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LETTER REGARDING OPTIONS FOR TRANSFER AND RECOMMENDATION STUDY AREA
2 HERNDON ANNEX NTC ORLANDO FL
5/13/1997
ABB ENVIRONMENTAL



03.04.02.0006

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May 13, 1997

8545.326

Southern Division
Naval Facilities Engineering Command
ATTN: Wayne Hansel, Code 187300
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29418

Dear Mr. Hansel:

**SUBJECT: Options for Transfer and Recommendations
Study Area 2, Herndon Annex
Naval Training Center (NTC), Orlando, Florida
Contract No. N62467-89-D-0317/107**

Because of the complex nature of the results of site screening at Study Area (SA) 2, Herndon Annex, ABB-ES has been asked to summarize the significant findings of the various field studies and to present the Orlando Partnering Team (OPT) with a matrix of options to assist them in making a technically sound and environmentally responsible decision regarding the transfer of this parcel.

SUMMARY OF FINDINGS TO DATE.

The details of previous ABB-ES site screening activities are contained in two documents. The first is the (Draft) Site Screening Report for Groups I and II, submitted in November 1995. The second is the letter to Mr. Hansel dated February 3, 1997 reporting the results of site screening activities conducted subsequent to submittal of the Groups I and II report.

The first site screening investigation addressed several potential sources of contamination, including the septic tank and leach field (Facility 6001), five former aircraft parking aprons, and the former landfill area(s) that were mapped with geophysical surveys (Figure 1). During this investigation, data from the deeper portion of the surficial aquifer revealed benzene and tetrachloroethene (PCE) concentrations in excess of Florida maximum contaminant levels (MCLs). ABB-ES concluded from these studies that:

- the septic tank and former leach field were not areas of environmental concern;
- there was no evidence of a release of contaminants to environmental media at any of the five aircraft parking aprons investigated;
- shallow groundwater samples downgradient from former landfilled areas do not indicate the presence of contaminants at concentrations of concern;

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1080 Woodcock Road, Suite 100
St. Paul Building
Orlando, Florida 32803

Telephone (407) 895-8845
Fax (407) 896-6150

- surface soil samples of the former landfill cover materials do not contain contaminants at concentrations of concern; and

- the source of the benzene and PCE in groundwater is likely a release from an offsite source, possibly a former firefighter training area (FTA) located southwest of Herndon Annex.

In July, 1996, the U.S. Army Corps of Engineers (COE) conducted a study near the southeast property line of Herndon Annex on Executive Airport property (Figure 1). The results of this study indicated that there is no significant groundwater contamination. However, since none of the samples were collected deeper than 40 feet below land surface (bls), and since nearly all benzene and PCE detections in ABB-ES site screening data were from deeper than 40 feet bls, the study was inconclusive in identifying the presence of groundwater contamination at the site.

Additional site screening studies were conducted by ABB-ES in late October 1996. Based on this new investigation, ABB-ES concluded that an offsite source remains the most probable explanation for the observed occurrences of benzene and PCE in the deeper portions of the surficial aquifer. An exposure assessment was also conducted in October, and it concluded that there is currently no human contact with groundwater at the Annex, nor is there a complete exposure pathway available for humans. However, the exposure assessment did not consider future reuse scenarios, nor did it consider offsite residences east of the Annex, surface water quality in Lake Barton, or ecological receptors. ABB-ES concludes that additional investigations on Herndon Annex property would not add significantly to the body of knowledge that currently exists, although studies conducted on property upgradient from the Annex would likely be of benefit to our understanding. Figures 2 through 4 present the benzene and PCE concentrations as a function of depth, and Figures 5 through 7 present benzene concentration contour maps from the ABB-ES data.

On April 11, 1997, ABB-ES collected three surface water samples in Lake Barton approximately 100 feet from the northeast corner of Herndon Annex in 6 to 10 feet of water. The samples were collected approximately halfway between the water surface and the lake bottom (Figure 1). The samples were submitted for low detection level analysis of volatile organic compounds (VOCs). Although the results have not been subjected to independent data validation, the laboratory reported concentrations of tetrachloroethene (PCE) and trichloroethene in Sample 02W00101 of 6.2 and 0.20 J $\mu\text{g/l}$, respectively. Sample 02W00201 had a PCE concentration of 0.23 J $\mu\text{g/l}$. The estimated "J" concentrations are below the reported detection limit of 0.5 $\mu\text{g/l}$. The State of Florida surface water standard is 8.85 $\mu\text{g/l}$ for PCE, and 80.7 $\mu\text{g/l}$ for TCE, assuming that Lake Barton is a Class III lake used for recreation.

OPTIONS FOR LAND ASSESSMENT AND TRANSFER.

Several possible options or combinations of options for the transfer of Herndon Annex property exist. The options ABB-ES considered are:

- No further remedial action;

- Delineation of the source of groundwater contamination;

- Natural attenuation of groundwater contaminants;
- "Dirty" transfer of the property; and
- Elevate the study area to "RI/FS" status.

Consideration of the residential area east of the Annex and south of Lake Barton (Figure 1) was made for each option. A recent survey by the City of Orlando indicates that all residences in the area are connected to the City water supply, although some residences may have private irrigation wells. The presence and use of private irrigation wells must be determined, and if they exist, they should be sampled to identify if they are contaminated with benzene, PCE, or TCE (the contaminants of concern). If the wells have concentrations of these VOCs above MCLs, residents must discontinue use because of a potential for exposure, primarily via the inhalation pathway.

In addition, ABB-ES recommends consideration of the use of the US Army Environmental Center's Tri Service SCAPs (Site Characterization and Penetrometer System) technology, which consists of a truck mounted cone penetrometer, on-site data acquisition and analysis systems, and a suite of sensor and sampling probes. Groundwater near the north-south ditch east of the Herndon Annex property line could be sampled to determine VOCs concentrations. This equipment could also be used along City of Orlando streets within the residential neighborhoods east of Herndon Annex, if necessary. During any offsite sampling, the possibility of a local contamination source (e.g., a source downgradient from the Herndon parcel) should be considered during data evaluation.

