Reconnaissance Survey of Archaeological Resources Within the Proposed International Technology, Inc. Development Area in the Clinch River Industrial Park Roane County, Tennessee

Prepared by

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MANAGEMENT SUMMARY

Between 22 and 26 July 1988 a cultural resources reconnaissance survey of the proposed International Technology Corporation development tract in the Clinch River Industrial Park was conducted by personnel from the Midsouth Anthropological Research Center, University of Tennessee, Knoxville, Research Corporation. The survey was performed to meet the statutory requirements of the National Environmental Policy Act of 1969 (P.L. 91-190) and the Archaeological and Historical Protection Act of 1974 (P.L. 93-291) as stipulated by 36 CFR VIII 800. Impetus for the survey was the proposed development of the tract subsequent to transfer of two parcels of land (numbers 6 and 6.01) from the City of Oak Ridge to International Technology Corporation (IT), and the transfer of one parcel (number 8) from the Tennessee Valley Authority to the City of Oak Ridge for later transfer to IT. Development of the tract was to include construction of facilities to demonstrate mobile decontamination technology (see Appendix A for details of the properties' transfer and development).

Preceded by a walkover of the tract, the two investigative techniques employed, surface collection and shovel testing, produced no evidence of anything other than contemporary historic occupational debris. Results of the shovel testing phase did reveal that surface erosion had been pronounced prior to reforestation of the tract. No previously recorded sites or National Register properties are present within the survey boundaries.

It is recommended that International Technology, Inc. be permitted to proceed with planned development as scheduled. However, because hard-to-recognize significant [Exempted from Disclosure by Statute] archaeological resources have been reported in the vicinity, monitoring of vegetation clearance is also recommended.

INTRODUCTION

On 28 May 1988 Mr. Darrel J. Elliot, Special Projects Director for the International Technology Corporation's Regional Office in Knoxville, Tennessee, contacted the Midsouth Anthropological Research Center about conducting a reconnaissance-level archaeological survey of a proposed development area along Bear Creek Road in the Clinch River Industrial Park in Oak Ridge, Tennessee. The survey tract consists of 50.9 ac of primarily wooded terrain located between Bear Creek Road and Grassy Creek in Roane County (Figure 1). The development area is currently divided into four separate parcels. Parcels 6 and 6.01 (22.8 ac combined) are proposed for transfer from the City of Oak Ridge; parcel 8 (17.92 ac), which is now Tennessee Valley Authority property, is slated for transfer to the City of Oak Ridge; and parcel 7 (10.14 ac) is currently owned by International Technology Corporation (IT). Details of property transference procedures as well as specific development plans are outlined in Appendix A (provided by IT).

Field work was conducted between 21 and 26 July 1988 by personnel from the Midsouth Anthropological Research Center, University of Tennessee Research Corporation. Prior to the survey an authorized preliminary visit to the tract was conducted on 12 May 1988 by the author to collect data necessary for realistic proposal and budgetary preparation. The purpose of the survey was to locate extant archaeological remains to be impacted by IT's development of the tract, which will include the construction and management of a facility for testing of transportable treatment technologies for hazardous waste. In addition to the field reconnaissance, a literature search and check of the site files maintained by the State Division of Archaeology and the McClung Museum at the University of Tennessee, Knoxville were executed.

Environmental Setting

The project area is composed of gently sloping terrain contained between the prominences of Pine Ridge to the north and Chestnut Ridge to the south (Figure 1). Grassy Creek and its intermittent tributaries bound the tract on the south, east, and west; Bear Creek Road provides the artificial boundary on the north.

The survey area is located within the Ridge and Valley biogeographic province (Fenneman 1938), which is generally referred to as the Great Valley in East Tennessee (Amick and Rollins 1937). The Ridge and Valley is flanked on the west by the Appalachian Plateau and on the east by the Blue Ridge biogeographic provinces, respectively. The Ridge and Valley is itself contained within the Carolinian biotic province, which occupies the approximate center of the deciduous forest area of the Eastern United States (Dice 1943).

