

CLINCH RIVER SITE LAND USE AND RECREATION TECHNICAL REPORT

REVISION 2

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CLINCH RIVER SITE LAND USE AND RECREATION TECHNICAL REPORT

This report describes the land use and recreation in the vicinity of the Clinch River Site (Site) in Roane County Tennessee. On October 25, 2012, Tennessee Valley Authority (TVA; Jack Brellenthin, Jeff Perry, and Ruth Horton) guided AECOM staff around the interior of the Clinch River Site for initial Site familiarization. On March 4 and 5, 2013, AECOM staff visited the Clinch River Site and the surrounding vicinity to determine the existing land use and recreation conditions. On March 4, the staff conducted a windshield survey of the areas within approximately 6 miles of the center of the Site. On March 5, TVA (Jack Brellenthin and Jeff Perry) guided the AECOM staff around the interior of the Site. The following sections describe land use on and around the Clinch River Site as observed from onsite and offsite observations during the AECOM Site visits and from an analysis of aerial photography, topographic maps, and road maps.

1.0 THE SITE AND VICINITY

The Clinch River Site is located in Roane County, Tennessee approximately 10 miles southwest of the City of Oak Ridge business district and within the city limits as shown in Figure 1.0-1. The Site is approximately 26 miles west-southwest of the City of Knoxville. The Clinch River (part of the Watts Bar Reservoir) surrounds the Site on the south, west, and much of the eastern sides. The majority of the Site is located on a peninsula, approximately between river miles 14.5 and 19 on the north shore of the Clinch River as shown in Figure 1.0-2.

The Site is located at 1300 Bear Creek Road, Oak Ridge, Roane County, Tennessee. The Site is situated approximately 0.7 miles north of Interstate 40, approximately 1.1 miles south of Tennessee Highway 58, and approximately 1.9 miles east of Tennessee Highway 95. The Site is accessed from Bear Creek Road on the north side of the property (Figure 1.0-2).

The Site is managed by TVA. The Grassy Creek Habitat Protection Area (Grassy Creek HPA) is located in the northwestern portion of the Site as shown in Figure 1.0-2. The Grassy Creek HPA protects habitat for a plant species, Appalachian bugbane, that is state-listed as threatened (297 Hart 2011).

1.1 THE CLINCH RIVER SITE

The Clinch River Site was previously selected as the location for construction of a liquid metal fast breeder reactor in 1972. Currently the Site consists primarily of undeveloped forested or grassland/meadow areas as shown in Figure 1.1-1. Portions of the Site were previously disturbed during the earlier activities associated with the breeder reactor project. Site preparation for the breeder reactor project began in 1982 and was nearly complete in late 1983. Approximately 240 acres of the Clinch River Site were disturbed during site preparation activities. Site preparation activities included leveling a ridge that originally reached 880 feet above mean sea level (msl) at 780 feet msl, excavation of the construction area, and installation of various structures and pads. (26 Breeder Reactor Corporation 1985; 89 U.S. Department of Energy, Tennessee Valley Authority, and Project Management Corporation 1984) The excavated area totaled approximately 2 to 3 acres in extent and extended to as much as 100 feet in depth (176 Domer 1983). The excavated area included near-vertical walls on the

northern, eastern, and southern sides of the excavation secured with steel rock-bolts 5 to 50 feet in length. The western wall of the excavation was sloped at an angle of 26 degrees. Approximately three million cubic yards of earth and rock were excavated during the Site preparation. Structures installed at the Site included a cement crane pad, quality control test laboratory, construction shops, concrete batch plants, and sediment ponds. An approximately 6450 foot long 8-inch water line from the U.S. Department of Energy's (DOE) Bear Creek Filtration Plant was also installed at the Site. (89 U.S. Department of Energy, Tennessee Valley Authority, and Project Management Corporation 1984; 26 Breeder Reactor Corporation 1985) The project was terminated in late 1983 and site redress plans were developed and implemented. Measures to stabilize the Site and included reseeding of grass and trees and mulching cleared areas, installation of straw bales in shallow ditches, installation of small berms of riprap in larger ditches, installation of culverts to direct water from steep slopes, and modification of the holding ponds for long term stability. Portable buildings and structures were removed from the Site with the exception of the crane pad and meteorology tower. (540 Thress 1987; 541 Jones 1986; 542 Lockwood Greene Engineers, Inc. 1985) The approximately 6450-foot long 8-inch water line was terminated at a hydrant and left in place (176 Domer 1983). The 80-foot by 80-foot crane pad was left in place (89 U.S. Department of Energy, Tennessee Valley Authority, and Project Management Corporation 1984). The excavated area was partially backfilled in a manner to sustain site drainage. Rock bolts within the excavated area were left in place. Level areas of the Site were graded and compacted. (542 Lockwood Greene Engineers, Inc. 1985)

The current site topography includes steep hills and flat meadows as shown in Figure 1.0-2. A portion of the steep, northeast to southwest trending Chestnut Ridge is located in the northern portion of the Site, south of Grassy Creek and within the Grassy Creek HPA (Photos 1.1-1 and 1.1-2, Appendix B). Elevations in this area range from approximately 750 feet msl near the bank of the Clinch River to 1120 feet msl near the top of the Ridge as shown in Figure 1.0-2. A series of roughly parallel ridges of gradually lower elevations stretches from the Chestnut Ridge in the north to approximately the center of the peninsula. These ridges are generally lower in height than the Chestnut Ridge, reaching approximately 860 to 940 feet msl in elevation. Several small drainages descend from these ridges to the Clinch River. The southeastern portion of the peninsula is a relatively flat plateau, with an elevation of approximately 780 feet above msl (Photo 1.1-3, Appendix B). The plateau was created during the construction activities associated with the Clinch River Breeder Reactor Project (26 Breeder Reactor Corporation 1985). A few small hills are located in this portion of the Site. The large depression from previous excavation work conducted as part of the former Clinch River Breeder Reactor Project is also located in this area (Photo 1.1-4, Appendix B) (26 Breeder Reactor Corporation 1985). This excavated area forms a natural drainage for surface and ground water from the site. The northeastern portion of the Site consists of interspersed rolling hills and meadows. Elevations in this part of the Site range from approximately 780 feet msl at the meadows to 960 feet msl at the peaks of the hills.

A series of gravel and dirt roads are located within the Site boundaries as shown in Figure 1.1-1. A gravel road enters the northwest corner of the Site from Bear Creek Road. This gravel road roughly parallels the Clinch River until it reaches roughly the center of the peninsula. Here,

the gravel road makes a loop through this portion of the Site. A gravel/dirt road continues around the western, southern, and eastern sides of the Site parallel to the Clinch River. Along the river, portions of this gravel road narrow to dirt tracks and some portions of this road are currently unsafe for vehicle travel because of deteriorated road conditions. An older dirt track road traverses the Site at the top of the peninsula and crosses into the northeastern portion of the Site.

Limited infrastructure development and structures are present on the Site. Near the center of the peninsula on the plateau, TVA has installed a gravel parking lot and several mobile trailers and support structures for use as office and storage space (Figure 1.1-1). An abandoned water line traverses the Site from near the entrance gate to the plateau in the central-southeastern portion of the peninsula terminating in a hydrant (Photo 1.1-3). A meteorology tower, metrological equipment, and equipment shed were located in the southeastern portion of the peninsula (Photo 1.1-5, Appendix B). The tower and all supporting equipment were removed in October 2013. Two power transmission lines cross the Site. The Kingston-Fort Loudoun #1 161-kilovolt (kV) transmission line crosses the Site from the southeastern tip of the peninsula to the northwestern corner of the Site near the entrance gate. The Bull Run-Watts Bar 500-kV transmission line (Photo 1.1-7) transverses the Site northeast to southwest. The majority of this 500-kV line lies outside of the main peninsula. (172 Simmons 1982; 277 Tennessee Valley Authority 2012)

The Hensley Cemetery, a small private cemetery, is located on the south side of the peninsula along a dirt track portion of the Site road (Photo 1.1-6, Appendix B). TVA currently maintains and will continue to maintain this cemetery. Family access to this cemetery is permitted and will continue to be permitted in the future.

