ATLANTIC TESTING LABORATORIES, LIMITED

Sustaining Member—N.Y.S. Society of Professional Engineers

Box 29
Canton, N.Y. 13617
(315) 386-4578

Box 356
Cicero, N.Y. 13039
(315) 699-5281

February 26, 1986

Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254-9149

Attn: Mr. Richard D. Reardon

Re: Contract No. DACW33-85-D-0011
Delivery Order No. 0003
Aberjona River, Wells G & H Site
Woburn, MA

Gentlemen:

In accordance with Delivery Order No. 0003, dated 11 September 1985, attached is one copy of our final Engineering Report detailing the subsurface investigation at Woburn, MA.

By copy of this letter, we are also transmitting two copies of this report to the Chief of the Geotechnical Engineering Branch.

If you have any questions or comments, please do not hesitate to call.

Respectfully submitted,

Spencer F. Thew, P.E./L.S.
President

/smf

encs.

cc: Chief, Geotechnical Engineering Branch (2)

RECEIVED
MAR 7 1986

SECTION 1

SUBSURFACE INVESTIGATION
AND OBSERVATION WELL INSTALLATION
ABERJONA RIVER, WELLS G & H SITE
WOBURN, MA

CONTRACT DACW-33-85-D-0011
CONTRACTING OFFICER Edward D. Hammond, LTC, CE
28 JUNE 85

DELIVERY ORDER NO. 0003
SEPTEMBER 11, 1985

PREPARED FOR: Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254-9149

PREPARED BY: Paul M. Fisher, P.E.
Theresa A. Beddoe, Staff Hydrogeologist
Atlantic Testing Laboratories, Limited
P. O. Box 29
Canton, NY 13617

ATL Project No. CD002-11-85

December 2, 1985

SECTION 2

SECTION 1 Title Page

SECTION 2 Table of Contents

SECTION 3 Scope of Investigation
- a. Delivery Order
- b. Project Site
- c. Purpose
- d. Scope of Work

SECTION 4 Quality Control
- a. General Certification Statement
- b. Records Taken
- c. Equipment Used
- d. Procedures

SECTION 5 Summary of Daily Activities and Telephone Logs
- Table I Summary of Activities
- Table II Summary of Telephone and On Site Conversations

SECTION 6 Chain of Custody Logs

SECTION 7 Safety Reports

SECTION 8 Field Inspectors Logs
- a. Figure 1 - General Project Map (Boston)
- b. Figure 2 - Site Location Map (Woburn)
- c. Figure 3 - Cluster Location Plan
- d. Figure 4 - Boring Location Plan, North
- e. Figure 5 - Boring Location Plan, South
- f. Table III - Summary of Well Installation
- g. Drilling and Well Installation Logs (FD-85-1 thru FD-85-34)

SECTION 9 Other Records Taken

SECTION 3

SCOPE OF INVESTIGATION

a. DELIVERY ORDER No. 0003

CHECKED BOX APPLIES: [X] ORDER FOR SUPPLIES OR SERVICES [ ] REQUEST FOR QUOTATIONS NO.

RETURN COPY(IES) OF THIS QUOTE BY

(THIS IS NOT AN ORDER See DD Form 1155r)

PAGE 1 OF 2

5 CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REG 1 DO

1 CONTRACT/PURCHASE ORDER NO: DACW33-85-D-0011

2 DELIVERY ORDER NO: 0003

3 DATE OF ORDER: 85 SEP 11

4 REQUISITION/PURCH REQUEST NO: GEB 85-90

6 ISSUED BY: Dept. of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254 9149
Buyer/Symbol: Douglas/NEDSD-P Phone: 617-647-8415

7 ADMINISTERED BY (If other than 6)

8 DELIVERY FOB: [X] DEST [ ] OTHER (See Schedule if other)

9 CONTRACTOR/QUOTER: Atlantic Testing Laboratories, Inc.
P.O. Box 29
Canton, NY 13617

10 DELIVER TO FOB POINT BY: In accordance with para 7 of Scope of Work

11 CHECK IF BUSINESS IS: [X] SMALL [ ] SMALL DISADVANTAGED [ ] WOMEN-OWNED

12 DISCOUNT TERMS: NET

13 MAIL INVOICES TO: Finance & Accounting Officer at Issuing Office

14 Service For:
U.S. Army Engineer Division, New England
Engineering Division
424 Trapelo Road
Waltham, MA 02254-9149

15 PAYMENT WILL BE MADE BY: Finance & Accounting Officer at Issuing Office

MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER

16 TYPE OF ORDER

DELIVERY [X] This delivery order is subject to instructions contained on this side of form only and is issued in accordance with and subject to terms and conditions of above numbered contract.

PURCHASE [ ] Reference your furnish the following on terms specified herein, including, for U.S. purchases.

General Provisions of Purchase Order on DD Form 1155r (EXCEPT CLAUSE NO. 12 APPLIES ONLY IF THIS BOX [ ] IS CHECKED, AND NO. 14 IF THIS BOX [ ] IS CHECKED), special provisions ; and delivery as indicated. This purchase is negotiated under authority of 10 USC 2304(a)(3) or as specified in the schedule if within the U.S., its possessions or Puerto Rico; if otherwise under 2304(a)(6)

[ ] If checked, Additional General Provisions apply. Supplier shall sign "Acceptance" on DD Form 1155r and return copies

17 ACCOUNTING AND APPROPRIATION DATA/LOCAL USE
96X3122 Construction General
BZ6223821500000 (MC)

SB(1)&(4
ED-Blair
SID/ln

18 ITEM NO	19 SCHEDULE OF SUPPLIES/SERVICES	20 QUANTITY ORDERED/ ACCEPTED*	21 UNIT	22 UNIT PRICE	23 AMOUNT
	Furnish necessary Services and equipment for observation well installation at Woburn MA, Aberjona River Well G & H Site, in accordance with the attached Scope of Work.	APPROX.			ESTIMATED
1.2	Geotechnical Inspector	356	HR	$ 40.00	$14,240.00
1.4	Mileage from Waltham, MA & Return	1980	MI	.35	693.00

* If quantity accepted by the Government is same as quantity ordered, indicate by √ mark. If different, enter actual quantity accepted below quantity ordered and encircle

24 UNITED STATES OF AMERICA
BY: Edward D. Hammond LTC, CE
Deputy Division Engineer
CONTRACTING/ORDERING OFFICER

25 TOTAL: $107,134.20

29 DIFFERENCES

26 QUANTITY IN COLUMN 20 HAS BEEN: [ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

DATE SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

27 SHIP. NO. [ ] PARTIAL [ ] FINAL

28 D.O VOUCHER NO.

30 INITIALS

32 PAID BY

33 AMOUNT VERIFIED CORRECT FOR

31 PAYMENT [ ] COMPLETE [ ] PARTIAL [ ] FINAL

34 CHECK NUMBER

36 I certify this account is correct and proper for payment

DATE SIGNATURE AND TITLE OF CERTIFYING OFFICER

35 BILL OF LADING NO

37 RECEIVED AT | 38 RECEIVED BY | 39 DATE RECEIVED | 40 TOTAL CONTAINERS | 41 S/R ACCOUNT NUMBER | 42 S/R VOUCHER NO.

DD FORM 1 SEP 87 1155 PREVIOUS EDITION WILL BE USED UNTIL EXHAUSTED.

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED Order No. 0003(DACW33-85-D-0011	PAGE 2 OF 2 PAGES

NAME OF OFFEROR OR CONTRACTOR
Atlantic Testing Laboratories, Inc.

ITEM NO.	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
2.1	Geotechnical Report	1	JOB	60% of 1.2	$8,544.00
6.1	Mobilization & Demobilization	2	JOB	700.00	1,400.00
6.2	Mileage from/to Waltham, MA	88	MI	1.15	101.20
6.5	Standby Time/On Site Moves	192	HR	75.00	14,400.00
12.3	Hollow Stem Auger, 4" ID	1300	LF	22.00	28,600.00
13.1	0-30 foot depth	36	EA	13.00	468.00
13.2	31-50 foot depth	18	LF	16.00	288.00
13.3	51-100 foot depth	24	EA	20.00	480.00
18.1	BX, NX Size	390	LF	18.00	7,020.00
19.6	Pipe (4"I.D., ¼" wall)	300	LF	18.00	5,400.00
24.3	Open-end type, 3" diameter PVC, 0-50 foot depth	1000	LF	9.50	9,500.00
24.4	Open-end type, 3" diameter PVC, over 50 foot depth	300	LF	12.00	3,600.00
30.1	Light Lumber for Shoring Excavation, ETC.	20	MBF	620.00	12,400.00

ATTACHMENT NO. 1

GEB REQUISITION NO. 85-90, DACW 33-85-D-0011

DELIVERY ORDER NO. 0003

INSTRUCTIONS FOR INSTALLING OBSERVATION WELLS

PROJECT: Installation of Observation Wells

SITE: Woburn Superfund Site, Aberjona River (Well G&H Site), Woburn, MA

PURPOSE: Observation wells are required by EPA for hydrologic modeling by others

1. SCOPE OF WORK

a. Install ten groups of three wells each (30 observation wells) at predetermined location shown approximately on Attachment 2. More accurate locations will be provided separately when received. The wells in each group shall be 5 feet apart and approximately 80-feet, 40-feet and 10-feet deep. The wells shall consist of 2 inch PVC pipe with slotted PVC tips constructed as shown on Attachment 3.

b. Range lines shall be established at the site by EPA for location purposes. The Contractor shall determine drill locations by taping along those range lines from set points on dry land.

c. Samples (all material recovered) shall be placed in jars, labeled, and visually classified. Custody of the samples shall be taken by EPA as directed by Mr. James Blair.

d. A geotechnical inspector shall be provided by the Contractor for quality control, safety, coordination, location of explorations, log holes and installing wells.

e. All work shall be within the limits of the (EPA obtained) permit.

