High Lakes Stabilization
East Timothy Lake
Construction Report

Uinta Basin Replacement Project

08/19/2010
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Introduction

The Uinta Basin Replacement Project (UBRP Project) was authorized by Section 203 of the Central Utah Project Completion Act [CUPCA; Titles II through VI of P.L. 102-575]. A component of the UBRP Project is that 13 high mountain lakes formerly used to store water would be stabilized at No-Hazard levels and the water rights transferred downstream for storage in the enlarged Big Sand Wash Reservoir, another feature of the UBRP Project. The stabilization of the thirteen reservoirs is mitigation for the UBRP Project.

Stabilization of the thirteen high mountain lakes at No-Hazard levels will provide constant lake water levels year-round. Nine of these lakes (Bluebell, Drift, Five Point, Superior, Water Lily, Farmers, East Timothy, White Miller, and Deer) are located in the upper Yellowstone River watershed and four (Brown Duck, Island, Kidney and Clements) are in the Brown Duck Basin portion of upper Lake Fork watershed.

The work accomplished in the Swift Creek Drainage portion of the upper Yellowstone River watershed in 2006 was to stabilize Water Lily Lake, plug the Farmers Lake Tunnel, and remove the outlet structure at White Miller Lake. Clements Lake, in the Brown Duck Basin, was stabilized in 2007. The work accomplished in the Brown Duck Basin in 2008 was the stabilization of Island Lake and Brown Duck Lake. In 2009, Kidney Lake in the Brown Duck Basin was stabilized, and four lakes in the Garfield Basin were stabilized (Superior, Five Point, Bluebell, and Drift).

This report includes work completed during 2010 when the Duchesne County Water Conservancy District (DCWCD) crew worked to stabilize East Timothy Lake. Contract record drawings showing location maps and applicable details for East Timothy Lake are included in Appendix B. For complete details on design analysis and methodology of the process used to stabilize this lake, please refer to the High Lake Stabilization Technical Memorandum for Swift Creek Drainage Deer Lake and East Timothy Lake dated January 2010 by the Bureau of Reclamation, Upper Colorado Region, Provo Area Office. The Technical Memorandum was reviewed by all project participants, and was formally approved by the Utah Reclamation Mitigation and Conservation Commission, U.S. Forest Service, U.S. Department of the Interior – CUP Completion Act Office, and Utah Division of Water Rights – Office of Dam Safety. Deer Lake was also stabilized during 2010 by the U.S. Bureau of Reclamation (Reclamation). Details of the Deer Lake work are found in the Deer Lake Construction Report.

Construction Oversight

Project management was provided by the Utah Reclamation Mitigation and Conservation Commission. Construction oversight throughout the project was accomplished by multiple entities. The Bureau of Reclamation designed the stabilization of East Timothy Lake with assistance by other partners. East Timothy Lake was stabilized by the Duchesne County Water
Conservancy District (DCWCD) and the Utah Conservation Corps (UCC). The U.S. Forest Service and Utah Department of Natural Resources’ Division of Water Rights were responsible for inspecting the project. Other entities including U.S. Department of the Interior CUPCA Office, U.S. Fish and Wildlife Service, Duchesne County Water Conservancy District (DCWCD), Central Utah Water Conservancy District, and Moon Lake Water Users Association were all involved in successfully completing the project. Outfitter (riding and pack train) services were provided by Flying J Outfitters, a contractor, and the U.S. Forest Service (pack train only).

**UCC Crew**

Construction work during the summer of 2010 consisted of preparation of the site by the Utah Conservation Corps (UCC) prior to mobilization at the site by the DCWCD crew. The UCC is an organization administered through Utah State University. Their mission is to improve the quality of public lands and the communities surrounding them through partnership projects, service, and education. The UCC crews were arranged and managed by the U.S. Forest Service.

**Helicopter Fly in**

Equipment and materials were brought to the staging area adjacent to Mill Park for loading by the helicopter contractor (Columbia). The contractor was responsible for loading all equipment and materials to the helicopter. All material was safely flown to the work site at East Timothy Lake.
Figure 1: Columbia Helicopter flying equipment from Mill Park to East Timothy Lake, using a Boeing Chinook CH-47 helicopter.

Figure 2: DCWCD at completion of project. [From L to R: Casey Long, Mitch Lamb, Macklin Nash, Heston Farnsworth, Brynnen Lamb, Makensie Malnar, Julie Lamb, Russell Lamb, Bob Richens, Rusty Farnsworth, Hailey Davis, Randy Crozier, Manager. Not pictured: Dex Winterton]
East Timothy Lake Construction

East Timothy Lake is located near the top of the Swift Creek drainage basin. The dam was a very large structure for the High Mountain Lakes. It was rebuilt using large equipment in the 1950s. At full pool, the reservoir had a surface area of about 44 acres at the existing spillway and held approximately 596 acre-feet of water. The dam was more than a quarter-mile long with a crest width of 15 feet and was oriented such that it impounded runoff from two Swift Creek sub-basins.

The maximum dam height was 32 feet with a hydraulic height of 27 feet. The upstream embankment has stone riprap facing. The dam had an 18-inch diameter low-level outlet pipe, 230 feet in length. There was a short length of cone-shaped pipe on the upstream end of the inlet pipe, which tapered from 24” diameter down to 18”. There was a corrugated-steel vertical access shaft that extended from the top of the dam, down through the embankment to the outlet pipe gate well.

As part of this project, the outlet works gate and pipe were grouted in place and a stabilized notch was cut through East Timothy Dam. An armored outlet channel was constructed through the notch subsequent to the design done by Bureau of Reclamation engineers. Formal survey work was performed at East Timothy Lake and the contract record drawings are included in Appendix B of this document. The spillway elevation of the reservoir was 11,030.5 feet. The stabilized outlet channel was set at elevation 11,013.5 to restore East Timothy Lake to close to the original natural lake level.

