

# SERDP's SEMP

## *Ecosystem Management Project*

**CS-1114**

Dr. Hal Balbach

U.S. Army Engineer Research  
and Development Center (ERDC)

Science Advisory Board

13 June 2001

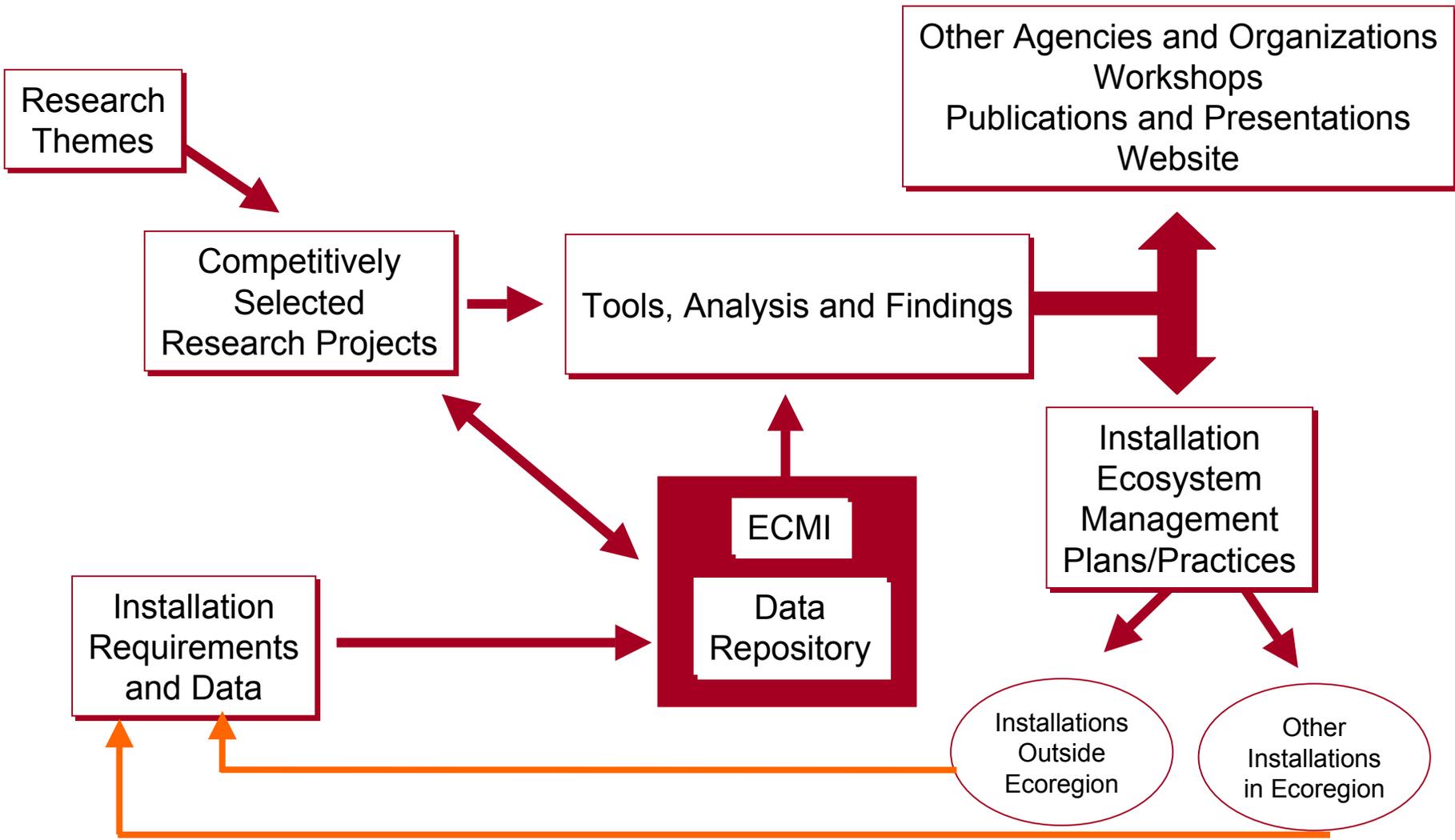
# What IS the Problem?

