

National
Ecosystem Based
Assistance Team

Report

Indianapolis, Indiana
February 14-16, 1995

TABLE OF CONTENTS

	<u>PAGE</u>
Introduction	
Team Charge	1
Possible Uses of Document	1
Team Goal	1
Team Comments	2
Resource Concerns/Expertise and Attributes/Skills Needed	
Soils	3-4
Water	4-6
Air	6-7
Plants	7-10
Animals	10-11
Human	12-14
List of Attributes/Skills Needed to Provide EBA	15
Manager's Guide to Selection of Skills/Disciplines for EBA	16-17
Manager's Matrix for Selecting Needed Disciplines	18
Team Membership	19

INTRODUCTION

TEAM CHARGE:

To describe as specifically as possible the desired skills, knowledge and abilities of the future Natural Resources Conservation Service field office in order to carry out ecosystem based assistance on the farm, ranch, watershed, or other level of detail.

SOME USES OF THIS DOCUMENT MAY BE TO:

- Design training sessions;
- Develop recruitment efforts;
- Influence college curriculum;
- Set up of new institutes/centers;
- Show others how comprehensive the Natural Resources Conservation Service is;
- Information for National Employment;
- Staffing;
- Help managers develop key job/skill needs.

TEAM GOAL:

To identify skills that Natural Resources Conservation Service field employees need to provide ecosystem based assistance.

The second part of the team goal was to develop a process for managers to use in determining skills needed to solve specific resource concerns. A model for this process follows on pages 16-18.

The team realizes that improvements can and will be made since we had only a few hours to get it to this point. A tremendous "Thank you" is given to the ES&P staff at the West National Technical Center for the initial work on the proposal.

Introduction (cont.)

As the team completed its deliberations the following general comments were summarized of previous discussions that are not included elsewhere in the report, but were deemed important:

1. More interdisciplinary teamwork must be practiced in the future.
2. It is important that we work at local, state, regional and national levels to partner with others as a way of getting help from them (and for us to help them with their objectives).
3. The Natural Resources Conservation Service needs new skills/attributes at levels higher than awareness.
4. We need to consider an internal skills assessment system to insure quality and we need to know individual skills in order to mesh with the matrix concept found later in this report.

After considerable "storming" the team decided to use the SWAPA+H model as the logical way to discuss and list expertise needs.

RESOURCE: SOIL

CONCERN/EXPERTISE

ATTRIBUTES*

CLASSIFICATION/DATABASE

Soil morphology
Soil correlation
Classification
Soil mapping
Geology/geomorphological properties

Soil taxonomist, geomorphologist, soil classifier, geologist, cartographer, digitizer, GIS specialist, soil scientist

SOIL BIOLOGY

Pests/diseases/plants
Soil microbiology
Soil organisms (earthworms, etc.)

Biologist, entomologist, botanist, range specialist, agronomist, nematologist, soil microbiologist

CHEMISTRY

Soil chemistry (nutrients and contaminants)
Bio-chemical properties
Fertility
Soil pollution
Chemical movement
Chemical breakdown process
Soil toxicity

Biochemist, geologist, nutrient specialist, pest specialist, chemist, soil specialist, agronomist, ecologist, hydrologist

SOIL INTERPRETATIONS

Basic soil services
Riparian
Forestland
Cropland
Productivity
Hydric soils
Plant/animal impacts
Urbanland
Rangeland
Soil composition (organic matter)
On site disposal
Field soil property identification

Soil scientist, soil chemist, forester, range specialist, urban conservationist, resource conservationist, agronomist, landscape architect, agricultural engineer, environmental engineer, botanist, soil mechanics engineer, ecologist

* **Attribute:** The skill, quality, trait, or discipline required to insure adequate ecosystem based assistance.

SOILS (CONT.)

