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Kurram Tangi Dam Construction



Annex V: Emergency Preparedness Plan Final Report

December 2013

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Map to Kurram Tangi Dam Project Documents

Shown below is the suite of documents submitted to USAID under Contract AID-391-C-13-00002 for the KTDP. This report is shaded in red in order to show its relationship to the full set of documentation.

ENVIRONMENTAL ASSESSMENT

VOLUME I: MAIN REPORT

VOLUME II: PROJECT ECONOMIC BENEFITS

VOLUME III: MAPS

ENVIRONMENTAL MITIGATION AND MONITORING PLAN

MAIN REPORT

ANNEX I: HEALTH AND SAFETY PLAN FRAMEWORK

ANNEX II: WATERSHED MANAGEMENT PLAN

ANNEX III: WASTE MANAGEMENT PLAN

ANNEX IV: FISHERIES MANAGEMENT PLAN

ANNEX V: EMERGENCY PREPAREDNESS PLAN

ANNEX VI: INSTRUMENTATION AND MONITORING PLAN

LAND ACQUISITION AND RESETTLEMENT

RESETTLEMENT POLICY FRAMEWORK

RESETTLEMENT ACTION PLAN (COMPONENT I)

CULTURAL HERITAGE PRESERVATION PLAN

VULNERABLE TRIBES PLAN

GENDER PLAN

KEY SUPPORTING TECHNICAL REPORTS

SUPPLEMENTAL REPORT ON GEOLOGY

SUPPLEMENTAL REPORT ON GEOTECHNICAL ASPECTS

SUPPLEMENTAL REPORT ON SEISMIC HAZARD

SUPPLEMENTAL REPORT ON HYDROLOGY

SUPPLEMENTAL REPORT ON CLIMATE CHANGE

All documents may be read as stand-alone documents, but the reader should be aware of the full set of documents available. Any one document may reference other documents in the suite in order to avoid duplication.

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Kurram Tangi Dam Construction

Annex V: Emergency Preparedness Plan

USAID Environmental Assessment of Kurram Tangi Dam Construction
Contract Number: AID-391-C-13-00002
From MWH Americas, Inc.
To USAID/Pakistan Energy Office
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Author: MWH Americas, Inc.

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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List of Acronym

Acronym	Term
CFRD	Concrete Faced Rockfill Dam
EA	Environmental Assessments
EAP	Emergency Action plan
EIA	Environmental Impact Assessment
EMMP	Environmental Mitigation and Monitoring Plans
ESIA	Environmental and Social Impact Assessment
FATA	Federally Administered Tribal Areas
H&S	Health and Safety
KP or KPK	Khyber Pakhtunkhwa
KTDC	Kurram Tangi Dam Construction
KTMDP	Kurram Tangi Multipurpose Dam Project
MDE	Maximum Design Earthquake
MMP	Mott McDonald Pakistan
MSDS	Material Safety Data Sheets
MWH	MWH Global, Inc. or MWH, Inc.
NCSW	National Commission on the Status of Women-Pakistan
NESPAK	National Engineering Services Pakistan
NEQS	National Environmental Quality Standards
NGO	Non-governmental Organization
OBE	Operating Basis Earthquake
OSHA	Occupational Safety and Health Administration
PAP	Project Affected Persons
Pak-EPA or PEPA	Pakistan Environmental Protection Agency
PPE	Personal Protective Equipment
PSHA	Probabilistic Seismic Hazard Analysis
RLACAP	Resettlement Land Acquisition and Compensation Action Plan
REA	Rapid Environmental Assessment
ROD	Road Open Day
TESCA	Tribal Area Electric Supply Corporation
TGP	Towards Gender Party
UET	University of Engineering and Technology
UN	United Nations
UNEP	United Nations Environment Program
USAID	United States Agency for International Development
USAID/Pak	United States Agency for International Development/Pakistan
USDA	United States Department of Agriculture
USG	United States Government
USGS	United States Geological Survey
WAPDA	Water and Power Development Authority
WWF-P	World Wide Fund for Nature – Pakistan

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I INTRODUCTION

The Kurram Tangi Dam Project (KTDP) is located in the North Waziristan Agency of Pakistan and is a complex infrastructure project that includes diversion tunnels, a dam, power tunnels, several power houses, steel penstocks, a spillway, a stilling basin, turbines, generators and weirs on rivers and the canals.

