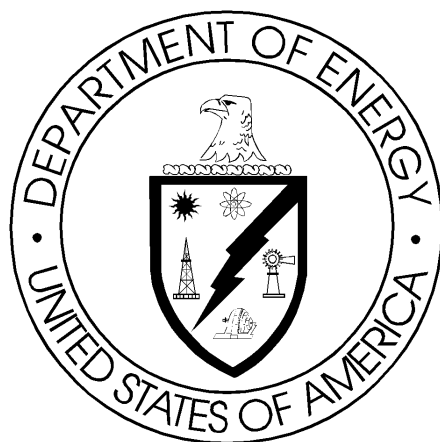


**COMPREHENSIVE ENVIRONMENTAL RESPONSE,
COMPENSATION, AND LIABILITY ACT
SECTION 120(h) REPORT FOR THE
TITLE TRANSFER OF PARCEL ED-6 AT THE
OAK RIDGE RESERVATION,
OAK RIDGE, TENNESSEE**



February 2006

U.S. Department of Energy
Oak Ridge Office
Oak Ridge, Tennessee

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

contributed to the preparation of this document and should not
be considered an eligible contractor for its review.

**Comprehensive Environmental Response,
Compensation, and Liability Act
Section 120(h) Report for the
Title Transfer of Parcel ED-6 at the
Oak Ridge Reservation,
Oak Ridge, Tennessee**

Date Issued—February 2006

Prepared by
Science Applications International Corporation
Oak Ridge, Tennessee
Contract No. DE-AM04-02AL67954
Task Order No. DE-AT05-04OR23901

Prepared for
U. S. Department of Energy
Oak Ridge Office
Oak Ridge, Tennessee

Blank page

CONTENTS

| | | |
|-------|---|------|
| 1.0 | PROPERTY IDENTIFICATION | 1-1 |
| 2.0 | TITLE SEARCH..... | 2-1 |
| 3.0 | FEDERAL RECORDS SEARCH AND REGULATORY SUMMARY | 3-1 |
| 3.1 | FEDERAL RECORDS SEARCH..... | 3-1 |
| 3.2 | REGULATORY SUMMARY | 3-3 |
| 4.0 | SUMMARY OF SITE CONDITIONS | 4-1 |
| 4.1 | PAST AND PRESENT ACTIVITIES IN THE TITLE TRANSFER FOOTPRINT | 4-1 |
| 4.1.1 | Documented Spills, Releases, or Disposal | 4-3 |
| 4.2 | PAST AND PRESENT ACTIVITIES—ADJACENT PROPERTY | 4-4 |
| 4.3 | HYDROGEOLOGIC ENVIRONMENT | 4-4 |
| 4.3.1 | Geology and Soils | 4-4 |
| 4.3.2 | Surface Water | 4-8 |
| 4.3.3 | Groundwater..... | 4-8 |
| 5.0 | RESULTS OF VISUAL AND PHYSICAL INSPECTIONS..... | 4-13 |
| 5.1 | VISUAL AND PHYSICAL INSPECTIONS OF THE PROPERTY FOR TRANSFER | 5-1 |
| 5.2 | VISUAL AND PHYSICAL INSPECTION OF ADJACENT PROPERTY..... | 5-5 |
| 6.0 | REFERENCES | 6-1 |
| | APPENDIX A: REAL ESTATE FILES RESEARCH DOCUMENT..... | A-1 |
| | APPENDIX B: INDIVIDUALS INTERVIEWED FOR INFORMATION REGARDING HISTORICAL AND CURRENT HAZARDOUS SUBSTANCE ACTIVITY..... | B-1 |
| | APPENDIX C: TRANSFORMER REPORTS | C-1 |

Blank page

FIGURES

| | | |
|-----|---|------|
| 1.1 | Location of Parcel ED-6. | 1-2 |
| 1.2 | Parcel ED-6 and surrounding features. | 1-3 |
| 1.3 | Aerial photograph of Parcel ED-6. | 1-4 |
| 2.1 | Land tracts formerly occupying Parcel ED-6. | 2-2 |
| 3.1 | 1942 aerial photograph of a portion of Parcel ED-6. | 3-2 |
| 4.1 | City of Oak Ridge pumphouse at Parcel ED-6. | 4-1 |
| 4.2 | City of Oak Ridge water tank at Parcel ED-6 looking northeast. | 4-2 |
| 4.3 | Air Monitoring Station 38 located adjacent to the water tank. | 4-2 |
| 4.4 | TVA transmission lines in the southeast corner of Parcel ED-6. | 4-3 |
| 4.5 | Geologic map of Parcel ED-6. | 4-6 |
| 4.6 | Hydrogeologic zones and directions of water flow in the vicinity of ED-6 | 4-10 |
| 4.7 | Residential wells in the vicinity of ED-6. | 4-12 |
| 5.1 | Impacts of pine beetle infestations at Parcel ED-6, Blackoak Ridge is in the background. | 5-1 |
| 5.2 | Culvert under East Quarry Road during the dry period. | 5-2 |
| 5.3 | Culvert under East Quarry Road 24 hrs after a precipitation event. | 5-2 |
| 5.4 | Remnants of a stone wall along East Quarry Road. | 5-3 |
| 5.5 | Foundation remains on the north side of East Quarry Road. | 5-3 |
| 5.6 | Pole-mounted transformer at a city of Oak Ridge water tank at Parcel ED-6. | 5-4 |
| 5.7 | Pole-mounted transformers at the city of Oak Ridge pumphouse at Parcel ED-6. | 5-4 |

TABLE

| | |
|-----|--|
| 4.1 | Summary of analytical results for residential wells located north and west of Parcel ED-6 4-13 |
|-----|--|

Blank page

ACRONYMS

| | |
|------|--------------------------------------|
| BJC | Bechtel Jacobs Company LLC |
| COE | U.S. Army Corps of Engineers |
| DOE | U.S. Department of Energy |
| EPA | U.S. Environmental Protection Agency |
| ETTP | East Tennessee Technology Park |
| FFA | Federal Facility Agreement |
| kVA | kilovolt-ampere |
| NFI | No Further Investigation |
| ORO | Oak Ridge Operations Office |
| ORR | Oak Ridge Reservation |
| PCB | polychlorinated biphenyl |
| ppm | parts per million |
| TVA | Tennessee Valley Authority |

Blank page

EXECUTIVE SUMMARY

The U.S. Department of Energy (DOE) is proposing to convey the fee title of a parcel of real property (hereinafter referred to as Parcel ED-6). Parcel ED-6 is located in the north-central portion of the DOE Oak Ridge Reservation and consists of approximately 336 acres. The purpose of the proposed action is to convey this property to the city of Oak Ridge for the development of new housing. This report is submitted pursuant to Section 120(h)(4) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, and to applicable U.S. Environmental Protection Agency (EPA) guidance.

Based on its investigation and the information set forth in this document, DOE has identified Parcel ED-6 as “uncontaminated property” in accordance with CERCLA Section 120(h)(4)(A). This report documents the review of Parcel ED-6 and pertinent records to identify any areas on the parcel where hazardous substances or petroleum products were known to have been released or disposed of as required by CERCLA Section 120(h)(4)(A). Government records, title documents, and historical aerial photographs were searched; inspections of Parcel ED-6 and adjacent properties were performed; and interviews with current and former employees were conducted as part of this effort. Based on the reviews, inspections, and interviews documented herein, DOE has determined, in accordance with regulations issued by EPA at 40 *Code of Federal Regulations* Part 373, that there is no evidence to indicate that hazardous substance activity took place on Parcel ED-6 during the time the property was owned by the United States. Further, DOE hereby requests that EPA concur in the results of DOE’s identification of Parcel ED-6 as uncontaminated in accordance with CERCLA Section 120(h)(4)(B).

DOE will continue to be responsible for any legacy contamination discovered at Parcel ED-6 after the date of transfer. Once EPA has concurred in the results of DOE’s identification of Parcel ED-6 as uncontaminated, DOE will proceed to convey the property. DOE will include in the deed the required covenant warranting that any response action or corrective action found to be necessary after the date of the transfer of Parcel ED-6 shall be conducted by the United States, and a clause granting the United States access to the property in any case in which a response action or corrective action is found to be necessary after such date at such property, or such access necessary to carry out a response action or corrective action on adjoining property, in accordance with CERCLA Section 120(h)(4)(D).

Following is a summary of the findings of the evaluation that was performed:

- Primary uses of the property have included agriculture, wildlife management, forestry, and environmental monitoring.
- A No Further Investigation determination for the East Blackoak Ridge Study Area, which included Parcel ED-6, was approved by EPA in June 1997.
- Structures currently existing on the property include a water tank on top of the ridge and a pumping station for the water tank, both of which are operated by the city of Oak Ridge.
- No environmental media sampling was conducted to support the title transfer of Parcel ED-6.

Blank page

1.0 PROPERTY IDENTIFICATION

Parcel ED-6 is located in the northeastern portion of the Oak Ridge Reservation (ORR) in Roane County, Tennessee. The ORR was established in the early 1940s as part of the Manhattan Project, a secret undertaking that produced the materials for the first atomic bombs. The ORR encompasses about 33,749 acres of mostly contiguous land in the Oak Ridge area. The majority lies within the corporate limits of the city of Oak Ridge. The residential section of Oak Ridge forms the northern boundary of the ORR.

Parcel ED-6 is located along the ridge and the moderate-to-steep southeast slopes of Blackoak Ridge in the north-central portion of the ORR. Several intermittent streams flow down the ravines along the southern slope of Blackoak Ridge and drain into East Fork Poplar Creek. Figure 1.1 is a map showing the location of Parcel ED-6, and Fig. 1.2 provides a detailed view of the property and surrounding features.

The area proposed for title transfer includes about 336 acres. The southern boundary is generally about 100 ft south of and parallels the Oak Ridge Turnpike (Fig. 1.2). The western boundary turns north approximately 200 ft east of East Fork Poplar Creek, crossing under the Oak Ridge Turnpike, and extends northward to Whippoorwill Drive. The northern and eastern boundaries of Parcel ED-6 follow the U.S. Department of Energy (DOE) ORR boundary. Figure 1.3 provides an aerial photograph from 1993 of Parcel ED-6.

Parcel ED-6 was included in the East Blackoak Ridge Study Area, which was evaluated under the Environmental Restoration Footprint Reduction Process (DOE 1996). This process was used to identify ORR lands that have not been impacted by activities that have resulted in hazardous substance contamination, and to issue all such lands a No Further Investigation (NFI) status. An NFI determination for the East Blackoak Ridge Study Area, which included Parcel ED-6, was approved by the U.S. Environmental Protection Agency (EPA) in June 1997.

Preparation of this report included the review of government records, title documents, aerial photos, visual inspections of the property and adjacent properties, and interviews with current and former employees to identify any areas on the property where hazardous substances and petroleum products were known to have been released or disposed of.

