. This MOU in no way restricts either party from participating in similar activities with other public or private agencies, organizations, and individuals.

6. That each party agrees that it will be responsible for its own acts and results thereof and shall not be responsible for the acts of the other parties mid the results thereof. Each party therefore agrees that it will assume all risk and liability to itself, its agents or employees, for any injury to persons or property resulting in any manner from the conduct of its own operations, and the operations of its agents or employees, under this MOU, and for any loss, cost, damage, or expense resulting at any time from failure to exercise proper precautions, of or by itself or its own agents or its own employees, while occupying or visiting the projects under and pursuant to this MOU. The Government's liability shall be governed by the provisions of the Federal Tort Claims Act (28 U-S.C. 2671-80).

V. TECHNICAL AND ADMINISTRATIVE CONTACTS

A. NRCS

Lee Bensey, Director, Watersheds and Wetlands
Division (Administrative Contact)
USDA Natural Resources Conservation Service
P.O. Box 2890, Room 6014-S
Washington, DC 20013-2890

Mike W. Anderson, National Wildlife Biologist,
Ecological Sciences Division (Technical Contact)
USDA Natural Resources Conservation Service
P.O. Box 2890, Room 6158-S
Washington, DC 20013-2890
(202) 690-0856

B. BCI

Steve Walker, Executive Director
(Administrative Contact)

Faith Watkins, North American Bats and Mines
Project Director (Technical Contact)

Bat Conservation International, Inc.
Post Office Box 162603
Austin, Texas 78716-2603
(512) 327-9721

VI. DURATION

This MOU shall become effective the date of the last signature and continue in effect for a period of five years or until modified or terminated. This MOU maybe modified or amended upon written consent of both parties. This MOU may be terminated with a 30-day written notice from either party.

VII. PROVISIONS

1. All activities and programs, conducted under this MOU shall be in compliance with the nondiscrimination provisions contained in Titles VI and VII the Civil Rights Act of 1964, as amended; Civil Rights Restoration Act of 1987 (Public Law 100-259); and other nondiscrimination statues: namely, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendment of 1972, and the Age Discrimination Act of 1975. They will also be in accordance with regulations of the Secretary of Agriculture (7 C.F.R. 15, Subparts A & B), which provide that no person in the United States shall on the grounds of race, color, national origin, age, sex, religion, martial status, or handicap be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any program or activity receiving Federal financial assistance from USDA or any agency thereof.

2. All activities conducted under this MOU shall be in compliance with the Drug Free Workplace Act of 1988 (Public Law 100-690, Title V, Subtitle D).

Accepted by:

(signed)
PEARLIE S. REED
Chief
Natural Resources Conservation Service

January 2002
DATE

(signed)
STEVEN M. WALKER
Executive Director
Bat Conservation International, Inc.

January 2002
DATE

Exhibit 510–4 MOU Between NRCS and National Wild Turkey Federation

MOU A-3A75-5-98

MEMORANDUM OF UNDERSTANDING
BETWEEN THE
NATIONAL WILD TURKEY FEDERATION
AND THE
U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

This memorandum of understanding (MOU) is entered into between the National Wild Turkey Federation (Federation) and the Department of Agriculture Natural Resources Conservation Service (NRCS).

I. BACKGROUND

Wildlife is considered to be a key resource of concern by NRCS in the ecosystem-based approach to conservation. NRCS works hand-in-hand with people to conserve natural resources on private lands. This includes providing planning and technical assistance for the improvement of wildlife habitat. The NRCS field staff work with landowners to enhance wildlife habitat on their lands. Many species, including the wild turkey, have specific habitat requirements that must be met in order to complete their life cycle. In order to enhance or develop wild turkey habitat on private land, NRCS must have species biology information, population assessment methods, and habitat development techniques readily available.

The mission of the Federation is to conserve the wild turkey and to preserve the turkey hunting tradition by supporting scientific wildlife management on public, private, and corporate lands. The Federation recognizes the need to expand their technical delivery system to the private sector, especially direct assistance to landowners.

II. PURPOSE

The purpose of this MOU is to provide a framework for the cooperative management of activities necessary to maintain and enhance the productivity of wild turkey habitats on private and public lands.

III. RESPONSIBILITIES

A. The Federation will:

1. Provide available information to NRCS.

2. Refer members and customers to NRCS for technical assistance.

3. Assist with the wild turkey habitat training of NRCS personnel.

B. NRCS will:

1. Provide updated technical information reflecting current research results and recommendations of the Federation for wild turkey habitat management to its field offices.

2. Train field office personnel to improve wild turkey habitat on private and public lands with assistance from the Federation using current technical information. Guidelines will be developed on the State level to maintain technical abilities.

3. Utilize its public information program to inform landowners of available assistance including Project HELP.

C. It is mutually agreed and understood that both parties will:

1. Agree to cooperate fully with each other in the management and improvement of the wild turkey habitat on private and public lands in the United States.

2. Meet annually to review implementation of this partnership and make any necessary improvements.

3. Recognize that service personnel and facilities are to be under this administrative jurisdiction.

4. Personnel, facilities, and funds available to the Federation from State, local, and private sources are to be under the administrative jurisdiction of the Federation.

5. All matters that may require administrative action or approval by NRCS will be handled through the established administrative procedures of NRCS.

IV. FUNDING

A. This MOU is to define, in general terms, the basis on which the parties concerned will cooperate and, as such, does not constitute a financial obligation to serve as a basis for expenditures. No transfer of Federal funds will be involved under this MOU.

B. Any expenditure of funds will be provided for under joint or cooperative agreements between the Federation and NRCS contingent upon the availability of funds as appropriated by Congress from which the expenditures legally may be met. These agreements will specify the project or activity title, scope of work, deliverable final products, period of performance, and amount of payment.

V. TECHNICAL/ADMINISTRATIVE CONTACTS

A. The Federation

1. James Earl Kennamer, Ph.D. (Technical)
Vice President for Conservation Programs
National Wild Turkey Federation
Post Office Box 530
Edgefield, South Carolina 29824-0530

B. NRCS

1. Mark W. Berkland, State Conservationist
USDA Natural Resources Conservation Service
Strom Thurmond Federal Building
1835 Assembly Street, Room 950
Columbia, South Carolina 29201

2. Sheila Leonard (Administrative)
   USDA Natural Resources Conservation Service
   Post Office Box 2890, Room 5220-S
   Washington, D.C. 20013-2890

VI. PERIOD OF MOU

A. This MOU will be in full force and effect for a period of 5 years, beginning April 1, 1995, and continuing through September 30, 2000.

B. This MOU and any agreement(s) written hereunder may be amended, extended, or modified through an exchange of correspondence between the authorizing officials of NRCS and the Federation, provided such an extension does not extend this MOU and any agreement(s) written hereunder beyond the end of the fiscal year in which the work is completed.

C. This MOU or any agreement(s) written under this MOU may be terminated by authorized officials of any party hereto with written notification to the other party at least 60 calendar days in advance of the effective date of termination. This MOU or any agreement(s) written hereunder may be terminated by either party because of failure to comply with the provisions of this MON any agreements written hereunder.

D. None of the signatories of this MOU or agreement(s) written under this MOU are bound by any obligation in this MOU or agreement(s) written hereunder or any supplement thereto or other appropriate arrangements that involve the expenditure of funds or period in excess of that authorized by this MOU or agreement(s) written hereunder.

VII. PROVISIONS

A. No member of, or delegate to, Congress or resident commissioner, and no officer, agent, or employee of the Government shall be admitted to any share or part of this agreement or to any benefit to arise therein.

B. In accordance with SCS Property Management Regulation, Temporary Regulation A-2, "The program or activities conducted under this agreement or memorandum of understanding will be in compliance with the nondiscrimination provisions contained in titles VI and VII of the Civil Rights Act of 1964, as amended; the Civil Rights Restoration Act of 1987 (Public Law 100-259); and other nondiscrimination statutes: namely, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendment of 1972, and the Age Discrimination Act of 1975. They will also be in accordance with regulations of the Secretary of Agriculture (7 CFR 15, Subparts A & B), which provide that no person in the United States shall on the grounds of race, color, national origin, age, sex, religion, marital status, or handicap be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial assistance from the Department of Agriculture or any agency thereof."

VIII. AUTHORITY

This MOU is entered into under the authority of Conservation Operations, Public Law 74-46, 49 Stat, 163, 16 U.S.C. 590a-f.

PAUL W. JOHNSON 9-28-95
Chief
Natural Resources Conservation Service

LYNN BOYKIN 8-11-95
President, Board of Directors
National Wild Turkey Federation

Exhibit 510–5 MOU Between NRCS and Quail Unlimited

NRCS A-3A75-5-88

MEMORANDUM OF UNDERSTANDING
BETWEEN
QUAIL UNLIMITED, INC.
AND
U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

This memorandum of understanding (MOU) is entered into by and between Quail Unlimited, Inc. (QU), and the Department of Agriculture, Natural Resources Conservation Service (NRCS).

BACKGROUND

Wildlife is considered to be a key resource of concern by NRCS in the ecosystem-based approach to conservation. NRCS works hand-in-hand with people to conserve natural resources on private lands. This includes providing planning and technical assistance for the improvement of wildlife habitat. The NRCS field staff work with landowners to enhance wildlife habitat on their lands. Many species, including the North American quail, have specific habitat requirements that must be met in order to complete their life cycle. In order to enhance or develop quail habitat on private land, NRCS must have species biology information, population assessment methods, and habitat development techniques readily available.

The mission of Quail Unlimited, Inc. is to conserve quail and to preserve the quail hunting tradition by supporting scientific wildlife management on public, private, and corporate lands. QU recognizes the need to expand their technical delivery system to the private sector, especially direct assistance to landowners.

PURPOSE

The purpose of this MOU is to provide a framework for cooperative management of activities necessary to maintain and enhance the productivity of quail habitats on private and public lands.

RESPONSIBILITILES

A. Quail Unlimited will:

1. Provide quail habitat management information to the NRCS.

2. Refer members and customers to the NRCS for quail habitat technical assistance.

3. Assist with coordinating and providing quail habitat training to NRCS staff.

B. Natural Resources Conservation Service will:

1. Provide updated technical information reflecting current research results and recommendations of the QU for quail habitat management to its field offices.

2. Train field office personnel to improve quail habitat on private and public lands with assistance from QU using current technical information. Guidelines will be developed on the state level to maintain technical abilities.

3. Utilize its public information program to inform landowners of available assistance.

C. It is mutually agreed and understood that both parties will:

1. Agree to cooperate fully with each other in the management and improvement of the quail habitat on private and public lands in the United States.

2. Meet annually to review implementation of this partnership and make any necessary improvements.

3. Recognize that service personnel and facilities are to be under this administrative jurisdiction.

4. Personnel, facilities, and funds available to QU from state, local, and private sources are to be under the administrative jurisdiction of QU.

5. All matters that may require administrative action or approval by NRCS will be handled through the established administrative procedures of NRCS.

BENEFITS

Mutual benefits will:

Strengthen our conservation partnership in the wise use of the nation's wildlife resources.

A. Increase the levels of' technical knowledge for both parties, therefore providing greater quality service to the landowners.

B. Assist with reversing the downward trend of quail population in certain regions of the nation.

C. Result in increased public knowledge of wildlife benefits to the environment and economic benefits derived from wildlife.

D. Assist with the implementation of the 1996 Federal Agriculture Improvement Reform Act (FAIR).

FUNDING

A. This MOU is to define, in general terms, the basis on which the parties concerned will cooperate and, as such, does not constitute a financial obligation to serve as a basis for expenditures. No transfer of Federal funds will be involved under this MOU.

B. Any expenditure of funds will be provided for under joint or cooperative agreements between QU and NRCS contingent upon the availability of funds as appropriated by Congress from which the expenditures legally may be met. These agreements will specify the project or activity title, scope of work, deliverable final products, period of performance, and amount of payment.

TECHNICAL/ADMINISTRATIVE CONTACTS

A. Quail Unlimited

1. Roger Wells (technical)
   National Habitat Coordinator
   Quail Unlimited, Inc.
   868 CR 290
   Americus, KS 66835

B. Natural Resources Conservation Service

1. Mike Anderson (technical)
   National Wildlife Biologist USDA-NRCS
   P.O. Box 2890
   Washington, DC 20013

2. Gary Nordstrum (administrative)
   Director, USDA-NRCS
   P.O. Box 2890
   Washington, DC 20013

3. Mark W. Berkland (administrative)
   State Conservationist
   USDA-NRCS
   1835 Assembly Street, Room 950
   Columbia, South Carolina 29201

PERIOD OF MOU

A. This MOU will be in full force and effect for a period of 5 years, beginning April 1, 1996, and continuing through September 30, 2001.

B. This MOU and any agreement(s) written hereunder may be amended, extended, or modified through an exchange of correspondence between the authorizing and administrative officials of NRCS and QU, provided such an extension does not extend this MOU and any agreement(s) written hereunder beyond the end of the fiscal year in which the work is completed.

C. This MOU or any agreement(s) written hereunder may be terminated by authorized officials of any party hereto with written notification to the other party at least 60 calendar days in advance of the effective date of termination. This MOU or any agreement(s) written hereunder may be terminated by either party because of failure to comply with the provisions of this MOU or any agreements written hereunder.

D. None of the signatories of this MOU or agreement(s) written under this MOU are bound by any obligation in this MOU or agreement(s) written hereunder or any supplement thereto or other appropriate arrangements that involve the expenditure of funds or period in excess of that authorized by this MOU or agreement(s) written hereunder.

PROVISIONS

A. No member of, or delegate to, Congress or resident commissioner, and no officer, agent, or employee of the Government shall be admitted to any share or part of this agreement of this agreement or to any benefit to arise therein.

B. In accordance with NRCS Property Management Regulation, Temporary Regulation A-2, 'The program or activities conducted under this agreement or memorandum of understanding will be in compliance with the nondiscrimination provisions contained in Titles VI and VII of the Civil Rights Act of 1964, as amended; the Civil Rights Restoration Act of 1987 (Public Law 100-259); and other nondiscrimination statutes; namely, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendment of 1972, and the Age Discrimination Act of 1975. They will also be in accordance with regulations of the Secretary of Agriculture (7 CFR 15, Subparts A & B), which provide that no person in the United States shall on the grounds of race, color, national origin, sex, religion, age, disability, political beliefs or marital or familial status be excluded from participation in, be denied the benefits of' or be otherwise subjected to discrimination under any programs or activity receiving federal financial assistance from the Department of Agriculture or any agency thereof.'

This MOU is entered into wider the authority of Conservation Operations, Public Law 74-46, 49 Stat, 163, 16 U.S.C. 590a-f.

(signed)
PAUL W. JOHNSON
Chief
Natural Resources Conservation Service

(7-17-96)
DATE

(signed)
JOSEPH R. EVANS
Executive Vice President
Quail Unlimited, Inc.

