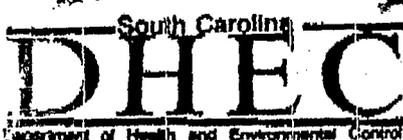


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FASCIMILIE TRANSMISSION FOR WELL INSTALLATION NOTICE CNC CHARLESTON SC
04/11/1990
KEMRON ENVIRONMENTAL SERVICES, INC

4/26/90



Monitoring Well Approval

Approval is hereby granted to: Kemron Environmental Services
1815 Century Blvd., Suite 150
Atlanta, GA 30345

RE: Chicora Tank Farm
Charleston County

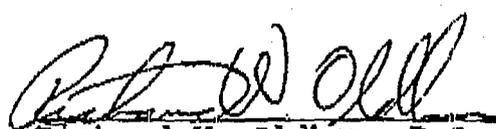
for the construction of monitoring wells designated MW-1 to MW-11
in accordance with the construction plans and specifications
submitted on April 16, 1990.

These wells will be constructed to the approximate depth of 15 feet
below the surface and screened in the surficial aquifer for the
purpose of monitoring ground-water quality.

Conditions: That the latitude and longitude and actual
construction details for each well be submitted within 30 days
after installation. That the analytical results be submitted
within 30 days of receipt of laboratory results.

This approval is pursuant to the provisions of Section 44-55-40 of
the 1976 South Carolina Code of Laws and the Department of Health
and Environmental Control Regulations R.61-71.

Date of Issue April 24, 1990.


Richard W. Oldham, P.G., Manager
Assessment and Development Section
Ground-Water Protection Division
Bureau of Drinking Water Protection

DB/sa

DB1448
0424901448/DB

cc: Trident EQC District, Christine Sanford

Kurt Hausner, Kemron Environmental

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CALC



1815 Century Boulevard ■ Suite 150 ■ Atlanta, Georgia 30345 ■ (404) 636-0928 ■ FAX: (404) 636-7162

FACSIMILE TRANSMISSION

There are 2 page(s) including this cover sheet. If message is not properly received, please call (404) 636-0928.

part of this

DATE: 30 April 90

TO: Reece Batten

COMPANY: NAUFAC ENGC&M

FAX NO.: 803/743-0965

FROM: C. Beck

RE: Chicora Well Approval



KEMRON
ENVIRONMENTAL SERVICES

1815 Century Boulevard ■ Suite 150 ■ Atlanta, Georgia 30345 ■ (404) 636-0928 ■ FAX: (404) 636-7162

11 April 1990

Mr. David Baize
Department of Health
and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Dear Mr. Baize:

Preliminary contamination assessment activities at the Chicora Tank Farm in Charleston, South Carolina were initiated on 27 March 1990. The soil-gas survey and Tracer survey have been completed. This document is to serve as notification of intent to install eleven soil borings and monitoring wells at the Chicora Tank Farm site, as described in the Preliminary Contamination Plan.

The Chicora Tank Farm houses six subsurface fuel storage tanks (five 50,000 bbl and one 27,000 bbl) on a completely fenced site covering approximately 23 acres. The tanks are approximately 25 feet in height and are situated so that approximately one-half of each is below grade. The site was regraded following installation of the tanks so that each was covered with soil (3 - 5 feet thick at the Apex); each tank is now buried inside its own grassy hillock. Tank locations are shown on Figure 1.

A soil-gas survey was performed at the site from 27 February to 9 March 1990. Few detections above 10 ppm were noted. A map showing soil-gas sample locations and results is presented in Figure 2.

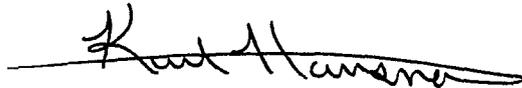
Eleven monitoring wells are to be installed throughout the site by a South Carolina certified drilling contractor. The monitoring wells will be advanced to a depth approximately seven feet below the existing water table. Borings will be advanced by a truck mounted drill rig using 6 1/4-inch O.D. hollow stem augers. Cuttings and soil samples retrieved from each borehole will be monitored in the field with a photo-ionization detector for organic vapors. Soil sampling will be performed in general accordance with ASTM D 1586. A standard 1.4-inch I.D., 2-inch O.D., split barrel stainless steel sampler will be used. The sampler will be first seated six inches into the ground to penetrate loose cuttings, and subsequently driven an additional foot with blows from a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler the final foot will be recorded. Soils, when removed from the sampler will be inspected for soil characteristics, which will be recorded on borehole-specific logs. All equipment coming in contact with the soil will be decontaminated by steam cleaning between boreholes.