TVA's Watts Bar Reservoir Land Management Plan specifies different land use zones for the Clinch River Site. The majority of the Site is designated as Zone 2 – Project Operations. A strip along the reservoir shoreline is designated Zone 3 – Sensitive Resource Management, and the Grassy Creek HPA is designated Zone 3 – Sensitive Resource Management/Natural Area. (342 Tennessee Valley Authority 2009)

1.2 BEAR CREEK ROAD

Several commercial/industrial properties are located adjacent to the northwest side of the Clinch River Site along Bear Creek Road in the Clinch River Industrial Park as depicted in Figure 1.1-1. Portions of the industrial park are located on TVA land. These properties are discussed in more detail in the 2013 Final Clinch River Site Solid and Hazardous Materials/Waste Review Technical Report (358 AECOM 2013). The 161-kV transmission line exits the Clinch River Site near the entrance gate and connects with a power substation located just outside the gate. The City of Oak Ridge operates a pumping station and filtration system near the entrance of the Site, on the eastern bank of the river and across Bear Creek Road from the Site. There is an inactive barge terminal at mile marker 13.1 of the tributary Clinch River once used by the U.S. Department of Energy. This inactive barge terminal has highway access to TN 58. No truck or rail service is provided from this terminal. (289 Tennessee Valley Authority 2013)

1.3 OAK RIDGE RESERVATION

The Clinch River Site is bounded on the north and east by the U.S. DOE's Oak Ridge Reservation (ORR) as depicted in Figure 1.0-1. Much of the reservation is undeveloped and consists of forested areas, grasslands and old agricultural fields, bottomlands and wetlands, utility corridors, and ridges in which a number of caves are present (294 Griffen, Evans, and Parr 2012). The primary development areas within the reservation currently include the Oak Ridge National Laboratory, the Y-12 National Security Complex, and the East Tennessee Technology Park. These facilities have controlled entrances and were observed from the public roadways.

1.4 SOUTH SIDE OF THE CLINCH RIVER

The south bank of the Clinch River, from the Melton Hill Dam upstream of the Clinch River Site to beyond Highway 58, is largely residential with some small private pastures and farm fields. Many residences include several acres of property (Photos 1.4-1 and 1.4-2, Appendix B). The area is sparsely wooded. Several residential properties have views of the Clinch River and the Clinch River Site, including those pictured in Photos 1.4-1 and 1.4-2.

The Roane Regional Business and Technology Park is located approximately one-half mile east of the Clinch River Site on Industrial Park Road, adjacent to I-40 (Figure 1.0-1, Photo 1.4-3, Appendix B). This business park occupies approximately 655 acres and has several operating facilities and vacant space. Current tenants include food distribution, tool, engineering, ceramics, roofing, energy, engine parts, and automotive companies. The industrial park also contains sites available for development. (523 The Roane Alliance 2013)

2.0 RECREATION

Recreation areas observed include: the Melton Hill Dam Reservation, the Soaring Eagle Campground and RV Park, the Gallaher Recreation Area, the Oak Ridge Wildlife Management Area, the East Tennessee Technology Park Visitor's Overlook, and the Southern Appalachia Railway Museum. The Wheat Community African Burial Ground, while not specifically a recreation area, is a historic site open to the public. Several private boat ramps were also observed during the windshield tour. Locations of each of these recreation areas including the Wheat Community African Burial Ground are shown on Figure 2.0-1. Unless otherwise referenced, information provided on these locations was directly or obtained from on-location information sources such as signs and postings.

2.1 MELTON HILL DAM RESERVATION

The Melton Hill Reservation includes 159 parcels of land that occupy 2578 acres around the Melton Hill Reservoir. Land use within the Melton Hill Reservation is divided into six planning zones as follows: (570 Tennessee Valley Authority 1999)

- 294.4 acres for TVA Project Operations (Zone 2) which includes the Melton Hill Dam and associated facilities
- 1275.6 acres for Sensitive Resource Management (Zone 3) which includes resources protected by federal law or executive orders or resources important to the area viewscape or natural environment
- 619.7 acres for Natural Resource Conservation (Zone 4) which includes informal recreation areas and conservation areas
- 21.8 acres for Industrial/Commercial Development (Zone 5) which includes land managed for economic development purposes
- 216.1 acres for Recreation (Zone 6) which includes land managed for active recreation activities that include capital improvement and maintenance including the Melton Hill Dam Sustainable Recreation Area
- 150.7 acres for Residential Access (Zone 7)

Construction of the 103-foot high, 1020-foot wide Melton Hill Dam (Photos 2.1-1 through 2.1-4, Appendix C) occurred from 1960 to 1963. This hydroelectric dam has two generating units which produce 79 megawatts (MW) of electricity on average, over and above the amount of energy required for dam operations. The Melton Hill Dam Reservoir (Photo 2.1-5, Appendix C) extends upstream over 57 miles to Norris Dam. Water levels in this run-of-river dam typically fluctuate less than 2 feet per day, on average. The Melton Hill Dam is the only dam on the Clinch River that has a lock, which allows barge traffic to extend upstream to Clinton, Tennessee. (344 Tennessee Valley Authority 2013) The Melton Hill Dam Sustainable Recreation Area is located within the Melton Hill Dam Reservation, approximately 5 miles east of the Clinch River Site as shown in Figure 2.0-1. The recreation area and reservation are operated and managed by TVA, with annual total visitation of approximately 1 million campers and day visitors (549 Wike 2013). From observation of the facilities and amenities available at the Melton Hill Dam Sustainable Recreation Area, recreational activities that may occur include walking, jogging, hiking, camping, picnicking, biking, roller blading, outdoor games, fishing,

swimming, boating, and rowing. (344 Tennessee Valley Authority 2013) Photo 2.1-6, Appendix C is one of the welcome signs posted around the recreation area. The welcome sign encourages visitors to read the information about the various sustainable technologies in use around the recreation area. These information signs include suggestions for how visitors can apply such technologies to reduce their personal environmental impacts. Several commercial companies have partnered with TVA for producing the sustainable facilities and technologies in use at the Site (Photo 2.1-7, Appendix C).

The Melton Hill Dam Sustainable Recreation Area is accessible from two entrances along Highway 95 on the west (Photo 2.1-8, Appendix C), and from Woodlawn Road and Grubb Road on the south (Figure 2.0-1). The northern entrance from Highway 95 provides access to the north shore of the Clinch River (Figure 2.0-1). Two parking areas and a boat ramp are available downstream of the dam on this north shore of the river. An additional parking lot is located immediately adjacent to the dam. Entering the area from the southern entrance on Highway 95, visitors travel downhill into the recreation area along the southern bank of the Clinch River (Photos 2.1-9 and 2.1-10, Appendix C). There are two parking areas on the downstream side of the Melton Hill Dam on this south shore of the river. In the parking area closest to the dam, several sustainable technologies in use at the Site are on display (Photo 2.1-11, Appendix C). Another parking area is accessible on the reservoir side of the Melton Hill Dam (Photo 2.1-12, Appendix C) on the south shore of the reservoir. The upper portions of the dam are accessible from this parking area (Photo 2.1-3 and 2.1-4, Appendix C). From the parking area, the road continues uphill to the campground/beach area and further uphill to the overlook.

The Melton Hill Dam campground and beach area is located on the reservoir side of the dam. A boat ramp is accessible from the associated parking area (Photo 2.1-13, Appendix C). A beach, including a swim area, is located east of the parking area (Photo 2.1-14, Appendix C). Picnic pavilions, restrooms, and campground areas are all accessible from the parking lot and beach area (Photos 2.1-15 and 2.1-16, Appendix C).

Facilities at the overlook include a pavilion with restrooms and a small meeting room (Photo 2.1-17, Appendix C), several sustainable technology demonstration projects (Photos 2.1-18 and 2.1-19, Appendix C), a picnic area, and a trail. From the pavilion, visitors can look down on the Melton Hill Dam (Photo 2.1-20, Appendix C). Power lines connecting to the dam traverse the overlook area (Photo 2.1-18, Appendix C). Across the parking lot, west of the overlook pavilion and technology demonstration area, is a picnic area and trailhead (Photos 2.1-21 and 2.1-22, Appendix C). The trail traverses the hillside between the picnic area and the first parking lot (closest to the Highway 95 entrance) on the south bank of the Clinch River.