Construction on East Timothy Lake was performed by DCWCD with help from the UCC crew. The Kings Peak Wildland Fire Module of the Duchesne Ranger District also assisted the project by removing hazard trees and downed timber from the work and camp sites. The following summaries are based on what both crews recorded in their daily logs, a copy of which is included in Appendix A of this report.

Equipment Used at East Timothy Lake

4– Caterpillar 308 Trackhoes
3– Caterpillar 287 Skidsteer Loaders
1– Caterpillar 257 Skidsteer Loaders
2– Caterpillar 289 Skidsteer Loaders
1– Miller Welder
2– Generac generators
1– 3” Trash Pump
1– 4” Trash Pump
2– Concrete Mixers
1– Air circulation system
1– Oxygen/acetylene torch
1 – Demolition saw
2 – Grout Plants – Chem Grout - Self Contained
Construction Activities at East Timothy Lake

Activities at East Timothy Lake began on Tuesday, June 22nd, 2010. The Duchesne County Water Conservancy District (DCWCD) assisted the Forest Service and contractor Helitech crews for flying in materials and equipment to the job site. Crew rode or hiked in and set up camp on June 24th. With help from the UCC crew, DCWCD built fuel containment covers and started unloading flight decks and organizing materials on the dam crest using a skidsteer. East Timothy was holding approximately 25 feet of water in the reservoir with outlet works completely open when the crew arrived. Surveyor from Reclamation staked out the breach while blasters began drilling blasting holes.

Figure 3: Fuel containment cover in place in preparation for blast.
Work continued at East Timothy Lake with toolbox safety meetings held every day of the week. Crews finished assembling trackhoes and started excavating the breach. More rock was encountered in dam embankment than expected – DCWCD separated large rip-rap rock from waste material and stock piled the rip-rap. The DCWCD crew was split into two shifts,
one in the morning and the other in the afternoon to better utilize daylight for running equipment.

The UCC crew assisted in assembling gabion baskets and stockpiling rocks to fill the baskets. They also helped screen and stockpile material for the sand filter. Forest Service Blasters drilled and set charge holes for fracturing large rock that was too large to be moved with the equipment available. The blasting crew continued their work throughout the week and rode out on July 3rd after blasting work was complete.

The DCWCD crew removed relief well stand pipes with torch on the backside of the dam toe to be buried with the spoil material. The existing outlet channel was re-routed back to historical alignment to allow for new outlet channel construction. The crew also developed a second spring for drinking water because the relief well had stopped flowing water.

Figure 6: Forest Service blasters drilling and setting charge holes for blasting.
July 05-July 11 Work continued at East Timothy Lake with split shift working from dawn to dusk excavating material from the breach. The UCC crew assisted in removing the existing headwall structure and concrete. DCWCD and UCC installed the new steel structure with head gate to the upstream end of the outlet pipe. This gate was needed to block off the pipe and
establish back pressure during the grouting operation. The fitting had a 4 inch vent outlet and 1½ inch lock bolts to secure structure to existing outlet pipe. The breach centerline was adjusted approximately four feet east to match all other survey stakes on upper dam face.

The crew constructed forms for the 4 foot high gabion cutoff walls and set up the concrete batch plant (2 cement mixers, 2 generators, 3-inch water pump, stock pile of sand and gravel, and cement pallets). The UCC crew assisted the DCWCD crew in batching and pouring cement around upper new head structure (twenty 94lb bags were used). Also excavated and formed upper gabion cut off wall at mouth of new outlet channel.

Figure 9: DCWCD and UCC crews installing head structure (designed for up to 30lb back pressure).
Work continued at East Timothy Lake with crew excavating through the breach with 4 trackhoes and 4 skidsteers. One skidsteer broke and needed major repairs. 3 skidsteers are now out of commission. The crew painted forms with oil and added #9 wires to gabion forms. Valton Mortenson (Forest Service engineer), and Bob Leake and Brad Weber (Utah Division
of Water Rights) rode in on July 12th to verify elevations before pouring upstream gabion.

The crew checked grades to verify gabion height and started to batch and pour upper gabion. Forty-six 94-lb bags of cement were used for the upper gabion wall (mixture: 7.5 gallons of water, seven 5 gallon buckets sand and gravel, and two 47lb bags of cement to a batch). The UCC crew assisted in this effort.

The DCWCD repaired one of the broken skidsteer and continued excavating the breach with 4 trackhoes and 5 working skidsteers. The UCC crew assisted in excavating and forming the second gabion wall and poured it on July 16th. Forty-three 94-lb bags of cement were used for the second gabion cutoff wall.

Figure 12: Gabion cutoff walls with forms and #9 wires ((3) 3’x4’x9’).
July 19-July 25  Work continued at East Timothy Lake with 3 trackhoes and 4 skidsteers. Continued to cut breach through the dam and expanded the channel to connect the two lake basins behind the stabilized lake. The fourth trackhoe worked on dressing the side slopes of the breach. The UCC crew assisted the DCWCD crew in batching and pouring the third gabion
on July 21st (ninety-four 47lb bags and nine 94lb bags of cement were used). Forms for the third gabion wall were stripped on the same day. Harv Forsgren, Randy Welsh, Valton Mortenson, JR Kirkaldie, Brian Paul, and Kevin Elliott (Forest Service), and Mark Holden (Mitigation Commission) arrived on site to inspect the progress of the work.

The crew formed and poured the fourth gabion wall using eighty-eight 47-lb bags of cement. Valton Mortenson and Mark Holden agreed to lower the 4th gabion wall approximately 3/4 foot of the design elevation to better match the fall elevation and grade of the downstream natural channel. Forms were stripped from the 4th gabion wall and the crew started placing riprap in the upper channel and set final rock elevation at the inlet.

