RECLAMATION

Managing Water in the West

High Lakes Stabilization East Timothy Lake Construction Report

Uinta Basin Replacement Project

U.S. Department of the Interior
Bureau of Reclamation
Provo Area Office
Provo, Utah

November 2010

High Lakes Stabilization East Timothy Lake Construction Report

Uinta Basin Replacement Project

prepared by

Provo Area Office
Upper Colorado Region

Contents

Page

Introduction 1

Construction Oversight 1
UCC Crew 2
Helicopter Fly in 2

East Timothy Lake Construction 4

Equipment Used at East Timothy Lake 4
Construction Activities at East Timothy Lake 5

Appendix A – Crew Daily Logs ..... A

Utah Conservation Corp Crews – High Lakes Stabilization Weekly Report . A-1
Duchesne County Water Conservancy District Crew A-2

Appendix B – Contract Record Drawings ..... B

Appendix C – Historical Drawings C

Appendix D – Letters of Approval ..... D

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

Miscellaneous Hand Tools - shovels, sledgehammers, pry bars, cross cut saws, axes
Diesel and Gasoline Fuel Containers

Construction Activities at East Timothy Lake

June 21-June 27

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.

Figure 4: Crew using trackhoes and skidsteers to excavate breach.

Figure 5: Material was removed from the dam and transported to spoil areas in an assembly line fashion.

June 28-July 04 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.

Figure 7: Four trackhoes were used to excavate the breach while six skidsteers hauled the material to the spoil pile.

Figure 8: View of all four trackhoes working in breach before placing cut-off walls and riprap.

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).

Figure 10: Crew batching and pouring cement on new head structure on existing outlet pipe.

Figure 11: View of new head structure with concrete poured around existing outlet pipe.

July 12-July 18 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').

Figure 13: Crew mixing and delivering cement for gabion cutoff walls.

Figure 14: First and second gabion cutoff walls poured in place (looking upstream).

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.

Figure 16: Looking upstream with three gabion walls in place.

Figure 17: Trackhoe excavating the lake connection channel.

July 26-Aug. 01 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.

Aug. 02-Aug. 08

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.

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]

Breach Channel Width [3]	Breach Channel Elevation (feet, msl)	Breach Channel Excavation Volume (CY)	Existing Outlet Grout Backfill Volume (CY) [4]	Gabion Basket Volume (CY)	Riprap Removed From Dam Volume (CY)	Inlet/Outlet Channel Fill Volume (CY)	Riprap Placed in Breach Volume (CY)	Stilling Pool Sill Riprap Volume (CY)	Filter Material Volume (CY)
15' min	11,012.57	8,400	28	17.75	610	160	1,300	15	5

(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	Leader Tom Ogilvie
6-9-10 to 6-15-10	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	Leader Mercer Owens
6-14-10 to 6-21-10	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	Leader Tom Ogilvie
6-21-10 to 6-29-10	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	Leader Mercer Owens
6-28-10 to 7-6-10	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	Leader Tom Ogilvie
7-5-10 to 7-13-10	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	Leader Mercer Owens
7-12-10 to 7-20-10	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	Leader Tom Ogilvie
7-19-10 to 7-27-10	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	Leader Mercer Owens
7-26-10 to 8-2-10	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.

Week	Leader Tom Ogilvie
8-2-10 to 8-10-10	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	Leader Mercer Owens
8-9-10 to 8-13-10	We hiked up to East Timothy Dam today and worked with the Duchesne County Water Conservancy District crew rehabbing the work site area.

Week	Leader Luke Leclair-Marzolf
8-30-10 to 9-6-10	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	Leader Sara Davis
9-6-10 to 9-13-10	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	Leader Luke Leclair-Marzolf
9-12-10 to 9-14-10	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

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

Assembled 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 steam 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 ¼ 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. Glenium.
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 out let 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