Option #1 - No Further Remedial Action. A large amount of site screening data has been collected at Herndon Annex. The only medium of environmental concern is groundwater, and only the deepest portion of the surficial aquifer has been impacted to levels exceeding regulatory criteria. There are no human receptors or completed pathways for humans at the Annex. Surface water sampling along the shoreline of Lake Barton has revealed the presence of PCE and possibly of TCE at concentrations that do not pose a risk to recreational users (i.e., swimmers) of the lake. Institutional controls could prevent use of the surficial aquifer as either a potable water source or for irrigation. Although site screening has not revealed any environmental concerns associated with the former landfilled areas, ABB-ES recommends that institutional controls (deed restrictions preventing excavation and groundwater extraction) be implemented to prevent exposure to materials that were disposed there.

Option #2 - Source Delineation. The present data set suggests an upgradient (to the southwest) offsite source of contamination for the benzene and PCE in the deep surficial aquifer. A records search and interviews conducted by ABB-ES (Technical Memorandum, U.S. Air Force Records Search, submitted to SOUTHNAVFACENGCOM, September 1995) indicates that there was a FTA southwest of the Annex near an aircraft parking apron; this FTA might be the source of the observed contamination. A representative from the Greater Orlando Aviation Authority (GOAA)(the management authority for the Executive Airport) indicated in the March meeting of the OPT that a more likely location of the FTA, based on their interviews with former base personnel, was a parking apron approximately 1,500 feet to the east. Both potential FTA sites could be the focus of future source delineation, should this option be

selected. GOAA has requested that the COE investigate the site, but COE has indicated that funding for this work may be delayed for many months.

If this option were chosen, source delineation must be preceded by a study of groundwater flow of the area between Lake Underhill and Lake Barton. Several strategically-placed piezometer pairs could be used to determine shallow and deep flow conditions in the surficial aquifer. Results would be used to plan a plume delineation program and focus DPT explorations in the most likely areas of past site contamination. Based on historical records and personnel interviews, ABB-ES has concluded that the most likely source for VOC contamination are the former FTAs. Interviews with former base personnel have flagged two areas of potential former FTAs (Figure 8). If either of these locations can be demonstrated to be a continuing source of the observed groundwater contaminants, then remedial action may be appropriate. The 30-odd former aircraft parking aprons may also be the source of groundwater contamination, but ABB-ES is not aware of historic site activities that would justify the investigation of these structures. Investigations have taken place at five of these aprons on Herndon Annex property, and there is no indication of contaminant releases to the environment.

The age of site activities (most of the parking aprons have not been used since the 1950's and the former FTA has not been used since 1962) may suggest that the remaining contamination plume is diffuse to the extent that it is no longer mappable.

Option #3 - Natural attenuation. It may be advantageous to measure certain geochemical groundwater parameters to demonstrate the potential for natural attenuation of BTEX and chlorinated hydrocarbons to occur in the surficial aquifer at Herndon Annex. As a first step, ABB-ES recommends that an evaluation of the aquifer under Herndon Annex be implemented in accordance with USEPA Region IV guidance. This evaluation would involve the measurement of selected geochemical parameters using existing wells. The geochemical parameters that would be measured would likely include alkalinity, chloride, dissolved oxygen, dissolved iron (II), iron (III), hydrogen gas, methane, ethane, ethene, nitrate, nitrite, oxidation-reduction potential, pH, temperature, conductivity, sulfate, sulfide, and total organic carbon. Geochemical parameter measurements would then be used to score the site with regard to its propensity to support natural attenuation. It is anticipated that four of the existing wells would need to be sampled for selected geochemical parameters. If natural attenuation is a viable option for the site, additional studies would be required to more adequately define the plume and to determine whether or not the behavior of the plume is changing. If the plume is in a growth mode, a contingency action would be implemented to manage the accompanying increase in the amount of contamination identified. And conversely, if the plume is in a decline mode, and at a rate that is acceptable to State and Federal regulators, then monitoring only would be acceptable. If NA is viable, ABB-ES estimates that up to three new wells may be required. Two of the wells would be installed in a downgradient direction, and one in an upgradient location.

Option #4 - "Dirty" Transfer. If it is determined that Herndon Annex will require remedial action, transfer of the property is possible if five USEPA criteria are met. It should be noted that these criteria follow CERCLA guidance, and although NTC, Orlando is not a CERCLA site, BRAC guidance requires that CERCLA guidance be followed:

- the site must be the subject of a pending or anticipated enforcement action [NTC, Orlando is not subject to a pending enforcement action];
- implementing a remedial action would produce benefit to the USEPA [the site would have a guarantee from the Navy that it would be remediated in accordance with CERCLA guidance];
- allowing new development to occur would not aggravate the existing contamination or interfere with the proposed remedy [any prospective purchasers would be required to adhere to State and Federal guidance regarding environmental issues];
- impacts on the health of persons likely to be present on the site must be duly considered [institutional controls, as appropriate, would be implemented to protect future site users from, for example, exposure to groundwater or excavating known landfill cells]; and
- the prospective purchaser must be sufficiently viable financially to fulfill obligations under the agreement [the prospective purchaser must be able to meet the terms of any financial arrangement that is reached].

A sixth criteria also exists: the transfer will require the signature and approval of the Governor of Florida.

A transfer prior to implementation of a remedial action, if one is required, would benefit both the Navy and the prospective purchaser. In the case of Herndon Annex, since data suggests that groundwater contamination is from an offsite source, GOAA may be involved in seeking FUDs (formerly used defense sites) funding to further evaluate groundwater quality. Should this be the case, delays of up to two or more years may occur to secure funding. It should be noted, however, that proving that an offsite source is the sole contributor to groundwater contamination is not a trivial task, and it is unlikely that the investigations completed to date would prove culpability in a court of law.

Option #5 - Elevate to RI/FS Status. The OPT could opt to transfer SA 2 to operable unit status as it has done with the greenskeeper storage area and former pesticide shop (OU 3) and the base laundry (OU 4).

This would delay the transfer of the Herndon Annex property for many months as funding is sought to complete a formal remedial investigation and feasibility study. ABB-ES has concluded that there is not a major BTEX or chlorinated solvent plume at Herndon Annex. ABB-ES further concludes that additional investigations on Herndon Annex property would not add significantly to the body of knowledge that currently exists, although studies conducted on GOAA property upgradient from the Annex would likely be of benefit to our understanding.