Tectonic folding of Paleozoic rocks (i.e., shales, dolomites, limestones, sandstones, and siltstones of Cambrian, Ordovician, and Silurian geologic age) and subsequent alteration processes--including peneplaining, upwarping, reduction of weaker rocks to lower stratigraphic levels, and additional uplift and dissection--have combined to produce a washboard topography of alternating lowland and even-topped longitudinal ridges (Fenneman 1938). Differential

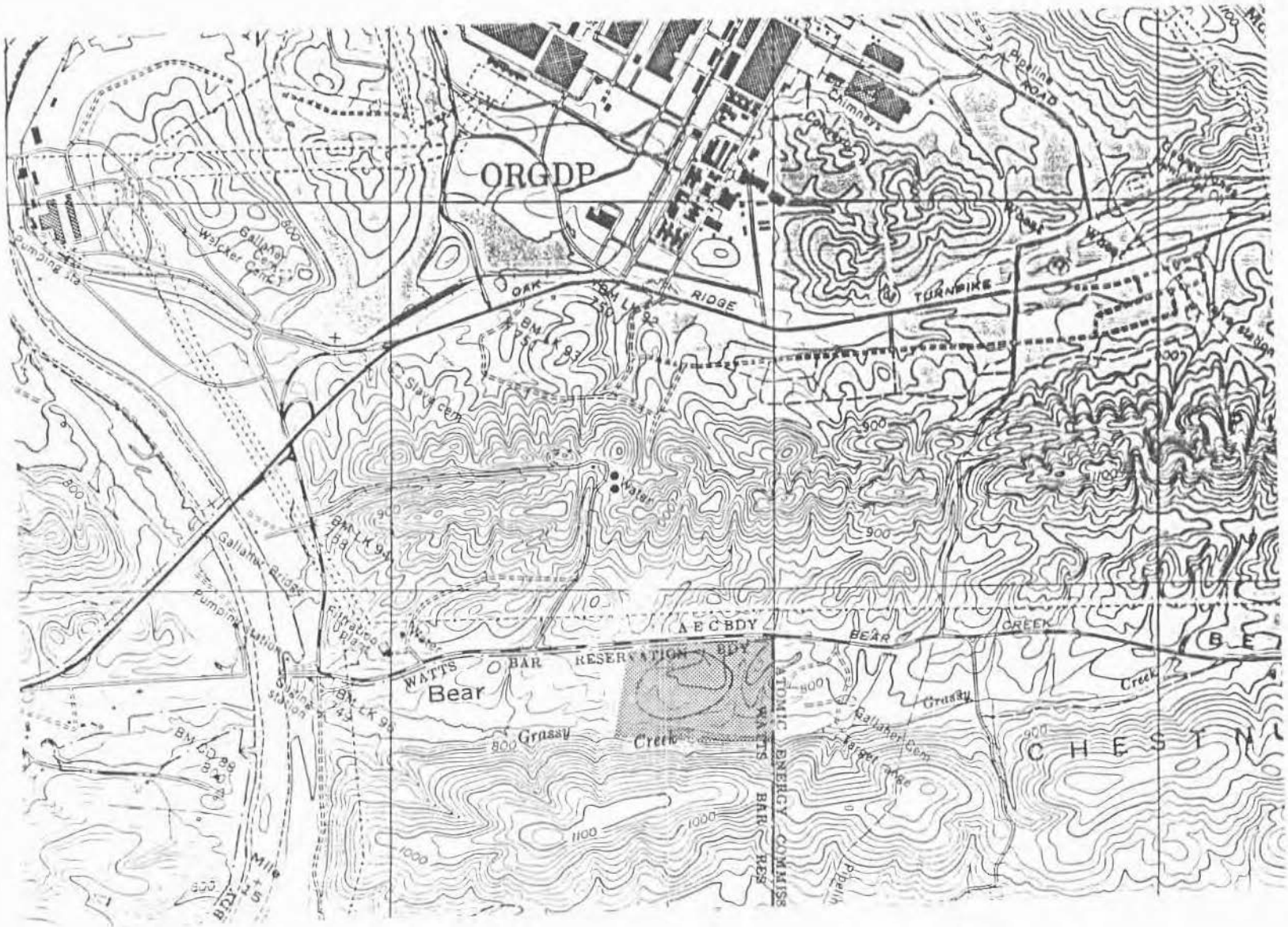

Figure 1. Location of the International Technology Corporation development tract survey. Elverton(130-NW) and Bethel Valley(130-NE), Tennessee Quads.

weathering of the exposed lithography has contributed greatly to the Ridge and Valley's contemporary form and has produced the sediments that occupy the province today.

