USAID
FROM THE AMERICAN PEOPLE

8. ENVIRONMENTAL MITIGATION AND MONITORING

GLOBAL ENVIRONMENTAL
MANAGEMENT SUPPORT

PRINCIPLES OF MITIGATION AND MONITORING

Learning Outcomes:

1. Understand the relationship between mitigation and monitoring
2. Understand the principles of monitoring logistics
3. Be familiar with the requirements of an EMMP

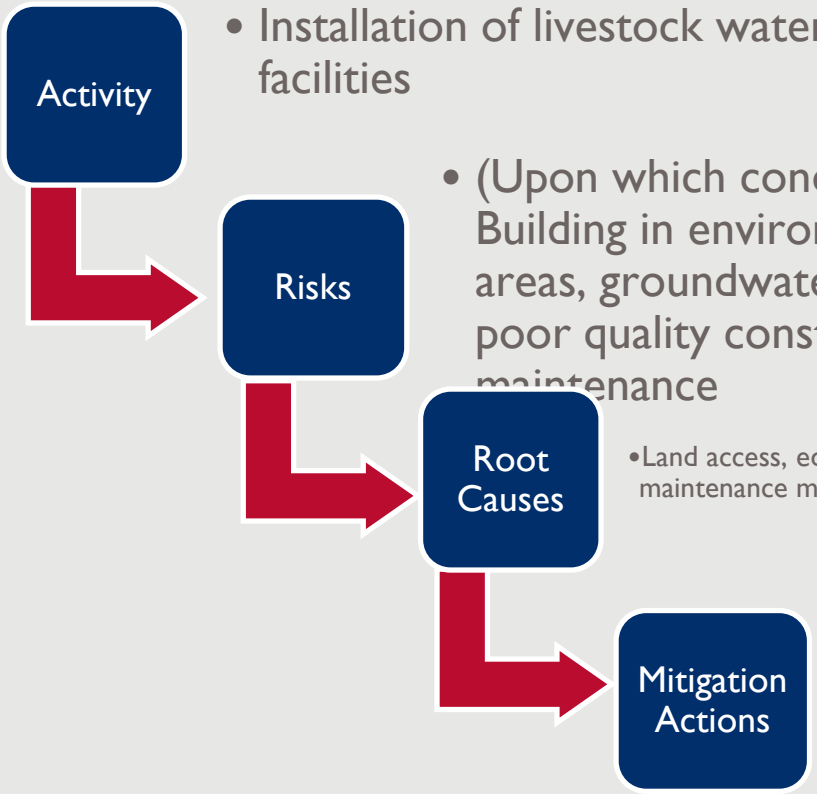
DEFINITIONS

- Mitigation is the implementation of measures designed to eliminate, reduce, or offset the undesirable effects of project activities on the environment.
- Monitoring is observation and measurement of environmental activities to determine if your mitigation measures are:
  - Being implemented
  - Sufficient and effective
- An Environmental Mitigation and Monitoring Plan (EMMP) is a document that outlines mitigation measures and monitoring procedures for project activities

REMEMBER. . .

- No activities may be implemented without approved Regulation 216 environmental documentation.
- Any resulting mitigation and monitoring conditions are written into contract instruments.
- AORs/CORs are required to assure implementation of IEE/Environmental Assessment conditions.

TRANSLATING CONDITIONS INTO MITIGATION MEASURES



- Installation of livestock watering facilities

- (Upon which conditions are based) Building in environmentally sensitive areas, groundwater contamination, poor quality construction, lack of maintenance

- Land access, education on relevant topics, maintenance materials and labor

- Follow water quality standards, exclude from protected areas, design best practices in siting, community training

MITIGATION TECHNIQUES

Consider altering or adding:

- Siting
- Design elements
- Operating practice
- Remediation or rehabilitation methods

EXAMPLE: WATER SUPPLY

ENVIRONMENTAL MONITORING: TWO ESSENTIAL PIECES

1. Determining whether mitigation is being implemented as required

2. Determining whether mitigation is working to mitigate the impacts

! Environmental monitoring should be a normal part of project monitoring and evaluation

HOW TO MONITOR

1. **Determining whether mitigation is being implemented as required**
   - This includes quantifying mitigation:
     - How many staff trained?
     - How many trees planted?
   - There are two basic ways to get the information required:
     - Paper reports & field inspection

For example…

MONITORING: STEP I
VERIFY MITIGATION MEASURES ARE IN PLACE

Mitigation measure

Clinic staff shall be trained to segregate and properly incinerate infectious waste

Two mitigation implementation indicators

Desk assessment

Clinics are asked to report:

1. Percentage of staff trained
2. Spot inspections of waste disposal locations carried out
3. Result of spot inspections

Field inspection

Shows waste is segregated at A, but not incinerated at B

A

B

MONITORING, STEP 2: VERIFY MITIGATION MEASURES ARE WORKING

2. Determining whether mitigation is working

Requires systematic observation of key environmental conditions

(1) that correspond to impacts & mitigation measures and/or

(2) upon which the project depends for its success

Example: a road project may lead to stream sedimentation. **Stream turbidity** is monitored.