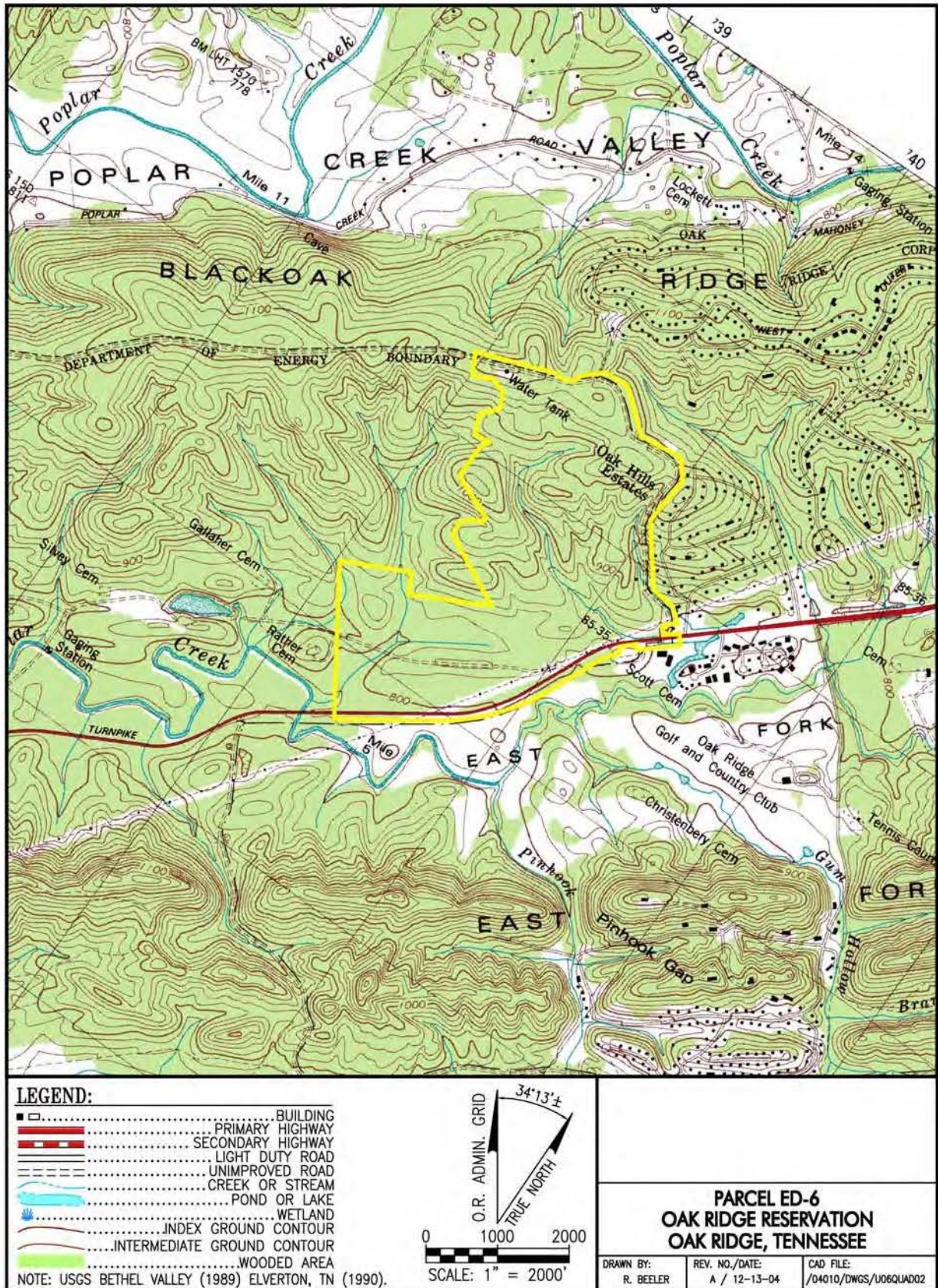


Fig. 1.1. Location of Parcel ED-6.

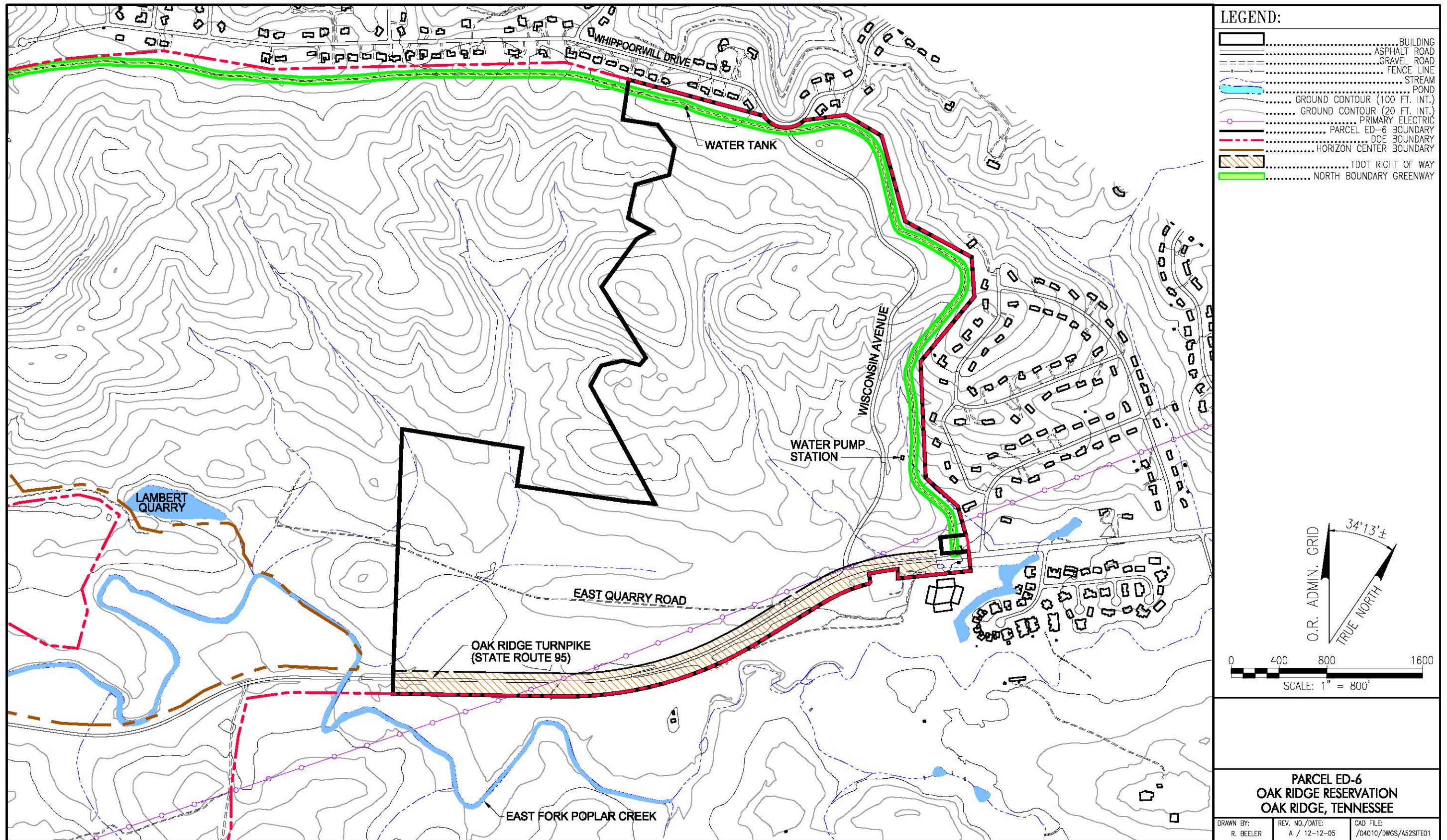


Fig.1.2. Parcel ED-6 and surrounding features.

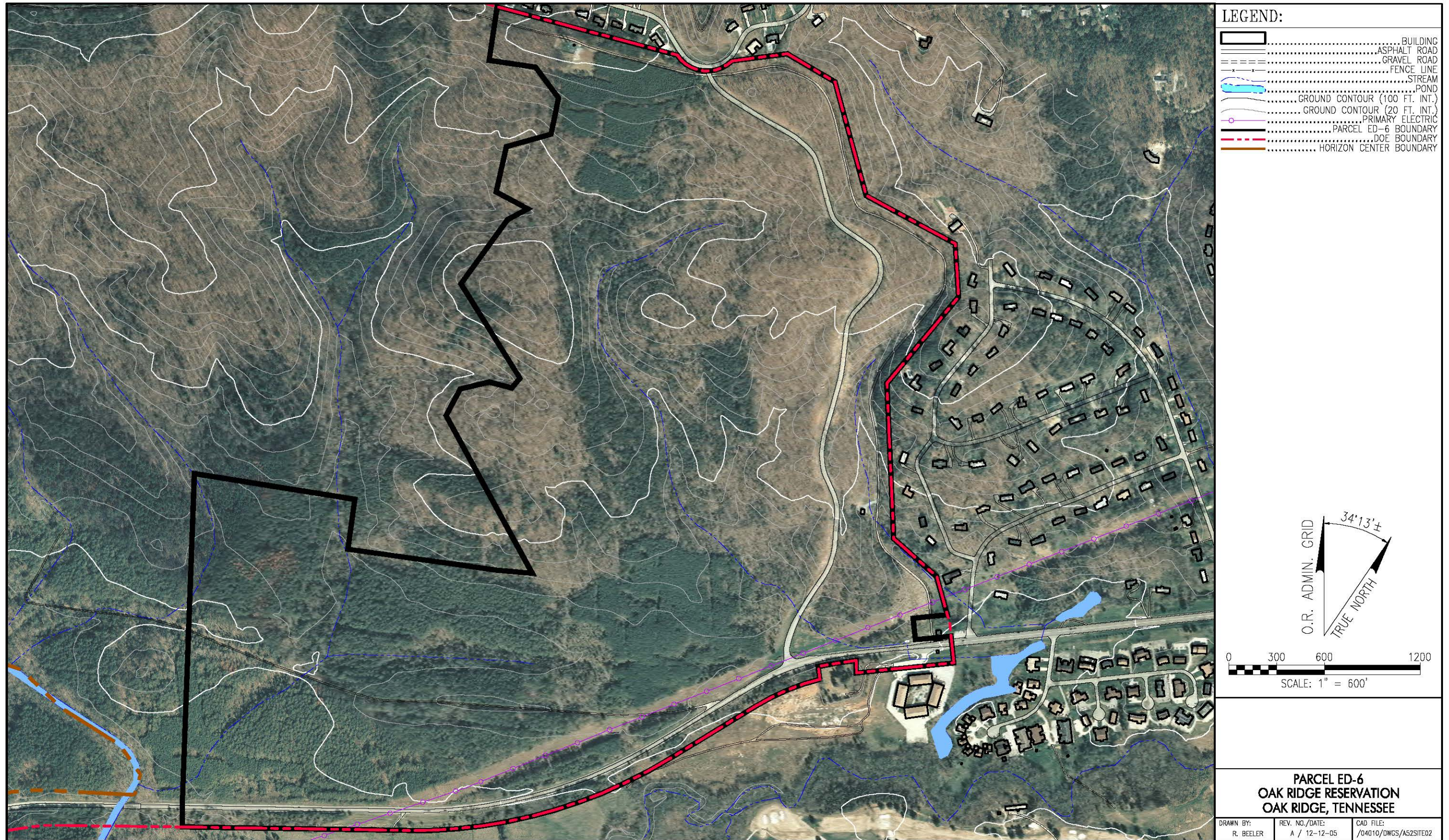


Fig. 1.3. Aerial photograph of Parcel ED-6.

2.0 TITLE SEARCH

DOE conducted a review of the recorded deeds from the state of Tennessee Roane County Recorder's Office documenting previous ownership of land tracts J-939, J-941 through J-946, J-961, J-963 through J-966, J-969, and J-970, which previously occupied the area now encompassed by Parcel ED-6 (Fig. 2.1). The deeds contained no information or references to other recorded evidence that, prior to DOE or predecessor U.S. government agency ownership, the property was utilized for the storage of hazardous substances and/or petroleum products or their derivatives. Additionally, no information contained in the deeds would indicate that hazardous substances and/or petroleum products or their derivatives were released from or disposed of on the property. Prior to acquisition by the government, the area was farmland and was a combination of cultivated fields, pastures, and forested areas.