Sustainable building practices were utilized to construct portions of the Melton Hill Dam recreational facilities as described by signs posted around the area. For example, coal combustion products were used to produce shingles and synthetic stones, thus reusing materials rather than consigning them to landfills or requiring new raw resources (Photo 2.1-23, Appendix C). Additionally, the concrete pavers constructed from the coal combustion products are permeable, which allows storm water to filter through into the underlying soils and decreases runoff caused by impermeable surfaces (Photo 2.1-23, Appendix C). Lights

throughout the recreation area utilize light emitting diodes (LED) to reduce electrical consumption and maintenance costs (LEDs require less frequent replacement than standard bulbs; Photo 2.1-24, Appendix C). Energy efficient motion sensor lighting is utilized within the overlook building, which further reduces energy requirements (Photo 2.1-24, Appendix C). Heat pump water heaters also reduce energy requirements (Photo 2.1-24, Appendix C). An energy efficient heating and cooling system with a high Seasonal Energy Efficiency Ratio (SEER) is also in use at the overlook building (Photo 2.1-24, Appendix C). Low-flow aerators on the restroom sinks and showers, sensor activated lavatories, dual flush toilets, and low- and no-flush urinals are water conservation methods in use at the recreation area (Photo 2.1-24, Appendix C). TVA also provides multiple electric vehicle charging stations throughout the recreation area (Photo 2.1-11, Appendix C).

TVA is testing and evaluating the performance of the sustainable technologies utilized throughout the recreation area. For example, multiple varieties of solar panels are installed on the pavilion near the Melton Hill Dam beach (Photo 2.1-15, Appendix C) to allow comparison of the different styles. Other solar panels have been constructed to maximize use even when intermittently shaded (Photos 2.1-11, 2.1-18, and 2.1-23, Appendix C). (343 Tennessee Valley Authority 2013) Wind turbines are also in use at the recreation area (Photo 2.1-18, 2.1-19, and 2.1-24, Appendix C). The performance data for the various technologies on display are available online (347 Electric Power Research Institute 2013). Any power generated but not used at the Melton Hill Dam Sustainable Recreation Area is supplied to the electric grid through the Lenoir City Utilities Board (Photo 2.1-24). (343 Tennessee Valley Authority 2013)

2.2 SOARING EAGLE CAMPGROUND AND RV PARK

The Soaring Eagle Campground and RV Park is located along Buttermilk Road West, adjacent to I-40, immediately south of the Clinch River Site (Figure 2.0-1). This privately owned and operated campground includes 90 camp sites for either tents or RVs and hosts approximately 13,000 patrons per year (545 Wike 2013). Amenities at the campground include picnic pavilions, a boat ramp and dock, a swimming pool and play area, a bathhouse, laundry facilities, internet access and pay phones, shopping, a meeting room, a stage and bleachers, storage, and a dump station. Recreation activities at the campground include camping, swimming, boating, fishing, water skiing, nature walks, meetings, and performances on the stage (Photos 2.2-1 and 2.2-2, Appendix C). Electricity, gas, and security services are present at the campground. (524 Soaring Eagle Campground and RV Park 2013) The boat ramp at the campground provides access to Caney Creek embayment, which feeds into the Clinch River at river mile 17 on the southern side of the Clinch River Site (Photo 2.2-3, Appendix C).

2.3 GALLAHER RECREATION AREA

The Gallaher Recreation Area is located at the end of Culton Lane on the west bank of the Clinch River, almost directly west of the Clinch River Site main access gate (Figure 2.0-1). The recreation area is managed by the City of Oak Ridge. According to the signs posted near the boat ramp, the Gallaher Recreation Area was donated by the National Park Service, U.S. Department of Interior, through the Lands to Parks Program (Photo 2.3-1, Appendix C). The National Park Service's Tennessee Federal Lands to Parks Transfer website indicates that the Gallaher Public Access Area consists of 45 acres. (338 National Park Service 2013) The

Gallaher Recreation Area consists of a gravel parking area, boat ramp at river mile 14.5 (Photo 2-3.2, Appendix C), and narrow beach (Photo 2.3-3, Appendix C), and is used by approximately 30-50 people daily (544 Wike 2013). The City of Oak Ridge water station and water gauge are immediately across the Clinch River and visible from the boat ramp (Photo 2.3-4, Appendix C).

Recreation activities observed at the Gallaher Recreation Area included boating and fishing. However, signs posted at the boat ramp indicate that striped bass and catfish should not be eaten from the Clinch River (Photo 2.3-1, Appendix C).

2.4 OAK RIDGE WILDLIFE MANAGEMENT AREA

ORR was designated as a Wildlife Management Area (WMA) in 1984 by the Tennessee Wildlife Resources Agency and the U.S. DOE. Management of the wildlife within the WMA helps ensure public safety (by helping reducing human/wildlife collisions) while also maximizing wildlife health and diversity. The Oak Ridge WMA is managed in accordance with all applicable federal and state regulations regarding wildlife management. Public hunts are a key component of wildlife management in the Oak Ridge WMA. At various times of year during, the Oak Ridge WMA is open for recreational hunting of deer, Canada goose, wild turkey, and duck. (294 Griffen, Evans, and Parr 2012) Three weekend deer hunts and two weekend turkey hunts are held at ORR each year, with a total quota of 3825 hunters (Neil Griffen reference). No other public recreation activities are known to occur within the restricted access ORR and Oak Ridge WMA.

2.5 EAST TENNESSEE TECHNOLOGY PARK VISITOR'S OVERLOOK

The East Tennessee Technology Park Visitor's Overlook is located on the south side of Highway 58, across the roadway from the East Tennessee Technology Park (Photo 2.5-1, Appendix C). The overlook is operated by the U.S. DOE and its partners in the East Tennessee Technology Park. The Overlook is located approximately 1 mile from the entrance and 2.2 miles from the center of the Clinch River Site as shown on Figure 2.0-1.

The Overlook consists of a pavilion, historic marker, historic display, and parking and picnic areas. The Overlook is on the Tennessee Heritage Trail (Photo 2.5-2, Appendix C). A historic marker outside the pavilion (Photo 2.5-3, Appendix C) explains the history of the K-25 plant, which was formerly located at the East Tennessee Technology Park. The K-25 plant was used to separate uranium-235 from uranium-238 through gaseous diffusion. Originally a critical part of the Manhattan Project, this plant operated from 1945 through the 1980s.

The pavilion was closed at the time of the windshield survey; however, several information displays were visible through the windows. The Tennessee Department of Tourism website indicates the displays, including a video presentation, describe the history of the K-25 plant from its inception as part of the Manhattan Project through the Cold War. (341 Tennessee Department of Tourist Development 2013) The DOE Reservation Management office estimates visitation at approximately 1000 people per year (543 Wike 2013).

A short distance north of the pavilion is a display of a converter similar to those formerly used at the K-25 plant (Photo 2.5-4, Appendix C). Several picnic areas are located on the north and east sides of the parking lot (Photo 2.5-5, Appendix C). Recreation activities at the Overlook

include visitors to the area stopping to view the historic marker and displays, picnicking and possibly outdoor games.

The East Tennessee Technology Park is easily viewed from the Overlook (Photo 2.5-6, Appendix C). The East Tennessee Technology Park is owned and operated by the U.S. DOE. The facility includes two business centers, the Heritage Center and the Horizon Center. The Heritage Center was the site of a former gaseous diffusion plant utilized from 1945, during the Manhattan Project, through the Cold War, and into the 1980s. The site is currently undergoing remediation. Facilities at the center have been identified for potential reuse and facilities are available for lease for industrial and commercial purposes. Some facilities are occupied, others are available for lease and many include cranes and equipment for use. Preservation to memorialize the historic use of the site is also planned. In addition to the existing facilities, several hundred acres of land are available for new construction. The Horizon Center is a new, 1,000-acre greenfield site designed to provide building sites for high-tech companies, while also preserving the scenic environment. (337 Community Reuse Organization of East Tennessee (CROET) and U.S. Department of Energy)

2.6 SOUTHERN APPALACHIA RAILWAY MUSEUM

The Southern Appalachia Railway Museum is a non-profit organization associated with the East Tennessee Technology Park (339 East Tennessee Technology Park 2013). The museum is located on the southern side of the Heritage Center, across Highway 58 from the Wheat Community African Burial Ground (Photo 2.6-1, Appendix C). The mission of this non-profit museum is restoration and operation of historic railway equipment to preserve southern Appalachian railway history. The Southern Appalachia Railway Museum has operated for 10 years with the assistance of volunteer staff. In addition to restoring and maintaining railroad equipment, on weekends from March through December, the museum runs 1.5-hour “The Secret City Scenic Excursion Train” tours about 7 miles of track through the East Tennessee Technology Park’s Heritage Center historic site and into the surrounding area. Private charter trips are also available. The museum is currently operated from a converted guardhouse, named the Wheat Union Station, located at the Heritage Center (Photos 2.6-3 and 2.6-4, Appendix C). (340 Southern Appalachia Railway Museum ; 339 East Tennessee Technology Park 2013)