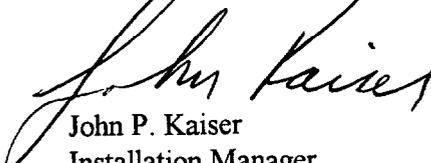
RECOMMENDATIONS.

The five options discussed above are summarized in Table 1. Based on the above discussion, ABB-ES recommends a screening study using existing monitoring wells to determine if Option #3 - Natural Attenuation is viable. Selected monitoring well locations would be used to quantify the groundwater parameters to demonstrate the presence and effectiveness of natural attenuation processes, which, if acceptable, would then be combined with Option #1, NFA. ABB-ES feels that with the current evidence, and with minimal efforts to test shallow wells that may exist in adjacent residential areas, it can be shown that the risk to human health should be of no or minimal concern.

It is our intent to discuss these options and our recommendation at the next scheduled OPT meeting. If you have questions or comments regarding this matter, feel free to call me at (407) 895-8845.

Very Truly Yours,

ABB ENVIRONMENTAL SERVICES, INC.


John P. Kaiser
Installation Manager

cc: Nancy Rodriguez, USEPA Region IV John Mitchell, FDEP
Barbara Nwokike, Southern Division Lt. G. Whipple, NTC Public Works Officer
Mac McNeil, BEI
Steve McCoy, Brown & Root
Rick Allen, ABB-ES

**Table 1
Options for Transfer
Herndon Annex
Study Area 2**

Naval Training Center, Orlando

Option #	Description	Pros	Cons
1	No further Action	Immediate transfer possible.	Residential area east of Annex may be impacted if exposed to deep surficial aquifer groundwater that contains contaminants above MCLs*.
2	Source Delineation	Determine party responsible for groundwater contamination.	Additional work required: groundwater flow modeling; plume delineation; may not be possible to define plume due to diffusion and possible multiple sources (two potential FTAs and approximately 30 former aircraft parking aprons).
3	Natural Attenuation	Will limit the scope of future investigations; will not require detailed plume delineation or assignment of responsibility; may be adequately protective of environment.	Residential area east of Annex may be impacted if exposed to deep surficial aquifer groundwater that contains contaminants above MCLs*; groundwater geochemical quality would need to be evaluated.
4	"Dirty" Transfer	Immediate transfer possible, and will benefit Navy and prospective purchaser.	Must meet USEPA criteria and transfer documents require Governor's signature; will not relieve Navy of future cleanup costs. Plume delineation may not be possible given the apparently diffuse nature of the plume.
5	Elevate to RI/FS Status	Would determine future status of parcel.	Delays would be incurred in procuring funding for RI/FS studies; funding would be needed with RI/FS Studies and may not contribute greatly to existing body of knowledge.

*Note that a baseline risk assessment has not been completed for the site.

FIGURES

- Figure 1 All Herndon Annex Explorations (monitoring wells, surface soil samples, DPT, surface water, USCOE study area)
- Figure 2 Benzene/PCE Concentrations less than 40 Feet bls
- Figure 3 Benzene/PCE Concentrations 40 to 50 Feet bls
- Figure 4 Benzene/PCE Concentrations Greater than 50 Feet bls
- Figure 5 Benzene Contours Less than 40 Feet bls
- Figure 6 Benzene Contours 40 to 50 Feet bls
- Figure 7 Benzene Contours Greater than 50 Feet bls
- Figure 8 Potential Firefighter Training Areas, Herndon Annex