The Carolinian Biotic Province (Dice 1943) is characterized by a temperate deciduous forest, and present floral and faunal species are typical of those represented in an oak-chestnut forest (Braun 1974). An exhaustive treatment of faunal and floral species present in the study area has been presented by Fielder (1974; 1975).

Lithic raw material of the varieties used by local prehistoric populations for the manufacture of stone tools is readily available in the immediate vicinity of the survey tract. In addition to stream gravel sources, outcrops of Knox chert-bearing Ordovician Chepultepec and Copper Ridge dolomite are present along slopes of Chestnut Ridge (Stoops 1988; Safford 1869; Hardeman 1966; Floyd 1974). Chickamauga chert-bearing formations also outcrop in the area. To illustrate this, two previously recorded archaeological sites, 40RE157 and 40RE159, [Exempted from Disclosure by Statute], were established to exploit sources of Knox and Chickamauga chert, respectively (Jolley 1982).

Four soil types dominate the sediments within the survey tract (Swann et al. 1942). Specific information for each of them is listed in Table 1. Lehew stony fine sandy loam covers the majority of the tract and is the second most extensive soil type listed for Roane County (ibid). It occurs in large and unbroken belts on sandstone and shale ridges. Only about 20% of this sediment type has been cleared. It is poorly suited to crops or pasture because of strong relief, stoniness, shallowness, and strongly acid reaction. Evidence of pronounced erosion is abundant in the surveyed area.

The remaining three sediments are restricted in their extent within the tract. Leadvale very fine sandy loam occupies the edges of NE to SW trending drainages; Atkins very fine sandy loam is present only along drainages oriented N-S; and Apison very fine sandy loam, eroded slope phase, is restricted to a narrow band paralleling Grassy Creek. All of the soils show strong relationships to sediment sources upslope on Pine Ridge from which the drainages emanate.

Archaeological Background

Large-scale archaeological surveys conducted within the major river valleys in the vicinity of the study area have a long history (i.e., Thomas 1894 through Cannon 1987). Results of these surveys have demonstrated that this portion of the Tennessee Valley was utilized throughout the known span of prehistoric occupation (Paleoindian through early Historic) in the Southeastern United States (Nash 1941; Webb 1938; McNutt and Fischer 1960; McNutt and Graham 1961).

Numerous investigations have also been conducted within the boundaries of the Oak Ridge Reservation. Fielder conducted three separate surveys that examined prehistoric occupation of the entire reservation (1974), the proposed site of a nuclear facility for the Exxon Corporation (1975), and later (Fielder et al. 1977) an historic-sites study encompassing most of the

Table 1. Characteristics of Sediments in the International Technology Corporation Development Area (see Swann et al. 1942).

Soil Series	Parent Material	Dominant Relief	A Horizon Depth/Color	B Horizon Depth/Color	Characteristics
Lehew	Acid shale and sandstone	Hilly and steep	6-10"/Purplish gray	10-16"/Purplish yellow to purplish brown	Stony and shaly; low productivity
Leadville	Shale outcrops and Apison soils	Undulating	10"/Brownish gray	15"/Yellow	Medium productivity
Atkins	Sandstone and acid shale	do	Little profile development mottled gray, yellow, and brown		Low productivity
Apison	Acid shales with thin strata of sandstone	Gently roll ing	7"/Brownish gray	14"/Brownish yellow	Low productivity; very erodible

reservation. Other studies conducted include the testing of the Tennessee Synfuels Associates' site (GAI 1981) and concentrated effort by two additional researchers on sites within the Clinch River Breeder Reactor Project area (Schroedl 1972, 1973, 1974a, 1974b; Jolley 1982). Of those listed, several have direct importance to the present project.

Three of the previous surveys included all or part of the area under study. However, with one exception (Fielder 1975) the intensity of coverage was too coarse to locate all but the most obvious resources (Fielder 1974; Jolley 1982). A corridor approximately 40m wide and south of Bear Creek Road, which includes the northwestern boundary of the present survey tract had been previously examined (see Fielder 1975, Figure 3). Consequently, this area was excluded from the present reconnaissance.

