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LETTER REGARDING REGULATORY WORKSHOP NSB KINGS BAY GA
7/30/1993
ABB ENVIRONMENTAL

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ASEA BROWN BOVERI

30 July 1993

United States Environmental Protection Agency
Region IV
Federal Facilities Branch
345 Courtland Street, N.E.
Atlanta, Georgia 30365

ATTN: James Barksdale

SUBJECT: **Regulatory Workshop**
Naval Submarine Base, Kings Bay, Georgia
Contract Task Order #094
Contract N62467-89-D-0317

Dear James:

On behalf of the Naval Submarine Base, Kings Bay, Georgia, and Mr. Ed Lohr of Southern Division Naval Facilities Engineering Command, ABB Environmental Services is pleased to present a discussion of the agenda for the 12 August 1993 meeting at Region IV headquarters in Atlanta. These specific details are of the topics forwarded to you and Reginald Young of Georgia EPD on 13 July 1993. We have also forwarded a copy of this to Mr. Reginald Young.

If you have any questions, please call me at (615) 531-1922 or Mr. John Garner at (912) 673-8845. I want to thank you in advance for your cooperation in this matter.

Sincerely,

ABB ENVIRONMENTAL SERVICES, INC.

Frank B. Cater, PE
Task Order Manager

enc

pc Ed Lohr - Southern Division
John Garner- NSB Kings Bay
CTO 094 Files

GENERAL

ABB Environmental Services (ABB-ES) is presently under contract with Southern Division to provide Work Plans for NSB Kings Bay, Georgia for the continuation of the RFI at Site 11, The Old Camden County Landfill, and the Interim Measure for the same site. These work plans will be completed in late September 1993, and field activities will commence in mid-October 1993. In our continued interest to team with the regulators, ABB-ES is providing discussion items we feel need regulatory input. The Navy is pro-actively proceeding forward with the investigation and remediation of the groundwater problem at Site 11, The Old Camden County Landfill, located on NSB Kings Bay property. A successful program initiated and progressing through a short time frame involves teaming efforts with the Georgia EPD, EPA Region IV, NSB Kings Bay, Southern Division, and ABB-ES. The Workshop scheduled for 12 August 1993 is the first step in this teaming process.

We have divided these discussion items into two main categories, Continuation of the RCRA Facility Investigation (RFI) and the Interim Measure (IM) Start-up.

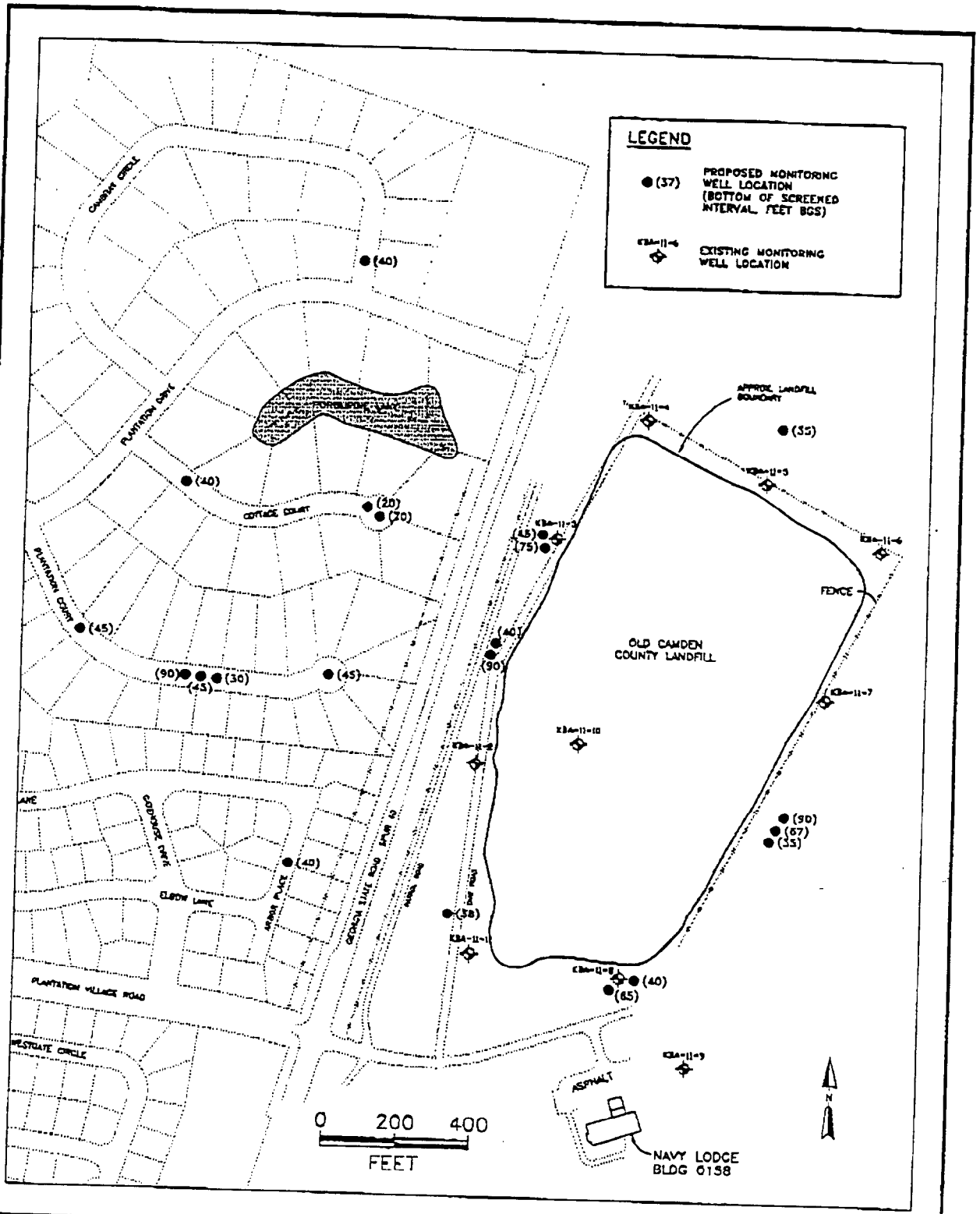
CONTINUATION OF THE RFI

Item 1. Discussion of monitoring well placement and depths.