The museum receives approximately 6,000 visitors annually and is funded by fees from tours, membership dues, and private donations (564 Wike 2013). Twelve rail cars comprise the museum’s rolling stock. In addition to leading tours, the staff provides training to museum members interested in being train conductors, brakemen, and engineers. (340 Southern Appalachia Railway Museum)

A sign for the future home of the Southern Appalachia Railway Museum is visible off Highway 58 south of the Heritage Center (Photo 2.6-2, Appendix C). The museum plans to construct a 5000 square foot passenger depot, ticket office, and museum at this location. Amenities at the museum will include a visitor’s center, displays of railroad art and artifacts, a gift shop, and a rail station. (340 Southern Appalachia Railway Museum)

2.7 WHEAT COMMUNITY AFRICAN BURIAL GROUND

The Wheat Community African Burial Ground is located approximately 0.4 miles southwest of the East Tennessee Technology Park Visitor's Overlook as shown in Figure 2.0-1. The burial ground is maintained by the U.S. DOE. The site is accessible via a gravel road on the east side of Highway 58 (Photo 2.7-1, Appendix C).

Historical records indicate a number of African-American slaves were buried in this cemetery in the mid-1800s. Thus, this is one of the oldest of several small cemeteries located within the ORR. On May 26, 2000, the U.S. DOE, several U.S. DOE contractors, and local organizations dedicated a monument to memorialize African-American slaves buried in the Wheat Community African Burial Ground (Photo 2.7-4, Appendix C). (336 Wyatt and Perry 2000) A single marker stands within the burial ground (Photos 2.7-2 and 2.7-3, Appendix C). This marker is inscribed with the following:

John Henry and Elizabeth Inman Welcker owned and operated a plantation named Laurel Banks as early as 1810 and possibly 1805. This plantation was located along the banks of the Clinch River where the East Tennessee Technology Park (formerly the K-25 Plant) now stands. John Henry died in 1838 and Elizabeth died in 1840. In 1847, George Hamilton Gallaher, Sr. bought Laurel Banks. According to the 1860 Roane County census, George Gallaher, Sr.'s personal estate was valued at \$36,000. This included \$25,000 worth of real estate and at least 19 slaves. This cemetery, now named the Wheat Community African Burial Ground, was formally known as Atomic Energy Commission Cemetery #2 – Slave Cemetery and was sometimes referred to as the Gallaher-Stone Cemetery. In 1979, Dorothy Moneymaker, a resident of the Wheat Community, counted between 90 and 100 graves with no inscribed markers located within the cemetery. It is presumed that slaves who once belonged to the Welckers and Gallahers and some of their descendants are buried here. It is also possible that slaves and their descendants, who lived on other farms in the area are buried here. Some of the other families that owned slaves and lived in the vicinity were the Burums, Carmichaels, Staples, Henleys, Ellis, and Rathers. We will never know the names of those buried here.

Though the Wheat Community African Burial Ground is not a traditional recreation area, visitors to the burial ground may include people interested in regional or African-American history as well as family and community members stopping by to pay their respects.

2.8 PRIVATE BOAT RAMPS

Several private boat ramps are located at various points along the Clinch River, including in the communities on the opposite side of the river from the Clinch River Site (Photo 2.8-1, Appendix C). These boat ramps are most likely used by local area residents and not by area visitors, unless the visitors are guests of the residents. Boats utilizing these ramps likely include fishing boats, canoes, kayaks, and small motor boats similar to those observed at the Gallaher Recreation Area (Photo 2.3-2, Appendix C).

3.0 REFERENCES

358, AECOM, "Final Clinch River Site Solid and Hazardous Materials/Waste Review Technical Report," Greenville, SC, Tennessee Valley Authority, July, 2013.

26, Breeder Reactor Corporation, "Final Report The Clinch River Breeder Reactor Plant Project," January, 1985.

337, Community Reuse Organization of East Tennessee (CROET) and U.S. Department of Energy, East Tennessee Technology Park About ETPP, Website: <http://www.etppreuse.com/about.html>.

176, Domer, Ron G., Clinch River Breeder Reactor Project (CRBR) - Site Redress Memorandum, ToEN DES Manager's Office Files, December 5, 1983.

339, East Tennessee Technology Park, Southern Appalachia Railyway Museum (26), Website: <http://www.etppreuse.com/sarm.html>, 2013.

347, Electric Power Research Institute, TVA Melton Hill Dam Sustainable Recreation Area, Website: <http://144.58.243.149:8080/meltonhill20121015/dashboard.aspx#/Live>, 2013.

294, Griffen, Neil R., Evans, James W., and Parr, Patricia D., "Wildlife Management Plan for the Oak Ridge Reservation," ORNL/TM-2012/387, Oak Ridge National Laboratory, Department of Energy, September, 2012.

297, Hart, Heather M., "Technical Report from assessment of Natural Areas (Managed Areas and Sites) in the vicinity of the Clinch River Small Modular Reactor Site (SMR)," Tennessee Valley Authority, October 21, 2011.

541, Jones, C. P., Clinch River Breeder Reactor Project - Inspection of Site Stabilization, May 7, 1986.

542, Lockwood Greene Engineers, Inc., "Clinch River Breeder Reactor Project Site Redress," Solicitation No. DE-AC05-85OR21457, U.S. Department of Energy, Oak Ridge Operations, Construction Division, Oak Ridge, Tennessee, March 22, 1985.

338, National Park Service, Tennessee Federal Lands to Parks Transfers, Website: <http://www.nps.gov/state/tn/list.htm?program=9EFBAA98-155D-4519-...2>, May 25, 2013.

172, Simmons, Jesse T., Clinch River Breeder Reactor Plant Environmental Report - Revision - and Proposed Section 3.8 for Nuclear Regulatory Commission's (NRC) Environmental Impact Statement, Tennessee Valley Authority Memorandum, ToHardy Adams, April 22, 1982.

524, Soaring Eagle Campground and RV Park, Soaring Eagle Campground and RV Park Site Layout, Website: <http://www.soaringeaglecampgroundrvpark.com/site-map.html>, 2013.

340, Southern Appalachia Railway Museum, East Tennessee Technology Park, Oak Ridge Advantage Southern Appalachia Railway Museum, Website: http://www.ettpreuse.com/pdf/PDF11/26_SARM_Rev6.pdf.

341, Tennessee Department of Tourist Development, K-25 Overlook/East Tennessee Technology Park, Website: <http://www.tnvacation.com/vendors/k-25-overlook-east-tennessee-technology-park/>, 2013.

570, Tennessee Valley Authority, "Melton Hill Reservoir Land Management Plan - Volume 2," April 21, 1999.

342, Tennessee Valley Authority, "Final Environmental Impact Statement Watts Bar Reservoir Land Management Plan Loudon, Meigs, Rhea, and Roane Counties, Tennessee," February, 2009.

277, Tennessee Valley Authority, Clinch River Area Transmission Line Map, 2012.

343, Tennessee Valley Authority, Melton Hill Dam Sustainable Recreation Area, Website: http://www.tva.com/environment/technology/melton_hill.htm, 2013.

344, Tennessee Valley Authority, Melton Hill Reservoir, Website: <http://www.tva.gov/sites/meltonhill.htm>, 2013.

289, Tennessee Valley Authority, Tennessee and Cumberland River Terminal Directory, Website: http://www.tva.com/river/navigation/pdf/terminal_list.pdf, 2013.

523, The Roane Alliance, Available Industrial and Commercial Property Buildings - Roane County, Tennessee, Website: http://www.roanealliance.org/available_properties/industrial_parks.aspx?id=30, 2013.

540, Thress, Robert G., Clinch River Breeder Reactor Project (CRBRP) - Return of Site to TVA Ownership, J. A. Kirkebo and Maurice G. Msarsa, April 6, 1987.

89, U.S. Department of Energy, Tennessee Valley Authority, and Project Management Corporation, "Clinch River Breeder Reactor Plant DOE/TVA/PMC Site Redress Planning Task Force Report," January, 1984.

543, Wike, Ernest, Email in reference to East Tennessee Technology Park Overlook, Request for Usage statistics for the K-25 overlook located at the ETP, Aaron L. Cadle and Brian Henry, August 21, 2013.

