MACH

MANAGEMENT OF AQUATIC ECOSYSTEMS THROUGH COMMUNITY HUSBANDRY

Supported by USAID

Working Document # 3

Overview of Baseline and Monitoring Programs

April, 1999

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MANAGEMENT OF AQUATIC ECOSYSTEMS

THROUGH COMMUNITY HUSBANDRY

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OVERVIEW OF BASELINE AND MONITORING PROGRAMS

Goal: ↑ Fish consumption and quality of life (income) of poor fisherfolk

Objective: ↑ Fish through community ecosystem management and habitat restoration

Given:

Dry Season Habitat = river, beel, hoar, khal, pond, kum, pagar/kata

Wet Season Habitat = floodplain depth strata

Dysfunctional ecosystem = poor land/water management → ecological fragmentation → social fragmentation } resource competition

Functional ecosystem = good land/water management → resource connectivity → sustainable use } social cohesion

Demonstration Hypothesis:

↑ Fish = ↑ Habitat + ↑ Management ⇒ ↑Consumption + Income

↑ Habitat = ↑ Water ↑ Connectivity ↓ Sedimentation ↑ Quality

↑ Management = ↑ Regulation ↑ Awareness ↑ Land/Water Use ↑ Organization

↑ Habitat + Management = ↑ Biodiversity

↑ Biodiversity = ↑ Resilience ↑ Sustainability

DUAL FLOODPLAIN DEMONSTRATION

Hail Hoar – closed system

Kalikore – open system

PURPOSE OF MONITORING

1. **Track trends toward established targets**

   A. Trends at Floodplain Scale

   B. Trends at Site Scale

   C. Trends of Biological-Physical-Social Targets - Simultaneously

2. **Adaptive Management**

   "Learn as we go and apply what we learn"

HAIL HOAR

Discrete Watershed

Himialyian Piedmont
Highland Catchment
Sump
North Flow
Dry Season Inflow/Outflow
Wet Season Inflow/Outflow

Interventions

Restoration	**Management**
↑ Flown from Choars	↓ Beel De-watering
↑ Hoar water level	↓ Fishing Pressure
↓ Sedimentation (Chills filled)	↓ Number of gill nets/jal seines
↑ Biodiversity (catfish/shad)	↑ Dry Season Alternative Income (women)
↑ Connnect Gopla to Kushiara	↑ Resource management
↓ Fish Disease (epizotic ulcers)	↑ Empowerment