(7/2/96)
DATE

Exhibit 510–6 MOU Between NRCS and Ducks Unlimited

MOU A–3A75–7–89

MEMORANDUM OF UNDERSTANDING
BETWEEN THE
U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
AND
DUCKS UNLIMITED, INC.

This memorandum of understanding (MOU) is entered into between the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and Ducks Unlimited, Inc. (DU).

I. PRINCIPAL AUTHORITIES

This MOU is entered into under the following principal authorities: Soil Conservation and Domestic Allotment Act, as amended [Public Law 74-46, 49 Stat. 163, 16 U.S.C. 590b-f], Commodity Credit Corporation Charter Act as amended [15 U.S.C. 714c], Food Security Act of 1985 as amended [16 U.S.C. 3841 et seq.]. Food, Agriculture, Conservation and Trade Act of 1990 [Public Law 101-624] and Federal Agriculture Improvement and Reform Act of 1996 [Public Law 104-127].

II. BACKGROUND

NRCS provides planning, technical and financial assistance for the conservation of natural resources on private lands. Wetlands and wildlife are considered to be two of several key resource concerns by NRCS in their ecosystem-based approach to conservation. Many wetland associated wildlife, including waterfowl, have specific habitat requirements that must 6e met to complete their life cycle. USDA conservation programs such as the Conservation Reserve Program (CRP), Wetlands Reserve Program (WRP), and Wildlife Habitat Incentives Program (WHIP) help protect, restore and enhance essential waterfowl, wetland associated wildlife, and upland wildlife habitats.

The mission of DU is to fulfill the annual life cycle needs of North American waterfowl. DU has accepted the: basic principle that conservation of waterfowl and other wetland associated wildlife ultimately must focus on the protection and restoration of ecologically functional habitat complexes and systems on both public and private lands. DU embraces the concept of the North American Waterfowl Management Plan (NAWMP) as a continental strategy for restoring and maintaining waterfowl populations.

NAWMP is an international agreement signed by the United States, Canada, and Mexico seeking to recover and safeguard waterfowl populations by protecting and restoring wetland and associated upland habitat ecosystems upon which they depend throughout North America. NAWMP recognizes that USDA conservation programs and technical assistance significantly contribute towards meeting waterfowl habitat objectives in the U.S. Furthermore, NAWMP recognizes, and encourages the development of, conservation partnerships between the public and private sector.

III. PURPOSE

The purpose of this MOU is to provide a framework for cooperative activities between NRCS and DU necessary to maintain and enhance the productivity of wetland habitats and associated wildlife. Such activities can include but are not limited to waterfowl and wetland conservation projects, provision of technical assistance, delivery of information and educational materials, and collaboration on wetland and wildlife research, and development of habitat enhancement techniques.

IV. RESPONSIBILITIES

A. NRCS and DU mutually agree:

1. That each and every provision of this MOU is subject to the laws and regulations of the United States.

2. To attempt to identify and develop cooperative projects, including project title, description, scope, objectives, costs, anticipated outputs and period of performance for activities conducted under this MOU that advance waterfowl and wetland habitat conservation;

3. That implementation of cooperative projects developed under this MOU will be detailed under, and subject to, project specific cooperative agreements, grants, task orders or contracts mutually agreed to and entered into by NRCS and DU;

4. That either party may assume the responsibility for the design and implementation of projects under this MOU if such projects are completed subject to appropriate standards and specifications mutually agreed to by NRCS and DU in the project specific cooperative agreement, grant, task order or contract;

5. To collectively review programs and activities associated with this MOU to assess progress and to plan future program direction as appropriate;

6. That nothing herein shall be construed as obligating NRCS to expend, or as involving the United States in any contract or other obligation for the future payment of money in excess of appropriations authorized by law and administratively allocated for these projects by NRCS;

7. That nothing herein shall be construed as obligating DU to expend, or as involving DIJ in any contract or other obligation for the future payment of money in excess of budgeted and available funds allocated for these projects by DU; and,

8. That each party agrees that it will be responsible for its own acts and results thereof and shall not be responsible for the acts of other parties and the results thereof. Each party therefore agrees that it will assume all risk and liability to itself, its agents or its employees, for any injury to persons or property resulting in any manner from the conduct of its own operations, and the operations of its agents or employees, under this MOU, and for any loss, cost, damage, or expense resulting at any time from failure to exercise proper precautions, of or by itself or its own agents or its own employees, while occupying or visiting the projects under and pursuant to this MOU. The Government's liability shall be governed by the provisions of the Federal Tort Claims Act (28 U.S.C. 2671-80).

9. That each party recognizes that the other party may work independently and in cooperation with other entities in the completion of the type of conservation activities applicable to this agreement.

B. NRCS agrees:

1. To provide training as it deems necessary to its staff on wetlands and waterfowl conservation using as a technical source the current technical information provided by DU;

2. To utilize its public information program to inform private landowners about wetlands and waterfowl conservation practices and programs, including when appropriate, distribution of technical and financial assistance information available through DU;

3. To provide appropriate recognition of DU on all cooperative projects conducted under this MOU;

4. To actively participate in the implementation of NAWMP along with DU; and

5. To provide funds and unique technical assistance to DU for cooperative activities under this MOU subject to project specific cooperative agreements, grants, task orders, or contracts.

C. DU agrees:

1. To provide NRCS with information regarding the status of waterfowl populations, waterfowl habitat management techniques, and progress in implementing NAWMP;

2. To inform its members and the general public about waterfowl and wetland conservation projects conducted cooperatively with NRCS;

3. To assist NRCS in the training of its personnel in wetlands and waterfowl conservation and management;

4. To provide funds and unique technical assistance to NRCS for cooperative activities under this MOU subject to project specific cooperative agreements, grants, task orders or contracts; and

5. To provide appropriate recognition of NRCS, DU members, and the general public on all cooperative projects conducted under this MOU.

V. FUNDING

This MOU is to define, in general terms, the basis on which the parties concerned will cooperate, and as such, does not constitute a direct financial obligation for expenditures.

VI. ADMINISTRATIVE/TECHNICAL CONTACTS

A. NRCS—

1. Lloyd E. Wright, Director, Conservation & Ecosystem Assistance Division (Administrative Contact)
USDA Natural Resources Conservation Service
P.O. 2890, Room 6024-S
Washington, DC 20013-2890

2. Warren M. Lee, Director, Watersheds and Wetlands Division (Administrative Contact)
USDA Natural Resources Conservation Service
P.O. 2890, Room 6014-S
Washington, DC 20013-2890

3. Mike W. Anderson, National Wildlife Biologist (Technical contact)
   USDA Natural Resources Conservation Service
   P.O. Box 2890, Room 6150-S
   Washington, DC 20013-2890

B. DU—

1. Alan Wentz, Group Manager of Conservation
   Ducks Unlimited, Inc.
   One Waterfowl Way
   Memphis, TN 38120-2351

2. Jack Payne, National Director of Conservation
   Ducks Unlimited, Inc.
   One Waterfowl Way
   Memphis, TN 38120-2351

3. Eric Schenck, Manager of Agricultural and Conservation Policy
   Ducks Unlimited, Inc. Suite 202
   1709 New York Ave., NW
   Washington, DC 20006

VII. SPECIAL PROVISIONS

A. This MOU will be in full force and effect for a period of 5 years, beginning March 17, 1997, and continuing through March 16, 2002.

B. This MOU, or any cooperative agreement(s), grant(s), task order(s) or contract(s) written hereunder, may only be amended, extended, or modified in writing with the mutual consent of the authorizing officials of NRCS and DU provided that no extension of a cooperative agreement(s) or other document(s) written hereunder may be: beyond the term of this MOU.

C. This MOU, or any cooperative agreement(s) written hereunder, may be terminated by authorized officials of any party hereto with written notification to the other party at least 60 calendar days in advance of the termination. This MOU, or any cooperative agreement(s), grant(s), task order(s), or contract(s) written hereunder may be terminated by either party because of failure to comply with the provisions of this MOU, or any cooperative agreements, grants, task orders, or contracts written hereunder.

D. None of the signatories of this MOU or agreement(s) written under this MOU are bound individually by any obligation in this MOU or cooperative agreement(s) written hereunder or any supplement thereto.

E. This MOU shall be enforced and interpreted in accordance with applicable federal laws and regulations, directives, circulars, or other guidance. When signed, this; MOU will become binding on DU and NRCS to be administered in accordance with OMB Circular A-110 (19 Nov. 93), OMB Circular A-133, Audits of Institutions of Higher Learning and Other Non-Profit Institutions (Mar. 1990); Public Law 100-690, (Title 5, Subtitle D) the "Drug-free Workplace Act of 1988", and regulations at 7 C.F.R. o3018 concerning lobbying activities. In the event of a conflict between the provisions of this MOU and the referenced laws, regulations, and OMB Circulars, the latter shall govern.

F. In accordance with NRCS Property Management Regulation, Temporary Regulation A-2, "The program or activities conducted under this agreement of memorandum of understanding will be in compliance

with the nondiscrimination provisions contained in Titles VI and VII of the Civil Rights Act of 1964, as amended; the Civil Rights Restoration Act of 1987 (Public Law 100-259); and other nondiscrimination statutes: namely, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendment of 1972, and the Age Discrimination Act of 1975. They will also be in accordance with regulations of the Secretary of Agriculture (7 C.F.R. 15, Subparts A & B), which provide that no person in the United States shall on the grounds of race, color, national origin, age, sex, religion, marital status, or handicap be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial assistance from the Department of Agriculture or any agency thereof. "

(signed)
PAUL W. JOHNSON
Chief
Natural Resources Conservation Service

(3-17-97)
DATE

(signed)
ALAN WENTZ
Group Manager of Conservation
Ducks Unlimited, Inc.

(17 March 1997)
DATE

Exhibit 510–7 MOU Between NRCS and Rocky Mountain Elk Foundation

NRCS MOU A–3A75–8–170

**MEMORANDUM OF UNDERSTANDING
BETWEEN THE
ROCKY MOUNTAIN ELK FOUNDATION
AND
THE U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE**

This memorandum of understanding (MOU) is between the Rocky Mountain Elk Foundation (RMEF) and the Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS).

I. PURPOSE

The purpose of this MOU is to provide a framework for cooperative activities between RMEF and NRCS that are necessary to maintain and enhance the productivity of habitats supporting free-ranging North American elk herds and other associated wildlife. Such activities can include, but are not limited to, habitat protection, restoration and enhancement projects, provisions of technical assistance, delivery of information and educational materials, and collaboration regarding elk habitat and associated wildlife research and wildlife habitat management techniques development.

II. BACKGROUND

NRCS provides planning, technical and financial assistance for the conservation of natural resources on private lands. Grazing lands, timberland, and wildlife are considered to be three of the key resource concerns by NRCS in its ecosystem-based approach to conservation. Much grazing land and timberland-associated wildlife, including elk, has specific habitat requirements that must be met to complement its life cycle. SDA conservation programs, such as the Conservation Reserve Program (CRP), Environmental Quality Improvement Program (EQIP), and the Wildlife Habitat Incentives Program (WHIP), help protect, restore, and enhance essential elk habitat, as well as associated grazing and timber wildlife habitats.

The mission of RMEF is to ensure the future of elk and other wildlife and their habitat. In support of this mission, RMEF is committed to:

- conserving, restoring, and enhancing natural habitats;
- promoting the sound management of wild, free-ranging elk, which may be hunted or otherwise enjoyed;
- fostering cooperation among Federal, State and private organizations and individuals in wildlife management and habitat conservation; and
- educating its members and the public about habitat conservation, the value of hunting, ethics, and wildlife management.

RMEF recognizes the basic principle that elk and other wildlife habitat conservation associated with grazing and managed timberlands ultimately focuses on the protection, enhancement, and restoration of properly functioning ecological systems and processes occurring on both public and private lands.

NRCS A–3A75–8–170

III. BENEFITS OF THIS MOU

A. RMEF will benefit gaining an entree to working with private land managers, through NRCS and Conservation Districts, and collaborating with NRCS and other conservation partners to share technical information and resources.

B. NRCS will benefit from the facilitation of technology transfer of the latest information on elk and associated wildlife habitat management.

C. The public will benefit by the collaboration of private land managers, conservation districts, RMEF, and NRCS on mutual habitat objectives that reduce duplication of effort and increase project efficiency and more effective care of the wildlife public trust.

IV. RESPONSIBILITIES

A. RMEF will—

1. Provide NRCS with information regarding the status of elk populations, habitat management techniques, and progress in implementing RMEF objectives.

2. Inform its members and the general public about elk and associated wildlife conservation projects conducted cooperatively with NRCS.

3. Assist NRCS in the training of its personnel in elk and associated wildlife conservation and management.

4. Provide funds and unique technical assistance to NRCS for cooperative activities under this MOU subject to project-specific cooperative proposals, agreements, grants task orders or contracts.

5. Provide appropriate recognition of NRCS, RMEF members, and the general public on all cooperative projects under this MOU.

B. NRCS will–

1. Provide or make available training, as it deems necessary, to its staff regarding elk and associated wildlife conservation on grazing lands and timberland, using technical sources, and the current technical information provided or recommended by RMEF.

2. Use its public information program to inform private landowners about elk and associated wildlife conservation practices and programs, including, when appropriate, distribution of technical and financial assistance information available through RMEF.

3. Provide appropriate recognition of RMEF on all cooperative projects conducted under this MOU.

4. Provide funds and technical assistance to RMEF for cooperative activities under this MOU, subject to project-specific cooperative proposals, agreements, grants, task orders, or contracts.

NRCS A–3A75–8–170

V. TECHNICAL/ADMINISTRATIVE CONTACTS

A. RMEF–

1. Alan Christensen
   2291 W. Broadway
   Missoula, Montana 59802

2. Kevin Lackey
   2291 W. Broadway
   Missoula, Montana 59802

3. Tom Tomar.
   2291 W. Broadway
   Missoula, Montana 59802

B. NRCS—

1. L. Pete Heard
   Director, Wildlife Habitat Management Institute
   100 Webster Circle, Suite 3
   Madison, Mississippi 39110

2. Mike Anderson
   National Wildlife Biologist
   P.O. Box 2990, Room 6150 South Building
   Washington, D.C. 20013-2890

VI. FUNDING

A. This MOU defines in general terms the basis on which signatory agencies or organizations will cooperate, and as such, does not constitute a financial obligation to service as a basis for expenditures. Expenditures of funds, human resources, equipment, supplies, facilities, training, public information, and expertise will be provided by each signatory agency or organization to the extent that their participation is required and resources are available.

B. Details of specific projects between NRCS and RMEF will be spelled out in separate agreements.

VII. PERIOD AND TERMS OF MOU

A. This MOU shall become effective on the date of the last signature for a period of 5 years, at which time it will be reaffirmed, if appropriate.