564, Wike, Ernest, Telephone call regarding Annual Visitation Data to the Southern Appalachia Railway Museum, September 11, 2013.

545, Wike, Ernest, Telephone call regarding Yearly Visitation Data at the Soaring Eagle Campground, Telephone call regarding Yearly Visitation Data at the Soaring Eagle Campground, ToJennifer Kester, August 16, 2013.

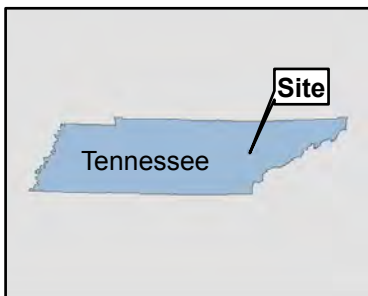
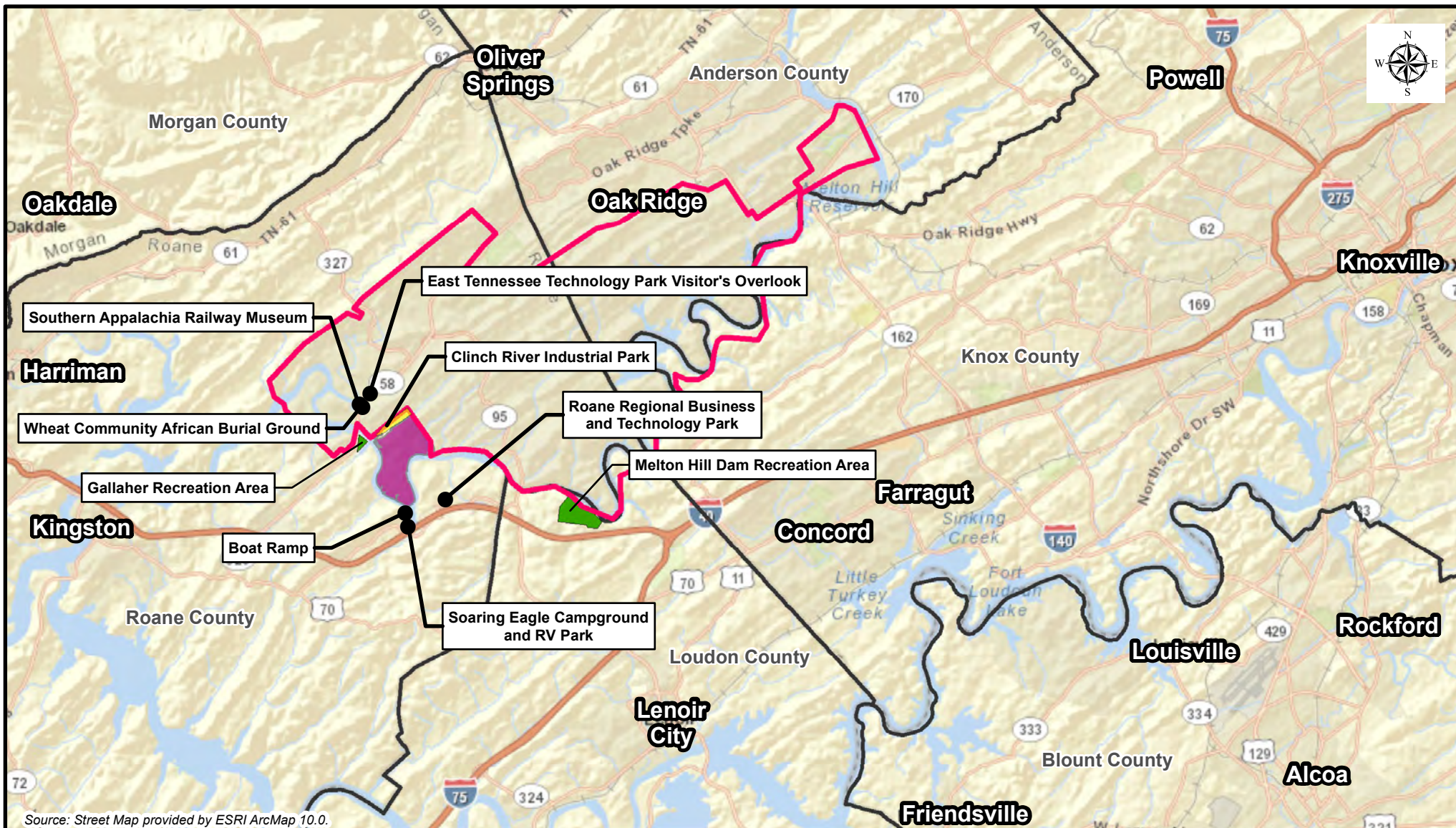
549, Wike, Ernest, Telephone call regarding Yearly Visitation Data for the Melton Dam Recreation Area, ToJerry Fouse, August 23, 2013.

544, Wike, Ernest, Telephone call regarding Yearly Visitation Data on the Gallaher Bend section of the Greenway, Telephone Call Summary regarding yearly visitation data on the Gallaher Bend section of the Greenway, ToJosh Collins, August 16, 2013.

336, Wyatt, Steven and Perry, Walter, United States Department of Energy, Wheat Community African Burial Ground To Be Dedicated Monument to Memorialize Region's Early African-Americans, Website: http://www.oakridge.doe.gov/media_releases/2000/r-00-015.htm, May 9, 2000.

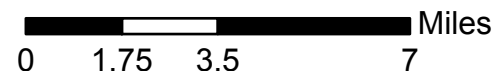
APPENDIX A

FIGURES



Legend

- Oak Ridge Reservation
- Recreation Areas
- Clinch River Site
- County Boundary
- Clinch River Industrial Park



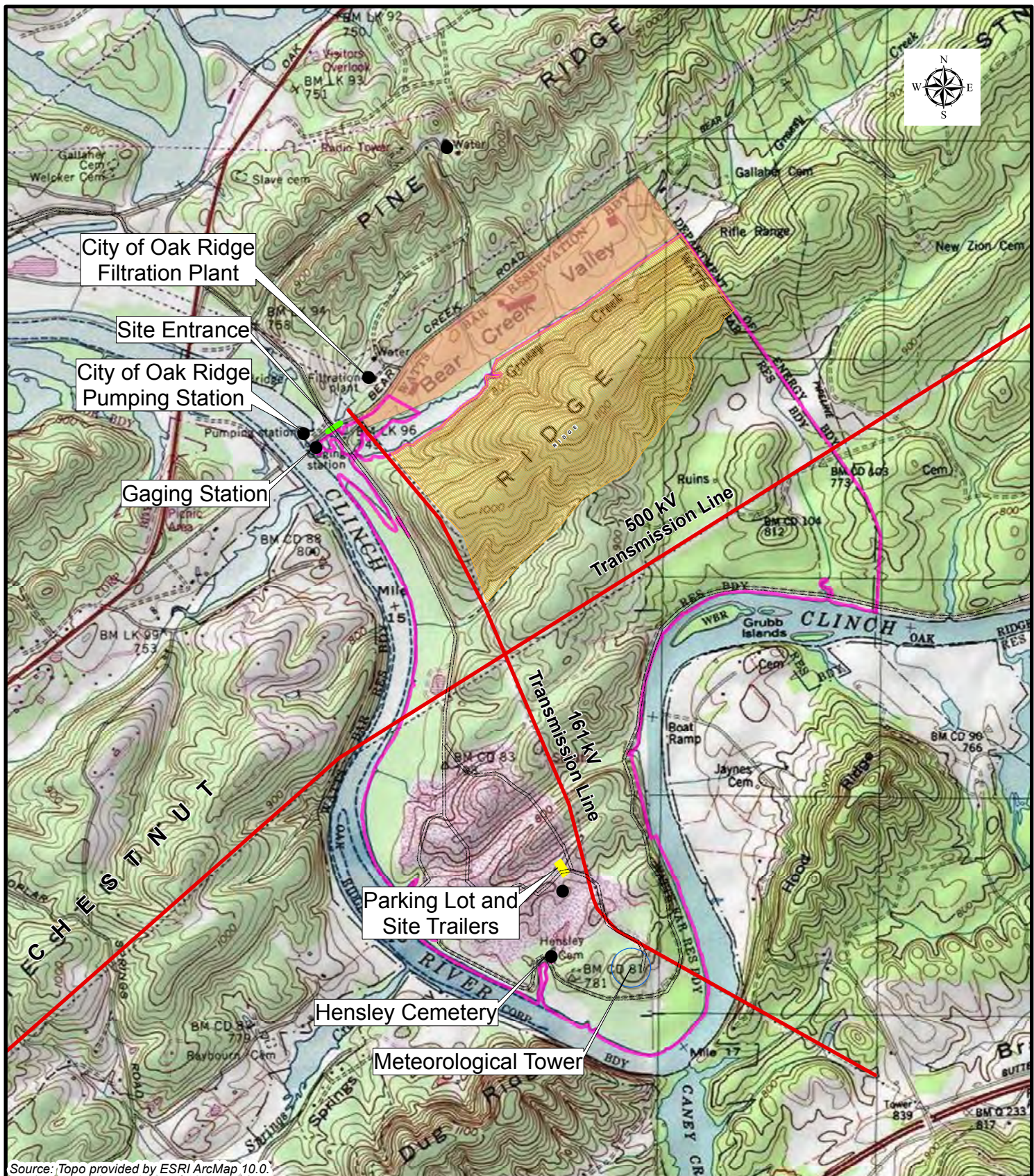
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T: (864) 234-3000 F: (864) 234-3069

