RECLAMATION

Managing Water in the West

TR-2013-04

Travel to Yakima Field Office

Installation of test instrumentation for research project 7973 on hydrokinetic turbine impacts to existing canal & power plant operation.

Dates of Travel: March 11 to 15, 2013

U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center
Hydraulic Investigations and Laboratory Services Group
Denver, Colorado

BUREAU OF RECLAMATION
Technical Service Center
Denver, Colorado

TRAVEL REPORT

Code: 86-68460 Date: March 25, 2013

To: Manager, Hydraulic Investigations and Laboratory Services Group
From: Josh Mortensen, Hydraulic Engineer

Subject: Travel to the Yakima Field Office to begin installation of test instrumentation for research project 7973 on hydrokinetic turbine impacts to existing canal & power plant operation.

1. Travel period: 11 March – 15 March 2013

2. Places or offices visited: Yakima Field Office (Roza canal and power plant).

3. Purpose of trip: The primary purpose of this trip was to install submersible water level data loggers in the Roza canal in preparation for research project #7973. This study will help determine the impacts of hydrokinetic power generators to existing canal and power plant operations. The secondary purpose was to tour the Roza power plant and determine how its operation can be tested and monitored as part of the same research.

4. Synopsis of trip:

Sunday, March 10th: Josh Mortensen and Bryan Heiner flew into Seattle and rented a car to drive to Yakima, arriving Sunday evening.

Monday, March 11th: We first met with Tom Glover to briefly discuss our plans for the week and asked a few questions about the power plant. We then met with Tony Hargroves to discuss equipment and assistance needed to install water level data loggers along the canal. A JHA for the work to install the loggers was reviewed. Tony then drove us along the canal system to the various deployment sites so we could determine safe access and which materials would be needed. Monday afternoon was spent gathering materials needed to deploy the loggers and preparing the deployment pipes.

Tuesday, March 12th: All day was spent installing the HOBO water level data loggers along the main canal section. The loggers were launched at 15 minute recording intervals and deployed in 2-inch PVC pipes that were either clamped to an existing safety ladder (Fig. 1) or anchored to the side wall (Fig. 2). The loggers were lowered into the pipe and secured just a couple of inches from the end of the pipe using a rope tied to the top cap. Water entered the pipe through 3 small holes in the bottom end cap. We started at site #2 just downstream of the first tunnel and finished at site #7 just upstream of the last tunnel. We surveyed each deployment pipe and water surface by setting a benchmark (Fig. 3) and using a survey rod and level. These bench marks still need to

be surveyed with an RTK GPS survey system to obtain accurate elevations.

Wednesday, March 13th: Loggers were installed at the power plant. The forebay logger was deployed in the stilling well (Fig 4). The tailbay logger was deployed in a pipe anchored to the north side of the north wing-wall (Fig. 5). Ron Moores then took us into the power plant where we located pressure taps upstream of the scroll case as well as the Winter-Kennedy flow taps. Ron cracked opened the valves to the flow taps which showed that they were still usable. Josh photographed the wicket gates and control panels to help determine how unit performance might be tested and monitored throughout the study.

Thursday, March 14th: Early Thursday morning we met with Tony Hargroves to discuss work completed this trip as well as plans and coordination for future work. After returning some safety equipment to Tony we departed for Seattle by way of Cle Elum Dam where we took some video for a current physical model in the Hydraulics Lab. Late Thursday afternoon we departed from the Seattle airport.

5. Conclusions:

Roza Canal: All HOBO water level loggers were successfully launched and deployed at the designated sites along the Roza canal. They are to remain in place throughout the irrigation season. They will be pulled out for data download and analysis at a future date. An accurate survey of the benchmarks that were set needs to be completed for accurate analysis of the water level data.

Roza Power Plant: Water level loggers were also deployed in the forebay and tailbay. Pressure and flow taps needed for unit efficiency testing were located. Josh will consult with other TSC and Regional engineers to determine when and how this testing will be conducted.

