USDA
UNITED STATES DEPARTMENT OF AGRICULTURE

Natural Resources Conservation Service
Ecological Sciences Division

People in Partnership for a Healthy Land

Action Plan

Providing Ecosystem-Based Assistance for the Management of Natural Resources

A Natural Resources Conservation Service Strategic Initiative for the 1990's

Ecosystem-based assistance is the appropriate integration of ecological, economic, and social factors through the NRCS planning and assistance process to maintain and enhance the quality of the environment to best meet society's current and future needs.

Foreword

Natural Resources Conservation Service (NRCS) leadership formed a Quality Improvement Team (QIT) in May 1993 to develop an action plan for refining and implementing Strategy 3, "Provide ecosystem-based assistance to our customers for the integrated management needed to sustain natural resources," of the NRCS strategic plan, "A Productive Nation in Harmony with a Quality Environment: Strategic Initiatives for the 1990's." The QIT determined that the agency should implement ecosystem-based assistance (EBA), which focuses on managing the natural systems and processes that sustain resources. This creates a science-based approach to the integrated management of natural resources, more closely fits the customer service orientation of NRCS, and aligns NRCS activities more closely with those of other agencies who are taking this approach.

Ecosystem-based assistance will continue to use and build upon the NRCS planning process and the Field Office Technical Guide, which address the interactions among natural resources—soil, water, air, plants, and animals—and human considerations.

NRCS is adopting EBA because: it focuses on fundamental natural processes rather than a single resource; it is consistent with the need to achieve sustainable use of the Nation's natural resources; it is systems-oriented rather than single resource-oriented, enabling planners to address a broad range of interactions among the resources; and it recognizes people as part of the ecosystem.

An ecosystem-based approach conforms to the way the world is arranged—as interrelated ecological, social, and economic systems. Thus, it provides a framework for integrating the knowledge and perspectives of the natural and social sciences into policy, planning, and decision making. Such an interdisciplinary approach is needed to simultaneously address the environmental, social, and economic impacts of natural resource policy and management. An ecosystem-based approach also fits the multiplicity of resource goals and mandates in such statutes as the National Environmental Policy Act, the Endangered Species Act, the Clean Water Act, the Food Agriculture Conservation and Trade Act, the Coastal Zone Management Act, and the Watershed Protection and Flood Prevention Act.

We are distributing this open-ended plan to ensure that the entire agency is moving towards an EBA approach. Your comments will be welcome at any time.

PAUL W. JOHNSON
Chief

Introduction

The Natural Resources Conservation Service is preparing to deliver to its customers a new and better way of managing natural resources. It blends the sound and proven fundamentals with ecosystem principles. Recently, we have focused on technical assistance that addresses individual resources; EBA addresses the natural systems, processes, and interrelationships that sustain the resources. This new approach will enable NRCS to:

- Create awareness of the interrelationships that sustain life;
- Create awareness of the need for ecosystem-based assistance for the management of natural resources;
- Plan for harmony between natural and social needs by understanding the interaction among biological communities, the environment, and society;
- Use ecological principles, including cycling, diversity, and interdependence to address natural and human needs as a whole;
- Consider the effects of planned actions over time and at interrelated scales (e.g., large and small water sheds, interconnected planning areas, farms, fields, etc.);
- Consider interactions among the soil, water, air, plant, animal, and human resources to achieve environmentally and economically sustainable use of natural resources;
- Provide an interdisciplinary approach for planning to maintain the health of ecosystems; and
- Recognize risk or uncertainty and act upon the best available science and technology.

This plan is the beginning. It is open-ended and will be revised as experience is gained with EBA.

EBA and the NRCS Planning Process

EBA is a way of thinking about natural resource problems and opportunities. Hugh Hammond Bennett set forth conservation planning in NRCS to consider a broad range of resources. EBA calls for enhancing Bennett's basic approach to conservation planning. EBA will fundamentally change how NRCS recruits and trains personnel, develops technology, and works with clients. EBA will enhance the way NRCS and its clients perceive, approach, and carry out natural resource management. In all of its activities, NRCS will focus on helping clients to sustain and/or enhance ecosystems in harmony with social, cultural, and economic considerations.