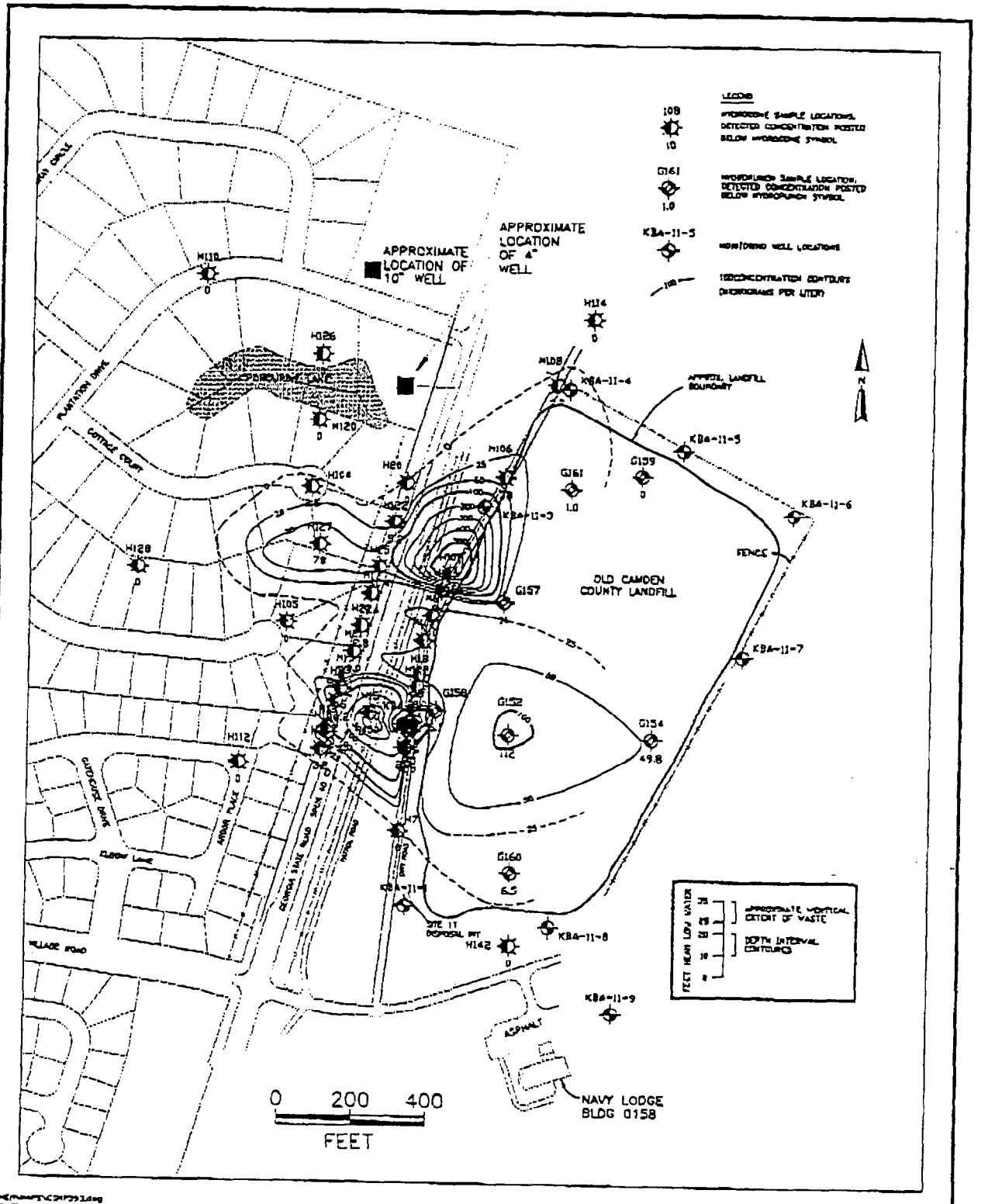
Currently there are nine monitoring wells that were placed around the landfill in January 1992 for the initial groundwater monitoring program. This was in accordance with the RFI Work Plan submitted and approved in 1991, prepared by ABB-ES. These wells are screened from approximately three to thirteen feet below ground surface (bgs).

Following are four figures. Figure 1 is the location of the proposed new monitoring wells and the location of the existing monitoring wells. The depths of the proposed wells vary between 20 feet bgs and 90 feet bgs. The monitoring well locations on the diagram provide an indication of the proposed depth. Figures 2, 3, and 4 are current contours of the VOC plume in the aquifer. These are representative of approximately 15 to 25 feet bgs, 30 to 40 bgs, and 45 to 55 bgs, respectively. The depth indicated on the legend is referenced to mean low water (MLW), with the surface of the landfill being at approximately 35 feet MLW and the surface of the subdivision is approximately 25 to 28 feet MLW.