- **There is a need for military testing and training ranges with buffer zones (which are also used).**
- **There is a need to maintain those ranges for use in the future.**
- **The buffer zones have become protected areas with high biodiversity and high TES presence for which there is limited information as to ecological impact effects and sustainability.**
- **The problem for installation commanders then is how to test and train while protecting TES and sustaining the ranges.**

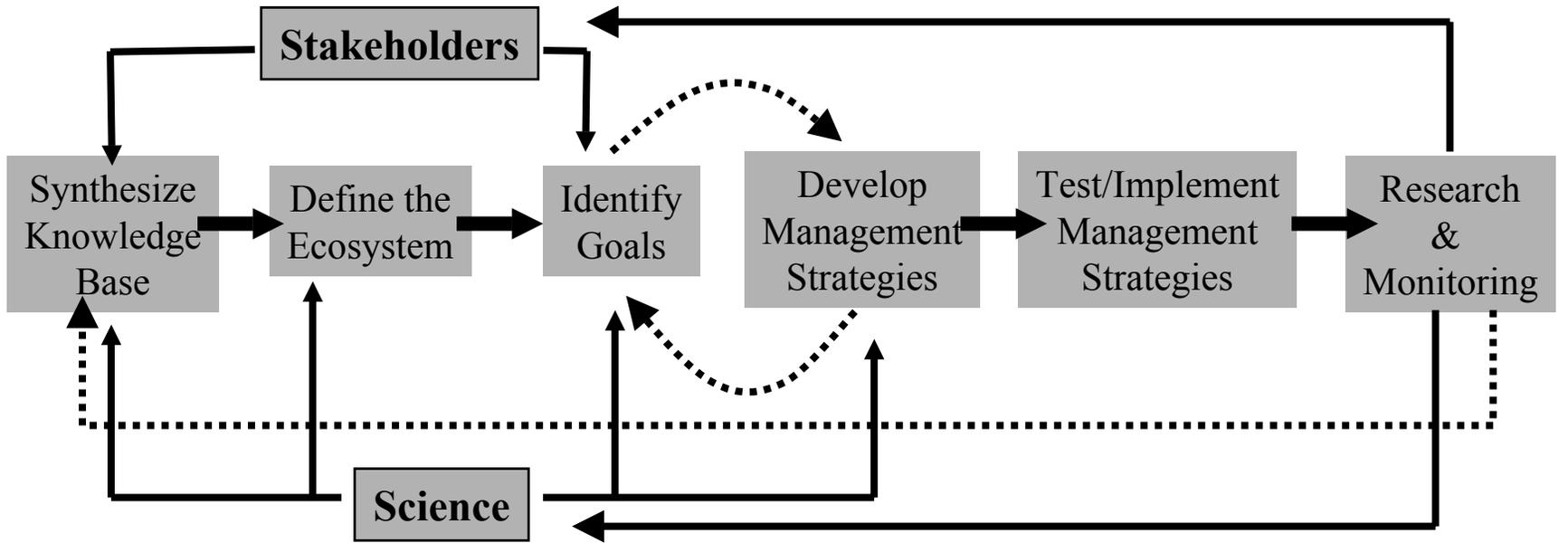
# Purpose of SEMP

- To Address Knowledge **Gaps Related to Ecosystem Management** on Military Lands
- To Design and Test a **Long-Term Baseline Monitoring Program** on DOD Lands
- To Provide Land Managers with Resources to Understand and Better Manage Their Installations for Long-Term Use - **Range Sustainability**

