centurywest
ENGINEERING CORPORATION

April 2, 1993

STID537

UST Local Oversight Program
Alameda County Health Agency
Department of Environmental Health
80 Swan Way, Suite 200
Oakland, CA 94621

Attention: Ms. Susan Hugo

Subject: Amended Workplan to Conduct Ground Water Investigation
Liquid Sugars UST Site
1275 66th Street
Emeryville, California
CWEC 20516-001-04

Ladies and Gentlemen:

Pursuant to our recent phone conversation with Ms. Susan Hugo, Century West Engineering is pleased to submit this amended workplan to install two ground water monitoring wells at the subject site in Emeryville, California. The purpose of these wells will be to investigate the extent of fuel hydrocarbons in ground water in a downgradient direction from the three former gasoline and diesel underground storage tanks (USTs) located at the subject site.

BACKGROUND

The Liquid Sugars facility formerly contained two 1,000-gallon gasoline USTs and one 10,000-gallon diesel UST, located on the southwest side of the site (see Figure 1). (Historical information indicates that this portion of the site was formerly occupied by a Mohawk Oil Company bulk fuel facility.) The following is a brief chronology of key events related to removal of the USTs.

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4.1 Chronology of Key Events

November 2, 1990	Two 1,000-gallon gasoline USTs and one 10,000-gallon diesel UST were removed by VCI of California. Several holes were visible at the seam at either end of the diesel tank; no apparent holes in the gasoline tanks. Soil samples taken beneath the USTs contained TPH-D levels ranging from 17 ppm to 10,300 ppm, and TPH-G levels ranging from 710 ppm to 3,400 ppm. Benzene levels in the soil samples ranged from 0.008 ppm to 33 ppm. Consultant: Environmental Geotechnical Consultants, Inc.
January 1991	LSI submitted *Workplan for a Preliminary Site Assessment, 1275 66th Street, Emeryville, California* to Alameda County Health Agency. This Workplan proposed to: (1) Excavate fuel laden soil from the bottom and sides of the excavation to the extent possible; (2) Collect verification samples for TPH-G, TPH-D, and BTXE analysis; (3) Treat fuel laden soil onsite by enhanced bioremediation followed by Class III landfill disposal; and (4) Install and sample one downgradient ground water monitoring well. Consultant: Baseline Environmental Consulting.
March 12, 1991	LSI received approval of Workplan from Alameda County Health Care Services with the provision that LSI must install three ground water monitoring wells rather than one as originally proposed.
July 12, 1991	LSI submitted *Amended Workplan For a Preliminary Site Assessment, Liquid Sugars, Inc., 1275 66th Street, Emeryville, California* to Alameda County Health Agency. The amended Workplan contained the following elements: (1) Backfill the excavation pit; (2) Remediate and/or dispose of stockpiled soil; (3) Drill and sample five soil borings; (4) Remediate fuel laden soil above ground water table; and (5) Install and sample three ground water monitoring wells. Consultant: Century West Engineering.
July 29, 1991	Received verbal approval from Alameda County Health Agency to proceed with amended Workplan.
July 30, 1991	Visqueen was placed in UST excavation pit, and pit was backfilled and compacted using clean material. Prior to backfilling, two soil samples were collected from the west sidewall at a depth of approximately five feet below grade. Samples contained 10 ppm and 19 ppm of TPH-motor oil. Other fuel constituents were nondetectable. Consultant: Century West Engineering.
August 5, 1991	Collected five discrete soil samples from the soil stockpile for compositing into one sample. Composite sample was analyzed for TPH-gas, TPH-diesel, BTXE, RCI, and 17 CAM Metals. Sample contained 590 ppm of TPH-diesel and 560 ppm of TPH-motor oil. Consultant: Century West Engineering.

September 14, 1991	Stockpiled soil was hauled to Vasco Road Sanitary Landfill in Livermore, California for disposal.
November 7, 1991	Eight soil borings were drilled and sampled around the backfilled UST pit to assess lateral and vertical extent of fuel constituents in soil. Consultant: Century West Engineering.

Results of the November 7, 1991 soil boring investigation were summarized in *Report of Excavation Pit Backfilling, Stockpile Disposal and Soil Boring Investigation.* The results of this investigation indicate that a relatively thin layer of soil between eight and ten feet in depth has been impacted by fuel leakage from the USTs. Results of the soil boring investigation are summarized on Figure 2 and Figure 3.