KALIAKAIR

Diffuse Watershed

Typical Floodplain

Distributary Inflow

Focus Area

Interventions

Restoration

↑ Flows/Connectivity: River-Khals-Beels

↑ Beel water level

↑ Biodiversity

Management

↓ Beel De-watering

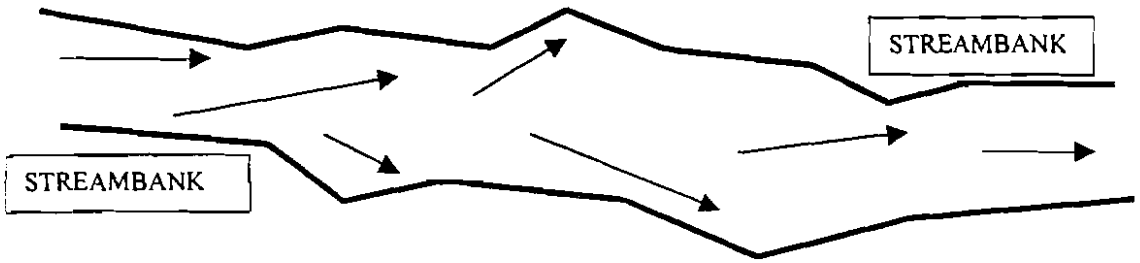
↑ Improve kum Management

↑ Alternative Income

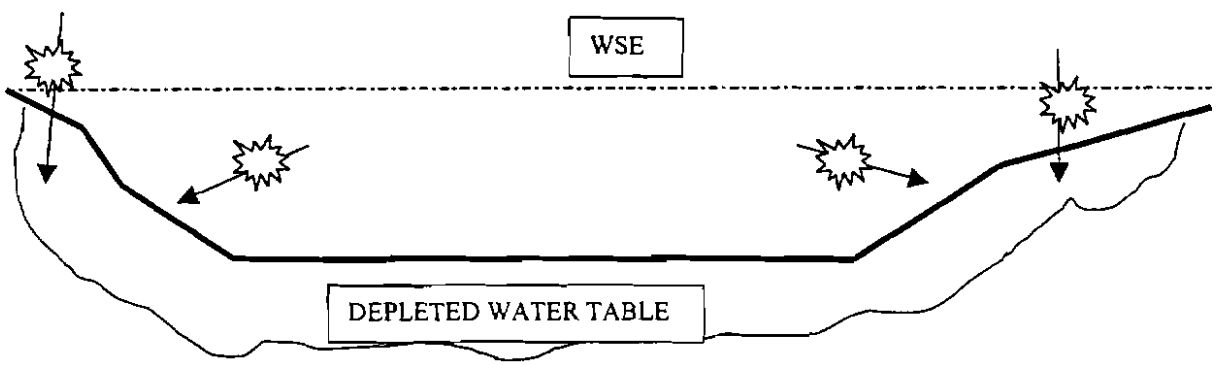
↑ Resource management

DEVEGETATED CHOAR

PLAN VIEW



CROSS SECTION VIEW

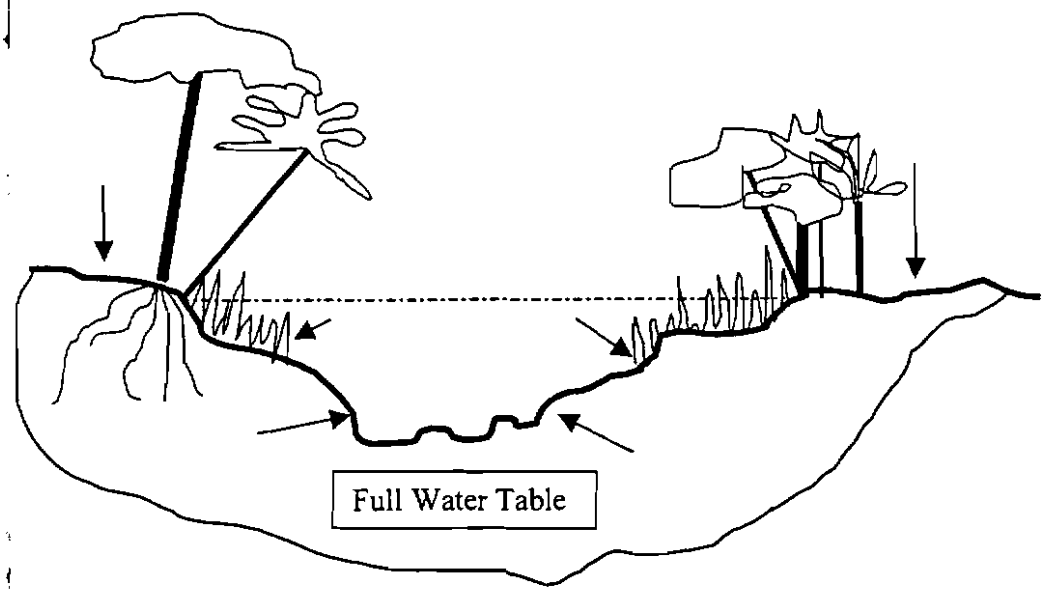


- Extreme high flow velocities without vegetation drag
- Increasing erosion by high energy longitudinal discharge
- No flow retention by vegetation to allow lateral water table recharge
- Short retention time and compacted soil retards surface water infiltration
- Widened channel, laid-back banks increases evaporation and erosional area
- Lack of canopy increases water temperature and evaporation
- Decreased dry season flow – quantity and duration
- Habitat is uniform, lacking complexity and diversity