# Technical Approach



# Ecosystem Management Protocol



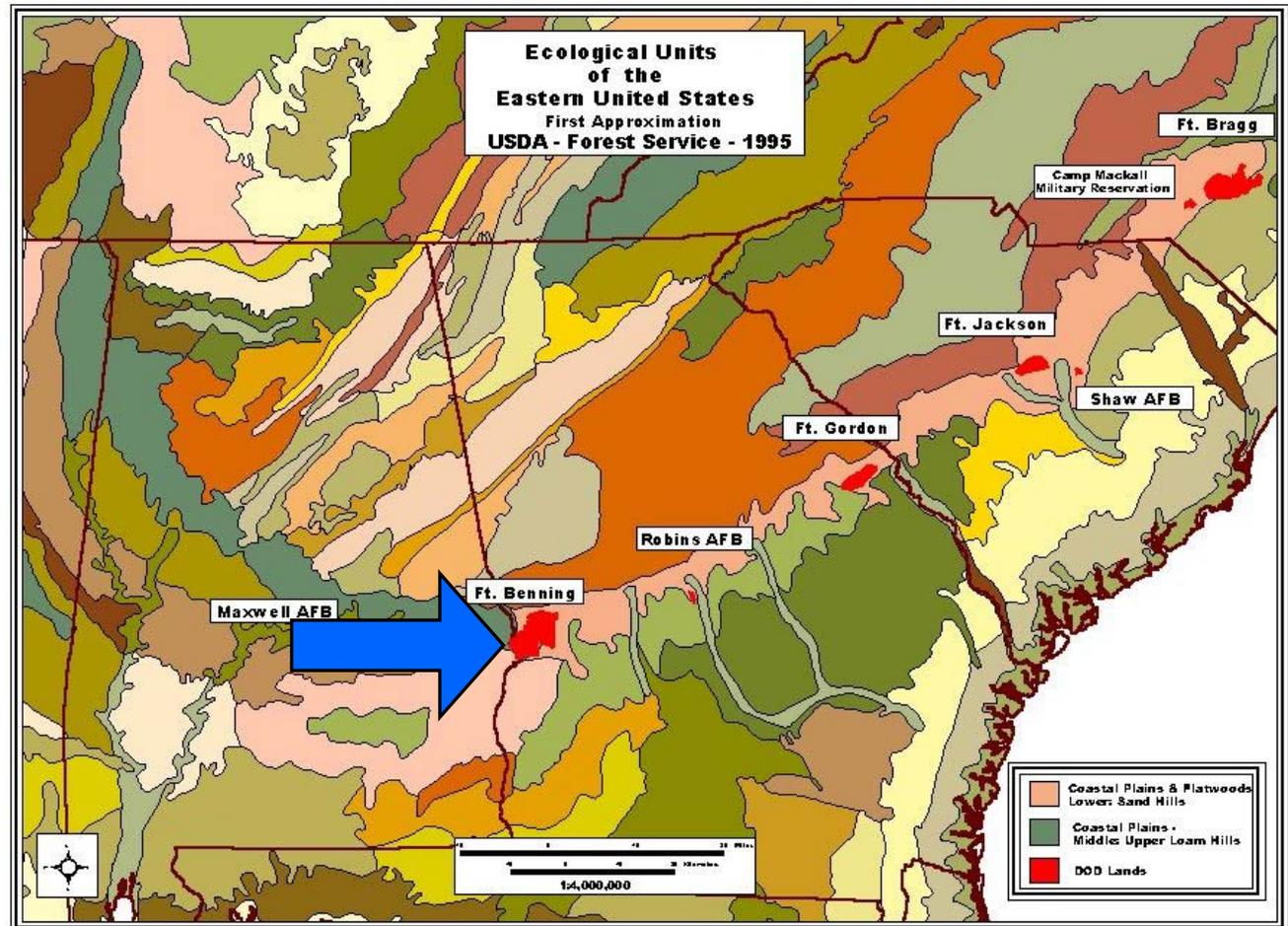
..... Management Action      — Knowledge & information flow

after J.A. Stanford and G.C. Poole. 1996. A Protocol for Ecosystem Management. Ecological Applications 6(3): 741-744.