Each of the previous surveys located archaeological sites, none of which fell within the International Technology Corporation corridor. Fielder's 1975 survey located the only two sites in close proximity to the present tract. 40RE140 is [Exempted from Disclosure by Statute] 40RE139 [Exempted from Disclosure by Statute] [Exempted from Disclosure by Statute] [Exempted from Disclosure by Statute] at 40RE139 should provide important insight into the kinds of prehistoric evidence present within the survey area.

FIELD PROCEDURES

Two approaches were used during the reconnaissance. Initially, the perimeter of the tract was pedestrian surveyed. At this time all exposures such as road banks, erosion gulleys, game trails, creek banks, animal burrows, tree falls, and the cleared perimeter along the eastern boundary adjacent to a high hurricane fence separating the firing range from the survey area were examined. With the exception of some areas along the cleared eastern margin, visibility was extremely limited. At two locations concentrations of stream gravels in Grassy Creek were checked for cultural material dislodged by stream flow.

Following surface survey the entire tract was shovel tested. Test units were .5m^2, were systematically located at 50m intervals, and were excavated through the A horizon until the B horizon was exposed. All fill was screened though .635cm mesh and the exposed B horizon surface inspected for cultural disturbances. Figure 3 shows the shovel-test grid as established and its relation to the four parcels (6, 6.01, 7 and 8) composing the tract.

There is an existing hurricane fence demarcating the east and west perimeters of parcel 7 and separating it from the other parcels. Consequently, shovel testing was initiated in parcels 6 and 6.01, proceeded next in parcel 8, and was completed last within the confines of parcel 7. The northern half of parcel 7 had been significantly altered prior to the present survey by land clearing and the construction of an existing building now occupied by IT. Ground disturbances in this area were examined, but only the forested and southernmost portion of the tract was shovel tested.

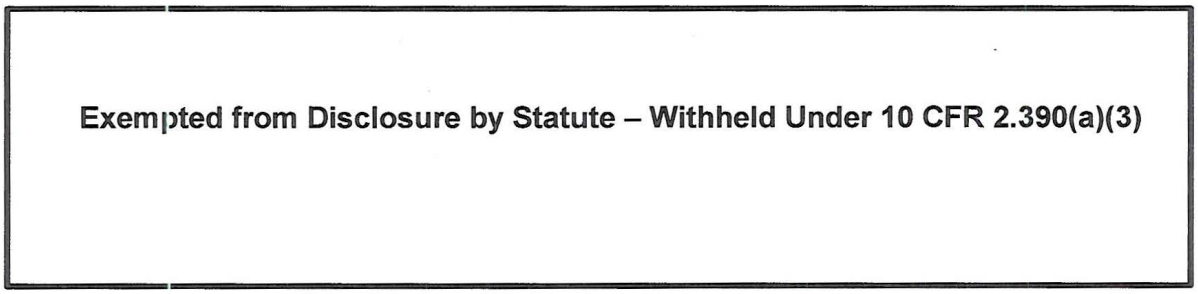

Figure 2. Locations of previously recorded prehistoric sites in areas adjacent to the survey tract (after Jolley 1982).