2. SITE CONDITIONS

The well locations are in the Aberjona River, adjacent wetland area and on the river banks. Six observation well group sites are in a wetlands characterized by standing water, tall grasses and soft sediments in the uppermost zones. Extraordinary methods of access for equipment may be required in the wetlands. Four sites on dry land are routine access. Previous explorations and environmental testing by EPA reportedly indicates no contamination in the area of proposed observation wells.

3. RIGHTS OF ENTRY

A permit for this work has been obtained by EPA. Mr. James Blair shall be notified prior to any access to site.

4. COORDINATION

Mr. James Blair, Corps of Engineers, 617-647-8396, shall be contacted five days prior to start of work and at least once a day by the geotechnical inspector to report on how work is progressing and what types of materials are being encountered.

5. EXPLORATION NUMBERS

The observation well locations as shown on Attachment 2 and designated 1 through 30 shall be numbered individually FD-85-1 through FD-85-30 in order of their completion. The new numbers shall be indicated and shown on a plan of explorations.

6. GOVERNMENT REVIEW

The Government will review the draft submittal as well as the completed work. Subsequent to such review, the Contractor shall accomplish any corrections which may be directed as the result of the Government review.

7. COMPLETION SCHEDULE

Services under this delivery order shall start within seven calendar days after receipt of delivery order. Duration of field work is estimated to be nine weeks. The geotechnical report shall be submitted in draft format for review (by the Government), postmarked no later than seven calendar days after completion of field work. Government review will take approximately ten calendar days from receipt of draft report. The final geotechnical report shall be submitted postmarked no later than seven calendar days after receipt of draft report with Government comments.

8. QUALITY CONTROL

You will be held responsible for the quality of the maps submitted and for all damages caused the Government as a result of your negligence in the performance of any services furnished under the contract.

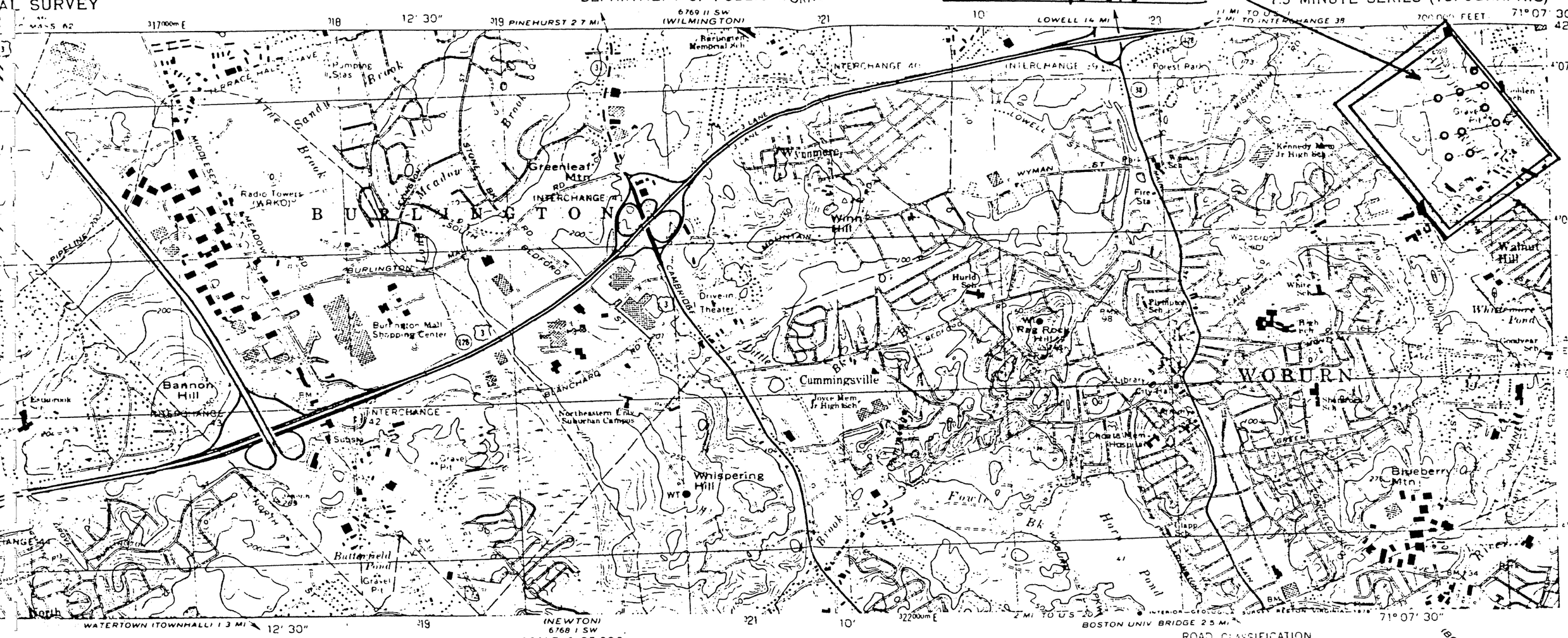
Although submissions required by your contract are technically reviewed by the Government, it is emphasized that your work must be prosecuted using proper internal controls and review procedures. The letter of transmittal for each submission which you make shall include a certification that the submission has been subjected to your own review and coordination procedures to insure (a) completeness for each discipline commensurate with the level of effort required for that submission, (b) elimination of conflicts, errors and omissions, and (c) the overall professional and technical accuracy of the submission. Documents which are significantly deficient in any of these areas will be returned to ou for correction and/or upgrading prior to our completing our review. Contract submission dates will not be extended if a resubmission of draft material is required for this reason.

STATES
THE INTERIOR
AL SURVEY

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

General Locations
O-Well Groups of 3

LEXINGTON QUADRANGLE
MASSACHUSETTS–MIDDLESEX CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



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ecked 1971

e system.

SCALE 1:25 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

MN GN
15° 267 MILS
1°29' 26 MILS

UTM GRID AND 1971 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

MASS

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U. S. Route
State Route

LEXINGTON, MASS.
N4222.5—W7107.5/7.5

1971

AMS 6768 I NW—SERIES V814

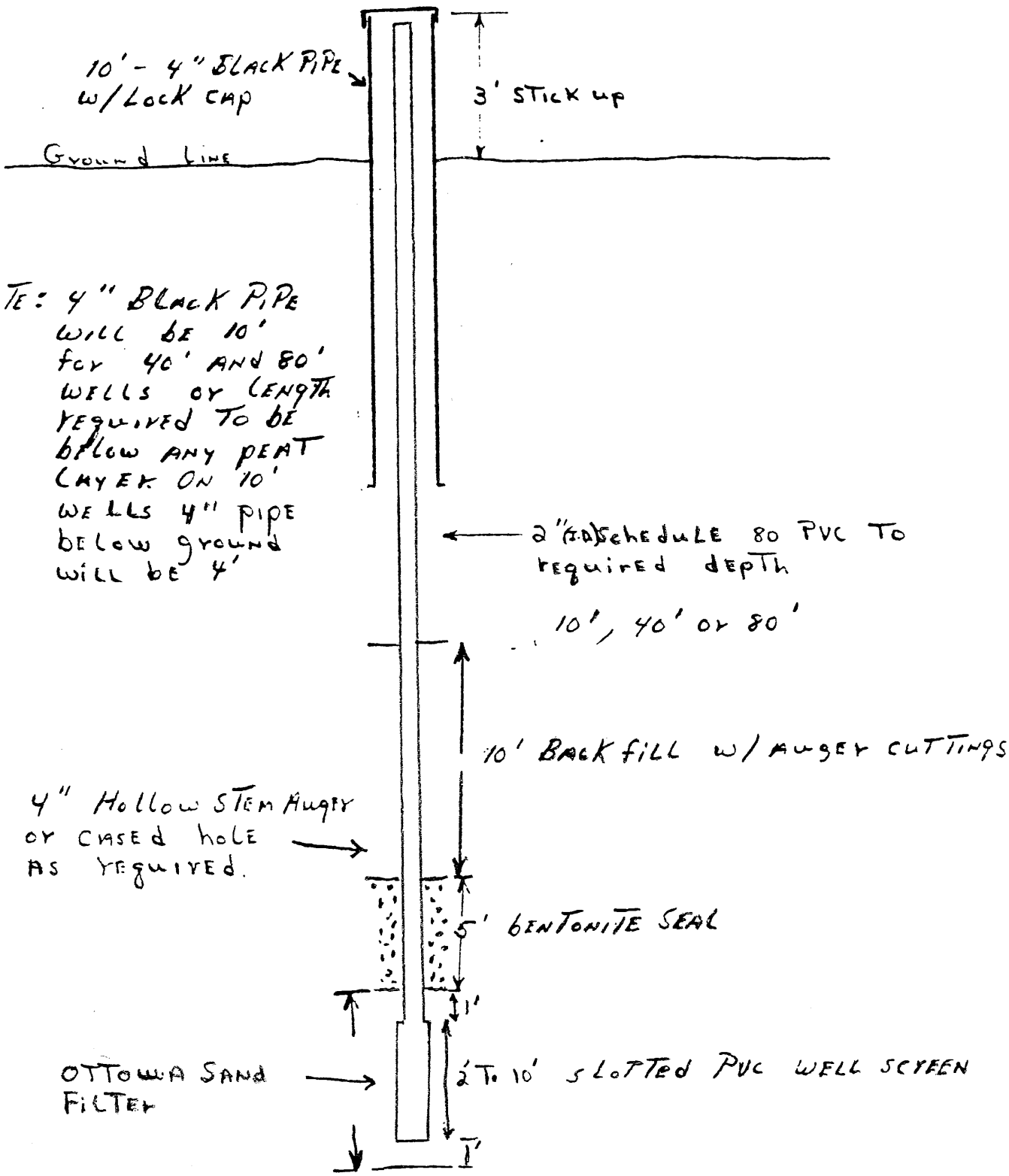
NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U S ARMY