Figure 1.0-1 Site Location Map

Land Use and Recreation Technical Report

PROJECT NO. 60279942	DRAWN BY: MLS	DATE: 10/9/2013	Figure 1.0-1
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Legend

-  Clinch River Site Road
-  Grassy Creek Habitat Protection Area
-  Clinch River Site
-  Clinch River Industrial Park

0 1,000 2,000 4,000 Feet

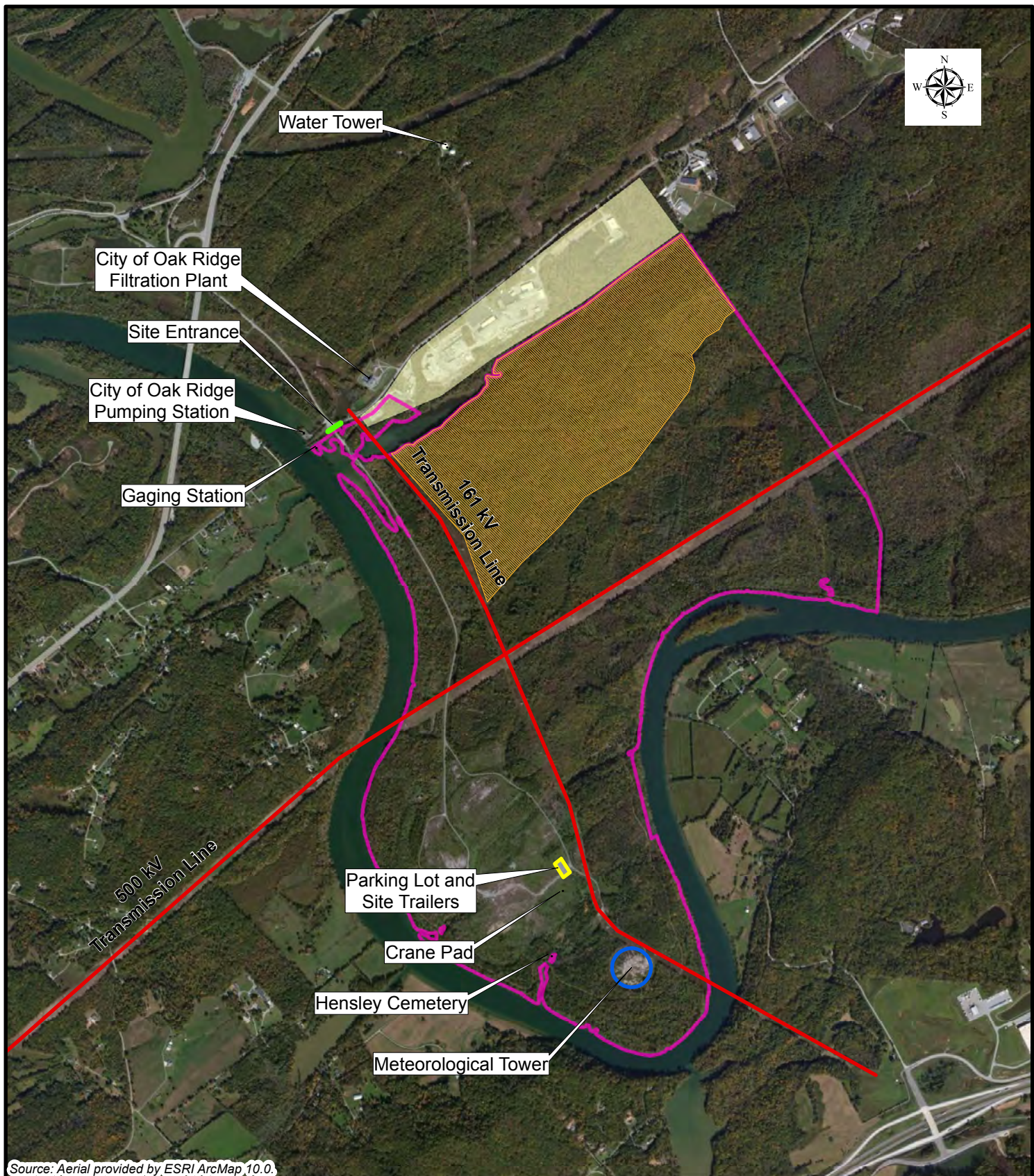
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Figure 1.0-2 Clinch River Site Topographic Map

Land Use and Recreation Technical Report

PROJECT NO. 60279942	DRAWN BY: MLS	DATE: 10/9/2013	Figure 1.0-2
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Source: Aerial provided by ESRI ArcMap 10.0.

Legend

- Grassy Creek Habitat Protection Area
- Clinch River Site
- Clinch River Industrial Park

0 1,000 2,000 4,000 Feet

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Figure 1.1-1 Clinch River Site Aerial Map

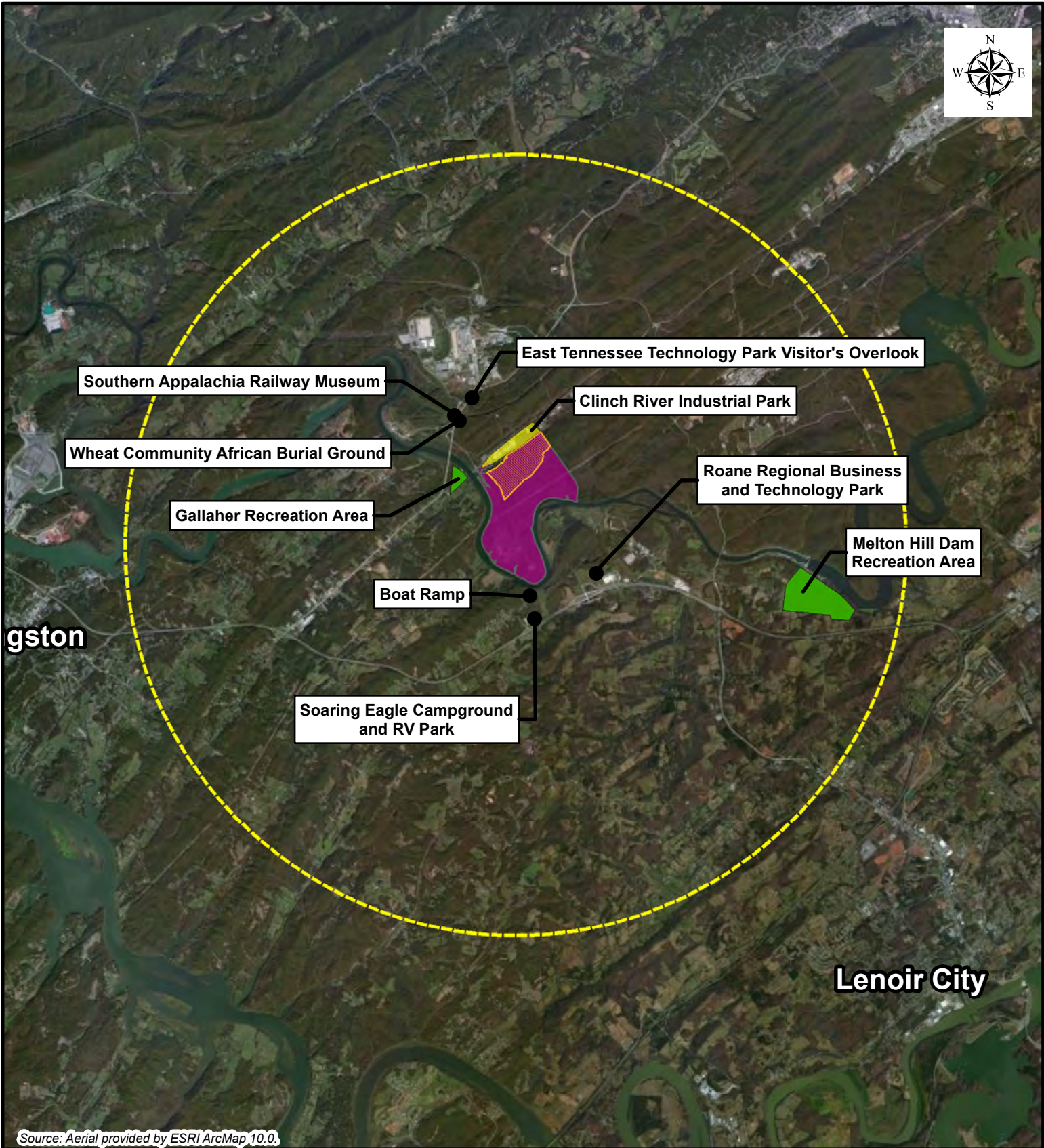
Land Use and Recreation Technical Report