To achieve this change in our approach: (1) We must develop practical ways of measuring EBA and identifying its value to NRCS and our customers. (2) We must recognize that the transition will take time. (3) We must fill voids in our expertise. (4) We must work closely with other agencies and groups. The result will be a unified natural resource management program that relies on partnerships for implementation.

NRCS is structured to manage individually legislated programs and activities as separate entities. Each program has its own objectives, rules, procedures, resource emphasis, time frame, and budget. EBA provides a way to coordinate these programs into one planning vehicle. EBA will also provide NRCS with opportunities for more effective partnering among those agencies charged with providing natural resource management and assistance on public and private lands.

NRCS will provide ecosystem-based assistance to all of our customers to help them improve ecosystem health, restore damaged ecosystems, and sustain natural resources. All

assistance will be based on ecological principles and will stress integrated management of soil, water, air, plants, and animals, including human considerations. Ecosystem-based assistance applies to all planning units, regardless of scale. All assistance, even that initiated by single-purpose objectives, will follow the ecosystem-based assistance concept by considering related concerns in the planning unit. NRCS will assess the interrelated effects of all its assistance on the resources within the planning unit and its interconnected systems.

Ecosystems are defined in space and time. In either dimension, sub-systems can be defined that address processes, inputs, and outputs. This ability to conceptually nest ecosystems within ecosystems offers tremendous flexibility. One convenient method of nesting is along defined hydrologic boundaries where ecosystems can be nested from sub-field to field to large watershed.

To effectively implement EBA, NRCS will need to consider functional boundaries that recognize socio-eco nomic, political, and legal constraints. Functional boundaries provide a framework for analyzing ecosystem conditions and delivering technical and financial assistance to our clients. The NRCS planning process encourages public involvement in identifying problems, evaluating the effects of alternative solutions, and implementing actions at the appropriate level.

ECOSYSTEM - BASED ASSISTANCE ACTION PLAN

Implementation of this action plan will fully integrate EBA into NRCS operations by December 1996. Building upon existing delivery mechanisms, the plan presents a focus and technical assistance process with the flexibility to provide EBA. The NRCS National Planning Policy, the National Planning Procedures Handbook, the Field Office Technical Guide, and other technical manuals and releases will provide the foundation for providing EBA. They will be revised over time.

Several leadership actions are needed to achieve implementation of an EBA approach. Some are short-term actions that can be accomplished or initiated immediately to set the stage for transition to EBA. Others are actions that need to be placed in motion to identify, develop, or firm-up the specific position, process, and steps to be implemented.

Successful implementation of EBA will require a fundamental change in thinking in NRCS and in the services we provide. It will require taking specific actions at all levels of the agency and across many disciplines. This action plan, developed by the Quality Improvement Team (QIT), outlines the areas of concern that NRCS must address. They are:

- Commitment;
- Policy, Regulations, and Laws;
- Technology;
- Measurement and Reporting; and

- Education.

Each area of concern includes a goal statement, desired condition, and recommended actions that include how, by whom, and when they should be carried out. This plan does not try to go into detail on all actions, but does identify areas where further actions need to be developed.

Action items are identified as critical (necessary for internal execution of EBA), departmental support (enhance EBA while strengthening TEAM USDA), or complementary (not critical, but enhance effectiveness of EBA).

COMMITMENT:

NRCS will implement ecosystem-based assistance for the management of natural resources through changes in organizational attitudes, structures, and processes.

To provide ecosystem-based assistance, NRCS will commit to provide for technology development and effective transfer processes. NRCS will foster an attitude that focuses on integrated effects and processes among the soil, water, air, plant, and animal resources as well as social, economic, and cultural considerations. The organizational structure and leadership orientation shall insure that assistance to clients for the use and treatment of individual management units is compatible with ecosystem objectives within the larger area.