Monitoring wells will be installed in each of the soil borings described above. Initially, auger flights used to drill each borehole will remain in place to prevent the boring walls from collapsing. Two-inch diameter schedule 40 PVC screen and riser pipe will be installed into each borehole. Approximately 10 feet of screen with 0.01 inch slots will be placed into each borehole such that approximately three feet will extend above and seven feet will extend below the

groundwater table at the time of drilling (screen and riser lengths may be adjusted if an unexpectedly high or low water table is encountered). Riser pipe will be added to the screen section to set each well either approximately three feet above the ground surface or flush mounted with the ground surface. A tremie pipe will be used to backfill the annular space adjacent to the screen section with a sand pack. The augers will be pulled up as sand is tremied into the annular space. This sand pack will extend approximately two feet above the screened interval. The one foot annular space interval directly above the sand pack will be filled with bentonite pellets and water to form an expansive seal. A 5% bentonite grout will be sequentially tremied into the annular space extending from the top of the bentonite seal to one foot below the ground surface. Quantities and depths of sand and bentonite fill may be smaller if the water table is extremely high. Portland cement will be poured into the annular space and filled to approximately six inches below grade. A cement pad, extending to a depth of six inches below grade and six inches beyond the borehole diameter will be installed around each well. The cement pad will serve to prevent infiltration between the surface casing and the borehole. Stick-up or flush-mounted protective casings will be placed over each well as an added security measure. The wells will be completed with a locking plastic cap placed on the riser pipe. Cross-sectional diagrams, showing monitoring well construction details are presented in Figures 3 and 4. Proposed monitoring well locations are shown on Figure 5.

Expeditious review of proposed monitoring well locations would be appreciated. Installation activities will begin upon receipt of DHEC's comments. Please feel free contact either myself or Mr. Reece Batten of SouthDiv if you have any questions or comments concerning this submittal.

Sincerely,

A handwritten signature in black ink, appearing to read "Kurt Hausner", written over a horizontal line.