The deeds that conveyed the property from the previous owner to the U.S. government, and any deeds that conveyed the property to that previous owner, were reviewed as a part of the title search. Generally, the deeds from the previous two owners of a particular ORR parcel provide information that goes back to the early 1900s or even earlier. The deeds were reviewed for any references to previous land uses (e.g., homestead, farm, school, business, etc.). Also reviewed were any easements or conveyances referenced in the deeds that might indicate that portions of the land were used for pipelines, power lines, etc. Partial disposal or acquisition conveyance deeds were also reviewed because, in some instances, the land comprising a large farm had been acquired via several separate acquisitions.

In addition, property assessment records from the County Property Assessor's Office were reviewed because these documents may also contain evidence of a particular land use. Survey or subdivision maps referenced in deeds and maintained in the Register of Deeds Office were also reviewed for any indications of a previous land use. Furthermore, because the Tennessee Valley Authority (TVA) was the previous owner of several large tracts of ORR land, the TVA Real Estate Office was contacted regarding its knowledge of any previous land uses. The U.S. Army Corps of Engineers (COE) was another source of information that was contacted.

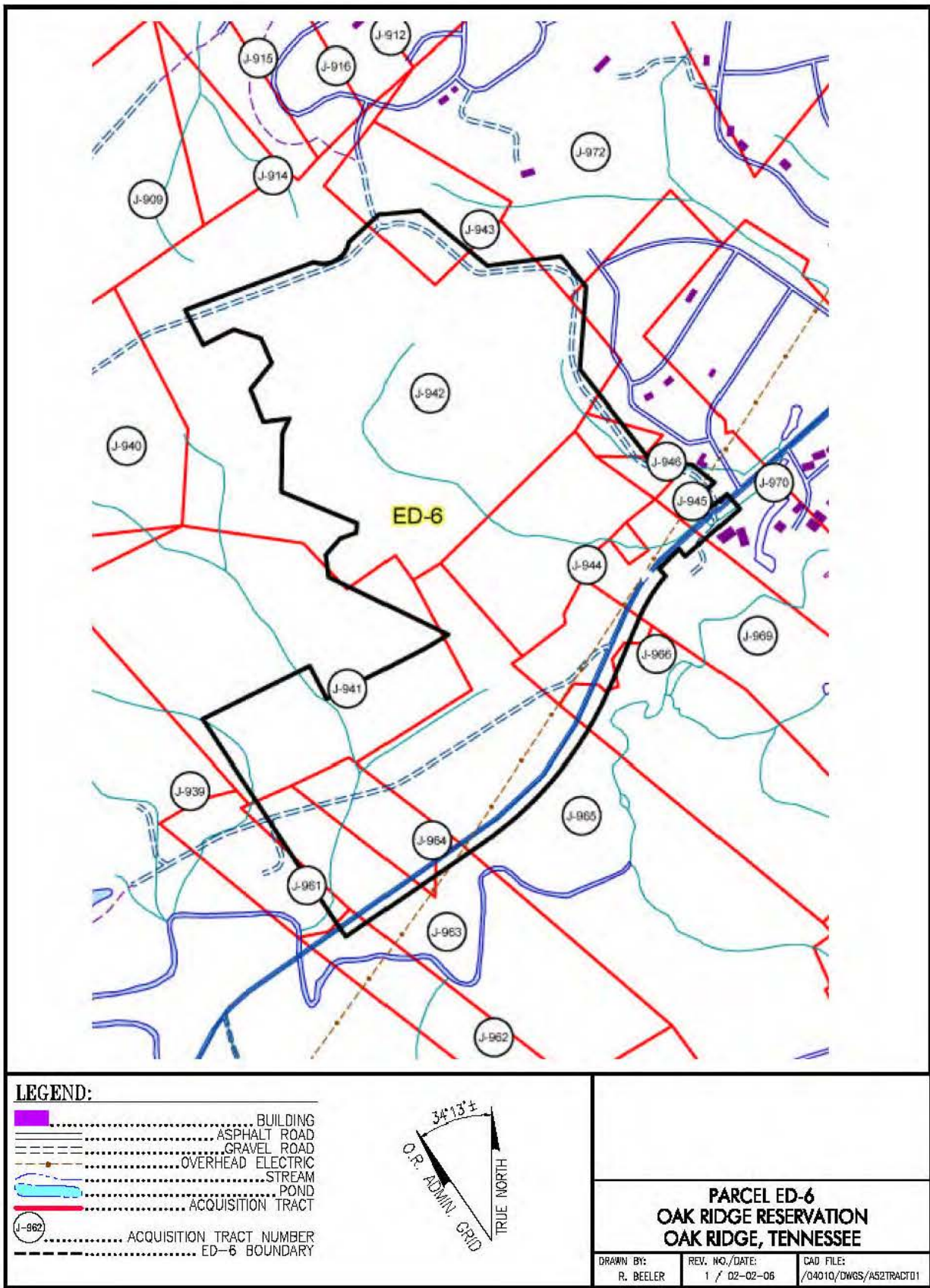


Fig. 2.1. Land tracts formerly occupying Parcel ED-6.

3.0 FEDERAL RECORDS SEARCH AND REGULATORY SUMMARY

3.1 FEDERAL RECORDS SEARCH

TVA in Knoxville, Tennessee, and the COE District Office in Nashville, Tennessee, were contacted to determine if they maintained any records reflecting past or present land use relative to the land now making up the ORR (TVA 1998, COE 1998). Neither TVA nor COE had any information at the time contacted regarding the history of past or present land use that would indicate if hazardous substances or petroleum products were stored or released on the DOE-owned property making up Parcel ED-6.

DOE real estate records that document previous ownership of land tracts J-941 through J-946, J-961, J-963 through J-966, J-969, and J-970 where Parcel ED-6 is located were examined. Page A-3 of Appendix A is a statement from the Realty Officer of the DOE Oak Ridge Office (ORO) stating that the real estate records contained no information or references to other recorded evidence that, prior to DOE ownership, the property was utilized for the storage of hazardous substances. Additionally, no information contained in these records would indicate that hazardous substances were released from or disposed of on the property.

The following preconstruction aerial photographs and maps reflecting prior use of this land were also reviewed. Copies of these photographs and maps are maintained on file in the Bechtel Jacobs Company LLC (BJC) Real Estate Office.

Aerial Photographs

| <u>Photograph Nos. and Date</u> | <u>Flight By</u> | <u>Source</u> |
|---|--|-------------------------|
| No. 130-3-9, dated 1939 | Unknown | BJC, Real Estate Office |
| Nos. 820-2-15 through -23, dated September 25, 1942 | Aero Service Corporation for Stone and Webster | BJC, Real Estate Office |

These photographs, which were taken in 1939 and 1942 prior to federal acquisition of the land, show that the land where Parcel ED-6 is located was predominantly undeveloped forest or used for agricultural purposes. Several residential and agricultural buildings existed in the study area in 1942 (Fig. 3.1). Several cemeteries are present in the area adjacent to the western boundary of Parcel ED-6.

Topographic and Real Estate Maps

1. A November 2, 1942, topographic map identified as Section A-1 of ORR was prepared by Aero Services Corporation for Stone and Webster.
2. A February 19, 1945, real estate map (sheet 9 of 16) prepared by the U.S. Army shows the boundaries of all land tracts upon which facilities at the site are currently located.



Fig. 3.1. 1942 aerial photograph of a portion of Parcel ED-6.

Neither the aforementioned photographs nor maps contained any information regarding the history of the past land use that would indicate that storage or releases of hazardous substances or petroleum products have occurred on the land where Parcel ED-6 is located. Copies of the 1942 topographic map and real estate map are maintained in the BJC Real Estate Office and the DOE-ORO Real Estate Office (Energy Systems 1996).

A check of the Occurrence Reporting and Processing System (ORPS 2003) and Radiological Control Organization records was also performed. There are no records in either of these databases indicating the release or suspected release of hazardous substances within the Parcel ED-6 footprint.

3.2 REGULATORY SUMMARY

As discussed previously, prior to ownership by DOE (and its U.S. government predecessor agencies), the property was either forested or farmland. Any DOE operations within the footprint of Parcel ED-6 occurred under DOE's own authority, without external regulation, prior to 1984. Interviews with employees and a review of records show that no recorded releases occurred before 1984. Records (containing information about spills, permits, or permit violations) for the period since 1984 and interviews with employees do not indicate that any regulatory actions have occurred within the footprint of the parcel. Appendix B contains a list of individuals contacted.

Blank page

4.0 SUMMARY OF SITE CONDITIONS

4.1 PAST AND PRESENT ACTIVITIES IN THE TITLE TRANSFER FOOTPRINT

Prior to acquisition of the land by the U.S. government, the Parcel ED-6 area was undeveloped forest or farmland. At least five pre-World War II structures have been documented in the parcel footprint. All of these appear to be former dwellings or sheds. Only a semblance of the foundations remains for these structures. Past federal activities consisted primarily of forest management and environmental research.

The property proposed for conveyance includes the area occupied by Wisconsin Avenue and all currently existing structures, and the underlying property, also known as the underlying fee. Access to the property is provided by Wisconsin Avenue, which is a city-maintained paved road, and the East Quarry Road and East Ridge Access Road, which are DOE-maintained unpaved roads. The DOE unpaved roads are equipped with gates, which restrict access. Land rights were conveyed to the city of Oak Ridge for the purpose of construction and maintenance of Wisconsin Avenue and associated utility lines in July 1987. The easements were revised in May 1988. The East Ridge Access Road has also been leased to the city of Oak Ridge and is maintained as a greenway for the public.

The facilities currently in use in the Parcel ED-6 footprint are a city of Oak Ridge pumphouse (Fig. 4.1), which was constructed in 1977–78 and contains two electrically driven pumps and no backup generator; a city of Oak Ridge elevated steel water tank with a 250,000-gal capacity (Fig. 4.2); and an air monitoring station operated by Oak Ridge National Laboratory located adjacent to the water tank (Fig. 4.3). A TVA transmission line transects the southeastern corner of the property (Fig. 4.4).



Fig. 4.1. City of Oak Ridge pumphouse at Parcel ED-6.



Fig. 4.2. City of Oak Ridge water tank at Parcel ED-6 looking northeast.



Fig. 4.3. Air Monitoring Station 38 located adjacent to the water tank.



Fig. 4.4. TVA transmission lines in the southeast corner of Parcel ED-6.

Historical maps of the ORR area were reviewed to determine whether former facilities had been located in the Parcel ED-6 footprint. None were found.

As discussed in Chap. 1.0, interviews with former/current employees were conducted to identify any areas on the property at which hazardous substances and/or petroleum products were known to have been released or disposed of. The Hazardous Materials Information System (database, HMIS 2004) has also been searched for information about storage of hazardous materials.

4.1.1 Documented Spills, Releases, or Disposal

There is no documentation of, or evidence thereof, the storage, spill, or disposal of hazardous substances or petroleum products within the Parcel ED-6 footprint. Although it is possible that petroleum products could have been stored at the pre-World War II structures, if such products were released to the environment, it is unlikely that any residual contamination remains at unacceptable levels because of natural volatilization and biodegradation processes over the past 60 years of federal ownership of the property (DOE 1996).