NRCS will adopt an attitude that fosters the management and allocation of human and physical resources to implement EBA. This will require the following leadership actions:

1. Adopt an aggressive, pro-active, advocacy role for implementing EBA.
2. Incorporate EBA into all policies, procedures, guidelines, manuals, and handbooks as they are revised and into strategic plans, quality plans, plans of operations, and the budgeting and allocation process.
3. Ensure the proper diversity of skills to implement EBA.
4. Monitor and guide NRCS implementation of EBA.
5. Initiate a revised national training program that emphasizes EBA.
6. Develop and present ecosystem awareness training.
7. Develop a results-oriented partnership with the Forest Service (FS) in the spirit of TEAM USDA to establish the Department as the leader in EBA.
8. Support actions of other agencies, institutions, and groups in implementing EBA.
9. Support USDA activities by establishing coalitions including Federal, State, and local agencies and non-governmental organizations to develop and coordinate EBA.
10. Incorporate EBA into RCA analysis.

11. Consider EBA when evaluating lines of authority within NRCS to determine the most effective structure for providing assistance that emphasizes:

    - Communications
    - Coordination
    - Conservation systems
    - Issue areas
    - Flexibility
    - Innovation
    - Needs of conservation districts, State agencies, and other Federal agencies.

POLICY, REGULATION, AND LAW:

NRCS will develop an overall framework for policy, regulation, and law that promotes an ecosystem-based approach to assistance for the management of natural resources.

The success of EBA depends on policies, regulations, and laws that support ecosystem management through an interconnected set of programs and funding initiatives. This will require that we work with Congress as they examine their committee structure and legislative issues that affect ecosystem management. Legislation needs to focus on systems and integration of programs rather than single issues and initiatives. USDA cost-share and commodity programs should encourage multi-year efforts that support EBA. Field staff should provide the local view to help draft legislation, regulations, and policies. The EBA approach requires a flexible management philosophy that allows managers to be innovative and to take risks in carrying out programs that fit local needs and situations.

The following actions will help implement the overall framework needed to promote EBA:

1. Ensure that the General Manual, National Planning Procedures Handbook, and Field Office Technical Guide support EBA.

2. Identify and appoint additional technical liaisons to public interest groups, coalitions, and professional societies that have an interest in EBA.

3. Clarify capability to work with all appropriate agencies, institutions, and groups in utilizing their information and expertise to implement EBA.

4. Expand legislative contacts to identify needs of and provide USDA staff support for congressional committees and subcommittees in addition to Agriculture such as Merchant Marine and Fisheries, Energy and Natural Resources, and Environment and Public Works.

5. Support Department in review of existing authorities, regulations, and natural resource conditions; and propose policy legislation to support EBA.

TECHNOLOGY:

NRCS will develop, use, and adapt science-based tools to support ecosystem-based assistance.

Technology development transfer, application of new technology, and the hiring and training of staff to use the technology are critical to the adoption of new procedures and processes. Technology to identify biological, ecological, social, and economic indicators of ecosystem health are now being developed. We must support continued research into these processes while adapting new and existing technology for agency use.

Technology transfer involves: the development of application procedures and guidelines using current research; development of information systems to store necessary information, analyze it, and display it for the user; and the transfer of these procedures and knowledge to field staff. Demonstration projects will be used as both a training and public education tool. The application of new technology must consider the appropriate level of precision for the scale of analysis, provide information on the value added for management decisions, and use adaptive application techniques. Adaptive application requires the establishment of measurable goals, monitoring of effects, and alteration of conservation treatment to achieve goals. This recognizes that situations exist that require site specific applications rather than standard designs and management systems.

The following are actions necessary for building a technically sound foundation for ecosystem-based assistance:

1. Develop procedures and guidelines for EBA that:
    - Are science based;
    - Identify and utilize a technically current set of ecosystem health indicators that:
        - Are based on sound technology;
        - Emphasize biological, economic, and social factors;
        - Recognize short- and long-term changes;
        - Are recognized in the environmental and academic worlds; and
        - Are practical to attain.
    - Reflect interactions among associated biological, social, economic, and physical processes;
    - Are packaged in an easy-to-use format;
    - Allow for the variability of biological process data; Reflect current research and

technology;

- Ensure adequate soil surveys and soil interpretations;
- Recognize risk and uncertainty; and
- Recognize international accomplishments in technology.