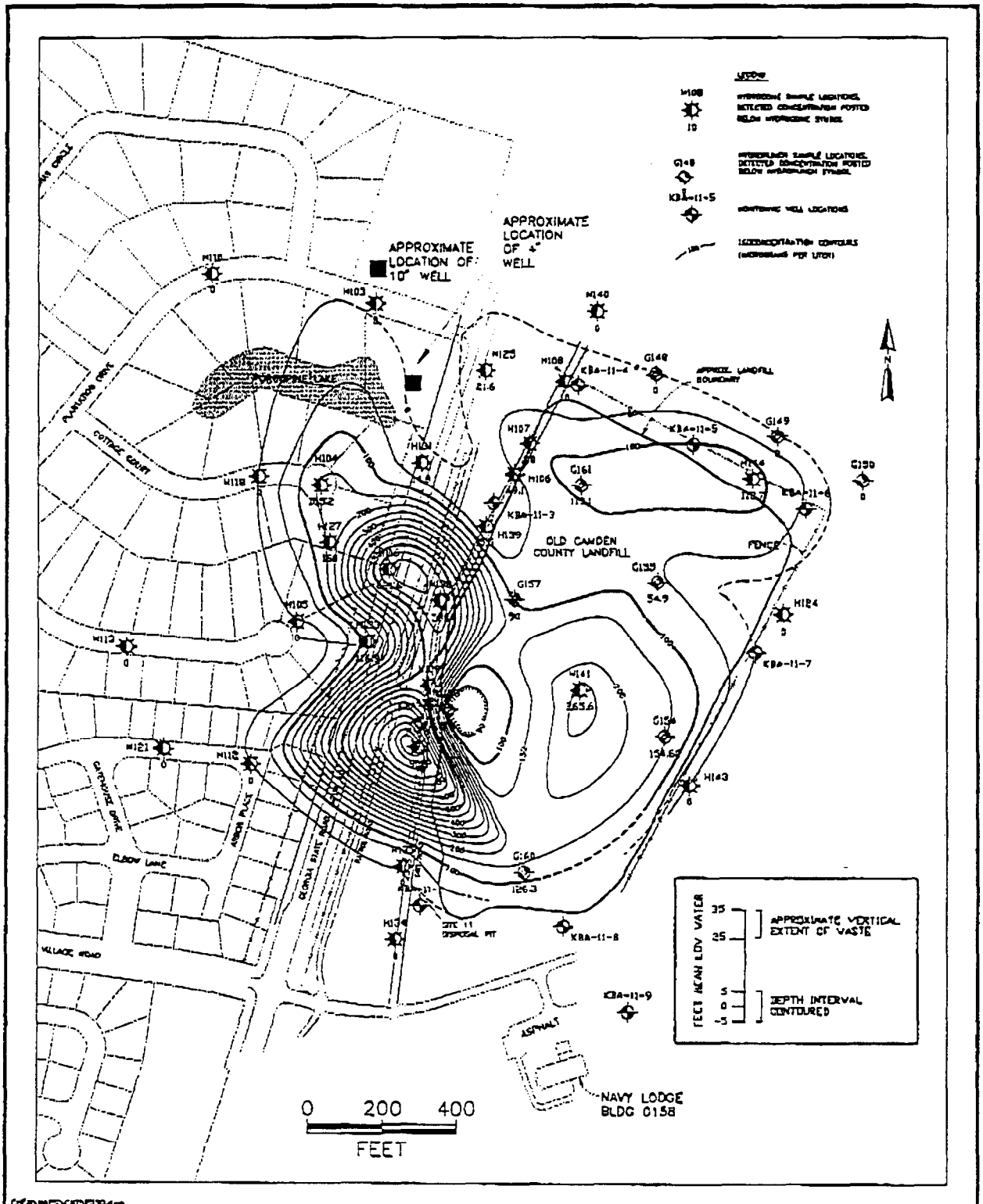
Monitoring wells will be screened over a 10 foot interval. Construction will be in accordance with the EPA SOP for monitor wells.



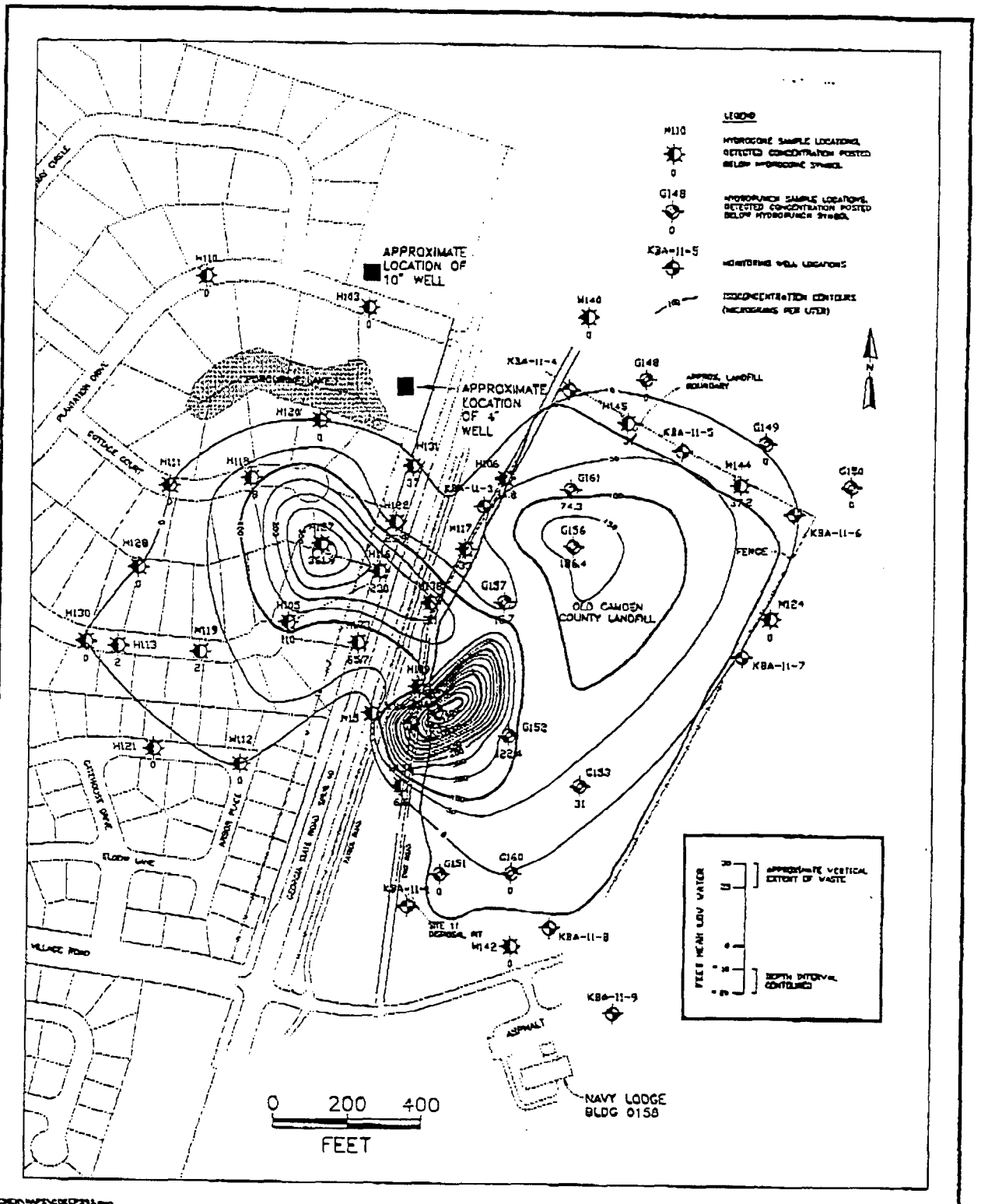
DWN: NLW	DES.: LBH	PROJECT NO.: 08503	TITLE: PROPOSED MONITORING WELL LOCATIONS
CHKD: LBH	APPD: FC	FIGURE NO.: 1	
DATE: 7/28/93	REV.: 1.0		