NET EFFECT = ↑ SEDIMENTATION ↓ DISCHARGE

VEGETATED CHOAR

CROSS SECTION VIEW

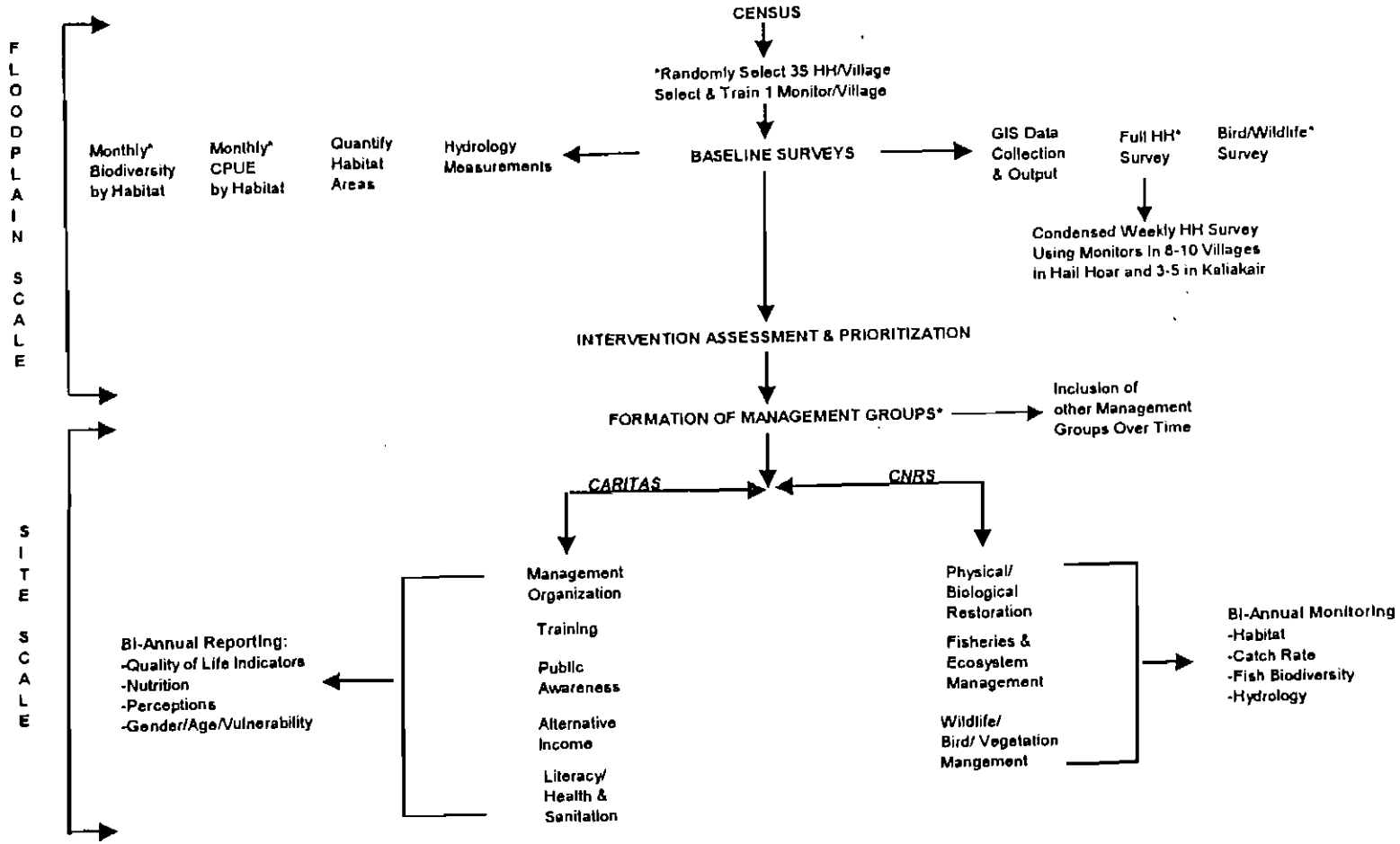


PLAN VIEW

- Vegetation holds bank, reduces velocities and erosion
- Sediments are vorticed up onto floodplain and deposited in place
- Water table is recharged surficially, laterally, and longitudinally
- Short retention time and compacted soil retards surface water infiltration
- Channel narrows decreasing evaporation and erosional area
- Vegetation canopy decreases water temperature and evaporation
- Increased dry season flow – quantity and duration
- Habitat is exhibits complexity and diversity