Kurt D. Hausner
Geologist

cc: Reece Batten

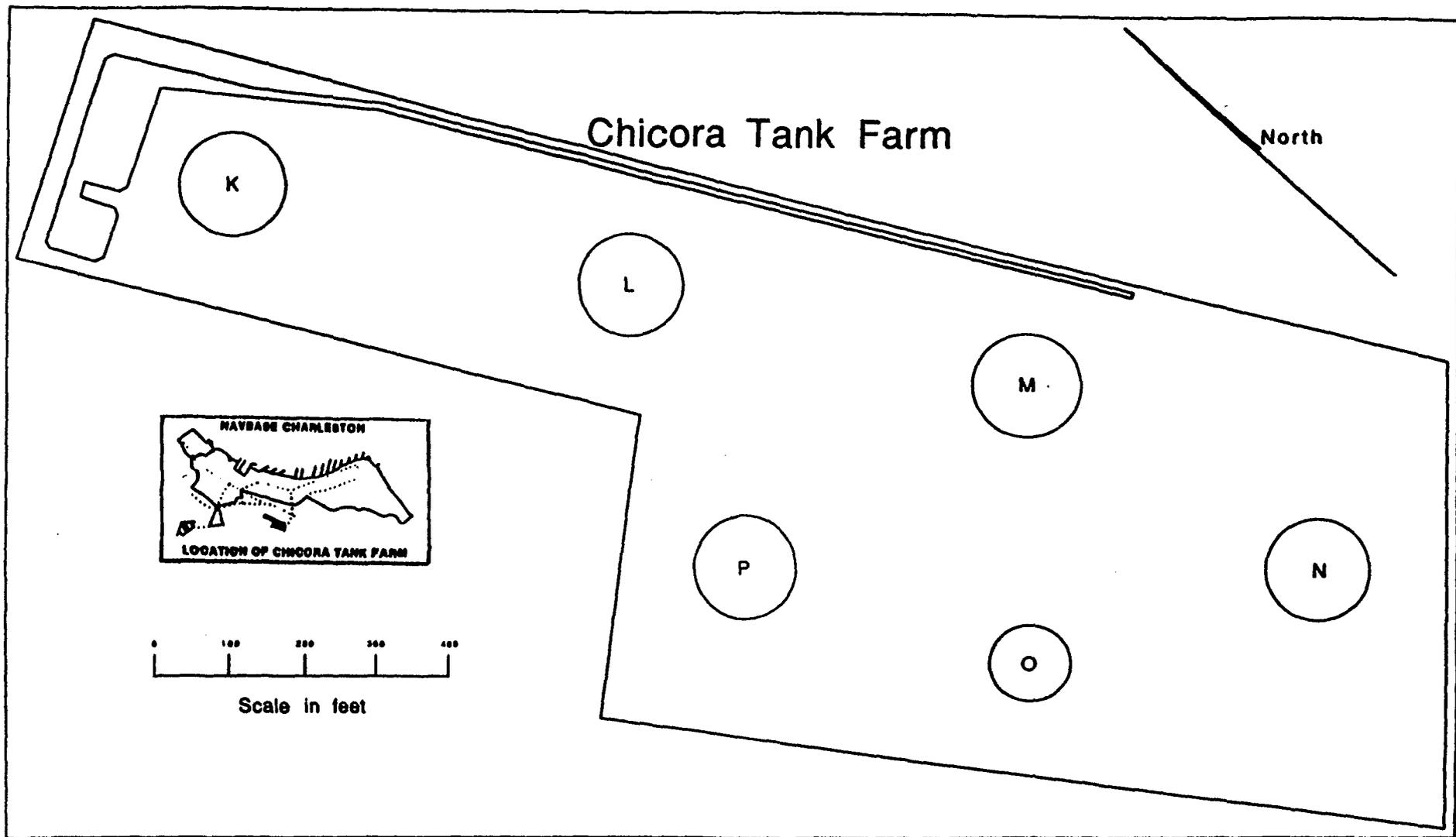


Figure 1. Site Map