B. This MOU may be renegotiated, amended, extended, or modified by a written amendment to this agreement through an exchange of correspondence between authorized officials of RMEF and NRCS.

C. This MOU may be terminated by any signatory party with written notification to the other parties at least 60 calendar days in advance of the effective date of termination. This MOU can be terminated by NRCS, if NRCS that any of the signatory parties have failed to comply with the provisions of this MOU.

NRCS A–3A75–8–170

VIII. PROVISIONS

A. As a condition of this MOU, RMEF assures and certifies that is in compliance and will comply with 7 CFR, Part 3017 and Part 3018 Govornmentwide Debarment and Suspension; Governmentwide Requirements for Drug-Free Workplace; and New Restrictions on Lobbying.

B. As a condition of this MOU, RMEF assures and certifies that all programs and activities conducted under this agreement or memorandum of understanding will be in compliance with the nondiscrimination provisions contained in the Titles VI and VII of the Civil Rights Act of 1964, as amended; the Civil Rights Restoration Act of 1987 (Public Law 100-259); and other nondiscrimination statutes: namely, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, and the Age Discrimination Act of 1975. They will also be in accordance with regulations of the Secretary of Agriculture (7 CFR- 15, Subparts A & B), which provide that no person in the U.S. shall, on the grounds of race, color, national origin, gender, religion, marital status, or handicap be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any program or activity receiving federal financial assistance from the Department of Agriculture or any agency thereof.

IX. AUTHORITY

This MOU is entered into under the authority of the Soil Conservation and Domestic Allotment Act, as amended (Public Law 74-46, 49 Stat. 163, 1 U.S.C. 590-14); Commodity Credit Corporation Charter Act as amended (15 U.S.C. 714c); Food Security Act of 1985 as amended (16 U.S.C. 3841 et seq.); Food, Agriculture, Conservation and Trade Act of 1990 (Public Law 101-624): and Federal Agriculture Improvement and Reform Act of 1996 (Public Law 104-127).

The undersigned parties hereby agree to the terms and conditions specified above and have authority to enter into and carry out the provisions of this MOU.

(signed as L. Pete Heard for)
PEARLIE S. REED
Chief
Natural Resources Conservation Service

(2-11-99)
DATE

(signed)
GARY J. WOLFE
President/Chief Executive Officer
Rocky Mountain Elk Foundation

(Feb. 11, 1999)
DATE

Exhibit 510–8 MOU Between NRCS and the National Audubon Society

NRCS A-3A75-2-65

MEMORANDUM OF UNDERSTANDING

BETWEEN THE

NATIONAL AUDUBON SOCIETY

AND THE

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

This Memorandum of Understanding (MOU) is made and entered into by and between the National Audubon Society, hereinafter referred to as Audubon, and the Department of Agriculture, Natural Resources Conservation Service, hereinafter referred to as NRCS.

I. PURPOSE

This MOU establishes a general framework of cooperation between the above named parties to:

1. Engage citizens as partners in enhancing habitat for birds and other fish and wildlife on their properties, in their neighborhoods and on community lands.

2. Advance public awareness of, and appreciation for the habitat needs of birds and other fish and wildlife.

3. Expand collaboration on efforts to engage people in activities to conserve birds and other fish and wildlife resources.

II. STATEMENT OF MUTUAL INTEREST AND MUTUAL BENEFITS

Audubon is a prominent environmental organization with a long tradition of conservation accomplishments in the United States. Nationwide, Audubon has over 1 million members and supporters, 520 chapters, 25 state offices and 100 sanctuaries and Audubon Centers. Audubon magazine is an award winning publication, with a readership of 1.5 million people. Audubon's mission is to conserve and restore natural ecosystems, focusing on birds and other wildlife for the benefit of humanity and the earth's biological diversity. Audubon recently launched *Audubon At Home*, a new national program to engage people in conserving and restoring habitat for birds and other fish and wildlife on their properties and in their communities.

The NRCS is charged with helping farmers, ranchers, and other landowners meet natural resources conservation objectives. As a technical service organization, NRCS seeks opportunities to meet the public and private sector's needs to enhance the ecological health of our Nation's natural resources, which includes restoring and managing fish and wildlife habitats. The development and transfer of technical and scientific information is at the foundation of these efforts.

In its 2001 report entitled "Food and Agricultural Policy: Taking Stock for the New Century," the Department of Agriculture articulated its intent to expand collaborative public-private efforts to conserve the Nation's fish and wildlife resources. Specifically, the policy identified the emerging challenge of broadening the support system for wildlife conservation:

> "A healthy rural landscape provides critical habitat, food, and safety to a diversity of wildlife. About 80 per-cent of the wildlife species in the West use agricultural land. Improvements to the landscape—including wetlands, grasslands, flood plains, and certain types of forests—can provide ecosystems to help support wildlife and aquatic species and provide benefits in the form of recreation, hunting, and other forms of agrotourism. Habitat restoration can also help threatened and endangered species recover. Pursuing environmental quality across a diverse landscape mosaic will better safeguard wildlife populations and healthy ecosystems than limiting conservation to small, specialized, and isolated tracts. Wildlife habitat restoration has helped significantly in the past several years, and has yielded substantial benefits. Because wildlife species move freely across both public and private lands, new approaches should cover both public and private lands, farm and non-farm lands, and will require cooperation among agencies, multiple levels of government, and the public."

The collaboration between NRCS and Audubon established through this MOU is a significant step toward meeting the challenge of raising awareness about the need – and opportunity – to enhance habitat for birds and other fish and wildlife habitat on private properties, and to broaden the wildlife conservation support system in the United States.

III. Responsibilities

A. NRCS agrees to—

1. Coordinate potential habitat conservation opportunities for birds and other fish and wildlife with Audubon, and in particular *Audubon At Home*, where mutual benefits will be derived.

2. Provide Audubon with NRCS program information that provides opportunities for development of habitat conservation projects.

3. Integrate Audubon, and in particular *Audubon At Home*, as appropriate, to aid in the development of technical transfer documents, training courses, seminars, workshops, and demonstrations to educate the public and private sectors about NRCS programs and the habitat needs of birds and other fish and wildlife

B. Audubon agrees to—

1. Encourage Audubon members, supporters, and other entities to participate in the conservation of birds and other fish and wildlife, spotlighting related NRCS programs as appropriate.

2. Seek opportunities to develop educational materials to inform Audubon members and others about the importance of private lands in wildlife conservation, spotlighting NRCS programs and activities where mutual benefit is derived.

C. IT IS MUTALLY AGREED AND UNDERSTOOD BY AND BETWEEN SAID PARTIES THAT —

1. Specific work projects or activities that involve the transfer of money, services, or property between the parties to this MOU will require execution of separate agreements or contracts, subject to appropriate statutes, regulations, and policies.

2. This MOU in no way restricts either of the parties from participating in similar activities or arrangements with other public or private agencies, organizations, or individuals.

3. Nothing in this MOU shall be construed as obligating NRCS to expend appropriations or to enter into any contract or other obligation.

4. The parties affirm that, absent a writing to the contrary signed by each party, the MOU shall not result in i) the transfer of ownership or control of any intellectual property between the parties; ii) a requirement that any party share information that the party considers to be proprietary, confidential or beyond the scope of the MOU; or iii) an obligation by any party to financially support or fundraise for the benefit of this MOU. NRCS further agrees that it will not use Audubon's name or trademarks, including but not limited to AUDUBON AT HOME, in any written manner accessible to the public without Audubon's prior written approval in each instance.

5. This MOU shall become effective upon the date of final signature affixed hereto and shall continue for a period of 5 years. This MOU may be modified or amended upon written request of either party and with the concurrence of the other. This MOU may be terminated by either party with 30 calendar days written notice.

IV. PROVISIONS

A. All activities under this MOU will be in compliance with the Drug Free Workplace Act of 1988 (Public Law 100-690, Title V, Subtitle D).

B. In accordance with NRCS Property Management Regulations, Temporary Regulations A-2, "The program or activities conducted under this agreement or memorandum of understanding will be in compliance with the nondiscrimination provisions contained in Titles VI and VII of the Civil Rights Act of 1964, as amended; the Civil Rights Restoration Act of 1987 (Public Law 100-259); and other nondis crimination statutes: namely, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, and the Age Discrimination Act of 1975. They will also be in accordance with regulations of the Secretary of Agriculture (7 CFR-15, Subparts A & B), which provide that no person in the United States shall on the grounds of race, color, national origin, age, sex, religion, marital status, or handicap be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial assistance from the Department of Agriculture or any agency thereof."

/s/ Bruce L. Knight 7/24/02	
BRUCE I. KNIGHT, Chief (Date)	**DAN BEARD**, Chief Operating Officer (Date)
Natural Resource Conservation Service	National Audubon Society

Exhibit 510–9 Cooperative Agreement Between NRCS and the Wildlife Management Institute

NRCS 68–3A75–1–2

AGREEMENT

BETWEEN THE

WILDLIFE MANAGEMENT INSTITUTE

AND THE

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

This agreement is entered into between the Wildlife Management Institute (WMI) and the Department of Agriculture, Natural Resources Conservation Service (NRCS).

I. PURPOSE

The purpose of this agreement is to document the support of NRCS in co-sponsoring the 66th North American Wildlife and Natural Resources Conference to be held by WMI in the Washington, D.C. metropolitan area. This five day conference will be held at the Omni Shoreham on March 16 – 20, 2001.

This conference will be attended by the natural resources profession's top administrators, scientists, managers, educators, and a unique interface of science, policy, and on the ground management. Conferences in the past have featured Farm Bill Programs. The 66th Conference will feature several working committee meetings focusing on needs for future farm policy and a session for Enhancing Wildlife Habitat on Private Lands.

II. RESPONSIBILITIES

A. WMI will:

1. Coordinate all logistical details for the conference.
2. Produce and distribute conference materials.
3. Provide administrative support for conference activities.
4. List NRCS as a co-sponsor on conference materials and programs.

B. NRCS will:

1. Provide a contact person to serve as a member of the program committee.
2. Participate in Farm Bill program working committee meetings.
3. Provide funding in the amount of $10,000 to support the conference.

III. PERIOD AND TERMS OF AGREEMENT

A. The project period for this agreement is from the date of the last signature and will continue through September 30, 2001. Congress appropriates NRCS funds annually on a FY basis; therefore, funds appropriated for this agreement in FY 2001 are available for payment to WMI for its performance throughout

the project period of this agreement. It is further documented that any additional funds in support of this project will be effected through written correspondence between the parties.

B. The terms, conditions, and provisions of this agreement will be in effect as long as work is being carried out on this project. This agreement may be renegotiated, amended, extended or modified by a written amendment to this agreement through an exchange of correspondence between authorized officials of WMI and NRCS, provided such an amendment does not extend this agreement beyond the close of the FY in which the work is completed on this project.

C. This agreement may be terminated by either party hereto by written notice to the other party at least 30 calendar days in advance of the effective date of termination. In the event that this agreement is terminated, the financial obligations of the parties will be as set forth in the Code of Federal Regulations (CFR), Title 7, Part 3015, Subpart N, which is incorporated by reference.

D. None of the signatories of this agreement are bound by any obligation in this agreement or any supplement thereto or other appropriate arrangements that involve the expenditure of funds or a period in excess of that authorized by this agreement or any amendment(s) hereto.

IV. FUNDING, PAYMENT PROCEDURES, AND QUARTERLY REPORTS

A. Funds in the amount of $10,000 have been obligated for this agreement in FY 2001. Reimbursements shall not exceed the estimated amounts indicated without prior written consent by NRCS.

B. Reimbursements shall be made to WMI upon receipt of a properly completed SF-270, "Request for Advance or Reimbursement," for the NRCS share of allowable expenses incurred by WMI under Section III of this agreement. NRCS can advance the Federal share of reasonable estimated outlays for one month at a time. However, NRCS can make disbursements any time it determines necessary to facilitate the purposes of this agreement.

C. All requests for reimbursement shall cite the agreement number, fund citation, remittance address and billing period. Invoices for reimbursement along with summary reports of accomplishments will be submitted to:

Mike Anderson
P.O. Box 2890, Room 6158-S
Washington D.C. 20013-2890

Fund Citation: 0101T83

D. Expenditures by WMI are contingent upon the availability of funds authorized for the purposes stated herein.

V. PROVISIONS

A. As a condition of this agreement, WMI assures and certifies that it is in compliance with, and will comply in the course of this agreement with, all applicable laws, regulations, executive orders, and other general applicable requirements including:

1. 7 CFR Part 3015, Uniform Federal Assistance Regulations;
2. 7 CFR Part 3017, Governmentwide Debarment and Suspension (Nonprocurement) and Governmentwide Requirements for Drug-Free Workplace (Grants);
3. 7 CFR Part 3018, New Restrictions on Lobbying;

4. 7 CFR Part 3019, Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals and Other Non-Profit Organizations; and 7 CFR Part 3052, Audits of States, Local Governments and Non-Profit Organizations; which are hereby incorporated by reference, and such other statutory provisions as are specifically set forth herein.

B. The programs or activities under this agreement will be in compliance with the nondiscrimination provisions contained in Titles VI and VII of the Civil Rights Act of 1964, as amended; the Civil Rights Restoration Act of 1987 (Public Law 100-259); and other nondiscrimination statutes: namely, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, the Age Discrimination Act of 1975, and Americans With disabilities Act of 1990. Activities will also be in accordance with regulations of the Secretary of Agriculture (7 CFR-15, Subparts A & B), which provide that no person in the United States shall on the grounds of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial assistance from the USDA or any agency thereof.

C. No assignments shall be made in whole or in part by either party without the written consent of the other party.

D. Employees of WMI will not be considered federal employees or agents of the United States for any purpose under this agreement.

E. WMI certifies that it will comply with the minimum wage and maximum hour provisions of the Federal Fair Labor Standards Act, as they apply to employees of WMI.

F. The Federal Travel Regulations will serve as a guideline for any travel performed under this agreement.

G. The Comptroller General of the United States, and any of his/her duly authorized representatives, shall, until the expiration of three years after final payment under this agreement, have access to and the right to examine transactions related to this agreement.

VI. AUTHORITY

This agreement is entered into under the authority of the Soil Conservation and Domestic Allotment Act, as amended (Public Law 74-46, 49 Stat. 163, 16 U.S.C. 590a), and 7 U.S.C. Section 2255a.