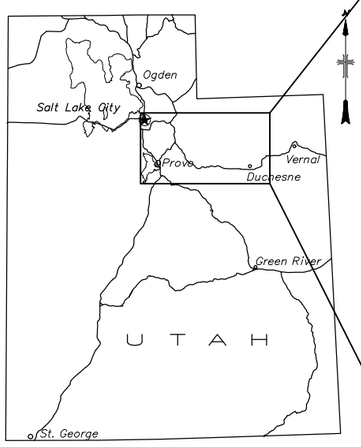
AUGUST 25

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

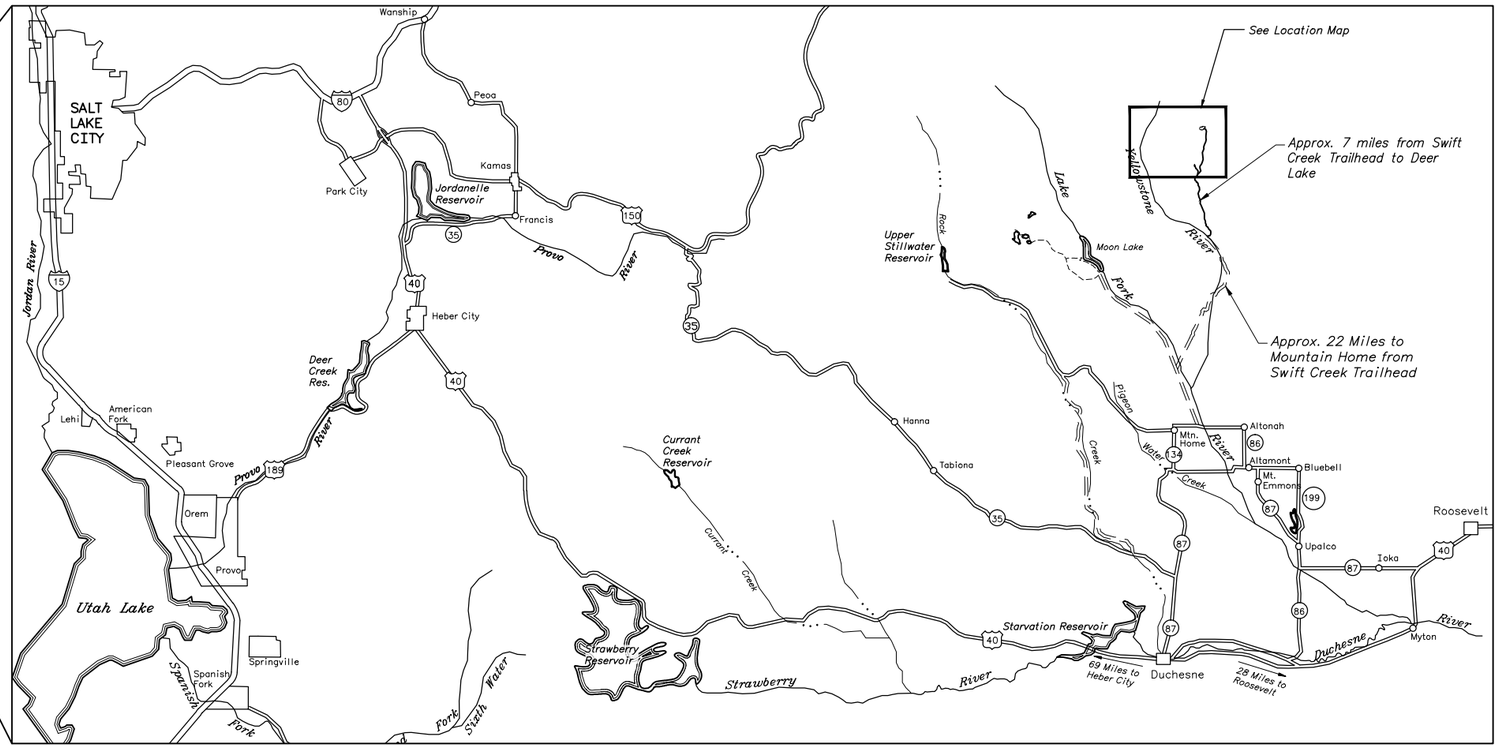
AUGUST 26

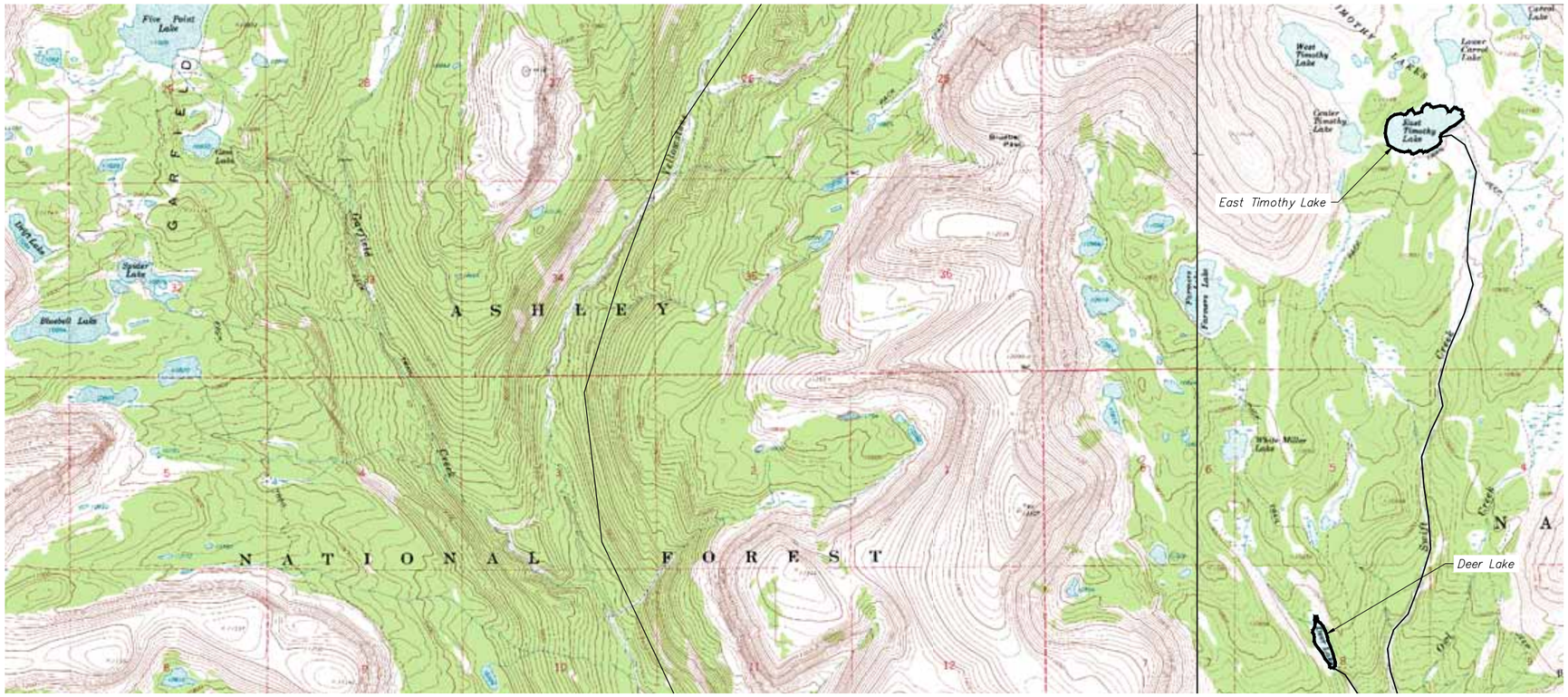
Safety Meeting
Finished reassembling last 308 trackhoe
Loaded and removed everything from Mill Park
Finished on the Mountain

Appendix B – Contract Record Drawings

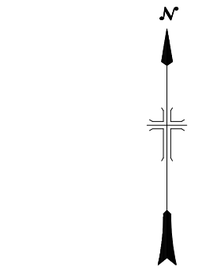


KEY MAP





LOCATION MAP
NOT TO SCALE



VICINITY MAP

8 0 8 12 16
SCALE OF MILES

Page no.	Drawing no.	Title
1	OA58-418-99	Key Map, Vicinity Map, Location Map and Drawing List
2	OA58-418-100	Deer Lake Plan and Profile
3	OA58-418-101	Deer Lake Sections, Detail and Tables
4	OA58-418-102	East Timothy Lake Overall Plan
5	OA58-418-103	East Timothy Lake Breach Plan and Profile
6	OA58-418-104	East Timothy Lake Breach Sections, Detail and Tables
7	OA58-418-105	East Timothy Lake Existing Outlet Profile

RECLAMATION
Managing Water in the West

REV NO		
1	2010-10-06 Will Spitzenberg	ASBUILT DRAWINGS

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
PROVO AREA OFFICE
PROVO, UTAH

SWIFT CREEK BASIN LAKES
EAST TIMOTHY AND DEER LAKES
VICINITY AND LOCATION MAPS - CONTRACT RECORD

DESIGNED _/s/ Michael Draper_ CHECKED_/s/ Scott Winterton, P.E._
DRAWN _/s/ Michael Draper_ TECH. APPR._/s/ Cary Southworth, P.E._
APPROVED _/s/ Joseph Bullough, P.E._ PEER REVIEWER

PROVO, UTAH SHEET 1 OF 1 2010-02-11 OA58-418-99

DATE AND TIME PLOTTED
DECEMBER 16, 2010 15:27
PLOTTED BY
WSPITZENBERG

CAD SYSTEM
AutoCAD RM 18.1s
CAD FILENAME
OA58-418-99-SWIFTCREEKLOCATIONMAP-ASBUILT.DWG

RECLAMATION
Managing Water in the West

OVERALL PLAN

100 0 100 200 300
SCALE OF FEET

NOTES

1. Contour interval is 1 foot.
2. Centerline alignment meandered along breach to create resting pools.
3. Top of riprap El. 11,012.57. Cut vol. = 8,400 c.y.
4. Grid factor = 0.99949466.
5. Lake connection was excavated to be 20 feet wide at El. 11,011.00 with 3:1 side slopes.
6. Existing drain wells were buried under spoil disposal area.

REV NO		
1	2010-10-06 418-WS	ASBUILT DRAWINGS

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
PROVO AREA OFFICE
PROVO, UTAH

SWIFT CREEK BASIN LAKES
DAM STABILIZATION

EAST TIMOTHY LAKE
OVERALL PLAN – CONTRACT RECORD

DESIGNED /s/ Will Spitzenberg, P.E. CHECKED /s/ Scott Winterton, P.E.
DRAWN /s/ Will Spitzenberg, P.E. TECH. APPR. /s/ Cary Southworth, P.E.
APPROVED /s/ Joseph Bullough, P.E.
PEER REVIEWER