REGULATORY APPROVAL

Prior to conducting the well installations, Century West Engineering will contact Ms. Susan Hugo of Alameda County Health Care Services to obtain verbal and written approval to proceed. Prior to beginning field activities, a site safety plan will be issued to Gregg Drilling, and a tailgate safety meeting will be conducted.

WORKPLAN ELEMENTS

We propose the following workplan elements to provide a preliminary assessment of ground water quality downgradient from the former USTs.

Task 1: Drill and Install Two Ground Water Monitoring Wells.

Drilling and installation of the two monitoring wells will be conducted by Gregg Drilling according to the following specifications:

1) The two monitoring wells will be sited based on: (1) The west-southwest ground water gradient direction, as documented at the Oliver Tire UST site (see Appendix A); and (2) The results of the November 1991 soil boring investigation, which appear to confirm a west-southwest ground water flow gradient based on soil samples taken at approximate ground water depth. Based on these criteria, one well will be located approximately ten feet west-southwest from the backfilled UST pit, near the soil boring TB-2. The second boring will be located approximately 25 feet west-southwest from the backfilled UST pit, near the LSI property line.

2) The two well borings will be drilled to a depth approximately ten feet below the

ground water table using hollow stem auger equipment. Ground water depth beneath the project site is approximately ten feet below grade; thus, each boring will be drilled to a depth of approximately 20 feet below grade, but not to exceed a total depth of 25 feet.

3) Subsurface soils will be logged and field evaluated for the presence of hydrocarbons using sight, smell, and a photoionization detector (PID). Undisturbed soils will be sampled in advance of the auger at approximate five-foot intervals down to the ground water table and at areas of obvious contamination using a split spoon sampler with brass liners. Soils will be sampled as follows: (1) A two-inch inside diameter California-style split spoon sampler will be driven into undisturbed soil ahead of the drill bit; (2) The sampler will be raised quickly to the surface and the brass liners exposed; (3) One of the brass liners (the one containing the most undisturbed soil) will be quickly sealed with aluminum foil and plastic end caps, labeled, and wrapped tightly with tape; and (4) The sealed soil sample will be immediately placed in cold storage for transport to the laboratory under formal chain-of-custody. All sampling equipment will be thoroughly cleaned and decontaminated between each sample collection by triple-rinsing first with water, then with dilute tri-sodium phosphate solution, and finally with distilled water.

4) The two wells will be constructed in accordance with the following specifications.

   1. The closer downgradient well will be constructed using four-inch diameter casing, and the farther downgradient well will be constructed using two-inch diameter casing. Well casing will consist of Schedule 40 threaded PVC. 0.020-inch slotted well casing will be placed from twenty feet to five feet in depth, and blank casing will be placed from a depth of five feet to ground level.

   2. Number 3 Lonestar silica sand will be placed around the casing to a depth of four feet below grade.

   3. A hydrated bentonite seal will be placed around the casing from four feet to three feet in depth.

   4. The remaining three feet of annulus will be grouted using a cement/sand slurry (bentonite less than 5 percent).

   5. The top of the well will be enclosed in a traffic rated locking box set in

concrete slightly raised above grade.

Task 2: Develop and Sample Two Monitoring Wells.

Century West Engineering will develop each well as follows:

1) After the cement has cured in each of the wells for a minimum of 48 hours, the ground water depth in each of the wells will be measured to the nearest 0.01 foot using an electronic probe. A single bail of fluid will be taken using a disposable PVC bailer to check for hydrocarbon sheen and odor.

2) Each of the wells will be developed by bailing or pumping each well of at least three well volumes, periodically monitoring the purged ground water for free-floating product thickness, pH, specific conductance, temperature and visible clarity in accordance with approved protocols.by overpumping the wells until ground water pH, conductivity, temperature, and visible clarity have stabilized.

3) After these parameters have stabilized, the wells will be sampled using a disposable PVC bailer as follows: (1) Three 40-ml glass VOC vials and two 1-liter glass amber bottle will be completely filled directly from the bailer with a minimum of agitation; (2) After making sure that no air bubbles are present in each container, each container will be tightly sealed with a teflon-lined septum; and (3) Each container will be labeled and placed in cold storage for transport to the analytical laboratory. Completed chain-of-custody records will accompany all samples. All purged ground water will be stored on site in sealed drums pending analytical results of the ground water samples.