An Emergency Preparedness Plan (EPP) is a formal document that is used during emergency events. The purpose of an EPP is to establish procedures and protocols to be following during an emergency event to help save lives and reduce property damage in areas that would be affected by dam failure or operation.

This EPP framework has been prepared as a guidance or reference document for use in developing an EPP for the KTDP. This guidance document is being prepared as a part of the Environmental Assessment (EA) studies and was prepared to provide guidance of good engineering practice to be following in preparation of an EPP. In preparation of the EPP for KTDP the Design Engineer shall perform the necessary design and analysis required to develop the inundation maps, and shall coordinate appropriate procedures and protocols with local emergency management agencies, local law enforcement, WAPTA, and others as needed.

A full EPP could not be developed at this time as the necessary background studies of dam break analysis and inundation maps have not yet been performed by the Design Consultant or WAPDA. Request for such studies was discussed with WAPDA in the very early stage of this study but such studies were not performed. It is however recognized by WAPDA that such studies should be performed as early as possible.

Although the Terms of Reference for the EPP are specific to the KT Dam, it should be noted that an EPP should also be prepared for Weir III as this is also a large dam structure as defined by World Bank standard OP 4.37 (large dams are defined as structures over 49.2 feet (15 m)). The same EPP framework would apply to Weir III.

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2 APPROVAL OF THE EPP

The EPP shall contain a section that states, to the best of his knowledge and belief, that all involved parties have read the EPP, know the contents of the EPP, and that all of the statements contained in the document are true and correct. This is important because including approval signatures ensures that all parties are aware and understand their assigned roles in the event of an emergency

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3 PURPOSE OF EPP

An EPP is a formal plan that identifies potential emergency conditions at a dam and outlines the procedures to be followed in order to save lives and minimize property damage, in the event of a dam failure. Procedures should be prepared for reacting to the unlikely but potential failure conditions at Kurram Tangi Dam. By pre-planning the coordination of actions by the Dam Owner, EPP Coordinator, and responsible emergency management officials, timely notification, warning and evacuation can occur which will save lives and minimize property damage.

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4 NOTIFICATION FLOWCHART(S)