2. Activate a technology development team to develop tools and information systems that:
    - Explain in easily understandable terms the effects and advantages of ecosystem management;
    - Result in user-friendly, knowledge-based, computer systems to facilitate ecosystem-based management planning;
    - Provide information on the value added from ecosystem-based assistance;
    - Maintain layers of geographically-based information for analysis and display.
    - Are decision oriented and lead staff through ecosystem-based assistance planning; and
    - Maintain the necessary data bases to store monitored information.
3. Acquire proper technical diversity to implement EBA.
4. Develop training, cross training, maintenance plans, and materials that:
    - Provide technically competent, technically diverse skills based on need;
    - Cover ecosystem concepts;
    - Develop proficiency in the application of ecosystem guidelines, procedures, and tools;
    - Include the complex interaction of ecosystem processes; Encourage an interdisciplinary approach; and
    - Explain how computer models can be used in decisionmaking.
5. Demonstrate the application of EBA to:
    - Help clients understand ecosystem-based technology,
    - Help in training staff,
    - Market ecosystem-based technology,
    - Show the value added through the ecosystem-based approach, and
    - Show adaptive application.

MEASUREMENT AND REPORTING:

NRCS will use key indicators that show results in terms of ecosystem health.

Traditionally, NRCS has reported progress in terms of practices applied. This does not provide the information needed to adequately monitor effects and ecosystem health.

Indicators should define what is different in the landscape or ecosystem in terms of the added value. They should define the capacity of the ecosystem and its relationship to human interaction. Indicators and results should be based on science to support decisions. Evaluation procedures should fit ecosystem-based management concepts. The following are actions that will improve measuring and reporting the health of an ecosystem while measuring our performance:

1. Integrate EBA indicators into the reporting system. Indicators are needed that:
    - Recognize changes in the landscape;
    - Recognize good management achieved by the avoidance of ecologically inappropriate actions;
    - Are locally adaptable;
    - Are real time (as changes occur, they are captured in the reporting system, data base, GIS, etc.);
    - Recognize and capture results that occur over time;
    - Allow innovation in monitoring ecosystem health;
    - Capture innovation and creativity rather than standard designs;
    - Measure outcomes or results as well as the inputs, be they preventive or remedial;
    - Utilize geographical information systems;
    - Link with other data bases; and
    - Are simple, friendly, and transparent to the field.
2. Use key ecosystem health indicators to measure performance.
3. Use ecosystem health indicators in developing and implementing a management control system that:
    - Shows accountability and defensibility of expenditure of funds,
    - Can show efficiency gains and losses,
    - Is simple to complete and transparent to the field, and

- Can measure productivity.

4. Focus on recognition that is:
    - Based on ecosystem health indicators,
    - Team work,
    - Good management achieved by the avoidance of ecologically inappropriate actions,
    - Holistic views, and
    - Innovation and creativity rather than standard designs and a one-size-fits-all approach.

EDUCATION:

NRCS will develop and implement a strategic communications plan to support ecosystem-based assistance for the management of natural resources.

A team, working with our conservation partners, will develop a strategic communications plan that identifies customers' needs and develops products and carries out a series of interrelated activities to meet those needs. Through this educational effort NRCS will:

1. Focus on supporting an ecosystem-based approach to providing assistance for the management of natural resources as opposed to a single resource approach.
2. Develop and implement a strategic communications plan to:
    - Gain understanding of and support for EBA among customers and NRCS employees at all levels;
    - Foster public and private partnerships in EBA initiatives, especially at the local level;
    - Provide guidance on including EBA in outreach efforts at the State level;
    - Show linkages with the agency's Water Management Action Plan and other strategic initiatives; and
    - Overcome barriers to implementing EBA.