6. Action correspondence initiated or required:

Tony Hargroves and Tom Glover will keep a log of events on the canal & power plant for documentation which they will forward to Josh (startups, shutdowns, hydrokinetics installed, etc.). They will also help coordinate the power plant testing and/or monitoring.

Josh Mortensen will contact surveyors from the Ephrata Field office about surveying the benchmarks. He will also update and work with Tom regarding the power plant testing.

7. Client feedback received: N/A

cc:
Tony Hargroves (YAK-5410)
Tom Glover (YAK-5210)
Chuck Garner (YAK-5100)
Sid Ottem (YAK-5000)
Erin Foraker (86-69000)
Shanna Durham (86-68420)

SIGNATURES AND SURNAMES FOR:

Travel to: Roza Canal & Power Plant, Yakima, WA

Dates of Travel: March 11 – March 15, 2013

Names and Codes of Travelers: Josh Mortensen, 86-68460 and Bryan Heiner 86-68460

Travelers:

Joshua D Mortensen 3/20/13
Joshua D. Mortensen Date
Hydraulic Investigations and Laboratory Services Group

BHeiner 3/25/13
Bryan J. Heiner Date
Hydraulic Investigations and Laboratory Services Group

Peer Review by:

Tracy B Vermeyen 3/21/13
Tracy B. Vermeyen Date
Hydraulic Investigations and Laboratory Services Group

Noted and Dated by:

Robert F. Einhellig 3/20/2013
Robert F. Einhellig, Manager Date
Hydraulic Investigations and Laboratory Services Group

Figure 1 Site #5 water level logger deployment pipe clamped to the downstream side of the safety ladder.

Figure 2 Site #6 water level logger deployment pipe anchored to the concrete side.

Figure 3 Typical bench mark set at each deployment site marked with a concrete anchor and an X.

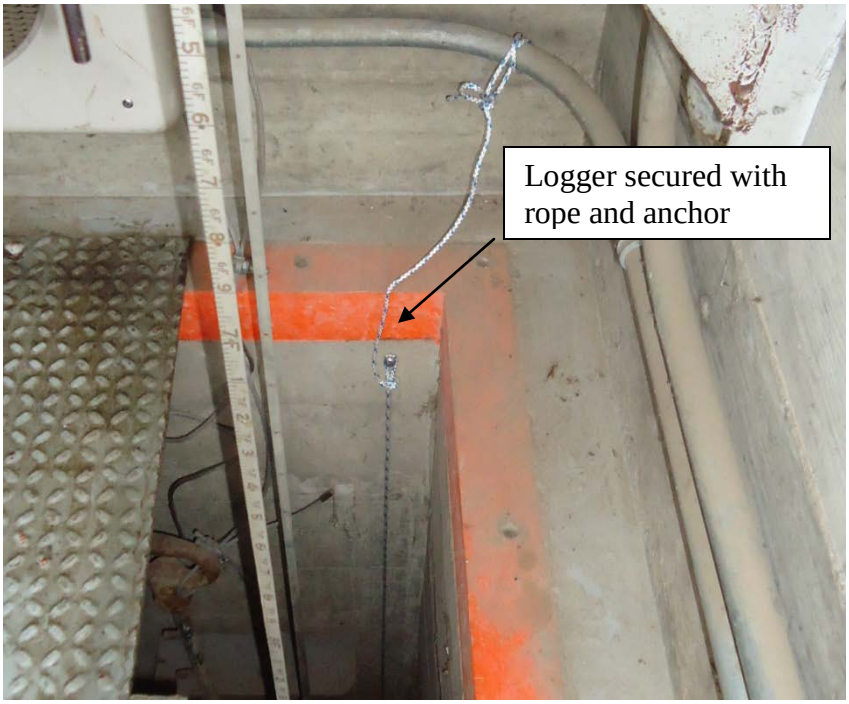

Figure 4 Site #8 Water level logger deployed into the forebay stilling well.

Figure 5 Site #9 Water level logger deployment pipe anchored to the wing wall of the power plant tailbay.