As part of DOE's Environmental Restoration Footprint Reduction Process, an evaluation of East Blackoak Ridge, which includes Parcel ED-6, was completed in 1996. The footprint reduction process was part of an effort to identify ORR lands that have not been impacted by activities that have resulted in hazardous substance contamination and to issue all such lands an NFI status. To satisfy the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 120(h) process for the East Blackoak Ridge Study Area, historical records, aerial photography, and field investigation/verification activities were conducted. Remote sensing data were added to these requirements to augment the historical aerial photography and to ensure a comprehensive investigation of the area. Remote sensing data included color infrared photography, airborne gamma radiation surveys, multi-spectral imagery, thermal imagery, and vertical

magnetic gradient data that were examined to identify anomalous regions. Field inspections were used to resolve the anomalous regions. The results of the footprint reduction investigation (DOE 1996) indicated that the East Blackoak Ridge Study Area was not used for industrial activities that would have resulted in hazardous substance contamination, and no evidence of possible disposal of hazardous materials was found. The evaluation concluded that no public health concern should arise because of past and present federal activities within the study area. An NFI determination for the East Blackoak Ridge Study Area, including Parcel ED-6, was approved by EPA in June 1997.

4.2 PAST AND PRESENT ACTIVITIES—ADJACENT PROPERTY

The study area is located in the north-central portion of ORR. The nearest non-DOE property is the Oak Ridge Turnpike/State Highway 95, which transects the southern portion of the parcel and Wisconsin Avenue, which is located within the eastern portion of the parcel. Additional adjacent areas include residential areas along Whippoorwill Drive to the north; Oak Hills Estates on the east; and Sweet Gum Lane, E. and W. Southwood Lanes, and Shagbark Lane to the south. There is no indication that activities from these non-DOE areas would have contributed any contamination to the area to be transferred.

Parcel ED-6 is located in the heart of what was once an agricultural area, prior to acquisition by the federal government. It is surrounded on the north, east, and south by residential areas that were developed between the 1950s to the present.

Lambert's Quarry, which is located approximately 1500 ft west of Parcel ED-6, is believed to have operated from 1942 to 1953 to provide stone for building purposes. Although there is no documentation or direct physical evidence of contamination, metal drums have been reported to exist beneath quarry waters and elevated mercury concentrations were reported in largemouth bass taken from the quarry (Southworth, Peterson, and Turner 1994). The quarry is within the 100-year floodplain of East Fork Poplar Creek and mercury-contaminated sediments may have been deposited in the quarry during high flow events (DOE 1996). The quarry is included on Appendix C of the Oak Ridge Federal Facility Agreement (FFA) (DOE 1992). An NFI status was approved for Lambert Quarry in February 1999.

Several cemeteries are located west of Parcel ED-6. These cemeteries include the Silvey Cemetery, Gallaher Cemetery, and the Rather-Hembree Cemetery. The Rather-Hembree Cemetery is located within 300 ft of the west boundary of the parcel.

4.3 HYDROGEOLOGIC ENVIRONMENT

The following sections describe the hydrogeologic conditions present at Parcel ED-6. These conditions are primarily summarized from available reports. Investigations to determine groundwater conditions have not been conducted, and the groundwater conditions are largely interpolated from other ORR reports.

4.3.1 Geology and Soils

Soils underlying Parcel ED-6 can be generally characterized as well-drained residuum and colluvium derived from Knox Group dolostones. The soils in the area have been mapped as primarily consisting of Fullerton cherty silt loam and Clarksville cherty silt loam with smaller areas of Dewey silty clay loam, Talbott silty clay loam, Colbert silty clay loam, and Roane gravelly loam (USDA 1942). Soils of the Fullerton and Clarksville series occupy the majority of the site and are found on the steep, hilly, and

rolling portions of the parcel, while soils of the other series primarily occupy the low areas near streams and East Fork Poplar Creek.

Soils of the Fullerton series are described as being well-drained, strongly acid, moderately cherty, and moderately productive soils originating from the weathering of moderately cherty dolomitic limestone. In uneroded areas, Fullerton cherty silt loam has a brownish-gray loose silt loam surface soil about 10 to 15 in. thick. This layer normally contains a moderate quantity of chert fragments. Underlying the surface soil is the yellowish-red or pale-red silty clay or silty clay loam subsoil, about 25 to 35 in. thick. This subsoil also contains a moderate quantity of chert fragments. Underlying the subsoil is the substratum consisting of reddish-yellow silty clay splotched with yellow, red, brown, and gray. This material is generally tight, sticky, and plastic and contains a moderate quantity of chert fragments. The substratum continues to bedrock, which lies from 20 to 30 ft below the surface in most places (USDA 1942). The eroded phase of the Fullerton, which has also been mapped in the area, is similar to the above with the exception that most or all of the surface soil is missing from this phase. Like the Fullerton soils, the Clarksville soils are developed from the residuum of cherty dolomitic limestone. These soils have similar characteristics; however, the Clarksville soils contain more chert and have lighter colored surface soils and yellow rather than yellowish-red subsoils. The Talbott soils are developed from the residuum of clayey limestones and have grayish-brown surface soils and yellowish-red subsoils. The Talbott subsoils are characterized by their toughness, plasticity, and stickiness. In contrast to the Fullerton and Clarksville soils, the Talbott soils have few chert fragments and chert is completely absent in many places (USDA 1942). Dewey soils are developed from relatively pure limestones and dolomitic limestones. The parent rocks generally contain some chert. The Dewey soils differ from the Fullerton soils in that they have darker surface soils, redder and deeper subsoils, and less chert. They differ from the Talbott soils in having deeper surface soils and deeper, more red subsoils. The Colbert soils are developed from clayey limestones and occupy valleys underlain by limestones. These soils differ from the Talbott soils in that they are developed from the residuum of clayey limestones, are shallower over bedrock, have tougher and stickier subsoils, and have more gray and yellow and less red in the subsoils. The Roane gravelly loam is washed primarily from the upland areas of the Clarksville and Fullerton soils. A semi-cemented layer of chert fragments is a conspicuous feature of this soil (USDA 1942).

Discussions of the regional geology and structural and stratigraphic relationships on the ORR can be found in the *Status Report on the Geology of the Oak Ridge Reservation* (Hatcher et al. 1992), and detailed discussions of the geology and geologic structure of the area immediately west of Parcel ED-6 can be found in Lemiszki (1994 and 1995). The geologic formations underlying Parcel ED-6 are indicated on Fig. 4.5 and include those of the Knox Group and the lower portion of the Chickamauga Supergroup.

The Knox Group, which underlies the northern two-thirds of the parcel, consists of carbonates that have been divided into five formations based primarily on the characteristics of chert and sandstone blocks preserved in the residuum. The Knox Group includes, from oldest to youngest, the Copper Ridge Dolomite, the Chepultepec Dolomite, the Longview Dolomite, the Kingsport Formation, and the Mascot Dolomite. For the most part, these rocks range from massive- to medium-bedded, fine- to coarse-grained dolomite with some interbedded limestones, primarily in the Kingsport Formation, and sandstone lenses, all containing chert. These formations weather chiefly by solutional attack with irregular thicknesses of soil developed above them.

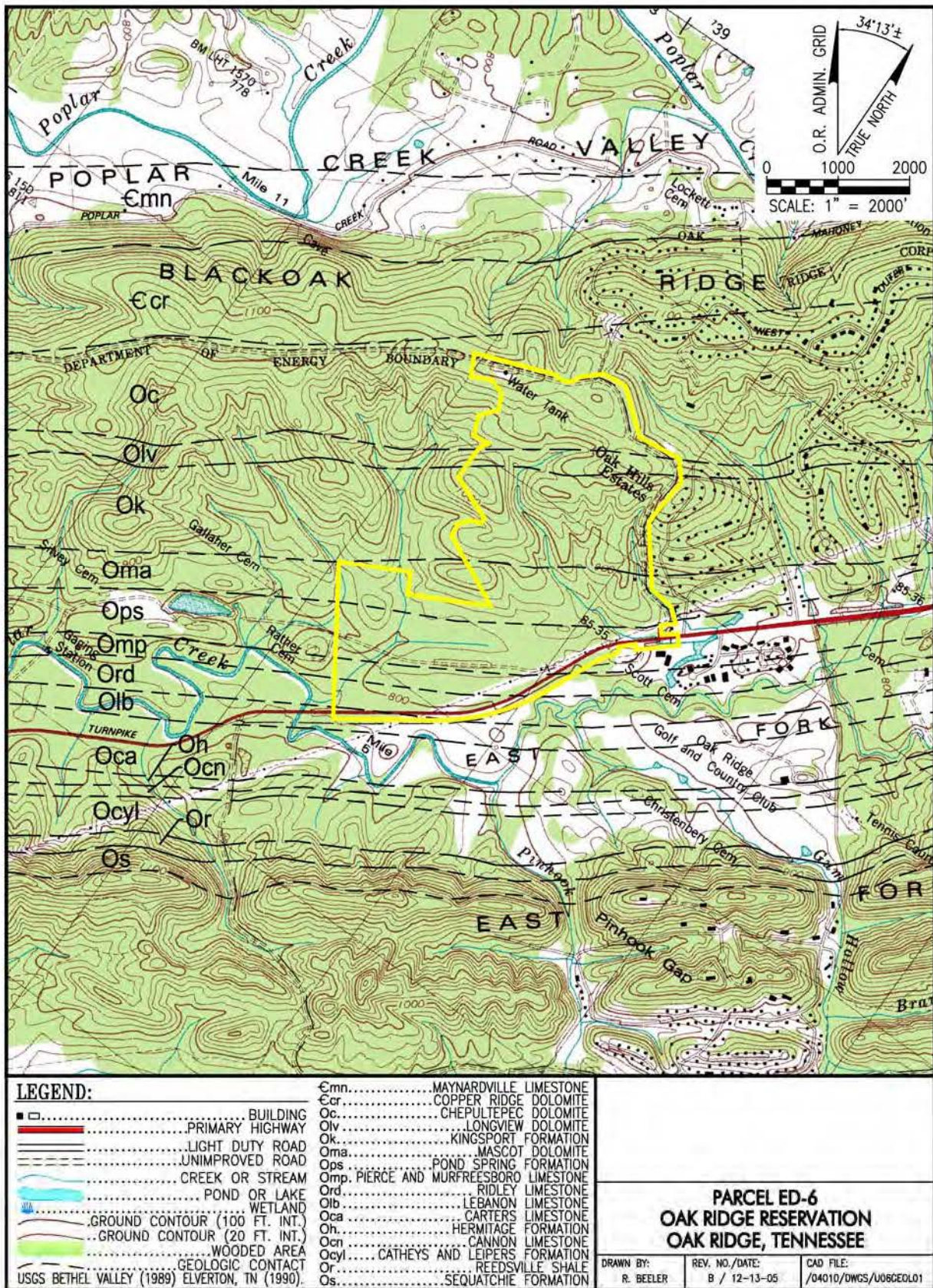


Fig. 4.5. Geologic map of Parcel ED-6.

