Level II Documentation of the Grand Valley Diversion Dam Work Complex (5ME12482) in Mesa County, Colorado

by

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INTRODUCTION

The Grand Valley Water Users Association (GVWUA) and the Orchard Mesa Irrigation District (OMID) plan to complete upgrades to the Government Highline Canal Roller Dam Electrical and Control Systems. The first phase of upgrades includes extending the utility system, burying overhead service lines, replacing the service equipment at the dam, and installing an on-site standby generator. A later phase of upgrades will include adding new service entrances at all buildings except the dam tender's house. The upgrades have the potential to impact the historic character of the Grand Valley Diversion Dam work complex (work complex). The work complex is on lands managed by the Bureau of Reclamation (Reclamation).

The work complex is a National Register-eligible site. This project is being conducted under a memorandum of agreement (MOA) between GVWUA, Reclamation, and the Colorado State Office of Archaeology and Historic Preservation (OAHP). The MOA requires that Level II documentation of the work complex be prepared to provide a permanent record of the facility prior to alteration or impacts. The documentation is combined into a package that includes photography, a site description, geographical information system mapping, and background historical information. This is in accordance with the guidelines presented in Athearn (1990) and with the guidelines established by History Colorado (2013). Level II documentation for the work complex (5ME12482) was completed prior to any project-related ground disturbances or alteration. The documentation was conducted by Project Director Tosh McKetta on October 9, 2018. Jaclyn A. Mullen acted as Principal Investigator for Alpine Archaeological Consultants, Inc. Aaron Goldman conducted the Geographic Information Systems work for the project.

METHODS

The work complex was photographically documented using a 24.2-megapixel, global positioning system-enabled Nikon D5300 digital single-lens reflex camera mounted with an 18–55-mm Nikon lens. The resulting photographs were produced in JPEG format with at least a 300-dots-per-inch resolution. Photographs were taken from various directions to capture all of the elevations of each feature. Each digital photograph is associated with a specific photographic point and has metadata attached to the photograph, which includes the date and time, F-stop, shutter speed, and focal length. Photographic points were recorded in the field with azimuth directions recorded for each photograph. Azimuths collected are depicted on the site maps and provided in the project’s photograph logs.

Descriptive information was collected during the documentation of the work complex, including construction methods and materials used. Historical research was completed through the examination of records housed at the Reclamation Western Colorado Area Office and the OMID, cartographic sources, Reclamation Grand Valley Project histories, Civilian Conservation Corps (CCC) camp histories (O’Brien Printing Company 1938), and other online project information.

DESCRIPTION OF SITE 5ME12482- THE GRAND VALLEY DIVERSION DAM WORK COMPLEX

Site 5ME12482 consists of a work complex composed of five structures and two features: the dam tender’s house, the well house, a garage, a shed, a covered fuel platform, and two masonry walls. The site is immediately south of the Grand Valley Diversion Dam on the northern bank of the Colorado River within DeBeque Canyon (Photographs 1 and 2). Maintenance of the complex has eradicated native vegetation, except within areas along the river to the east, where tamarisk, reeds, and cottonwood propagate. Ornamental vegetation, such as a grass lawn and cherry trees, has been planted around the dam tender’s house.
The site was originally documented in 2001 by Reclamation, with four of the structures given separate Smithsonian numbers (5ME12482—5ME12485). Following consultation with OAHP, it was decided that all four of the previously documented structures should be combined into one site using one site number. All of the structures were described in detail in the original documentation (Coulam 2001a, b, c, d). The site was updated in 2015 during an inventory for staging areas associated with this project (Pfertsh 2015).

The complex is currently used by the GVWUA for ongoing maintenance of the Government Highline Canal and monitoring of the Grand Valley Diversion Dam. The dam tender’s house is the northernmost of the structures on the site. It is a single-story structure with a rectangular floorplan that measures 53-x-24 feet (ft.) and is oriented north to south (Photographs 3–6). The structure is built on a concrete perimeter foundation with a basement below. The exterior of the building is covered with 11-inch (in.)-wide Masonite siding that forms a clapboard pattern. It has a gable roof that is currently covered with 3-tab asphalt composition shingles. The house is entered through a covered doorway on the western elevation near the northwestern corner. There are 13 windows on the structure and all are aluminum clad. There are five windows on the western elevation, including four double-hung vertical-sliding windows and one double-hung horizontal-sliding window. There are two windows on the northern elevation—one double-hung horizontal-sliding window and a picture window made up of three, side-by-side, double-hung vertical-sliding windows. Four windows are on the eastern elevation—three are double-hung vertical-sliding windows and one is a double-hung horizontal-sliding window. On the southern elevation there are two double-hung horizontal-sliding windows.

The well house is approximately 45 ft. southwest of the dam tender’s house. It is a single-story building with a square floorplan measuring 14½-x-14½ ft. and is built over a metal-lined well. It has a gabled roof that is covered with the same asphalt composite shingles as the dam tender’s house (Photographs 7–10). The roof has a returned cornice on the gabled ends, with the cornice boxed in a plain frieze. The gable ends of the structure are covered with wood clapboard siding with a wooden vent on the lower portion. The exterior of the structure is beautifully covered with river cobbles laid horizontally in distinctive rows. The cobbles are pressed into cement, which is also used as mortar. The walls are 1 ft. thick and provide insulation to keep water pumped from the well from freezing. The lower portion, where the well is located, can be accessed by a small wooden board door at the base of the southern elevation. The upper level is accessed through the front of the building (northern elevation) through a four-panel wood door near the northwestern corner. A single cobble-faced stair leads up to the door. There is a single window in the center of each the eastern, southern, and western elevations. All three are four-light fixed-pane windows, although the window on the eastern elevation has been replaced, resulting in the removal of the horizontal dividing wood piece.

The southern side of the building is built on the same grade as the dam tender’s house, with its southern side stepped down approximately 3 ft. in height. The stepped area is also retained by an east-to-west-running wall constructed in two sections, with one tied to the southeastern corner of the structure. The second wall is tied to western side of a small set of four stairs constructed at the structure’s southwestern corner. The stairs provide access up to the front of the structure along a concrete sidewalk. The wall stands just over 3½ ft. tall and is constructed with the same cobble masonry as the well house. The wall is topped with a 17-in.-wide, 3-in.-thick concrete cap. A cement plaque is mortared to the wall immediately west of the stairs and reads “CCC/1939.” The wall is similar to the walls that define the western and eastern extents of a gravel lot that contain the remainder of the structures making up the work complex. The western wall runs north-to-south from the eastern end of the retaining wall described above and serves as a barrier along the edge of the Colorado River (Photograph 11). The wall is 317 ft. long and is built on top of a concrete levy constructed along the river. The northern end of the wall flares outward forming a V-shape as the levy deflects river water away from the area. The majority of the wall is in good condition except for near the junction of the wall and the retaining wall. In this area, several cobbles are missing and
there are holes in the wall that appear to have been made by equipment impacts. The damage to the wall shows that the core of the wall is made from 7-in.-thick concrete layered in rows, with cobbles placed horizontally into the mix.

From the well house, there is another wall running north-to-south that has been built along the eastern side of the canal and dam access road (Photograph 12). The wall stands at an average height of 4 ft. and serves as a retaining wall along the western end of the complex. It is built in the same manner as the wall described previously and has a total length of 230 ft. There is a 21 ft. gap between this wall and the western end of the retaining wall that extends from the well house to allow vehicles to enter a level, graveled work area. The three remaining structures on the site are incorporated into this wall.

The first of the wall-incorporated structures is near the northern end of the wall and consists of a covered fuel platform (Photographs 13–15). It is a 6-x-6-ft. raised concrete slab covered by a small gable roof that is supported by concrete and cobble columns. The 2-ft.-thick concrete slab is a reddish color and is elevated 22 in. above the ground surface. It is accessed by two stairs on its southern side. Both the face of the stairs and the raised portion below the concrete slab are covered with mostly red-colored cobbles. A cement plaque has been incorporated into the eastern wall below the slab, which reads “CCC/1940.” Two of the roof support columns are built on the eastern corners of the concrete slab with the remaining two built on top of the above-mentioned wall. The columns comprise vertical stacks of cobbles, with three stacks visible on each side of each column. These are held together by cement with a distinctive reddish-hue. The roof of the platform is covered with galvanized, corrugated sheet metal, as are both gable ends. The gable ends are painted red. The platform is no longer used, as evidenced by the two standing fuel tanks on its northern side.

The garage is 30 ft. south of the fuel platform. It is a one-story structure with a rectangular plan, measuring 58-x-22½ ft. It is oriented north-to-south, with the western elevation of the structure built below the ground surface of the canal and dam access road, with the retaining wall abutting the structure’s northern and southwestern corners (Photographs 16–19). The walls of the structure are built with the same wet-laid cobble face as the other structure and wall elements previously described, with the exception of the addition of a formed, concrete header on top of the cobble walls for the purpose of leveling the wall for roof construction. There are eight, 6-in.-diameter, stoneware ventilation pipes incorporated into the upper end of the walls—two on the northern elevation near the northeastern corner, two on the eastern elevation near the southeastern corner, and four on the southern elevation near the southeastern corner. The structure has a gable roof covered with galvanized, corrugated sheet metal over 2-x-6-in. open board rafters. The same material is used to cover both gable ends. Equipment and automobiles enter the structure through two, side-by-side, track-sliding doors near the center of the structure on its eastern elevation. Pedestrian entry is also gained on this side of the structure through a board door at each end of the elevation. A third entryway is on the northern elevation through another board door near the northeastern corner. There are six windows on the structure, with one three-light fixed-pane window on the eastern elevation to the north of the sliding doors, one small boarded-up window on the southern elevation near the southwestern corner, and four along the western elevation. The latter are double-hung, four-light, wood-sash, horizontal-sliding windows near ground level of the access road. In addition to these four windows, a small, board access door is south of the windows, near the structure’s southwestern corner. This may have been used to shovel coal into the interior for heating purposes. The structure is heated by a stove in the northwestern corner of the interior.

The final structure within the work complex is a small, general-purpose shed 75 ft. south of the garage. The shed has a square plan that measures 7-x-7 ft. and is oriented north-to-south. Like the garage, the retaining wall abuts the northwestern and southwestern corners of the structure (Photographs 20–23). It is also built in the same manner as the previous structures, with a gable roof covered with galvanized, corrugated sheet metal over 2-x-6-in. board rafters. The gable ends of
the structure are also covered in the same corrugated sheet metal. The structure is entered on the
southern elevation near the southeastern corner through a four-panel wooden door with a fixed-glass
pane in the upper part of the door. Three windows would have provided light to the interior of the
structure. Two are on the eastern elevation and are side-by-side, double-hung, four-light, wood-sash,
horizontal-sliding windows. In both instances, plywood covers one half of the windows. The third
window is on the southern elevation opposite the door and is currently covered with plywood but was
likely the same style as the two on the eastern elevation.

HISTORICAL BACKGROUND

Irrigation History

The Grand Valley irrigation history begins almost immediately after the removal of the Utes
with the first appropriation of water from the Colorado River. The water was appropriated on
August 22, 1882 in the amount of 520.81 cubic feet per second for use in irrigating the Grand Valley.
To make use of this water, construction of the Grand Valley Canal was begun by the Grand River
Ditch Company on January 10, 1883 (Grand Valley Irrigation Co. 2008). The company quickly ran
out of money, and T. C. Henry purchased the company with the backing of the Travelers’ Insurance
Company, completing the project in 1884 (Holleran 2005). The original diversion from the Colorado
River was a wooden structure. The initial 17.12 miles (mi.) of the canal is now known as the Upper
Mainline. When constructed, it was 25 to 30 ft. wide and carried water at a depth of 3 to 4 ft. At the
end of the Upper Mainline, the canal was split into two canals by a structure referred to as a divider.
From this point, the northern branch of the canal continued along the same contour elevation to a
point 3 miles northwest of Fruita as the Highline, and the southern branch dropped 22 ft. and
continued westward as the Mainline to its terminus at Big Salt Wash. These canals were completed
by Henry in 1884. Later that year, the Mesa County Ditch was constructed, supplied by a feeder
canal midway along the route of the Upper Mainline. The canals were consolidated under the
ownership of the Grand River Ditch Company in 1886, which was controlled by the Travelers’
Insurance Company. Financial difficulties resulted in the incorporation of the Grand Valley
Irrigation Company (GVIC) on January 7, 1894 to acquire the holdings of the Grand River Ditch
Company, the Grand Valley Canal Company, the Mesa County Ditch Company, and the Independent
Ranchmen’s Ditch Association from the Travelers’ Insurance Company. The GVIC was organized as
a cooperative, mutual ditch company, comprising individual water users as shareholders of water
stock; it continues to the present day.

By the end of the 1890s, additional irrigation projects were being envisioned and devised in
an effort to put thousands more acres into cultivation. It is at this time that the Grand Valley
Project was being proposed with the intent of diverting additional water from the Colorado River and
transporting it through a lengthy canal along the whole of the Grand Valley. After the Reclamation
Service was formed in 1902, the Grand Valley Project was again proposed and was one of six such
projects slated to have lands withdrawn to provide the necessary funding after the passage of the
Reclamation Act on June 17, 1902. After the lands were withdrawn, the Reclamation Service began
surveying lands, drafted engineered drawings of the system, and was preparing to begin construction
by 1903, when the project taken over by private enterprise. The Grand Junction Chamber of
Commerce approached the Secretary of the Interior in 1907 requesting that the government again
consider constructing the project. In two years, approval for the project was granted and the
Reclamation Service began limited construction on March 10, 1909. Project delays would continue
until September 1912, at which point the Secretary of the Interior James R. Garfield gave the
Reclamation Service authorization to begin the project. Construction of the project began on one of
three tunnels along the upper portions of the proposed project canal. Construction on the Grand
Valley Diversion Dam began in 1913 following considerable debate concerning its design and
location. Once the location of the dam was determined, it became apparent that the close proximity
of the Denver & Rio Grande Western Railroad could potentially become an issue during high water
situations. To prepare for this, the government proposed raising the railroad grade an additional 5
ft. at the dam location and further proposed the installation of a spillway system to better control increased water volume. The end result was the installation of a roller crest dam with six controlled roller gates. Construction on the dam continued through 1914 and into 1915 without major project delays. The first roller was installed in March 1915, with the last of the rollers installed and the dam completed in October 1916. The final product was the largest roller crest dam in the world (Simonds 1994).

In the course of building the dam, construction had also begun on the massive, high-volume canal that would convey the diverted irrigation water to the valley below. Excavations on the soon-to-be-named Government Highline Canal began in June 1913, with the headworks and diversion gates extending from the western abutment of the diversion dam. Water for the canal was diverted through nine, 7-x-7-ft., cast-iron sliding gates. The canal was constructed as a cut-and-fill feature, and during its initial 1913–1914 construction, much of the fill was used to raise the railroad grade 5 ft. along its western side. A limited amount of water was released into the canal to help cure it after construction; however, water was not officially diverted into the canal until May 4, 1916. Almost immediately, the canal began to leak, particularly in those areas cut through Mancos Shale. Several attempts to address the leakage issues were undertaken, including sluicing clay through the canal and lining some sections with concrete. The measures had limited success, and the Grand Valley Project contributed significantly to agricultural production within the valley.

By the 1930s, project deterioration was having a detrimental impact on the delivery of water through the system. To rectify this, Reclamation (renamed from the Reclamation Service in 1923) utilized the CCC to make much needed repairs to the system beginning in 1935. The CCC established camps on project lands and began to rehabilitate project features (Simonds 1994). A portion of this work was undertaken by CCC Company 2803 working out of Camp BR-22-C. The camp was established two miles east of Grand Junction and was inhabited on July 27, 1935. The 201-man work force in the camp was largely from Tulsa, Oklahoma, and to a lesser extent from Texas and Colorado. The camp was under the command of Capt. L.L. Chambers and the enrollees were turned over to the Reclamation technical force to begin maintenance work on the Grand Valley Canal Project. The work completed by the enrollees consisted of replacing wooden flumes with metal conduits, headgates, laterals, and farm turnouts. Two miles of the main ditch was concreted to prevent seepage, and areas of the canal were lined with rock to prevent bank cutting (O'Brien Printing Company 1938:23). The camp continued to complete maintenance work on the canal and was later aided by the addition of Camp BR-59-C, established at Palisade on October 16, 1935. The original company that inhabited the camp only worked on the canal project for a short period before they were transferred to California and replaced by Company 868. Company 868 was sent from Ponca, Oklahoma, where they had been engaged in constructing the Lake Ponca Park. The company worked on the Grand Valley Project until they were disbanded on June 30, 1938 and replaced with Company 2120. The Company 2120 contingent was made up of 100 men from Connecticut under the command of Capt. Ralph A. Stevens. Company 2120 was divided into three divisions—Canyon, Orchard Mesa, and the Main Canal, Palisade Division. The Canyon Division concentrated on clearing and repairing the sections of the Government Highline within the Colorado River Canyon, and the Main Canal Division did the same type of work on portions of the canal beginning at the southern end of the tunnels and continuing westward. The Orchard Mesa Division was responsible for carrying out maintenance and repair work on the Orchard Mesa Canal on the southern side of the Colorado River. The current project area is located within the Canyon Division; the work was outlined for that area as follows:

A great deal of minor and some major work has been done on the homes of the ditch riders of the projects. Landscaping and rock paving has also been undertaken around their homes (O'Brien Printing Company 1938:177).
In addition to the work described above, the camp also completed what was termed as “considerable rock paving” on the canyon portion of the Government Highline Canal (O’Brien Printing Company 1938:177). Given the description, it can be assumed that Camp BR-59-C was responsible for the construction of the support facility structures and features at the dam and canal work complex where one of the ditch riders’ homes was located. The camp’s involvement in the construction of the facility is further evidenced by two plaques placed at the site commemorating the CCC construction with dates of 1939 and 1940. The CCC would continue as an active program working on maintenance and upgrades to the Grand Valley Project until it was terminated by Congress on June 30, 1942 following the outbreak of World War II (Pfaff 2001).

According to the research completed for the 2001 recording, a portion of the structure was used as the CCC barracks during work completed at the site in the late 1930s. Examination of early U.S Reclamation project planview maps dating to the construction of the dam indicates that the structure may have been present before the 1930s CCC work at the site. The planview map is dated September 15, 1914 and depicts a “warehouse” and “Gate Keepers Residence” in the location of the current dam tender’s house. The same structure is also shown in project photographs from the GVWUA as a clapboard-sided structure with what appears to be a 1920s Model A Ford parked in front, suggesting that the previous structure was still present into the 1920s (Figure 1 and Figure 2). A late 1930s photograph used in the original site form also shows the same structure in the background of a photograph taken during cribbing work by the CCC at the site (Coulam 2001d). Collectively, the evidence indicates that the current dam tender’s house was likely built using the same structure footprint as the structure that was built during the 1914 construction of the dam, but that the structure itself has undergone extensive remodeling through the years and no longer retains the historical fabric of its original construction.

Figure 1. Circa 1920s photograph, looking east at the dam tender’s house.
Figure 2. Looking north at diversion dam, showing northwestern corner of the dam tender’s house.
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Pfertsh, Jack E.

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Map 2: 1:24,000 scale Location Map of the Grand Valley Diversion Dam Work Complex (5ME12482).

Map 3: Planview map of the Grand Valley Diversion Dam Work Complex (5ME12482).

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Photographer: Tosh McKetta
Date: October 9, 2018

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Photograph No. 2: Overview of the work complex (5ME12482) from the southern end, with shed in the foreground, facing northwest.

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Photograph No. 23: Oblique view showing the southern elevation of the shed at site 5ME12482, facing northeast.
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