PAGE ____

SUBJECT Woburn, MA Superfund Site, Aberjonia River (Well G&H S
COMPUTATION Typical Section
COMPUTED BY J.B CHECKED BY ____ DATE 5 Sept 85

Typical Observation Well Installation



b. Project Site:

The project site is located in the wetland and adjacent banks of the Aberjona River within the City of Woburn, MA. The investigation covered an area of roughly 20 acres on the north side of Salem Street. All work was within the limits of the permit retained by EPA. Three observation well clusters were located on the west side of the river and the remaining eight (8) clusters were located on the east side. Project, cluster and boring location drawings are provided in Section 8, Figures 1 thru 5.

c. Purpose:

The purpose of the exploration was to recover soil samples for soil classification and chemical analysis. Observation wells, in clusters, were placed at different depths as required by EPA and USGS. These wells will be used in a hydrologic model during the pumping of production Wells G and H. Chemical analysis, modeling and pumping is being performed by others. It is our understanding that the information collected will be used in a site contamination lawsuit.

d. Scope of Work:

The scope of work under this delivery order consisted of installation of 34 observation wells in eleven (11) clusters. Originally, ten (10) clusters consisting of three (3) wells each, had been planned, having nominal depths of 10 ft, 40 ft and 80 ft. An additional well in Cluster S-92, along with an additional Cluster (S-97) in the northeast section of the project, having three (3) wells, were requested and performed during the scheduled work.

General inspection, exploration and well installation instruction was provided by the Army Corps of Engineers, New England Division, through the contracted "Specifications for Services and Equipment Necessary for Conducting Geotechnical Exploratory Work, Various Locations in New England, and New York" and through Delivery Order No. 0003 which was included in Section 3a. Specific instructions and changes during the course of work were given verbally during on site and phone conversations through the EPA and/or USGS and were relayed to a Corps of Engineer representative for approval. All new instructions and changes can be found listed in Table I and Table II of Section 5, herewith.

Horizontal and vertical control of the boring locations were taken from a topographic map provided by EPA, as instructed. Therefore, location of borings shown on the enclosed figures and elevations noted on the soil boring logs are estimated. Survey of the installed wells will be performed at a later date by others.

Drilling, sampling and well installation at the referenced site was performed by Atlantic Testing Laboratories employees using Atlantic Testing Laboratories equipment. Only one set of soil boring logs was required per cluster. On Clusters S-87 (FD-85-4, 5 and 14), S-90 (FD-85-1, 3 and 15) and S-91 (FD-85-6, 7 and 8) soil boring log information was taken from two borings within the cluster. Each soil sample retrieved was chemically tested by NUS Corporation, on site, along with gasses coming from the well head. Soil samples from Clusters S-92 (FD-85-25, 27, 28 and 29) and S-95 (FD-85-26, 30 and 31) were split, with the second sample transmitted to Woodward-Clyde, as requested by EPA.

SECTION 4

QUALITY CONTROL

a. General Certification Statement:

I hereby certify, as a principal of Atlantic Testing Laboratories, Limited, that the reported records, equipment, and procedures were used to perform the subsurface exploration described herein. I also certify that the work was conducted in a professional manner and meets the requirements set forth in the delivery order. This report has been subject to my review and is both complete and technically accurate.

CERTIFIED 26 February 1986

Spencer F. Thew, P.E./L.S.
President

b. Records Taken:

Pertinent drilling procedures, sampling operations and soil classifications were noted on Forms NED 121, 58 and 58A provided for use by the Corps. Well installation data and installation sketch forms were also used. A completed series of logs for the total 34 wells installed along with location drawings and a summary are included in Section 8. Sample containers were marked in the format provided to us in the Contract.

Summary of daily activities and telephone conversations can be found in Tables I and II of Section 5. Also documented during the project operations were chain of custody logs and safety meeting reports, located in Sections 6 and 7, respectively.

c. Equipment Used:

All equipment and supplies were provided by Atlantic Testing Laboratories, Limited. A short description of the pertinent equipment and tools used during the exploration have been provided below:

- 2 track-mounted drill rigs, Model CME 45 and CME 55
- 2 drive hammers on each rig: 140 lbs for driving samplers, and 300 lbs for driving casing
- 1-3/8" I.D. split barrel soil samplers, 2.0 ft in length
- 5 ft core barrel which retrieves 2.06" dia. rock core
- other appurtenances to the exploration were 3" I.D. and 4" I.D. flush joint casing and 4-1/4" I.D. by 8" O.D. hollow stem augers

d. Procedures:

Sampling techniques as described in the Contract were followed throughout the project. Said techniques were common to the industry, and involved retrieving material using the "Standard Penetration Test". A split spoon was driven 1.5 ft, and the blows were recorded for every 0.5 ft advancement. Refusal was defined as 100 blows with no penetration or bouncing refusal. The bore hole was then advanced 5.0 feet before the next sample was taken. The bore hole was retained using thin-walled casing or hollow stem augers. A 5 ft core barrel was used in only one boring, FD-85-32, in order to sample and set a well in the shallow bedrock.

Samples were classified in the field immediately following retrieval. Classification was in accordance with ASTM D-2488. Representative samples were taken from each soil sampling run and placed in 16 oz. jars with hermetically sealed lids. Jars were labeled with the sticker provided to us by the Corps. A chain of custody log was maintained documenting custody of the samples between Atlantic Testing Laboratories, in the field, and NUS Corporation. EPA requested the samples be transmitted directly to NUS. A draft copy of the boring logs were transmitted, as they were acquired, to the Corps, NUS, EPA and USGS.

Depth of exploration, per cluster, was generally held at the planned 80 ft, with four exceptions. Depth changes, under the direction of EPA and USGS, were made in FD-85-2, 9, 15 and 32; and has been summarized in Table III, Section 8.

A 2" flush joint threaded PVC screen and riser were installed in each boring. Screen slots for all wells was .010 inch with a nominal 2 ft screen length. Some of the shallower wells were equipped with longer screens as indicated in Section 8. Control of each observation well screen depth was handled by EPA and USGS. Occasionally, a screen was set per the direction of the Atlantic Testing Laboratories Geotechnical Inspector on site if an EPA or USGS representative could not be contacted.

All well screens had No. 3 graded filter sand placed around them, with the exception of FD-85-32. This well was set in rock and filter sand was not used. Directly above the sand, a 5 ft or greater bentonite seal was installed. Natural on site material was used to backfill the remainder of the bore hole. A 4" diameter black iron surface casing was placed over the riser with a locked cap for protection.

A falling head test, as described in the Contract, was performed on each well installed. Because the screens were set in very permeable soils, reading time increments were shortened during the test. Data from said tests are included as part of the boring logs; see Section 8g.

