TEMPORARY CONSTRUCTION EMERGENCY
ACTION PLAN
WORUMBO HYDROELECTRIC PROJECT
TIMBER CRIB REHABILITATION

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MAY 2011
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# TEMPORARY CONSTRUCTION EMERGENCY ACTION PLAN
## WORUMBO HYDROELECTRIC PROJECT
### TIMBER CRIB REHABILITATION

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Section 1
Introduction

This document presents the Temporary Construction Emergency Action Plan (TCEAP) to be implemented at Miller Hydro Group’s (MHG) Worumbo Hydroelectric Project during the construction spillway sections involved with the rehabilitation of the Timber Crib Dam. The TCEAP will be the basis for notification and evacuation of construction workers and other persons who would be affected by a failure of the temporary cofferdam systems constructed to dewater the work areas, or by high river flows. The Contractor will be required to formulate their own TCEAP, which will, as a minimum, include the requirements of this plan.

This document constitutes the Owner’s TCEAP and is included as part of the Construction Documents for the Project. In the event of an emergency situation, the Contractor shall implement notification and evacuation procedures and immediately notify the Owner’s Representative, or the Hydropower Plant Operator (Operator) if the Owner’s Representative is unavailable, of the emergency situation. The Operator will implement operation procedures to minimize impacts associated with a potential failure of the cofferdams or high river flows.
Section 2

Project Description

The Worumbo Hydroelectric Project is located on the Androscoggin River in the towns of Lisbon and Durham, Maine. The Project is owned by MHG, and consists of a timber crib and concrete spillway overflow, a concrete spillway overflow, a gated spillway and a two-unit powerhouse. A site plan is provided as Figure 1.

The Project currently maintains a licensed headpond water surface elevation of 98.5 feet NGVD-29 datum during normal operation. While work on the spillways is being conducted, the reservoir elevation will be maintained at or below the normal operating headpond elevation.
Section 3
Temporary Structures

The work will require an approximate 520-foot-long section of the dam be dewatered. This will be accomplished through the use of temporary cofferdams on the upstream and downstream sides of the existing spillway. This has been conceptually proposed as an earthen cofferdam and bulkhead on the upstream side, and as earthen cofferdams and sandbags on the downstream side. The temporary cofferdams will be designed to withstand a seasonal 10-year flow recurrence with an inflow of 43,600 cfs, or a static headwater elevation of 104.5 feet and a static tailwater elevation of 84.8 feet. This presents an earthen headpond cofferdam that is conceptually 14 feet high, and a temporary bulkhead system, if used, will be approximately 8 feet high for headpond, and an earthen cofferdam that, at its highest is conceptually 9 feet high for tailwater. Final cofferdam crest elevations and freeboard above static water surface elevations to be provided by Contractor's cofferdam design.
Section 4

Project Operation During Construction

The Owner will try to maintain the headwater at or below normal operating levels until the construction activities are complete. Site discharge will be maintained by operating the powerhouse units, normal fish passage flow, and required bypass flow. Work in the river will be coordinated so that spillway will be available for use in the event of a flood. In the event of a station outage, the gated spillway will be opened to provide additional spillway capacity.

4.1 Dewatering

The construction area will be dewatered throughout the duration of construction activities in the river in accordance with project specifications. The existing timber crib structure is in poor condition, and is prone to excessive leakage. Some dewatering will be accomplished by constructing the earthen cofferdam and allowing the water to flow through the timber crib dam. The timber crib dam will be removed as part of the project. The remaining water between the cofferdam and timber crib dam will flow through the breached sections of the timber crib dam as it is removed. Once the headpond is dewatered, equipment can access the downstream sections through the breach to construct the downstream cofferdams.