4) All sampling equipment will be thoroughly cleaned and decontaminated between each sample collection by triple-rinsing as described above.

Task 3: Provide Laboratory Analysis of Soil and Water Samples.

Century West Engineering will provide laboratory analysis of the four soil samples and two ground water samples at a State-certified analytical laboratory. Each sample will be analyzed for TPH-G, TPH-D, and BTXE. Turnaround on analytical results will be two weeks.

Task 4: Prepare Report of Findings.

Century West Engineering will prepare a summary report for submittal to the Alameda

County Department of Environmental Health and the San Francisco Bay Regional Water Quality Control Board. This report will include: (1) Description of drilling and sampling methods; (2) Description of subsurface soils; (3) Tabulated analytical results; (4) Results and conclusions: (5) Site plan; (6) Boring logs; and (7) Laboratory data reports.

PROJECT SCHEDULE

We have tentatively scheduled with Gregg Drilling to drill and install the two monitoring wells on Friday, April 9, 1993. The wells will be developed and sampled during the following week, and the report of findings will be completed within approximately one month after conducting field activities.

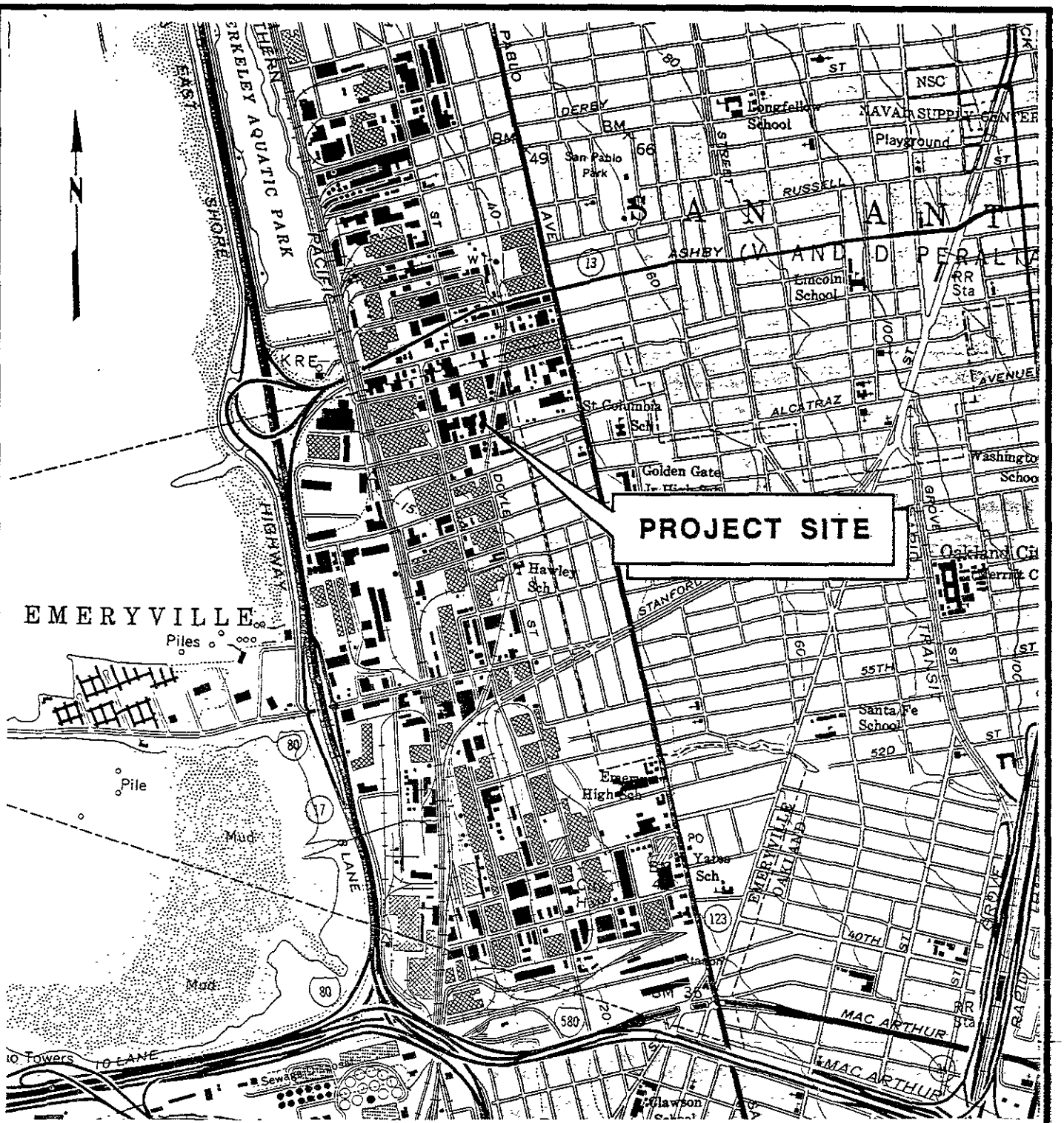
We appreciate the opportunity to present this workplan for your review. Please contact us if you have questions or require additional information.