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60279942

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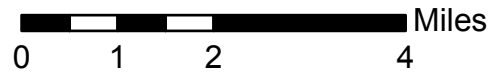
Figure 1.1-1



Source: Aerial provided by ESRI ArcMap 10.0.

Legend

- Clinch River Industrial Park
- Grassy Creek Habitat Protection Area
- Recreation Areas
- ProposedSiteBdy_CR_SMRprj
- 6-Mile Radius



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Figure 2.0-1 Site Location Map			
Land Use and Recreation Technical Report			
PROJECT NO. 60279942	DRAWN BY: MLS	DATE: 10/9/2013	Figure 2.0-1

APPENDIX B
LAND USE PHOTOS



Photo 1.1-1 Grassy Creek Habitat Protection Area.

Looking NE up Grassy Creek from the gravel road near the entrance gate. Chestnut Ridge and the Grassy Creek HPA are on the ridge in the upper right. The metal culvert in the lower left corner extends under the road. Grassy Creek empties into the Clinch River (to the SW) a short distance beyond the road (not shown). Power lines from the 161 kV transmission line cross the center of the image.



Photo 1.1-2 Grassy Creek Habitat Protection Area.

Near the top of Chestnut Ridge in the Grassy Creek Habitat Protection Area.



Photo 1.1-3 Plateau area. The southeastern portion of the peninsula was heavily disturbed during the activities associated with the former Clinch River Breeder Reactor Project. In the left foreground of this image, the hydrant pictured marks the end of the existing water line that was installed for the breeder reactor project. In the background, the graded plateau created during the project is visible. Looking W.



Photo 1.1-4 Former Clinch River Breeder Reactor Project Excavation Area. Located in the central-southeastern portion of the peninsula on the plateau, this excavation area is a remnant of the construction activities associated with the Clinch River Breeder Reactor Project. The 161 kV transmission line is visible on the left side of the image. Looking NE.



**Photo 1.1-5
Meteorological
Tower.** The rain gauge is the silver structure located left center of the photo. The radiometer is located atop the white post adjacent to the rain gauge. The equipment shed contains additional meteorological equipment. The tank in the foreground holds propane used to power the electric generator located in the lower left of the image. The generator provides emergency power to the meteorological trailer. Looking W.



**Photo 1.1-6
Hensley Cemetery.** A small private cemetery located along the river road. Looking N.





APPENDIX C
RECREATION PHOTOS



Photo 2.1-1 Melton Hill Dam. Melton Hill Dam looking NE. The power transfer station is visible at the top of the dam on the right side of the photo.



Photo 2.1-2 Melton Hill Dam. The power transfer station at the top of Melton Hill Dam. Looking N.



Photo 2.1-3 Melton Hill Dam. Looking N across the top of the Melton Hill Dam.



Photo 2.1-4 Melton Hill Dam. Looking NW toward the Melton Hill Dam. The Melton Hill Reservoir is in the foreground.



Photo 2.1-5 Melton Hill Dam Sustainable Recreation Area.

Looking downstream (NW) from the top of the Melton Hill Dam.



Photo 2.1-6 Melton Hill Dam Reservoir. Looking NE along the Melton Hill Dam Reservoir from near the top of the Melton Hill Dam.



Photo 2.1-7 Melton Hill Dam Welcome Sign. One of several informative signs posted around the Melton Hill Dam Sustainable Recreation Area describing the various facilities and sustainable technologies in use at the site.



Photo 2.1-8 Melton Hill Demonstration Project Sign. Second of several informative signs posted around the Melton Hill Dam Sustainable Recreation Area. This sign lists the TVA's partners in the sustainable technologies in use at the site.



Photo 2.1-9 Melton Hill Dam Sustainable Recreation Area.

Looking NW from the entrance to the Melton Hill Dam Sustainable Recreation Area toward Highway 95/White Wing Road.



Photo 2.1-10 Melton Hill Dam Sustainable Recreation Area.

Looking NE along the Clinch River toward the Melton Hill Dam just inside the entrance to the Melton Hill Dam Sustainable Recreation Area.



Photo 2.1-11 Melton Hill Dam Sustainable Recreation Area.

Looking NW downstream along the Clinch River from the Melton Hill Dam Sustainable Recreation Area. The Highway 95/White Wing Road bridge is visible in center left of the photo.



Photo 2.1-12 Melton Hill Dam Sustainable Recreation Area.

A solar demonstration project and electric vehicle charging stations in the parking area near the base of the Melton Hill Dam. Looking N.



Photo 2.1-13 Melton Hill Dam Sustainable Recreation Area. Melton Hill Dam Sustainable Recreation Area adjacent to the top of the dam. Looking E toward the campground and beach area. The road to the overlook area curves up the hill on the right side of the photo.



Photo 2.1-14 Melton Hill Dam Boat Ramp. The boat ramp into the Melton Hill Reservoir upstream of the dam. The ramp is located in the Melton Hill Dam campground and beach area, immediately adjacent to the parking lot. Looking NW toward the dam.



Photo 2.1-15 Melton Hill Dam Beach. The beach and swimming area at the Melton Hill Dam Reservoir. Looking NE from the edge of the parking lot near the boat ramp.



Photo 2.1-16 Melton Hill Dam Campground. Pavilions and facilities at the Melton Hill Dam beach and campground area. Looking E from the edge of the parking lot near the boat ramp.



Photo 2.1-17 Melton Hill Dam Campground.

Looking uphill (S) from the parking lot toward the Melton Hill Dam campground. The campground was closed for the season at the time of the site visit.



Photo 2.1-18 Melton Hill Dam Overlook Pavilion.

The overlook area is situated on a hill on the south side of the dam. A meeting room and restrooms are located inside the pavilion. Looking NE.



Photo 2.1-19 Melton Hill Dam Overlook Technology Demonstration Area.

Electric generation technology demonstration area at the Melton Hill Dam Overlook, immediately adjacent to the pavilion. Technology demonstration projects include a wind turbine (the lower half of the wind turbine is the silver pole pictured on the left side of the photo) and solar panels of various configurations. The power lines that cross the center of the photo connect to the power generating station on the dam. Looking E.



Photo 2.1-20 Melton Hill Dam Overlook Technology Demonstration Area.

Upper portion of the wind turbine pictured in Photo 2.1-17.



Photo 2.1-21 Melton Hill Dam. Looking N from the overlook area to Melton Hill Dam. The hillside in the distance is DOE property.



Photo 2.1-22 Melton Hill Dam Picnic Area and Walking Trail. Looking W from the overlook area to Melton Hill Dam Picnic Area and walking trail.



Photo 2.1-23 Melton Hill Dam Picnic Area and Walking Trail. Looking W from the trailhead along the walking trail. One of the picnic area pavilions can be seen in the left center of the photo. The walking trail descends 0.8 miles from the overlook area to the parking lot located on the downstream side of the Melton Hill Dam.