Figure 15: Crew pouring 3rd gabion basket using skidsteer for transporting cement.
Work continued at East Timothy Lake with DCWCD crew placing riprap throughout the channel. This was accomplished by two trackhoes loading rip-rap in skidsteers which freighted rip-rap and fines to other trackhoes in channel placing material (4 trackhoes and 4 skidsteers). One skidsteer broke down and was repaired by the end of the week.
The UCC crew started packing forms and other materials for fly out while the DCWCD crew continued placing riprap on the breach. Riprap was placed on the side slopes up to 5 foot above the breach floor per design, the rest of the side slope areas were left with no riprap.

Figure 18: Skidsteer transporting rip-rap and fines while trackhoes place riprap on breach.

Figure 19: Randy Crozier cutting the 48 inch gate well tower with a torch.
The DCWCD crew continued to place riprap on breach per design. Other crew members worked on tying the new outlet channel into the existing channel. On August 4th, the crew cut and removed the gate well tower and prepared to weld in confined space in lower gate well chamber. They also set up confined space equipment (man lift hoist, ventilation system, lighting system, welder, torch, and electrical supply).

Bob Leake, Brad Weber, and Valton Mortenson arrived onsite to assist with pipe grouting. 1-¼ inch grout nipples were welded in place and the grout plant and equipment were set up to grout the upper half of the existing outlet pipe. The new inlet head structure was closed at 9am on August 6th and no leakage was observed. The crew with Valton supervising the operation started grouting the upstream section of the pipe (334 bags of 47-lb cement used). The grout mixture consisted of eight 47-lb bags cement, four 5 gallon buckets of water, and 20 oz. Glenium (a plasticizing additive) per batch.

On August 7th, the crew grouted the downstream section of pipe and into the gate well to a height of 2 feet above the valves in the CMP chamber (626 bags of 47lb cement used). They also batched and poured 3x3x3 gabion on the downstream end of the outlet pipe (8 bags of 94lb cement used) and removed the 4 inch vent pipe from the upstream structure.

![Figure 20: Crew preparing for confined space entrance into gate well.](image-url)
Figure 21: Randy Crozier in gate well welding in 1-1/4” nipples.

Figure 22: Randy Crozier welding steel plate on downstream end of pipe.
Figure 23: 4” vent pipe on upstream structure used for grouting; it was broken off when grouting operation was completed.

Figure 24: 3’x3’x3’ gabion at downstream end of pipe.
Aug. 09-Aug. 15

The DCWCD crew continued worked at East Timothy on August 9th by placing a small temporary earthen coffer dam at the upstream side breach. The crew filled the gate well with clean gabion rock to within two feet of the final grout cap elevation before grouting to the top. The gate well was grouted using 216 bags of 47lb cement. The sand filter and pea gravel drain was installed at the downstream end of the grouted outlet pipe. Other crew members worked on filling in the old outlet channel with native material.

After grouting operation was completed, crew members dismantled grout plants and fuel containments and loaded them on decks for fly out. The equipment operators continued to place riprap on breach slopes and rehabilitated the work area. The grouted gate well was filled in to match finish grade.

Figure 25: Looking upstream to sand filter and pea gravel drain in place on downstream side of outlet pipe.

Aug. 16-Aug. 19

The DCWCD crew continued work at East Timothy on August 16th by rehabilitating and cleaning work area with three trackhoes. They also cleared driftwood from the old spillway. Other crew members dismantled trackhoes for fly out leaving one for any changes after inspection.

The inspection crew arrived onsite for final inspection on Aug. 18th. The inspection crew consisted of the following: Mark Holden (Mitigation Commission), Valton Mortenson (USFS), Brian Paul (USFS), Kirk Beecher (CUWCD), Bob Leake (DWRi), Brad Weber (DWRi), Scott Winterton (USBR), and Will Spitzenberg (USBR). Everyone was
impressed with the work and everything was passed off. Duane Taylor (USBR) also arrived on site and did the as-built survey work.

After receiving final approval on the work, the crew dismantled the rest of the equipment and packed everything on deck ready for fly out. The DCWCD crew rode out on August 19th with Flying J Outfitters.

Figure 26: Looking upstream to the completed breach with water flowing through it.

Aug. 24-Aug. 26 The DCWCD crew flew into Deer and East Timothy on August 24th to assist with fly out. The crew dismantled loads and removed everything from Mill Park with the final load driven out on August 26th.
Table 1. Quantities of materials involved in stabilization of East Timothy Lake Dam. Total Bulk Amount of Material Handled was 10,615 CY\(^{(1,2)}\)

<table>
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<tr>
<th>Breach Channel Width ((3))</th>
<th>Breach Channel Elevation (feet, msl)</th>
<th>Breach Channel Excavation Volume (CY)</th>
<th>Existing Outlet Grout Backfill Volume (CY) (^{(4)})</th>
<th>Gabion Basket Volume (CY)</th>
<th>Riprap Removed From Dam Volume (CY)</th>
<th>Inlet/Outlet Channel Fill Volume (CY)</th>
<th>Riprap Placed in Breach Volume (CY)</th>
<th>Stilling Pool Sill Riprap Volume (CY)</th>
<th>Filter Material Volume (CY)</th>
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<td>15' min</td>
<td>11,012.57</td>
<td>8,400</td>
<td>28</td>
<td>17.75</td>
<td>610</td>
<td>160</td>
<td>1,300</td>
<td>15</td>
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\(^{(1)}\) The sum of ‘Breach Channel Excavation’ + ‘Riprap Removed from Dam’ + ‘Riprap Placed in Breach’ + ‘Riprap Volume, Sill’ + ‘Inlet/Outlet Channel Fill’ + ‘Filter Material’ + ‘E.T. excavated lake connection’

\(^{(2)}\) Also, additional excavation for lake connection at elevation 11,011.0 = 125 CY

\(^{(3)}\) 2.5:1 sideslopes, both sides, finished width

\(^{(4)}\) Includes 12 CY grout for vertical access shaft that extended from the top of the dam, down through the embankment to the outlet pipe gate well
Appendix A – Crew Daily Logs
Utah Conservation Corp Crews – High Lakes Stabilization Weekly Report

Week 6-9-10 to 6-15-10
Leader Tom Ogilvie
We setup our camp on a ridge line and had to move it when the weather got bad. We met up with the High Lakes Coordinator after set-up and he showed us how to use the USFS radios and gave us emergency contact info. Met Bureau of Reclamation at Mill Park helicopter staging area where we ran security for millions of dollars worth of equipment. We helped other crews package equipment and supplies. We experienced bad weather for 3 days including heavy winds, snow, sleet rain and hail.