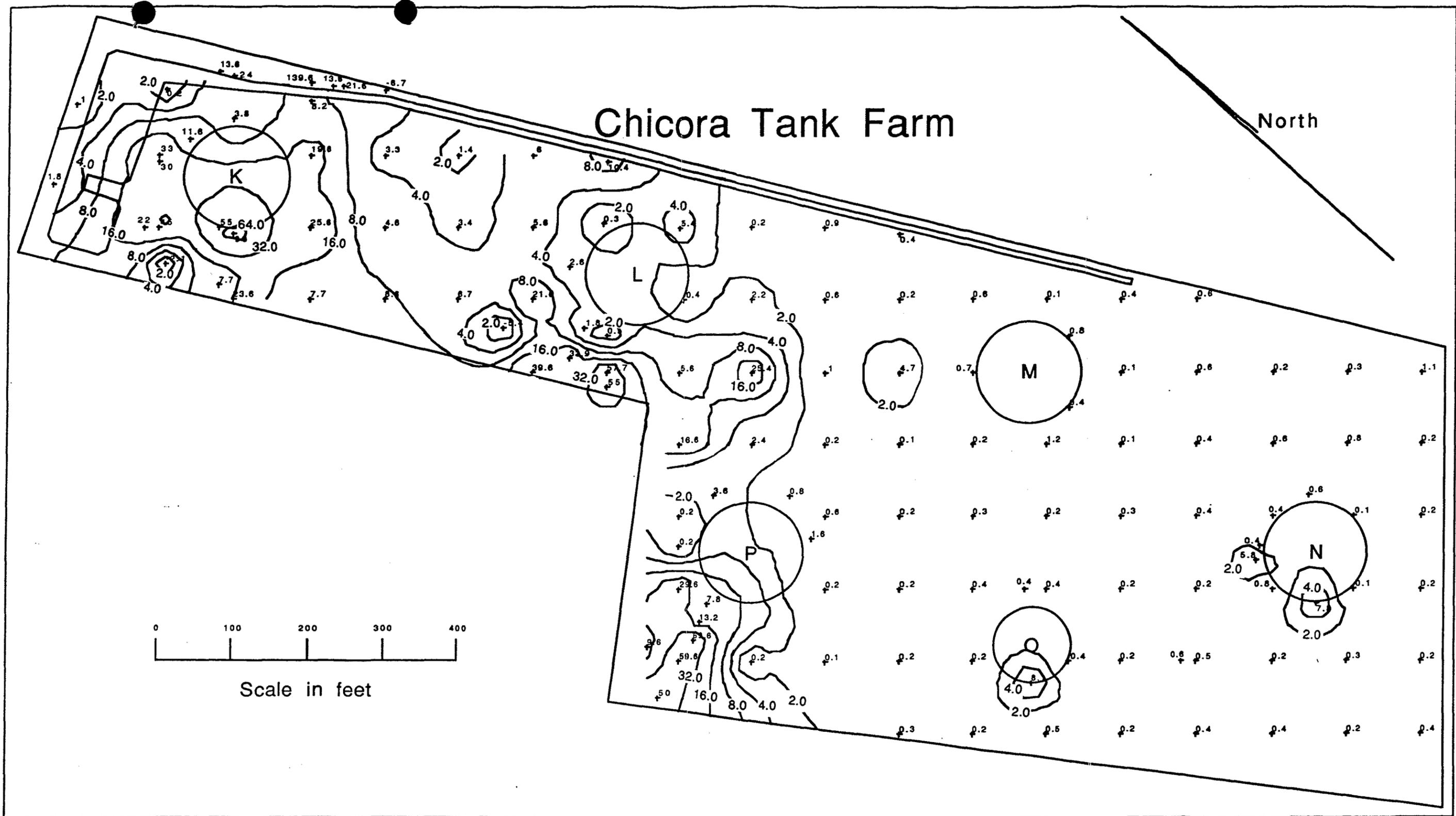


Figure 2. Organic Vapor Contour Map; Source: Soil-Gas Survey

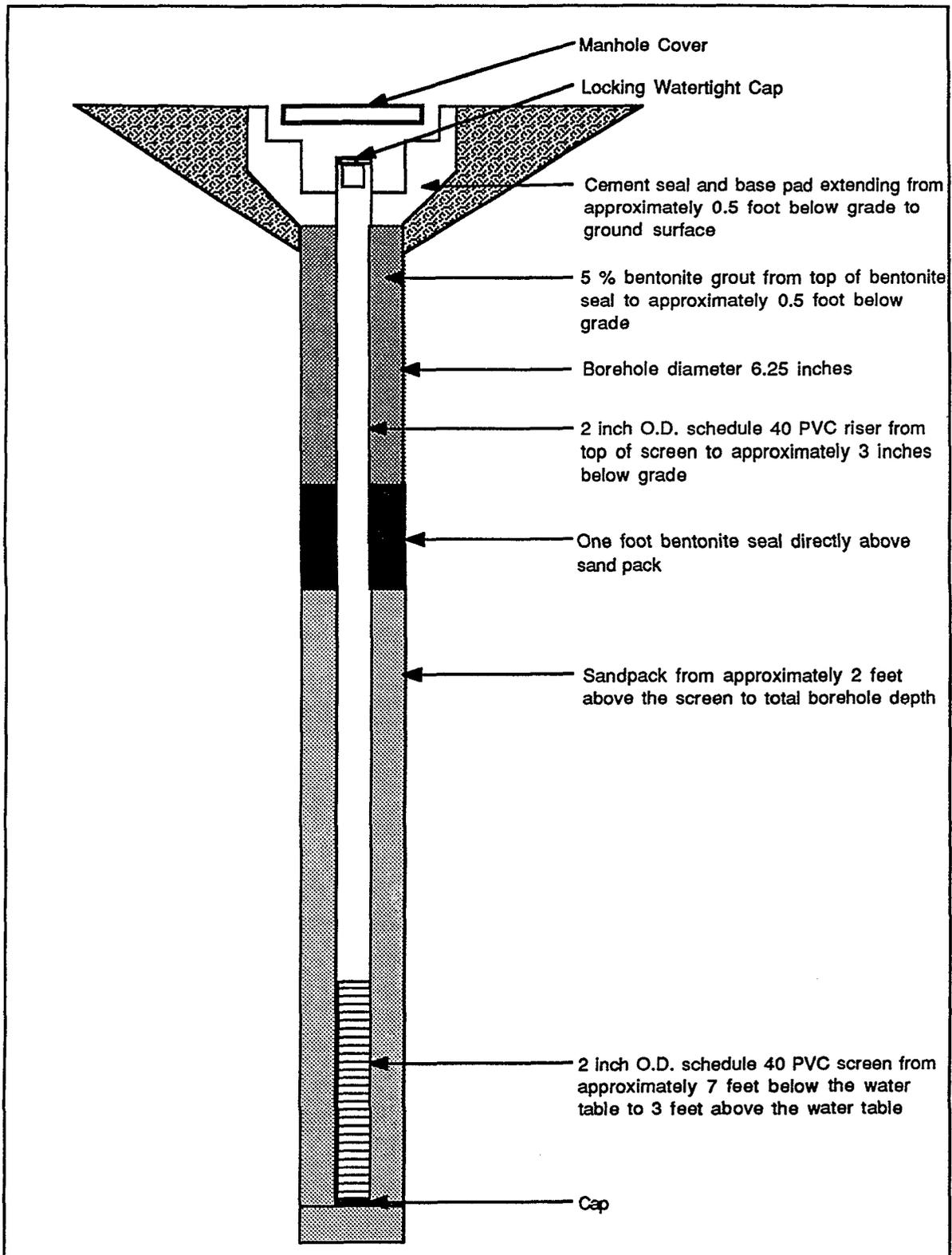