CONCERN/EXPERTISE

ATTRIBUTES

SOIL PHYSICS (Water)

Soil as a filter (pesticides)
Hydrology (hydraulic properties)
Leaching
Structure
Soils drainage

Water quality specialist, pest management specialist, bio-chemist, geologist, hydrologist, soil physicist, drainage engineer, soil mechanics engineer

SOIL PHYSICS (Erosion Characteristics)

Soil strength
Erosion processes
Erosion prediction
Soil sustainability
Soil health
Erosion control

Microbiologist, soil scientist, resource conservationist, agricultural engineer, soil mechanics engineer

RESOURCE: WATER

WATER QUANTITY

PREDICTION ASSESSMENT

Water availability/quantity/supply
Hydrology/water cycle (water budget)
Quantity
Surface runoff prediction
Groundwater resource prediction (aquifer)

Hydrologist, hydro-geologist, water quality specialist, meteorologist/climatologist, GIS specialist

WATER MANAGEMENT

Drainage
Flooding/flood planning
Stream flow analysis
Irrigation/water management/scheduling
Hydraulics/inadequate outlet
Groundwater movement/subsurface flow analysis
Recreation
Regulations governing use
Water erosion control/urban erosion

Hydrologist, agricultural engineer, civil engineer, irrigation specialist, agronomist, recreation specialist, erosion control specialist, chemist

WATER (CONT.)

CONCERN/EXPERTISE

ATTRIBUTES

WATER QUALITY

Quality drinking water
Recreation
Salinity
Pesticides
High nitrates
Waste treatment/restoration
Turbidity
Nutrient enrichment/organics
Soil/water relationships
Nonpoint source pollution (controlling/
eliminating)
Water/animal relationships
Chemistry related to planned use
Sediment/transport
Monitoring
Pollutants in ecosystems
Groundwater quality
High sodium
Abandoned wells/groundwater pollution/well
head protection/groundwater quality

Interdisciplinary ecologist, water quality
specialist, chemist, pest management specialist,
agronomist, nutrient management specialist, soil
scientist, hydrologist, geologist (sedimentation),
soil chemist, environmental engineer,
geomorphologist, limnologist, range specialist,
toxicologist, coastal zone specialist, marsh
specialist

ASSESSMENT

Monitoring
Biological assessment (fish, water plants,
biological activity)
Aquatic insect ecosystem
Chemical analysis/water quality tests/toxicity/
spills
Water quality models

Environmental specialist, biologist, biochemist,
water ecologist, fisheries biologist, limnologist,
entomologist

AESTHETICS

Visual resource assessment
Recreation

Recreation specialist, landscape architect, project
manager, landscape ecologist

RESOURCE: AIR

CONCERN/EXPERTISE

ATTRIBUTES

TRANSPORT OF PARTICULATES

Dust (tillage/traffic)
Dust (wind erosion)
Urban contributing areas
Air-borne particles - ag.
Smoke management (prescribed burning)
Particulate carrying capacity
Wood smoke/chimney
PM-10 (mapping)/locate sources of pollution
Interpret data

Meteorologist/climatologist, agricultural engineer, soils specialist, chemist, environmental specialist, agronomist, agro-forester, forester

WIND EROSION

Wind erosion equation
Plants for wind erosion control
Erosion mechanism
Cultural practices on wind erosion prone land
Wind erosion control on non-ag land

Agronomist, botanist, soil specialist, agricultural engineer, forester, plant materials specialist, agro-forester, windbreak forester, resource conservationist, plant ecologist, meteorologist

ODOR

Odors from non-ag sources
Odors from agricultural sources

Meteorologist, agricultural engineer, animal scientist, agronomist, environmental engineer, chemist, animal waste specialist

AIR/PLANT RELATIONSHIPS

Effects of air on plant growth
Benefits of plants/water
Greenhouse effect

Ecologist, plant physiologist, agronomist, forester, meteorologist, climatologist, range specialist, botanist

AIR PHYSICS

Movement
Airshed identification
Composition
Temperature
Air drainage

Meteorologist, agronomist, agricultural engineer, environmental engineer

AIR (CONT.)