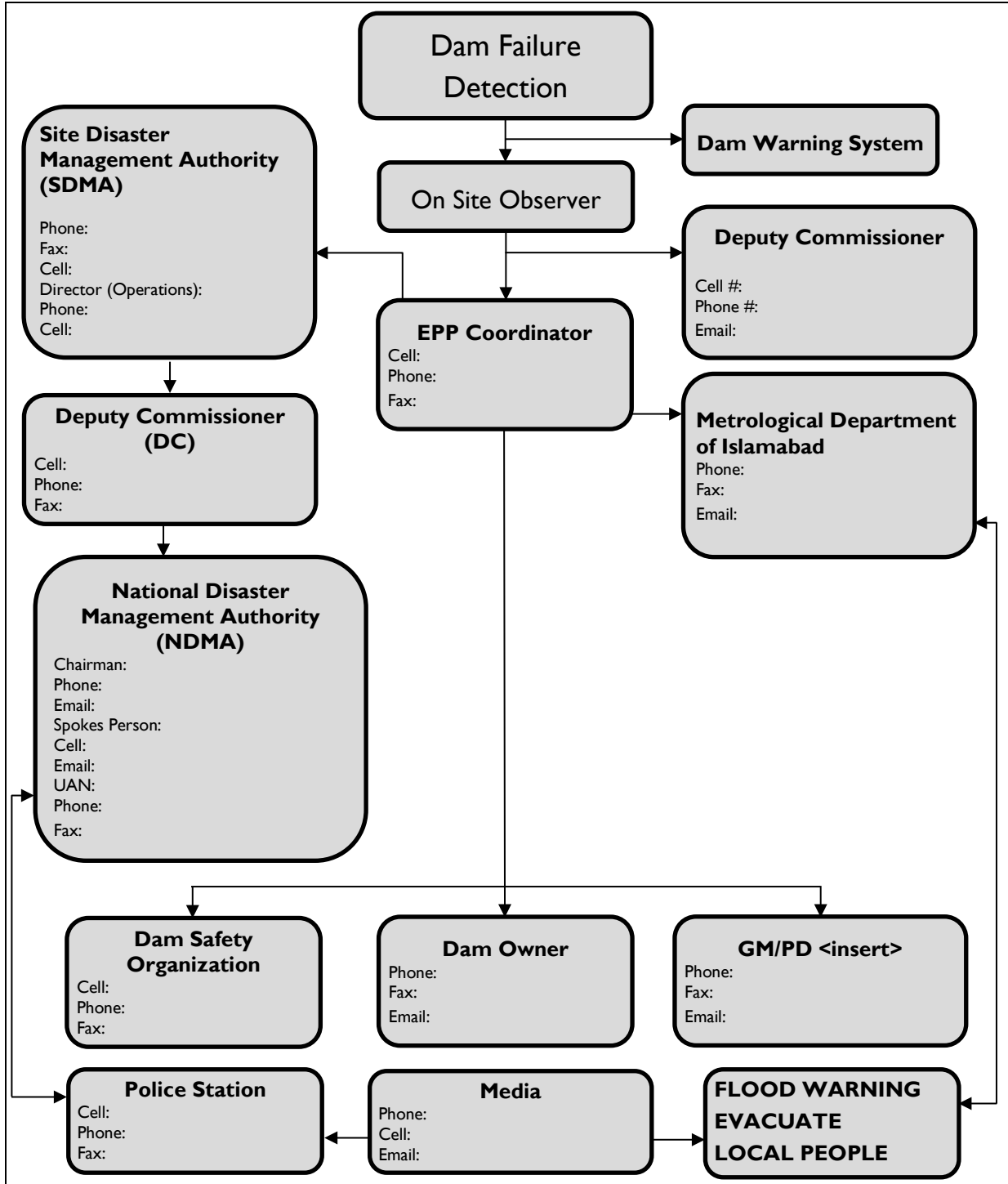
The EPP shall include notification flow chart(s) that clearly summarize who is to be notified and who is responsible for notifying individuals in the event of a dam failure. The flow chart(s) should further prioritize the order in which individuals and organizations are contacted, and provide phone, fax, cell, and email information for each individual and organization. It may also be useful to provide a high level quick review of emergency conditions (if used) and direct the reader to the appropriate location in the EPP. Notification chart(s) should be easy to follow, and copies of the flowchart(s) should be readily available to each individual having responsibilities under the plan, and should be kept up-to-date through exercises and revisions.

The notification flowchart(s) should include the following individuals and organizations (if applicable):

- Dam Owner
- EPP Coordinator
- Local emergency management officials and other organizations.
- Appropriate governmental agencies both local and national.
- Residents and property owners located immediately downstream of the dam within the boundary of potential inundation where available warning time is very limited.
- Operators of other dams or water-retaining facilities (such as Kurram Garhi Head Works)
- National metrological departments
- News media
- Others, as appropriate

Although the list provided above is not inclusive or prioritized, both the Dam Owner and the local and national emergency management authorities are typically given top priority in the notification flowchart. An example of a flowchart developed for a similar project in Pakistan is shown on Figure I.

Figure I – Emergency Condition Notification Flowchart



Important!!! If you cannot contact an organization or individual promptly, proceed to the next contact on the Notification Flowchart. Try to re-contact the unavailable or busy number after you have contacted all others.

5 DAM BREAK STUDY AND INUNDATION MAPS

Inundation maps are a necessary tool during an emergency event. Inundation maps delineate the areas that would be flooded as a result of a dam failure. These maps graphically display the flooded areas and show travel times of the wave front and flood peaks at critical locations, which are developed during performance of a dam break study. The requirements of the dam break study and associated inundation map preparation are discussed in the following sections.

5.1 Dam Break Study

A dam break study shall be performed for development of inundations maps to be used during an emergency event. The dam break study shall be performed following Pakistan and international guidelines. Several factors are usually evaluated during a dam break analysis. The type of dam, in this case a CFRD, and the mechanism of failure require careful consideration to ensure that realistic failure scenarios are considered. Factors to be considered include the size of shape of the breach, the time of breach formation, hydraulic head available, and storage volume available in the reservoir. In addition, appropriate procedures shall be followed to determine the appropriate dam failure hydrographs used in the analysis.