4.2 Cofferdam Construction, Monitoring, and Maintenance

For temporary cofferdams proposed, the Contractor will inspect the cofferdams during installation and will perform daily inspection and monitoring of the temporary cofferdams, and will provide a report of the condition of the bulkhead to the Owner’s Representative at any time when safety or maintenance concerns are identified. The Contractor will notify the Owner’s Representative of any conditions which may be related to the integrity of the cofferdams, including, but not limited to, changes in the rate of leakage and any signs of instability. The Contractor is responsible for maintenance work including leak sealing, repairs, providing additional material, and other appropriate means for maintaining the integrity of the cofferdams. The Contractor is required to have an adequate quantity of materials readily accessible at all times throughout the construction period for maintenance work or for emergency purposes.
4.3 Emergency Procedures

Failure or overtopping of the cofferdam or the adjacent spillway crest could result in flooding of the adjacent work area. As a low-hazard structure, a failure of the structure would be contained within the riverbank, and minor downstream impacts are anticipated as a result of cofferdam failure or overtopping, except in the immediate vicinity of the dam. The primary safety concern is the exposure of workers and recreationalists downstream of the dewatering cofferdam. In view of this, the TCEAP procedures noted below must be implemented.

The Contractor shall monitor the headwater elevation continuously during the work. If the spillway crest is overtopped, the design reservoir elevation of the cofferdams are exceeded or the cofferdams show signs of distress or failure, the Contractor shall sound evacuation alarms, and all workers shall evacuate the work area in an orderly manner. Personnel shall assemble at the safety areas at the boat launch area on the Lisbon side and at the on shore staging area on the Durham side, until all on-site personnel are accounted for. Any fishermen or other recreational river users immediately downstream of the dam that could be affected by a failure of the cofferdams will be notified and evacuated. Signs shall be provided on each riverbank notifying fishermen of evacuation procedures.

The Contractor shall have an audible warning system which can be activated by construction workers at strategic locations within and outside the work area. The Contractor shall maintain adequate emergency egress routes from hazardous areas at all times. The Contractor shall hold regular safety meetings to instruct all construction workers in the provisions and procedures implemented for emergency situations. These procedures will be posted in the Contractor’s construction trailer and will include names and telephone numbers of persons to be notified.

The Owner shall notify the Contractor of upcoming flood events 24 hours in advance whenever possible in order to allow for the securing of the work area. The Owner shall immediately notify the Contractor of potential emergency conditions, such as the powerhouse turbines tripping off-line, or flash flooding, that could result in rapid inundation of work areas.
4.4 Notification Procedures

In event of an emergency situation, the Contractor shall immediately implement its audible warning system and evacuate hazardous areas. The Contractor shall notify the Owner’s Representative accurately describing the emergency situation. The Owner’s Representative will verify the emergency situation and notify the Operator. If the Owner’s Representative is unavailable, the Contractor shall notify the Operator directly. After verifying that workers escape routes will not be affected, the Operator shall take the appropriate actions to minimize further impacts. The Owner shall immediately notify the Contractor of turbine generator trips or flash floods.
FIGURES
FIGURE 1
WORUMBO TIMBER CRIB REHABILITATION SITE PLAN

- STAGING AREA
- (SAFE AREA)
- HEADPOND EVACUATION ROUTE
- POSSIBLE LOCATION OF HEADPOND COFFERDAM
- EXISTING SPILLWAY
- PROPOSED SPILLWAY
- DOWNSTREAM EVACUATION ROUTE
- POSSIBLE LOCATION OF TAILWATER COFFERDAM
- BOAT/BARGE EVACUATION ROUTES
- POSSIBLE LOCATION OF BULKHEAD COFFERDAM
- POSSIBLE LOCATION OF SANDBAG COFFERDAM
- EXISTING SPILLWAY
- GATES
- POWERHOUSE
- LISBON BOAT LAUNCH (SAFE AREA)
- FLOW
FIGURE 2
WORUMBO HYDROELECTRIC PROJECT TIMBER CRIB REHABILITATION
TEMPORARY EMERGENCY ACTION PLAN ORGANIZATION CHART

Contractor
Later
Superintendent - Later
Site Telephone - Later

Miller Hydro Group
Ken Wells
Operator
Telephone: (207)-353-9919

Pejepscot Project (Downstream)
John Demchak - Supervisor On Call
Office: (207)-353-9000
Cell: (207)-751-1988

Brunswick Project (Downstream)
Androscoggin River Control Center
Phone: (207)-629-1890
Alt: (207)-629-1850

Owner's Representative
Devin McNeil
Cell: (207)-671-9328
(On-Call)

FERC NYRO
Peter Valeri, Regional Engineer
Office: (212)-273-5930
Cell: (201)-874-5035

Municipal Warning Point
Brunswick Dispatch
Emergency:
(207)-725-5521 x 9

May 12, 2011