Week 6-14-10 to 6-21-10
Leader Mercer Owens
We met up with the other crew at Mill Park on the first day and set-up camp. We spent the week running security on thousands of dollars worth of machinery. We played hearts to pass the time.

Week 6-21-10 to 6-29-10
Leader Tom Ogilvie
We arrived at Mill Park and ran security. We took part in the safety briefing by the USFS and Columbia helicopters. We worked as traffic control during the helicopter lift operation. Crews onsite during the helicopter operation included the Duchesne County Water Conservancy District, US Forest Service, Reclamation and the Columbia Helicopter crew. We hiked up to the East Timothy lake and met the US Forest Service Archeologist, the packers and their animals, the USFS explosives crew and set-up our summer camp. We worked with the USFS trail crew and archeologist to establish trail reroutes.

Week 6-28-10 to 7-6-10
Leader Mercer Owens
We hiked up to East Timothy Dam today, and met up with crew leader Ogilvie and we worked with the Duchesne County Water Conservancy District crew. We sifted sand and sorted boulders, all of which were removed from the dam.

Week 7-5-10 to 7-13-10
Leader Tom Ogilvie
We hiked up to East Timothy Dam today, and met up with crew leader Owens, and we worked with the Duchesne County Water Conservancy District crew. We sifted sand and sorted boulders, all of which were removed from the dam. We worked with Reclamation at Deer Lake. We spent days on 3 miles of trail reroute.

Week 7-12-10 to 7-20-10
Leader Mercer Owens
We hiked up to East Timothy Dam today and met up with crew leader Ogilvie, and we worked with the Duchesne County Water Conservancy District crew. We worked with concrete and helped create gabion walls in the dam. We spent days on 3.5 miles of trail reroute.

Week 7-19-10 to 7-27-10
Leader Tom Ogilvie
We hiked up to East Timothy Dam today and met up with crew leader Owens. We spent a week on re-routing a tough section of trail to East Timothy. The new reroute now goes around a few trouble spots, mud holes, in a nearby meadow.

Week 7-26-10 to 8-2-10
Leader Mercer Owens
We hiked up to East Timothy Dam today and met up with crew leader Ogilvie, and we worked with the Duchesne County Water Conservancy District crew and Reclamation. We cleaned up the Deer Lake worksite, and rocked a ½ mile of the new trail reroutes created by Ogilvie’s crew. We were invited to the USFS High Lakes Coordinator’s office where he taught us about what it’s like to work with the Government, how to apply to Government jobs and the best route to take to land a Government job.
East Timothy Lake Construction Report

**Week**  
8-2-10 to 8-10-10  
**Leader Tom Ogilvie**  
We worked with the DCWCD crew mixing concrete. We did a lot more trail work and are very proud of the quality of our work. We worked on 3 miles of trail. We did some hiking to some great areas.

**Week**  
8-9-10 to 8-13-10  
**Leader Mercer Owens**  
We hiked up to East Timothy Dam today and worked with the Duchesne County Water Conservancy District crew rehabbing the work site area.

**Week**  
8-30-10 to 9-6-10  
**Leader Luke Leclair-Marzolf**  
We hiked up to East Timothy Dam today, hiked up the Swift Creek trail to perform trail maintenance, and performed trail work on about ½ mile of trail. Also, climbed King’s Peak and South King’s Peak.

**Week**  
9-6-10 to 9-13-10  
**Leader Sara Davis**  
We hiked into the Brown Duck Basin and cleared fallen trees of the trail leading to Kidney Lake (including Brown Duck and Island Lakes), cleared channels, checked for beaver dam removed unburned drift wood from burn piles, and hiked up to Clements Lake in East Basin and did the same. Did work on 13 miles of trail!

**Week**  
9-12-10 to 9-14-10  
**Leader Luke Leclair-Marzolf**  
Hiked up the Swift Creek trail to perform trail maintenance.

**Duchesne County Water Conservancy District Crew**

**WEEK #1**  
**JUNE 7**  
Safety Meeting  
Packaged Forest Service – UCC – DCWCD supplies for flight  
Packaged horse feed  
Replaced liners and plywood protective floor in containment decks  
Loaded 2 semis with materials

**JUNE 8**  
Safety Meeting  
Project Orientation/Wilderness Training Meeting in Provo, UT  
Packaged Forest Service – UCC – DCWCD supplies for flight  
Weighed 2 semi loads of individual pallets at IFA  
Hauled materials to Yellowstone ATV Trailhead and reloaded to haul to Mill Park  
Forest Service hauled trackhoes and skidsteers to Mill Park  
Loaded 1 semi with materials

**JUNE 9**  
Safety Meeting – worked at Mill Park  
Weighed 1 semi load of individual pallets at IFA and delivered to Yellowstone ATV Trailhead  
Hauled materials from Yellowstone ATV Trailhead to Mill Park  
Hauled flight decks to Mill Park  
Started taking apart trackhoes and loading flight decks
JUNE 10
Safety Meeting – worked at Mill Park
Hauled flight decks and other materials to Mill Park
Continued taking apart trackhoes and loading flight decks

JUNE 11

JUNE 12

JUNE 13- Sunday

WEEK #2
JUNE 14
Safety Meeting – worked at Mill Park
Took final trackhoe apart and finished loading all on site material onto flight deck