Dam break analyses are commonly performed for a “sunny day” failure condition (reservoir is at normal full pool elevation and normal stream flow conditions), as this condition is typically expected to result in the largest potential loss of human life and property. The flood failure condition is also typically considered and the two methods provide the expected extremes in peak water surfaces, travel times, and distances downstream between the two scenarios. A sensitivity analysis is recommended to fully evaluate the effect of the dam break to the downstream areas.

Appropriate software shall be used in preparation of the dam break study. Available software programs include the (US) National Weather Service (NWS), (US) Bureau of Reclamation, USACE, USGS, and the (US) Federal Emergency Management Agency; however the program developed by the (US) NWS is generally considered the most widely used and preferred software program available.

5.2 Development of Inundation Maps

Inundation maps are necessary and should be developed by the Design Engineer in coordination with the appropriate local and national emergency management agencies and local law enforcement. Coordination with appropriate agencies and law enforcement is essential because those agencies will heavily rely on the inundation maps during an emergency event and it is important that information needed by those parties is included on the maps.

At a minimum, inundation maps should clearly indicate inundation areas and peak discharge, maximum inundation elevation, and travel time of the leading edge and peak flood wave at critical locations downstream of the dam. The maps should be developed at a scale that allows easy identification of downstream inhabited areas, road crossings, etc. Based on the topography of the area downstream of the dam it may also be appropriate to develop water surface profiles to accompany the inundation maps. The water surface profiles should include the water surface elevation before failure, the peak water surface elevation after dam failure, and the location of structures at critical locations.

In development of the inundation maps the best available topographical information shall be used, as water levels are sensitive to channel slopes and cross sections downstream of the dam. The limits of the inundation area shall be clearly indicated, yet should also allow the reader to easily identify major downstream structures. If multiple inundation maps are required a map index sheet should be provided to orient the reader of the EPP. Any other pertinent information such as emergency

evacuation routes, emergency shelters, emergency command centers, etc. should be clearly indicated on the maps.

6 EVACUATION TABLE

Due to the remote nature of the project and rugged terrain the use of an evacuation table is recommended. An evacuation table can be a useful tool for emergency management personnel, in conjunction with the inundation maps, to notify effected parties in a timely manner. Table I provides an example emergency contact list for all persons located within the flood inundation area that should be evacuated during an emergency event.

Table 6-1 – Emergency Contact list

Contact	Phone	Cell	Mailing Address

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7 PROJECT INFORMATION

7.1 Project Overview

The KTDP is located in the North Waziristan Agency of the Federally Administered Tribal Areas (FATA) of Pakistan. Kurram Tangi Dam is located near the Kurram River, and is a multi-purpose dam used for irrigation, hydropower generation, and potable water. The major project features consist of a concrete faced rockfill dam (CFRD), 16-ft dia. diversion tunnel, 20-ft diameter power tunnel and powerhouse, and a spillway gated structure and stilling basin. The normal conservation level of the reservoir is 648 meters (2,127 feet). Water within the reservoir includes natural drainage flows upstream of the dam as well as flows diverted from the Kaitu River upstream of the dam. The CFRD is about 98 meters (322 feet) high and 315 meters (1,035 feet) long, provides storage of about $1.48 \times 10^9 \text{ m}^3$ (1.2 million acre-feet), and generates about 84 MW of electricity.

7.2 Project Access

The EPP should provide clear instructions regarding how to access the site, who has access to the site, and where personnel need to go to obtain access to the site. Location and vicinity maps shall be provided to clearly illustrate site access.

7.3 Project Description

The EPP should include a summary of the most pertinent dam information. At a minimum, the following information shall be provided:

- Dam Name
- Year Built
- Nearest Town
- Distance to Nearest Town
- Dam Type
- Dam Height
- Crest Length
- Crest Width
- Crest Elevation
- Flood Storage Capacity at PMP Level
- Reservoir Maximum Capacity
- Maximum Reservoir Surface Area

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8 EMERGENCY DETECTION, EVALUATION, AND CLASSIFICATION

8.1 Inspection/Monitoring Plan & Procedures

The EPP should outline the frequency and scope of dam inspection and monitoring. The dam shall be visually inspected a minimum of once per day by the Resident Engineer, EPP Coordinator, or another qualified staff member. A dam inspection form shall be developed for consistent daily records.