The Copper Ridge Dolomite occupies the northern slopes of Blackoak Ridge and is not exposed at the surface of Parcel ED-6. The Chepultepec Dolomite underlies the northernmost portion. The Chepultepec consists of fine- to medium-grained dolomite that is commonly medium- to thick-bedded and light gray or tan colored. Although other types of dolomite are present, they are less abundant than the light-colored varieties. Oolitic chert is also present in the Chepultepec. Much of the chert found in float is light gray, cream, tan, and white. The chert is commonly deeply weathered with black stains and contains rhombohedral-shaped molds of weathered dolomite crystals. The Longview overlies the Chepultepec and is composed of interbedded light- to medium-gray, thin- to thick-bedded, fine- to coarse-grained dolomite. The dolomite commonly contains light gray to white, concentrically banded chert nodules, lenses, and large masses. Dolomites in the Kingsport Formation, which overlies the Longview, range from light- to dark-gray, medium- to massive-bedded, and fine- to coarse-grained crystalline. Some dolomites have an oolitic texture. Near the top of the formation, the gray color of the dolomite may contain pink streaks or have a pinkish hue. Thick to massive limestones are commonly interbedded with the dolomites. The limestones are light- to medium-gray and fine-grained, with various forms of chert. Jasperoidal chert can be fine-grained crystalline and may have a sandy texture. Gastropods have been found in various varieties of chert throughout the unit but are found mostly in milky-white colored chert near the contact with the overlying Mascot Dolomite. The Mascot is primarily composed of thick- to massive-bedded, light-gray dolomite with pinkish streaks and hues. The dolomite is commonly fine-grained, but occasional thick beds of coarse-grained dolomite with scattered quartz sand grains also occur in the unit. Rare limestone beds in the unit are thick to massive, light gray, and fine-grained. Limestones contain some silicified gastropods, irregular dolomitic patches, and black chert pods. Near the base of the unit is a jasperoidal and flinty chert zone that commonly has stromatolitic (algal) laminations. Near the middle of the unit is a medium- to thick-bedded, white porcelaneous chert. Both of these chert layers are easily traced in the residuum. The top of the Mascot is characterized by an unconformity, which represents erosion of the Mascot prior to deposition of the overlying Chickamauga formations.

The Chickamauga Supergroup includes the Stones River Group of formations, which occupy the southern one-third of Parcel ED-6. The Stones River Group includes the Pond Spring Formation, the Murfreesboro Limestone, the Ridley Limestone, and the Lebanon Limestone. These formations range from massive-bedded limestones to thin, irregular-bedded calcareous shales colored from dark gray to maroon, green, and yellowish-red with some beds containing abundant fossils. The Pond Spring Formation in the vicinity of the parcel consists of calcareous shales and argillaceous limestones. The maroon, green, and gray argillaceous limestones are interbedded with thick, irregularly bedded grayish-green and red calcareous shales. The Murfreesboro Limestone consists of micritic and fine-grained limestone with minor amounts of calcareous shale and argillaceous limestone. A characteristic feature of the limestones in the upper part of the Murfreesboro is that they commonly contain nodular, gray-black chert zones with silicified fossils. The overlying Ridley Limestone contains thick- to massive-bedded limestones containing tan-brown, irregularly shaped, fine- to coarse-grained dolomitic patches. Minor amounts of gray-black chert are present in the upper part of the formation, and fossils are very abundant in some coarse-grained limestone beds. The Lebanon Limestone, which occupies only the southwestern corner of Parcel ED-6, is characterized by abundant fossils and ranges from regular and even, thin to medium beds to irregular, cobbly beds. Irregularly shaped, fine- to coarse-grained dolomitic patches similar to those found in the Ridley Limestone are common. Some thick to massive limestone beds also occur and chert is rare (Lemiszki 1994).

Monoclinical dipping beds with northeast strike and southeast dips characterize the bedrock underlying Parcel ED-6. The mean strike and dip for these formations along-strike in the vicinity of the East Tennessee Technology Park (ETTP) west of the parcel, as determined by Lemiszki (1995), is N49°E/35°SE. Lemiszki (1995) notes that faults are rare to nonexistent and fractures are generally consistent, with two primary bedding plane normal sets, and as many as three additional fracture sets present locally in these same rocks in the vicinity of ETTP. The secondary fracture sets have orientations

at 30 to 45° east and west of the primary sets, resulting in east-west and north-south fracture orientations. The primary structural feature in the vicinity of Parcel ED-6 is the East Fork syncline (bowl-shaped fold), which lies to the south. This feature was developed on the footwall of the Whiteoak Mountain fault and preserves younger rocks in the center of this feature. The leading edge of the Whiteoak Mountain fault lies approximately 5500 ft south of the parcel. A splay off of the Whiteoak Mountain fault, known as the K-25 fault, has been mapped to within approximately 4500 ft of the southwestern corner where it appears to terminate within the rocks of the north limb of the East Fork syncline. Karst development is common in the carbonate rocks of the Knox Group throughout the ORR. Lithologic and bedding variations in the Chickamauga result in less dramatic karst development in these rocks, but it still occurs. Sinkholes and related surface depressions in the vicinity of Parcel ED-6 indicate that karst development is present. A cave exists at the base of the north slope of Blackoak Ridge approximately 3000 ft northwest of Parcel ED-6. A relatively large sinkhole located approximately 1200 ft southwest of Parcel ED-6 is indicated on the U.S. Geological Survey topographic map. This sinkhole has developed within rocks of the Chickamauga.

4.3.2 Surface Water

Surface water features on Parcel ED-6 are limited. Storm water runoff from the parcel either infiltrates in the ground or drains to one of four intermittent streams, which eventually discharge into East Fork Poplar Creek. These intermittent streams are dry for much of the year and typically have only ephemeral flow after precipitation events.

East Fork Poplar Creek originates within the Y-12 National Security Complex (Y-12) and runs 14.5 miles from Lake Reality at Y-12 to its confluence with Poplar Creek. The East Fork Poplar Creek watershed covers an area of 29.8 square miles above the confluence of East Fork Poplar Creek and Poplar Creek. After it leaves Y-12, the creek flows northward through a gap in Pine Ridge and enters Gamble Valley and the City of Oak Ridge. From there, the stream flows northward along Illinois Avenue through commercial and light industrial areas in Oak Ridge, then trends generally westward parallel to the Oak Ridge Turnpike in East Fork Valley through primarily residential, agricultural, and open areas until its confluence with Poplar Creek.

Seasonal variations produce localized changes in the hydrologic balance between East Fork Poplar Creek and the shallow aquifer in the floodplain. During the wet season, East Fork Poplar Creek is a gaining stream (groundwater discharge); conversely, during the dry season, portions of the creek may experience a net loss (groundwater recharge). Pooling caused by high water elevations in Watts Bar Reservoir is often evident in the lower section of the creek between the confluence with Bear Creek and the confluence with Poplar Creek.

4.3.3 Groundwater

A clean parcel determination for Parcel ED-6 is appropriate on the basis that the underlying groundwater is not contaminated. This premise is based on the current understanding of groundwater flow on the ORR and historical records and geologic data for Parcel ED-6.

The principal aquifers in the Oak Ridge area include two general hydrologic units: the Knox Aquifer and the ORR Aquitards. The Knox Aquifer includes the Knox Group, which underlies the northern two-thirds of Parcel ED-6, and the Maynardville Limestone of the Conasauga Group. Karst development, characterized by sinkholes, caves, and similar solution openings, is common in the Knox Aquifer. Flow in the Knox Aquifer is primarily through solution cavities and enlarged fractures. The ORR Aquitards are associated with the remaining geologic units in the area, including the Chickamauga Group that underlies the southern third of Parcel ED-6. Hydraulic conductivity and potential yield in the ORR Aquitards are

generally low and highly variable, depending on the density, width, and interconnectedness of local bedrock fractures and solution cavities.

The subsurface flow system on the ORR consists of a stormflow zone, which corresponds approximately to the root zone of vegetation, a vadose zone, and a groundwater zone (Moore and Toran 1992). The water table generally occurs near the regolith and bedrock contact. The stormflow zone is much more permeable than the vadose zone. Large precipitation events produce a transient perched water table in the stormflow zone, and water is then transmitted downslope to the nearby streams. However, some water also percolates by infiltration or from this perched zone down to the water table. The water table is generally 3 to 6 ft deep near perennial streams but is 30 ft to greater than 100 ft deep beneath ridges in the Knox Aquifer, which underlies the majority of Parcel ED-6. Most groundwater is discharged in the channels of perennial and ephemeral streams (Moore and Toran 1992).

The groundwater zone of the ORR has been divided into a water table interval, an intermediate interval, and a deep interval. The water table interval consists of a permeable fracture network in which most groundwater flows in the direction of the maximum hydraulic gradient and discharges into the closest stream. The intermediate interval consists of a few relatively permeable fracture networks separated by thicker intervals of relatively impermeable rock. Most groundwater in the intermediate interval flows in the geologic strike direction of the rocks and discharges into cross-cutting tributary streams. The remainder flows downdip (southeast at Parcel ED-6) and then seeps upward through less permeable fractures and discharges into main-valley streams (Moore and Toran 1992), which at Parcel ED-6 is East Fork Poplar Creek (Fig. 4.6). Water flux decreases significantly with depth, and movement in the deep interval is thought to be upward through low-permeability fractures.

The northern boundary of Parcel ED-6 occupies the ridge crest of Blackoak Ridge, which represents a local recharge zone and groundwater divide with movement to the north-northwest and south-southeast from the ridge crest. Shallow groundwater movement both within the stormflow and water table intervals at Parcel ED-6 is expected to follow topography, flowing south-southeast off of the ridge and discharging into East Fork Poplar Creek and its tributaries. Groundwater flow in bedrock likely follows solution-enlarged features such as bedding planes and fractures with movement both along geologic strike (northeast-southwest) and down-dip (south-southeast) of the bedrock formations, and ultimately discharging to nearby primary streams.

The transport of groundwater contamination in the down-dip direction (south-southeast) on Blackoak Ridge has been documented at a former burial ground located approximately 4 miles west of Parcel ED-6. The K-1070-A Burial Ground located at ETTP is also located on Blackoak Ridge and is underlain by the same geologic formations (Knox Group) as found beneath the majority of Parcel ED-6. Dye tracer testing and data from groundwater monitoring wells at this burial ground indicate that the primary direction for contaminant transport from the burial ground, even in the bedrock, is to the south, or down-dip direction, where groundwater discharges at seeps and springs located at lower elevations near the Clinch River (the main-valley stream). There is limited along-strike movement of groundwater at K-1070-A, indicating that hydraulic gradient is the key controlling factor for overall movement of groundwater at this Blackoak Ridge site. Thus, it can be surmised that a similar condition would exist at Parcel ED-6, with the primary direction of groundwater flow being to the south-southeast toward East Fork Poplar Creek (the main-valley stream).