JUNE 15
Safety Meeting
Chopper was delayed
Cleaned up pre-packaging work area

JUNE 16
Full crew on standby

JUNE 17
Full crew on standby

JUNE 18
Full crew on standby

JUNE 19
Full crew on standby

JUNE 20 - Sunday

WEEK #3
JUNE 21
Safety Meeting - prepared for flight at Mill Park
Added final straps to equipment and supplies
Columbia’s representative and Randy numbered flight decks and equipment loads for fly-in
Additional materials were split into individual loads and numbered to be loaded on return flight decks

JUNE 22
Safety Meeting
Crew members from DCWCD flew into E. Timothy for placement of materials and equipment on site
Packaged and strapped additional loads on return flight decks
Flew 26 loads to E. Timothy Lake
Note: E. Timothy was holding approximately 25 feet of water in the reservoir with outlet works completely open

JUNE 23
East Timothy Lake Construction Report

Safety Meeting
Crew members from DCWCD and BOR flew into E. Timothy and Deer for placement of materials and equipment on site
Flew 3 loads to E. Timothy and 6 loads of equipment and supplies to Deer Lake

JUNE 24
Safety Meeting
Flying J Outfitters brought DCWCD crew in on horses
Crew began setting base camp
Carl, BOR surveyor, started to set survey points at construction site

JUNE 25
Safety Meeting
Continued to set base camp
Carl continued to set cut stakes, center line, and offset reference points

JUNE 26
Safety Meeting
Finished setting base camp
Set up restroom facilities at work cite and base camp
Began constructing containment covers over fuel cubes to provide blast protection
Started unloading flight decks and organizing materials on dam crest using a skidsteer
Forest Service blasters rode in

JUNE 27 - Sunday
Safety Meeting
Developed and cleaned a relief well for drinking water
Randy Crozier worked with blasters to determine the size and identify the rocks needed to be blasted in order to be handled by 308 trackhoes and to meet rip-rap specifications
Blasters began drilling charge holes

WEEK #4
JUNE 28
Safety Meeting
Started reassembling trackhoes – reassembled 2 trackhoes
Finished constructing fuel containments with plywood (looked like small cabins)
Blasters continued drilling charge holes, set charges and made first blast in center of dam rip-rap

JUNE 29
Safety Meeting
Reassembled other 2 trackhoes
Started excavating cut through existing dam and built roads for skidsteers to transport excavated material to spoil area (2 trackhoes and 6 skidsteers)
Repositioned containment decks on dam with a trackhoe to provide access to fuel cubes and passage on crest of dam
Found much more rock in dam embankment than expected – DCWCD separated large rip-rap rock from spoil material and stock piled rip-rap
Blasters continued drilling charge holes, set charges and shot on lakeside face

JUNE 30
Safety Meeting
Continued to excavate cut (4 trackhoes 6 skidsteers) *1 skidsteer broke down
Gathered gabion rock and stock piled with skidsteers – UCC assisted
Blasters continued drilling charge holes, set charges and shot another on lakeside face

JULY 1
Safety Meeting
Continued to Excavate cut (4 trackhoes 5 skidsteers)
Built the sand screening structure and UCC began screening material for sand filter and stock piled
Continued gathering gabion rock and stock piled – UCC assisted
Covered fuel containments with plastic sheeting to water proof gabion baskets
Removed relief well stand pipes with torch on the backside of the dam toe, so they could be buried with spoil material
Blasters continued drilling charge holes

JULY 2
Safety Meeting
Excavated cut (4 trackhoes 5 skidsteers) *1 more skidsteer broke down, 2 skidsteers disabled
UCC continued screening material for sand filter and stock piled sand and pea gravel
Continued gathering gabion rock and stock piled – UCC assisted
Re-routed outlet channel back to historical to allow for new outlet channel construction
Blasters continued drilling charge holes, set last charges and made their last shot on the south end of the dam.

JULY 3
Safety Meeting
Split DCWCD crew and ran a morning and afternoon shift. Utilizing daylight for running equipment
Continued to excavate cut (2 trackhoes 4 skidsteers daylight to dark)
UCC continued screening material for sand filter and stock piled sand and pea gravel
Forest Service blasters rode out

JULY 4—Sunday
Developed a second spring for drinking water because relief well had stopped flowing water
Marked stabilized water level as lake was going down. Lake was still holding approximately 9 foot water depth

WEEK #5
JULY 5
Safety Meeting
Continued split shift ran daylight to dark excavating material from cut (2
trackhoes 4 skidsteers)
Repaired 1 skidsteer

JULY 6
Safety Meeting
Continued excavating the cut (3 trackhoes 5 skidsteers)
Removed existing head structure and concrete (1 trackhoe)
Installed new steel structure with head gate designed for grout back pressure
with a 4 inch vent outlet and 1 ½ inch lock bolts to secure structure to existing
outlet pipe (1 trackhoe)

JULY 7
Safety Meeting
Continued to excavate cut (4 trackhoes 5 skidsteers) *1 more skidsteer broke
down, 2 disabled
Constructed forms for 4 foot high gabions
Adjusted center line of cut to match all other survey stakes on upper dam face –
moved approximately 4 feet east

JULY 8
Safety Meeting
Continued to excavate cut (4 trackhoes 4 skidsteers)
Set up safety shower
Oiled finished gabion forms with brush to prepare for pouring gabions

JULY 9
Safety Meeting
Continued to excavate cut (3 trackhoes 3 skidsteers)
Set up concrete batch plant – 2 cement mixers, 2 generators, 3 inch water pump,
stock pile of sand and gravel, and cement pallets (1 trackhoe 1 skidsteer)
Batched and poured cement around upper new head structure (twenty 94lb.
bags used) – UCC assisted (1 trackhoe 2 skidsteers)

JULY 10
Safety Meeting
Continued to excavate cut (4 trackhoes 4 skidsteers)
Cut final rough grade in upper end of channel
Excavated and formed upper gabion cut off wall at mouth of new outlet channel