CONCERN/EXPERTISE	ATTRIBUTES
-------------------	------------

AIR CHEMISTRY

Transport of chemicals
Acid rain
Agricultural chemical drift
Pesticide application/ag chemicals
Pesticide volatilization

Environmental engineer, meteorologist, chemist, agronomist

LAWS/STANDARDS

Federal, state, local air quality regulations
PM-10
Visual impacts
Poor air quality

Environmental lawyer, community planner, recreation specialist, meteorologist, political scientist

RESOURCE: PLANTS

PHYSICAL CHARACTERISTICS

PHYSIOLOGY

Growth characteristics
Air/soil relationship

Botanist, agronomist, plant physiologist, ecologist, range specialist, forester

PLANT TAXONOMY

Identification
Identification of endangered species
Wetlands plant identification

Botanist, plant materials specialist, plant ecologist, forester, range specialist, aquatic botanist, plant taxonomist

USES

WATER QUALITY

Ability to change chemical pollutants
Plants for lagoon wastewater application
Plants for purification of water and soil
Plants for toxic chemical uptake
Riparian areas
Buffer areas/filters for streams, wetlands

Marsh specialist, agronomist, forester, biologist, biosystems engineer, chemist, interdisciplinary ecologist, grazing lands ecologist, hydrologist, wetland plant specialist, water quality specialist, plant materials specialist, range specialist, environmental engineer

PLANTS (CONT.)

CONCERN/EXPERTISE

ATTRIBUTES

WATER QUALITY (CONT.)

Filter strips
Plants for phosphorus uptake
Plants for constructed wetlands

EROSION CONTROL

Use for erosion control
Conservation tillage
Plants for erosion control
Residues
Plants for windbreaks

Agro-forester, agricultural engineer, soil scientist, agronomist, range specialist, resource conservationist, interdisciplinary ecologist, forester, plant materials specialist

WILDLIFE HABITAT

Endangered species (wildlife)
Habitat requirements
Plants for wildlife habitat improvement
Use for wildlife habitat

Wildlife biologist, ecologist, botanist, range specialist, limnologist, plant materials specialist, forester

FOOD AND FIBER

FORESTRY

Forestry plans (planting/harvesting)
Forest management
Fire management

Marketing specialist, botanist, forester, agronomist, range specialist, financial developer, plant materials specialist, resource conservationist, fire management specialist

AGRONOMY

Crop rotation for pest control
Crop rotation
Agronomic principles/practices
Agronomic value
Sustain world food supply
Pesticide application
Nutrient needs
Trapping of insects

Soil specialist, agronomist, toxicologist, entomologist, weed specialist, rural developer, pest specialist, nutrient specialist, biologist, botanist, agricultural economist, plant materials specialist, political scientist

PLANTS (CONT.)

CONCERN/EXPERTISE

ATTRIBUTES

GRAZING LANDS

Pasture/hayland/rangeland
Rangeland management
Use by animals (livestock/wildlife)
Proper management
Reseeding cropland, rangeland and other lands

Biologist, range conservationist, animal scientist, agronomist, forester, resource conservationist, plant materials specialist, grazing land specialist

OTHER CONSIDERATIONS

Plants to improve aesthetics
Plants for urban conservation
Global warming
Greenhouse effect (treatment)
Plant diversity
Noise barrier
Landscape diversity
Natural ecosystems
Fuel productivity
Biomass conversion
Biological control of plants
Markets
Source of construction materials
Seed production
Wetland restoration/enhancement
Riparian areas
Wildland management
Tourism development
Urban planting (beautification/edge effects)
Plants for pharmaceuticals
Use as solution to pollution problems
Economic use

Biologist, environmental engineer, weed specialist, plant ecologist, plant materials specialist, public affairs specialist, agronomist, chemist, toxicologist, marketing specialist, archaeologist, meteorologist, landscape ecologist, biosystems engineer, hydrologist, wildlife biologist, biochemist, economist, landscape architect, community planner, range scientist, wetland restoration specialist, riparian specialist, ecologist, recreation specialist, teacher, anthropologist, resource conservationist, botanist, forester

PLANT ECOLOGY ASSESSMENT

Plant diversity
Landscape diversity
Biodiversity
Natural ecosystems
Native plants

Ecologist, range specialist, botanist, landscape architect, resource conservationist, recreation specialist, forester, plant ecologist, agronomist, biologist, plant materials specialist

PLANTS (CONT.)