Figure 3. Flush mounted monitoring well schematic

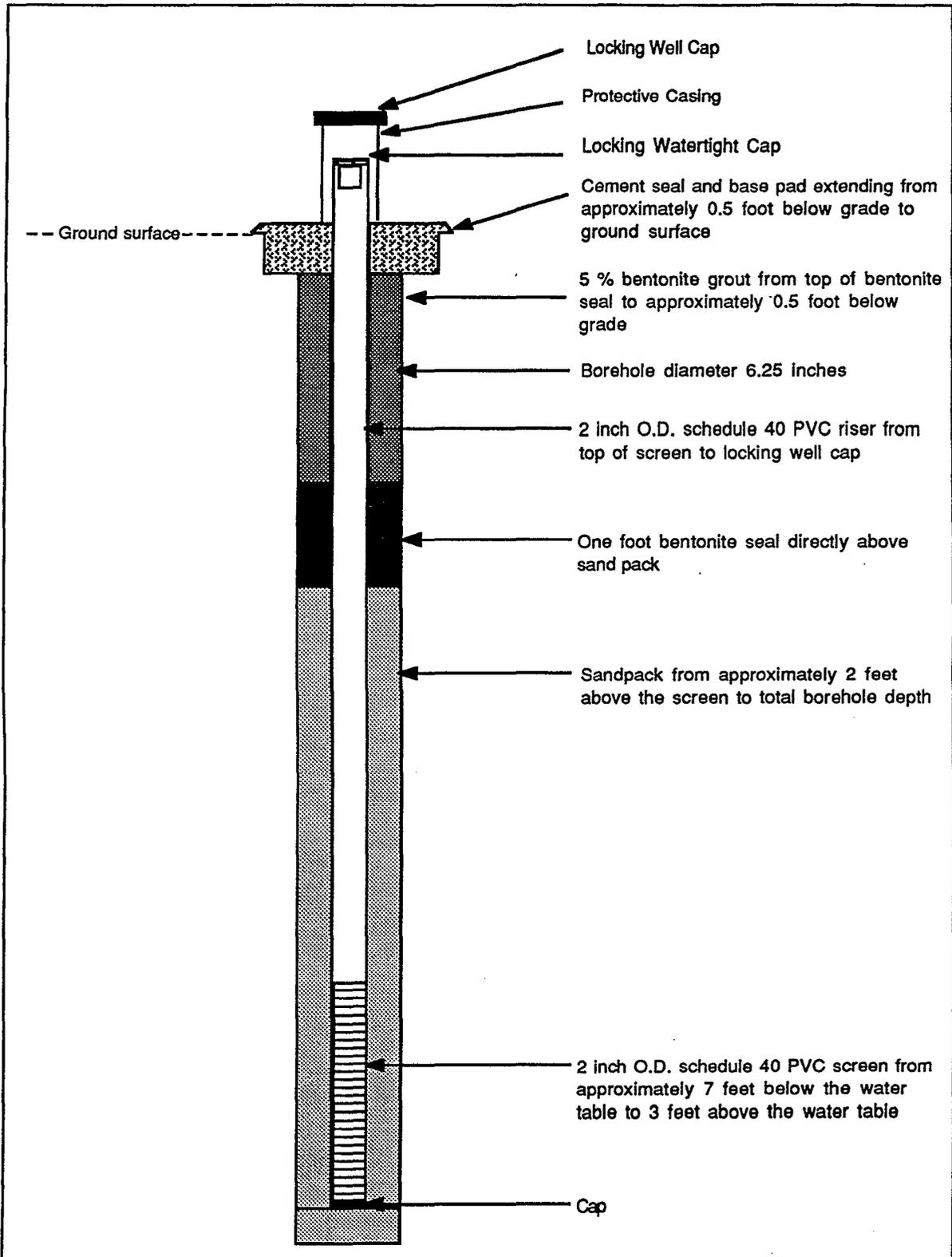