8.2 Emergency Classifications

An important step during the EPP process is the detection of an unusual or emergency event. Emergency classifications are used to identify the severity of an unusual or emergency event so that appropriate emergency response activities may be performed. An example of emergency classifications that have identified for similar projects are as follows:

- Condition A: Failure is imminent or has occurred
- Condition B: Potential failure situation is developing
- Condition C: Operation and Maintenance Condition; non-emergency

The definition of these emergency conditions is as follows:

Condition A: Failure is imminent or has occurred:

Failure has occurred, is occurring, or is obviously about to occur. With this emergency condition time is not available to attempt corrective actions. The Dam Owner/EPP Coordinator should immediately begin emergency notification procedures outlined in the EPP.

Common warning signs that dam failure is imminent include:

- Whirlpool is developing within the reservoir near the dam.
- A major landside of the face of the dam resulting in structural instability of the dam.
- Dam is overtopping.
- Reservoir level rises above the maximum pool elevation.
- Large scale landside into reservoir that causes overtopping of reservoir.

Condition B: Potential failure situation is developing:

Some time is available to evaluate the situation and develop appropriate plans, procedures, and corrective actions to prevent or moderate dam failure. While dam failure may eventually occur there are actions the Dam Owner may be able to perform (such as during a major flood or earthquake) that may lessen or prevent loss of life and damage to downstream areas.

Common warning signs that dam failure is imminent include:

- Structural failure results in dam leakage.
- Evaluation of instrumentation data shows that water levels within the dam and/or seepage rates in the drains are rapidly increasing. (Refer to Instrumentation & Monitoring Plan)
- Small scale landslides that may cause potential threats to the structural integrity of the dam.
- Blockage of the spillway and reservoir outlets that causes a substantial rise in the reservoir level.
- Major storm event that may result in large scale flooding in the project area.
- Sinkholes developing in or near the dam.
- Earthquake resulting in visible damage to the dam or appurtenances.

Refer to the Instrumentation & Monitoring Plan for threshold and warning instrumentation values. The O&M Plan should also be referenced for any potential conditions that are not normal, but have not threatened the operation or structural integrity of the dam.

Condition C: Operation and Maintenance Condition; non-emergency:

This situation is not normal but has not yet threatened the operation and structural integrity of the dam, but possibly could if it continues to develop, and/or a general state of monitoring existing during major storm events. The condition of the dam should be closely monitored, especially during storm events, to detect any development of a potential or imminent dam failure situation.

Common operation and maintenance conditions may include:

- New seepage areas in or near the dam.
- Visual movement/slippage of the downstream embankment slope.
- Instrumentation readings beyond predetermined values. (Refer to Instrumentation & Monitoring Plan)
- Damage to dam or appurtenances with no impacts to the functioning of the dam.
- Modification to the dam or appurtenances that could adversely impact the functioning of the dam.

Refer to the Instrumentation & Monitoring Plan for threshold and warning instrumentation values, and the O&M Plan for expected actions during an operation and maintenance condition.

9 ROLES AND RESPONSIBILITIES

The EPP should clearly define the roles and responsibilities of key project team members and/or organizations. The titles and responsibilities should be modified to suit the Dam Owner, anticipated staff on-site, and local law enforcement availability.

9.1 Dam Owner Responsibilities

The EPP shall define dam owner responsibilities - both routine and during an emergency event. At a minimum the Dam Owner shall perform the following duties:

- Perform daily monitoring and management of the KTDP.
- Appoint personnel, including the EPP Coordinator, that are trained to perform daily inspection and monitoring activities, and identify potential emergency conditions.
- Facilitate coordination and communication between the EPP Coordinator and appropriate local and national authorities.