CONCERN/EXPERTISE

ATTRIBUTES

PLANT ECOLOGY ASSESSMENT (CONT.)

Range conditions
Plant functions in the ecosystem
Relationship to other SWAPA

PLANT MATERIALS

Plant materials program
Plant testing methods
Tolerance to chemicals
Cultural requirements
Plants for Wetlands Reserve Program
Knowledge of genetic engineering for plant development
New cultivars
Plant materials
Adaptation and suitability

Plant physicist, agronomist, biologist, botanist, entomologist, forester, landscape architect, pest management specialist, plant materials specialist, range specialist, agro-forester, resource conservationist

RESOURCE: ANIMALS

CONCERN/EXPERTISE

ATTRIBUTES

WILDLIFE

Habitat characteristics
Forage needs
Species identification
Stocking rates
Carrying capacity
Predators management
Disease
Endangered species identification
Preservation of endangered species
Control of deer
Wildlife over-population
Climatic requirements
Protection of wildlife and habitat
Physiology

Veterinarian, wildlife biologist, interdisciplinary biologist, forester, agronomist, range specialist, animal scientist, entomologist, biologist, botanist, resource conservationist, plant materials specialist

ANIMALS (CONT.)

CONCERN/EXPERTISE

ATTRIBUTES

DOMESTIC

GENERAL SKILLS

Forage feed/budget/requirements
Goats for weed control
Stocking rates
Grazing lands
Animal intake - grazing management
Water

Agricultural engineer, plant materials specialist
agronomist, resource conservationist, forester,
range specialist, animal scientist, ag educator,
biologist, weed specialist, grazing lands specialist

ANIMAL HUSBANDRY

Production practices
Poultry management
Disease
Breeds
Physiology
Economic use
Livestock production
Aquaculture

Range specialist, animal scientist, economist,
resource conservationist, fishery biologist,
aquaculture specialist

WASTE MANAGEMENT

Animal waste management
Economic value of wastes
Methane production
Confined livestock
Pollution producing capability
Dead animal composting
Nutrient management

Agronomist, biosystem engineer, animal scientist,
nutrient management specialist, agriculture waste
management specialist, agricultural economist,
grazing lands specialist, environmental engineer

ANIMAL ECOLOGY

Climatic requirements
Domestic/wildlife relationship
Biodiversity
Place in the food chain
Relationship to other SWAPA
Assess impact of action on
Proper management domestic/wildlife

Interdisciplinary ecologist, animal scientist,
forester, wildlife biologist, botanist, agronomist,
anthropologist, wildlife ecologist, range specialist

ANIMALS (CONT.)

CONCERN/EXPERTISE

ATTRIBUTES

ANIMAL ECOLOGY (CONT.)

Quantify populations
Effect on Riparian areas
Relationship with EBA - rangeland

RESOURCE: HUMANS

COMMUNICATION

Writing
Speaking
Teaching skills/techniques
Visual expression
Cooperation
Effective presentations/instructions skills
Training
Multi-media - database manager
Terminology
Motivation
Information
Public relations skills
Photography
Information and education - non ag. audiences

Public affairs specialist, organization manager, political scientist marketing specialist, community planner, resource planning specialist, technical writer, editor, creative writer, advertising specialist, teacher, facilitator, conflict resolution/facilitator, advertising specialist, public relations specialist, organizational manager, computer specialist

ECONOMICS

Cost/benefits - ag. practices
Economic analysis
Cost-returns
Marketing animal products
Fund raising
Putting value on resources
Hunting value
Budget

Agricultural economist, economist, marketing specialist, agronomist, grazing land specialist, biologist, range specialist, rural development specialist, financial manager, contract specialist

MANAGEMENT OF EBA PROCESS

Managing human resources
Managing programs

Human resources specialist, program analyst, EBA project manager, resource conservationist, management consultant

HUMANS (CONT.)