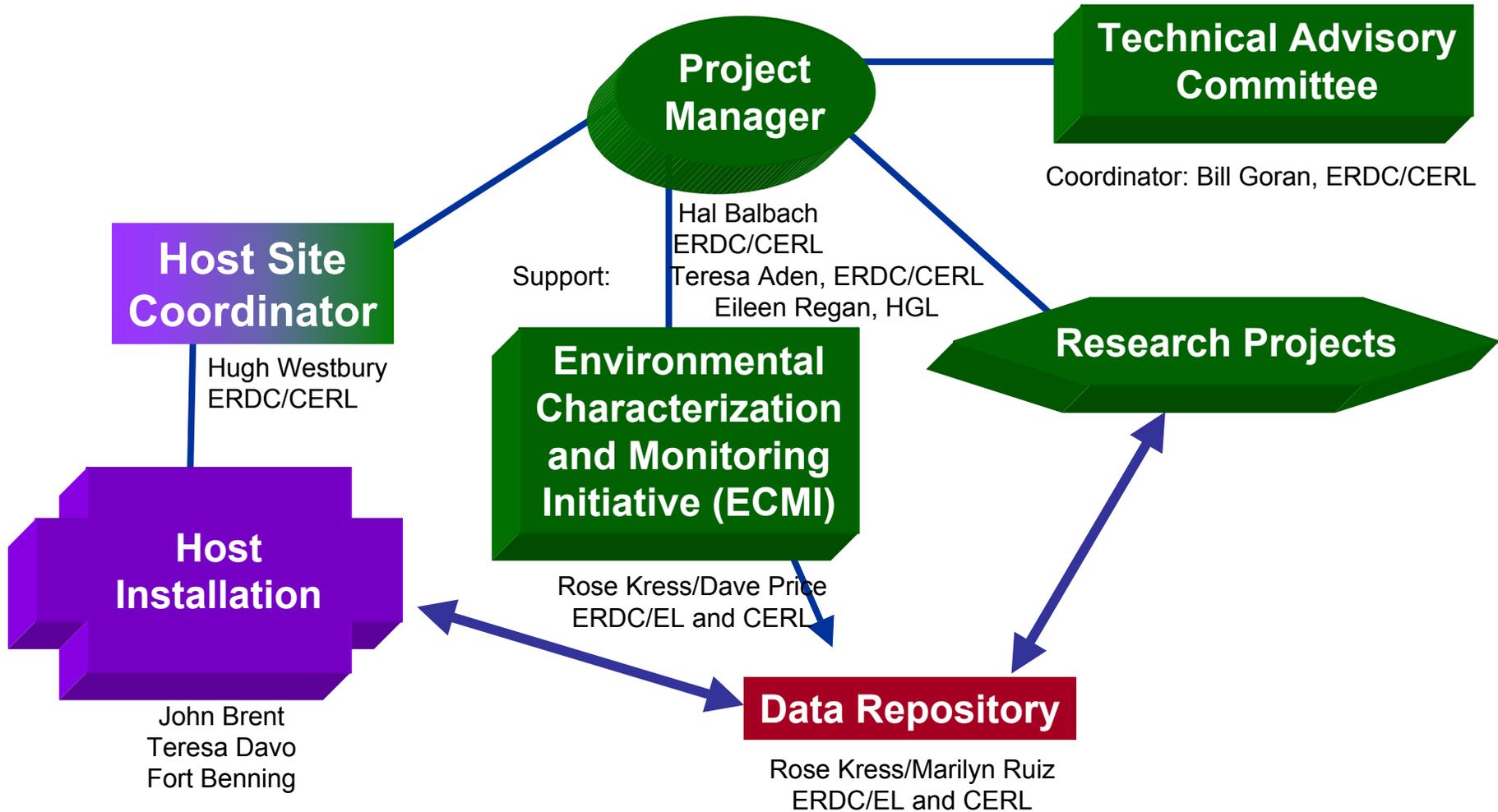
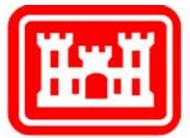
# Southeastern Ecosystem Focus Desired:

## Fort Benning Volunteered to Host the Project

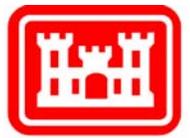
- Ft. Benning spans two major systems: Sand Hills and Coastal Plain
- Both support many DOD facilities
- Excellent opportunity to extend knowledge to other sites



# SEMP Organization Chart



# Technical Advisory Committee for SEMP



- Dr. Mary Barber, Ecological Society of America, SAB Member
- Mr. Peter Boice, Director of Conservation Programs, Office of the Deputy Undersecretary of Defense, Installations & Environment, TTAWG Member
- Dr. Neil Burns, US Environmental Protection Agency, Region 4
- Mr. George Carellas, Chief, So. Regional Env. Office, US Army Env Center
- Dr. Roger Dahlman, Program Manager, U.S. Department of Energy, TTAWG Member
- Dr. Mark Fenn, U.S. Department of Agriculture, Forest Service
- Dr. Penny Firth, National Science Foundation
- Dr. J. Whitfield Gibbons, Savannah River Ecology Lab and University of Georgia
- Mr. Bill Goran, Technical Director, ERDC/CERL, TAC Coordinator
- Dr. John Hall, The Nature Conservancy
- Mr. Richard McWhite, Natural Resources Chief, Eglin Air Force Base
- Dr. Doug Ripley, Headquarters, US Air Force, TTAWG Member
- Dr. James Spotila, Drexel University