SECTION 5

SUMMARY OF DAILY ACTIVITIES AND TELEPHONE LOGS

TABLE I

Summary of Activities

Date	Activity
30 Sept	Monday: Time on site 09:00-17:00 (given for ATL inspector) - Mobilize drill rigs and supply trucks to site. - On-site orientation meeting. - CME 45 set up and started drilling PZ-1, stopped due to flowing sands. - CME 45 set up on PZ-3, extended to 10 feet, set piezometer and surface casing. - CME 55 set up on PZ-2, extended to 30 feet, stopped due to flowing sands. - Stand by time, 6 hours for on-site moves.
1 Oct	Tuesday: Time on site 07:00-17:30 - Held safety meeting. - CME 45 set back up on PZ-1, extended to 40 feet, set piezometer and surface casing. - CME 45 set up on PZ-4, extended to 40 feet, set piezometer and surface casing (trace contaminant from 15-40 feet). - CME 55 extended PZ-2 to 45 feet, stopped due to flowing sands. - Stand by time, 2 hours for clearing, on-site moves and safety meeting.
2 Oct	Wednesday: Time on site 07:00-17:30 - CME 45 set up on PZ-5, drilled 10 feet, set piezometer and surface casing. - CME 45 set up on PZ-6, drilled 40 feet, set piezometer and surface casing. - CME 45 set up on PZ-7, drilled 10 feet, set piezometer and surface casing. - CME 55 drove 4" casing in PZ-2 to 70 feet. - Stand by time, 1 hour for clearing and on-site moves.
3 Oct	Thursday: Time on site 07:00-17:30 - CME 45 set up on PZ-8, advanced 4" casing to 30 feet, washing with water. - CME 55 drove 4" casing to 90 feet in PZ-2, roller washing without sampling, as instructed by EPA. - Stand by time, 4 hours due to heavy rain.
4 Oct	Friday: Time on site 07:00-17:30 - CME 45 extended PZ-8 to 50 feet, washing with a bentonite mix. - CME 55 extended PZ-2 to 105 feet with casing, roller washed to 110 feet, attempting to locate gravel horizon. Aberjona River flooded working area approximately 1 ft.
5 Oct	Saturday: Time on site 07:30-16:00 - CME 55 extended casing in PZ-2 to 110 feet. - Clear access to clusters S93 and S88. - Stand by time, 15 hours for clearing, planking and bridge building.

Date	Activity
7 Oct	Monday: Time on site 07:00-17:30 - USGS conducting seismic tests in line with clusters S-88, S-89, and S-90. - CME 45 advanced PZ-8 to 60 feet with difficulties in gravel and cobble horizon. - CME 55 drove casing in PZ-2 to 120 feet.
8 Oct	- Tuesday: Time on site 06:30-18:30 - Held safety meeting. - USGS seismic survey continued. - CME 45 continued advancing PZ-8, rewashing 30-60 feet, to 80 feet, set piezometer and surface casing. - CME 55 set PZ-2 at 118.5 feet, set surface casing. - Stand by time, 2.5 hours for safety meeting, setting planks and on site moves.
9 Oct	Wednesday: Time on site 06:30-18:30 - USGS seismic survey continued. - CME 45 moved to cluster S-88, set up on PZ-9, advanced boring to 55 feet, driving 4 inch casing. - CME 55 set up, drilled and set PZ-10 at 31 feet. - CME 55 set up on PZ-11, advanced to 15 feet, driving 4 inch casing. - Stand by time, 8.5 hours for on site moves and construction of plank bridging.
10 Oct	Thursday: Time on site 06:30-18:30 - USGS seismic survey continued. - Camera crew from NOVA on site filming drilling and seismic activities. Showing is scheduled for 18 February 1986. - CME 45 advanced PZ-9 to 82.5 feet, set piezometer and surface casing. - CME 55 advanced PZ-11 to 56 feet, set piezometer and surface casing; rig moved off swamp. - Stand by time, 0.5 hours for on site moves and planking.
11 Oct	Friday: Time on site 06:30-17:30 - CME 45 set up on PZ-12, cluster 88, drilled 10 feet, set piezometer and surface casing. - CME 45 set up on PZ-13, cluster 88, drilled 40 feet, set piezometer and surface casing. - CME 45 set up on PZ-15, cluster 90. - CME 55 set up on PZ-13, cluster 87, drilled with bentonite to 15 feet at which time the pump quit. Pulled casing and drilled to 40 feet with drive shoe. - Stand by time, 2 hours for planking and on site moves.
12 Oct	Saturday: Time on site 07:00-17:30 - Run falling head tests on PZ-9, 12, and 13 (cluster S-88), PZ-2, 10 and 11 (cluster S-89), and PZ-6, 7 and 8 (cluster S-91).

Date	Activity
14 Oct	Monday: Time on site 06:30-17:00 - Government holiday. - CME 45 advanced PZ-15, cluster S-90, to 40 feet, broke 140 pound hammer. - CME 55 advanced PZ-14 to 50 feet. - Stand by time, 1.5 hours for dismantling bridge.
15 Oct	Tuesday: Time on site 06:30-17:30 - Held safety meeting. - CME 45 had 140 pound hammer welded, advanced PZ-15 to 60 feet. - CME 55 advanced PZ-14 to 75 feet, trace contamination noted at 55-56.5 feet. - Stand by time, 1 hour for safety meeting.
16 Oct	Wednesday: Time on site 06:30-17:30 - USGS continued seismic survey. - CME 45 advanced PZ-15 to 67 feet at which time total casing string was pulled because it could not be advanced. Move rig about 4 feet south. - CME 55 advanced PZ-14 to 80 feet, set piezometer and surface casing. - CME 55 set up on PZ-10, cluster S-94. - Ran falling head test on PZ-4, 5 and 14, cluster S-87. - Stand by time, 1.5 hours for clearing and on site moves.
17 Oct	Thursday: Time on site 06:30-17:30 - CME 45 advanced new hole for PZ-15 to 27 feet where boulder nest was encountered. New location abandoned and rig set up on original boring location, advancing a spin shoe with mud to 10 feet. - CME 55 extended PZ-16 to 50 feet, trace contaminant in samples S-1 and S-2.
18 Oct	Friday: Time on site 07:00-15:30 - CME 45 advanced PZ-15 to 50 feet, stopped for 2 hours at 35-45 feet by NUS due to contaminated gas. - CME 55 advanced PZ-16 to 70 feet. - Stand by time, 2 hours for dissipation of contaminated gas.
21 Oct	Monday: Time on site 09:00-17:30 - Held safety meeting. - CME 45 advanced PZ-15 to 52 feet encountering considerable difficulty spinning 4 inch casing using drill mud in nested boulders. Stopped for 0.5 hours by NUS due to contaminated gas. - CME 55 advanced PZ-16 to 80 feet, set piezometer and surface casing. - Stand by time 1.5 hours for dissipation of contaminated gas and safety meeting.

Date	Activity
22 Oct	Tuesday: Time on site 06:30-18:00 - CME 45 advanced PZ-15 to 61 feet with 4 inch casing, and telescoped 3 inch casing to 70 feet. In boulder or bedrock from 67 to 70 feet. - CME 55 set up on PZ-17, drilled 15 feet, set piezometer and surface casing. - CME 55 set up on PZ-18, drilled 40 feet, set piezometer and surface casing. - CME 55 moved to cluster S-93. - Stand by time, 4 hours for on site moves.
23 Oct	Wednesday: Time on site 06:30-18:00 - CME 45 advanced PZ-15 to 74 feet, still in boulder or bedrock. Set piezometer and surface casing. - CME 55 cleared path through woods and moved equipment. - Stand by time 9.5 hours for on site moves and clearing.
24 Oct	Thursday: Time on site 06:30-18:00 - CME 45 move to cluster S-96 on the swamp. - CME 45 set up on PZ-20, advanced boring to 50 feet. - CME 55 set up on PZ-19, advanced boring to 55 feet. - Stand by time, 8 hours for on site moves.
25 Oct	Friday: Time on site 06:30-16:30 - CME 45 advanced PZ-20, cluster S-96, to 75 feet. - CME 55 advanced PZ-19, cluster S-93, to 65 feet. - Trace contaminant found in both borings by NUS.
26 Oct	Saturday: Time on site 8 hours - Rig maintenance.
27 Oct	Sunday: Time on site 3 hours - Build plank walkway. - Stand by time, 1.5 hours for planking walkway.
28 Oct	Monday: Time on site 09:00-17:00 - CME 45 advanced PZ-20 to 80 feet, set piezometer and surface casing.
29 Oct	Tuesday: Time on site 06:30-17:30 - Conduct safety meeting. - CME 45 finished PZ-20. - CME 45 set up on PZ-21, drilled 15 feet, set piezometer and surface casing. - CME 45 moved to PZ-22, drilled 40 feet, set piezometer and surface casing. - CME 45 moved off cluster S-96. - CME 55 finished PZ-19, drilling to 80 feet, setting piezometer and surface casing. - CME 55 moved to PZ-23, drilled 15 feet, set piezometer and surface casing. - CME 55 moved to PZ-24, drilled 45 feet, set piezometer and surface casing. - Stand by time, 0.5 hours for rig move.