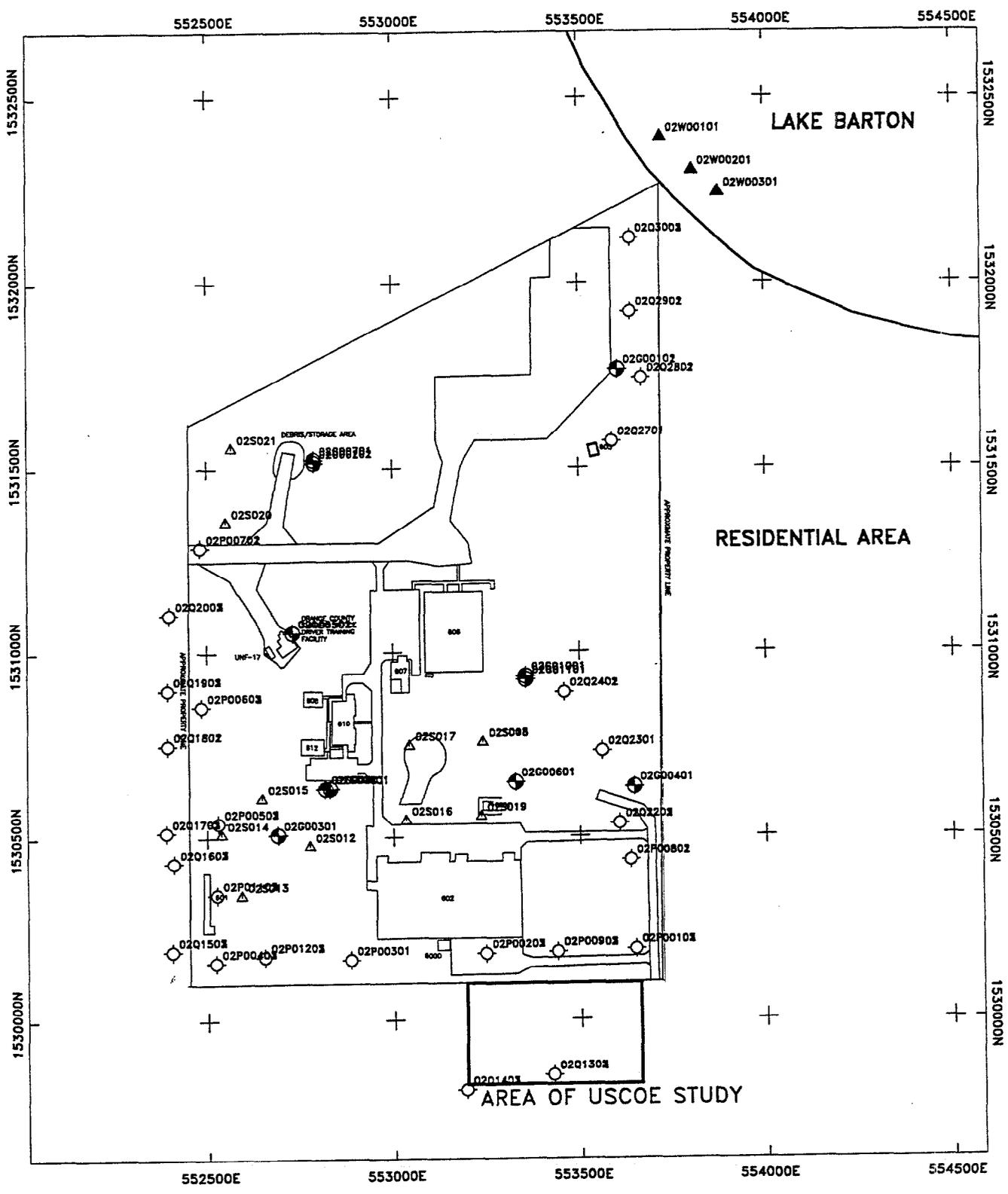
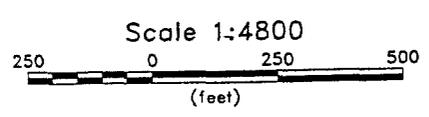
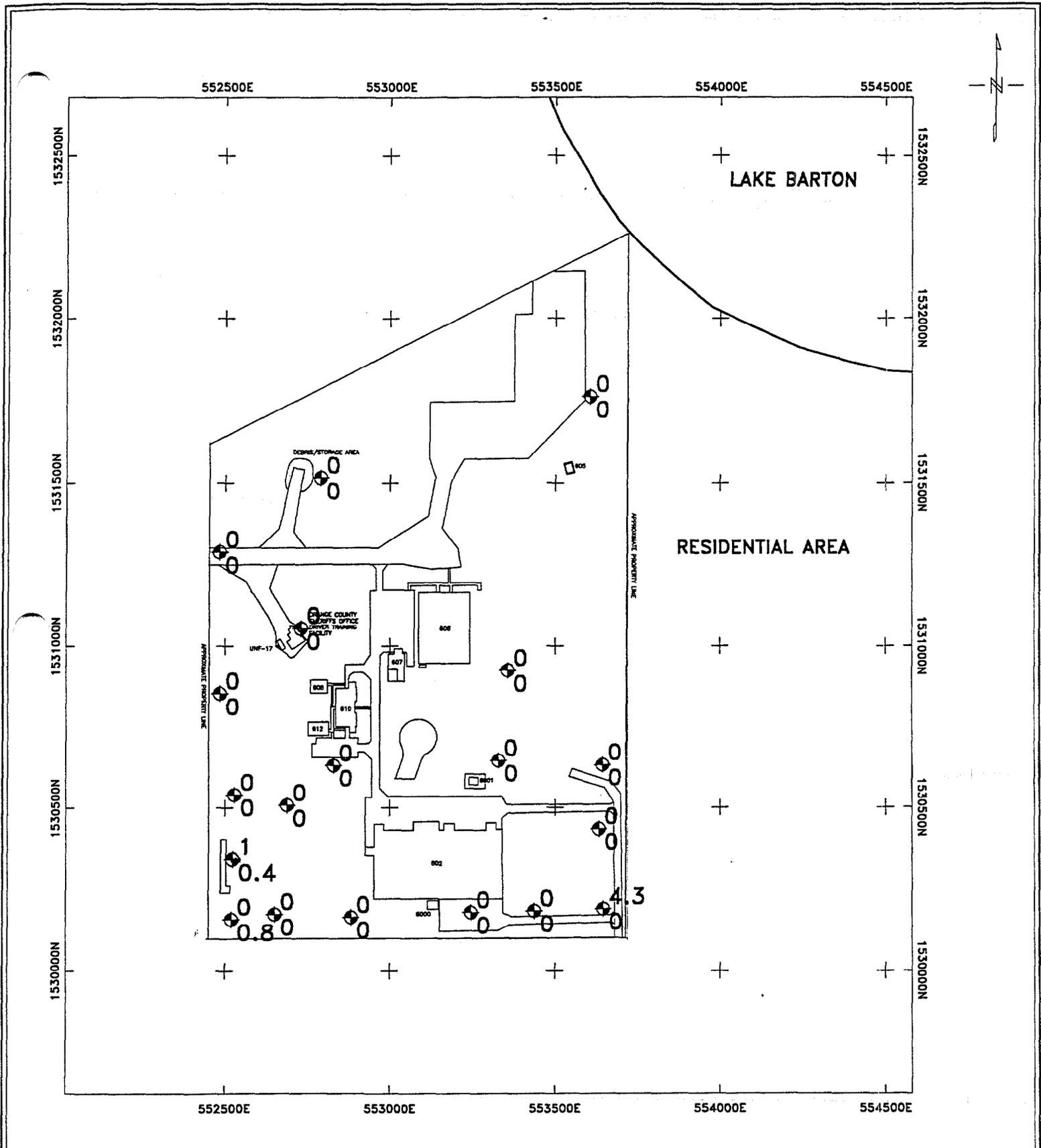


FIGURE 1

SOUTHERN DIVISION
 EXPLORATIONS
 HERNDON ANNEX
 ABB ENVIRONMENTAL SERVICES, INC.