9.2 EPP Coordinator Responsibilities

EPP Coordinators are typically responsible for all EPP-related activities including (but not limited to) preparing revisions to the EPP, establishing training seminars, and coordinating exercises. The EPP shall provide a full account of the EPP Coordinators responsibilities. At a minimum the EPP Coordinator shall perform the following duties:

- Serve as the primary contact person responsible for coordination of all emergency actions.
- Respond to observed or reported conditions, incidents, or unusual events to detect if an existing or potential emergency exists.
- During an emergency event immediately notify the personnel on the notification flowchart.
- Assist the on-site personnel in making timely and accurate decisions regarding warnings and evacuations.
- Assist the owner in notifying personnel on the notification flowchart, as needed.
- Provide leadership to assure the EPP is reviewed, understood, and updated annually and copies are distributed to all parties included on the emergency notification flowchart.
- Facilitate exercise of the EPP as necessary to ensure the effectiveness of the EPP and emergency response.
- Participate in annual review and update of the EPP.

9.3 Responsibilities for Notification

The EPP shall define detailed roles and responsibilities related to notification. Accurate and timely dissemination of emergency public notification is important. In the event that the primary contact is unavailable the plan should include both secondary and tertiary contact persons tasked with leading notification procedures if the primary contact person is unavailable. Also, to clearly communicate the nature of the emergency it is common to include a pre-scripted message in the EPP as a guide for emergency personnel to communicate the emergency with the public. To keep an accurate record of persons contacted during an emergency the use of a Contact Checklist similar to Appendix C-1 is recommended.

9.4 Responsibilities for Expected Actions and Evacuation

Responsibilities for evaluation will require coordination with local authorities. Typically warning and evacuation planning are performed by local law enforcement personnel. Under the EPP, the Dam Owner is responsible for notifying local law enforcement when flooding is anticipated, or failure is imminent or has occurred. Police and fire department personnel are dispatched to the area of potential inundation to establish traffic control points to facilitate evacuation and limit access to the area. Dam owners should not assume, or usurp, the responsibilities of government entities for evacuation of people; however there may be situations where routine evacuation and notification will not be sufficient. In those cases the Dam Owner shall coordinate responsibilities with the appropriate authorities before an emergency situation develops.

The EPP should clearly outline responsibilities for evacuation developed in conjunction with local authorities. Due to the remote nature of the project special considerations may be required for the KTDP.

It is recommended that personnel record all information, observations and actions taken on a form similar to the Unusual or Emergency Event Log provided in Appendix C-2.

9.5 Responsibilities for Duration, Security, Termination, and Follow-up

Whenever the EPP has been activated, an emergency event has been declared, all EPP actions have been completed, and the emergency is over, the EPP operations must eventually be terminated and follow-up procedures be followed. The EPP should define responsibilities for duration, security, termination, and follow-up. The follow-up evaluation should be documented on a form similar to Dam Emergency Situation Report provided in Appendix C-3.

10 EMERGENCY ALERT SYSTEM

The EPP shall outline the types of emergency alert systems available at the project site. The implementation of an early warning system for the dam is important to provide advanced notice so that inhabitants in identified flood zone can be safely evacuated from the inundated areas. What types of alert systems are generally used in the region? Radio, television, phone, sirens? If widespread use of alert systems is not used in the region, then the Client and appropriate agencies shall be consulted to determine which methods should be established.

For other similar known projects in Pakistan sirens have been provided in designated zones to allow safe evacuation of affected inhabitants. Sirens are used in conjunction with radio transmission and mobile loud speakers mounted on vehicle

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II EPP TESTING AND TRAINING

Exercising the EPP is important because it enhances emergency preparedness and demonstrates the effectiveness of the EPP. The testing will identify improvements that should be made to the plan, and will make the parties involved more responsible because they will have a clear understanding of their roles and responsibilities.

II.1 EPP Exercise

Periodic training and exercises are necessary to educate the personnel and thoroughly familiarize them with the EPP and their individual roles and responsibilities.

EPP exercises can include:

- Orientations
- Phone Drills
- Table Top Exercises
- Functional Exercises

The EPP shall be exercised a minimum of once per year, and key personnel from local and national agencies and organizations should be invited by the Dam Owner to participate in any orientation and exercises performed. The types of exercises to be performed and the frequency of exercise shall be clearly outlined in the EPP

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12 EPP CONTACTS

An up to date contact list shall be maintained for all EPP participants.