Date	Activity
30 Oct	Wednesday: Time on site 06:30-17:00 - CME 45 moved to cluster S-92 on west side of river, drilled 36.5 feet of PZ-25. - CME 55 moved off cluster S-93 to west side of river. - Stand by time 12.5 hours for moves to west side of river.
31 Oct	Thursday: Time on site 06:30-17:00 - CME 45 drilled PZ-25 to 80 feet, set piezometer and surface casing. NUS found toxic gases coming from well head at 45 and 50 feet, and contaminants in soil samples at 55 and 60 feet, stopped rig for half hour at 55 feet. - CME 55 moved onto cluster S-95, advanced PZ-26 to 40 feet. NUS found toxic gases coming from well head at 20 feet. - Stand by time, 5.5 hours for planking, on site equipment move and work stoppage due to contaminants found by NUS.
1 Nov	Friday: Time on site 06:30-17:00 - CME 45 drilled, set piezometers and surface casing for three piezometers in cluster S-92: PZ-27 (15 feet), PZ-28 (40 feet), PZ-29 (57 feet). - CME 45 demobilized. - CME 55 advanced PZ-26 to 50 feet. - Stand by time, 4 hours for planking and on site moves for demobilization.
4 Nov	Monday: Time on site 09:00-15:30 - No advancement.
5 Nov	Tuesday: Time on site 06:30-15:00 - Conducted safety meeting. - CME 55 advanced PZ-26 to 60 feet. - Stand by time, 12 hours due to rain and flooding.
6 Nov	Wednesday: Time on site 07:00-10:00 - Stand by time, 12 hours due to flooding.
7 Nov	Thursday: Time on site 06:30-12:00 - Stand by time, 12 hours due to flooding.
8 Nov	Friday: Time on site 06:30-17:00 - CME 55 advanced PZ-26 to 80 feet, set piezometer at 75 feet due to deeper till layer.
9 Nov	Saturday: Time on site 06:30-17:00 - CME 55 set PZ-26 surface casing. - CME 55 moved to cluster S-95, drilled, set piezometer and surface casing for PZ-30 (15 feet) and PZ-31 (40 feet). - CME 55 moved to east side of river, onto cluster S-97. - Stand by time, 5 hours for on site moves.
10 Nov	Sunday: Time on site 07:00-17:00 - CME 55 moved to and advanced PZ-32 to 33.5 feet in soil then cored bedrock to 44 feet. - NUS noted contaminants in all PZ-32 soil samples. - Stand by time, 1.0 hour for set up on PZ-32.

11 Nov Monday: Time on site 06:30-17:30
- Conducted safety meeting.
- CME 55 set piezometer in PZ-32 at 43.5 feet and set surface casing.
- CME 55 moved to, drilled, set piezometers and surface casing for PZ-33 (25 feet) and PZ-34 (15 feet).
- CME 55 moved off cluster S-97.
- Conduct falling head tests on cluster S-97 (PZ-32, 33, and 34).
- Stand by time, 5.25 hours for on site moves, safety meeting and rain.

12 Nov Tuesday: Time on site 08:00-12:00
- Site clean up.
- Stand by time, 12 hours due to rain.

13 Nov Wednesday: Time on site 07:00-11:00
- Site clean up and demobilization.
- Stand by time, 6 hours for picking up planks

15 Nov Friday: Time on site 12:00-16:00
- Site clean up, removed 1200' of fire hose from swamp.
- Stand by time, 4 hours for site pick up.

18 Nov Monday: Time on site 10:30-16:00
- Adjusted planks and collected remaining equipment and trash.
- Stand by time, 5-1/2 hours for site pick up.

19 Nov Tuesday: Time on site 08:00-15:30
- Continue site clean up.
- Stand by time, 7 hours for site clean up.

22 Nov Friday: Time on site 10:30-14:30
- Adjusted and nailed planking to Clusters S-88 and S-93.
- Conducted safety meeting.
- Stand by time, 4 hours for planking.

TABLE II

Log of Telephone and On Site Conversations

Date	Conversation
30 Sept	Monday: - On site orientation - Jim Blair (Corps), Yuri Yatsevitch (Corps), Dave Delaney (EPA), Charles Myette (USGS), Nicholas Varoutsos (NUS). - Due to lack of survey, horizontal and vertical control cannot be noted. Use sketches only. - 7' x 4" surface casing can be used in dry locations with approximately 2 foot stick up. - All soil samples are to be jarred. - Do not use river water - hydrant water only. - 10 foot piezometers may be located between 40 and 80 foot piezometers.
1 Oct	Tuesday: On site - Dave Delaney (EPA) - Hard hats, glasses, rubber gloves and rubber boots required or sign off for insurance purposes. - Gave go ahead to use 4 inch drive casing as opposed to the specified 3 inch casing. - Use 30 foot length surface casing at PZ-2 and adjacent piezometers. On site - Charles Myette (USGS) - Use boring cuttings to backfill around piezometer casing. On site - Jim Blair (Corps) - Questioned need for second geotechnical inspector.
2 Oct	Wednesday: On site - Dave Delaney (EPA) - Set a 10 foot surface casing in peat instead of casing full depth of peat. On site - Dave Delaney (EPA) and Charles Myette (USGS) - Use conventional drill mud (not Revert) to extend holes. Last 10 feet, drill with hydrant water only and mud will be flushed out.
3 Oct	Thursday: On site - Dave Delaney (EPA) and Charles Myette (USGS) - Drive 4 inch casing and roller wash without sampling PZ-2 in an attempt to intersect a gravel layer
4 Oct	Friday: Telephone - Yuri Yatsevitch (Corps) - Job progress. - Extension of PZ-2 past 80 feet. Suggested to continue driving.

Date	Conversation
7 Oct	Monday: Telephone - Jim Blair (Corps) - Job progress. - Delaney's decision on 10 foot casing used in thick peat surface layer. - Exposure hours listed on safety reports. On site Charles Myette (USGS) - Approved use of bentonite slurry tremied in as a seal for piezometer.
8 Oct	Tuesday: Telephone - Jim Blair (Corps) - Job progress. - Will tremie bentonite for piezometer seal. - ATL needs to keep exposure time for Corps, USGS, EPA and NUS. On site - Jim Blair (Corps) - All piezometer cap lock keys will go to Dave Delaney (EPA). - Samples and one copy of the logs will be transferred to NUS or EPA. - One copy of the logs will be sent to the Corps (Blair). - Note on logs that hydrant water is being used for all exploration. - Concerned about use of safety equipment (shirts, gloves and eye glasses in particular).
9 Oct	Wednesday: On site - Charles Myette (USGS) - Seismic equipment would not be in ATL drillers' way; however, CME 45 ran over seismic monitoring cord.
10 Oct	Thursday: On site - Dave Delaney (EPA) - Remarks on safety equipment and damage to swamp. - Will attempt to gain permission to use a fire hydrant located on private property. Telephone - Jim Blair (Corps) - Damage to swamp. - Damage to seismic equipment. - Required safety equipment letter to be sent.
11 Oct	Friday: Telephone - Terry Wong (Corps) - Job progress. - NOVA's visit to site on 10 October 1985. On site - Charles Myette (USGS) - As little water as possible placed in piezometer during falling head tests.

Date	Conversation
15 Oct	Tuesday: On site - Dave Delaney (EPA), Charles Myette (USGS) - Approved building walkway with planks used at clusters S-88 and S-89. - The remainder of the 10 feet deep piezometers will be drilled to 15 feet with tips set at 14 feet. - Requested 4 instead of 2 copies of the boring logs. - Delaney gained permission to use Cummings Park's fire hydrant as long as ATL disconnects every night. - Delaney requested all soil samples be transmitted to NUS. - Noted water level readings during boring were not important. Telephone - Jim Blair (Corps) - Relayed all items discussed with Delaney and Myette. - Requested to hold work on plank walkway until Wednesday. - Noted only general information be divulged to outsiders. - Rain is included in stand by time. - Plank bridging pick up will be included in moving time.
16 Oct	Wednesday: Telephone - Jim Blair (Corps) - Approved construction of plank walkway using material used as bridging in swampy area. Nail together only. On site - Charles Myette (USGS) - Questioned PVC screen length but did not request changing it. - Requested piezometer tip in PZ-14 be set 0.5 foot deeper leaving 0.5 foot filter sand below tip instead of 1.0 foot in PZ-14.
17 Oct	Thursday: Telephone - John Hart (Corps) - Plank bridging. - Stand by time used. - Jim Blair on site later. On site - Dave Delaney (EPA), Jim Blair (Corps) - Clean up in area of clusters S-88 and S-89. - Planks that were used in bridging the swamp will be stacked two high and end to end, and extend from swamp edge, bridging river, on out to cluster S-88. - Informed Dave and Jim that Charles Myette (USGS) changed the remaining 10 foot deep wells to 15 feet with possible screen lengthening
18 Oct	Friday: On site - Charles Myette (USGS) - Requested 5 foot screens in the remainder of the shallow 15 foot piezometers.
21 Oct	Monday: Telephone - Jim Blair (left message) - Two hour (2.0) stand by time Friday due to gases from bore hole (ordered by NUS).