_____ _____

GERLENE C. INMAN
Director, NHQ Administrative Services Division
Natural Resources Conservation Service

DATE

_____ _____

The Wildlife Management Institute

DATE

Exhibit 510–10 Example Checklist for Biology Functional Appraisals

Example Checklist
For
Biology (include Wetlands if appropriate)
Functional Appraisals

- ❑ Previous appraisals or reviews.
- ❑ Aquatic, Wetland and Terrestrial Resources:
  - ❑ Acreage in predominant aquatic, wetland, and terrestrial species use.
  - ❑ Extent of biology (wetlands) activities.
  - ❑ Conservation and program needs.
  - ❑ Special considerations peculiar to the location, i.e. threatened or endangered species, invasive species or critical habitats.
- ❑ The present staffing situation, such as comparison with states that have similar workloads and plans for strengthening biology if appropriate.
- ❑ The availability of policy documents, handbooks, and manuals including the compatibility of NRCS State and National documents, handbooks and manuals.
- ❑ Technical materials:
  - ❑ Biological information in Sections I II, III, IV, V of the technical guide.
  - ❑ Technical notes, job sheets, animal and plant guides, and management tips.
  - ❑ Fish and wildlife (wetlands) identification aids.
- ❑ Preparation of soil survey manuscripts. The use of soil-related biology interpretations or hydric soils in planning.
- ❑ The compatibility of NRCS biology and wetland practice standards and specifications with those of the State Fish and Wildlife agency.
- ❑ The coordination of fish, wildlife, and wetland management plans prepared by other agencies with the conservation plans prepared by NRCS.
- ❑ Broad resource planning, including:
  - ❑ NRCS biology and wetlands responsibilities in RC&D and PL-566.
  - ❑ NRCS biology and wetlands responsibilities in working with cities and counties.

- ❑ NRCS Biology and wetlands responsibilities in assisting conservation districts with long range and annual plans of work.

❑ Information program on biology and wetlands activities, such as:

- ❑ News releases.
- ❑ Radio and television programs.
- ❑ Technical articles.
- ❑ Brochures.

❑ Partnership activities, such as:

- ❑ Demonstrations or training workshops, etc. on biology or wetland practices with conservation districts.
- ❑ Demonstrations or training workshops, etc., on biology or wetland practices with state fish and wildlife agency.
- ❑ Demonstrations or training workshops, etc., on biology or wetland practices with other partnering agencies and organizations.

❑ Professional development activities

- ❑ Participation in professional society or organization meetings.
- ❑ Certification or license.
- ❑ Participation in training sessions and tours.

Exhibit 510–11 Performance Benchmarks Example

Performance Benchmarks Example

Level 1 Training

This training is suggested for GS–5 and GS–7 employees who work in areas where wildlife or aquatic practices are a significant part of the workload. On completion the trainee:

- ❑ Can identify the principal aquatic, wetland, and terrestrial wildlife species and have a general knowledge of their life history and habitat requirements.
- ❑ Is familiar with the principal soils in the area, understands their potentials and limitations for growing wildlife related plants, knows principal ecological sites important to wildlife.
- ❑ Is proficient in the use of habitat evaluation procedures in working with clients.
- ❑ Knows how to use the common aquatic and terrestrial tools for habitat and population evaluations.
- ❑ Understands and uses the technical guide in working with clients.
- ❑ Can assist a client in planning use and treatment of aquatic, wetland and terrestrial wildlife resources, including planning for cropland, forestland, grazing lands, recreation, and other related uses.
- ❑ Can assist a client in planning for fish and wildlife habitat (facilities), i.e. design, layout, species selection, space requirements, maintenance, water quality, renovation, etc.
- ❑ Participates in evaluating an aquaculture facility for population management recommendations and water quality analysis with a NRCS biologist.
- ❑ Participates in wetland determination and field delineation.
- ❑ Understands Authorities and laws that NRCS works within.

Level 2 Training

This training is suggested for GS–9 soil conservationists and biologists in training toward GS–11 staff biologist positions. On completion the trainee:

- ❑ Meets all the training requirements listed for level 1.
- ❑ Has trained GS-5 or GS-7 employees in the items listed for level 1 training.
- ❑ Can identify common native and introduced aquatic, wetland, and terrestrial plants in the area important for wildlife.
- ❑ Knows the desirable and undesirable characteristics of the principal grasses, forbs, shrubs, and trees in the area for wildlife.
- ❑ Assists in the development of ecological site descriptions and soil-related interpretations.
- ❑ Has developed working relationships with FWS or State fish and wildlife agency personnel at the local level.
- ❑ Has taken the Regulatory IV, Wetland Delineation Course (if employee is located in an area of cropped wetlands) and can make some wetland determinations.
- ❑ Assists in riparian habitat restoration planning and implementation activities.
- ❑ Assists in evaluating aquaculture enterprises for population management recommendations and water quality analysis under the direction of a fishery biologist.

Level 3 Training

This training is suggested for GS–11 soil conservationists or biologists in training toward GS–12 staff biologist positions. On completion the trainee:

- ❑ Meets all the training requirements listed for level 2.
- ❑ Conducts training sessions for soil conservationists or biologists on subjects covered at lower training levels.
- ❑ Gives public presentations on aquatic, wetland, and terrestrial wildlife habitat management or restoration.
- ❑ Prepares articles on conservation work involving the use of and or management of aquatic, wetland, or terrestrial wildlife resources.
- ❑ Takes leadership in conducting wetland determinations and field delineations.
- ❑ Has a working knowledge of the soil classification system and the relationship of soil to plant growth and management.
- ❑ Develops appropriate input for ecological site descriptions and soil-related interpretations.
- ❑ Works with the FWS or State fish and wildlife agency and cooperates with other partner agencies and organizations in developing and applying aquatic, wetland, and terrestrial programs to coordinate conservation planning activities with private landowners.

.

- ❑ Assists in making environmental assessments for projected work affecting aquatic, wetland, and terrestrial habitat resources.
- ❑ Evaluates aquaculture enterprises for population management recommendations and water quality analysis.
- ❑ Develops riparian habitat restoration plans and implements recommendations with clients.
- ❑ Performs occasional assignments of the type normally given to a GS-12 staff biologist.

Level 4 Training

This training is suggested for GS–12 staff biologists in training toward higher grade staff biologist positions. On completion the trainee:

- ❑ Meets the training requirements listed for level 3 training.
- ❑ Prepares training materials and conducts training sessions for soil conservationists, biologists, or other employees of NRCS or partnering agency or organization.
- ❑ Participates in activities of professional organizations.
- ❑ Performs occasional assignments of the type normally given to a higher grade staff biologist. Accepts occasional assignments from the National Wildlife Biologist or Aquatic Ecologist.
- ❑ Works with other biologists and technical specialists from Centers and Institutes to improve technology delivery to the field.
- ❑ Develops working relationships with employees of the FWS, State fish and wildlife agency, consultants, other partner agency (including Agric. MOA partners) or organizations.
- ❑ Provides state leadership in developing aquatic, wetlands, and terrestrial wildlife input into ecological site descriptions and soil-related interpretations.
- ❑ Develops environmental assessments for projected work affecting aquatic, wetland and terrestrial habitat resources, critical habitats, and threatened and endangered species.
- ❑ Develops aquatic, wetland and terrestrial wildlife species and habitat planning guidelines for conservation program activities.

Exhibit 510–12 MOU Between U.S. Fish and Wildlife Service and NRCS

MEMORANDUM OF UNDERSTANDING
between the
UNITED STATES FISH AND WILDLIFE SERVICE
and
NATURAL RESOURCES CONSERVATION SERVICE

This Memorandum of Understanding (MOU) is between the United States Fish and Wildlife Service (FWS) of the Department of the Interior and the Natural Resources Conservation Service (NRCS) of the Department of Agriculture. The FWS and NRCS are collectively referred to as the "Agencies."

A. Purpose: The purpose of this MOU is to promote effective coordination and utilization of the Agencies respective land acquisition authorities. Specifically, to coordinate the implementation of the Wetlands Reserve Program (WRP) on eligible lands which are within or adjacent to components of the National Wildlife Refuge System. This MOU promotes the cooperative combination of agency resources to achieve ecologically sound, cost-effective conservation of environmentally sensitive lands while offering landowners additional voluntary conservation options.

B. Authorities: Acquisitions by the NRCS shall be subject to the laws and regulations governing the WRP (16 U.S.C. § 3837; 7C.F.R. § 1467). Acquisitions by the FWS shall be in accordance with the National Wildlife, Refuge System administration Act of 1966, 16 U. S.C. 668dd-668ee; the Migratory Bird Conservation Act, 16 U.S.C. 715-715d; the Migratory Bird Hunting and Conservation Stamp Act, 16 U. S.C. 718d(c); the Fish and Wildlife Act of 1956, 16 U.S.C. 742a-742j; the Emergency Wetland Resources Act of 1986,16 U.S.C. 3901; the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; and the Land and Water Conservation Fund Act, 16 U.S.C. 4601-9(a)(1).

C. Cooperative Acquisition: Where lands are deemed by the respective Agencies as eligible for acquisition under their respective authorities, the Agencies may agree to combine acquisition resources. In such cases, the following procedures may be employed:

1. Estate to be acquired. From an eligible landowner, the NRCS will acquire an easement utilizing the standard reserved interest deed for the WRP. The WRP easement may be perpetual or for a term of 30 years. Subject to the WRP easement, the FWS may acquire the rest, residue and remainder of the fee title to the land.

2. Management of the WRP easement. The NRCS will delegate to the FWS the administrative jurisdiction of the easement, comprising all management, monitoring and enforcement responsibilities, and the easement shall be managed as part of the National Wildlife Refuge System (16 U.S.C. § 3837f). Management will be consistent with WRP objectives.

3. Consideration Paid. In cases of cooperative acquisition by the Agencies where FWS will be acquiring fee title to the property, the landowner/vendor shall be offered the appraised fair market value of the fee title to the property as determined prior to the placement of any WRP easement on the property. The consideration package paid the landowner/vendor by the Agencies shall consist of an easement payment made by NRCS, with any remaining difference between the easement payment and the fair market value of the property to be paid by FWS. In cases of cooperative acquisition by the Agencies where FWS will overlay a WRP 30-year easement with a FWS permanent easement, the landowner/vendor shall be offered the fair market value of the FWS permanent easement as determined prior to the placement of the WRP 30-year easement on the property. The consideration package paid the landowner/vendor by

the Agencies shall consist of a 30-year easement payment made by NRCS, with any remaining difference between the 30-year easement payment and the fair market value of the FWS permanent easement to be paid by FWS.

D. Acquisition processing: To the maximum extent practicable, the Agencies will cooperate on minimizing expenses and personnel by utilizing single appraisals, coordinating survey and land description work, sharing title evidence, and utilizing consolidated title reviews as may be agreed upon by title respective lawyers for title Agencies.

E. Third party cooperation: The Agencies may also engage in cooperative acquisitions in partnership with state and local governments, and nonprofit organizations. Insofar as project level managers may agree, and landowner/vendors are compensated in accordance with applicable law, the Agencies may individually or collectively contribute all or portions of the costs of acquiring WRP easements. In cases where FWS contributes funds, it is agreed that NRCS will delegate to FWS administrative jurisdiction of the easement per C.2. above.

F. Other laws unaffected: Nothing in this MOU shall affect the applicability of Federal appraisal and title standards. (It is understood that the Secretary of Agriculture has deemed acquisitions under the VVRP not to be subject to the provisions of Public Law 91-646).

G. No fiscal obligations: Nothing in this MOU shall obligate the expenditure of any funds. Acquisition funding shall be within the terms of Agency appropriations.

H. Delegation: Implementation and interpretation of this MOU is hereby delegated to the Project Manager, Wetlands Reserve Program for the NRCS, and the Division Chiefs of Realty and Habitat Conservation for FWS.

Executed this_____ day of_____1996.

_____
Paul Johnson, Chief
Natural Resources Conservation Service

_____
John Rogers, Acting Director
U.S. Fish and Wildlife Service

Language to be Inserted into Section VII (Special Provisions of the WRP Warranty Easement Deed when FWS is buying residual fee interests associated with a WRP Conservation Easement. 10/9/96

Easement Administration:

Pursuant to section 1438 of the Food, Agriculture, Conservation and Trade Act of 1990 (104 Stat. 3589; 16 U.S.C. 3837f), the Secretary of Agriculture hereby delegates administrative jurisdiction to the Secretary of the Interior, by and through the U.S. Fish and Wildlife Service, comprising all management, monitoring and enforcement responsibilities of the Secretary of Agriculture under this easement, provided that the Secretary of

the Interior shall manage this easement as part of the National Wildlife Refuge System in a manner consistent with the Wetlands Reserve Program.

There is reserved to the Secretary of Agriculture the right pursuant to 16 U.S.C. 3837e to modify or terminate this easement. However, for and in consideration of the contribution of the Fish and Wildlife Service to the acquisition and administration of this easement, the Secretary of the Interior shall have a right to assume those reserved interests of the Secretary of Agriculture in this easement in the event of modification or termination, said right to be exercised by the Secretary of the Interior within one year of the date of notice of any proposed modification or termination.

Exhibit 511–1 USDA Fish and Wildlife Policy

U.S. DEPARTMENT OF AGRICULTURE

WASHINGTON, D.C. 20250

DEPARTMENTAL REGULATION **NUMBER: 9500–4**

SUBJECT: Fish and Wildlife Policy **DATE: August 22, 1983**

Wildlife and Fisheries Staff Forest Service

1 PURPOSE

The purpose of this regulation is to state the policies of the U.S. Department of Agriculture with respect to management of fish and wildlife and their habitats and to prescribe specific actions to implement the policies.

The Department's prime responsibility is to help maintain sufficient and efficient production capability of farm, forest, water, and rangeland resources for the public benefit, now and in the future, and to encourage and support proper use, management, and conservation of those natural resources. Programs to meet this mission are carried out through research, education, technical and financial assistance to landowners, managers, producers and consumers, and through the management of public land for which the Department is responsible, in cooperation with State and local agencies.

These programs affect habitats and populations of fish and wildlife. Balancing the competing uses for habitats supporting fish and wildlife requires strong, clear policies, relevant programs, and effective actions to sustain and enhance fish and wildlife in desired locations and numbers. More than 2 billion acres of farm, forest, and rangelands in the United States, plus associated water and wetlands provide habitats for over 3,000 species of birds, mammals, fishes, reptiles, and amphibians. Fish and wildlife are important economic, aesthetic, ecological, educational, recreational, and scientific resources. They provide opportunity for hunting, commercial and sport fishing, trapping, and the countless aesthetic rewards of outdoor experiences. Collectively these pursuits have created significant employment opportunity and have generated an important outdoor recreation industry. Fish and wildlife have inherent value as components and indicators of healthy ecosystems.

They often demonstrate how altered environments may affect changes in quality of life for humans. The U.S. Department of Agriculture recognizes an important role in the stewardship of the Nation's heritage of fish and wildlife for present and future generations.

DISTRIBUTION 95

2 CANCELLATION

This regulation supersedes Secretary's Memorandum No. 9500-3 dated July 20, 1982.