CONCERN/EXPERTISE

ATTRIBUTES

INTERPERSONAL SKILLS

People skills - working with people
Conflict resolution
Facilitator
Coalition building
Negotiating - win/win
Problem solving
Consensus building
Teambuilding
TQM
Leadership - interpersonal skills
Skills in partnering

Communication specialist, facilitator,
interpersonal skills specialist, conflict
management specialist, sociologist, psychologist,
marketing specialist, CRM specialist, community
planner, public affairs specialist, anthropologist

LEGISLATIVE/POLITICAL PROCESS

Understand the process
Congressional philosophies
Politics (local, state, national)
Negotiation - leeway on regulations

Legislative affairs specialist, arbitrator, political
affairs consultant, resource conservationist,
political scientist, lawyer, community planner

CITIZEN INPUT

Real public participation/input
Community involvement
Public surveying

Public affairs specialist, statistician, public
participation specialist, sociologist, community
planning specialist, facilitator, CRM specialist

INSTITUTIONS

Policies
Working with units of government
Public administration
Interagency cooperation
Laws, i.e., NEPA, WQA, ESA, PL-46, SOWA
Agency cooperation
Partnerships Interagency sharing (resources,
equipment, people)
Relations
Working with environmental groups

Organizational psychologist, CRM specialist,
legislative affairs specialist, political affairs
specialist, public administrator, sociologist,
USDA liaison, lawyer, community planner,
resource conservationist

HUMANS (CONT.)

CONCERN/EXPERTISE

ATTRIBUTES

MARKETING EBA

Sales specialist, marketing specialist, facilitator, public affairs specialist, communications specialist

PLANNING

Quality criteria
Technology transfer
FOCS
Watershed management, best management practices
Systems analysis
Case studies
Resource assessment
Persistence
Personal contacts
Photo interpretation
Technical guides
Use of tools (USLE, GIS, WEQ)
GIS soil interpretation/map compilation
Planning process
Community planning process
Incremental/economic evaluation of alternatives

Remote sensing specialist, GIS specialist, chemist, agronomist, geographer, economist, demographer, resource planning specialists, biosystem engineer, project/systems planner, resource conservationist, statistician, cartographic specialist, urban community planner, economist, rural development planner, archeologist, conflict resolution/facilitator, range specialist

SOCIOLOGY/UNDERSTANDING LOCAL PEOPLE

Understanding rural jobs
Human behavior (why people make the decisions they do)
Cultural assessment
Cultural differences and values
Religious values
Historical perspective
Demographics
Understanding local concerns
Ability to understand all sides
Working with diverse group
Human impacts
Archaeological impacts

Sociologist, limited resources specialist, psychologist, rural development specialist, archaeologist, demographer, public affairs specialist, cultural resources specialist, anthropologist, financial planner, ecologist, urban conservationist, socially disadvantaged client specialist