Date	Conversation
22 Oct	Tuesday: On site - David Delaney (EPA) - Remarked about gasoline spill on ground about 100 feet from Well G. - Can use glycol in pumps to prevent freezing, but not in hoses. Load hoses with a CaCl solution if needed. On site - Charles Myette (USGS) - Agreed that telescoping from 4 inch to 3 inch casing could be used in PZ-15, due to the bedrock or boulder encountered. Telephone - Jim Blair (Corps) - Job progress. - Stand by time due to gases coming from Bore Hole PZ-15.
23 Oct	Wednesday: Telephone - Jim Blair (left message) - Move of CME 55 Tuesday Telephone - Julio Olympio (USGS) - Approved setting PZ-15 tip at 67 feet. Telephone - Dave Delaney (EPA) - Confirmed setting PZ-15 tip at 67 feet.
24 Oct	Thursday: On site - Dave Delaney (EPA) - Asked if additional cluster could be installed if necessary. - No problems with move of CME 45 to cluster S-96. On site - Charles Myette (USGS) - Explained to him the setting of PZ-15 at 67 feet. On site - Jim Blair (Corps) and Ed O'Donnell (Corps) - Requested that both EPA and a City of Woburn representative approve clean up of work areas. - Transferred a copy of drilling logs for PZ-1 to 18 to Jim Blair. - Pointed out amount of moving time used during recent relocation of rigs onto swamp. - Mentioned EPA and USGS are considering an additional cluster.
28 Oct	Monday: Telephone - John Hart (Corps) - Jim Blair will be out for three weeks. - Job progress. - Possible extra piezometer cluster. - Report to John Hart or Paul L'Heureux from now until further notice.
29 Oct	Tuesday: On site - Dave Delaney (EPA) - Received final permission to enter and start drilling on the west side of the river. - Woodward-Clyde representative will observe our operation and half of all samples will be turned over to them through NUS.

Date	Conversation
30 Oct	Wednesday: Telephone - John Hart (left message) - Moving rigs to other side of river.
31 Oct	Thursday: Telephone - Terry Wong (Corps) and John Hart (Corps) - Progress report. On site - David Delaney (EPA) - Buried non-visible planks could be left.
1 Nov	Friday: Telephone - Paul L'Heureux (Corps) - Job progress. - CME 45 will be demobilized today. - Possible extra cluster for EPA and USGS. On site - Dave Delaney (EPA) - Requested an additional piezometer in cluster S-92 at approximately 60 feet.
4 Nov	Monday: Telephone - Terry Wong (Corps) - CME 45 was demobilized Friday. - Extra piezometer (PZ-28) was installed in cluster S-92 on Friday at 57 feet. - Possible extra cluster located in the northwest. - Clear the use of a third driller on site to be charged at 1/2 rig time where applicable.
5 Nov	Tuesday: Telephone - Paul L'Heureux (Corps) - Stand by time due to rain and flooding. - Additional cluster. On site - Charles Myette (USGS), Dave Delaney (EPA), Bob Ripley (Massachusetts Rifle Association). - Discussed piezometer cluster location on MRA property. - Confirmed 3 piezometers installed at cluster S-97 (proposed depth of 15, 40 and 80 feet).
6 Nov	Wednesday: Telephone - Paul L'Heureux (Corps) - Stand by time due to the rise of the river.
7 Nov	Thursday: Telephone - Paul L'Heureux (Corps) - No work today, stand by due to high water. Telephone - Dave Delaney (EPA) - No work today.
8 Nov	Friday: Telephone - Paul L'Heureux (Corps) - Progress report: stand by all yesterday. - Drilling Friday and over weekend.

Date	Conversation
8 Nov	Friday: Attempted telephone - Charles Myette or Julio Olympio (USGS) and Dave delaney (EPA) - no answer. - Change piezometer tip depth in PZ-26 from 79 feet to 75 feet due to till layer at depths greater than 75 feet. Telephone - Paul L'Heureux (Corps) - Job progress.
10 Nov	Sunday: On site - Dave Delaney (EPA) - Request 10 foot rock core of PZ-32. - Set depths for piezometer tips in cluster S-97.
12 Nov	Tuesday: On site - Charles Myette (USGS) - Discussed possible additional cluster. Telephone - Dave Delaney (EPA) - Discussed possible additional cluster. - Final decision by EPA was to demobilize. Telephone - Terry Wong (Corps) - Demobilization tomorrow.
13 Nov	Wednesday: Telephone - Terry Wong (Corps) - ATL's demobilization. - Final clean up scheduled when river subsides. Telephone - Dave Delaney (EPA) - not in - Will send final soil boring logs and keys to him by mail.
19 Nov	Tuesday: Telephone - Dave Delaney (EPA) - Mark piezometers in Clusters S-90, S-93, S-96. - Something clogging PZ-23. - Nail planks. Telephone - Terry Wong (Corps) - Clean up in progress. - Final meeting with Dave Delaney (EPA) set up for 11/22/85.
20 Nov	Wednesday: Telephone - Paul L'Heureux and Terry Wong (Corps) - Clean up status. - Piezometer installation sketches not required.
21 Nov	Thursday: Telephone - Terry Wong and Paul L'Heureux (Corps) - Meeting with Dave Delaney (EPA) on Friday, Nov. 22, 1985. - Finish clean up Friday, Nov. 22.

Date	Conversation
22 Nov	Friday: On site - Dave Delaney (EPA) - Town of Woburn Conservation Commission viewed the site and voted it unacceptable due to ruts by tracked drill rigs.
25 Nov	Monday: Telephone - Jim Blair (Corps) - Explained ATL clean up proceedings. - Final day, Friday, Nov. 22, on site. - Report has been started. - Woburn Conservation Commission rejection of clean up mentioned by Dave Delaney (EPA).
26 Nov	Tuesday: Telephone - Jim Blair (Corps) - Do not report to Commission or EPA, all calls and correspondence with Corps only. - Dave Delaney (EPA) will have to go through the Corps to acquire original logs. - Send letter addressing the Commission and EPA rejection. - Piezometer sketch must accompany logs.

SECTION 6

CHAIN OF CUSTODY LOGS

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CD-002

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELL G+H, WOBURN MA
DACW-33-85-D-0011, D.O. #003

ITEMS:

~~Tubes~~ 3 KEYS (#2207) TO PIEZO LOCK CAPS

~~Bottles~~ NOTE: TOTAL NUMBER OF KEYS (5), REMAINING

~~Jar Samples~~ TWO KEYS HELD BY ATL UNTIL

~~Core Boxes~~ COMPLETION OF JOB.

~~Sampling Logs~~ —

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	10/3/85, 0930	TO DAVE DELANEY (EPA)	[illegible]

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0011, D.O. #3

ITEMS:

Tubes 0

Bottles 0

Jar Samples 0

Core Boxes 0

Sampling Logs PZ 2, 6, 7, 8, 9, 10, 11, 12 + 13 (1 COPY EACH)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85 0900	10/17/85 1330	TO EPA DAVE DELANEY	[illegible]

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0511, D.O. #3

ITEMS:

Tubes: 0

Bottles: 0

Jar Samples: 5 BOXES; PZ-2 (SS-1-11), PZ-2 (SS-12-22), PZ-2 (SS 23-24) + PZ 8 (SS-1-8), PZ 6 (SS 1-8), PZ 9 (SS-1-13)

Core Boxes: 0

Sampling Logs: PZ-2, 6, 7, 8, 9, 10, 11, 12 + 13 (1 COPY EACH)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	10/15/85, 1600	TO NUS MARTHA MEYERS-LEE	Martha Meyers Lee 10-15-85

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELL G + H, WOBURN, MA
DACW-33-85-D-0011, D.O. #3

ITEMS:

Tubes 0

Bottles 0

Jar Samples 0

Core Boxes 0

Sampling Logs PZ 2 6 7 8 9 10 11 12 + 13 (1 COPY EACH)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	10/24/85 1500 HR	TO CORP JIM BLAIR	James T Blair

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0011, D.O. 003

ITEMS:

Tubes 0

Bottles 0

Jar Samples 0

Core Boxes 0

Sampling Logs FD-85-1, 3, 4, 5, 14, 15, 16, 17 + 18 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	10/24/85, 1500 HRS	To Corp JIM BLAIR	James T Blair

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-B-0011, D.O. 005

ITEMS:

Tubes: 0

Bottles: 0

5 BOXES Jar Samples: FD-85-1 (S-1 → S-8), FD-85-4 (S-1 → S-8), FD-85-14 (S-1 – S-9) FD-85-16 (S-1 → S-12), FD-85-16 (S-13 → S-18) AND FD-85-15 (S-1 → S-5)

Core Boxes: 0

Sampling Logs: FD-85-1, 3, 4, 5, 14, 15, 16, 17 + 18 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	10/24/85, 1500 HRS	TO NUS JOHN PANARO	John M. Panaro

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELL G+H, WOBURN, MA
DACW-33-85-D-0011, D.O. #3

ITEMS:

Tubes 0

Bottles 0

Jar Samples 0

Core Boxes 0

Sampling Logs PZ-2,6,7,8,9,10,11,12 & 13 (1 COPY EACH)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	10/15/85 1700	TO USGS CHARLES MYETTE	[signature]

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0011, D.O. 003

ITEMS:

Tubes 0

Bottles 0

Jar Samples 0

Core Boxes 0

Sampling Logs FD-85-1, 3, 4, 5, 14, 15, 16, 17 + 18 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	10/28/85, 1440	To EPA DAVE DELANEY	[illegible]

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0011, D.O. 003

ITEMS:

Tubes 0

Bottles 0

Jar Samples 0

Core Boxes 0

Sampling Logs FD-85-1, 3, 4, 5, 14, 15, 16, 17 + 18 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	10/30/85, 1048	To USGS CHUCK MYETTE	[illegible]

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WBURN, MA
DACW-33-85-D-0011, D.O. #003

ITEMS:

Tubes NONE

Bottles NONE

Jar Samples NONE

Core Boxes NONE

Sampling Logs FD-85-19, 20, 21, 22, 23 + 24 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	11/1/85, 0900	FOR EPA DAVE DALAMAR	[illegible]

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0011, D.O. #003

ITEMS:

Tubes NONE

Bottles NONE

Jar Samples NONE

Core Boxes NONE

Sampling Logs FD-85-19, 20, 21, 22, 23 + 24 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	10/31/85, 1600	FOR USGS CHUCK MYETTE	C. Myette

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0011, D.O. #003

ITEMS:

Tubes: NONE

Bottles: NONE

Jar Samples: 3 BOXES, FD-85-19 (S-1 → S-16), FD-85-20 (S-1 → S-16)

Core Boxes: NONE

Sampling Logs: FD-85-19, 20, 21, 22, 23 + 24 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	10/31/85, 1400	FOR NUS STEFAN SOKEL	Stefan Sokol

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0011, D.O. #003

ITEMS:

Tubes NONE

Bottles NONE

Jar Samples NONE

Core Boxes NONE

Sampling Logs FD-85-19, 20, 21, 22, 23 + 24 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	11/1/85, 1230 (MAILED)	FOR CORA JIM BLAIR	[signature] FOR J. BLAIR

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0011 D.O. #3

ITEMS:

Tubes: NONE

Bottles: (40cc) SAME SOIL AS NOTE BELOW
SAMPLES 2 OF 2

(2 BOXES) Jar Samples: FD-85-25 (SS-1 → SS-16), FD-85-26 (SS-1 → SS-17)

Core Boxes: NONE

Sampling Logs: NONE

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	11/9/85, 1300	FOR NUS KEVIN ONEILL	Kevin O'Neill
11/9/85, 1300	11/9/85, 1300	FOR WOODWARD-CLYDE GLENN WYGANT	Glenn Wygant

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0011, DO #3

ITEMS:

Tubes: NONE

Bottles: NONE

(3 BOXES) Jar Samples: SAMPLES 1 OF 2 FO-85-25 (SS-1 → SS-16) + FO-85-26 (SS-1 → SS-17)

Core Boxes: NONE

Sampling Logs: NONE

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	11/9/85, 1300	FOR NUS KEVIN ONEIL	Kevin O'Neill

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G&H, WOBURN, MA
DACW-33-85-D-1011, D.O. #3

ITEMS:

Tubes: NONE

Bottles: NONE

Jar Samples: NONE

Core Boxes: NONE

Sampling Logs: FD-85-25 THRU 34 (COPY)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	11/12/85, 1000	TO CORP. BY MAIL PAUL L'HEUREUX	Paul Fisher (ATL) (FOR L'HEUREUX)

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G+H, WOBURN, MA
DACW-33-85-D-0011, D.O. #3

ITEMS:

Tubes: NONE

Bottles: NONE

(1 Box) Jar Samples: FO-85-32 (SS-1 → SS-8), FO-85-33 (SS-1 → SS-2)

Core Boxes: 1 Box PZ-32 (33.5' → 44')

Sampling Logs: FO-85-25 THRU 34 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	11/12/85, 1000	FOR NUS Dennis Dumont	Dennis Dumont

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G&H, WOBURN, MA
DACW-33-85-D-0011, D.O. #3

ITEMS:

Tubes NONE

Bottles NONE

Jar Samples NONE

Core Boxes NONE

Sampling Logs FD-85-25 THRU 34 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	11/12/85 1730	FOR USGS CHUCK MYETTE	[illegible]

ATLANTIC TESTING LABORATORIES, Limited

VIA PAUL FISHER

CHAIN OF CUSTODY LOG

PROJECT: ABERJONA RIVER, WELLS G&H, WOBURN, MA
DACW-33-85-D-0011, D.O. #3

ITEMS:

Tubes NONE

Bottles NONE

Jar Samples NONE

Core Boxes NONE

Sampling Logs FD-85-25 THRU 34 (copy)

Date & Time Received	Date & Time Transferred	Comments	Custodian
9/30/85, 0900	11/18/85, 1400	FOR EPA DAVE DELANEY	[signature] FOR DELANEY

ALSO: 20 KEYS TO WELL CAP LOCKS (#2207)

NOTE: ITEM LISTED ABOVE WERE MAILED TO DAVE DELANEY ON 11/18/85

FINAL DISPOSITION OF KEYS TO WELL CAP LOCKS (#2207)
AT START OF JOB, ATL HAD 5 (FIVE).
18 (EIGHTEEN) ADDITIONAL KEYS WERE BROUGHT BY ATL FROM CANTON TO WOBURN DURING JOB.
TOTAL OF 23 KEYS.
3 TRANSFERRED TO DAVE DELANEY (EPA) ON 10/3/85
20 TRANSFERRED TO DAVE DELANEY (EPA) BY MAIL ON 11/18/85

SECTION 7

SAFETY REPORTS

WEEKLY SAFETY MEETING

NEDSO

Date held 10/1/85

THRU: Area Engineer, NEW ENGLAND Area

Time 0900

TO: Safety Office, NED

1. Weekly safety meeting was held this date for the following personnel:

DACW 53-85-D-0011

Contract No. 0003 Contractor ATLANTIC TESTING LAB

Conducted By PAUL FISHER All personnel present (Contr) 7
(Sub) 2
(Govt) 1

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

X Accident Prevention Plan YOUR JUDGEMENT

X Individual Protective Equipment - HARD HATS

X Prevention of Falls - DERICKS

X Back Injury, Safe Lifting Techniques -

X Fire Prevention - FIRE EXTINGUISHERS, FLAMABLE GAS + LIQUID IN CONTAMINATED ORGANIC SOILS

X Sanitation, First Aid, Waste Disposal - KITS IN ALL ATL RIGS + SERVICE TRUCK

X Tripping Hazards - trash, hose, nails in lumber -

X Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

X Equipment Inspection & Maintenance (Zero Defects) -

Hoisting Equipment - DRILL RIG

X Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

X Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting - DRILL HOLE LOCATION OK THRU CORP + EPA.

Excavations -

X Loose Rock and Steep Slopes - BAD FOOTING IN SWAMP AREA

Explosives -

Water Safety -

X Toxic materials - hazards, MSDS, respiratory, ventilation - (IN SOILS) HANS KRAHN (NUS)
GAVE TALK RE: TOXIC TESTS ON SAMPLES, (50-100 PREVIOUS TESTS IN WELL AREA OK FOR LOW LEVEL

Other - FIRST AID COURSE
EMERGENCY PHONE No. + LOCATION ON NEAREST PHONE + HOSPITAL

Prepared by PAUL FISHER Title ENG

2. Forwarded.

Signature _____
Resident Engineer

CF:

NO WORK PERFORMED ON SITE LAST WEEK BY ATL

NED APR FL 251

WEEKLY SAFETY MEETING

NEDSO

Date held 10/8/85

THRU: Area Engineer, NEW ENGLAND Area

Time 0700

TO: Safety Office, NED

1. Weekly safety meeting was held this date for the following personnel:

Contract No. DACW33-85-0-0011 D.O. 003 Contractor ATLANTIC TESTING LAB

Conducted By PAUL FISHER All personnel present (Contr) 6
(Sub) ____
(Govt) ____

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: ____

X Accident Prevention Plan

X Individual Protective Equipment -

Prevention of Falls -

Back Injury, Safe Lifting Techniques -

X Fire Prevention - DISCUSSED INDIVIDUAL PASS EXPERIENCES RE: CAUSES & ACTIONS

X Sanitation, First Aid, Waste Disposal - CHOKING

Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

Equipment Inspection & Maintenance (Zero Defects) -

X Hoisting Equipment - DRILL RIG CABLE HOISTS

Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

X Welding, Cutting - WITH REGARDS TO FIRES

Excavations -

Loose Rock and Steep Slopes -

X Explosives - RE: ON GOING SEISMIC

Water Safety -

X Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by PAUL FISHER Title ENG.

2. Forwarded.

EXPOSURE TIME (9/30/85 TO 10/6/85)

Signature [signature]
Resident Engineer

CF: ATL 333.5 HRS (INCLUDING SAT WORK 32 HRS), NO WORK SUN
CORP 20 HRS NO WORK SAT OR SUN
OTHERS 112.5 " " " " "

NED FL 251 APR 82

WEEKLY SAFETY MEETING

NEDSO

Date held 10/15/85

THRU: Area Engineer, NEW ENGLAND Area

Time 0700

TO: Safety Office, NED

1. Weekly safety meeting was held this date for the following personnel:

Contract No. DACW-33-85-D0011 DO #3

Contractor ATLANTIC TESTING LAB

Conducted By PAUL FISHER

All personnel present (Contr) 6
(Sub)
(Govt) 1

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

Accident Prevention Plan

X Individual Protective Equipment - HARD HATS, GLOVES, BOOTS, EYE PROTECTION

Prevention of Falls -

Back Injury, Safe Lifting Techniques -

X Fire Prevention - GASOLINE, NEW GAS CAN

Sanitation, First Aid, Waste Disposal -

X Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

X Equipment Inspection & Maintenance (Zero Defects) - WELDS SHOULD BE CHECKED FOR CRACKS

X Hoisting Equipment - NEW CABLE

X Ropes, Hooks, Chains and Slings - REMOVED 140# HAMMER HOOK

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

Loose Rock and Steep Slopes -

Explosives -

Water Safety -

X Toxic materials - hazards, MSDS, respiratory, ventilation - CONTAMINENTS IN SAMPLES

Other - WORKING IN RAIN

Prepared by FISHER Title EIS

2. Forwarded.

EXPOSURE TIME FOR LAST WEEK

Signature _____
Resident Engineer

CF: ATL 296.5 HRS (INCLUDES 16 HR ON SAT)
CORP 2 HRS
OTHERS 105.5 HRS

NO OTHER WORK ON SAT OR SUN. EXCEPT THAT NOTED.