NET EFFECT = ↓ SEDIMENTATION ↑ DISCHARGE

MACH MONITORING FRAMEWORK



*Fisherfolk, poor, and subsistance fishing households will be sorted from the total census; 35 households in each village will be randomly selected for the baseline survey
*Monthly CPUE and Biodiversity will generally include 3 river, 3 beel, 3 khal sites in each flood plain for gillnet, seines, traps, lift nets, etc.-actual sites and gears to be determined
*Full Household Survey during the baseline will include 35 households in all villages
*Bird surveys require seasonal census and staff will be augmented with volunteers
*It is anticipated that 70 management groups will be formed in Hail Hoar and 30 in Kaliakair

SOCIAL AND CULTURAL FACTORS AND ISSUES

- EXISTING SOCIAL HIERARCHY – KEY STAKEHOLDERS ROLES
- LOCAL KNOWLEDGE OF AND ATTITUDES TOWARD RESOURCE MANAGEMENT
- PROBLEMS AND CONSTRAINTS INHERENT IN FLOODPLAIN ECOSYSTEM
- LIVELIHOOD DEPENDENCE OF LOCAL COMMUNITIES ON FLOODPLAIN RESOURCES
- POSSIBLE INTERVENTIONS TO ENHANCE COMMUNITY QUALITY OF LIFE, WELFARE – TO INCLUDE LOCAL SOLUTIONS FOR CONSERVATION AND MANAGEMENT OF RESOURCES
- POSSIBLE ACTION PLANS FOR IMPLEMENTING INTERVENTIONS AND MONITORING
- POTENTIAL FOR LOCAL INSTITUTIONAL CAPACITY BUILDING TOWARD BETTER LOCAL MANAGEMENT OF RESOURCES

BASIC FRAMEWORK FOR HOUSEHOLD SURVEY DATA COLLECTION AND ANALYSIS – BUILDING BLOCKS

LEVELS

1. GENDER

2. AGE

3. COMMUNITY

4. HOUSEHOLD

5. INCOME UNIT (OR WORK UNIT/PRODUCTION UNIT)

QUALITY OF LIFE INDICATORS TO BE MONITORED

- BENEFICIARY/STAKEHOLDER GROUPS AND COMMUNITIES – HOW THE STRUCTURE FUNCTIONS AND HOW THAT STRUCTURE IMPACTS HOUSEHOLDS AND THE MANAGEMENT OF RESOURCES – CHANGES IN

- ECONOMIC FACTORS AFFECTING STAKEHOLDERS – TO INCLUDE NUTRITIONAL DATA – CHANGES IN

- ACCESS AND OWNERSHIP IN THE PROJECT AREAS – CHANGES IN

- LABOR/PRODUCTION GROUPS – USE OF AND DEPENDENCE UPON

- NATURAL RESOURCES IN PROJECT AREA – CHANGES IN

- INSTITUTIONS AND DECISION-MAKING PATTERNS – CHANGES IN

- HISTORY AND CHANGE IN BENEFICIARY COMMUNITIES – PARTICULARLY CHANGES AS A RESULT ON PROJECT INTERVENTIONS THAT AFFECT QUALITY OF LIFE.

- BELIEFS, PERCEPTIONS, KNOWLEDGE, TRADITIONS, AND SKILLS – CHANGES IN

WE WANT TO DEMONSTRATE THAT AS A RESULT OF PROJECT INTERVENTIONS THE LOCAL COMMUNITIES AND BENEFICIARIES CAN HAVE:

- INCREASED SOCIAL, ECONOMIC, AND CULTURAL SECURITY
- REPORT LESS VULNERABILITY TO STRESSFUL CONDITIONS
- FAMILY AND COMMUNITY IS MORE STABLE
- FUTURE CAN BE PREDICTED AND RELIED UPON WITH MORE CERTAINTY
- OPPORTUNITIES FOR CHILDREN'S LIVES ARE AVAILABLE AND ACCESSIBLE
- FAMILY AND COMMUNITY IS HEALTHIER
- BELIEFS AND ATTITUDES ABOUT THE PRESENT AND THE FUTURE ARE MORE POSITIVE
- KNOWLEDGE AND SKILLS TO SUSTAIN COMMUNITIES AND HOUSEHOLDS BY MANAGING RESOURCES IS IMPROVED
- ACCESS TO RESOURCES AND EXPERTISE TO ADAPTIVELY MANAGE RESOURCES HAS IMPROVED
- CONFLICTS AND PROBLEMS HAVE LESSENED