LIST OF ATTRIBUTES NEEDED TO PROVIDE EBA

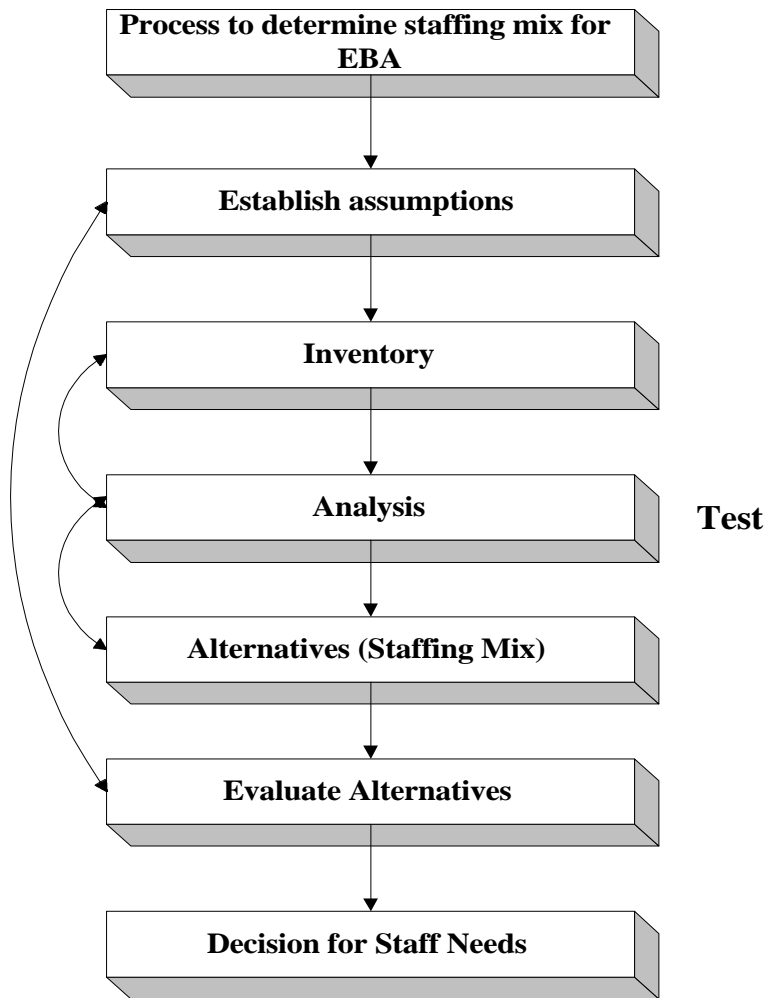
Accountant	Environmental lawyer	Project manager
Advertising specialist	Environmental specialist	Public administrator
Agricultural cultural specialist	Erosion control technician	Public affairs specialist
Agricultural economist	Facilitator	Public affairs consultant
Agricultural engineer	Financial developer/planner	Public participation specialist
Agricultural waste management specialist	Financial specialist	Public relations specialist
Agroforester	Fire management specialist	Psychologist
Agronomist	Fish biologist	Public relations specialist
Animal scientist	Fish specialist	Quality assurance specialist
Animal waste specialist	Forester	Range specialist
Anthropologist	Geographer	Recreation specialist
Aquaculture specialist	Geomorphologist	remote sensing specialist
Aquatic botanist	Geologist	Resource conservationist
Arbitrator	GIS specialist	Resource planner
Archaeologist	Grazing lands ecologist	Riparian area specialist
Attorney	Human resources specialist	Rural development specialist
Biochemist	Hydraulic engineer	Sales specialist
Biosystems engineer	Hydrogeologist	Socially disadvantaged client specialist
Biologist	Hydrologist	Sociologist
Botanist	Interdisciplinary ecologist	Soil chemist
Cartographer	Interpersonal communications specialist	Soil classifier
Chemist	Irrigation engineer	Soil mechanics engineer
Civil engineer	Irrigation specialist	Soil microbiologist
Climatologist	Landscape architect	Soil physicist
Coastal zone mgnt. specialist	Landscape ecologist	Soil scientist
Community planner	Legislative affairs specialist	Soil specialist
Computer operator	Limited resources specialist	Soil taxonomist
Computer specialist	Limnologist	Statistician
Conflict management specialist	Management consultant	Systems engineer
Construction engineer	Marketing specialist	Systems planner
Contract specialist	Marsh specialist	Teacher
Coordinated resource management specialist	Mediator	Technical writer
Creative writer	Meteorologist	Technicians
Cultural resources specialist	Microbiologist	Toxicologist
Database manager	Minister	Urban community planner
Demographer	Negotiator	Urban conservationist
Digitizer	Nematologist	USDA liaison
Drainage engineer	Nutrient management spec.	Veterinarian
EBA project manager	Organizational manager	Water ecologist
Ecologist	Pest management specialist	Water quality specialist
Economist	Plant ecologist	Weed specialist
Editor	Plant materials specialist	Wetland plant specialist
Employee development spec.	Plant physiologist	Wildlife biologist
Entomologist	Plant toxicologist	Wildlife specialist
Environmental engineer	Political scientist	Windbreak forester
	Program analyst	