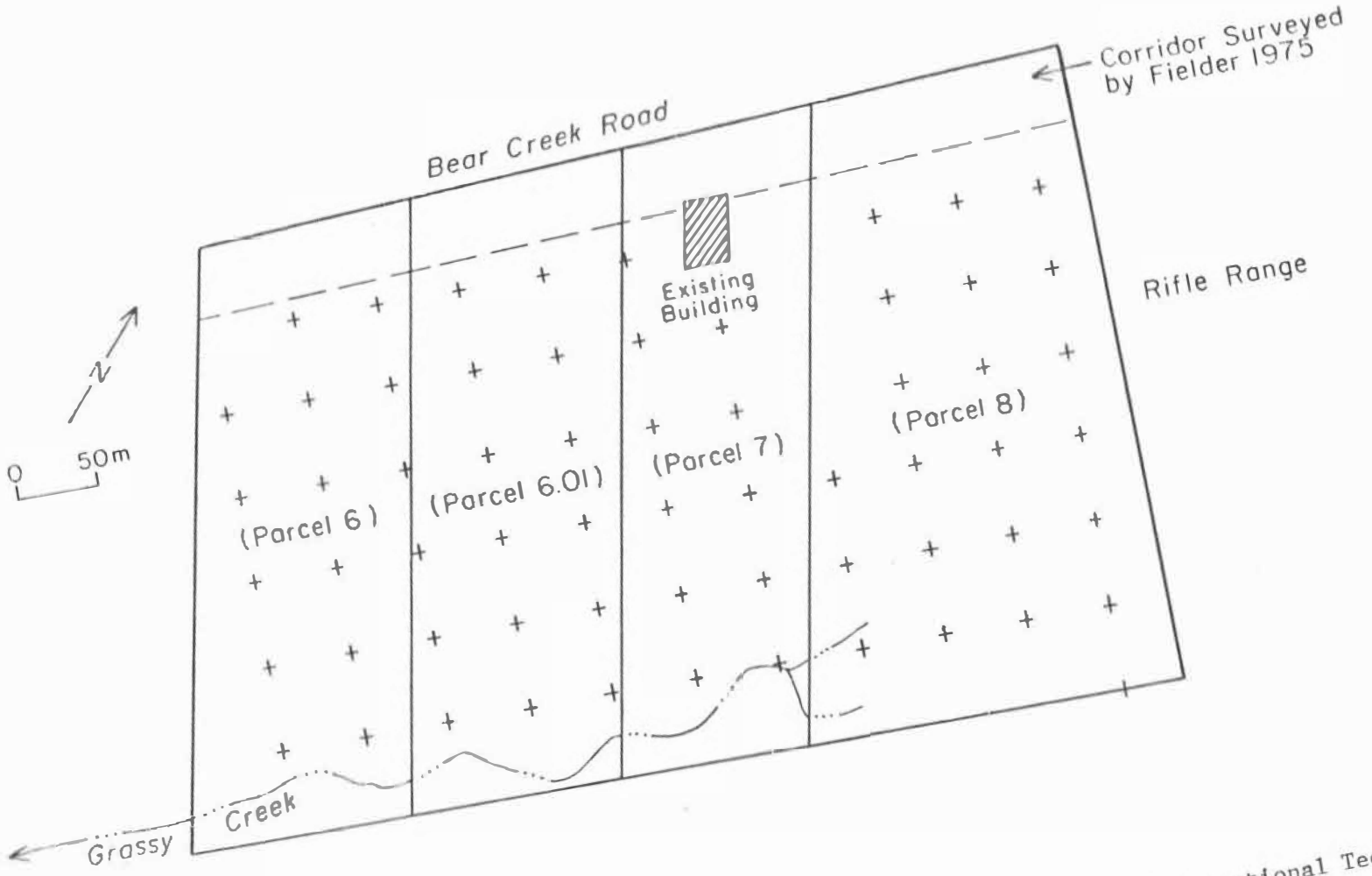

Figure 3. Survey tract configuration and shovel-test grid used during the International Technology Corporation development tract archaeological reconnaissance survey.

RESULTS

Surface Collection

No artifacts were found during the surface reconnaissance. Surface exposures sufficient for artifact detection were rare. [Exempted from Disclosure by Statute]
[Exempted from Disclosure by Statute]
[Exempted from Disclosure by Statute].

Shovel Testing

No artifacts or cultural features were discovered during the shovel-testing phase of the survey. Ap horizon depths differed greatly across the tract even within the same soil units and ranged from as deep as 30cm at the base of slopes to as shallow as 5cm on proveniences. This evidence indicates that erosion was pronounced subsequent to original land clearing, during the later historic land-use practices, or both. Heavy concentrations of gravel, which also suggest extensive translocation of surface sediments, were encountered.

RECOMMENDATIONS

No cultural evidence other than contemporary historic debris was located during the reconnaissance survey of International Technology's development tract in the Clinch River Industrial Park. Previous surveys [Exempted from Disclosure by Statute] sections of the immediate surrounding area have demonstrated that archaeological resources are present but, because of their small size and low artifact density, are difficult to detect. For example, Colley (1982), in a survey covering [Exempted from Disclosure by Statute] located just south of the current project area, reported that [Exempted from Disclosure by Statute] were often no larger than 500M² (40RE161), with some considerably smaller. 40RE155 (250M²), 40RE156 (400M²), and 40RE163 (a minute 50M²), provide useful illustrations of this.