DWN: DF	DES.: LGT	PROJECT NO.: 7553	TITLE: INTERPRETED PLUME PLAN VIEW 20 TO 10 FT MEAN LOW WATER TOTAL TARGET VOCs
CHKD: LBH	APPD: LBH	FIGURE NO.: 2	
DATE: 5/11/93	REV.:		



DWN: DF	DES.: LGT	PROJECT NO.: 7553	TITLE: INTERPRETED PLUME PLAN VIEW 5 TO -5 FT MEAN LOW WATER TOTAL TARGET VOCs
CHKD: LBH	APPD: LBH	FIGURE NO.: 3	
DATE: 3/7/93	REV.:		



DWN: DF	DES.: LGT	PROJECT NO.: 7553	TITLE: INTERPRETED PLUME PLAN VIEW −10 TO −20 FT MEAN LOW WATER TOTAL TARGET VOCs
CHKD: LBH	APPD: LBH	FIGURE NO.: 4	
DATE: 5/10/93	REV.:		

Item 2. Requirements for sampling to complete the RFI.

The proposed sampling to complete the RFI for Site 11 includes:

- Subsurface soil sampling during the installation of soil borings and the Interim Measure recovery wells. Parameters to be analyzed for include Appendix IX compounds, Target Compound List (TCL) analytes, Target Analyte List (TAL) parameters, and fate and transport parameters.

- Surface soil samples will be collected from areas within the landfill and background locations. Samples will be analyzed for TCL, TAL, and Appendix IX parameters. If contaminants are found to be present in the groundwater and have the potential to be in the surface soil in the subdivision, we will modify our approach to include surface soil sampling in the subdivision.

- Two groundwater sampling events are planned for new and existing monitoring wells. During the first event certain monitoring wells will have samples collected for Appendix IX analysis. Otherwise the analytical program includes analysis of TCL and TAL constituents.

- Surface water and sediment samples will be collected from Porcupine Lake for analysis of TCL, TAL, and Appendix IX parameters.

- Air sampling will be done to establish baseline air quality conditions and again during invasive sampling activities at the landfill. Air samples will be analyzed for TCL VOCs.

- Test trenches will be excavated within the landfill for visual inspection of wastes, collection of soil samples, and collection of aqueous samples if groundwater or leachate is encountered. Analysis will include TCL, TAL, and Appendix IX constituents.

- Presently, plans to sample groundwater from private irrigation wells (PIWs) are not included until such time it is considered necessary. This decision will be based on obtaining groundwater analytical data that indicates the potential for contaminants other than VOCs in the PIWs.

- An evaluation of passive gas venting as a potential source control resource is planned for the landfill in support of the planned Corrective Measure Study (CMS).

- The United States Geological Survey (USGS) has indicated they will conduct borehole geophysics on the deep wells located near the north entrance to Crooked River Plantation Subdivision. It is anticipated that natural gamma geophysical logging techniques will be employed. The depths of the two deep wells are estimated to be approximately 380 and 700 feet bgs. The borehole geophysics is dependent upon permission from the property owner.

- An ecological survey will be performed to qualitatively identify potential ecological receptors and potential exposure pathways.

- A public health survey will be performed to examine on-base and off-base communities, activities, and drinking water sources.

- Aquifer characterization activities include pump tests and step drawdown tests associated with the IM.

Item 3. Deep geologic information required.

Currently, stratigraphic information regarding the site and its surrounding area is based on piezocone data and information from literature. Subsurface soil borings will be completed to allow additional stratigraphic characterization through visual observation and collection of samples for chemical and physical analysis relating to fate and transport of contaminants. The borehole geophysical data collected by the USGS will provide stratigraphic information relating to the Hawthorn Formation, a regional confining layer, and the Floridian aquifer system, which is the primary source of drinking water in the area of Naval Submarine Base Kings Bay.

Item 4. Investigative Derived Waste Management Plan for both the RFI and Interim Measure.

Investigation derived wastes (IDW) associated with the field program include:

- soil cuttings
- drilling mud
- groundwater from development and purging
- decontamination water

In an effort to control waste handling, ABB-ES is proposing an approach that minimizes the cost and amount of drums to be disposed. This approach was developed using the Management of Investigation-Derived Wastes During Site Inspection, EPA/540/G-91/009, May 1991. ABB-ES proposes that the limit of wastes generated and categorized as on-site wastes include the area of the landfill site within the base boundary, and the area from the eastern side of the base boundary to the western boundary of Georgia Spur 40 right-of-way (ROW). These wastes would be considered as generated within Site 11 and would be disposed of within Site 11, as noted in the following discussion. Wastes generated within Crooked River Plantation Subdivision would be drummed and transported back to Site 11, then transported to the NSB Defense Reutilization and Marketing Office (DRMO) for disposal. The transportation of the drums from within the subdivision to the base would be performed by the drilling subcontractor.

Soil cuttings and drilling mud generated from locations on NSB Kings Bay property and from the area between the western boundary of the base to the western boundary of Spur 40 ROW will be disposed in a lined pit excavated at the landfill. The pit will have a fence around it to control access. The fence around the pit will be closed at the end of each day. Data from the soil borings will be used to evaluate the potential for contaminants within the soil in the pit. During the Corrective Measure Study,

recommendations for the final disposition and handling of the IDW will be made. The proposal is for the IDW to be dealt with during the Corrective Measure Implementation.

Development water and purge water generated from monitoring well locations on NSB Kings Bay property will be discharged to the ground surface on the downgradient side of each monitoring well. Development water from recovery wells located along the Georgia Spur 40 ROW will be drummed and transported to an area near the IM treatment compound. During the operation of the treatment system, this water will be added to the extracted groundwater flow and treated.

Soil cuttings and drilling mud generated from locations within the Crooked River Plantation Subdivision property will be placed in 55-gallon drums, labeled, and transported to a staging area at Site 11, then transported to the DRMO. Five composite samples will be collected from the drums and analyzed by the toxicity characteristic leaching procedure (TCLP) for all TCLP parameters. An additional 20 composite samples, if necessary, will be collected from the drummed material and analyzed by TCLP for VOCs and SVOCs. An appropriate disposal facility will be selected based upon the results of the analyses.