3 POLICY

It is the policy of the Department to assure that the values of fish and wildlife are recognized, and that their habitats, both terrestrial and aquatic, including wetlands, are recognized, and enhanced, where possible, as the Department carries out its overall missions.

The Department will support research and management programs that respond to the economic, ecological, educational, recreational, scientific and aesthetic values of fish and wildlife. A goal of the Department is to improve, where needed, fish and wildlife habitats, and to ensure the presence of diverse, native and desired non-native populations of wildlife, fish, and plant species, while fully considering other Department missions, resources, and services.

a Lands Administered by the Department

Lands administered by the Department include the National Forest System, managed by the Forest Service (FS), and relatively small experimental or research areas administered by FS, Agricultural Research Service (ARS), and Soil Conservation Service (SCS).

(1) National Forest Systems Lands:

Habitats for all existing native and desired non-native plants, fish, and wildlife species will be managed to maintain at least viable populations of such species. In achieving this objective, habitat must be provided for the number and distribution of reproductive individuals to ensure the continued existence of a species throughout its geographic range.

Habitat goals for threatened or endangered plants and animals, species with special habitat needs, species in demand for hunting, fishing, and trapping, and for other species as appropriate, will be established and implemented. This will be accomplished through the Forest planning process in response to targets identified in the Forest and Rangeland Renewable Resources Planning Act (RPA) program and public issues and concerns brought up in the planning process, consistent with available resources. Habitat goals will be coordinated with State Comprehensive Plans developed cooperatively under Sikes Act authority and carried out in forest management plans with State cooperators. Monitoring activities will be conducted to determine results in meeting population and habitat goals.

Land and water management activities will integrate fish and wildlife habitat needs with other resources and programs and will, where possible, mitigate habitat losses, consistent with Forest Plan goals and objectives as developed in the planning process. Research needed to accomplish these goals and objectives will be planned and carried out within FS research authorities.

(2) Research, experimental, and other lands administered by ARS, FS, and SCS:

Consideration will be given to fish and wildlife and their habitats in developing programs for these lands. Alternatives that maintain or enhance fish and wildlife habitat should be promoted. When compatible with use objectives for the area, management alternatives which improve habitat will be selected.

b Private and Other Non-Federal Lands

Departmental agencies will provide research, educational, technical, and financial assistance to inform, encourage, and assist landowners to understand, apply, and improve management practices for fish and wildlife habitats on private and other non-Federal forest, range, and agricultural lands. Fish and wildlife are valuable products of agricultural, forestry, and range management activities on private lands. The Department will work to achieve such recognition by private landowners and users.

Within its authorities, the Department will assist with the improvement of opportunities for recreational uses of fish and wildlife such as hunting, fishing, trapping, and viewing and will seek to protect or enhance the economic, ecological, educational, aesthetic, and scientific values of wildlife and fish on private lands when compatible with the land- owners' objectives and in accordance with Federal, State, and local laws and ordinances.

c Wildlife Jurisdiction and State Cooperation

The U.S. Department of Agriculture recognizes the rights of the individual States to manage fish and wildlife populations under their jurisdictions. Departmental agencies will utilize their respective authorities to manage habitat on public lands, to assist landowners in managing habitat on private lands, and to encourage and assist the States, territories, and other Federal agencies in conducting resource inventories and evaluating the status and potential of fish and wildlife habitat.

d Threatened or Endangered Species

The Department will conduct its activities and programs to assist in the identification and recovery of threatened and endangered plant and animal species and to avoid actions which may cause a species to become threatened or endangered. In cooperation with the States, critical habitat and other habitats necessary for the conservation of threatened and endangered species on lands administered by the Department will be evaluated and measures prescribed to prevent its destruction or adverse modification. The Department will consult as necessary with the Departments of the Interior and/or Commerce on activities that may affect threatened and endangered species.

Agencies of the Department will not approve, fund or take any action that is likely to jeopardize the continued existence of threatened and endangered species or destroy any habitat necessary for their conservation unless exemption is granted pursuant to subsection 7(h) of the Endangered Species Act of 1973, as amended. The Department will cooperate with other Federal and State agencies in carrying out this regulation and will coordinate with the Secretaries of the Interior and Commerce in the administration of the Endangered Species Act and the animal and plant quarantine laws. However, nothing in this regulation shall be construed as superseding or limiting in any manner the functions of the Department under the plant and animal quarantine laws. The Department will enforce, to the fullest extent possible, the regulations, provisions, goals, and objectives of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, and the Lacey Act, as amended, involving the importation and exportation of terrestrial plants.

e Economic Losses From Plant and Animal Pests

Programs of the Department will seek to alleviate damage by plant and animal pests to farm crops, livestock, poultry, forage, forest and urban trees, wildlife and their habitats. Departmental agencies, through management and research programs, will develop or assist in developing new techniques and methodologies for the prevention of damage to agricultural or forestry production. They also will strive to reduce potential depredation through improved management of USDA programs. Such techniques and considerations will be incorporated into appropriate management and education programs.

One goal is to minimize actual or potential conflicts between predators and livestock. Another goal is to reduce depredation on crops, poultry, livestock, forests, wildlife, other resources, and threats to human health, under registered control methods. When control is necessary, the offending animals will be removed as humanely and efficiently as possible, provided such action does not threaten the continued existence of any species.

On lands administered by the Department, direct predator and rodent damage control programs will be coordinated with other Federal and State agencies. The Department will coordinate with appropriate agencies of the Department of the Interior and with State agencies on predator-livestock research, extension-education programs, and on damage control activities.

In accordance with Executive Order 11987 (Introduction of Exotic Species), the Animal and Plant Health Inspection Service of the Department will cooperate with the Department of the Interior in development and implementation of appropriate procedures to restrict the introduction of undesirable exotic species into natural ecosystems.

The Department will promote the concept and use of integrated pest management practices in carrying out its responsibilities for pest control.

4 AUTHORITIES

Implementation of this regulation will be developed in accordance with the processes established by the Farmland Protection Policy Act (7 U.S.C. 4201-4209), as added by the Agriculture and Food Act of 1981; the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended (16 U.S.C. 1600-1614); the National Forest Management Act of 1976 (16 U.S.C. 1600 et seq.); the Soil and Water Resources Conservation Act of 1977 (R-CAT,-as amended

(16 U.S.C. 2001-2009); the Renewable Resources Extension Act of 1978 (RREA) (16 U.S.C. 1671-1676); the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1701 et seq.); the Multiple Use and Sustained Yield Act of 1960 (16 U.S.C. 528 et seq.); National Environmental Policy Act of 1969 (42 U.S.T. T371 et seq.); the Endangered Species Act of 1973, as amended, (16-U.S.C. 1531-1542); and other appropriate authorities.

DR 9500-4 August 22, 1983

5 RESPONSIBILITIES—IMPLEMENTATION AND COORDINATION

a The Secretary of Agriculture is responsible for:

(1) Resolving issues and acting on recommendations raised to the Secretary's Policy and Coordination Council by the Department committees.

(2) Raising unresolved issues and recommending actions to the appropriate Cabinet Council.

b The Natural Resources and Environment (NRE) Committee will:

(1) Coordinate efforts supportive of the objectives of this regulation.

(2) Utilize the USDA Food and Agriculture Councils in each State to ensure participation of State fish and wildlife agencies and other local interests.

(3) Schedule reviews of each agency's procedure for implementation of the policies.

(4) Establish a USDA Fisheries and Wildlife Issues Working Group to provide multi-agency coordination and assist the Committee, as directed, in carrying out this regulation. The working group will include representatives from each of the following agencies: Animal and Plant Health Inspection Service, Agricultural Stabilization and Conservation Service, Agricultural Research Service, Cooperative State Research Service, Economic Research Service, Extension Service, Farmers Home Administration, Forest Service, Rural Electrification Administration, Soil Conservation Service, Office of the General Counsel, and Office of Budget, Planning and Analysis. The working group will be co-chaired by the representatives of the Forest Service and the Extension Service. The Forest Service will provide core staff support for the work group.

c The Fisheries and Wildlife Issues Working Group will:

(1) Monitor implementation of this regulation, report inconsistencies, and make recommendations to the NRE Committee on how to more efficiently carry out policy and improve agency coordination.

(2) Coordinate with other Federal and State agencies in carrying out direction of the NRE Committee on issues addressed and maintain liaison with interest groups.

d Annual Review of Programs Affected by Regulation

Each USDA agency will annually review programs that will be affected by this regulation, and make the necessary administrative changes to bring agency programs into compliance with its provisions.

e Agency Procedures to Implement Regulation

Each USDA agency having programs that will be affected by this regulation shall develop implementing procedures, consistent with any guidelines provided by the NRE Committee, and shall provide, to all offices of the agency, copies of this regulation, Departmental guidelines, and agency procedures to implement the regulation.

Exhibit 512–1 Fish and Wildlife Background Information for Fremont County, Idaho, Soil Survey Document

Wildlife Habitat

The survey area has large and varied fish and game populations, mainly because of the condition and types of habitat available and because of the northeastern border with Yellowstone National Park.

Big game in the survey area includes mule deer, white-tailed deer, elk, moose, bighorn sheep, black bear, grizzly bear, and antelope. According to the Idaho Department of Fish and Game, the deer and elk herds total about 2,000 animals each. There are more than 450 moose in the survey area, and the population appears to be increasing. About 20 bighorn sheep are found in the Targhee Creek area. The survey area has about 450 black bear, but has fewer grizzly bears. Scattered bands of antelope are in the western part of the survey area in summer.

Big game migration routes and calving areas are throughout the survey area (See Map). Elk is the most numerous big game animal that winters in the area. The wintering elk herd grew from about 20 animals late in the 1940's to about 2,300 animals in 1986. A population of more than 3,000 animals were recorded in 1983. Elk from Yellowstone National Park and the surrounding areas of the Targhee and Gallatin National Forests also use the migration routes in the survey area.

Most elk begin to migrate late in November and congregate in the southwestern part of the Island Park area and in the southwest corner of Yellowstone National Park. During mild winters they use these areas for range. By mid-December elk have moved to the Juniper Mountains/Sand Dunes winter range area about 30 miles southwest of Island Park (general soil map unit 8). The Bureau of Land Management and the Idaho Department of Fish and Game administer this range in cooperation with the Idaho Department of Lands and private landowners. Most of the elk that use the Island Park, Centennial Mountains, Yellowstone National Park, and Fall River areas in summer spend the winter in this range area. Little snow accumulates in this area because of its southwestern exposure. The area is covered by grass and dense shrubs, including chokecherry, bitterbrush, and big sagebrush.

During some winters some of the elk move as far south as the Market Lake Wildlife Management Area, south of Highway 33.

In summer elk are primarily distributed throughout the forested parts of the survey area. Use of the habitat varies with the climate and the activities in the area, such as grazing, logging, and recreation. All of the northern and eastern parts of the survey area provide fair summer range for elk. Elk also use the habitat in Yellowstone National Park throughout the summer.

Other big game animals that use the Juniper Mountains/Sand Dunes range area are mule deer and moose. About 1,500 to 2,000 deer spend the winter in this area and an additional 100 to 200 migrate through the narrow corridor along the western side of the sand dunes. The actual numbers vary, depending on the severity of the winter. In some years as many as 50 moose winter in the area. This number is about half of the entire population of moose that winter in the desert brush environment in the southern part of the survey area. The forests in the survey area provide fair or good summer range for mule deer. Most of the mule deer that summer in the Island Park area winter in the Juniper Mountains/Sand Dunes area.

Moose are distributed throughout the Island Park area. In summer groups of 2 to 5 moose and individual moose are scattered throughout the various habitat areas. Moose prefer the forest, mountain brush, and riparian habitat types. They intensively use areas that support willows.

The survey area provides extensive winter range for moose. The condition of the range varies throughout the area, but it generally is good. The main winter areas the Fall River-Warm River Butte area, which receives heavy use during extreme winters; the Big Bend Ridge Juniper Range area; and the Island Park-Henrys Lake area, mainly along the Henrys Fork of the Snake Rive and in the Henrys Lake Flat area. Distribution of the moose in these areas is largely determined by the severity of the winter.

During extreme winters, snow depth in the Island Park area can restrict moose. Depths of 6 to 7 feet can result in increased mortality of both old

and young animals. The availability of food determines their winter range selection. Important forage species include willow, bitterbrush, chokecherry, serviceberry, aspen, subalpine fir, sedges, and grasses.

Sage grouse, forest grouse, Hungarian partridge, and sharp-tailed grouse are the dominant game birds in the survey area. Sage grouse use areas of sagebrush-grass and mountain brush vegetation (general soil map units 6, 8, 9, 10, and 11) for summer feeding and brood rearing. The preferred habitat for brood rearing is associated with areas on stream bottoms where water is available and meadows provide succulent vegetation.

Sage grouse winter mostly on sagebrush-covered, south facing slopes and in areas of dense brush near Nine Mile Knoll, the Sand Dunes, and the Juniper Mountains (general soil map unit 8). They also migrate through these areas to other areas of winter range farther south and west. Sage grouse is the most abundant game bird species that nests and winters in the southwestern part of the survey area.

Sharp-tailed grouse are not so numerous as sage grouse, but the survey area has the largest population of sharp-tailed grouse in the Upper Snake River Basin. These grouse are classified as a species of special concern by the Idaho Department of Fish and Game.

Blue grouse and ruffed grouse are common throughout the forested parts of the survey area. Blue grouse use most types of habitat, but they move to the higher elevations in winter. They nest on grassy, open slopes and sagebrush-covered ridges, generally at the base of a small tree or shrub. The preferred nesting habitat commonly is at elevations below the mature coniferous forest, which provides conifer needles for food in winter.

Ruffed grouse use most of the types of habitat in the forested parts of the survey area. Although these birds eat a variety of food throughout much of the year, they feed largely on buds from aspen and various other deciduous species in winter.

Migratory and nesting populations of mourning dove are common throughout the survey area. Suitable habitat commonly includes areas of sagebrush-grass and mountain brush vegetation, riparian areas, and areas of cropland, but it also includes some forested areas.

Hungarian partridge is an upland game bird associated with the areas of cropland. It nests in areas of sagebrush-grass vegetation and non-irrigated cropland (alfalfa), and prefers brushy cover for use as hiding areas and for wintering.

Furbearers, such as otter, mink, beaver, and muskrat, live in and around the streams in the survey area. Weasels, martens, red fox, bobcat, and lynx also reside in the area if conditions are suitable.

The coyote is the primary predator in the survey area. It lives in all parts of the area.

The survey area is in the Pacific waterfowl flyway. More than a million waterfowl migrate over the area in spring and fall. The southward movement begins in mid-to-late August and continues through December. Large numbers of ducks and geese concentrate on and around the Island Park Reservoir, Henrys Lake and in Harriman State Park before moving south.