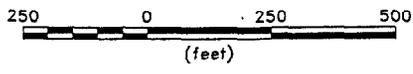


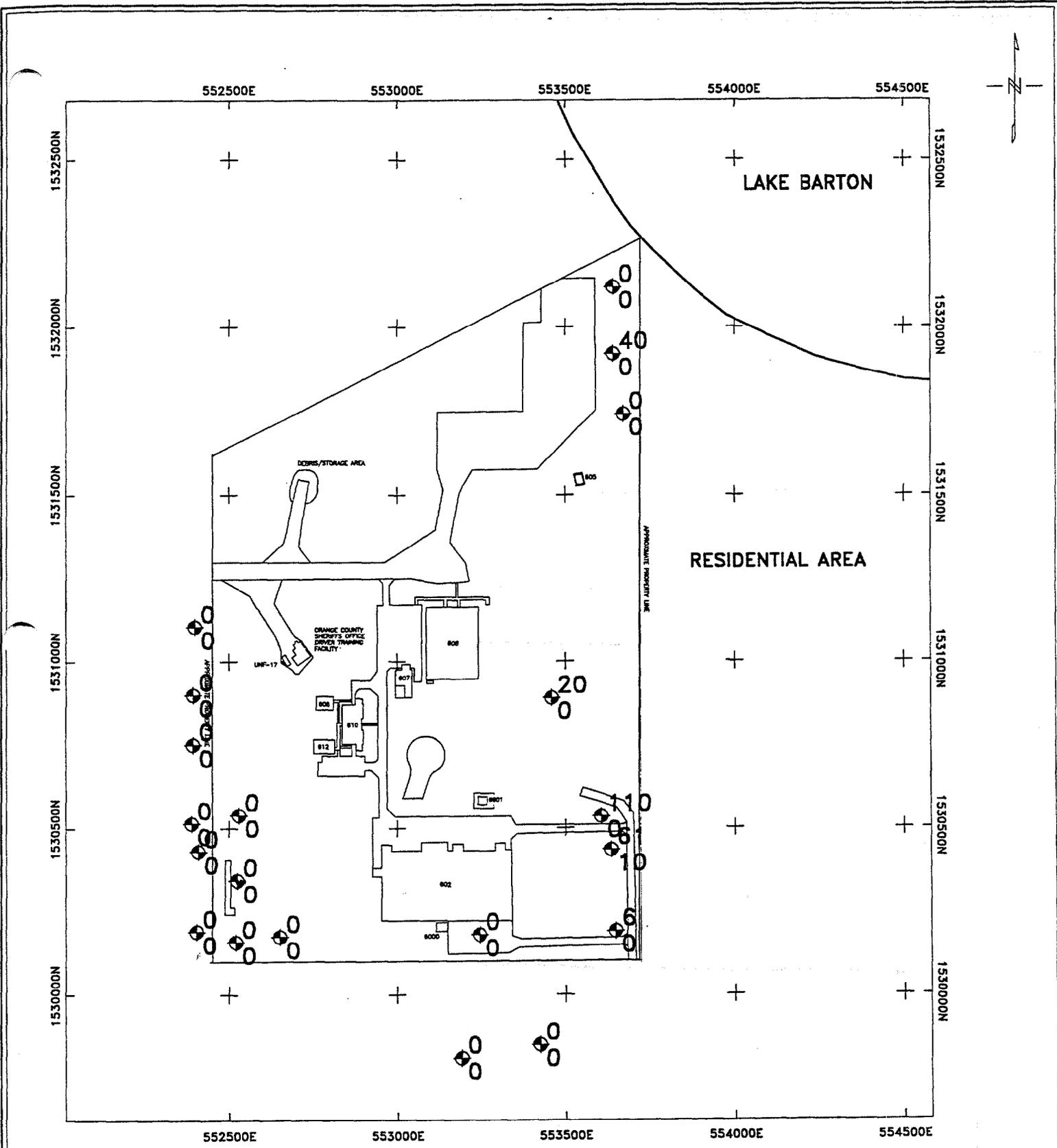
NOTES: BENZENE (PPB) UPPER RIGHT
 PCE (PPB) LOWER RIGHT

FIGURE 2

SOUTHERN DIVISION
BENZENE/PCE LESS THAN 40 FT BLS HERNDON ANNEX
ABB ENVIRONMENTAL SERVICES, INC.

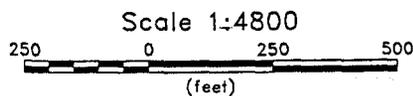
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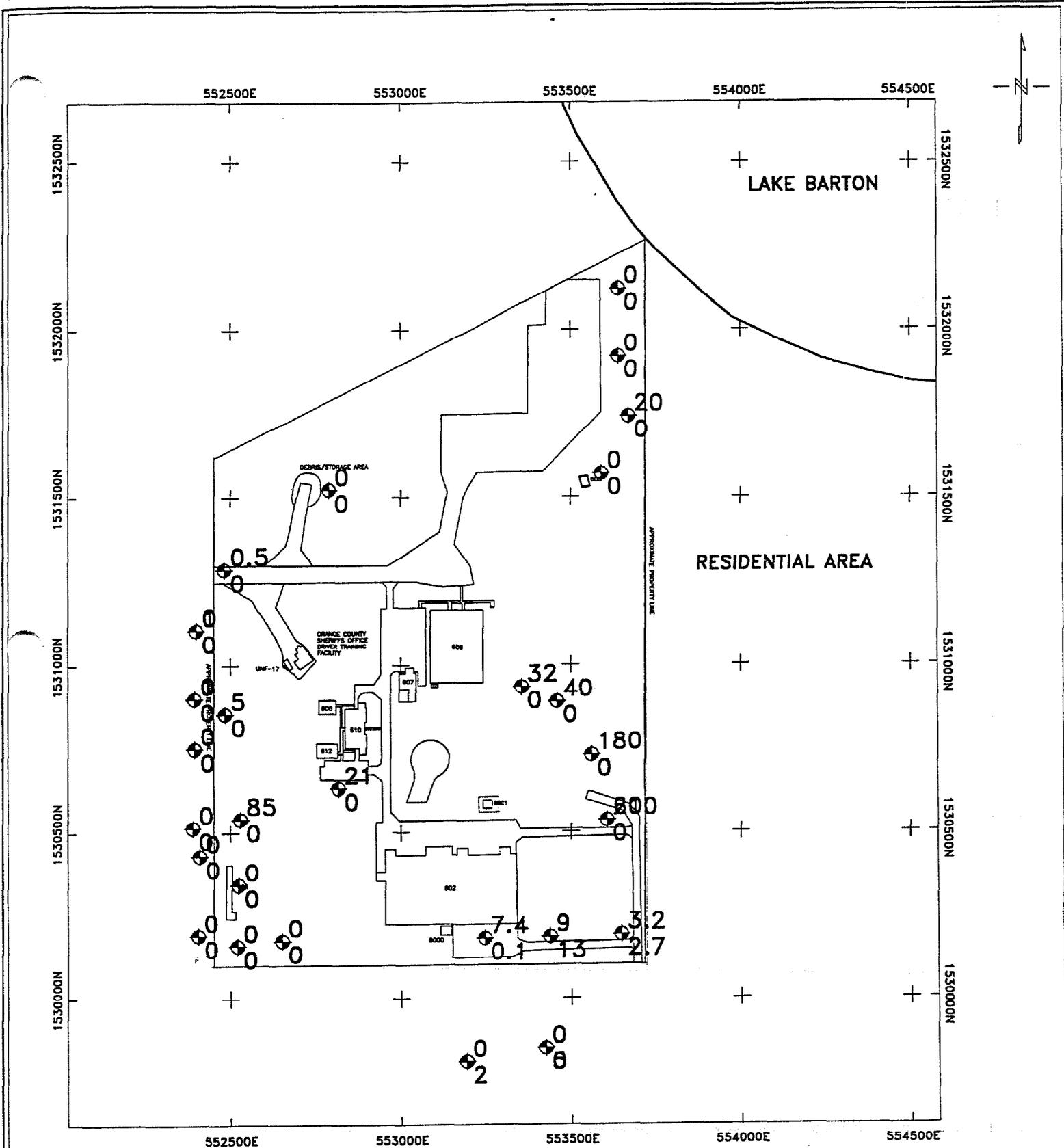