MANAGER'S GUIDE TO SELECTION OF SKILLS AND DISCIPLINES FOR ECOSYSTEM BASED ASSISTANCE (EBA)

Ecosystem Based Assistance (EBA) will be the Natural Resources Conservation Service's way of doing business in the future. EBA is very similar to the total resource management concept described in the national Planning Procedures Handbook (NPPH). The Natural Resources Conservation Service will need to make some changes to fully implement EBA.

EBA will require a more balanced approach involving alternatives that provide more biological diversity and in some cases, less productivity. This will require a shift in the staffing mix (types of disciplines, attributes, skills) that Natural Resources Conservation Service field employees need to implement EBA.

The Manager's Guide is based on the process below.



PROCESS TO DETERMINE STAFFING MIX FOR EBA

ASSUMPTIONS

- EBA is implementable within Natural Resources Conservation Service using the total resource management concepts contained in policy and guidelines.
- EBA will be done at least on a whole farm unit basis and on a watershed basis.
- EBA includes SWAPA+H.
- EBA technology will be implemented at the field level.
- Field area = the planning and application area.

METHODS FOR DETERMINING STAFFING MIX

- Inventory.
- Resource concerns of the **field area (such as watershed, township, farm or ranch)**.
- Human characteristics of the **field area** (community profile).
- Availability of technical support outside the **field area**
 - within Natural Resources Conservation Service;
 - outside Natural Resources Conservation Service;
 - current partners;
 - potential partners.
- Stakeholders (vested interests).
- Present field area's capability (with Natural Resource Conservation Service) to implement EBA.
- Existing mandates, laws, regulations, and locally approved plans, etc.

The following matrix is an example of the way this Manager's Guide can be implemented. Resources (SWAPA+H) and concerns of the **field, or planning and application area**, are listed on the left - specific attributes across the top. A determination is made as to how important each attribute is to meeting the resource and concern (see matrix footnote). Those with the highest numerical score provide the manager with decision choices.

**MANAGER'S MATRIX FOR SELECTING NEEDED DISCIPLINES
NEEDED ATTRIBUTE***

RESOURCE	CONCERN	Agonomist	Soil Scientist	Ag. Engineer	Chemist	Pest Mgt. Spec.	Hydrologist	Resource Consv.	etc.	^	^	^	TOTAL (Example)
SOIL	Erosion: Sheet/Rill	3	2	1	0	0	0	3	^	^	^	^	120
	Wind	3	1	1	0	0	0	3	^	^	^	^	90
	Gully	3	2	3	0	0	1	2	^	^	^	^	75
	Health	2	3	0	1	1	0	1	^	^	^	^	115
	etc.	^	^	^	^	^	^	^	^	^	^	^	^
	^	^	^	^	^	^	^	^	^	^	^	^	^
	^	^	^	^	^	^	^	^	^	^	^	^	^
	^	^	^	^	^	^	^	^	^	^	^	^	^
WATER	Pesticides	^	^	^	^	^	^	^	^	^	^	^	^
	Salinity	^	^	^	^	^	^	^	^	^	^	^	^
	Seeps	^	^	^	^	^	^	^	^	^	^	^	^
	Flooding	^	^	^	^	^	^	^	^	^	^	^	^
	Irrigation	^	^	^	^	^	^	^	^	^	^	^	^
	etc.	^	^	^	^	^	^	^	^	^	^	^	^
	^	^	^	^	^	^	^	^	^	^	^	^	^
	^	^	^	^	^	^	^	^	^	^	^	^	^
TOTAL (Example)		125	82	5	3	4	1	120	^	^	^	^	^

*Attribute: The skill, trait, quality, or discipline required to insure adequate ecosystem based assistance.

3 = Essential
2 = Needed
1 = Desirable
0 = Not Needed