JULY 11---Sunday

WEEK #6
JULY 12
Safety Meeting
Continued to excavate cut (4 trackhoes 4 skidsteers) * 1 more skidsteer broke
down (287C track frame broke – major repair needed), 3 skidsteers disabled
Added #9 wire to gabion forms
Valton Mortenson, Bob Leake, Brad Weber came in to verify elevation before
pouring upstream gabion

JULY 13
Safety Meeting
Batched and poured upper gabion (forty-six 94lb bags of cement used) – UCC assisted
Continued to excavate cut (4 trackhoes 3 skidsteers)
Stripped forms from upper gabion
Note: Valton Mortenson, Bob Leake and Brad Weber were on site
Mixture: 7.5 gallons of water, seven 5 gallon buckets sand and gravel, and two 47lb bags of cement to a batch

JULY 14
Safety Meeting
Repaired 1 skidsteer
Continued to excavate cut (4 trackhoes 4 skidsteers)
Cut rough final grade to second gabion

JULY 15
Safety Meeting
Continued to excavate cut (4 trackhoes 4 skidsteers)
Excavated and formed second gabion

JULY 16
Safety Meeting
Batched and poured second gabion (fifty-three 94lb bags of cement used) – UCC assisted
Continued to excavate cut (4 trackhoes 4 skidsteers)
Stripped forms from second gabion

JULY 17
Safety Meeting
Continued to excavate cut (4 trackhoes 4 skidsteers)

JULY 18---Sunday

WEEK #7
JULY 19
Safety Meeting
Continued to excavate cut (3 trackhoes 4 skidsteers)
Dressed cut face side slopes (1 trackhoe)

JULY 20
Safety Meeting
Continued to excavate cut (3 trackhoes 4 skidsteers)
Dressed cut face side slopes (1 trackhoe)
Excavated and formed third gabion

JULY 21
Safety Meeting
Continued to excavate cut (3 trackhoes 4 skidsteers)
Started excavating lake connect channel (1 trackhoe)
Batched and poured third gabion (ninety-four 47lb bags and nine 94lb bags of cement) – UCC assisted
Stripped forms from third gabion
Note: Forest Service visited the site – Harv Forsgren, Valton Mortenson, JR Kirkaldie, Randy Welsh, Brian Paul, Kevin Elliott, Mark Holden (Mitigation Commission)

JULY 22
Safety Meeting
Continued to excavate cut (3 trackhoes 4 skidsteers)
Excavated and formed fourth gabion
Finished excavating lake channel connect (1 trackhoe)

JULY 23
Safety Meeting
In consultation with Valton and Mark – dropped height of fourth gabion approximately 1 foot due to fall down stream
Poured fourth gabion (eighty-eight 47lb bags of cement used)
Built road over second and third gabions for freighting rip-rap into upper outlet channel (1 trackhoe 2 skidsteers)
Rehabilitated and rip-rapped the area around the up stream inlet structure (1 trackhoe)
Stripped forms from fourth gabion

JULY 24
Safety Meeting
Began placing rip-rap in upper channel – set final rock elevation at inlet
Freighted rip-rap and fines with skidsteers loaded by trackhoes (4 trackhoes 4 skidsteers)

JULY 25---Sunday
WEEK #8
JULY 26
Safety Meeting
Trackhoes loaded rip-rap in skidsteers which freighted rip-rap and fines to trackhoe in channel placing material (4 trackhoes 4 skidsteers) * 1 more skidsteer broke down, 3 disabled

JULY 27
Safety Meeting
Trackhoes loaded rip-rap in skidsteers which freighted rip-rap and fines to trackhoe in channel placing material (4 trackhoes 4 skidsteers)
Mechanic on 289C skid fuel issue – machine down

JULY 28
Safety Meeting
Trackhoes loaded rip-rap in skidsteers which freighted rip-rap and fines to trackhoe in channel placing material (4 trackhoes 3 skidsteers)
Began packaging and dismantling forms for fly-out
Put up silt fence
Washed fines into channel with 4 inch water pump
Disassembled 2 fuel containments for fly out

JULY 29
Safety Meeting
Trackhoes loaded rip-rap in skidsteers which freighted rip-rap and fines to trackhoe in channel placing material (4 trackhoes 3 skidsteers)
Washed fines into channel
Repaired 287B bogie wheel – 3 complete bogie wheels replaced on this machine

JULY 30
Safety Meeting
Trackhoes loaded rip-rap in skidsteers which freighted rip-rap and fines to trackhoe in channel placing material (4 trackhoes 4 skidsteers)
Worked on 289C fuel issue

JULY 31
Safety Meeting
Trackhoes loaded rip-rap in skidsteers which freighted rip-rap and fines to trackhoe in channel placing material (4 trackhoes 4 skidsteers)
Packaged miscellaneous materials for flight

AUGUST 1---Sunday

WEEK #9
AUGUST 2
Safety Meeting
Trackhoes loaded rip-rap in skidsteers which freighted rip-rap and fines to trackhoe in channel placing material (4 trackhoes 4 skidsteers)
Repaired 289C skid fuel issue – dirty fuel; used 3 new filters

AUGUST 3
Safety Meeting
Trackhoes loaded rip-rap in skidsteers which freighted rip-rap and fines to trackhoe in channel placing material (3 trackhoes 5 skidsteers)
Tied new outlet channel into the existing channel
Built stepped waterfall with 6 major rock seals (1 trackhoe)
Excavated around old gate well tower to allow for removal (1 trackhoe)

AUGUST 4
Safety Meeting
Placed select large rip-rap between rock seals used voids to collect fines (3 trackhoes 3 skidsteers)
Washed fines into channel with 4 inch water pump
Cut gate-well tower removed and prepared to weld in confined space in lower gate well chamber (1 trackhoe 1 skidsteer)
Set up confined space equipment (man lift hoist, ventilation system, lighting system, welder, torch, and electrical supply)