Figure 4. Stick-up monitoring well schematic

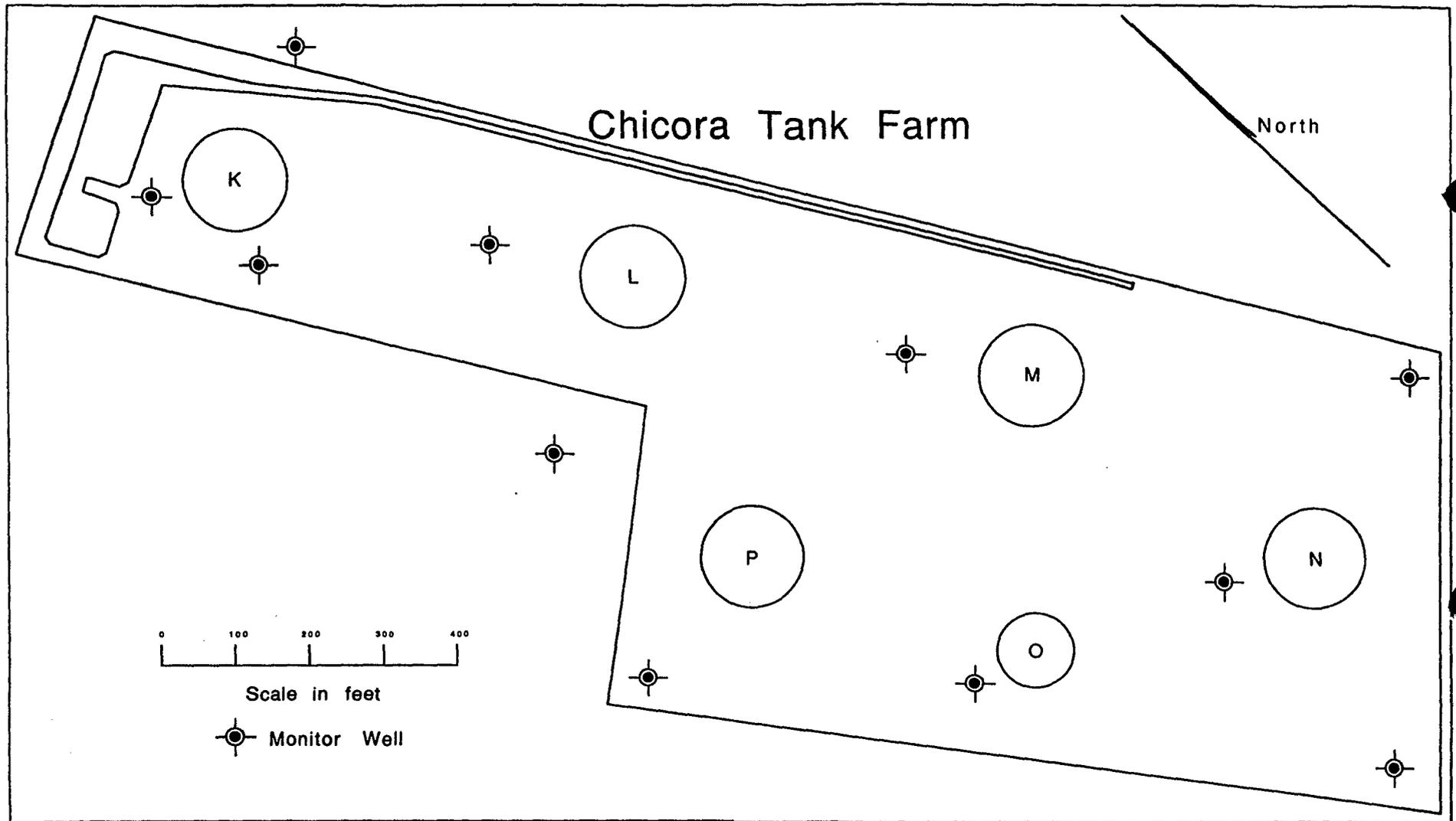


Figure 5. Proposed Monitoring Well Location Map