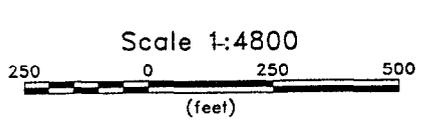
NOTES: BENZENE (PPB) UPPER RIGHT
 PCE (PPB) LOWER RIGHT
FIGURE 3

SOUTHERN DIVISION
BENZENE/PCE 40 TO 50 FT BLS HERNDON ANNEX
ABB ENVIRONMENTAL SERVICES, INC.





NOTES: BENZENE (PPB) UPPER RIGHT
 PCE (PPB) LOWER RIGHT
FIGURE 4



SOUTHERN DIVISION
BENZENE/PCE GREATER THAN 50 FT BLS HERNDON ANNEX
ABB ENVIRONMENTAL SERVICES, INC.

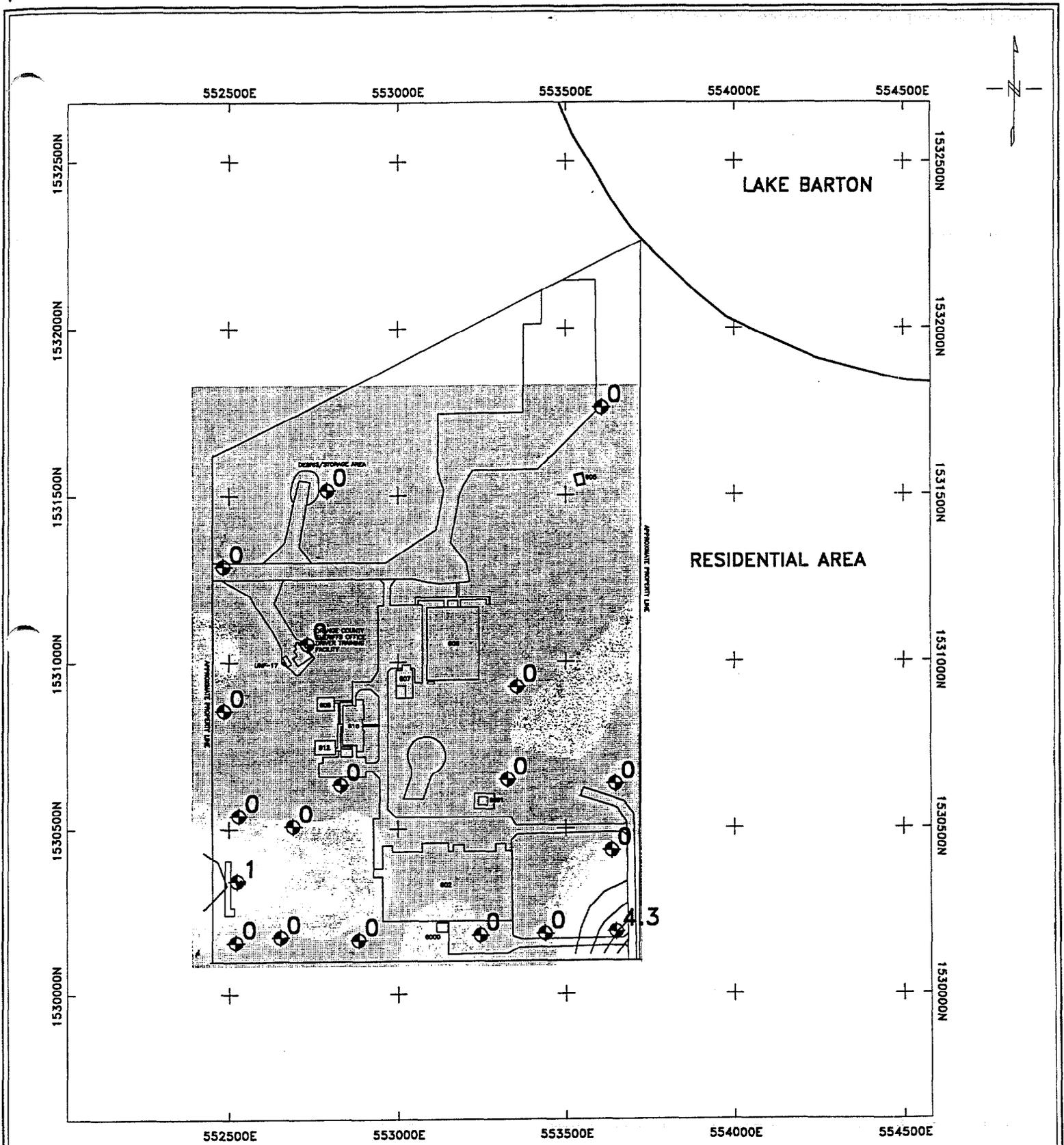
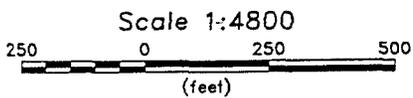


FIGURE 5



SOUTHERN DIVISION
BENZENE LESS THAN 40 FT BLS HERNDON ANNEX
ABB ENVIRONMENTAL SERVICES, INC.