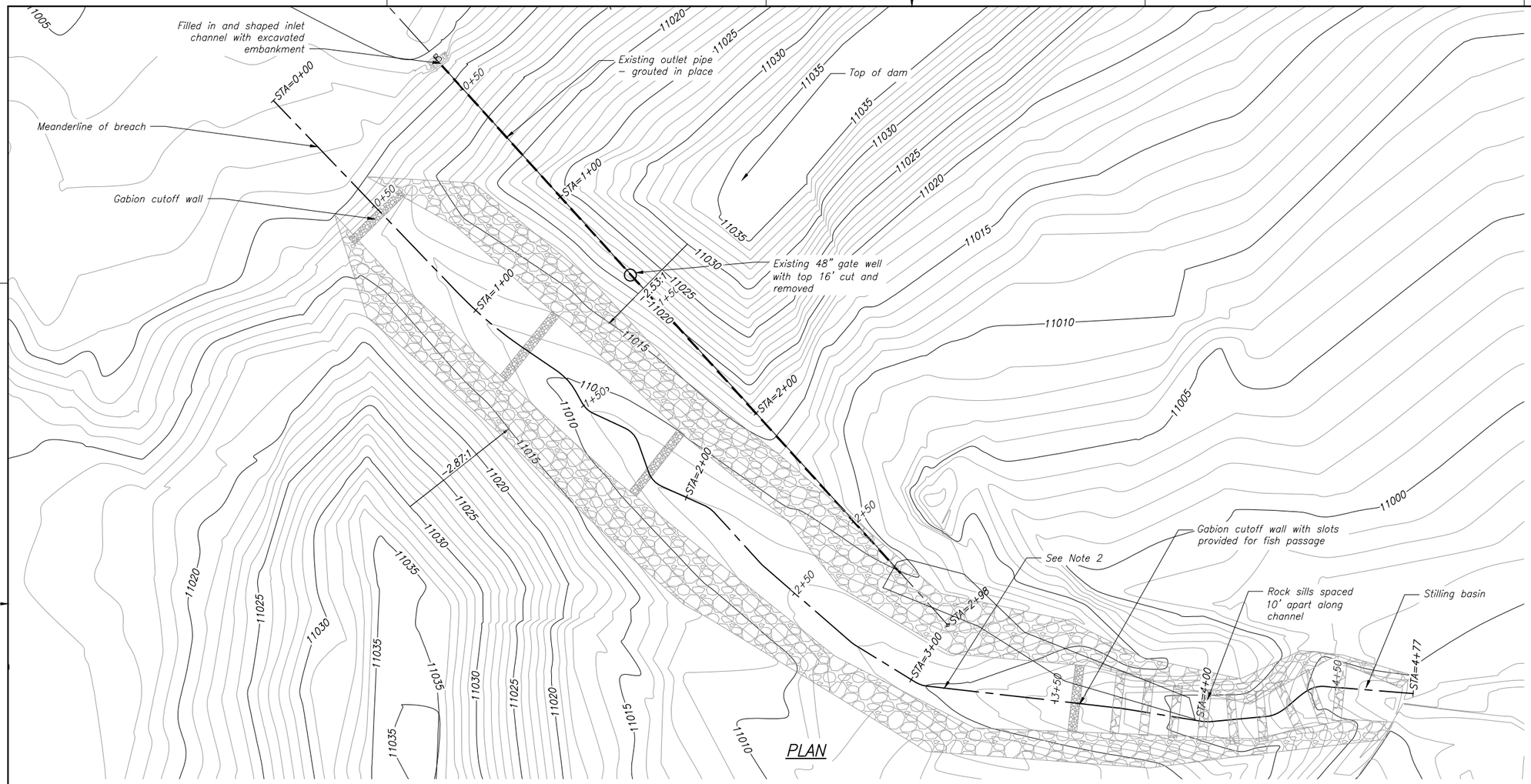
PROVO, UTAH 2010-02-11 SHEET 1 OF 1

0A58-418-102

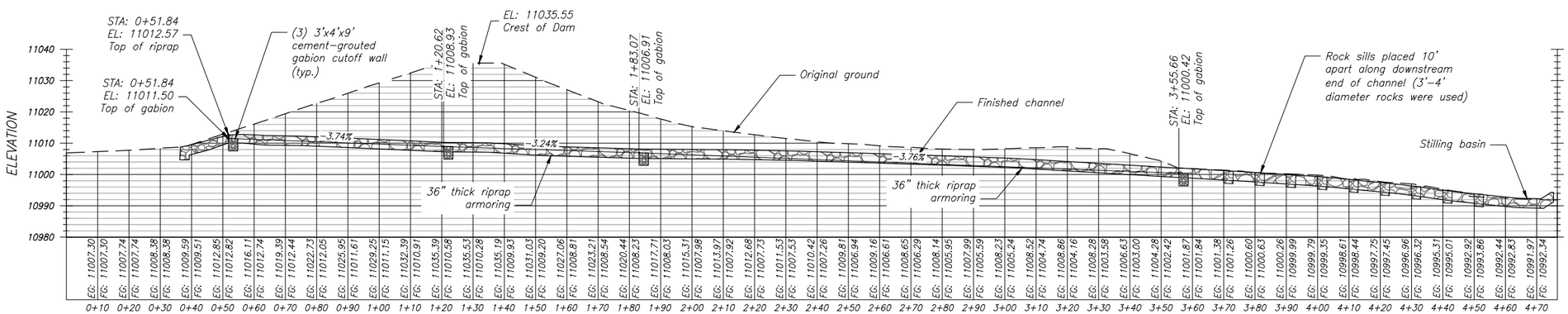
DATE AND TIME PLOTTED
NOVEMBER 11, 2010 12:24
PLOTTED BY
WSPITZENBERG

CAD SYSTEM
AutoCAD Rel. 18.1s
CAD FILENAME
EASTTIMOTHY-ASBUILT.DWG

RECLAMATION
Managing Water in the West



PLAN



PROFILE

NOTES

1. Contour interval is 1 foot.
2. Meanderline represents water path along breach with resting pools.
3. Top of riprap El. 11,012.57. Cut vol. = 8,400 c.y.
4. Grid factor = 0.99949466

REV. NO		
1	2010–10–06 418–WS	ASBUILT DRAWINGS

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
PROVO AREA OFFICE
PROVO, UTAH

SWIFT CREEK BASIN LAKES
DAM STABILIZATION

EAST TIMOTHY LAKE BREACH
PLAN AND PROFILE – CONTRACT RECORD

DESIGNED /s/ Will Spitzenberg, P.E. CHECKED /s/ Scott Winterton, P.E.
DRAWN /s/ Will Spitzenberg, P.E. TECH. APPR. /s/ Cary Southworth, P.E.
APPROVED /s/ Joseph Bullough, P.E.
PEER REVIEWER

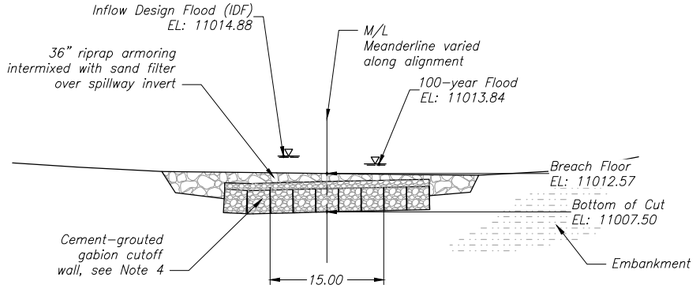
PROVO, UTAH 2010–02–11
SHEET 1 OF 1

0A58–418–103

DATE AND TIME PLOTTED
NOVEMBER 17, 2010 16:13
PLOTTED BY
WSPITZENBERG

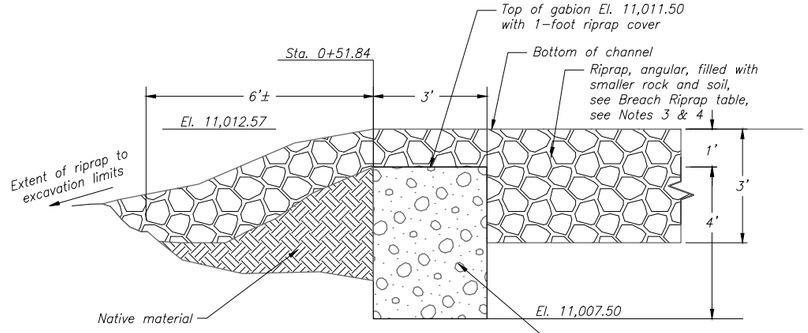
CAD SYSTEM
AutoCAD Rel. 18.1s
CAD FILENAME
EASTTIMOTHY–ASBUILT2.DWG

RECLAMATION
Managing Water in the West



BREACH CHANNEL SECTION AT STA. 0+51.84

10 0 10 20 30
SCALE OF FEET

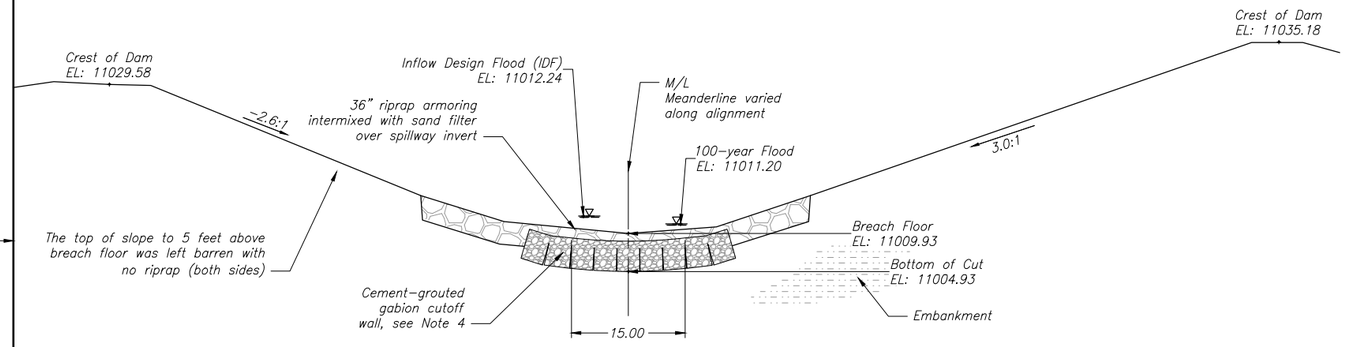


SECTION AT STA. 0+51.84
GABION BASKET WALL

BREACH RIPRAP				
D MIN.	D15	D50	D MAX.	THICKNESS MIN.
9"	12"	18"	27"	36"

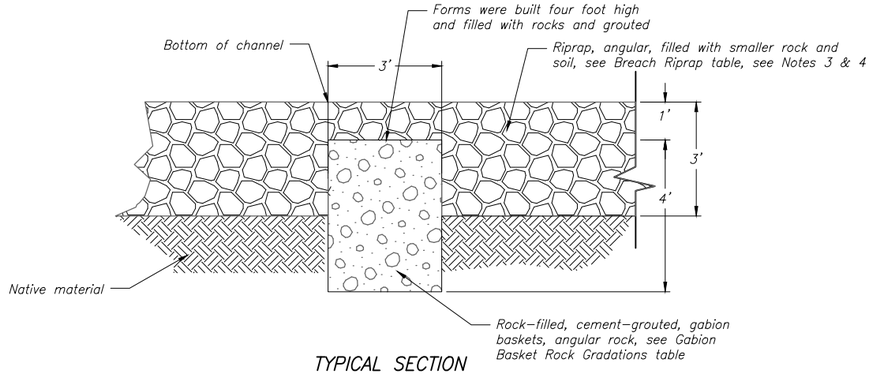
GABION BASKET ROCK GRADATIONS			
GABION BASKET HEIGHT (INCHES)	PREDOMINATE ROCK SIZE (INCHES)	MINIMUM ROCK SIZE (INCHES)	MAXIMUM ROCK SIZE (INCHES)
48	6 to 10	4	12

GABION CUTOFF WALL ELEVATIONS					
STATION	BREACH FLOOR	TOP OF GABION	BOTTOM OF GABION	IDF ELEVATION	100 YEAR FLOOD ELEVATION
0+51.84	11,012.57	11,011.50	11,007.50	11,014.88	11,013.84
1+20.65	11,009.93	11,008.93	11,004.93	11,012.24	11,011.20
1+83	11,007.91	11,006.91	11,002.91	11,010.22	11,009.18
3+55.66	11,001.42	11,000.42	10,996.42	11,003.73	11,002.69



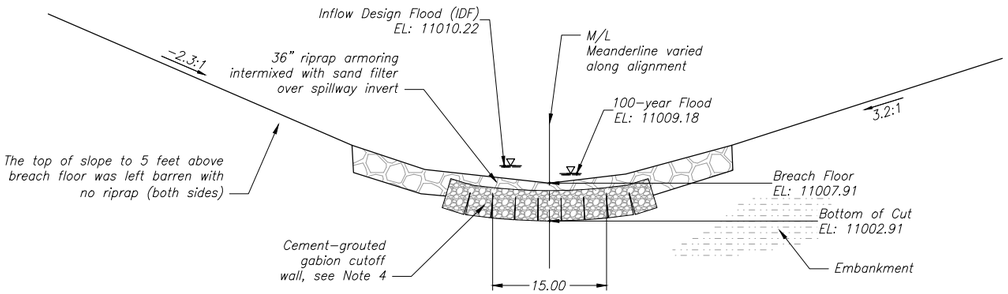
BREACH CHANNEL SECTION AT STA. 1+20.65

10 0 10 20 30
SCALE OF FEET



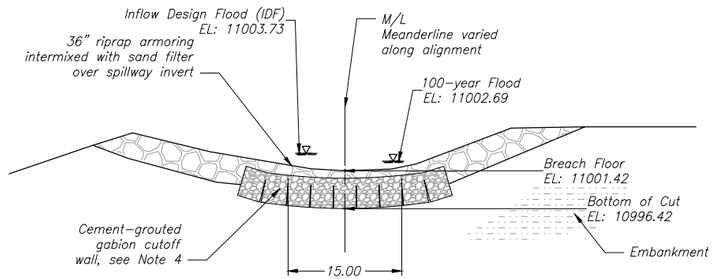
TYPICAL SECTION
GABION BASKET WALL

2 0 2 4 6
SCALE OF FEET



BREACH CHANNEL SECTION AT STA. 1+83

10 0 10 20 30
SCALE OF FEET



BREACH CHANNEL SECTION AT STA. 3+55.66

10 0 10 20 30
SCALE OF FEET

NOTES

1. Flood elevations through the breach represent elevations as if the abandoned spillway does not operate.
2. Riprap was placed through breach in layers to maintain correct gradations.
3. Compacted backfill to the extent possible based on tools allowed for the job.
4. Gabion baskets were rock-filled, cement-grouted, angular rock. See Gabion Basket Rock Gradations table.

REV NO		
1	2010-10-06 418-WS	ASBUILT DRAWINGS

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
PROVO AREA OFFICE
PROVO, UTAH

SWIFT CREEK BASIN LAKES
DAM STABILIZATION

EAST TIMOTHY LAKE BREACH
SECTIONS, DETAIL AND TABLES - CONTRACT RECORD

DESIGNED /s/ Will Spitzenberg, P.E. CHECKED /s/ Scott Winterton, P.E.
DRAWN /s/ Will Spitzenberg, P.E. TECH. APPR. /s/ Cary Southworth, P.E.
APPROVED /s/ Joseph Bullough, P.E.
PEER REVIEWER

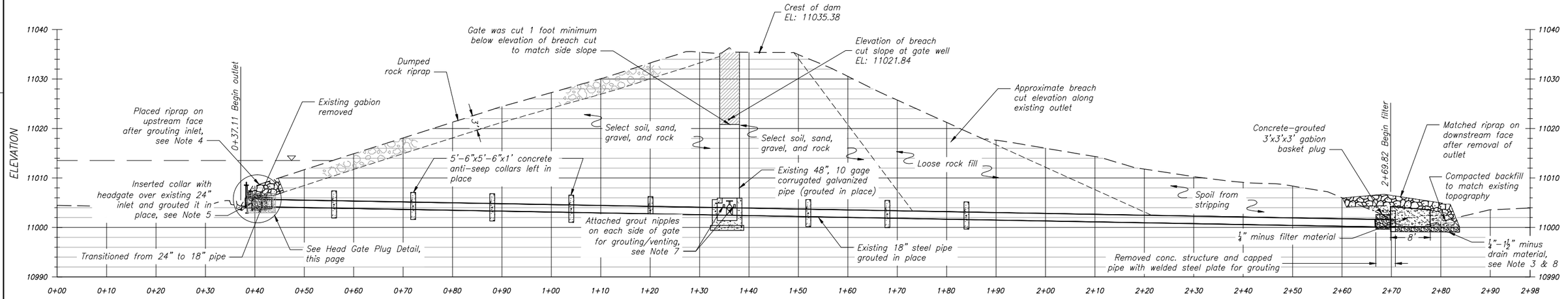
PROVO, UTAH 2010-02-11
SHEET 1 OF 1

0A58-418-104

DATE AND TIME PLOTTED
NOVEMBER 10, 2010 12:30
PLOTTED BY
WSPITZENBERG

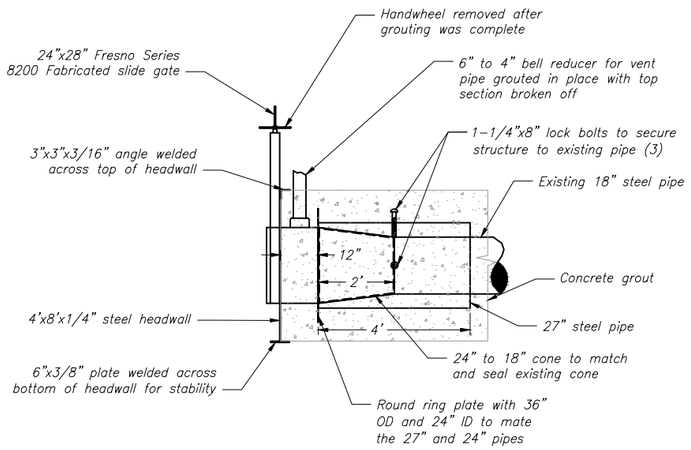
CAD SYSTEM
AutoCAD Rel. 18.1s
CAD FILENAME
EASTTIMOTHY-ASBUILT.DWG

RECLAMATION
Managing Water in the West



EXISTING OUTLET PROFILE

10 0 10 20 30
SCALE OF FEET



HEAD GATE PLUG DETAIL
(nts)

NOTES

1. Provided compacted filter material over end of pipe before grouting.
2. Trench walls were sloped to allow adequate compaction between fill and natural ground.
3. Extended gravel drain through compacted sloped material to discharge under riprap.
4. Filled inlet area around vent pipe with embankment material compacted to the extent possible. Vent pipe was removed after completion of work.
5. Installed collar and headgate at pipe inlet.
6. Outlet anti–seep collars were left in place.
7. Grout was pumped upstream in nipple upstream of gate. Nipple downstream of gate was used for venting for grout pumped from the downstream outlet.
8. No testing was performed on sand filter and gravel drain.

REV NO		
1	2010–10–06 418–WS	ASBUILT DRAWINGS

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
PROVO AREA OFFICE
PROVO, UTAH

SWIFT CREEK BASIN LAKES
DAM STABILIZATION

EAST TIMOTHY LAKE
EXISTING OUTLET PROFILE – CONTRACT RECORD

DESIGNED _/s/ Will Spitzenberg, P.E._ CHECKED_ _ _ /s/ Scott Winterton, P.E._ _ _
DRAWN _ /s/ Will Spitzenberg, P.E._ _ _TECH. APPR. _/s/ Cory Southworth, P.E._ _ _
APPROVED _/s/ Joseph Bullough, P.E._ _ _ _ _ _ _ _
PEER REVIEWER

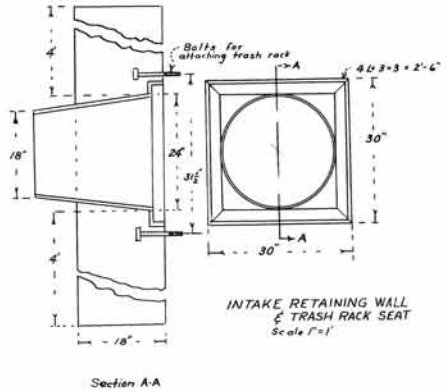
PROVO, UTAH 2010–02–11
SHEET 1 OF 1

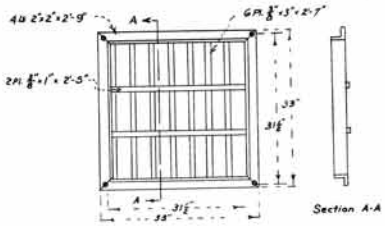
0A54–418–105

DATE AND TIME PLOTTED
NOVEMBER 10, 2010 12:33
PLOTTED BY
WSPITZENBERG

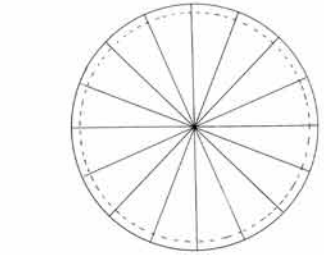
CAD SYSTEM
AutoCAD RM 18.1s
CAD FILENAME
E:\TIMOTHY–ASBUILT.DWG

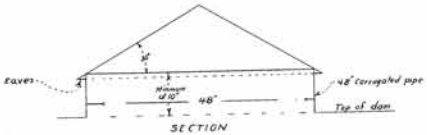
Appendix C – Historical Drawings



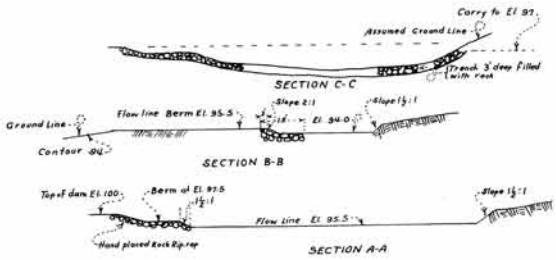


TRASH RACK
Scale 1"=1'

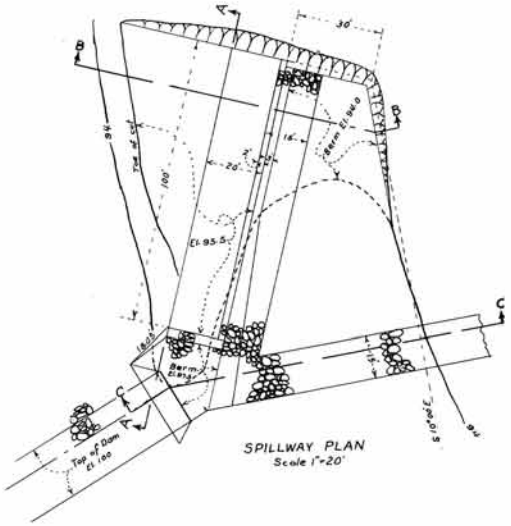


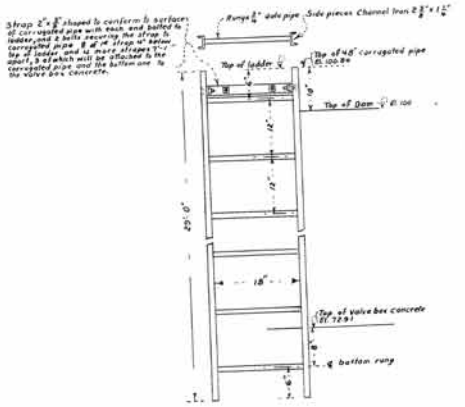


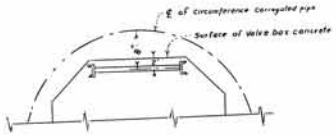
VALVE BOX WELL COVER
Design detail left to Manufacturer



SPILLWAY SECTIONS
Scale 1"=20'





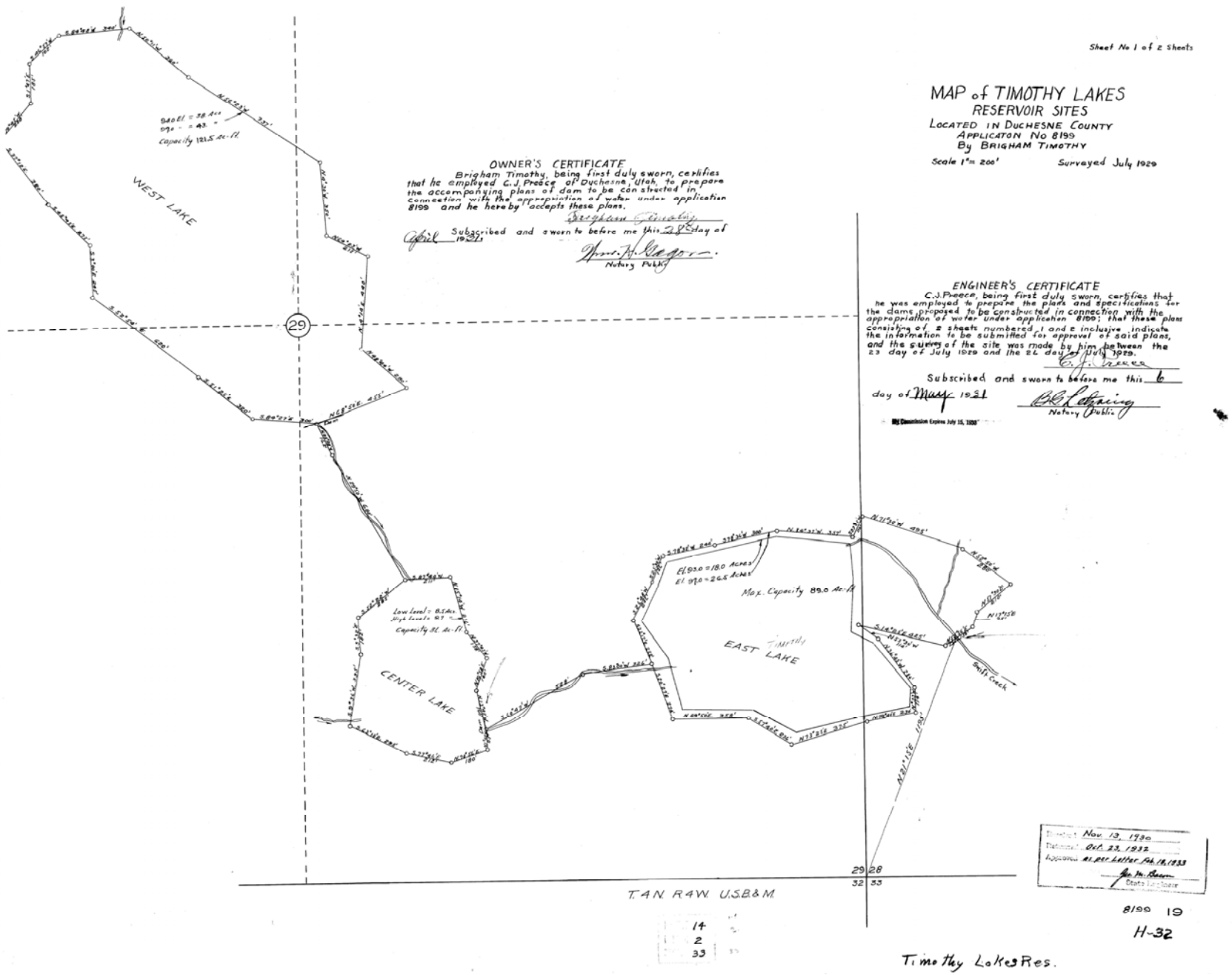


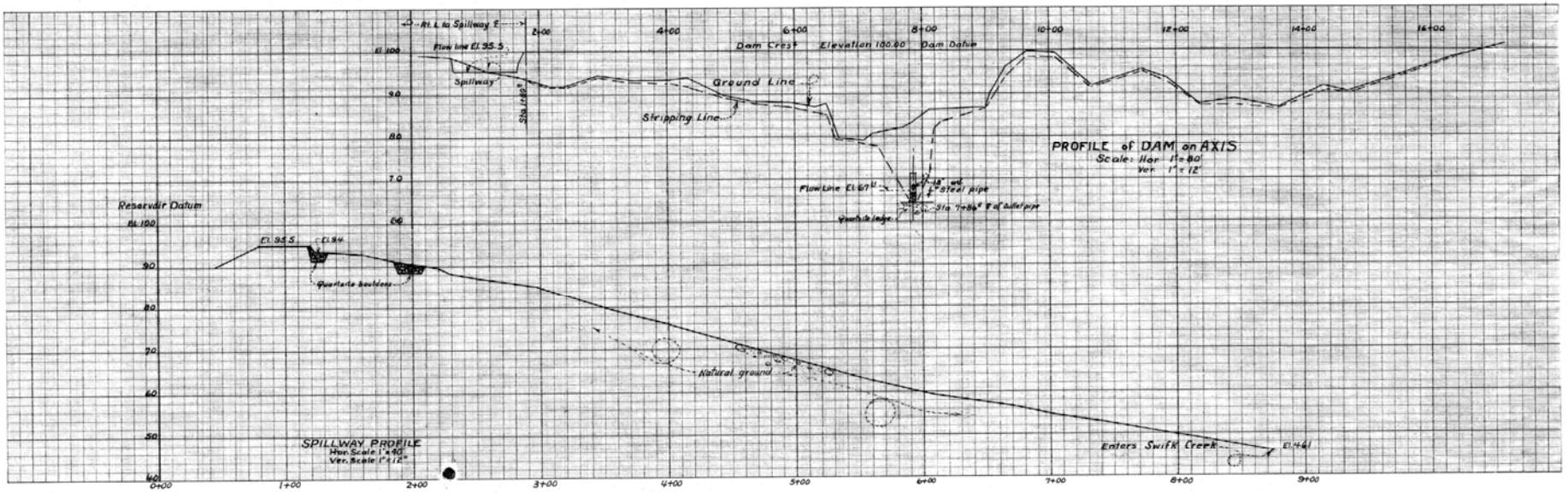
VALVE BOX WELL LADDER Scale 1"=1 Ft

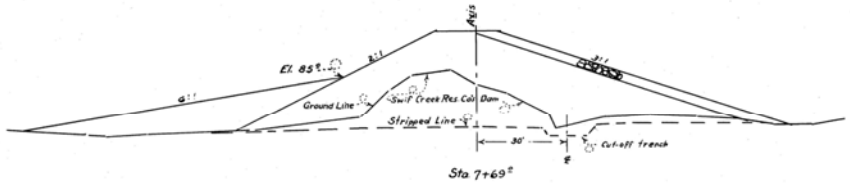
EAST TIMOTHY LAKE RESERVOIR
SPILLWAY DETAIL & DRAWINGS
SHEET No. 4 of 4

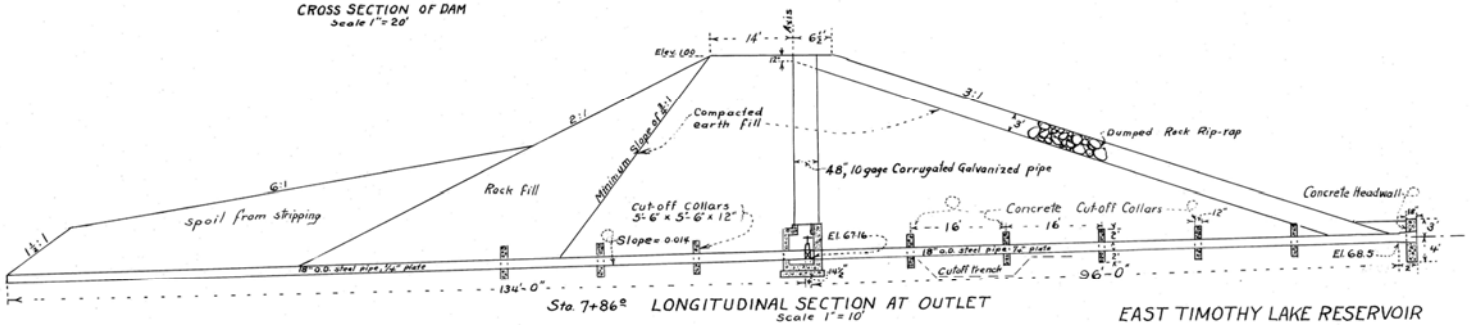
H-34-D
56

East Timothy Lake Res


Sheet No 1 of 2 Sheets
MAP of TIMOTHY LAKES
RESERVOIR SITES
LOCATED IN DUCHESNE COUNTY
APPLICATON No 8199
By BRIGHAM TIMOTHY
Scale 1"= 200'
Surveyed July 1929
OWNER'S CERTIFICATE
Brigham Timothy, being first duly sworn, certifies that he employed C.J. Preece of Duchesne, Utah, to prepare the accompanying plans of dam to be constructed in connection with the appropriation of water under application 8199 and he hereby accepts these plans.
Brigham Timothy
Subscribed and sworn to before me this 28th day of April 1931.
Notary Public
ENGINEER'S CERTIFICATE
C.J. Preece, being first duly sworn, certifies that he was employed to prepare the plans and specifications for the dams proposed to be constructed in connection with the appropriation of water under application 8199; that these plans consisting of 2 sheets numbered 1 and 2 inclusive indicate the information to be submitted for approval of said plans, and the survey of the site was made by him between the 23 day of July 1929 and the 26 day of July 1929.
C.J. Preece
Subscribed and sworn to before me this 6 day of May 1931
Notary Public
My Commission Expires July 15, 1934
WEST LAKE
CENTER LAKE
EAST TIMOTHY LAKE
El 9340 = 38 Acres
El 9370 = 43 "
Capacity 121.5 Ac-ft
Low Level = 8340
High Level = 87
Capacity 91 Ac-ft
El 9320 = 180 Acres
El 9370 = 265 Acres
Max. Capacity 89.0 Ac-ft
Smith Creek
29
29 28
32 33
T 4 N R 4 W U.S.B.& M.
Nov. 13, 1930
Oct. 23, 1932
Approved as per Letter Feb 16, 1933
State Engineer
8199 19
H-32
14
2
33
Timothy Lakes Res.



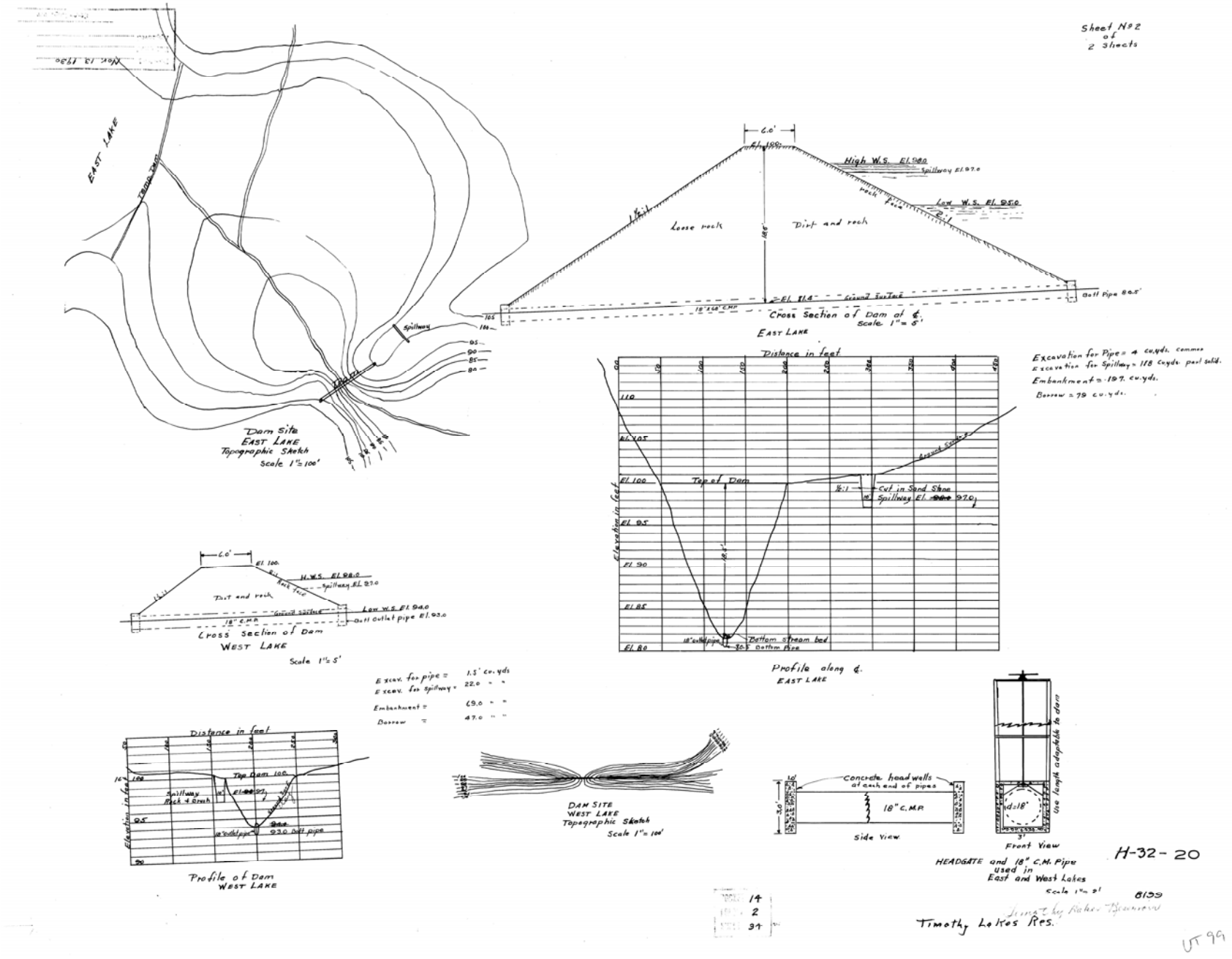




EAST TIMOTHY LAKE RESERVOIR
PROFILES and SECTIONS
DUCHESNE COUNTY APPL. No. 13900
Scales: As shown AUG. 7, 1950
SHEET NO. 3 of 4.