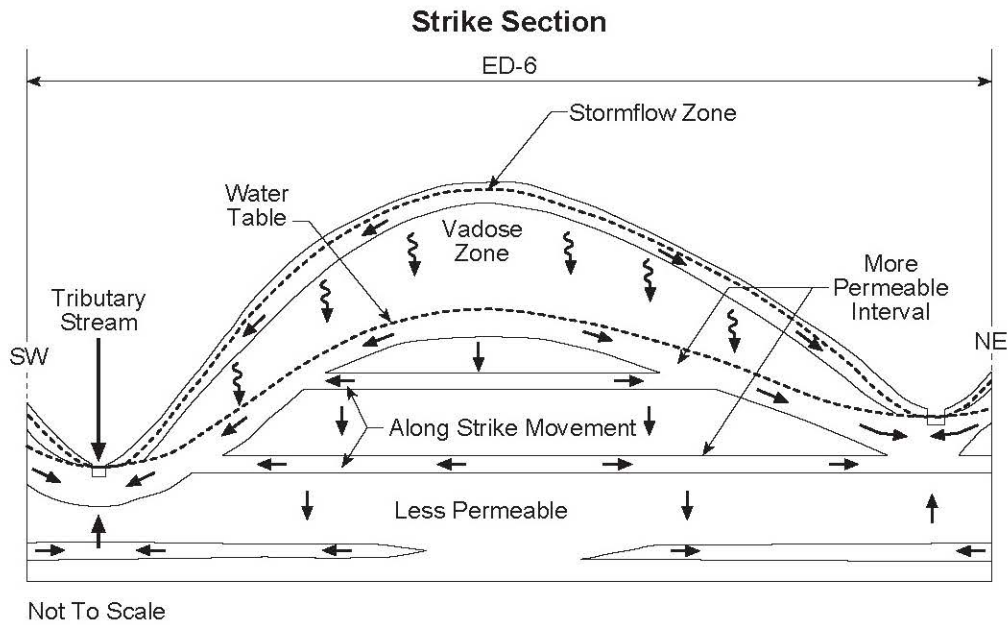
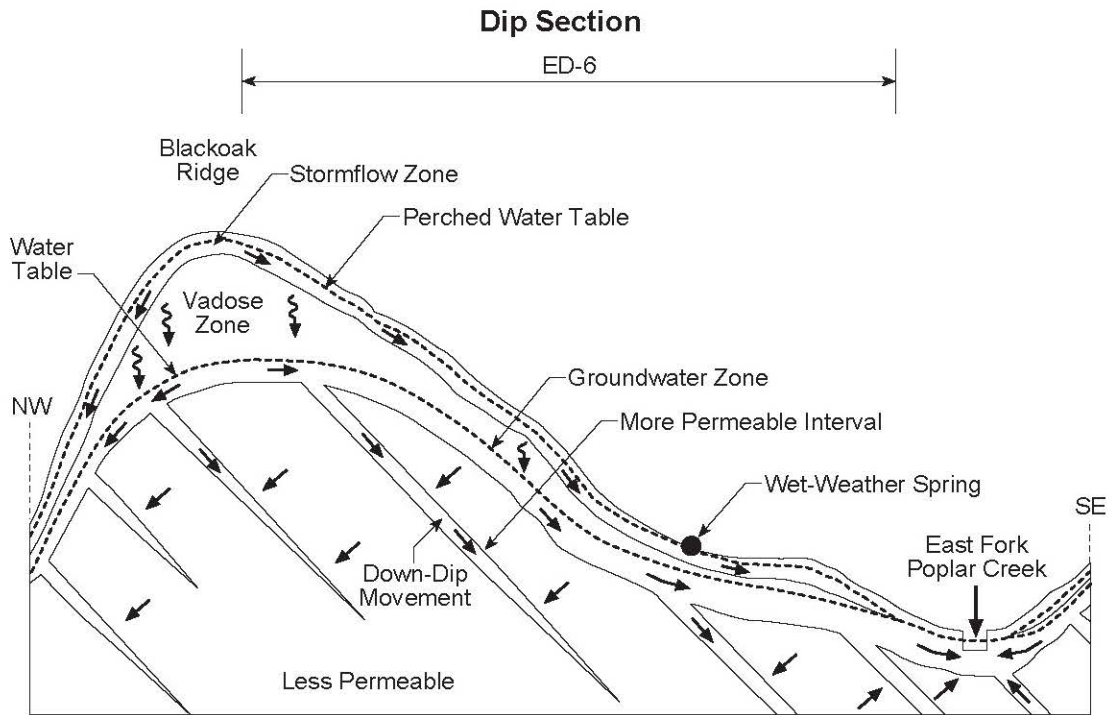


Fig. 4.6. Hydrogeologic zones and directions of water flow in the vicinity of ED-6 (Moor and Toran 1992)

Given this predominant direction of groundwater movement, for groundwater contamination to exist beneath the Parcel ED-6 footprint, this contamination could only originate from within the parcel boundary itself. However, historical records and site conditions indicate that no sources of groundwater contamination have existed within the Parcel ED-6 footprint. In addition, the limited movement of contamination along-strike at the K-1070-A Burial Ground, mentioned above, suggests that any unidentified contamination along-strike near Parcel ED-6 would not have migrated beneath the footprint. The nearby areas to the northeast and southwest (along geologic strike) of the parcel have historically been, and are currently, used for farming or residential purposes, and no potential sources of groundwater contamination have been identified in these adjacent areas.

The transport of contaminated groundwater from DOE facilities (i.e., the Y-12 National Security Complex) located southeast of Parcel ED-6 would be precluded by the presence of the Whiteoak Mountain fault and numerous fault splays and structural deformation associated with the East Fork Syncline, which is located south of East Fork Poplar Creek and Parcel ED-6. Several groundwater divides exist between the Y-12 facility and Parcel ED-6. Likewise, groundwater monitoring at ETTP indicates that the groundwater contaminant plumes are migrating toward the surrounding surface water bodies (i.e., Poplar Creek and the Clinch River). Thus, transport of contaminants from ETTP to the east toward Parcel ED-6 is extremely unlikely. The ETTP disposal sites that are located on Blackoak Ridge are separated from Parcel ED-6 by the water gap formed by Poplar Creek approximately 3 miles west of Parcel ED-6.

Groundwater use

Groundwater is not used for agricultural, drinking, or industrial purposes in Oak Ridge. All water users in the area obtain water directly from the Oak Ridge municipal water system. No groundwater wells extract water for drinking water purposes within the immediate vicinity of Parcel ED-6.

Historical residential well monitoring conducted in East Fork Poplar Creek Valley located northwest of Parcel ED-6 has not shown the presence of groundwater contamination in the residential wells located approximately 1.5 to 2 miles northeast and northwest of the parcel (Fig. 4.7). Table 4.1 provides a summary of the detected analytes at these wells during sampling events conducted in the 1990s. Volatile organic compounds were analyzed, but not detected at either of these two wells. The maximum iron concentration has exceeded the secondary drinking water standard (non-enforceable taste, odor, or appearance guideline) at Well 3, and the maximum detected concentration of lead has exceeded the primary drinking water standard, which is a treatment-based standard applicable to water treatment facilities, at both wells 3 and 21. However, neither iron nor lead were detected during some sampling events, and their concentrations can be influenced by well construction, information for which is unavailable for these wells, and sampling techniques. In general, the results for these two wells are within acceptable drinking water standards and are not indicative of groundwater contamination in the valley northwest of Parcel ED-6.

Therefore, based on the absence of a source of groundwater contamination either within the Parcel ED-6 footprint, or within adjacent areas, and the conceptual hydrologic framework for the ORR, a clean parcel determination is appropriate for the property.

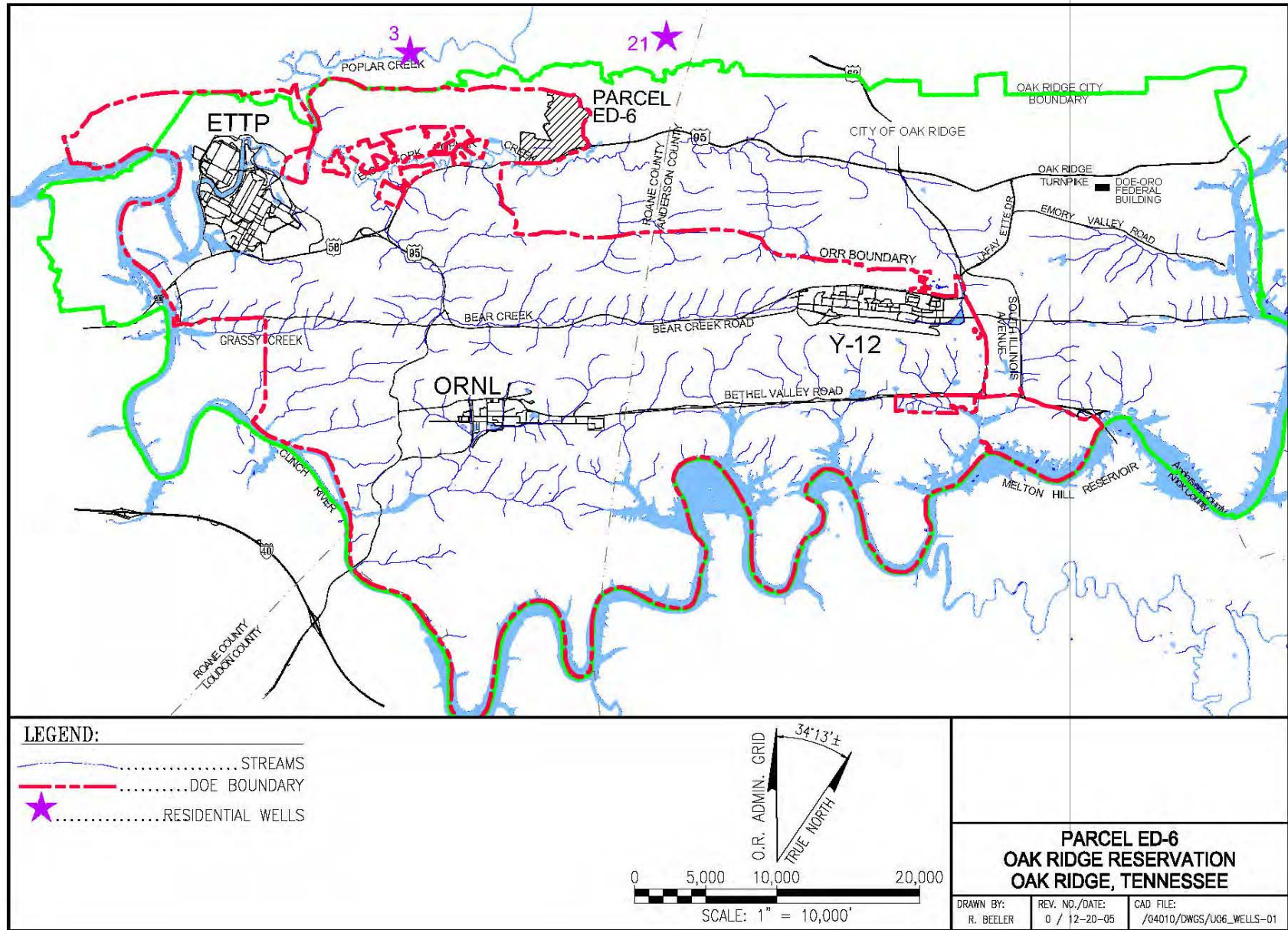


Fig. 4.7. Residential wells in the vicinity of ED-6.

Table 4.1 Summary of analytical results for residential wells located north and west of Parcel ED-6

| Analyte | Reference concentration ^a | Minimum concentration | | Maximum concentration | |
|-----------------------------|--------------------------------------|-----------------------|---------|-----------------------|----------|
| | | Well 3 | Well 21 | Well 3 | Well 21 |
| Barium | 2.0 | 0.098 | 0.019 | 0.17 | 0.38 |
| Beryllium | 0.004 | ND | ND | 0.00031 | ND |
| Chloride | 250 | ND | 2.9 | 2.0 | 4.1 |
| Chromium | 0.1 | ND | ND | 0.015 | 0.0058 |
| Copper | 1.3 ^b | ND | ND | 0.21 | 0.1 |
| Fluoride | 4.0 | ND | ND | 0.058 | 0.11 |
| Iron | 0.3 | ND | ND | 0.72 | 0.081 |
| Lead | 0.015 ^b | ND | ND | 0.027 | 0.018 |
| Mercury | 0.002 | ND | ND | 0.000078 | 0.000091 |
| Nickel | NA | ND | ND | 0.0043 | 0.0052 |
| Nitrate | 10.0 | ND | 0.70 | 2.3 | 5.5 |
| Sulfate, as SO ₄ | 250 | 1.7 | 6.2 | 2.2 | 7.2 |
| Total uranium | 0.03 | ND | ND | 0.0017 | 0.0007 |
| Zinc | 5.0 | ND | 0.048 | 1.1 | 0.14 |
| Gross alpha activity | 15 | ND | ND | 3.8 | 4.3 |
| Gross beta activity | 50 | ND | ND | 7.6 | 15 |
| Technetium-99 | 900 ^c | ND | ND | 3.2 | 2.2 |

Note: Units are mg/L.