IDW liquid wastes generated from locations within the boundaries of the Crooked River Plantation Subdivision property will be placed in 55-gallon drums, labeled, and transported to a storage area near the IM treatment compound. Decontamination fluids generated by steam cleaning area operations will be drummed and stored in an area near the IM treatment compound. Decontamination fluids containing soaps and solvents will be placed in 55-gallon drums, labeled, and stored in an area near the IM treatment compound. During the operation of the treatment system, this IDW liquid wastes will be added to the extracted groundwater flow and treated.

Item 5. Risk Assessment Topics.

The risk assessment topics are organized to follow risk evaluations. The questions we are proposing are methods or questions that will allow for our development of data quality during the field events, and interpretation. We understand that a full baseline risk assessment is to be required for Site 11. We appreciate this opportunity to discuss requirements.

↑ Not per EPA only Admiral wants this per Barksdale

<u>General</u>

CERCLA field sampling usually characterizes the horizontal and vertical extent of contamination at a site while RCRA field sampling usually employs "point of compliance" monitoring. Thus, the data collected in a RCRA-type field investigation may not be sufficient to support a CERCLA-type baseline risk assessment. Does Georgia EPD and Region IV suggest modifying present and future RCRA Sampling and Analyses Plans to collect data sufficient to support a CERCLA-type baseline risk assessment? Is Level III data (NEESA Level C) still acceptable for RCRA baseline risk assessments? What analytes must be included in the Sampling and Analysis Plan?

Is the Guidance for Data Usability in Risk Assessment (Part A) to be used to set Data Quality Objectives for a RCRA baseline risk assessment?

Does Georgia EPD and Region IV require a baseline risk assessment for each SWMU or can SWMUs be grouped together? What are the criteria for grouping SMWUs together?

Does Georgia EPD and Region IV want a baseline risk assessment for the SWMU itself or at the RCRA "point of compliance?"

What other differences does Georgia EPD and Region IV see between RCRA and CERCLA-type baseline risk assessments?

Contaminants of Potential Concern

In comparing samples to background, could Georgia EPD and Region IV expand on their guidance? That is, what exactly does Georgia EPD and Region IV want compared when is states "twice background:

Maximum background versus maximum sample; 2 × arithmetic mean

Arithmetic, geometric, or estimated background mean versus maximum sample value; or

Arithmetic, geometric, or estimated background mean versus corresponding sample mean? compliant mean against mean

Does Georgia EPD and Region IV support or allow screening of site contaminants to determine chemicals of concern? Does Georgia EPD and Region IV have any preferences on the source of screening values?

Does Georgia EPD and Region IV accept the concept of media "action levels" as described in the 1990 Proposed Rule of July 27, 1990?

Which screening levels should be used for RCRA baseline risk assessments:

The "action levels" in 1990 Proposed Rule;

Values calculated using current toxicity values and methodology of 1990 Proposed Rule;

Region III screening values for commercial/industrial exposures in appropriate situations;

Region III screening values for residential exposures in appropriate situations;

State-specific values if available?

What risk level or hazard quotient is considered sufficiently low to exclude a contaminant?

Does Georgia EPD and Region IV have criteria for point at which TICs becomes sufficiently important to include in risk assessment?

The algorithms provided in the most current Region III screening table (May 10, 1993) are significantly different than those described in RAGS and in the 1990 Proposed Rule. Are these algorithms to be used in place of ones given in RAGS or the 1990 Proposed Rules?

The Region III screening values for non-carcinogens are calculated for an adults while the 1990 Proposed Rule "action levels" and RAGS are calculated for children. Which is the correct methodology?

The 1990 Proposed Rule uses a $1x10^{-5}$ risk cutoff for Class C carcinogens? Is this acceptable?

The 30-year adult soil exposure was re-defined in "Standard Default Exposure Factors" as a 6-year childhood exposure plus 24-year adult exposure. Different sources have come up with different values for average intake values. Our average is 120 mg/day. Is this value acceptable?

Does Georgia EPD and Region IV have any difficulties with the idea of screening to identify main chemicals for inclusion in main text with minor chemical risks presented in an Appendix and added to total risks in the main text conclusion?

Exposure Assessment

Region IV guidance strongly suggests that a residential exposure scenario be used in the risk assessment. However, many Navy RCRA sites are industrial and will remain so for the foreseeable future. What criteria does Georgia EPD and Region IV use to determine if an industrial exposure scenario is applicable? When is a residential scenario required and what is meant by "a strong justification" for not including a residential exposure scenario? Which exposure scenario will be used to set cleanup levels?

What models does Georgia EPD and Region IV suggest with regard to modeling of groundwater contaminants, volatile organic compounds in air, and particulates? Will the "point of compliance" concept be used in these models to determine if a Corrective Measures Study is needed of if there is a human health threat at the site?

Is there any additional new guidance or new publications with respect to exposure assessments past May 29, 1992 Federal Register that we should be aware of?

Toxicity Assessment

Can Georgia EPD and Region IV confirm the hierarchy of sources of toxicity values:

1. IRIS
2. Current HEAST
3. Region IV specific guidance (e.g. Polycyclic Aromatic Hydrocarbon TEFs; cobalt, 2-hexanone, approved toxicity values from previous HEASTs)
4. ECAO values

5. Other EPA-derived toxicity values
6 In-house derived values reviewed by Georgia EPD and Region IV.

Is Georgia EPD and Region IV going to require toxicity profiles for site chemicals within the risk assessment?

Risk Characterization

Does Georgia EPD and Region IV have any experience yet with risk assessments incorporating the results of a Monte Carlo analysis? What is Georgia EPD and Region IV's policy relative to the use of such analysis? Does Georgia EPD and Region IV have any overall policy guidelines for use of Monte Carlo guidelines in risk assessment? Does Georgia EPD and Region IV have any preferences on software for Monte Carlo analyses?

How does Georgia EPD and Region IV want possible potentiation of non-carcinogenic toxic effects to be addressed?

What risk level is considered acceptable for a RCRA baseline risk assessment? Is it dependent upon the exposure scenario or is it set *a priori* at $1x10^{-6}$?