Very truly yours,

James E. Gribi
Geologist

Ted Zaferatos
Vice President

JEG/TZ:cc
Enclosure



DESIGNED BY:	CHECKED BY:	Figure 1 SITE VICINITY MAP CWEC 20516-001-03	DATE:	FIGURE:
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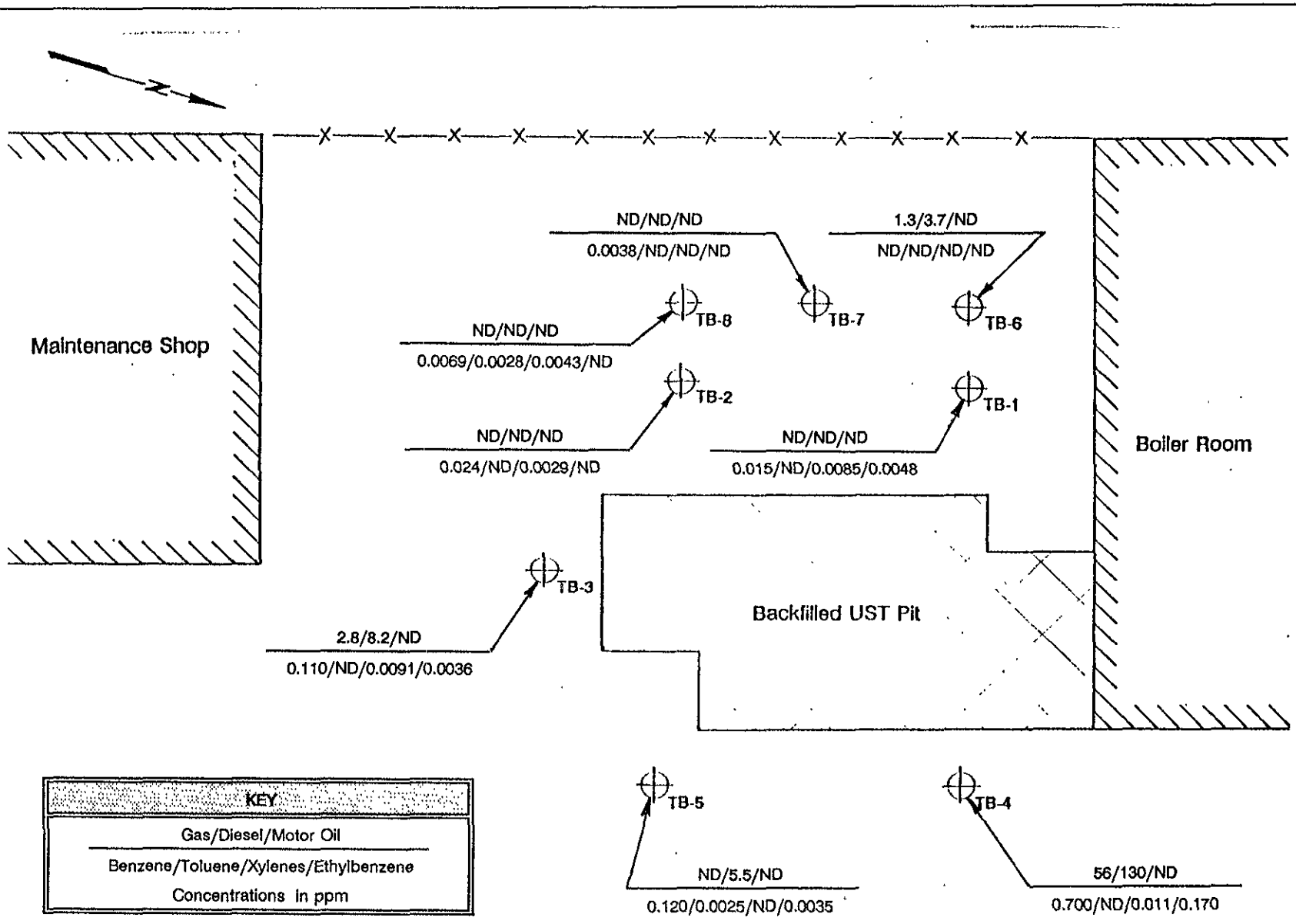