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13 EPP UPDATES

The EPP should be updated following changes in personnel, changes to personnel contact information, or after completion of scheduled exercises. Reviews of the adequacy of the EPP shall be conducted at frequency of once per year, at a minimum. The review should evaluate whether there are any changes to the flood inundation areas or new developments downstream of the dam that would be affected during an emergency event. Based on the results of the review necessary revisions including updates to the inundation maps and emergency notification tables shall be made to the EPP.

If no revisions are required as a result of the annual review a statement shall be used to all plan holders that no additional revisions to the plan are required at that time.

A list of plan holders shall be maintained in a format similar to Table 13-1, and a record of all revisions and updates shall be maintained in a format similar to Table 13-2

Table 13-1: Record of Holders of this EPP

Copy Number	Organization Name/Address	Person(s) Receiving Copy
1		
2		
3		

Table 13-2: Record of Revisions and Updates Made to EPP

Revision Date	Revision(s) Made

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14 APPENDICES

Appendices supporting the information included in the EPP shall be provided. At a minimum the following appendices shall be provided:

- A. Inundation Maps
- B. Evacuation Table
- C. Supporting Data and Forms

APPENDIX A – INUNDATION MAPS

The Design Engineer shall develop inundation maps as discussed.

APPENDIX B – EVACUATION TABLE

Table 14-I provides theoretical flood information for key locations based on assumed “worst-case” conditions.

Table 14-I : Dam Breach Time and Elevation Chart

Distance downstream of dam (km)	Flood arrival time (hours)	Predicted incremental water depth (meters)	Approximate Location

APPENDIX C – SUPPORTING DATA & FORMS

- C-1 Contact Checklist
- C-2 Unusual or Emergency Event Log
- C-3 Dam Emergency Situation Report
- C-4 Reservoir Elevation-Area-Capacity Data
- C-5 Resources Available

Appendix C-1 Contact Checklist

(to be completed during an emergency)

Dam Name: **Kurram Tangi Dam, Pakistan**

Date _____

The following contacts should be made immediately after the emergency condition is determined. The person making the contacts should initial and record the time of the call and who was notified for each contact made. See the Emergency Notification Flowchart for critical contact information.

Emergency Condition 1	Person Contacted	Time Contacted	Contacted by
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Emergency Condition 2	Person Contacted	Time Contacted	Contacted by
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Appendix C-2
Unusual or Emergency Event Log
(to be completed during an emergency)

Dam Name: **Kurram Tangi Dam**

Date _____

When and how was the event detected?

Weather Conditions:

General description of the emergency situation:

Emergency condition determination: _____ Made by: _____

ACTIONS AND EVENT PROGRESSION

Date	Time	Action/event progression	Taken by

Report prepared by: _____ Date: _____

Appendix C-3
Dam Emergency Situation Report
(to be completed following the termination of the emergency)

Dam name: **Kurram Tangi Dam**

Date: _____

Time: _____

Weather conditions: _____

General description of emergency situation: _____

Area(s) of dam affected: _____

Extent of dam damage: _____

Possible cause(s): _____

Effect on dam's operation: _____

Initial reservoir elevation: _____

Date/Time: _____

Maximum reservoir elevation: _____

Date/Time: _____

Final reservoir elevation: _____

Date/Time: _____

Description of area flooded downstream/damages/injuries/loss of life: _____

Other data and comments: _____

Observer's name and telephone number: _____

Report prepared by: _____ Date: _____

Appendix C-4 Reservoir Elevation-Area-Capacity Data

Elevation (m)	Area (km ²)	Capacity (m ³ x 1000)	Comments
			Crest of Dam
			NMOP* (Spillway Crest)
			Bottom of Reservoir

*NMOP = Normal Maximum Operating Pool Level

Appendix C-5 Resources Available

Available On-Site Materials:

Material	Location	Quantity

Locally available equipment, labor, and materials:

Earth Moving /Heavy equipment	Sand and gravel supply	Ready-mix concrete supply
Name: Address: Phone:	Name: Address: Phone:	Name: Address: Phone:
Name: Address: Phone:	Name: Address: Phone:	Name: Address: Phone:

Pumps	Diving Contractor	Sand Bags
Name: Address: Phone:	Name: Address: Phone:	Name: Address: Phone:

Pipe Repair/Replacement	Other:	Other:
Name: Address: Phone:	Name: Address: Phone:	Name: Address: Phone:

Other locally available resources: