resource survey of potential disturbance areas, soil and foundation characterization as the basis for shaft pad and access road design, and completion of a wetland/AVF survey for the shaft pad and access road. The cultural resource survey was conducted by Metcalf Archaeological Consultants, the engineering soils characterization by Northwest Colorado Consultants, and the soils/wetland/AVF survey by Habitat Management, as described in Section 2.04. Development, construction, and installation of the intake ventilation shaft (Exhibit 49A, Figures EX49A-F1 through F4 and Maps EX49A-M1 through M3, and Exhibits 49E and 49N) involve the following sequential activities:

- Completion of environmental and engineering investigations
- Placement of disturbed area markers
- Marking of wetland buffer zone
- Temporary drainage and sediment control measures
- Recovery and stockpiling of available topsoil
- Installation of drainage and sediment control structures
- Construction of an access road and site preparation for shaft pad
- Drilling and casing of seven (7) boreholes for:
- 3 power boreholes
- 1 water borehole
- 1 air compressor borehole
- 1 rockdust borehole
- 2 bulk-material drop borehole (will also be used as the nitrogen injection borehole), 2nd drilled in 2022
- Construction of shaft collar structure and temporary drilling equipment pad
- Conventional blind sink excavation and casing operations
- Driving of additional entries to the south of the existing 6-North Main entries
- Installation of electrical sub-station and extension of power distribution line
- Fabrication of Million-Gallon Tank for mine water storage
- Construction of the 6MN Mine Water Storage Reservoir and connections to the mine water system
- Installation of Rock-Dust Tank and Compressor
- Installation of a modular nitrogen injection system
- Final clean-up and dressing of roads and site pads

These activities are briefly described in the following sections:

Site-specific investigations required for design and permitting of the new ventilation shaft included a cultural resource survey of potential disturbance areas, soil and foundation characterization as the basis for shaft pad and access road design, and completion of a wetland/AVF survey for the shaft pad and access road. The cultural resource survey was conducted by Metcalf Archaeological Consultants, the engineering soils characterization by Northwest Colorado Consultants, and the soils/wetland/AVF survey by Habitat Management, as described in Section 2.04. The perimeter of all areas affected by surface facilities was clearly marked before initiating surface disturbance activities. The shaft pad surface area is approximately 11.1 acres in size with minimal cut and fills. The associated access road corridor is approximately 2,930 feet long, with a finished top width of 24 feet (road corridor 35 feet wide, 2.4 acres). See Exhibit 25U, 6-North Mains Ventilation Shaft - Geotechnical Pavement Design, for details on the road, and Map EX49A-M1, a new road profile and cross-section.

Given an average topsoil depth of approximately 6 inches and a total road disturbance area of approximately 2.4 acres, approximately 1,940 cubic yards of topsoil were salvaged from the road corridor, and 8,954 cubic yards from the 11.1 acre pad area. Prior to initiating topsoil removal activities, stream and wetland buffer zones were marked with identifying signs to limit surface disturbance within these areas to the planned and approved activities. Topsoil from the road corridor was recovered and placed in a stockpile at the north end of the road corridor beyond the edge of the 35-foot road disturbance area. Topsoil from the pad area was placed in a stockpile within the shaft pad on the southwest edge of the pad and along the west edge of the access road, just south of the pad, for future reclamation use. Topsoil salvage volumes are indicated on Table 49A. Natural vegetative materials (mulch) incorporated into the topsoil, and seeding with the topsoil stockpile stabilization seed mixture identified on page 2.05-121 will stabilize the stockpiled topsoil.

be provided by the compressor. The tank will be monitored by electronic controls and strain gauges. Electricity will be supplied from the 6-Main North substation. An electrical line will run from the tank down an existing electrical borehole to controls underground.

The air compressor component includes construction of a reinforced concrete slab foundation with stem wall and footer extending 4-foot below grade, a 30 x 50 x 12 foot compressor building, installation of existing compressors, installation of an electrical power supply for the compressors, installation of Polo Citrus tanks, and drilling of a nominal 13-inch borehole from the surface to the underground workings from the shaft pad above the 6-North Main entries. Drilling of the borehole was covered by the TR05-48 submittal. The compressor building will house two air compressors, two dryers, two 5,000 gallon Polo Citrus tanks, and electrical and control equipment for the systems within the building. The building will be constructed of steel and rest on a designed steel-reinforced concrete foundation. It will be supplied power from the 6-Main North substation and will be insulated and heated. The Polo Citrus tanks will be enclosed by a containment system capable of holding in excess of 5,000 gallons.

In 2016, TC replaced the compressor units with new units which are larger and have greater capacity, to meet the needs of the ongoing Wolf Creek development and mining operations. The larger units required extension of the existing compressor pad and the enclosure building to the south. In conjunction with these modifications, TC also added a small pad and building extension on the north side of the existing building to enclose the compressor after-coolers to facilitate inspection and maintenance. The south pad and building extension has a footprint of 35 feet x 40.75 feet, and the north pad and building extension is "L"-shaped, with a footprint of approximately 244 square feet. Both pad extensions are 8-inch concrete slabs resting on 12-inch diameter by 20-foot concrete piers on 10-foot centers. The building extensions are steel frame with coated corrugated metal siding, and match the existing wall and roof profiles. Pad layout and construction details are illustrated by the design drawings included in Exhibit 49A.

The bulk material component includes construction of a pad, installation of a bulk material hopper, and drilling of a nominal 13-inch borehole from the surface to the underground workings from the shaft pad above the 6-North Main entries. In 2022, a new 13-inch bulk material bore hole was drilled immediately west of the original borehole due to the original borehole becoming worn out and unusable. The boreholes are approximately 1,340 feet deep. Drilling of the boreholes were covered by the TR05-48 and MR22-321 submittals. Details for the concrete pad and bulk storage and transfer facilities will be submitted for review and approval as a Minor Revision, prior to installation.

The water component includes construction of a reinforced concrete pad and footers, installation of a water tank and associated pumping installation, drilling of a nominal 13-inch borehole from the surface to the underground workings from the shaft pad above the 6-North Main entries, and construction of the 6MN Mine Water Storage Reservoir. Drilling of the borehole was covered by the TR05-48 submittal. TCC proposes to construct a steel water tank 85 feet in diameter and 24 feet high designed to hold one million gallons. The tank will rest on a reinforced concrete foundation consisting of a spread-footer, stem wall, and slab floor supported by concrete pilings. Preparation of the tank foundation area will involve grading, compaction, and excavation for the support pilings and spread-footer. Following site preparation, the reinforced concrete pilings and footers will be formed, and poured, followed by the reinforced concrete pad and stem wall. The steel tank will be fabricated in sections which will be placed and anchored on the stem wall. A water-tight liner system will complete the tank installation. A buried 8-inch HDPE line will connect the tank to the water borehole for both filling from and discharge to the mine water system. Pumps (both underground and at the surface) and control sensors and valving will allow for controlled flow in either direction in the supply system. Tank fill sensors and a monitored overflow drain will be installed in the tank to prevent overfilling. The overflow drain line will be installed in the same trench as the water supply and return line and will drain back to the mine-water handling system. A small 8 x 8 foot pumphouse, will be constructed next to the tank on a concrete foundation to house pumps and valves. Power and/or control communications will be laid in conduit above the waterline connecting the tank and the borehole.

The locations for the seven boreholes for project utility components are shown on Maps EX16E-M1 and M2. As shown on Map 23, additional entries will be driven to the south of the 6 North Main entries to connect with the ventilation shaft. These entries will be needed to maximize the efficiency of the ventilation system. The entries will be driven in the same manner as is used in TCC's development work, i.e. continuous miners and shuttle cars. Following commissioning of the shaft, the shaft pad site and access road will be cleaned-up and surface areas graded and dressed.