AUGUST 5
Safety Meeting
Cut and welded in confined space – 1 ½ inch grout nipple upstream and 6 inch downstream grout and access pipe; to clean the existing gate seat
Washed fines into channel with 4 inch water pump (2 skidsteers)
Hand placed riprap
Set up grout plants and other equipment to grout upper section of pipe (1 trackhoe 1 skidsteer)
Note: Bob Leake, Brad Weber, and Valton Mortenson were on site

AUGUST 6
Safety Meeting
Closed new inlet head structure at 9:00 a.m. – no leakage noted
Cleaned and closed center gate 9:15 a.m. started grouting minimal leakage
observed Grouted upstream section of pipe (334 bags of 47lb cement used) (2 skidsteers)
Armored existing outlet channel lower plunge pool (1 trackhoe)
Cut and welded on lower pipe plug assembly on outlet pipe to prepare for lower section
grouting
Mixture: consisted of eight 47lb bags cement, four 5 gallon buckets of water, and 20 oz. Glencium.
Note: Valton Mortenson was supervising grouting operation

AUGUST 7
Safety Meeting
Grouted downstream section of pipe and into the gate well 2 feet above CMP chamber (626 bags of 47lb cement used)
Batched and poured 3x3x3 gabion on the downstream end of outlet pipe (8 bags of 94lb cement used)
Removed 4 inch vent pipe from the upstream structure

AUGUST 8—Sunday

WEEK #10
AUGUST 9
Safety Meeting
Lake level rose to start through new channel 9:00 a.m.
Placed small temporary earthen coffer dam
Filled gate well with clean gabion rock before grouting to within 2 foot of final grout cap elevation
Grouted wet-well (216 bags of 47lb cement used)
Placed sand filter and pea gravel drain downstream of grouted outlet pipe (1 trackhoe 3 skidsteers)
Filled in old outlet channel with native material

AUGUST 10
Safety Meeting
Continued filling in old outlet channel with native material (1 trackhoe 3 skidsteers)
Rehabilitated work area (2 trackhoes)
Dismantled down grout plants and loaded flight decks (1 trackhoe 2 skidsteers)
Cut off remainder of gate well pipe column with demolition saw

AUGUST 11
Safety Meeting
Continued building up north embankment and dike on east side of new outlet channel
Rehabilitated work area (3 trackhoes 4 skidsteers)
Packaged for flight (1 trackhoe 1 skidsteer)
Disassembled remainder of fuel containments
Removed coffer dam allowing lake water flow through constructed channel 5:00 p.m. – approximately 1 foot of head on temporary coffer dam

AUGUST 12
Safety Meeting
Filled in gate well hole in face of breach and placed material on top of it to match existing surface (1 trackhoe)
Rehabilitated work area (3 trackhoes)
Placed rip-rap on south dike of outlet channel (3 trackhoes 3 skidsteers)
Packaged for flight
Dressed upper faces of rip-rap on both sides of the new breach
Note: Everett Taylor with State Dam Safety visited site

AUGUST 13
Safety Meeting
Packaged for flight
Rehabilitated work area (3 trackhoes)
Excavated and placed rip-rap on drain ditches in rehabbed area
Dismantled 1 trackhoe for flight (2 skidsteers)

AUGUST 14
Safety Meeting
Rehabilitated work area (3 trackhoes)
Began dismantling camp
Cleared old spillway of drift wood

AUGUST 15---Sunday

WEEK #11
AUGUST 16
Safety Meeting
Rehabilitated and cleaned-up work area (3 trackhoes)
Dismantled 1 trackhoe for flight (2 skidsteers)

AUGUST 17
Safety Meeting
Rehabilitated work area (2 trackhoes)
Cleared more drift wood from old spillway
Dismantled 1 trackhoe (2 skidsteers)
Dismantled camp to bare necessities

AUGUST 18
Safety Meeting
Final inspection of East Timothy construction and rehabilitated area
Dismantled last trackhoe (2 skidsteers)
Packaged trackhoe parts onto flight decks

AUGUST 19
Safety Meeting  
Dismantled camp and packaged onto decks – all decks prepared to fly  
Flying J Outfitters brought DCWCD crew out on horseback

AUGUST 20
AUGUST 21
AUGUST 22 – Sunday

WEEK #12
AUGUST 23
AUGUST 24

Safety Meeting
Crew members from DCWCD flew in to Deer and East Timothy to organize loads for fly out
Flew all equipment and materials out of E. Timothy and Deer Lakes to Mill Park
(23 loads from East Timothy, 6 loads from Deer)
DCWCD dismantled loads at Mill Park

AUGUST 25

Safety Meeting
Reassembled 3 ½ 308 trackhoes
Loaded and hauled equipment and flight deck off from Mill Park

AUGUST 26

Safety Meeting
Finished reassembling last 308 trackhoe
Loaded and removed everything from Mill Park
Finished on the Mountain
Appendix B – Contract Record Drawings
Appendix C – Historical Drawings
Owner's Certificate

[Text]

Engineer's Certificate

[Text]

MAP of TIMOTHY LAKES RESERVOIR SITES
Located in Duchesne County
Application for Use
By BRIGHAM TIMOTHY
Scale 1" = 1', Drawn 1/1/1921

Sheet No. 1 of 2 sheets
East Timothy Lake Construction Report
Appendix D – Letters of Approval
Mark Holden
CUP Mitigation Commission
230 South 500 East
Suite 230
Salt Lake City, UT 84102-2045

Dear Mr. Holden,

In the summer of 2010, Deer and East Timothy lakes in the Swift Creek Basin were stabilized as planned. A breach was cut through each dam for passage of the maximum inflow design flood. The slopes were laid back on a 2.5:1 slope and the breaches were rip-rapped. Grouted gabion structures were installed on the bottom of the breach, as grade control at East Timothy. The outlet pipe was filled with grout at East Timothy. Several rock seals were installed for grade control at Deer. The outlet pipe was removed at Deer. The dams and spillways were cleared of woody debris and will be left in place as a monument to the men who built those years ago.