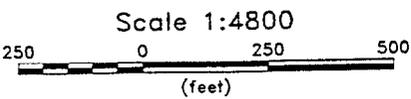
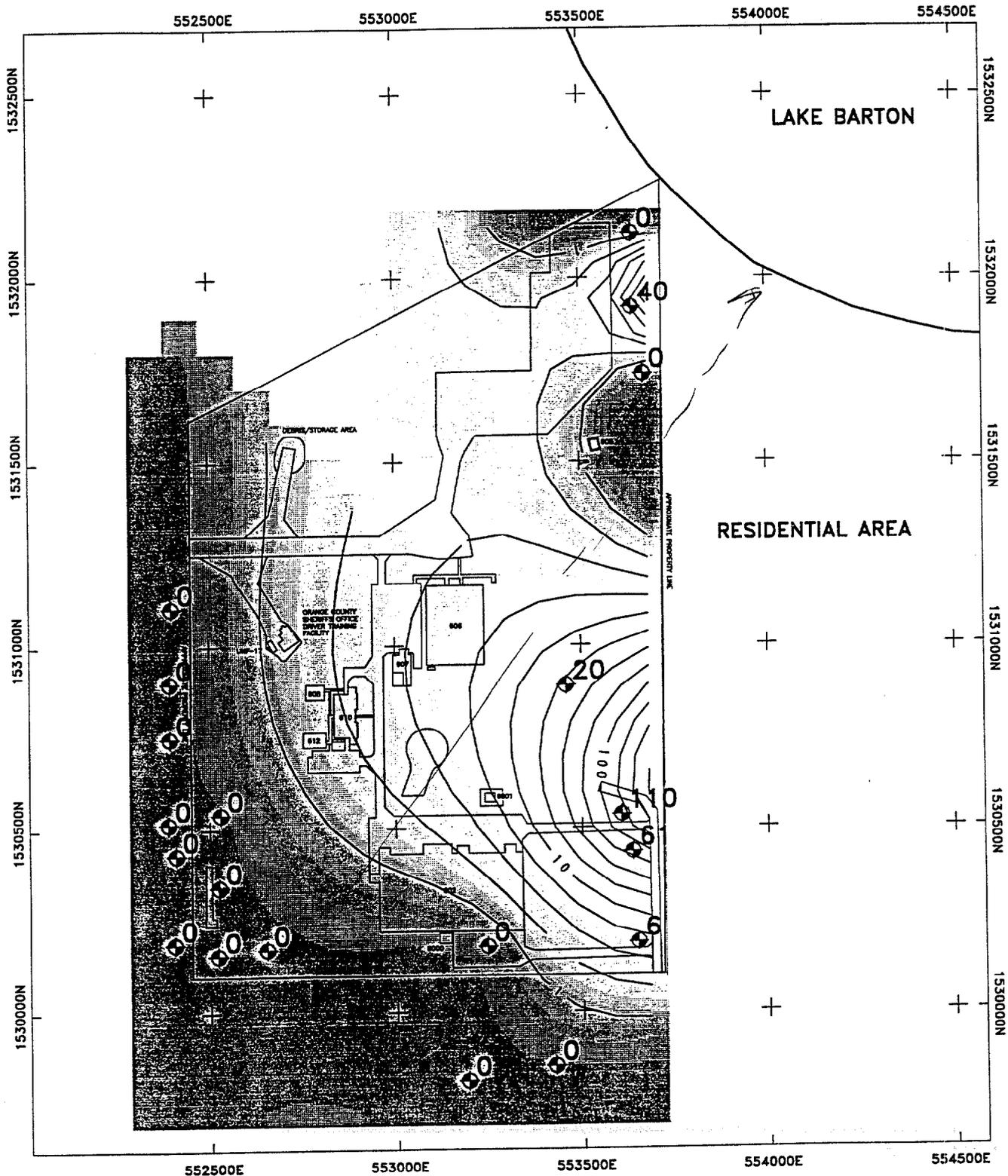


FIGURE 6

SOUTHERN DIVISION

BENZENE 40 TO 50 FT BLS
HERNDON ANNEX

ABB ENVIRONMENTAL SERVICES, INC.

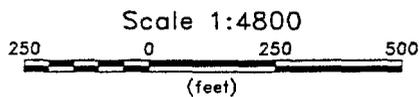
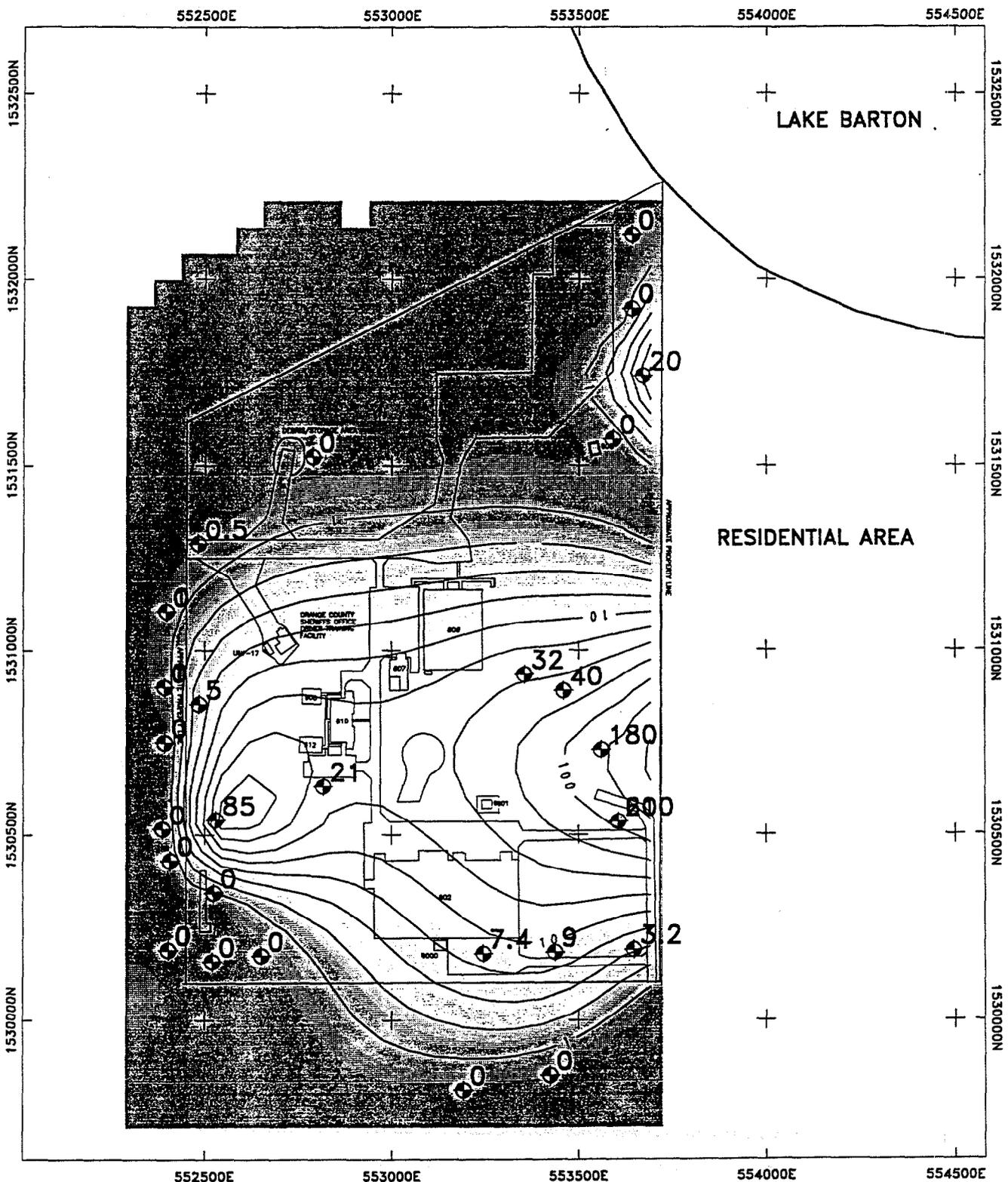