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Figure 2
SOIL SAMPLES AT 5.5 FT DEPTH
CWEC 20516-001-03

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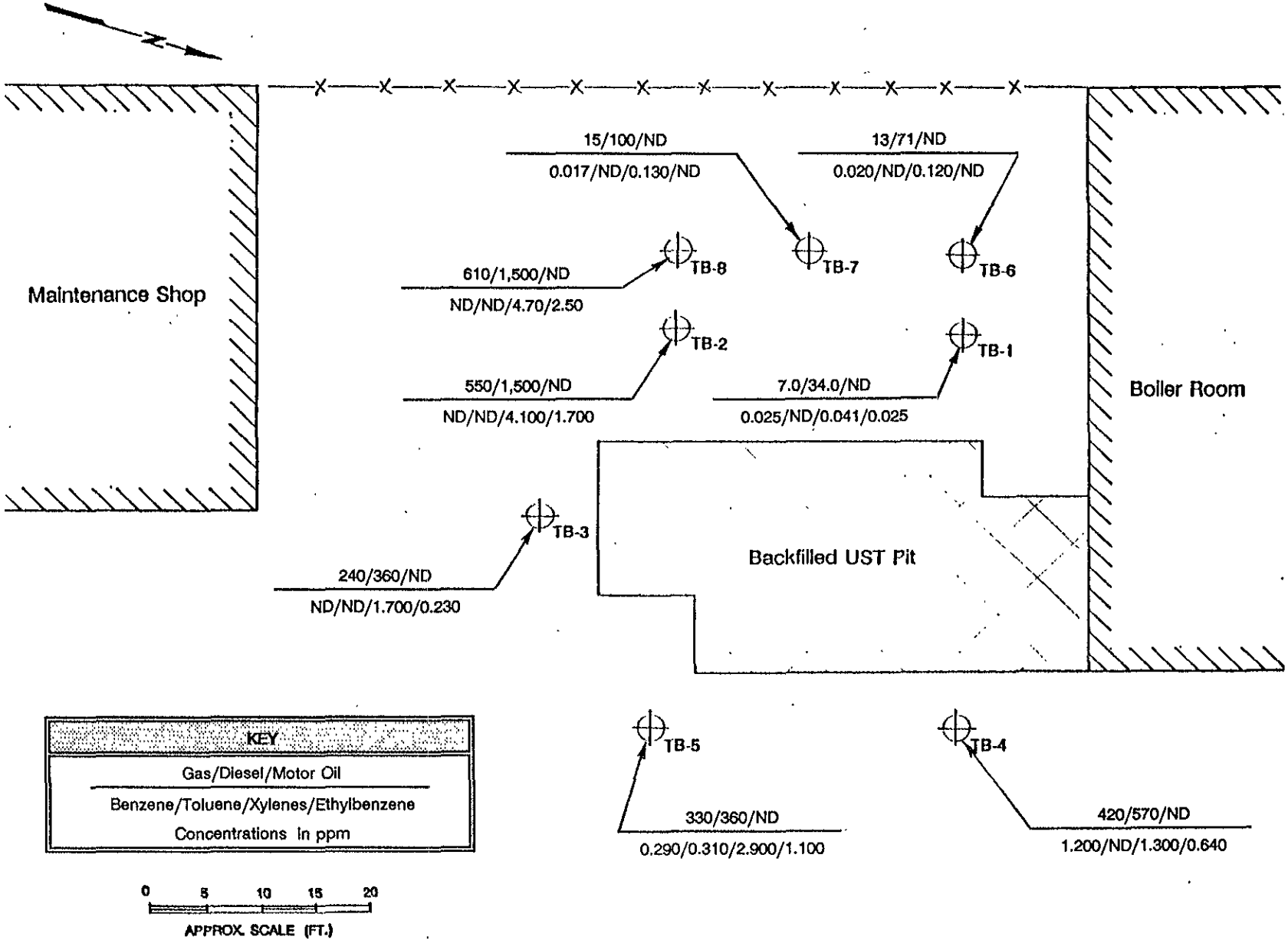