Migrating waterfowl also make extensive use of the Henrys Fork of the Snake River and other watercourses, lakes, marshes, and potholes in the survey area. The northward migration begins late in March and continues through April and May.

Trumpeter swans, which were once an endangered species, winter on the open waters of the Henrys Fork of the Snake River. The area along the river south d Island Park is one of the most important wintering areas for trumpeter swans in the United States and Canada.

Canada geese nest in the survey area, primarily along rivers and streams, small lakes, and potholes Many migrating geese use the Island Park area for nesting and feeding. Other important waterfowl include the whooping crane and sandhill crane.

About 31 species of birds of prey use the survey area during some part of the year. Some of the more common and highly visible raptors are the bald eagle, golden eagle, osprey, red-tailed hawk, Swanson ha Northern harrier, and kestrel.

Of special concern to the State of Idaho are species whose restricted range, specific habitat requirements low populations make them vulnerable to adverse conditions. Such species in this survey area include grizzly bear, Northern Rocky Mountain wolf, Canada lynx, fisher, wolverine, trumpeter swan, sharp-tailed grouse, ferruginous hawk, prairie falcon, American peregrine falcon, and Northern bald eagle.

The endangered Northern Rocky Mountain wolf (Canis lupus irremotus) inhabits the Island

Park area. The American peregrine falcon (Falco peregrinus anatum), also an endangered species, nests in the survey area. The endangered Northern bald eagle (Haliaeetus leucocephalus) nests in the northern half of the area. In summer the eagles feed extensively on fish in the lakes, rivers, and reservoirs in the area, and some winter in the survey area. The grizzly bear (Ursus arctos horribilis), a threatened species, is in areas adjacent Yellowstone National Park.

Whooping cranes (Grus americana) consistently use the Island Park area in spring, summer, and fall. The major drainageway in the survey area is the Henrys Fork of the Snake River, which flows through general soil map units 1, 2, 3, 4, 5, and 6. The relatively uniform waterflow and water temperature, high natural fertility, and good physical characteristics result in outstanding cold-water fishery. The portion of Henrys Fork that flows through the Island Park area attracts sport anglers from throughout the United States. It is one of the most important streams in Idaho.

Both native and introduced species of trout and salmon thrive in the lakes and streams in the survey area. Rainbow, cutthroat, brown, and brook trout, coho and kokanee salmon are the dominant species. Whitefish and suckers are in the lakes and streams in the lower elevations throughout the survey area. The natural fisheries of the area are supplemented by planting programs in several areas.

The most common game fish harvested from the Henrys Fork of the Snake River is wild rainbow trout

Smaller numbers of hatchery rainbow trout, brook trout, rainbow/cutthroat trout hybrids, and cutthroat trout also are harvested. A few areas of Henrys Fork are stocked with catchable-sized rainbow trout, which make up 11 to 20 percent of the fish harvest. Most of Henrys Fork, however, is managed as a "wild" trout stream.

Most of the tributary rivers and streams of Henrys Fork provide habitat for some fish. Many provide significant spawning and rearing habitat for native cutthroat trout. Kokanee salmon depend on some of these streams. The Fall River, the Warm River, and Robinson Creek are regularly stocked with fish. Many of the smaller streams that provide lesser habitat for fish are still very important because they affect the water quality of the other stream.

Elk and moose migration routes in the Fremont County, Idaho, soil survey area

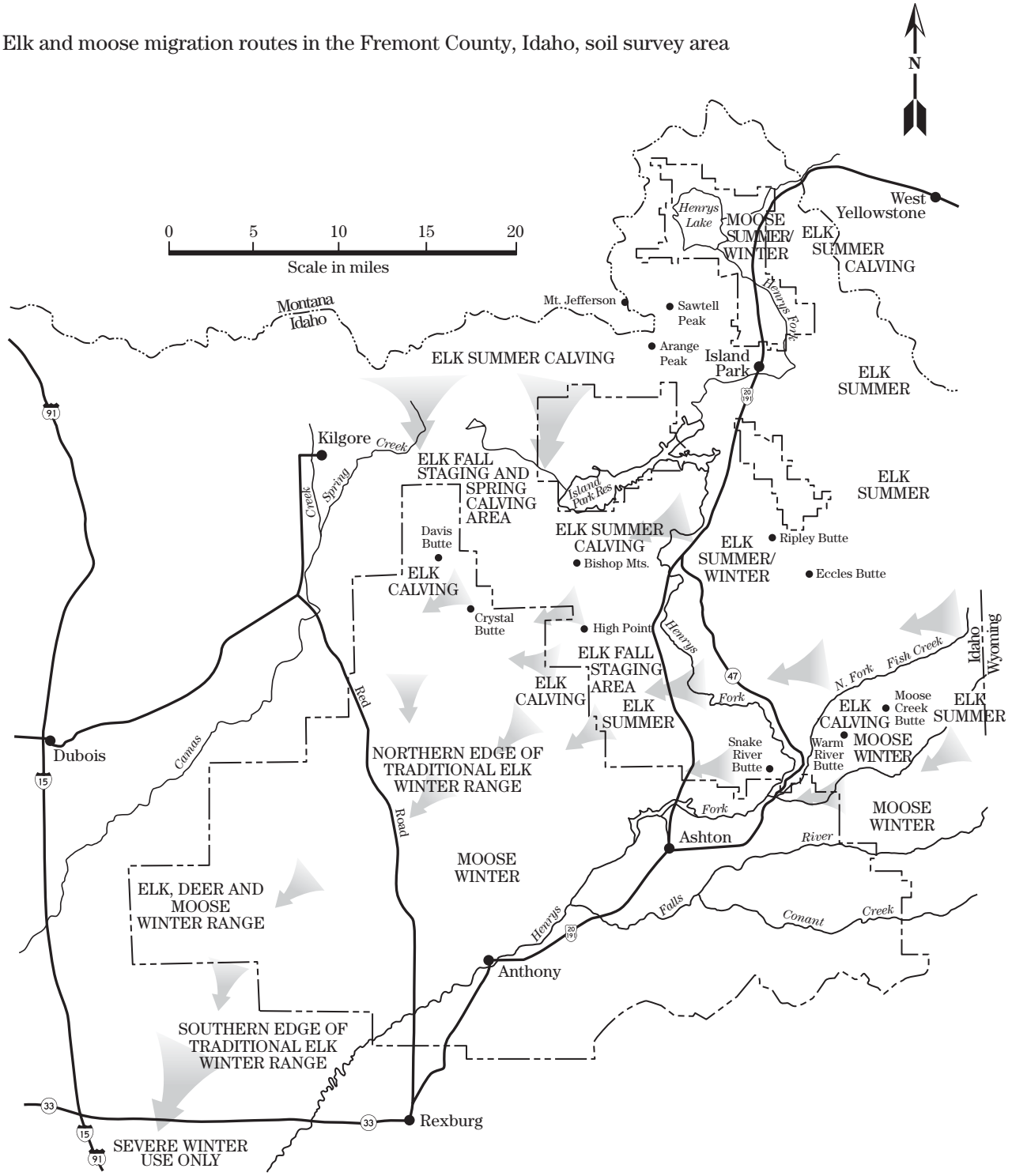


Exhibit 512–2 Fish and Wildlife Interpretations for a Soil Survey Document

(This example comes from a county in Illinois.)

Although wildlife habitat is generally a secondary land use in many parts of The County, the overall quality of available habitat is good. This is partly because of the variety of cropland uses in the county and partly because of the sizable number of wetland and woodland areas and areas that are left idle because the soil is not suitable for crops or timber production.

A majority of the soil associations in the county include habitat for openland wildlife. Major wildlife species in these openland areas are ringneck pheasant, quail, cottontail rabbits, coyotes, meadowlarks, dickcissels, and field sparrows. Much of the land in areas of openland wildlife habitat is cropland. The quality of this type of habitat is generally good in The County because of the cover crops planted in corners of nonirrigated fields, the extensive planting of small grain, and the number of hedgerows between fields. Good management can improve the habitat for openland wildlife. Good management practices include protecting the existing sand prairie and hill prairie vegetation, leaving crop fields unplowed through the winter, and establishing and maintaining hedgerows. Deferring mowing of grassed waterways, roadsides, and irrigation corners until early August, after the nesting season, can significantly increase populations of wildlife species that nest on the ground.

Most of the soil associations in The County include areas of woodland wildlife habitat. The quality of the habitat is good in many of these areas, which are used primarily for production of timber and Christmas trees. Major wildlife species in these areas are white-tailed deer, squirrels, raccoons, owls, woodpeckers, and a variety of other nongame birds.

Management practices that improve the habitat for woodland wildlife include excluding livestock from woodland areas, improving timber stands and encouraging the production of mast-producing trees, and retaining valuable den trees and snags.

Areas of wetland wildlife habitat in The County are on poorly drained soils, such as the soils in associations 4, 5, and 10. Most of the good wetland areas are in association 10, along the Illinois and Sangamon Rivers and Salt Creek. Wetland areas that are not heavily flooded are used primarily for crops. Other wetland areas are used for recreational purposes. The potential for wetland wildlife habitat in some areas along the rivers and creeks is only fair because of siltation.

Using management practices that promote the growth of plants that can tolerate wetness, installing artificial nesting structures and establishing feeding areas for waterfowl, and maintaining native grasses adjacent to the wetland improve wetland habitat. Erosion-control measures are needed in upland areas to prevent sediment from filling in the wetlands and destroying the plant communities.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In the table, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of good indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of fair indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of poor indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must

be intensive. A rating of very poor indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

(See text for definitions of "good," "fair," "poor," and "very poor")

Soil name	Map symbol	Potential for habitat elements							Potential as habitat for		
		Grain & seed crops	Grasses & legumes	Wild herbaceous plants	Hardwood tree	Coniferous splants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Tama	36B	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Ipava	41	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Sable	68	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good
Sparta	88D	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
Maumee	89	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good

The elements of wildlife habitat are described in the following paragraphs.

Potential as habitat for—

Grain and seed crops are domestic grains and seed producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, barley, rye, and sunflowers.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, orchardgrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, foxtail, and ragweed.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumnolive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, cattail, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, opossum, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, beaver, frogs, turtles, and snakes.

Exhibit 512–3 Ecological Site Description for a Loamy Rangeland Site 10- to 14-inch Precipitation Zone in MLRA 58B

(The following example is a grazingland ecological site description. It is presented as an example of content and format only. The data presented does represent an actual ecological site in a development stage; use for training purposes only.)

United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Loamy 10-14" Precipitation Zone,

Site ID: 058BY122WY

Major Land Resource Area: 58B – Northern Rolling High Plains

Physiographic Features

This site occurs on gently undulating rolling land.

Landform: Hill sides, alluvial fans, ridges & stream terraces **Aspect:** N/A

	Minimum	Maximum
Elevation (feet):	3,800	5,100
Slope (percent):	0	30
Water Table Depth (inches):	None within 60 inches	
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	0	0
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	high

Climatic Features

Annual precipitation ranges from 10-14 inches per year. Wide fluctuations may occur in yearly precipitation and result in more drought years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks from Canada in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Chinook winds may occur in winter and bring rapid rises in temperature. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Wind speed averages about 8 mph, ranging from 10 mph during the spring to 7 mph during late summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 75 mph.

Growth of native cool season plants begins about April 1 and continues to about July 1. Native warm season plants begin growth about May 15 and continue to about August 15. Green up of cool season plants may occur in September and October of most years.

The following information is from the "Clearmont 5 SW" climate station:
Frost-free period (32 °F): 76–132 days; (5 years out of 10, these days will occur between May 30 and September 11)
Freeze-free period 28 °F): 110–145 days; (5 years out of 10, these days will occur between May 16 and September 21)
Mean annual precipitation: 12.4 inches
Mean annual air temperature: 43.2 °F (28.4 °F Avg. Min. – 57.9 °F Avg. Max.)
For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at **http://www.wcc.nrcs.usda.gov/** Web site. Other climate station(s) representative of this precipitation zone include: "Dull Center"

Influencing Water Features

Wetland description:	System	Subsystem	Class	Subclass
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are deep to moderately deep (greater than 20" to bedrock), well drained & moderately permeable. Layers of the soil most influential to the plant community varies from 3 to 6 inches thick. These layers consist of the A horizon with very fine sandy loam, loam, or silt loam texture and may also include the upper few inches of the B horizon with sandy clay loam, silty clay loam or clay loam texture. Major Soil Series correlated to this site include Bidman, Cambria, Cushman, Forkwood, Kishona, Parmleed, Theedle, and Zigweid.

Other Soil Series correlated to this site in MLRA 58B include: Absted, Arvada, Ascalon, Big Horn, Bowbac, Briggsdale, Cambria Variant, Cedak Dry, Clarkelen, Connerton, Docpar, El Rancho, Emigha, Emigrant, Forkwood Variant, Fort Collins, Garrett, Glendo, Harlan, Harlan Dry, Haverdad, Hiland, Jonpol, Kadoka, Keota, Keyner, Kim, Kirtley, Larim, Larimer, Lawver, Lohsman, Maysdorf, Neville, Noden, Nuncho, Platmak, Platmak Dry, Pugsley, Recluse, Recluse Dry, Redbow, Reddale, Renohill, Roughlock, Senlar, Spearman, Stoneham, Teckla, Thirtynine, Ulm, Ulm Dry, Wages, Wolf, Wolf Variant, Wolf Dry, and Wyotite.

Parent Material Kind: alluvium and residuum
Parent Material Origin: sandstone, shale
Surface Texture: loam, silt loam, very fine sandy loam
Surface Texture Modifier: none is most common but gravelly or cobbly may occur
Subsurface Texture Group: loam
Surface Fragments - 3" (% Cover): 0
Surface Fragments > 3" (%Cover): typically 0, occasionally up to10
Subsurface Fragments - 3" (% Volume): typically 0, occasionally up to 15
Subsurface Fragments > 3" (% Volume): typically 0, occasionally up to 10

	Minimum	Maximum
Drainage Class:	moderately well drained	well drained
Permeability Class:	moderately slow	moderate
Depth (inches):	20	>60
Electrical Conductivity (mmhos/cm) - 20":	0	4
Sodium Absorption Ratio - 20":	0	5
Soil Reaction (1:1 water) - 20":	6.6	8.4
Soil Reaction (0.1M CaCl2) - 20":	NA	NA
Available Water Capacity (inches) - 30":	3.0	6.3
Calcium Carbonate Equivalent (%) - 20":	0	10

Plant Communities

Ecological Dynamics of the Site:

As this site deteriorates because of a combination of frequent and severe grazing, species such as blue grama and big sagebrush will increase. Cool-season grasses such as green needlegrass, needleandthread, and rhizomatous wheatgrasses will decrease in frequency and production.