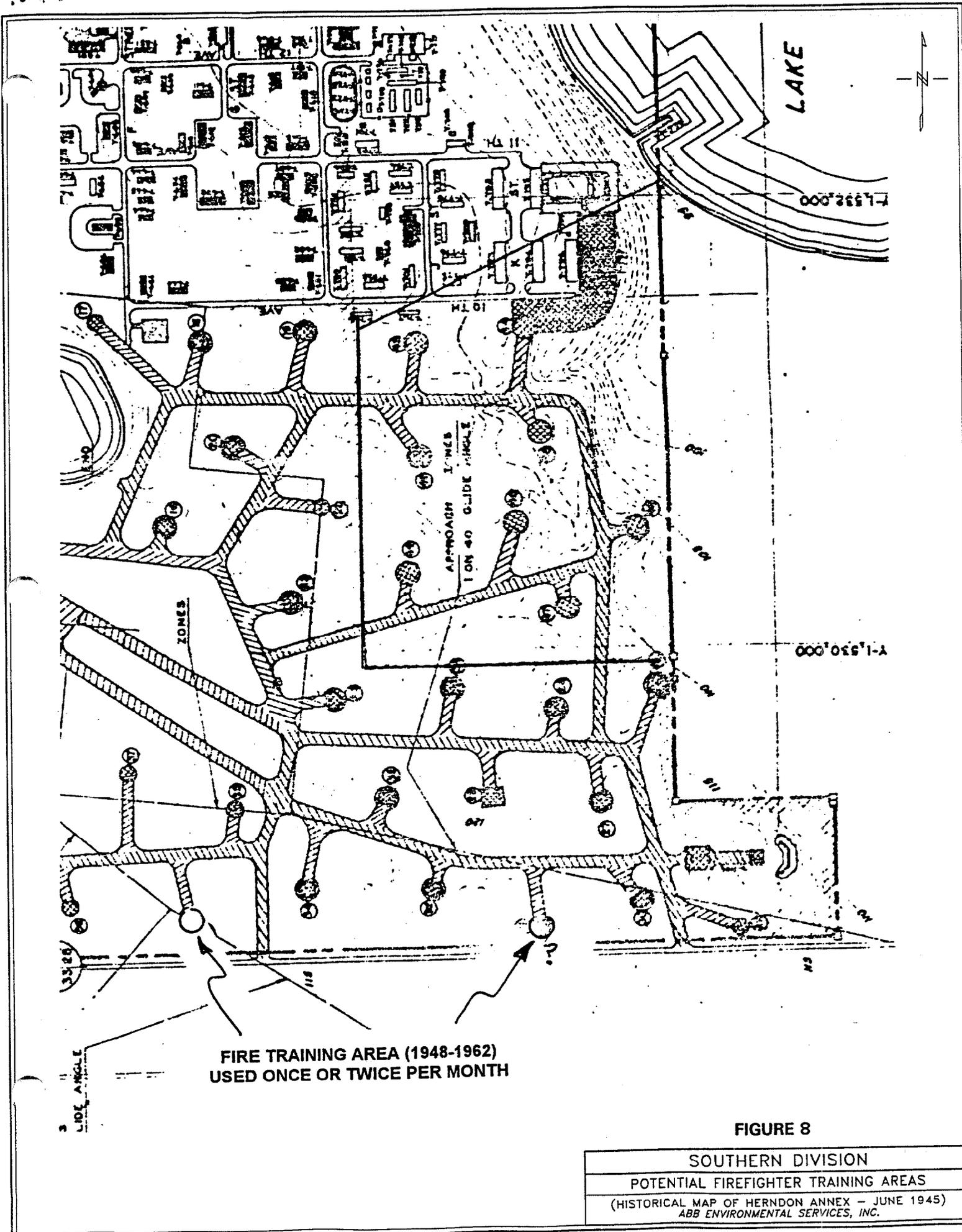
FIGURE 7

SOUTHERN DIVISION

BENZENE GREATER THAN 50 FT BLS

HERNDON ANNEX

ABB ENVIRONMENTAL SERVICES, INC.



FIRE TRAINING AREA (1948-1962)
 USED ONCE OR TWICE PER MONTH

FIGURE 8

SOUTHERN DIVISION
POTENTIAL FIREFIGHTER TRAINING AREAS
(HISTORICAL MAP OF HERNDON ANNEX - JUNE 1945)
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