Example: A water supply project depends on clean source water. **Source water quality** is monitored.

MONITORING ENVIRONMENTAL CONDITIONS

Systematic observation
of key environmental conditions
requires

systematically choosing and
assessing
environmental indicators

**which
are**

Signals of/proxies for

- **Environmental health**
- **Ecosystem function**
- **Community well-being**

SIMPLE INDICATORS

Measuring erosion

Topsoil loss from slopes upstream in the watershed **(top)** is assessed with a visual turbidity monitor **(bottom).**

Surface contamination by sewage

Visual inspection behind the latrine **(top)** reveals a leaking septic tank **(bottom).**

What are the limitations of this indicator?

SIMPLE INDICATORS

- **Observing drought**

Damaged crops **(top)** are accompanied by water shortages in wells and water bodies **(bottom).**

SIMPLE INDICATORS

SOIL DEPLETION
Visual inspections show fertility gradients within terraces. (Dark green cover indicates healthy soil; yellow cover indicates depletion)

GROUNDWATER LEVELS
Are measured at shallow wells with a rope and bucket.

Choose the simplest indicator that meets your needs!

COMPLEX MONITORING

- **Sometimes monitoring can be more complicated.**
- Some common strategies for complex monitoring:

Do research to obtain good baseline data

Monitor the actual project, plus a similar non-project area (control)

Monitor at multiple stations/ sampling locations

All are intended to help distinguish impacts from NORMAL VARIABILITY and other factors

CONSIDERATIONS FOR MONITORING

INDICATORS

- Intended outcome of the mitigation measure?

DATA SOURCE

- Are there multiple locations involved?

INTERVAL

- In what project phase does it occur?
- Is it an ongoing action?

COST

- What kinds of techniques will be used and what expertise is needed?

PLANNING AND SPECIFYING MITIGATION AND MONITORING: THE EMMP

- **TRANSLATES** IEE conditions into specific mitigation measures to implement IEE/EA conditions
- **SETS OUT** indicators/criteria for monitoring implementation & effectiveness of mitigation
- **ESTABLISHES** timing & responsible parties
- **PRESENTED** often in a table format. Formats are usually flexible but can be specified by the IEE.

Climate variability and change can undermine project progress and increase risk, therefore must be considered when developing an EMMP.

EMMP FORMATS

- Format is usually flexible, sometimes specified by the IEE (varies by Bureau), but must include key elements below.

EMMP for Project XXX

Person Responsible for Overseeing EMMP:
[name, contact information]

Activity 1: [name of activity] **[briefly describe activity & summarize potential adverse environmental impacts—from IEE]**			
IEE or EA Condition (reproduced from the IEE or EA)	**Mitigation** Specific actions to be taken to comply with the condition. (if an IEE or EA condition is already specific to the project/ activity and implementation actions self-evident, this "translation step" can be omitted)	**Monitoring** How will the project verify that the mitigation action is being implemented and is both effective and sufficient?	**Timing and Responsible Parties** Who is responsible for mitigation, monitoring, reporting? Timing/frequency of these actions
	A single IEE/EA condition may require multiple action to implement—add rows as necessary		

[add rows for additional conditions]

[repeat table for additional activities]

CHOOSING A RESPONSIBLE PARTY

- Prioritize the following criteria based on the mitigation effort to determine the best person/position for the job

EMMP REVIEW AND APPROVAL

- EMMP is usually submitted and approved with the project work plan or PMP
- EMMP must be approved by the project COR or AOR
- Must assure that EMMP is reflected in the workplan and budget
- Sometimes additional review or required clearance by the MEO, REA, or BEO per requirement of the IEE/Environmental Assessment or operating unit policy.

EMMP VERIFICATION AND OVERSIGHT

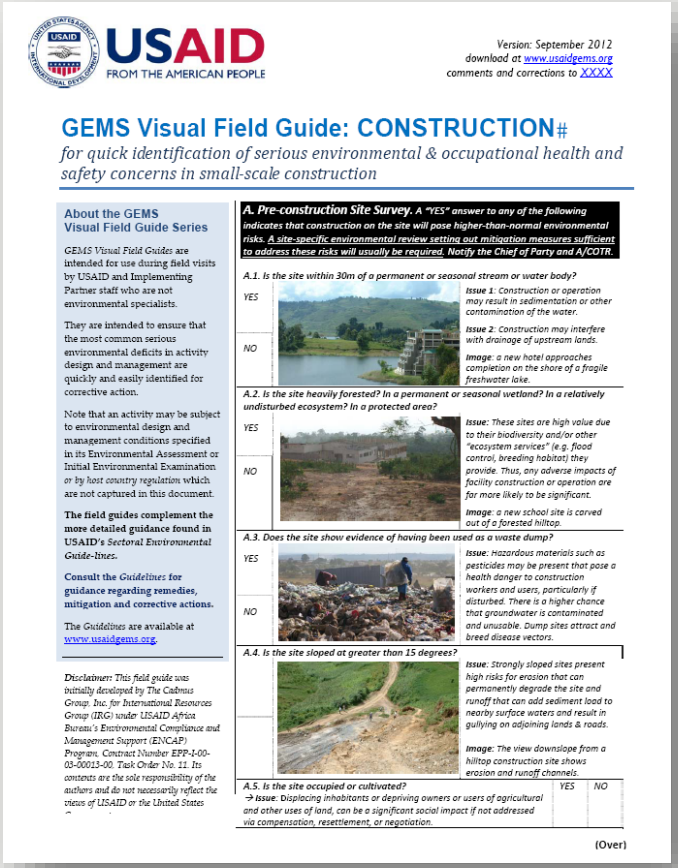
Ensure compliance by:

1. Reviewing ongoing partner implementation reports which **must address** EMMP implementation
2. Performing field visits

EFFECTIVE MITIGATION & MONITORING

- Tells you clearly and cost-effectively if mitigation is sufficient and effective.
- Usually requires a combination of:
  - Environmental indicators
  - Mitigation implementation indicators
- Prioritize the most serious impacts & issues.

GEMS visual field guides (www.usaidgems.org)



USAID FROM THE AMERICAN PEOPLE

Version: September 2012
download at www.usaidgems.org
comments and corrections to XXXX

GEMS Visual Field Guide: CONSTRUCTION#

for quick identification of serious environmental & occupational health and safety concerns in small-scale construction

About the GEMS Visual Field Guide Series

GEMS Visual Field Guides are intended for use during field visits by USAID and Implementing Partner staff who are not environmental specialists.

They are intended to ensure that the most common serious environmental deficits in activity design and management are quickly and easily identified for corrective action.

Note that an activity may be subject to environmental design and management conditions specified in its Environmental Assessment or Initial Environmental Examination *or by host country regulation* which are not captured in this document.

The field guides complement the more detailed guidance found in USAID's *Sectoral Environmental Guide-lines*.

Consult the *Guidelines* for guidance regarding remedies, mitigation and corrective actions.

The *Guidelines* are available at www.usaidgems.org.

Disclaimer: This field guide was initially developed by The Cadmus Group, Inc. for International Resources Group (IRG) under USAID Africa Bureau's Environmental Compliance and Management Support (ENCAP) Program. Contract Number EPP-I-00-03-00023-00. Task Order No. 11. Its contents are the sole responsibility of the authors and do not necessarily reflect the views of USAID or the United States

A. Pre-construction Site Survey. *A "YES" answer to any of the following indicates that construction on the site will pose higher-than-normal environmental risks. A site-specific environmental review setting out mitigation measures sufficient to address these risks will usually be required. Notify the Chief of Party and A/COTR.*

A.1. Is the site within 30m of a permanent or seasonal stream or water body?

YES / NO

Issue 1: Construction or operation may result in sedimentation or other contamination of the water.

Issue 2: Construction may interfere with drainage of upstream lands.

Image: a new hotel approaches completion on the shore of a fragile freshwater lake.

A.2. Is the site heavily forested? In a permanent or seasonal wetland? In a relatively undisturbed ecosystem? In a protected area?

YES / NO

Issue: These sites are high value due to their biodiversity and/or other "ecosystem services" (e.g. flood control, breeding habitat) they provide. Thus, any adverse impacts of facility construction or operation are far more likely to be significant.

Image: a new school site is carved out of a forested hilltop.

A.3. Does the site show evidence of having been used as a waste dump?

YES / NO

Issue: Hazardous materials such as pesticides may be present that pose a health danger to construction workers and users, particularly if disturbed. There is a higher chance that groundwater is contaminated and unusable. Dump sites attract and breed disease vectors.

A.4. Is the site sloped at greater than 15 degrees?

Issue: Strongly sloped sites present high risks for erosion that can permanently degrade the site and runoff that can add sediment load to nearby surface waters and result in gullying on adjoining lands & roads.

Image: The view downslope from a hilltop construction site shows erosion and runoff channels.

A.5. Is the site occupied or cultivated? YES / NO

→ *Issue: Displacing inhabitants or depriving owners or users of agricultural and other uses of land, can be a significant social impact if not addressed via compensation, resettlement, or negotiation.*

(Over)

EFFECTIVE MITIGATION & MONITORING

BE SYSTEMATIC

REALISTIC
M&M must be achievable within time, resources & capabilities.

TARGETED
Mitigation measures & indicators must correspond to impacts.

FUNDED
Funding for M&M must be adequate over the life of the activity

CONSIDERED EARLY
Preventive mitigation is usually cheapest and most effective. Prevention must be built in at the design stage.

If M&M budgets are not programmed at the design stage, they are almost always inadequate!