Big sagebrush may become dominant on some areas with an absence of fire. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this site. Recently, prescribed burning has regained some popularity.

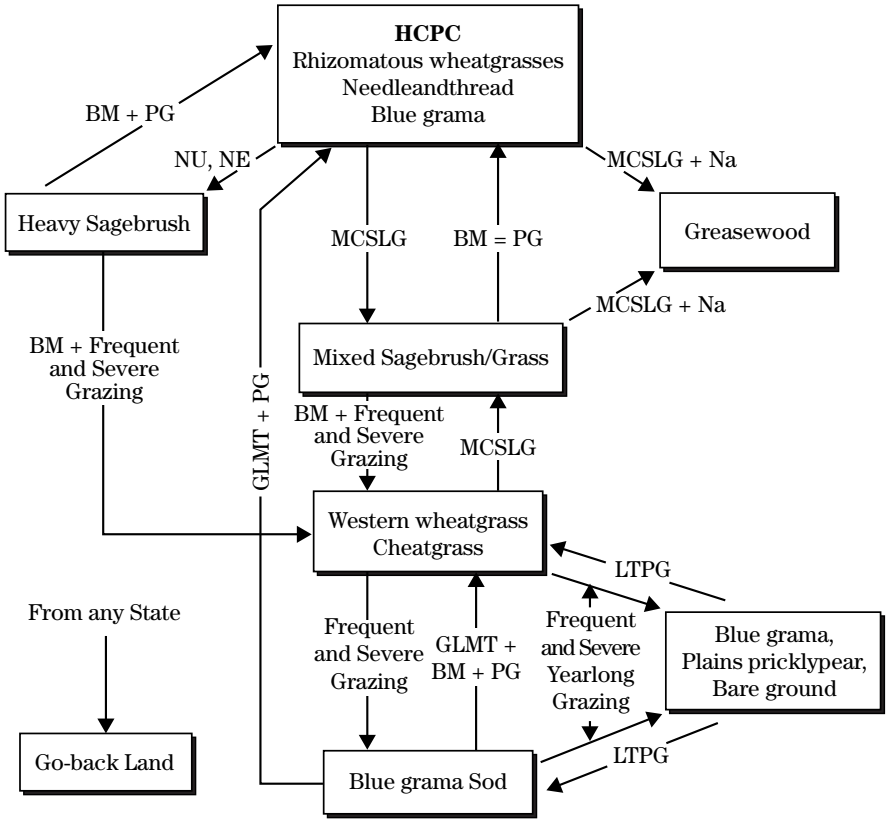
Due to the amount and pattern of the precipitation, the big sagebrush component typically is not resilient once it has been removed if a healthy and vigorous stand of grass exists and is maintained. The exception to this is where the herbaceous component is severely degraded at the time of treatment, growing conditions are unfavorable after treatment, and/or recovery periods are inadequate due to poor grazing management.

The Historic Climax Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

The following is a State and Transition Model Diagram that illustrates the common plant communities (states) that can occur on the site and the transitions between these communities. The ecological processes will be discussed in more detail in the plant community narratives following the diagram.

Exhibit 512–3 Ecological Site Description for a Loamy Rangeland Site 10- to 4-inch Precipitation Zone in MLRA 58B—Continued

State and Transition Model Diagram



BM-Brush Management (fire, chemical, mechanical)
Freq. & Severe Grazing-Frequent and Severe Utilization of the Cool-season Midgrasses during the Growing Season
GLMT-Grazing Land Mechanical Treatment
LTPG-Long term Prescribed Grazing
MCSLG-Moderate, Continuous Season-long Grazing
NU, NF-No Use and No Fire
PG-Prescribed Grazing (proper stocking rates wit adequate recovery periods during the growing season)
VLTPG-Very Long-term Prescribed Grazing (could possibly take generations)
Na-found adjacent to a saline site

Plant Community Composition and Group Annual Production

COMMON NAME/ GROUP NAME	SCIENTIFIC NAME	SCIENTIFIC SYMBOL	LOCAL SYMBOL	Grp	Allowable Annual Production lbs./acre			% Comp (MAX.)
					below normal	normal	above normal	
					700	*1200*	*1500*	
GRASSES/GRASSLIKES								
RHIZOMATOUS WHEATGRASSES:				1	175	300	375	25%
thickspike wheatgrass	Elymus lanceolatus	ELLAL	THWH	1	175	300	375	25%
western wheatgrass	Pascopyrum smithii	PASM	WEWH	1	175	300	375	25%
OTHER GRASSES:								
blue grama	Bouteloua gracilis	BOGR2	BLGR	2	105	180	225	15%
Cusick's bluegrass	Poa cusickii	POCU3	CUBL	3	70	120	150	10%
green needlegrass	Nassella viridula	NAVI4	GRNE	4	105	180	225	15%
hairy grama	Bouteloua hirsuta	BOHI2	HAGR	5	70	120	150	10%
needleandthread	Hesperostipa comata	HECO26	NEED	6	175	300	375	25%
MISCELLANEOUS GRASSES/GRASSLIKES: *				7	175	300	375	25%
bluebunch wheatgrass	Pseudorogneria spicata	PSSP6	BLWH	7	35	60	75	5%
Indian ricegrass	Achnatherum hymenoides	ACHY	INRI	7	35	60	75	5%
needleleaf sedge	Carex duriuscula	CADU6	NESE	7	35	60	75	5%
plains reedgrass	Calamagrostis montanensis	CAMO	PLRE	7	35	60	75	5%
prairie junegrass	Koeleria macrantha	KOMA	PRJU	7	35	60	75	5%
Sandberg bluegrass	Poa secunda	POSE	SABL	7	35	60	75	5%
threadleaf sedge	Carex filifolia	CAFI	THSE	7	35	60	75	5%
					0	0	0	
					0	0	0	
FORBS								
MISCELLANEOUS FORBS: *				8	105	180	225	15%
American vetch	Vicia americana	VIAM	AMVE	8	35	60	75	5%
biscuitroots	Lomatium spp.	LOMAT	BISC	8	35	60	75	5%
bluebells	Mertensia spp.	MERTE	BLUE	8	35	60	75	5%
breadroots	Pediomelum spp.	PEDIO2	BREA	8	35	60	75	5%
deathcamas	Zigadenus venenosus	ZIVEG	DEAT	8	7	12	15	1%
dotted gayfeather	Liatris punctata	LIPU	DOGA	8	35	60	75	5%
goatsbeard	Tragopogon spp.	TRAGO	GOAT	8	7	12	15	1%
hairy goldaster	Heterotheca villosa	HEVI4	HAGO	8	7	12	15	1%
hawksbeard	Crepis acuminata	CRAC2	HAWK	8	35	60	75	5%
larkspurs	Delphinium spp.	DELPH	LARK	8	7	12	15	1%
milkvetches	Astragalus spp.	ASTRA	MILK	8	35	60	75	5%
penstemons	Penstemon spp.	PENST	PENST	8	35	60	75	5%
prairie coneflower	Ratibida columnifera	RACO3	PRCO	8	35	60	75	5%
purple prairie clover	Dalea purpurea	DAPU5	PUPR	8	35	60	75	5%
rosy pussytoes	Antennaria rosea	ANRO2	ROPU	8	35	60	75	5%
scarlet gaura	Gaura coccinea	GACO5	SCGA	8	35	60	75	5%
scarlet globemallow	Sphaeralcea coccinea	SPCO	SCGL	8	35	60	75	5%
scurfpeas	Psoralidium spp.	PSORA2	SCUR	8	35	60	75	5%
stemless goldenweed	Stenotus acaulis	STACA	STGO	8	35	60	75	5%
sulpher-flower buckwheat	Eriogonum umbellatum	ERUM	SUFL	8	35	60	75	5%
western wallflower	Erysimum capitatum	ERCAC	WEWA	8	35	60	75	5%
western yarrow	Achillea millefolium	ACMI0	WEYA	8	35	60	75	5%
white prairie clover	Dalea candida	DACA7	WHPR	8	35	60	75	5%
wild onion	Allium textile	ALTE	WION	8	35	60	75	5%
					0	0	0	
TREES, SHRUBS & HALF-SHRUBS								
big sagebrush	Artemisia tridentata	ARTR2	BISA	9	70	120	150	10%
winterfat	Krascheninnikovia lanata	KRLA2	WINT	10	35	60	75	5%
MISCELLANEOUS SHRUBS & HALF-SHRUBS: *				11	35	60	75	5%
broom snakeweed	Gutierrezia sarothrae	GUSA2	BRSN	11	7	12	15	1%
fringed sagewort	Artemisia frigida	ARFR4	FRSA	11	14	24	30	2%
green rabbitbrush	Chrysothamnus viscidiflorus	CHVI8	GRRA	11	7	12	15	1%
green sagewort	Artemisia campestris	ARCA12	GRSA	11	7	12	15	1%
Louisiana sagewort	Artemisia ludoviciana	ARLU	LOSA	11	7	12	15	1%
plains pricklypear	Opuntia polyacantha	OPPO	PLPR	11	14	24	30	2%
rubber rabbitbrush	Ericameria nauseosa	ERNAN5	RURA	11	7	12	15	1%
					0	0	0	

*** Common native perennials are listed. Other native perennials may also be counted but no species in the group may be counted for more than 5%. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors.**

Plant Community Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as "Desired Plant Communities." According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC's) will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community

This plant community is the interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores and is well suited to grazing by domestic livestock. This plant community can be found on areas that are properly managed with grazing and/or prescribed burning, and sometimes on areas receiving occasional short periods of rest. The potential vegetation is about 75% grasses or grass-like plants, 15% forbs, and 10% woody plants. This state is dominated by cool-season mid-grasses.

The major grasses include western wheatgrass, needleandthread, and green needlegrass. Other grasses occurring in this state are Cusick's and Sandberg's bluegrass, bluebunch wheatgrass, and blue grama. A variety of forbs and half-shrubs also occur (see preceeding table). Big sagebrush is a conspicuous element of this state, occurs in a mosaic pattern, and makes up 5 to 10% of the annual production. Plant diversity is high.

The total annual production (air-dry weight) of this state is about 1,200 lb/acre, but it can range from about 700 lb/acre in unfavorable years to about 1,500 lb/acre in above average years.

Growth curve of this plant community expected during a normal year:

Growth curve number:
Growth curve name:
Growth curve description:

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	0	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

This plant community is extremely stable and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought tolerance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity).

Transitions or pathways leading to other plant communities are as follows:

- **No use and no fire** for 20 years or more will convert this plant community to the *Heavy Sagebrush Plant Community.*
- **Moderate, continuous season-long grazing** will convert the plant community to the *Mixed Sagebrush/Grass Plant Community.*
- **Moderate continuous season-long grazing, where greasewood occurs adjacent to the site,** will convert the plant community to the *Greasewood Plant Community.*
- When **cropped annually and then abandoned without reseeding,** the site is converted to the *Go-back Land Plant Community.*

Mixed Sagebrush/Grass Plant Community

Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush management. Wyoming big sagebrush is a significant component of this plant community. Cool-season grasses make up the majority of the understory with the balance made up of short warm-season grasses, annual cool-season grasses, and miscellaneous forbs.

Dominant grasses include needleandthread, western wheatgrass, and green needlegrass. Grasses of secondary importance include blue grama, prairie junegrass, and Sandberg bluegrass. Forbs commonly found in this plant community include plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Sagebrush canopy ranges from 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear can also occur.

When compared to the Historic Climax Plant Community, sagebrush and blue grama have increased. Production of cool-season grasses, particularly green needlegrass, has been reduced. The sagebrush canopy protects the cool-season mid-grasses, but this protection makes them unavailable for grazing. Cheatgrass (downy brome) has invaded the site. The overstory of sagebrush and understory of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife, such as mule deer and antelope.

The total annual production (air-dry weight) of this state is about 900 pounds per acre, but it can range from about 700 pounds per acre in unfavorable years to about 1,200 pounds per acre in above average years.

Growth curve of this plant community expected during a normal year:

Growth curve number:
Growth curve name:
Growth curve description:

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	0	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

This plant community is resistant to change. A significant reduction of big sagebrush can only be accomplished through fire or brush management. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.
Transitions or pathways leading to other plant communities are as follows:

- **Brush management (chemical, fire, or mechanical), followed by prescribed grazing,** will convert this plant community to the *Rhizomatous wheatgrasses*, *Needleandthread*, *Blue grama Plant Community.* The probability of this occurring is high. When prescribed fire is used, sufficient fine fuels will need to be present. This may require deferment from grazing prior to treatment. Post management is critical to ensure success. This can range from two or more years of rest to partial growing season deferment, depending on the condition of the understory at the time of treatment and the growing conditions following treatment. In the case of an intense wildfire that occurs when desirable plants are not completely dormant, the length of time required to reach the *Rhizomatous wheatgrasses*, *Needleandthread*, *Blue grama Plant Community* may be increased.
- **Brush management, followed by frequent and severe grazing,** will convert the plant community to the *Western Wheatgrass/Cheatgrass Plant Community.* The probability of this occurring is high. If bare areas exist after treatment, along with no recovery periods from grazing, cheatgrass will invade and plants not as resistant to grazing as western wheatgrass will be reduced.

- **Moderate continuous season-long grazing,** where greasewood occurs adjacent to this state, will convert the plant community to the Greasewood Plant Community.

Heavy Sagebrush Plant Community

This plant community is the result of long-term protection from grazing and fire. Sagebrush eventually dominates this plant community with canopy cover often exceeding 60%. At first, excessive litter builds up, shading out some of the grasses and forbs. Other plants become decadent with low vigor. Bunch grasses often develop dead centers. Eventually, the interspaces between plants increase in size leaving more soil surface exposed. Organic matter oxidizes in the air rather than being incorporated into the soil.

The dominant plants tend to be somewhat similar to those found in the Historic Climax Plant Community. Weedy species, cool-season grasses, and sedges have increased. Blue grama has decreased. Rodent activity has resulted in an increase in soil disturbance. Cactus and sageworts often increase. Noxious weeds such as Dalmatian toadflax, leafy spurge, or Canada thistle may invade the site if a seed source is present. Plant diversity is moderate to high.

The total annual production (air-dry weight) of this state is about 800 pounds per acre, but it can range from about 600 lb/acre in unfavorable years to about 1,000 pounds per acre in above average years.

Growth curve of the plant community expected during a normal year:

Growth curve number:
Growth curve name:
Growth curve description:

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	0	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

This plant community is not resistant to change and is more vulnerable to severe disturbance than the HCPC. The introduction of grazing or fire quickly changes the plant community.

Soil erosion is accelerated because of increased bare ground. Water flow patterns and pedestaling are obvious. Infiltration is reduced and runoff is increased.