Perhaps more salient than site size is the extremely low artifact densities manifested by reported [Exempted from Disclosure by Statute] Fielder (1975) located a complex of small artifact-bearing loci [Exempted from Disclosure by Statute] from the present survey area. These small scatters, reported collectively as 40RE139, were detectable [Exempted from Disclosure by Statute] [Exempted from Disclosure by Statute] consisted of only a few chert flakes. Their detection in a shovel test would be highly unlikely both because of the localized nature of the scatters and extremely low artifact densities (see for example Turner 1986).

Similar small, low-density manifestations may well have gone undetected during the current survey; and in the absence of a comprehensive research design into which data collected from such sites could be fit, their scientific merit is negligible. However, small sites of considerable significance are known to be present [Exempted from Disclosure by Statute] within the Oak Ridge Reservation (GAI Consultants 1981), and their detection may be possible only after vegetation clearing of the tract is completed prior to proposed development. Therefore, although it is recommended that International Technology Corporation be permitted to proceed with planned alteration of the survey tract, IT is reminded of its obligation to report any significant archaeological resources that become apparent as a result of such alteration. Monitoring of tract clearance is recommended.

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APPENDIX A

INFORMATION FOR

LAND PURCHASE AND/OR CONSTRUCTION WITHIN

CLINCH RIVER INDUSTRIAL PARK

Provided by

INTERNATIONAL TECHNOLOGY CORPORATION
312 Directors Drive
Knoxville, Tennessee 37923

Overview

It Corporation (IT) is presently planning to construct and manage a facility for the full-scale demonstration testing of transportable treatment technologies for hazardous waste. Pilot plants will be available for smaller-scale development testing. In developing and operating these functions, IT recognizes the primary need to provide a high level of environmental protection.

The location of the facility will be in the Clinch River Industrial Park, Oak Ridge, Tennessee. The 51-acre site, bounded on the north by Bear Creek Road and on the south by Grassy Creek, will house the facility and support service areas necessary for conducting appropriate demonstration testing of the processes. The site will be partially cleared for the construction of access roads, fencing, utilities, and facility and support services well above the probable maximum flood elevation. The support services area will include:

- Administration building
- Site services building
- Supplies warehouse
- Security building
- Tank farm
- Pump stations
- Storage areas.

These support services, common to many types of facilities, will ensure that the facility functions efficiently and safely.

The storage areas will be for receiving and handling materials necessary for process testing and operation and for storing by-products or residues accumulated during process operation.

System development includes the regulatory and institutional activities that are associated with design, construction, and operation of the facility.

These activities ensure that the facility functions efficiently and provides the means to protect the health and safety of the public and the quality of the environment.

The requirements set forth by TVA and the Industrial Development Board for the acquisition of Parcels 6.0, 6.01, and 8.0 in the Clinch River Industrial Park are presented in this document.

Company Name

The end user of the property will be International Technology Corporation (IT); 23456 Hawthorne Boulevard; Torrance, California, 90505; (213) 378-9933. Transfer of the property will be through the City of Oak Ridge. The local office of IT is at 312 Directors Drive; Knoxville, Tennessee, 37923; (615) 690-3211. Local contact in the Knoxville office is Darrell J. Elliott, Director, Special Projects.

Lot, Tract, and/or Parcel Number

Parcels 6.00 and 6.01 are proposed for transfer from the City of Oak and are located in the Clinch River Industrial Park east of Parcel 8. The parcels are bounded on the north by Bear Creek Road and on the south by Grassy Creek. Parcel 7, located between Parcel 6.01 and Parcel 8, is currently owned by IT. Parcel 8, currently held by TVA, is located adjacent to and west of Parcel 7. It is bounded on the north by Bear Creek Road and on the south by Grassy Creek.

Acreage

Parcel 7, currently owned by IT, is 10.14 acres and is the first parcel scheduled for development. The other parcels that are proposed for inclusion in the ETDC and the associated acreages are described in Table 1.

Total acreage for development, including Parcel 7, is 50.888 or 51 acres.

Table 1.

Parcel	Current Owner	Acreage
6.00	Oak Ridge	11.414
6.01	Oak Ridge	11.414
8.00	TVA	17.92
Total		40.748

Request for Purchase

The City of Oak Ridge requests that Parcel 8 be transferred from TVA to the City.