# Ecosystem Characterization and Monitoring Initiative

**Rose Kress, David Price, Harold Balbach**  
**US Army Engineer Research & Development Center**

<p>PHASE I 1999 - 2001 <u>DESIGN</u></p>	<p>PHASE II 2002 - 2005 <u>ADAPT</u></p>	<p>PHASE III 2006 - <u>MAINTAIN</u></p>
<p>Extended design, implementation and documentation</p>	<p>Adaptation based on: a) initial monitoring results b) SEMP research results c) land management experience</p>	<p>Long-term maintenance and technology upgrades</p>

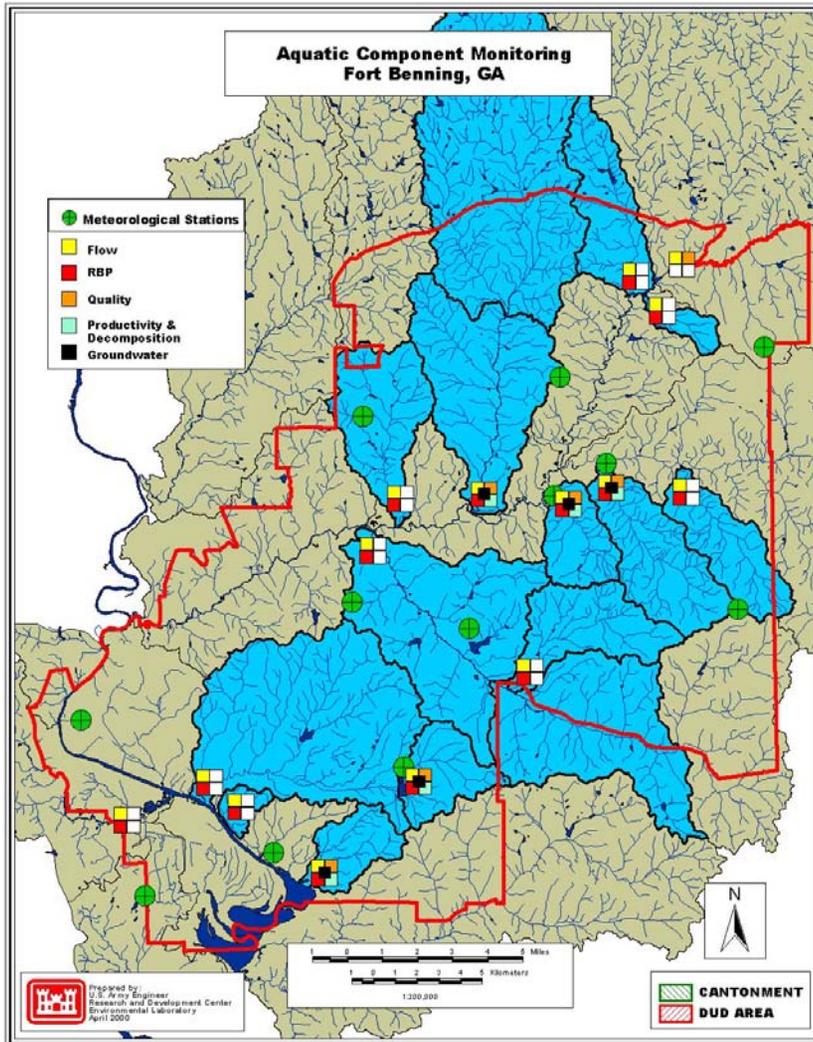
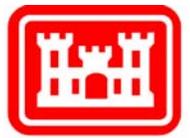
**Objectives:** TO: Characterize the long-term spatial and temporal dynamics of key ecosystem properties and processes