The State of Utah has downgraded the dams to a “No Hazard” inactive structure on their inventory and they are no longer going to regularly inspect the dams. The work performed has eliminated the risk to property below the dams and the Forest Service agrees with the state’s “No Hazard” rating.

The Forest Service appreciates the work of the Mitigation Commission, State of Utah, Moon Lake Water Users, Duchesne County Water Conservancy District, Bureau of Reclamation, and the Central Utah Water Conservancy District on the High Lake Stabilization Project. This work has successfully completed the field work for the High Lakes Stabilization Project.

If you have any questions, please contact Valen Mortenson, Civil Engineer, at (435) 781-5147.

Sincerely,

KEVIN B. ELLIOTT
Forest Supervisor

c: Bob Leake
Scott Winterton
Kirk Beecher
Randy Crozier
Rick Sweat
Everett Taylor
Brian Paul
September 8, 2010

Utah Reclamation Mitigation & Conservation Commission
230 South 200 East, Suite 230
Salt Lake City, UT 84102

Attention: Mark Holden, Project Manager

Re: East Timothy – UT00099, Deer Lake – UT00087

Final inspections of East Timothy and Deer Lake dams were conducted on Thursday, August 19, 2010, with the following in attendance:

<table>
<thead>
<tr>
<th>Name</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randy Crozier</td>
<td>Duchesne County Water Conservancy Dist.</td>
</tr>
<tr>
<td>Valton Mortensen, Brian Paul</td>
<td>USFS, Ashley National Forest</td>
</tr>
<tr>
<td>Mark Holden</td>
<td>Utah Reclamation Mitigation &amp; Conservation Commission</td>
</tr>
<tr>
<td>Bob Leake, Brad Weber</td>
<td>Division of Water Rights, Vernal Office</td>
</tr>
<tr>
<td>Everett Taylor (Visited 8/12/2010)</td>
<td>Division of Water Rights, Dam Safety</td>
</tr>
<tr>
<td>Kirk Beecher</td>
<td>Central Utah Water Conservancy District</td>
</tr>
<tr>
<td>Rick Sweat, Red Taylor, Scott Winterton, Will Spitzelberg</td>
<td>US Bureau of Reclamation</td>
</tr>
</tbody>
</table>

This letter will serve as official notice of our acceptance of the project, pursuant to Section 73-5a-304 of the Utah Code Annotated 1953, as amended, contingent upon the completion of the following items:

1. Within 60 Days of the project’s completion the State Engineer must be supplied with a final set of “As Constructed” drawings. These drawings should be marked as “Record Drawings” or other designation indicating the final status of these documents. The drawings can be submitted electronically in either a .pdf or .tif format. Alternatively, these drawings may be submitted on a mylar medium.

Based on our final inspection and acceptance of the project, the referenced dams are considered to be stabilized and will be reclassified on the State Dam Inventory as inactive dams.
Page 2
UT00099/UT00087
September 8, 2010

I have included a copy of our inspection report with this letter for your information. As always, if you have any questions or would like to discuss any of the aforementioned items in further detail, please contact me at (801) 538-7376 or Everett Taylor at (801) 538-7372.

Sincerely,

[Signature]

David K. Marble, P.E.
Assistant State Engineer

DKM/ewt/jm

Enclosures
DIVISION OF WATER RIGHTS - DAM SAFETY SECTION
DAM INSPECTION REPORT – 2010

<table>
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<th>Dam Name/Number:</th>
<th>East Timothy, UT00099</th>
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<tbody>
<tr>
<td>Date:</td>
<td>8/19/2010</td>
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<tr>
<td>Hazard:</td>
<td>Inactive</td>
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<td>Storage Level:</td>
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<td>Dam Type:</td>
<td>Earthen</td>
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<td>Spillway Flow:</td>
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<tr>
<td>Purpose of Inspection:</td>
<td>Final</td>
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<tr>
<td>Outlet (Breach) Flow:</td>
<td>5-10 cfs</td>
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<tr>
<td>Weather:</td>
<td>Partly Cloudy</td>
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Representatives at the Inspection:

<table>
<thead>
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<td>US Bureau of Reclamation</td>
</tr>
</tbody>
</table>

Comments:

2. This inspection was performed to finalize the project after the dam was breached, stabilizing the lake level and reducing the dam to “No Hazard” status.

Necessary Maintenance and Repair:

2. None. Punchlist items were discussed on August 12, 2010, and included: 1. Fill over the wet well; 2. Place riprap on the west downstream berm of the breach; 3. Grade below the west downstream toe to provide positive drainage away from the toe; 4. Place rocks in the breach for hikers to hop across; 5. Reclaim one of the track marks along the east downstream toe - leave the other as a trail. All items of work have been completed.

Embankment:

| Crest:     | Good.    |
| US Slope:  | Good.    |
| DS Slope:  | Good.    |

Abutments/Foundation:

| L. Abutment: | Good. |
| R. Abutment: | Good. |
| US Toe:      | Good. |
| DS Toe:      | Good. |

Reservoir Basin:

| Shore Stability: | Good. |
| Reservoir Bottom: | stabilized Lake is inundating the basin |
## Spillway (Breach):

<table>
<thead>
<tr>
<th>Item</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>Freeboard</td>
<td>Spilling approximately 6” through breach.</td>
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<tr>
<td>Intake</td>
<td>Good</td>
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<tr>
<td>Concrete Structures</td>
<td>Good</td>
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<tr>
<td>Outfall/Stilling Basin</td>
<td>Good</td>
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</table>

## Outlet:

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</thead>
<tbody>
<tr>
<td>Conduit</td>
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<tr>
<td>Intake</td>
<td>Grouted</td>
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<tr>
<td>Channel/Stilling Basin</td>
<td>Reclaimed</td>
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<tr>
<td>Controls/Venting</td>
<td>Removed</td>
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## Instrumentation:

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<th>Status</th>
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<tbody>
<tr>
<td>Monuments</td>
<td>Good</td>
</tr>
<tr>
<td>Staff Gage</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Piezometers</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Drains</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>