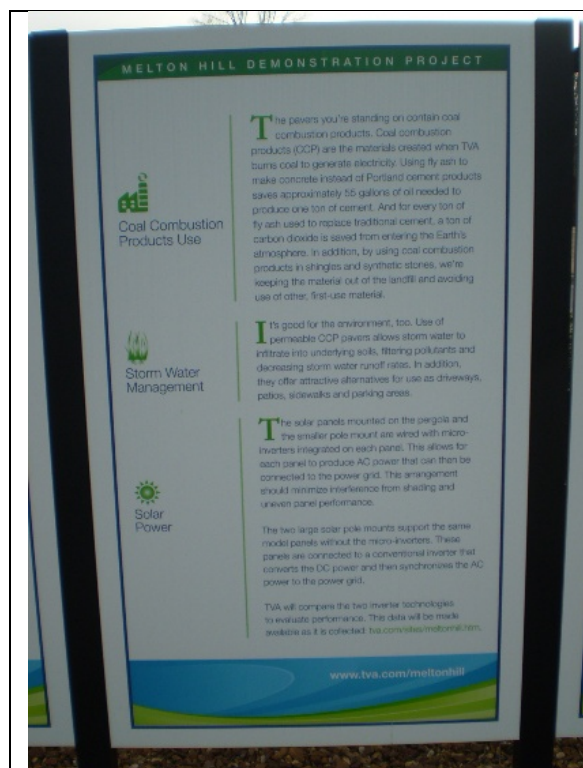


Photo 2.1-24 Melton Hill Demonstration Project Sign. Third of several informative signs posted around the Melton Hill Dam Sustainable Recreation Area describing the various sustainable technologies in use at the site.

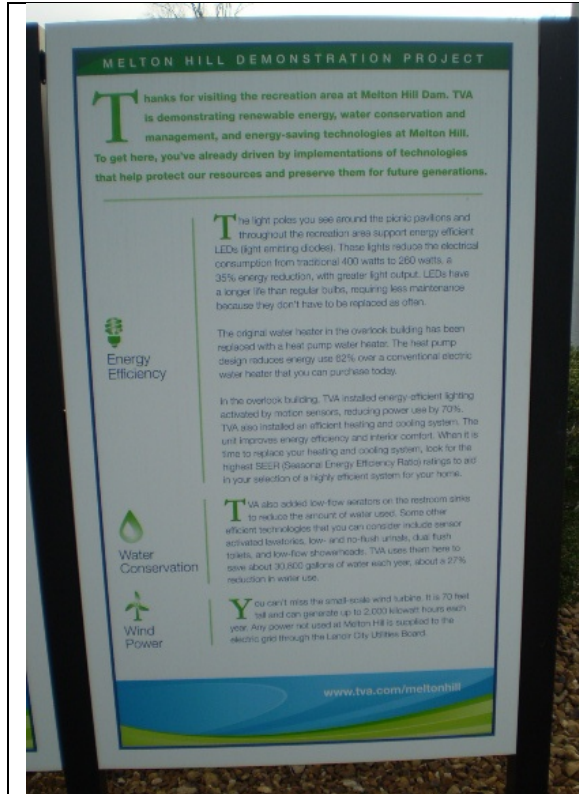


Photo 2.1-25 Melton Hill Demonstration Project Sign. Fourth of several informative signs posted around the Melton Hill Dam Sustainable Recreation Area describing the various sustainable technologies in use at the site.



Photo 2.2-1 Soaring Eagle Campground and RV Park. The picnic pavilion and swimming pool at the campground.



Photo 2.2-2 Soaring Eagle Campground and RV Park. One of the picnic areas with Caney Creek in the background and an RV on the right.



Photo 2.2-3 Soaring Eagle Campground and RV Park. The boat ramp and small dock leading into Caney Creek.



Photo 2.3-1 Gallaher Recreation Area. The area includes a parking area, boat ramp, and narrow beach. Looking NE.



Photo 2.3-2 Gallaher Recreation Area. The boat ramp at Gallaher Recreation Area. Looking NE.



Photo 2.3-3 Gallaher Recreation Area.

Looking downstream toward the Highway 58 bridge from the Gallaher Recreation area. Looking NW.



Photo 2.3-4 Gallaher Recreation Area.

Looking across the Clinch River toward the City of Oak Ridge water station. Portions of the Chestnut Ridge and the Grassy Creek Habitat Protection area can be seen behind the water station. Looking NE.



Photo 2.5-1 East Tennessee Technology Park Visitor's Overlook.

Entrance to the East Tennessee Technology Park Visitor's Overlook. Highway 58 is visible on the left side of the photo. The technology park is visible beyond the sign in the center of the photo. Looking NE.



Photo 2.5-2 East Tennessee Technology Park Visitor's Overlook.

Visitor's Overlook pavilion. The sign on the pavilion indicates that the overlook is part of the Tennessee Heritage Trail. The pavilion was closed at the time of the site visit, but appears to include several displays in the interior. Looking NE, the East Tennessee Technology Park is visible in the background.



Photo 2.5-3 East Tennessee Technology Park Visitor's Overlook.

Tennessee Historic Commission marker for the K-25 plant. Looking N, the East Tennessee Technology Park is visible in the background. The marker reads:

1F 39
K-25 Plant

As part of the Manhattan Project, the K-25 plant was designed to house work on separating U-235 from U-238 through the gaseous diffusion process. At the time of its construction, it was the largest industrial complex in history. Plant construction began in 1943 and was completed in 1945. Over 25,000 construction personnel worked on this plant. The main building exceeded 44 acres in size.



Photo 2.5-4 East Tennessee Technology Park Overlook Uranium Converter. Looking N toward the uranium converter display. Part of the East Tennessee Technology Park is visible on the left side of the photo. The plaque reads:

The Department of Energy,
Oak Ridge Office
BNFL Inc.
K-25 Site, East Tennessee
Technology Park

As part of a contract with the Department of Energy, Oak Ridge Operations, the BNFL Inc. Project was responsible for the decontamination and decommissioning of the three gaseous diffusion buildings K-33, K-31, and K-29. Within those three buildings were over 1,500 converters.

This specific converter is similar to the converters found in the facilities formerly known as the K-25 site. This converter was used to enrich uranium, which required increasing the percentage of the U-235 isotope.

Located inside the converter were barrier tubes that acted as filters used to separate the heavier U-238 isotope from the lighter U-235 isotope. To enrich even a small quantity of uranium, this process had to be repeated thousands of times.

BNFL Inc. changed its name to BNG America in April 2005



Photo 2.5-5 East Tennessee Technology Park Overlook. Looking E from the pavilion toward the parking lot and picnic area.



Photo 2.5-6 East Tennessee Technology Park. Looking N from the overlook toward the East Tennessee Technology Park. Highway 58 is in the foreground.



Photo 2.6-1 Southern Appalachia Railway Museum. Looking N from the Wheat Community African Burial Ground toward the Southern Appalachia Railway Museum. The East Tennessee Technology Park is visible in the distance on the right side of the photo. Near the center of the photo, a red railcar is barely visible beneath a pine tree. This rail car is one of several cars standing on a rail spur at the site of the museum.



Photo 2.6-2 Southern Appalachia Railway Museum. Looking NW from Highway 58 toward the future home of the Southern Appalachia Railway Museum.



Photo 2.6-3 Southern Appalachia Railway Museum. Current entrance to the museum and the departure point for the scenic tour.



Photo 2.6-4 Southern Appalachia Railway Museum. A view of the area surrounding the museum.



Photo 2.7-1 Wheat Community African Burial Ground. Looking N from the Wheat Community African Burial Ground toward Highway 58. The East Tennessee Technology Park is visible in the distance.



Photo 2.7-2 Wheat Community African Burial Ground. The burial ground is enclosed by the fence. No gravestones are present. Looking E.



Photo 2.7-3 Wheat Community African Burial Ground. One of two memorial markers at the Wheat Community African Burial Ground. This marker is the only marker located inside the burial ground. Looking E.



Photo 2.7-4 Wheat Community African Burial Ground. Second of two memorial markers at the Wheat Community African Burial Ground. Looking W toward Highway 58. This monument reads:

Wheat Community African
Burial Ground
Roane County, Tennessee

This cemetery and memorial is dedicated to the memory of these Africans who were in America in bondage, rather than by choice and lived, worked, and died in bondage in the Wheat Community

*When I Read My Title Clear
To Mansions In The Skies,
I'll Bid Farewell To Every
Fear,
And Wipe My Weeping
Eyes.*

Isaac Watts (1674-1748)
May 26, 2000



Photo 2.8-1 Private Boat Ramp. Looking NE toward a private boat ramp off Tucker Lane.