Calculation of Preliminary Remediation Goals

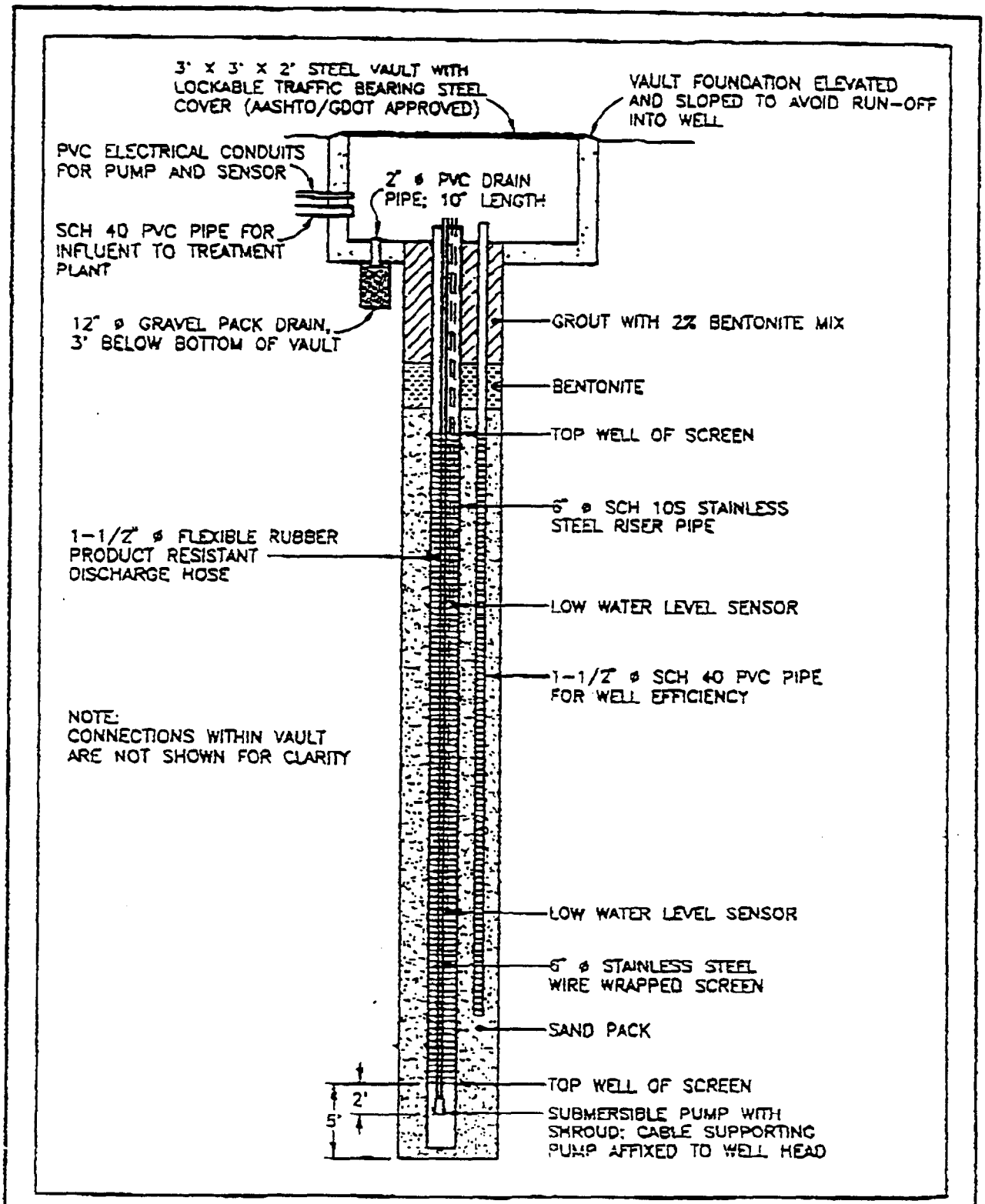
What algorithms are to be used to calculate preliminary remediation goals? Will the most likely exposure scenarios be used to calculate these goals or will they be set using only residential exposure scenarios?

Can Georgia EPD and Region IV provide an additional guidance on selecting target risk levels for either carcinogenic or non-carcinogenic contaminants?

INTERIM MEASURE START-UP

Item 1. Recovery Well Design.

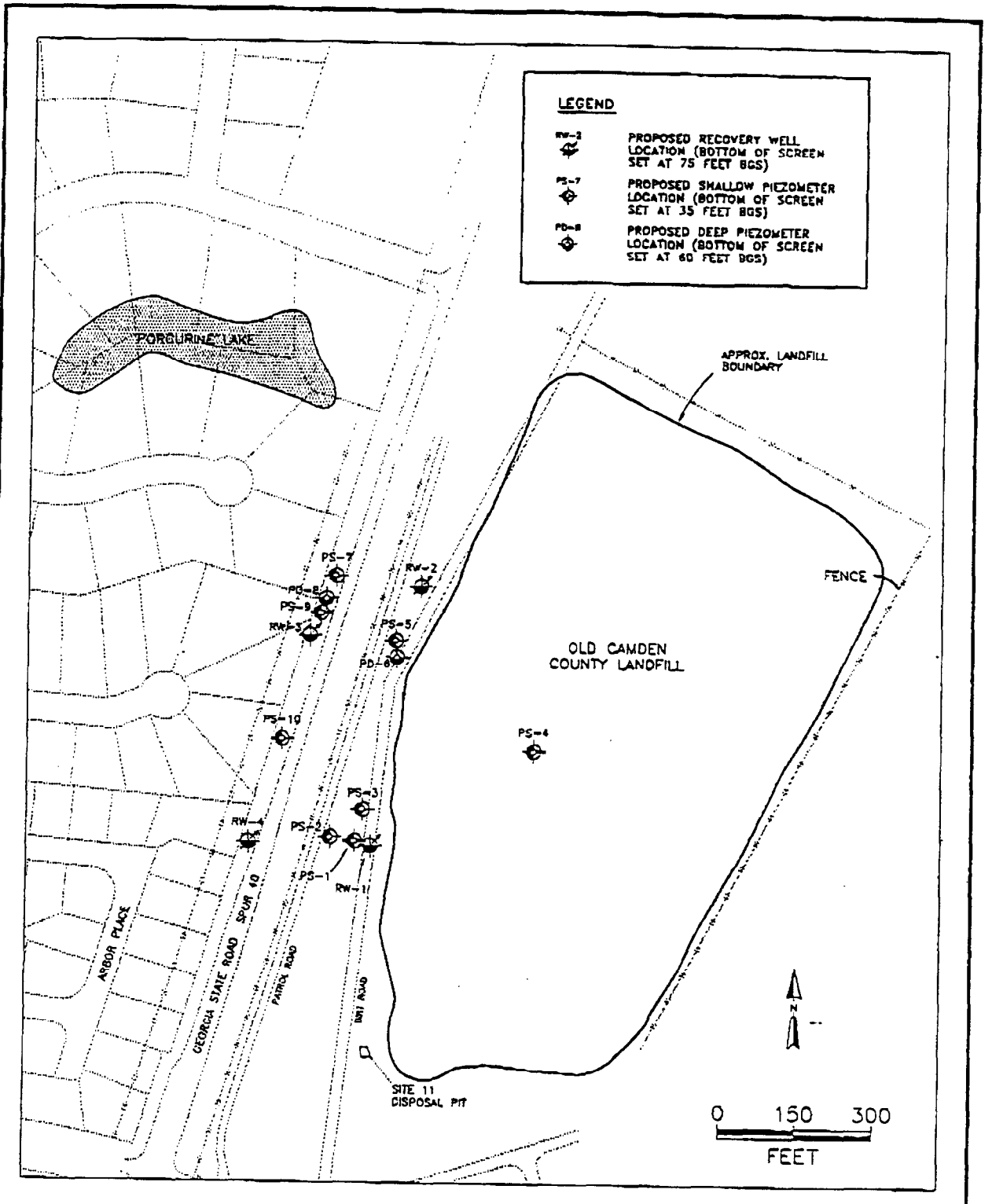
The design of the recovery wells is based on information gathered during the past year's investigation at Site 11. This includes slug test data, piezocone data, shallow soil borings, and literature. The recovery wells have been designed for optimal performance during pumping conditions. EPA Region IV SOP for monitoring well installation was used, as applicable to recovery well design. After the first recovery well is installed, a 25 hour pump test will be performed to evaluate the aquifer characteristics and compare this to our current knowledge base. When the IM treatment unit is in place and operational, the first phases of operation will be to test aquifer performance characteristics during pumping of first one well then staging up to all recovery wells in operation. Figure 6 is a cross section of a typical recovery well.