H-34-D
55

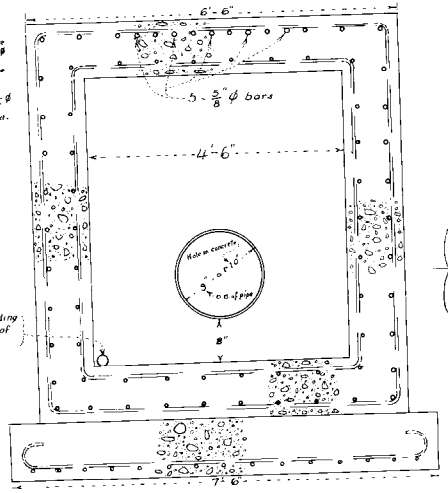
East Timothy Lake Res. UT 99


Sheet No 2
of
2 Sheets
EAST LAKE
Dam Site
EAST LAKE
Topographic Sketch
Scale 1"=100'
Cross Section of Dam of ℄
Scale 1"=5'
EAST LAKE
High W.S. El 980
Spillway El 977.0
Low W.S. El 950
Loose rock
Dirt and rock
Outl Pipe 80.5'
Distance in feet
Elevation in feet
Top of Dam
Cut in Sand Stone
Spillway El 970
Bottom stream bed
Profile along ℄
EAST LAKE
Excavation for Pipe = 4 cu.yds. common
Excavation for Spillway = 118 Cu.yds. part solid.
Embankment = 197. cu.yds.
Borrow = 79 cu.yds.
Cross Section of Dam
WEST LAKE
Scale 1"=5'
H.W.S. El 98.0
Spillway El 97.0
Low W.S. El 94.0
Outl outlet pipe El 93.0
Excav. for pipe = 1.5' cu.yds
Excav. for spillway = 22.0 " "
Embankment = 69.0 " "
Borrow = 47.0 " "
Profile of Dam
WEST LAKE
DAM SITE
WEST LAKE
Topographic Sketch
Scale 1"=100'
Concrete head walls
at each end of pipes
18" C.M.P.
Side View
Front View
d=18"
Use length adaptable to dam
HEADGATE and 18" C.M. Pipe
used in
East and West Lakes
Scale 1"= 2'
H-32-20
8139
Timothy Lakes Res.
UT 99

REINFORCEMENT STEEL
Inside curtain, center of which is 2½ in. from inside face of concrete all sides, top and bottom consisting of ⅝ ϕ bars spaced @ 8" centers, except transverse to ℄ of outlet pipe on ceiling downstream from manhole which bars are to be ⅝ ϕ.
Outside curtain, center of which is 2½ from outside face of concrete, all sides, top and bottom consisting of ½ ϕ spaced @ 8" centers, with extra ⅝ ϕ bars in ceiling longitudinal to ℄ of outlet pipe, hooked on end with a L leg extending down the downstream end of box.
All laps shall be 40 diameters of bar. Hooks to be standard.

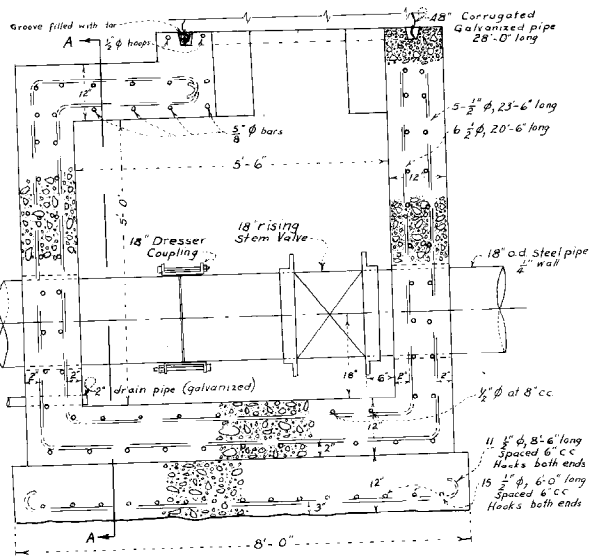
AREA - CAPACITY TABLE

Contour	Area at Contour (Acres)	Volume Between Contours (Ac Ft)	Capacity Reservoir at Contour (Ac Ft)
68.3	0.0		
		0.3	
71	0.25		0.3
		8.5	
76	3.15		8.8
		11.0	
77	18.8		19.8
		65.2	
80	23.7		84.0
		139.0	
85	31.9		223
		174.0	
90	37.6		397
		199.0	
95	42.0		596
		86.0	
97	44.3		682

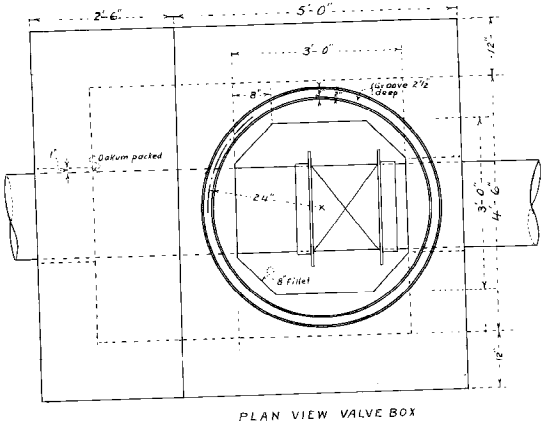


2" drain pipe extending from Valve box to toe of dam. Slope = 0.01

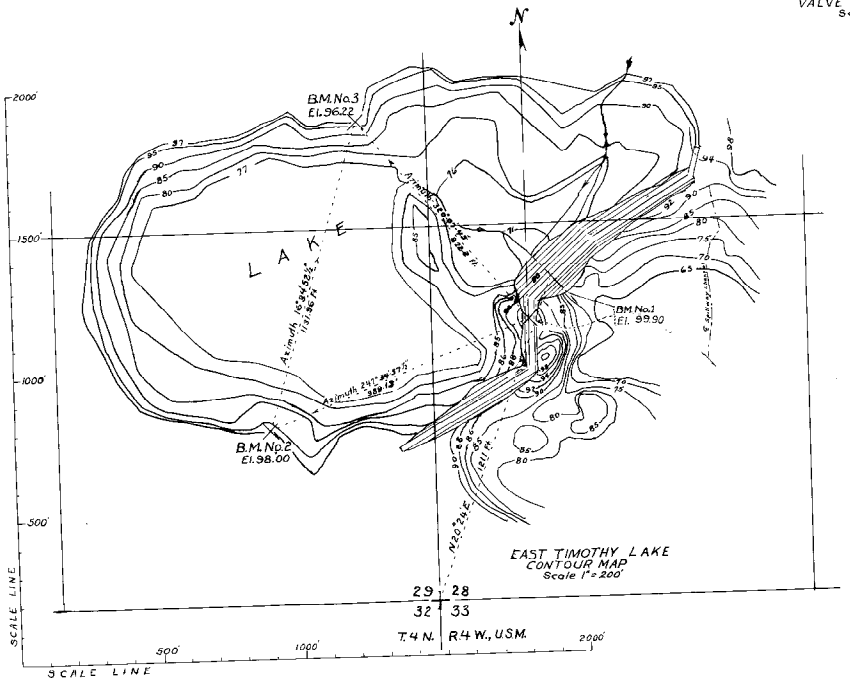
ELEVATION A-A



VALVE BOX DETAILS
Scale 1 In. = 1 Ft.