^aState or federal primary or secondary drinking water standard or guidance level.

^bTreatment-based standard at a water treatment facility.

^cDerived concentration.

ND = not detected

Blank page.

5.0 RESULTS OF VISUAL AND PHYSICAL INSPECTIONS

5.1 VISUAL AND PHYSICAL INSPECTIONS OF THE PROPERTY FOR TRANSFER

In December 2004, a walkdown of Parcel ED-6 was conducted by representatives from Science Applications International Corporation to observe the environmental conditions of the property. This chapter documents the observations of this inspection.

Parcel ED-6 is heavily forested with pine and hardwoods. Southern Pine Beetle infestations have severely impacted the older pine trees on the property (Fig. 5.1). Some hardwood areas have been selectively cut historically.



Fig. 5.1. Impacts of pine beetle infestations at Parcel ED-6, Blackoak Ridge is in the background.

Flow is generally absent from the drainages during dry periods, but may carry significant flow following precipitation events (see Figs. 5.2 and 5.3). At least five historical sites have been identified within Parcel ED-6 (DOE 1996). The remnants of the foundations for these structures are generally all that remain at these sites (Figs. 5.4 and 5.5).

Pole-mounted transformers are present near the city of Oak Ridge water tank and adjacent to the pumphouse. One 3-kilovolt-ampere (kVA) pole-mounted transformer exists at the water tank (Fig. 5.6) and three 25-kVA pole-mounted transformers are located at the pumphouse (Fig. 5.7). There is no



Fig. 5.2. Culvert under East Quarry Road during the dry period.



Fig. 5.3. Culvert under East Quarry Road 24 hrs after a precipitation event.



Fig. 5.4. Remnants of a stone wall along East Quarry Road.



Fig. 5.5. Foundation remains on the north side of East Quarry Road.



Fig. 5.6. Pole-mounted transformer at a city of Oak Ridge water tank at Parcel ED-6.



Fig. 5.7. Pole-mounted transformers at the city of Oak Ridge pumphouse at Parcel ED-6.

evidence, such as staining, that leaks have occurred at these transformers. Records at the city of Oak Ridge indicate that the three transformers at the pumphouse all contain less than 50 parts per million (ppm) polychlorinated biphenyls (PCBs). The PCB content of the transformer located at the water tank is unknown. Transformers that contain greater than 500 ppm PCBs are considered to be a PCB transformer and subject to EPA regulations governing the use, storage, and disposal of PCB transformers. The transformer reports provided by the city of Oak Ridge are included in Appendix C.

There have been no chemical sampling events within the property. However, no evidence of hazardous substance contamination resulting from current activities was found.

5.2 VISUAL AND PHYSICAL INSPECTION OF ADJACENT PROPERTY

Much of Parcel ED-6 is adjacent to non-ORR land in Roane County and the city of Oak Ridge that is zoned for residential or agricultural purposes. Only the adjacent areas to the west are owned by DOE. There is no evidence that actual or potential releases of hazardous substances or petroleum products have occurred from these adjacent areas.

Lambert Quarry, located approximately 1500 ft west of Parcel ED-6, is believed to have operated from 1942 to 1953 to provide stone for building purposes. The quarry, which is inundated with water, was included on Appendix C of the FFA (DOE 1992). Metal drums were reported to exist beneath quarry waters, and elevated mercury concentrations were reported in largemouth bass taken from the quarry. However, after further investigation, an NFI status was approved for Lambert Quarry in February 1999.

Blank page

6.0 REFERENCES

- COE (U.S. Army Corps of Engineers) 1998. Personal communication from Bill Barnes of the U.S. Army Corps of Engineers to Steve Goodpasture of Martin Marietta Energy Systems, April 6.
- DOE (U.S. Department of Energy) 1992. *Federal Facility Agreement for the Oak Ridge Reservation*, DOE/OR-1014, U.S. Environmental Protection Agency Region 4, U.S. Department of Energy, and Tennessee Department of Environment and Conservation, Washington, D.C.
- DOE 1996. *Evaluation of East Blackoak Ridge Study Area*, DOE/OR/01-1523&D1, Environmental Restoration, Footprint Reduction Process, Lockheed Martin Energy Systems, Inc., Oak Ridge, TN.
- Energy Systems (Lockheed Martin Energy Systems, Inc.) 1996. *Real Estate Section of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(h) Review*, authored by W. W. Teer, Jr., Real Estate Manager, Lockheed Martin Energy Systems, Inc., Oak Ridge, TN, August 9.
- Hatcher, R. D., P. J. Lemiszki, R. B. Drier, R. H. Kettelle, R. R. Lee, D. A. Leitzke, W. M. McMaster, J. L. Foremen, and S. Y. Lee 1992. *Status Report on the Geology of the Oak Ridge Reservation*, ORNL/TM-12074, Environmental Sciences Division Publication No. 3860, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
- HMIS (Hazardous Materials Information System) 2004. The Hazardous Materials Information System database.
- Lemiszki, P. J. 1994. *Geological Mapping of the Oak Ridge K-25 Site, Oak Ridge, Tennessee*, K/ER-111, Martin Marietta Energy Systems, Oak Ridge, Tennessee.
- Lemiszki, P. J. 1995. *Mesoscopic Structural Analysis of Bedrock Exposures at the Oak Ridge K-25 Site, Oak Ridge, Tennessee*, K/ER-259, Lockheed Martin Energy Systems, Oak Ridge, Tennessee.
- Moore, G. K. and L. E. Toran. 1992. *Supplement to a Hydrologic Framework for the Oak Ridge Reservation, Oak Ridge, Tennessee*. ORNL/TM-12191. Environmental Sciences Division Publication No. 3982, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
- ORPS (Occurrence Reporting and Processing System) 2003. Occurrence Reporting and Processing System database.
- Southworth, G. R., M. J. Peterson, and R. R. Turner 1994. "Changes in Concentrations of Selenium and Mercury in Largemouth Bass Following Elimination of Fly Ash Discharge to a Quarry," *Chemosphere* 29(1): pp. 71–79.
- TVA (Tennessee Valley Authority) 1998. Personal communication from Jimmy Massengill of the Tennessee Valley Authority to Steve Goodpasture of Martin Marietta Energy Systems, April 6.
- USDA (U.S. Department of Agriculture) 1942. Soil Survey, Roane County, Tennessee, Bureau of Plant Industry, Tennessee Agriculture Experiment Station.

Blank page

APPENDIX A
REAL ESTATE FILES RESEARCH DOCUMENT

Blank page

PROPOSED TRANSFER OF PARCEL ED-6

FILES RESEARCH FOR HAZARDOUS SUBSTANCE ACTIVITY

The following statement is provided in support of guidance promulgated under Section 120(h) of the Comprehensive Environmental Response, Compensation and Liability Act, as amended (CERCLA) 42 U.S.C 9620(h) and in support of regulations issued by the Environmental Protection Agency at 40 CFR part 373.

The undersigned has made a complete search of existing and available Department of Energy (DOE) records, documentation, and data within the real estate files relating to the property that is subject to the proposed fee transfer action of Parcel ED-6 within the Oak Ridge Reservation, Tennessee. The proposed action would result in transfer of land to the City of Oak Ridge under a 10 CFR 770 Proposal. The search conducted was considered reasonable with a good faith effort expended to identify whether any hazardous substances were released or disposed of on the property. The available real estate records of this office do not reflect any determinable reference that hazardous substance activity as defined by Section 101(14) of CERCLA took place on or in the property during the time the property was owned by the United States of America.

Lands affected by this action are identified as portions of the following original acquisition tracts in which the United States of America acquired title, (having been acquired for the Atomic Energy Commission as a forerunner of the Department of Energy) by Civil Action No. 429 filed in the United States District Court for the Eastern District of Tennessee, Northern Division:

Parcel ED-6 is located on Tracts J-939, J-941, J-942, J-943, J-944, J-945, J-946, J-961, J-963, J-964, J-965, J-966, J-969, J-970, and J-972.

Title to Tract J-939 land was vested in the United States of America by Declaration of Taking No. 28 dated October 6, 1942. Judgment on Declaration of Taking was filed for public record on April 5, 1943, in Vol. Y-5, page 355 in the Roane County Register's Office, Tennessee.

Title to Tract J-941 land was vested in the United States of America by Declaration of Taking No. 27 dated October 6, 1942. Judgment on Declaration of Taking was filed for public record on March 30, 1943, in Vol. Y-5, page 284 in the Roane County Register's Office, Tennessee.

Title to Tract J-942 land was vested in the United States of America by Declaration of Taking No. 30. Judgment on Declaration of Taking was filed for public record on May 8, 1943, in Vol. Z-5, page 113 in the Roane County Register's Office, Tennessee.

Title to Tract J-943 land was vested in the United States of America by Declaration of Taking No. 27 dated October 6, 1942. Judgment on Declaration of Taking was filed for public record on March 30, 1943, in Vol. Y-5, page 284 in the Roane County Register's Office, Tennessee.

Title to Tract J-944 land was vested in the United States of America by Declaration of Taking No. 40. Judgment on Declaration of Taking was filed for public record on May 8, 1943, in Vol. Z-5, page 113 in the Roane County Register's Office, Tennessee.

Title to Tract J-945 land was vested in the United States of America by Declaration of Taking No. 28. Judgment on Declaration of Taking was filed for public record on

April 5, 1943, in Vol. Y-5, page 355 in the Roane County Register's Office, Tennessee.

Title to Tract J-946 land was vested in the United States of America by Declaration of Taking No. 28. Judgment on Declaration of Taking was filed for public record on April 5, 1943, in Vol. Y-5, page 355 in the Roane County Register's Office, Tennessee.

Title to Tract J-961 land was vested in the United States of America by Declaration of Taking No. 25. Judgment on Declaration of Taking was filed for public record on March 30, 1943, in Vol. Y-5, page 463 in the Roane County Register's Office, Tennessee.

Title to Tract J-963 land was vested in the United States of America by Declaration of Taking No. 25. Judgment on Declaration of Taking was filed for public record on March 30, 1943, in Vol. Y-5, page 463 in the Roane County Register's Office, Tennessee.

Title to Tract J-964 land was vested in the United States of America by Declaration of Taking No. 27 dated October 6, 1942. Judgment on Declaration of Taking was filed for public record on March 30, 1943, in Vol. Y-5, page 284 in the Roane County Register's Office, Tennessee.

Title to Tract J-965 land was vested in the United States of America by Declaration of Taking No. 28. Judgment on Declaration of Taking was filed for public record on April 5, 1943, in Vol. Y-5, page 355 in the Roane County Register's Office, Tennessee.


Title to Tract J-966 land was vested in the United States of America by Declaration of Taking No. 28. Judgment on Declaration of Taking was filed for public record on April 5, 1943, in Vol. Y-5, page 355 in the Roane County Register's Office, Tennessee.

Title to Tract J-969 land was vested in the United States of America by Declaration of Taking No. 27 dated October 6, 1942. Judgment on Declaration of Taking was filed for public record on March 30, 1943, in Vol. Y-5, page 384 in the Roane County Register's Office, Tennessee.