TO: Conduct baseline ecosystem monitoring in support of SEMP research

TO: Contribute to host site integrated monitoring plan at the ecosystem level

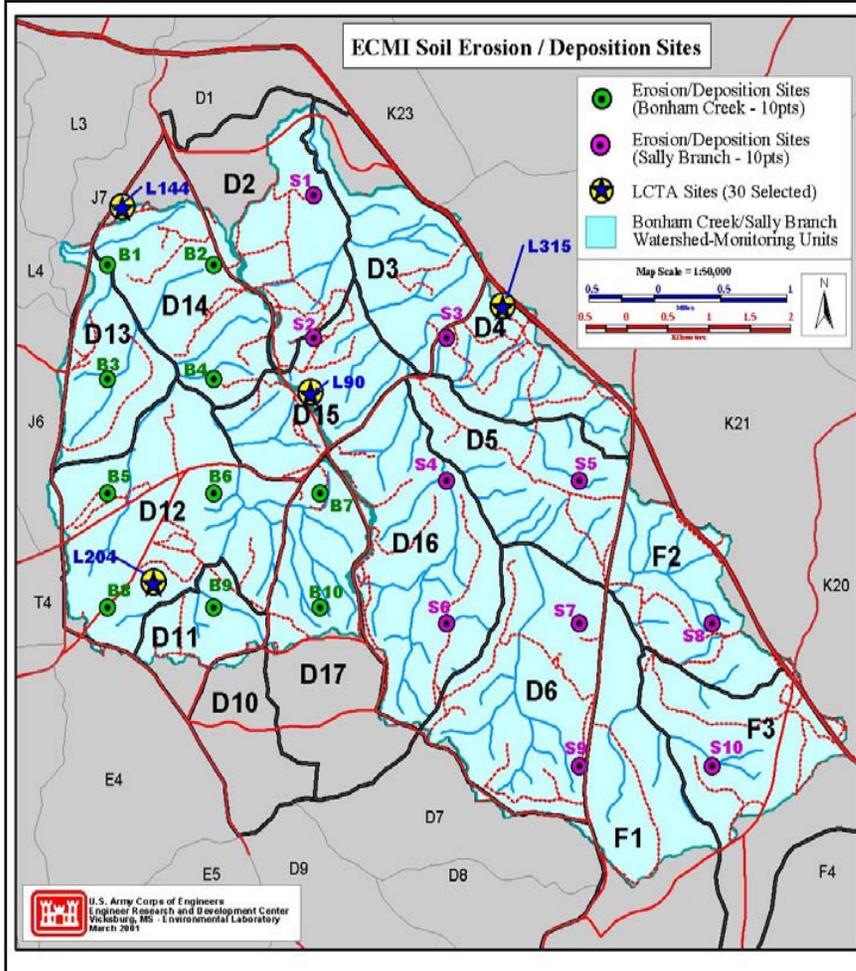
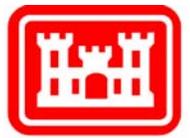
TO: Develop long-term ecological data set

# Aquatic Component Status



- Meteorology
  - Status:* 10 stations operational
- Surface flow/quality
  - Status:* quality can not be monitored until stream flow reaches 50cm depth; flow is being monitored at six sites
- Aquatic macros
  - Status:* characterization completed at 9 sites
- Aquatic prod/decomp
  - Status:* **characterization completed at 7 sites**
- Ground water
  - Status:* 4 wells drilled 30-31 May

# Terrestrial - Ground



**ECMI Plot Locations  
 Soil Erosion and Deposition  
 Fort Benning, GA**

Plot ID	Easting	Northing
S1	84.7380	32.4314
S2	84.7383	32.4179
S3	84.7224	32.4176
S4	84.7227	32.4041
S5	84.7068	32.4038
S6	84.7230	32.3906
S7	84.7071	32.3903
S8	84.6912	32.3900
S9	84.7074	32.3767
S10	84.6915	32.3764
B1	84.7629	32.4252
B2	84.7502	32.4250
B3	84.7632	32.4144
B4	84.7504	32.4142
B5	84.7634	32.4036
B6	84.7507	32.4034
B7	84.7379	32.4031
B8	84.7637	32.3928
B9	84.7510	32.3925
B10	84.7382	32.3923
L315 (L6)	84.7156	32.4185
144 (L7)	84.7581	32.3932
L204 (L8)	84.7610	32.4288
L90 (L9)	84.7389	32.4108

• Erosion/deposition

–**Status:** sites constructed, high precision horizontal and vertical GPS control network developed, and ground surface profiles developed. Re-sampling of ground profiles will occur in Sep/Oct 01.