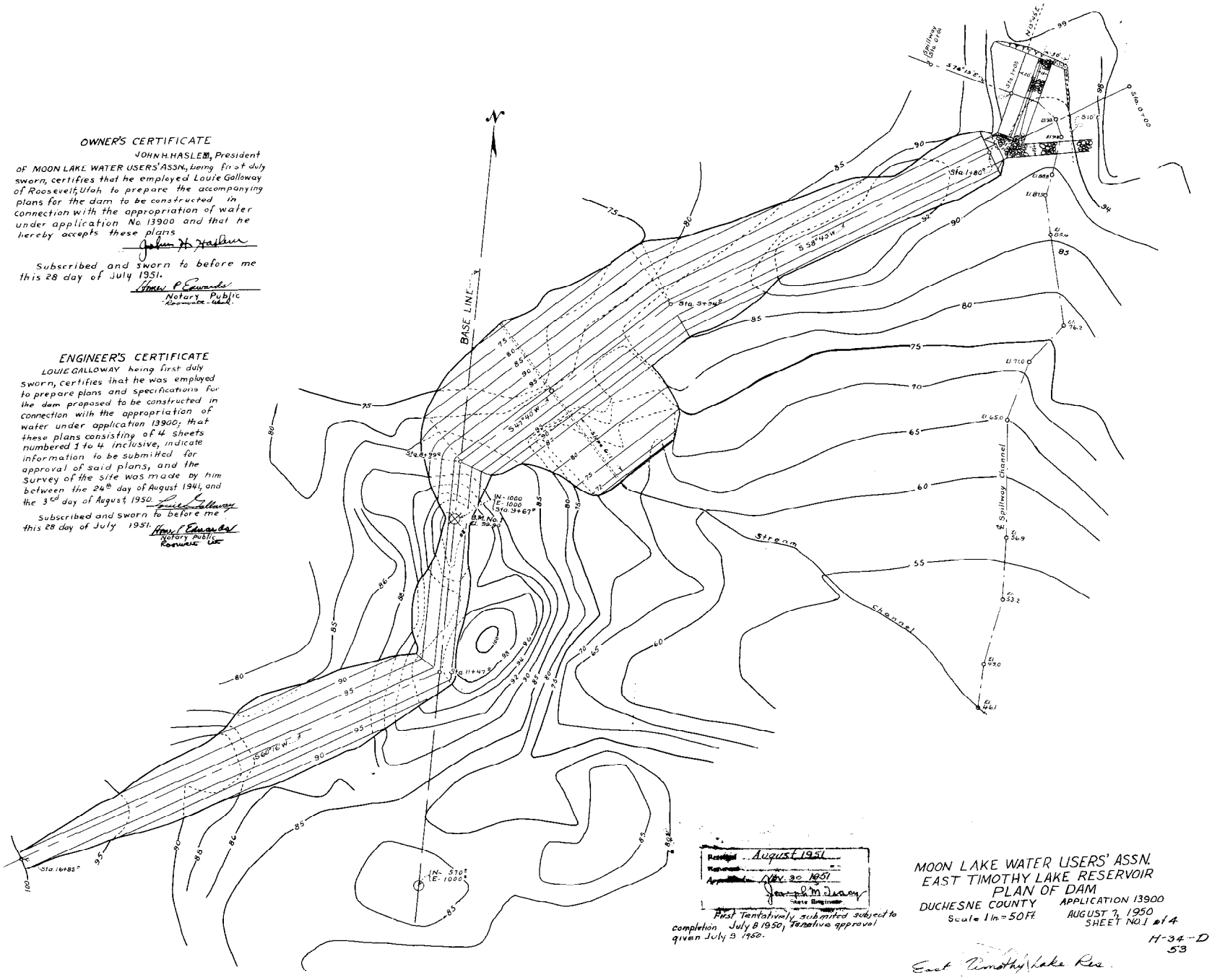
PLAN VIEW VALVE BOX

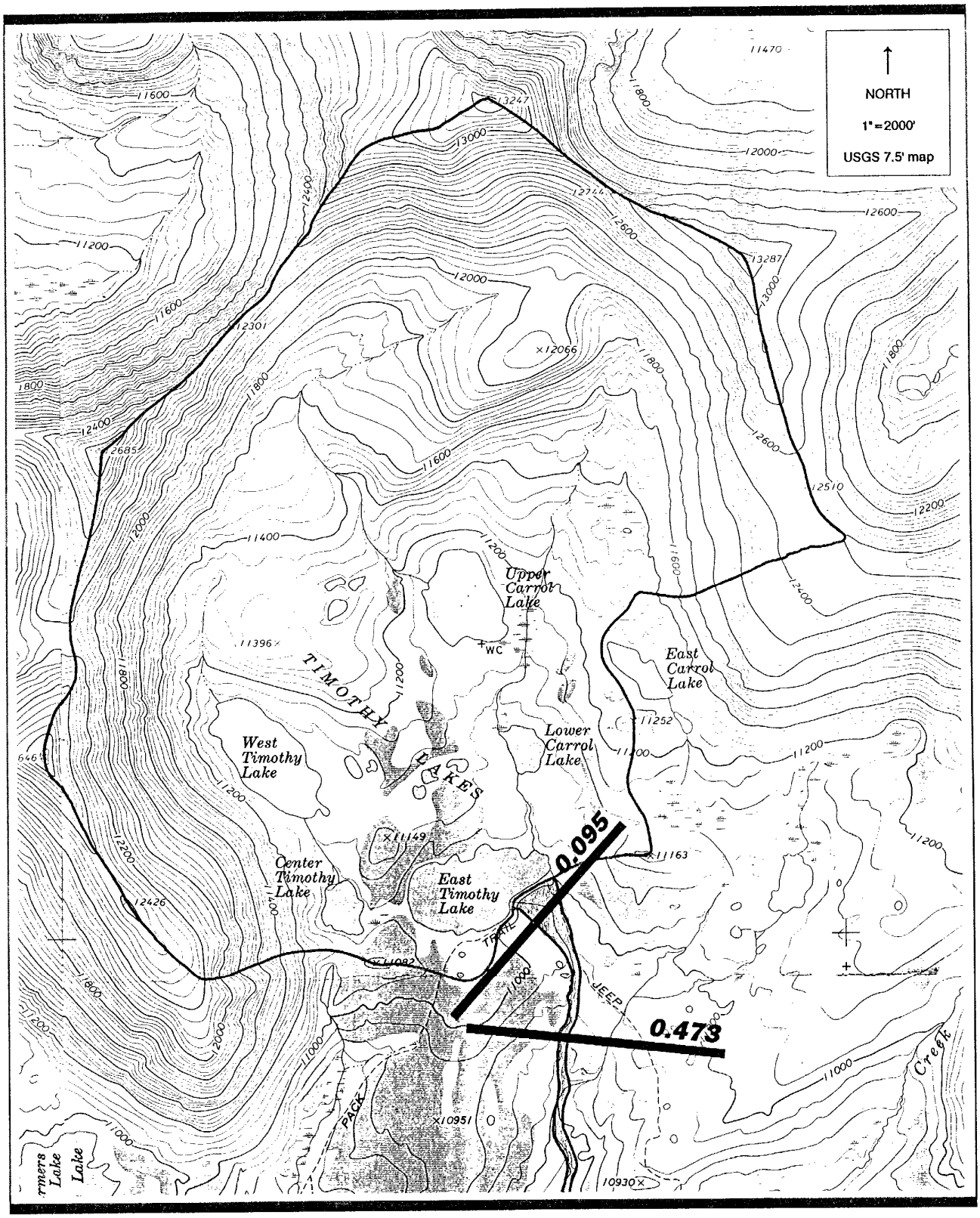


MOON LAKE WATER USERS' ASSN.
EAST TIMOTHY LAKE RESERVOIR
MAP and DRAWINGS
DUCHESNE COUNTY APPL. No 13900
Scale: As shown AUG. 7, 1950
SHEET NO. 2 of 4

H-34-D
54

East Timothy Lake Res.


OWNER'S CERTIFICATE
JOHN H. HASLEM, President of MOON LAKE WATER USERS' ASSN., being first duly sworn, certifies that he employed Louie Galloway of Roosevelt, Utah to prepare the accompanying plans for the dam to be constructed in connection with the appropriation of water under application No. 13900 and that he hereby accepts these plans.
Subscribed and sworn to before me this 28 day of July 1951.
Notary Public
Roosevelt, Utah
ENGINEER'S CERTIFICATE
LOUIE GALLOWAY being first duly sworn, certifies that he was employed to prepare plans and specifications for the dam proposed to be constructed in connection with the appropriation of water under application 13900; that these plans consisting of 4 sheets numbered 1 to 4 inclusive, indicate information to be submitted for approval of said plans, and the survey of the site was made by him between the 24th day of August 1941, and the 3rd day of August 1950.
Subscribed and sworn to before me this 28 day of July 1951.
Notary Public
Roosevelt Ut
BASE LINE
Sta 0+00
Sta 1+80
Sta 3+34
Sta 8+39
Sta 11+47
Sta 16+85
B.M. No. 1
El. 9230
N- 1000
E- 1000
Sta 3+67
N- 570
E- 1000
Stream Channel
Spillway Channel
El. 8850
El. 8730
El. 8540
El. 7612
El. 7110
El. 6650
El. 5690
El. 5332
El. 4980
El. 4761
Received August, 1951
Approved Nov. 30 1951
State Engineer
First Tentatively submitted subject to completion July 8 1950, Tentative approval given July 9 1950.
MOON LAKE WATER USERS' ASSN.
EAST TIMOTHY LAKE RESERVOIR
PLAN OF DAM
DUCHESNE COUNTY
Scale 1 in. = 50 Ft.
APPLICATION 13900
AUGUST 7, 1950
SHEET NO. 1 of 4
H-34-D
53
East Timothy Lake Res.



RB&G ENGINEERING INC.
Provo, Utah

Map 1. INUNDATION AREA

East Timothy Dam and Reservoir
Duchesne County, Utah

Appendix D – Letters of Approval

USDA United States Department of Agriculture | Forest Service | Ashley National Forest | Supervisor's Office
355 North Vernal Avenue
Vernal, UT 84078

File Code: 2320
Date: September 16, 2010

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 Valton Mortenson, Civil Engineer, at (435) 781-5147.

Sincerely,

KEVIN B. ELLIOTT
Forest Supervisor

MITIGATION COMMISSION
OFFICIAL FILE COPY
CLASSIFICATION
PROJECT
FOLDER CONTROL
SEP 2 2 2010

CODE	INITIALS
MC 02	

cc: Bob Leake
Scott Winterton
Kirk Beecher
Randy Crozier
Rick Sweat
Everett Taylor
Brian Paul

GARY R. HERBERT
Governor
GREG BELL
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Water Rights
KENT L. JONES
State Engineer/Division Director

September 8, 2010

Utah Reclamation Mitigation & Conservation Commission
230 South 500 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:

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

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.

1594 West North Temple, Suite 220, PO Box 146300, Salt Lake City, UT 84114-6300
telephone (801) 538-7240 • facsimile (801) 538-7467 • TTY (801) 538-7458 • www.waterrights.utah.gov

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,

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

DKM/ewt/jm

Enclosures

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

Dam Name/Number:	East Timothy, UT00099		
Date:	8/19/2010	Hazard:	Inactive
Storage Level:	~11,012.5'	Dam Type:	Earthen
Spillway Flow:	0 cfs	Purpose of Inspection:	Final
Outlet (Breach) Flow:	5-10 cfs	Weather:	Partly Cloudy

Representatives at the Inspection:

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

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):	
Freeboard:	Spilling approximately 6" through breach.
Intake:	Good.
Concrete Structures:	Good.
Outfall/Stilling Basin:	Good

Outlet:	
Conduit:	Grouted.
Intake:	Grouted.
Channel/Stilling Basin:	Reclaimed.
Controls/Venting:	Removed.

Instrumentation:	
Monuments:	Good.
Staff Gage:	Not Applicable.
Piezometers:	Not Applicable.
Drains:	Not Applicable.