Transitions or pathways leading to other plant communities are as follows:

- **Brush management, followed by prescribed grazing,** will return this plant community to at or near the *Rhizomatous Wheatgrasses*, *Needleandthread*, *Blue Grama Plant Community*.
- **Brush management, followed by frequent and severe grazing,** will convert the plant community to the *Western Wheatgrass/Cheatgrass Plant Community*. The probability of this occurring is high because of the amount of bare ground exposed to cheatgrass invasion.

Western Wheatgrass/Cheatgrass Plant Community

This plant community is created when the Mixed Sagebrush/Grass Plant Community or the Heavy Sagebrush Plant Community is subjected to fire or brush management not followed by prescribed grazing. Rhizomatous wheatgrasses and annuals will eventually dominate the site.

Compared to the HCPC, cheatgrass has invaded with western wheatgrass and thickspike wheatgrass maintaining at a similar or slightly higher level. Virtually all other cool-season mid-grasses are severely decreased. Blue grama is the same or slightly less than found in the HCPC. Plant diversity is low.

The total annual production (air-dry weight) of this state is about 600 pounds per acre, but it can range from about 450 pounds per acre in unfavorable years to about 750 pounds per acre in above average years.

Growth curve of the plant community expected during a normal year:

Growth curve number:
Growth curve name:
Growth curve description:

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	0	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

This plant community is relatively stable with the rhizomatous wheatgrasses being somewhat resistant to overgrazing and the cheatgrass effectively competing against the establishment of perennial cool-season grasses.

An increase in bare ground reduces water infiltration and increases soil erosion. The watershed is usually functioning. The biotic integrity is reduced by the lack of diversity in the plant community.

Transitions or pathways leading to other plant communities are as follows:

- **Moderate continuous season-long grazing** will eventually return this plant community to the *Mixed Sagebrush/Grass Plant Community.*
- **Frequent and severe grazing** will convert this plant community to *Blue Grama Sod Plant Community.*
- **Frequent and severe yearlong grazing** will convert this plant community to *Blue grama*, *Plains Pricklypear*, *Bare Ground Plant Community.*
- **Long-term, prescribed grazing** will eventually return this plant community to at or near the *Rhizomatous Wheatgrasses*, *Needleandthread*, *Blue Grama Plant Community.*

Blue Grama Sod Plant Community

This plant community is the result of frequent and severe grazing during the growing season of the cool-season mid-grasses. A dense sod of blue grama dominates it. Pricklypear cactus can become dense enough so that livestock cannot graze forage growing within the cactus clumps.

When compared to the Historic Climax Plant Community, blue grama and threadleaf sedge have increased. All cool-season mid-grasses and forbs have been greatly reduced. Plant diversity is extremely low.

The total annual production (air-dry weight) of this state is about 600 pounds per acre, but it can range from about 450 pounds per acre in unfavorable years to about 750 pounds per acre in above average years.

Growth curve of this plant community expected during a normal year:

Growth curve number:
Growth curve name:
Growth curve description:

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	0	10	15	30	25	15	5	0	0	0

(Monthly percentages of total annual growth)

This sod bound plant community is very resistant to water infiltration. While this sod protects the site itself, off-site areas are affected by excessive runoff that can cause gully erosion. This sod is very resistant to change and may require a grazing land mechanical treatment, such as chiseling, to return the cool-season grass component.

Transitions or pathways leading to other plant communities are as follows:

- **Grazing land mechanical treatment (chiseling, etc.) and pricklypear cactus control (if needed), followed by prescribed grazing,** will return this plant community to near H*istoric Climax Plant Community condition.*
- **Grazing land mechanical treatment, followed by frequent and severe grazing,** will convert this plant community to the *Western Wheatgrass/Cheatgrass Plant Community.*
- **Frequent and severe yearlong grazing** will eventually convert this state to the *Blue Grama*, *Plains Pricklypear*, *Bare Ground Plant Community.*

Greasewood Plant Community

This plant community can occur where states are subjected to continuous season-long grazing at moderate stocking rates and where greasewood occurs adjacent to the site. It is dominated by an overstory of greasewood and possibly big sagebrush. Rhizomatous wheatgrasses, cheatgrass, and inland saltgrass make up the understory. Salts in the surface will increase due to the shedding of the salt-filled leaves of the greasewood. Plant diversity is high.

The total annual production (air-dry weight) of this state is about 700 pounds per acre, but it can range from about 525 pounds per acre in unfavorable years to about 875 pounds per acre in above average years.

Growth curve of this plant community expected during a normal year:

Growth curve number:
Growth curve name:
Growth curve description:

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	0	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

This plant community is resistant to change. A significant reduction of greasewood can only be accomplished through repeated brush control treatments. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

The site is protected from erosion as long as ground cover is maintained. The biotic integrity of this state is somewhat intact because of the woody overstory and perennial grass understory. The watershed is functioning as long as a grass cover is maintained.

- Recovery to near *Historic Climax Plant Community* condition is difficult due to the resistance of greasewood to herbicides and accumulated effects of salts on the soil.

Blue Grama/Plains Pricklypear/Bare Ground Plant Community

This plant community is the result of frequent and severe yearlong grazing over the long-term. Perennial plants are decreased. Cheatgrass, annual weeds, and bare ground are increased. Plains pricklypear may have increased, rendering much of the forage unusable by livestock.

This plant community is highly variable depending on the severity, frequency, and duration of the grazing and also the condition of the plant community when this level of grazing began. Virtually all plants not resistant to overgrazing may have been eliminated. Dominant plants may include blue grama, threeawns, annuals, and, to a lesser degree, rhizomatous wheatgrasses. Perennial plant diversity is low.

The total annual production (air-dry weight) of this state is about 500 pounds per acre, but it can range from about 375 pounds per acre in unfavorable years to about 625 pounds per acre in above average years.

Growth curve of this plant community expected during a normal year:

Growth curve number:
Growth curve name:
Growth curve description:

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	0	10	15	30	25	15	5	0	0	0

(Monthly percentages of total annual growth)

This state is unhealthy and subject to increased erosion. Runoff is high on this state due to the sod nature of blue grama and bare ground.

Transitions or pathways leading to other plant communities are as follows:

- **Long-term prescribed grazing** will convert this plant community initially to the *Blue Grama Sod Plant Community*, when this state is dominated by blue grama sod at the time of treatment.
- **Long-term prescribed grazing** will convert this plant community to the *Western Wheatgrass / Cheatgrass Plant Community*, when this state has large amounts of cheatgrass, annual weeds, and bare ground at the time of treatment. Control of plains pricklypear cactus may be necessary.

Reseeding areas with native plant species and proper grazing management may be necessary to accelerate recovery where few desirable plants remain.

Go-back Land Plant Community

This plant community occurs on land that has been cropped annually in the past and then abandoned without reseeding. Natural succession has resulted in a plant community dominated by varying combinations of red threeawn, cheatgrass, blue grama, Sandberg bluegrass, and some rhizomatous wheatgrasses. Forage production is low and grasses such as red threeawn and cheatgrass are not used efficiently by livestock.

The total annual production (air-dry weight) of this state is about 600 pounds per acre, but it can range from about 500 pounds per acre in unfavorable years to about 900 pounds per acre in above average years.

Growth curve of this plant community expected during a normal year:

Growth curve number:
Growth curve name:
Growth curve description:

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	0	0	0	0	0	0	0	0	0	0

(Monthly percentages of total annual growth)

The potential for accelerated erosion can be highly variable depending on amount of bare ground present. Biological diversity is low.

Transitions or pathways leading to other plant communities are as follows:

- **Prescribed grazing** may be used to increase desirable native cool-season grass production. It is usually difficult to return to near Historic Climax Plant Community condition in a timely manner because of past soil loss.
- **Grazing land mechanical treatment (i.e., chiseling)** may improve forage production where significant rhizomatous wheatgrass is present to respond.

Where there is a lack of perennial grasses, reseeding to tame or native species may be necessary to return these lands to production in the form of pastureland. These pastures are normally seeded to crested wheatgrass, pubescent wheatgrass, or Russian wildrye. They require considerable investment to establish and have a variable life expectancy. They do produce up to 50% more than native range, but their value as forage is somewhat limited due to the single species usually seeded. In some cases, the single species or certain groups of species (e.g., wheatgrasses) may be more vulnerable to infestation by associated insects and/or diseases (e.g., black grass bugs).

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community (HCPC): The predominance of grasses in this plant community favors grazers and mixed-feeders, such as bison, elk, and antelope. Suitable thermal and escape cover for deer may be limited due to the low quantities of woody plants. However, topographical variations could provide some escape cover. When found adjacent to sagebrush dominated states, this plant community may provide brood rearing/foraging areas for sage grouse, as well as elk sites. Other birds that would frequent this plant community include western meadowlarks, horned larks, and golden eagles. Many grassland obligate small mammals would occur here.

Mixed Sagebrush/Grass Plant Community: The combination of an overstory of sagebrush and an understory of grasses and forbs provide a very diverse plant community for wildlife. The crowns of sagebrush tend to break up hard crusted snow on winter ranges, so mule deer and antelope may use this state for foraging and cover year-round, as would cottontail and jack rabbits. It provides important winter, nesting, brood-rearing, and foraging habitat for sage grouse. Brewer's sparrows' nest in big sagebrush plants, and hosts of other nesting birds utilize stands in the 20-30% cover range.

Heavy Sagebrush Plant Community: This plant community can provide important winter foraging for elk, mule deer and antelope, as sagebrush can approach 15% protein and 40-60% digestibility during that time. This community provides excellent escape and thermal cover for large ungulates, as well as nesting and brood rearing habitat for sage grouse.

Western Wheatgrass/Cheatgrass Plant Community: This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good insect availability equals good foraging for birds.

Blue Grama Sod and Go-back Land Plant Communities: These communities provide limited foraging for antelope and other grazers. They may be used as a foraging site by sage grouse if proximal to woody cover and if the Historic Climax Plant Community or the Western Wheatgrass/Cheatgrass Plant Community is limiting. Sites with less than 5" stubble height and greater than 30% bare ground are favorable for mountain plovers. Generally, these are not target plant communities for wildlife habitat management.

Greasewood Plant Community: This plant community exhibits a low level of plant species diversity due to the accumulation of salts in the soil. It may provide some thermal and escape cover for deer and antelope if no other woody community is nearby, but in most cases it is not a desirable plant community to select as a wildlife habitat management objective.

Blue Grama, Plains Pricklypear, Bare Ground Plant Community: Benefits to other wildlife are largely due to the subterranean structure created by the prairie dogs, not the sparse vegetation found on this plant community. It may be a desirable plant community if the goal is to provide habitat for burrowing owls or black-footed ferrets.

Introduced Pasture: These communities are highly variable depending on the species planted. Refer to Forage Suitability Groups for more information.

Animal Community – Grazing Interpretations

The following table lists suggested stocking rates for cattle under continuous season-long grazing under normal growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity. If distribution problems occur, stocking rates must be reduced to maintain plant health and vigor.

Plant community	Production (lb/ac)	Carrying capacity* (AUM/ac)
Rhizomatous WG, Needleandthread, Blue Grama	700–1,500	.4
Heavy Sagebrush	800–1,400	.3
Blue Grama Sod	400–1,000	.2
Mixed Sagebrush/Grass	700–1,200	.33
Western Wheatgrass/Cheatgrass	600–1,200	.2
Blue grama, Plains Pricklypear, Bare ground	300–800	.1
Greasewood	525–875	.3
Go-back Land	500–900	.2

* Continuous, season-long grazing by cattle under average growing conditions.

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage for cattle, sheep, or horses. During the dormant period, the forage for livestock use needs to be supplemented with protein because the quality does not meet minimum livestock requirements.

Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group B and C, with localized areas in hydrologic group D. Infiltration ranges from moderately slow to moderate. Runoff potential for this site varies from low to moderate depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short-grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to nonexistent. Cryptogamic crusts are present, but only cover 1-2% of the soil surface.

Recreational Uses

This site provides hunting opportunities for upland game species. The wide variety of plants which bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

Shallow Loamy	058BY162WY
Sandy	058BY150WY
Clayey	058BY104WY
Overflow	058BY130WY
Lowland	058BY128WY

Similar Sites

() – Loamy 15-17" Northern Plains P.Z. [higher production]	058BY222WY

Inventory Data References (narrative)

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used. Those involved in developing this site include: Glen Mitchell, Range Management Specialist, NRCS; Chuck Ring, Range Management Specialist, NRCS; and Everet Bainter, Range Management Specialist. Other sources used as references include USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

Data References

Data Source	Number of Records	Sample Period	State	County
SCS-RANGE-417	12	1971–1994	WY	Campbell & others
Ocular estimates	5	1990–1999	WY	Campbell & others

Site Correlation

This site has been correlated with Montana in MLRA 58B.

Type Locality

Field Offices

Buffalo, Douglas, Gillette, Lusk, Newcastle, Sheridan

Relationship to Other Established Classifications

Other References

Site Description Approval

_____ _____

State Range Management Specialist Date

_____ _____

State Range Management Specialist Date

ESD Definitions:

Ecological Site—The subdivision into which forestland and rangeland are divided for study, evaluation, and management. Ecological site descriptions provide the basic data for planning the use, development, rehabilitation, and management of ecological sites.

ESIS—The Ecological Site Information System (ESIS) is a database describing the rangeland, forestland, and cultivated (cropland, pasture, and hayland) ecosystems. ESIS consists of two components: 1) Ecological Site Description Database (ESD) and 2) Ecological Site Inventory Database (ESI).

Forest land—For the purpose of developing ecological site descriptions, a spatially defined site where the historic climax plant community was dominated by a 25% overstory canopy of trees, as determined by crown perimeter-vertical projection.

Historic Climax Plant Community—For the purpose of developing ecological site descriptions, the natural plant community that existed prior to the arrival of European settlers (original and climax are acceptable synonyms).

MLRA—Major Land Resource Areas (MLRA) are geographically associated land resource units, usually encompassing several thousand acres, characterized by a particular pattern of soils, geology, climate, water resources, and land use. A unit can be one continuous area or several separate nearby areas.

NASIS —The National Soil Information System (NASIS) is an automated tool for storing all information about and for soil surveys.

Overstory—The layer of foliage in a forest canopy consisting of the crowns of dominant, codominant, and intermediate trees that rise above the shorter understory foliage.

Potential Natural Plant Community—The biotic community that would be established if all seral sequences of its ecosystem were completed without additional human-caused disturbance under present environmental conditions. Grazing by native fauna and natural disturbances, such as drought floods, fire, insects, and disease, are inherent in the development of potential natural communities, which may include naturalized exotic species.

Seral Stage—Any stage of development of an ecosystem from a disturbed, unvegetated state to a climax plant community.

Tree—For the purpose of developing ecological site descriptions, a woody-stemmed plant that can grow to 4 meters in height at maturity on the site being described.

Understory—The foliage layer beneath the tree layer.