DWN: DMF	DES: HF	PROJECT NO.: 08503.02	TITLE: RECOVERY WELL DETAIL	
CHKD: TLK	APPD.: FBC	FIGURE NO.: 5		
DATE: 7-25-93	REV.:			

Item 2. Placement of Recovery Wells.

Following is Figure 2 providing the location of the proposed recovery wells for the Interim Measure. The recovery wells will be screened to a maximum depth of 65 feet bgs. The recovery well locations on the diagram provide an indication of the proposed depth. Placement of recovery wells 1 through 4 is based on current aquifer characteristic knowledge. After the 25 hour pump test, a decision will be made for the placement of recovery wells 5 and 6. Figure 2 indicates the proposed location of the recovery wells. The purpose of the recovery wells installed during the IM start-up are to evaluate hydraulic control of the contaminant plume while the corrective measure is being developed.



DWN: NLW	DES.: HF	PROJECT NO.: 08503	TITLE: PROPOSED RECOVERY WELL AND PIEZOMETER LOCATIONS
CHKD: HF	APPD: KS	FIGURE NO.: 6	
DATE: 7/28/93	REV.: 1.0		

Item 3. Discharge of Effluent.

Effluent Characteristics

Based on the latest analytical data available, the volatile constituents that are potentially present in the groundwater at concentrations above federally established Maximum Contaminant Levels (MCLs) are cis-1,2-dichloroethene, 1,2-dichloroethane, trichloroethene, vinyl chloride, and benzene. The treatment system will effectively remove these volatile organics to below the MCLs for each constituent. The anticipated inlet and discharge concentrations, and the respective MCLs of each constituent are listed in Table 1. The MCLs are representative of Federal and the State of Georgia MCLs.

TABLE 1

Constituent of Concern	Influent (µg/l)	Effluent (µg/l)	MCL (µg/l)
Benzene	5	<1	5
2-Butanone	580	578	
Chlorobenzene	10	1	100
1,4-Dichlorobenzene	12	8	75
1,1-Dichloroethane	24	<1	
1,2-Dichloroethane	9	<1	5
cis-1,2-Dichloroethene	3,600	7	70
trans-1,2-Dichloroethene	23	<1	100
1,2-Dichloropropane	6	1	5
Ethylbenzene	41	2	700
2-Hexanone	70	48	
4-Methyl-2-pentanone	110	110	
Tetrachloroethene	3	<1	5
Toluene	840	34	1,000
Trichloroethene	45	<1	5
Xylenes (total)	120	4	10,000
Vinyl Chloride	310	<1	2

Discharge Location

At the treatment system discharge, the treated effluent will meet MCL requirements for the volatile organics of concern. Pretreatment for iron removal will also be included in the treatment system. However, if the discharge point can accept some concentrations of iron, the pretreatment requirements, and cost, can be greatly reduced.

At this point, two readily available discharge options are available: the Kings Bay Land Application System (LAS), and the City of St. Mary's Publicly Owned Treatment Works (POTW). These two systems appear to have the same treatment capabilities.

The connection for the LAS is approximately 340 feet away from the treatment system. This is the closest available connection for discharge of the treated effluent. The LAS is equipped with equipment for screening, grit removal, biological treatment, filtration and chlorination and has an operating capacity of 1.5 million gallons per day. The treated discharge will not affect the LAS chemically or physically. The LAS has not been contacted to determine if the system can accept 60 gallons per minute (gpm) additional flow, or 6 percent of their operating capacity. ABB-ES requests an opinion if an amendment to the LAS operating permit will be needed for accepting the flow from the scale pilot test.

The nearest POTW connection is at least 900 feet away. The POTW is equipped with equipment for screening, primary clarification, aeration and activated sludge, and chlorination and has an operating capacity of 800,000 gallons per day. The POTW currently operates at 75 percent of operating capacity and can accept an additional 60 gpm.

Item 4. Air Permit Requirements.

The groundwater treatment system proposed for the pilot scale test includes an air sparger (low profile, tray type air stripper), preceded by pretreatment for iron and carbonate removal. Air Emission calculations have been performed for each volatile organic that has been detected in the plume. The maximum emission rate was calculated based on complete volatilization of the maximum concentration of each constituent detected. The design flow rate of the treatment system is 60 gallons per minute. The maximum ambient impact was calculated based on a tower height of 17.5 feet (stack height will actually be 20 feet) and a stack gas flow rate of 1400 cubic feet per minute. (The estimated stack gas flow rate is being verified by manufacturers of air spargers). The maximum ambient impact values are very low (see Table 2). Therefore, no off-gas treatment is proposed for the treatment system.