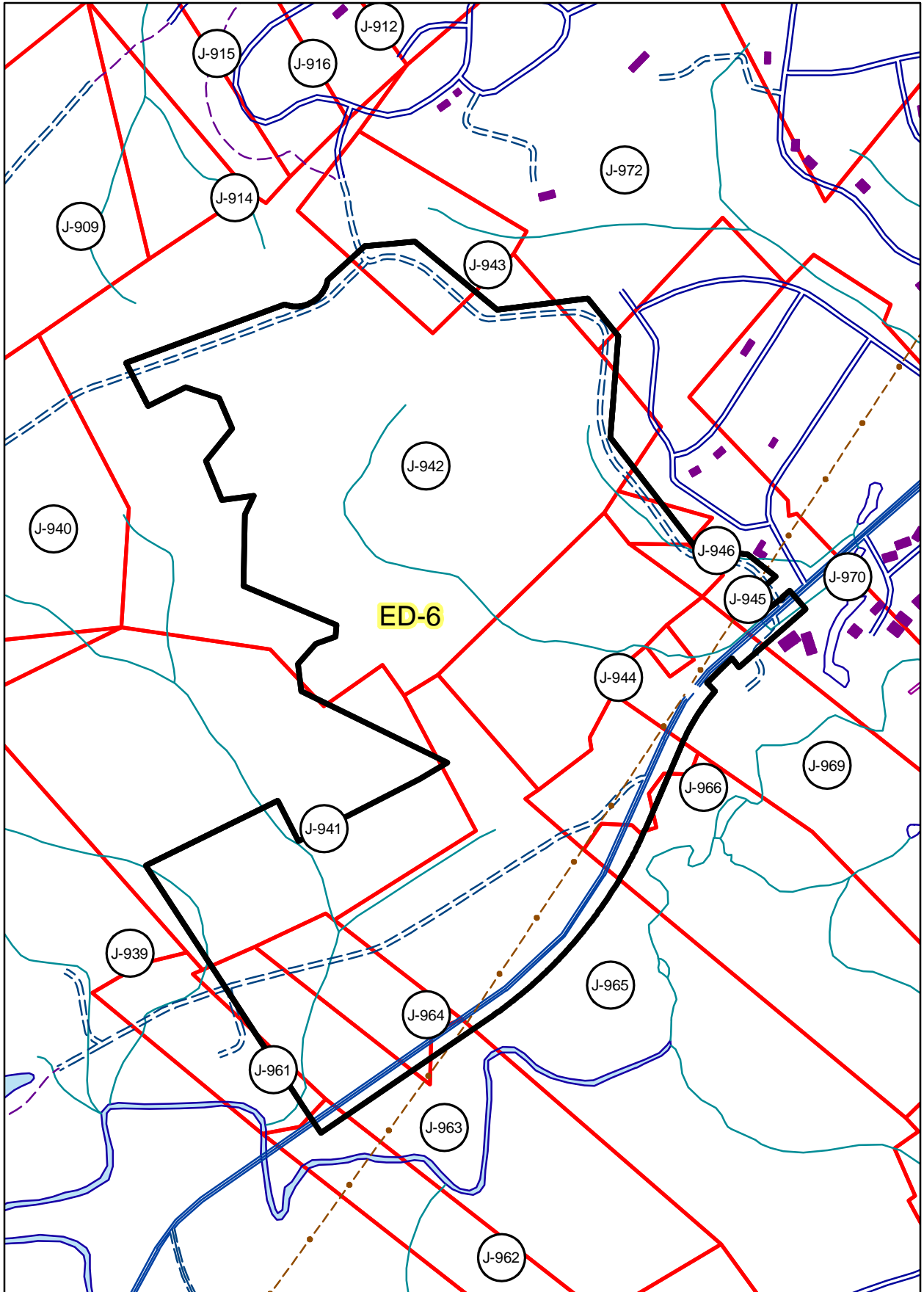
Title to Tract J-970 land was vested in the United States of America by Declaration of Taking No. 28. Judgment on Declaration of Taking was filed for public record on April 5, 1943, in Vol. Y-5, page 355 in the Roane County Register's Office, Tennessee.

Title to Tract J-972 land was vested in the United States of America by Declaration of Taking No. 28 dated October 6, 1942. Judgment on Declaration of Taking was filed for public record on April 5, 1943, in Vol. Y-5, page 355 in the Roane County Register's Office, Tennessee.

This record shall be made a part of the CERCLA report currently being prepared.


Cindy Hunter, Realty Officer/Date
Oak Ridge Office
U. S. Department of Energy

Attachment
Plat Exhibit



○ = Acquisition Tract Numbers
— = ED-6 Boundary



APPENDIX B

**INDIVIDUALS INTERVIEWED FOR INFORMATION REGARDING
HISTORICAL AND CURRENT HAZARDOUS SUBSTANCE ACTIVITY**

Blank page

**INDIVIDUALS INTERVIEWED FOR INFORMATION REGARDING HISTORICAL AND
CURRENT HAZARDOUS SUBSTANCE ACTIVITY**

Goodpasture, S. T. 2004. CDM Federal Programs. Personal communication pertaining to historical records of land use.

Long, L. W. 2004. Former Manager, Environmental Management Division, Oak Ridge Gaseous Diffusion Plant. Personal communication pertaining to historical records of land use.

Payne, F. L. 2004. Health Physics Manager, SEC RADCON. Personal communication pertaining to historical records of radiological surveys.

TVA 2004. Curator of TVA Historic Collection, Tennessee Valley Authority. Personal communication with Mike Dobrogosz pertaining to historical records of land use.

Blank page

APPENDIX C
TRANSFORMER REPORTS

Blank page



Transformer Report

Electric Department
City of Oak Ridge
P.O. Box 1
Oak Ridge, Tennessee 37830
(423) 220-1803 FAX(423) 482-8313

DATE PROCESSED

Monday, April 04, 2005

Transformer Number:

803

RECEIVED DATE:

MANUFACTURER KUHLMAN

SERIAL NUMBER A12912

| | | | |
|---------|---------|---------------|-------------|
| PHASE | 1 | HIGH VOLTAGE: | 7820/13200Y |
| KVA | 25 | LOW VOLTAGE:: | 240/480 |
| TYPE | POLE | CONFIGURATION | Wye-Wye |
| TAPS: | 4 BELOW | | |
| IMP_TWT | 3.1% | Total Weight: | 600 |
| STATUS | FIELD | Polarity: | ADD |

LOCATION subreport

| Set date | Street num | Street Name | Lot No | CTY | Remove Data |
|-----------|------------|----------------|--------|-----|-------------|
| 5/11/1998 | 1 | WESTOVER DRIVE | | AND | |

PCBTST subreport

| Sample # | Serial Number | Date Tested | Results | Comments | Company Testing |
|----------|---------------|-------------|---------|----------|-----------------|
| | A12912 | | <50 PPM | | |

ND: None Detected PPM: Parts Per Mill

NOTE:

The information contained in this report is provided as a courtesy by the City of Oak Ridge, Tennessee Electric Department. It reflects an accurate depiction of information in our records, but the City offers no warranty or guarantee as to its accuracy or completeness. Individual transformers can be tested for oil makeup for a fee and certified laboratory results furnished. Contact the Electric Department if these fee based services are desired.



Transformer Report

Electric Department
City of Oak Ridge
P.O. Box 1
Oak Ridge, Tennessee 37830
(423) 220-1803 FAX(423) 482-8313

DATE PROCESSED

Monday, April 04, 2005

Transformer Number:

13016

RECEIVED DATE:

MANUFACTURER **KUHLMAN**

SERIAL NUMBER **A12910**

| | | | |
|---------|-------|----------------|-------------|
| PHASE | 1 | HIGH VOLTAGE:: | 7620/13200Y |
| KVA | 25 | LOW VOLTAGE:: | 240/480 |
| TYPE | POLE | CONFIGURATION | |
| TAPS: | | | |
| IMP_TWT | | Total Weight: | |
| STATUS | FIELD | Polarity: | |

LOCATION subreport

| Set date | Street num | Street Name | Lot No | CTY | Remove Date |
|-----------|------------|----------------|--------|------|-------------|
| 12/1/1977 | 1 | WESTOVER DRIVE | | ROAN | |

PCBTTEST subreport

| Sample # | Serial Number | Date Tested | Results | Comments | Company Testing |
|----------|---------------|-------------|---------|-----------------------|-----------------|
| 12059 | A12910 | 3/2/1999 | 12 PPM | CERTIFICATE # 129751. | UNITED POWER |

ND: None Detected PPM: Parts Per Mill

NOTE:

The information contained in this report is provided as a courtesy by the City of Oak Ridge, Tennessee Electric Department. It reflects an accurate depiction of information in our records, but the City offers no warranty or guarantee as to its accuracy or completeness. Individual transformers can be tested for oil makeup for a fee and certified laboratory results furnished. Contact the Electric Department if these fee based services are desired.



Transformer Report

Electric Department
City of Oak Ridge
P.O. Box 1
Oak Ridge, Tennessee 37830
(423) 220-1803 FAX(423) 482-8213

DATE PROCESSED

Monday, April 04, 2005

Transformer Number:

13015

RECEIVED DATE:

MANUFACTURER ALLIS CHALMERS

SERIAL NUMBER 1807597

| | | | |
|---------|-------|---------------|-------------|
| PHASE | 1 | HIGH VOLTAGE: | 7620/Y3200Y |
| KVA | 25 | LOW VOLTAGE:: | 240/480 |
| TYPE | POLE | CONFIGURATION | |
| TAPS: | | | |
| IMP_TWT | | Total Weight: | |
| STATUS | FIELD | Polarity: | |

LOCATION subreport

| Set date | Street num | Street Name | Lot No | CTY | Remove Date |
|-----------|------------|----------------|--------|------|-------------|
| 12/1/1977 | 1 | WESTOVER DRIVE | | ROAN | |

PCBTEST subreport

| Sample # | Serial Number | Date Tested | Results | Comments | Company Testing |
|----------|---------------|-------------|---------|-----------------------|-----------------|
| 12060 | 1807397 | 3/2/1999 | 21 PPM | CERTIFICATE # 129752. | UNITED POWER |

ND: None Detected PPM: Parts Per Mill

NOTE:

The information contained in this report is provided as a courtesy by the City of Oak Ridge, Tennessee Electric Department. It reflects an accurate depiction of information in our records, but the City offers no warranty or guarantee as to its accuracy or completeness. Individual transformers can be tested for oil makeup for a fee and certified laboratory results furnished. Contact the Electric Department if these fee based services are desired.



Transformer Report

Electric Department
City of Oak Ridge
P.O. Box 1
Oak Ridge, Tennessee 37830
(423) 220-1803 FAX(423) 482-8313

DATE PROCESSED

Monday, April 04, 2005

Transformer Number:

12772

RECEIVED DATE:

MANUFACTURER ALLIS CHALMERS

SERIAL NUMBER 1836825

| | | | |
|---------|-------|---------------|---------|
| PHASE | 1 | HIGH VOLTAGE: | 7.620 |
| KVA | 3 | LOW VOLTAGE:: | 120/240 |
| TYPE | POLE | CONFIGURATION | |
| TAPS: | | | |
| IMP_TWT | 2.9% | Total Weight: | |
| STATUS | FIELD | Polarity: | |

LOCATION subreport

| Set date | Street num | Street Name | Lot No | CTY | Remove Date |
|----------|------------|-----------------|--------|------|-------------|
| 8/2/1978 | 0001 | EAST RIDGE ROAD | | ROAN | |

PCBTTEST subreport

| Sample # | Serial Number | Date Tested | Results | Comments | Company Testing |
|----------|---------------|-------------|---------|----------|-----------------|
| | 1836825 | | UNKW | | |

ND: None Detected PPM: Parts Per Milli

NOTE:

The information contained in this report is provided as a courtesy by the City of Oak Ridge, Tennessee Electric Department. It reflects an accurate depiction of information in our records, but the City offers no warranty or guarantee as to its accuracy or completeness. Individual transformers can be tested for oil makeup for a fee and certified laboratory results furnished. Contact the Electric Department if these fee based services are desired.