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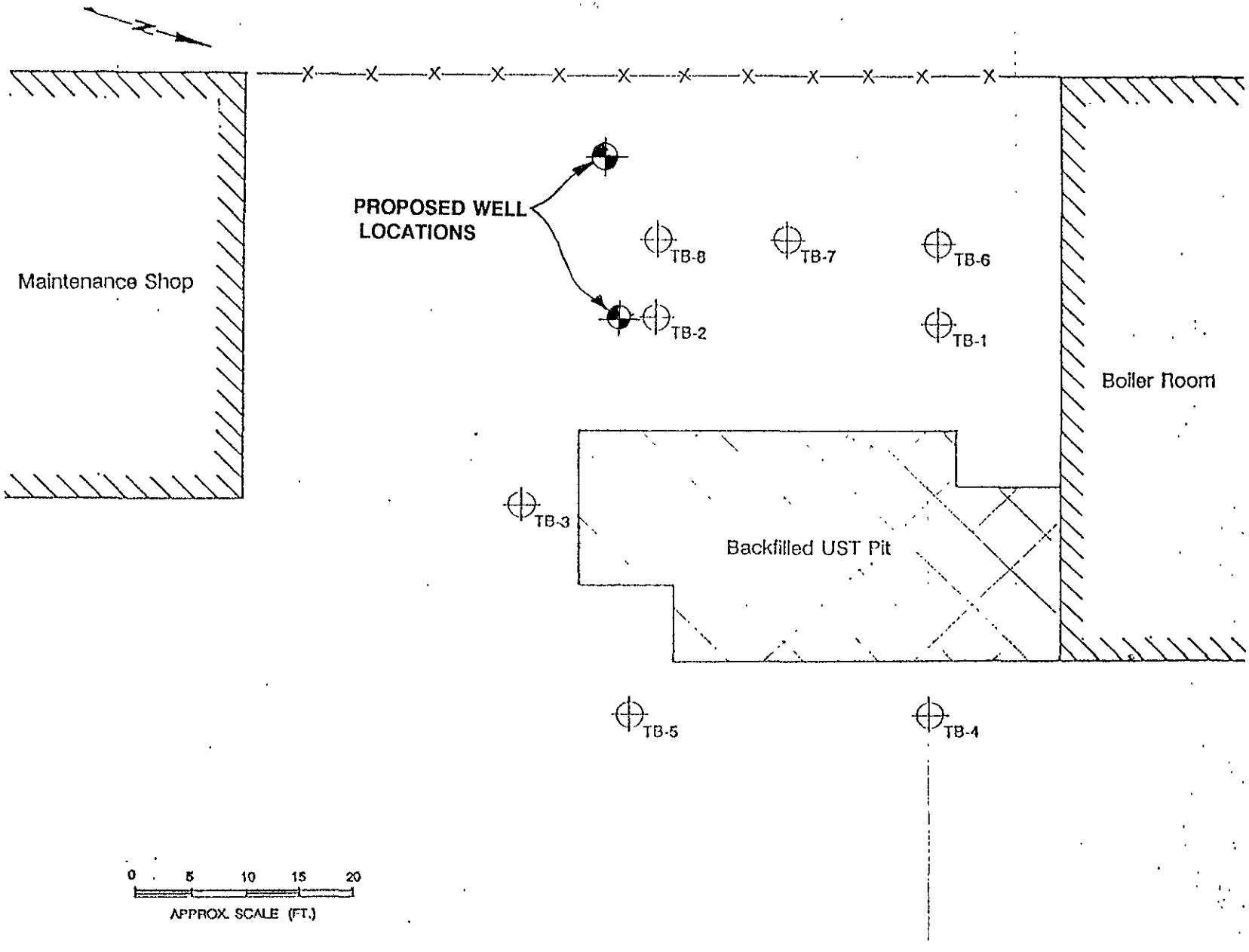

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