The Acceptable Ambient Impact values will be calculated following the State of Georgia guidelines to verify that off-gas treatment will not be necessary to protect human health and the environment. A letter will be submitted to the State formally proposing this treatment system without off-gas treatment. This letter should be submitted by mid to late August 1993.

Table 2

#	Contaminant Name	Max Conc (ppb)	Max. Emission Rate (lb/hr)	Max. Ambient Impact (mg/m3)
1	Benzene	5	0.00015	0.00008
2	2-Butanone (MEK)	580	0.01742	0.00876
3	Chlorobenzene	10	0.00030	0.00015
4	1,4-Dichlorobenzene	12	0.00036	0.00018
5	1,1-Dichloroethane	24	0.00072	0.00036
6	1,2-Dichloroethane	9	0.00027	0.00014
7	cis-1,2-Dichloroethene	3600	0.10814	0.05438
8	trans-1,2-Dichloroethene	23	0.00069	0.00035
9	1,2-Dichloropropane	6	0.00018	0.00009
10	Ethylbenzene	41	0.00123	0.00062
11	2-Hexanone (MBK)	70	0.00210	0.00106
12	MIBK	110	0.00330	0.00166
13	Tetrachloroethene	3	0.00009	0.00005
14	Toluene	840	0.02523	0.01269
15	Trichloroethene	45	0.00135	0.00068
16	Total Xylenes	120	0.00360	0.00181
17	Vinyl chloride	310	0.00931	0.00468

If maximum ambient impact is greater than acceptable ambient impact, this implies that the design is not adequate.

Item 5. Sign and Seal Requirements (PG v. PE).

The RFI workplan and subsequent investigative reports will be signed and sealed by a Georgia registered Professional Geologist. ABB-ES would like clarification of the requirements for the Interim Measure workplan and subsequent reports. Are these to be signed and sealed by a Georgia registered Professional Geologist or a Georgia registered Professional Engineer or both?

Item 6. Temporary Operation verses Long Term Operation.

The proposed plan for the evaluation of the pilot scale test is for a forty-five day operation with an option for another eight months of operation. The pilot-scale operation and testing phase of the IM will support the evaluation of:

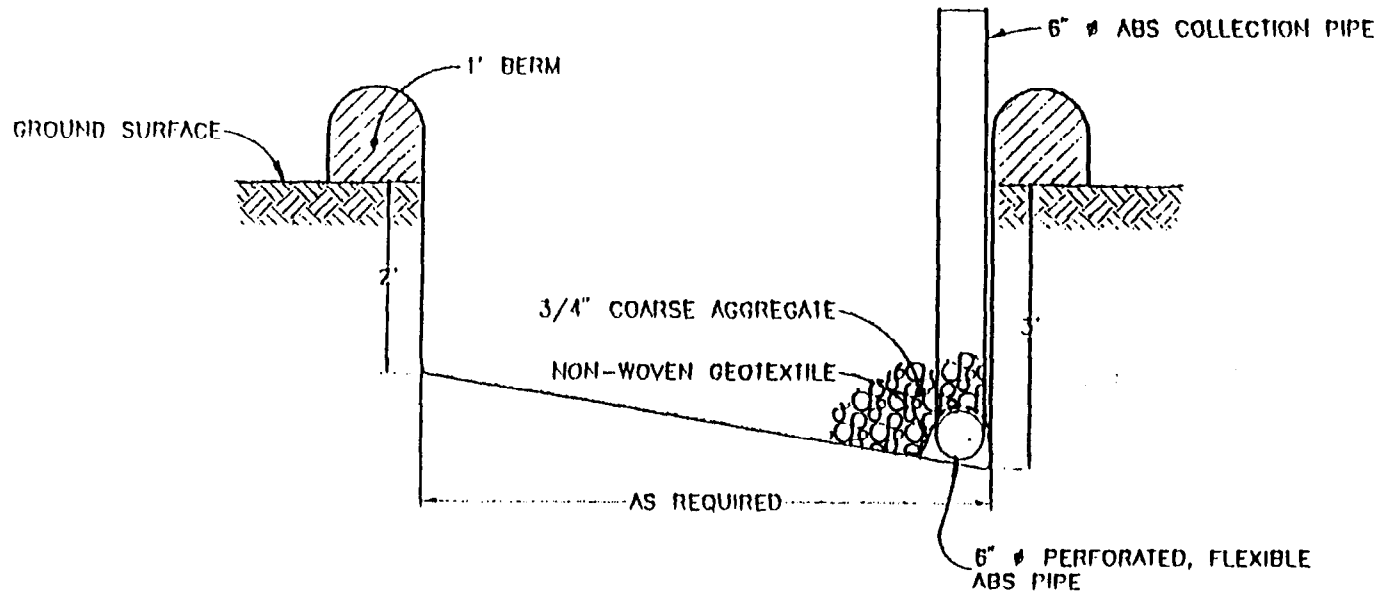
- the effectiveness of the groundwater extraction (GWE) system using an array of conventional recovery wells,
- the use of the GWE system to hydraulically control further migration of VOC contaminated groundwater originating at Site 11,
- a treatment system which incorporates air stripping technology to clean-up levels of VOC contaminants within the extracted groundwater to MCLs, and
- an alternative treatment system, which incorporates biotechnology, using a methanotrophic rotating bioreactor unit.

Data collected during the IM pilot-scale effort at NSB Kings Bay will be used to support design and specifications for the construction and long-term operation of the full-scale IM. Specific Data Quality Objectives (DQOs) are as follows:

- Development of an understanding of site-specific operational characteristics of a GWE system to hydraulically control VOC plume movement.
- Development of an effective capture zone that contains the areas of greatest concentrations of VOCs within the groundwater.
- Evaluate the suitability of an appropriate treatment system.

The long term operation as defined by ABB-ES will be the operation of the system beyond the proposed eight month option of operation. This would be the operation until the final corrective measure is in place, and could possibly be part of the final corrective measure.

At the current time, ABB-ES would like to propose operation permits, if required, be based on the eight month operation. At the end of this period, ABB-ES and the regulators can revisit long term operation requirements.



DWN:	DES:	PROJECT NO.:	TITLE:
DMF	HF	08503.02	SOIL DISPOSAL PIT
CHKD: KDS	APPD.: GMB	FIGURE NO.: 2	
DATE: 8-6-93	REV.:		