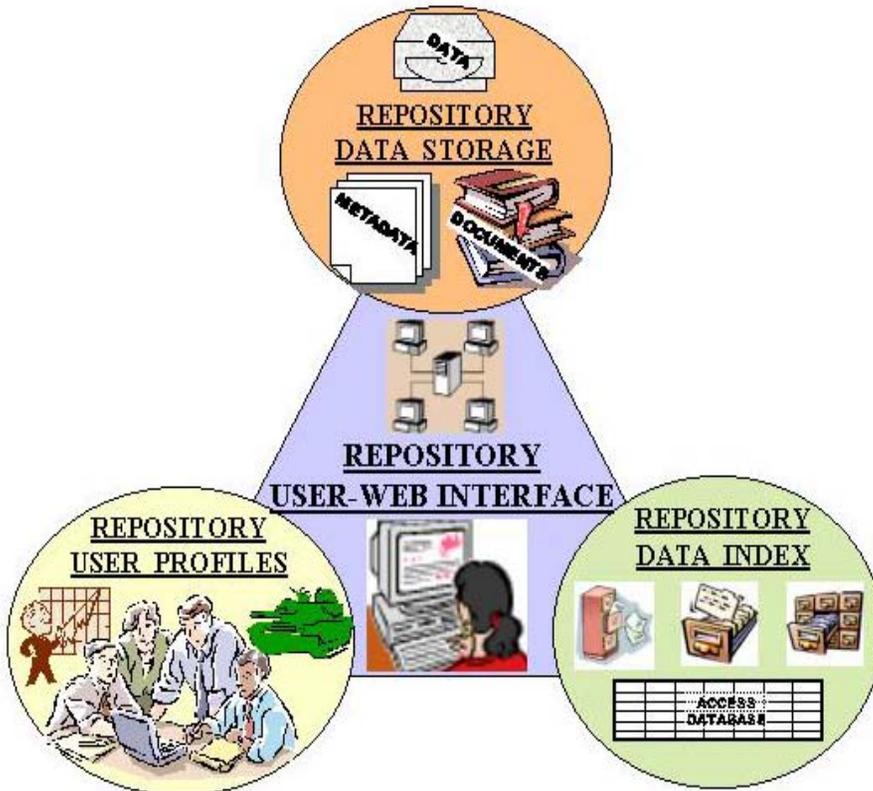
• Woody productivity

–**Status:** protocol established in conjunction with Fort Benning Forest Inventory

# SEMP Data Repository

Rose Kress, Marilyn Ruiz, Harold Balbach

US Army Engineer Research & Development Center



## •Current Status

–Phase III development including QAQC complete Dec 2000

## •Development Schedule

–Maintenance in 2001

–Possible modernization and improvements based on user input in 2002



# SEMP Research Projects Responding to “Indicators” SON



US Army Corps  
of Engineers.



**Dr. W. DeBusk**

**Determination of Indicators of  
Ecological Change**



**Dr. T. Krzysik**

**Development of Ecological Indicator  
Guilds for Land Management**



**Dr. V. Dale**

**Indicators of Ecological Change**

# SEMP Research Projects Responding to “Thresholds” SON



**Mr. C. Garten, Jr.**

**Disturbance of Soil Organic Matter and  
Nitrogen Dynamics: Implications for  
Soil and Water Quality**



**The University of Georgia**

Savannah River Ecology Laboratory

**Dr. B. Collins**

**Thresholds of Disturbance: Land  
Management Effects on Vegetation  
and Nitrogen Dynamics**

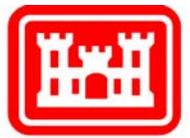
# Status of SEMP Research

- **Three “Indicators” projects completing second year of study**
- **Two “Thresholds” projects completing first full year of study**
- **Research teams developing better understanding of local ecosystem processes and variations**
- **Integration of knowledge across teams has started through research coordination workshops**
- **Adaptive Management analysis of Ft. Benning procedures initiated**
- **Tech transfer and regional cooperation initiated**

# SEMP Plans for FY 2002

- **Further develop installation environmental management relationships – “Adaptive Management”**
- **Expand tech transfer activities**

# SEMP Calendar FY2002



OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
						TTAWG IPR		SAB Briefing			
			Adaptive Mgmt Study			Installation Land Mgmt Tasks Evaluated			Study Results to TAC	TAC SON Recommendations	
	TAC Meeting					TAC Meeting					
SEMP Newsletter	Research Coord Meeting					Research Coord Meeting		SEMP Newsletter			
Agronomy Society Land Mgmt Sessions	SERDP ESTCP Symposium				Military Fish and Wildlife Meetings/ Session					Ecological Society of America Meeting/ Session	
		Research Results Reported			Research Results Reported			Research Results Reported			Research Results Reported
		FY01Annual Report	Repository Plan and Approach								

- SAB and TTAWG Briefings
- SON Activities
- TAC Activities
- Communication Notes and Workshops
- Scientific Meetings and Exchange
- Research Results Reported
- Publications/Reports