NED FL APR 82 251

WEEKLY SAFETY MEETING

NEDSO

Date held 10/21/85

THRU: Area Engineer, New England Area

Time 1300

TO: Safety Office, NED

1. Weekly safety meeting was held this date for the following personnel:

Contract No. DACW-33-85-D-0011 D.O. #3 Contractor Atlantic Testing Lab

Conducted By Paul Fisher All personnel present (Contr) 5 (Sub) 0 (Govt) 0

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

X Accident Prevention Plan

X Individual Protective Equipment - Hard Hat, Gloves, Boots

Prevention of Falls -

Back Injury, Safe Lifting Techniques -

Fire Prevention -

Sanitation, First Aid, Waste Disposal - Trash

X Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

X Equipment Inspection & Maintenance (Zero Defects) -

X Hoisting Equipment - New cable on site, to replace

X Ropes, Hooks, Chains and Slings - New Hooks

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

Loose Rock and Steep Slopes -

Explosives -

Water Safety -

X Toxic materials - hazards, MSDS, respiratory, ventilation - Gases coming from bore hole #PZ15

Other -

Prepared by Paul Fisher Title Engr

2. Forwarded. Exposure time 10/14 to 10/18

Signature _____
Resident Engineer

CF: ATL 237 hrs
CORP 24
OTHERS 48 No work Sat or Sun

NED FL APP FZ 251

WEEKLY SAFETY MEETING

NEDSO

Date held 10/28/85

THRU: Area Engineer, New England Area

Time 1200

TO: Safety Office, NED

1. Weekly safety meeting was held this date for the following personnel:

Contract No. DACW-33-85-D-0011 O.O. #3 Contractor Atlantic Testing Lab

Conducted By Paul Fisher All personnel present (Contr) 5
(Sub) ____
(Govt) ____

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: ____

Accident Prevention Plan

X Individual Protective Equipment - Hard Hats, Gloves Boots

Prevention of Falls -

X Back Injury, Safe Lifting Techniques -

Fire Prevention -

X Sanitation, First Aid, Waste Disposal -

X Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

X Hand Tools, Portable Power Tools, Woodworking Machinery -

X Equipment Inspection & Maintenance (Zero Defects) - Replace Cable

X Hoisting Equipment - Replaced Cable

X Ropes, Hooks, Chains and Slings - New Hooks

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

Loose Rock and Steep Slopes -

Explosives -

Water Safety -

X Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by P. Fisher Title Eng.

2. Forwarded. Exposure Time (10/21 - 10/27)

Signature [signature]
Resident Engineer

CF: ATL - 258 (Includes 8 hrs Sat + 3 hr Sun)
Corp - 8 hrs
Others - 52 hrs

NED APP PC 251

WEEKLY SAFETY MEETING

NEDSO

Date held 11/5/85

THRU: Area Engineer, New England Area

Time 0745-0815

TO: Safety Office, NED

1. Weekly safety meeting was held this date for the following personnel:

Contract No. DACW-33-85-D-0011 D.O. #3 Contractor Atlantic Testing Lab

Conducted By Fisher All personnel present (Contr) 4
(Sub) ____
(Govt) 1

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: ____

Accident Prevention Plan

X Individual Protective Equipment - Hard Hat, Gloves, Boots,

X Prevention of Falls - Derick on Rig

X Back Injury, Safe Lifting Techniques -

X Fire Prevention - Transferring Gasoline To Rigs

X Sanitation, First Aid, Waste Disposal -

X Tripping Hazards - trash, hose, nails in lumber - Casing + Augers

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

X Equipment Inspection & Maintenance (Zero Defects) -

X Hoisting Equipment - In Rain

X Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

Loose Rock and Steep Slopes -

Explosives -

Water Safety -

X Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by Fisher Title Eng.

2. Forwarded.

Exposure Hours
CF: ATL 207½
Corp 0
Others 42

Signature [signature]
Resident Engineer

NED APR 82 FL 251 Note No Work Sat or Sun

WEEKLY SAFETY MEETING

NEDSO

Date held 11/11/85

THRU: Area Engineer, New England Area

Time 0700 — 0730

TO: Safety Office, NED

1. Weekly safety meeting was held this date for the following personnel:

Contract No. DACW-33-85-D-0011 D.O. 003 Contractor Atlantic Testing Lab

Conducted By Paul Fisher All personnel present (Contr) 4
(Sub)
(Govt)

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section:

Paul Fisher
Gerry Cambrione
Jim Boyer
Kevin Hawkins

Accident Prevention Plan

X Individual Protective Equipment - Hard Hats Gloves Boots

Prevention of Falls -

/ Back Injury, Safe Lifting Techniques -

Fire Prevention -

/ Sanitation, First Aid, Waste Disposal - Garbage

/ Tripping Hazards - trash, hose, nails in lumber -

X Staging, Ladders, Concrete Forms, Safety Nets - Planking in Swamp

Hand Tools, Portable Power Tools, Woodworking Machinery -

X Equipment Inspection & Maintenance (Zero Defects) -

X Hoisting Equipment - Cat Head Use in the Rain

X Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

Loose Rock and Steep Slopes -

Explosives -

Water Safety -

X Toxic materials - hazards, MSDS, respiratory, ventilation -

Other - Working in Rain

Prepared by Fisher Title Eng

2. Forwarded.
Exposure Time For 11/4 to 11/10

Signature [signature]
Resident Engineer

CF: ATL 114 HRS
Corp 1½
Others 34½ Includes Work On Site Sat + Sun

NED FL 251 APR 82

WEEKLY SAFETY MEETING

NEDSO

Date held 11/22/85

THRU: Area Engineer, NEW ENGLAND Area

Time 1030

TO: Safety Office, NED

1. Weekly safety meeting was held this date for the following personnel:

Contract No. DACW-33-85-D-0011 D.O. 3 Contractor ATLANTIC TESTING LAB

Conducted By PAUL FISHER All personnel present (Contr) 3
(Sub) ____
(Govt) ____

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: ____

PAUL FISHER
KEVIN HAWKINS
CHRIS JEKINS

Accident Prevention Plan

X Individual Protective Equipment -

X Prevention of Falls -

X Back Injury, Safe Lifting Techniques - LIFTING PLANKS FROM SWAMP

Fire Prevention -

Sanitation, First Aid, Waste Disposal -

X Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

Equipment Inspection & Maintenance (Zero Defects) -

Hoisting Equipment -

Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

Loose Rock and Steep Slopes -

Explosives -

Water Safety -

Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by FISHER Title ENG

2. Forwarded.
EXPOSURE TIME FOR 11/11/85 TO 11/15/85

Signature [signature]
Resident Engineer

CF: ATL 67t
CORPS 0
OTHERS 13t

NED APR FL 251

NO WORK THUR, FRI, SAT, SUN

NO ATL PERSONNEL ON SITE THIS WEEK 11/25/05
FOR LAST WEEKS EXPOSURE TIME ONLY

WEEKLY SAFETY MEETING

NEDSO

Date held _____

THRU: Area Engineer, NEW ENGLAND Area

Time _____

TO: Safety Office, NED

1. Weekly safety meeting was held this date for the following personnel:

Contract No. DACW-33-85-D-0011 D.O. 3 Contractor ATLANTIC TESTING LAB

Conducted By _____ All personnel present (Contr) _____
(Sub) _____
(Govt) _____

Subjects discussed (Note, delete, or add):
EM 385-1-1, Section: _____

Accident Prevention Plan

Individual Protective Equipment -

Prevention of Falls -

Back Injury, Safe Lifting Techniques -

Fire Prevention -

Sanitation, First Aid, Waste Disposal -

Tripping Hazards - trash, hose, nails in lumber -

Staging, Ladders, Concrete Forms, Safety Nets -

Hand Tools, Portable Power Tools, Woodworking Machinery -

Equipment Inspection & Maintenance (Zero Defects) -

Hoisting Equipment -

Ropes, Hooks, Chains and Slings -

Electrical Grounding, Temporary Wiring, GFCI -

Lockouts for safe clearance procedures - electrical, pressure, moving parts -

Welding, Cutting -

Excavations -

Loose Rock and Steep Slopes -

Explosives -

Water Safety -

Toxic materials - hazards, MSDS, respiratory, ventilation -

Other -

Prepared by FISHER Title ENG

2. Forwarded.
EXPOSURE TIME FOR 11/18 – 11/22

Signature Paul Fisher
Resident Engineer

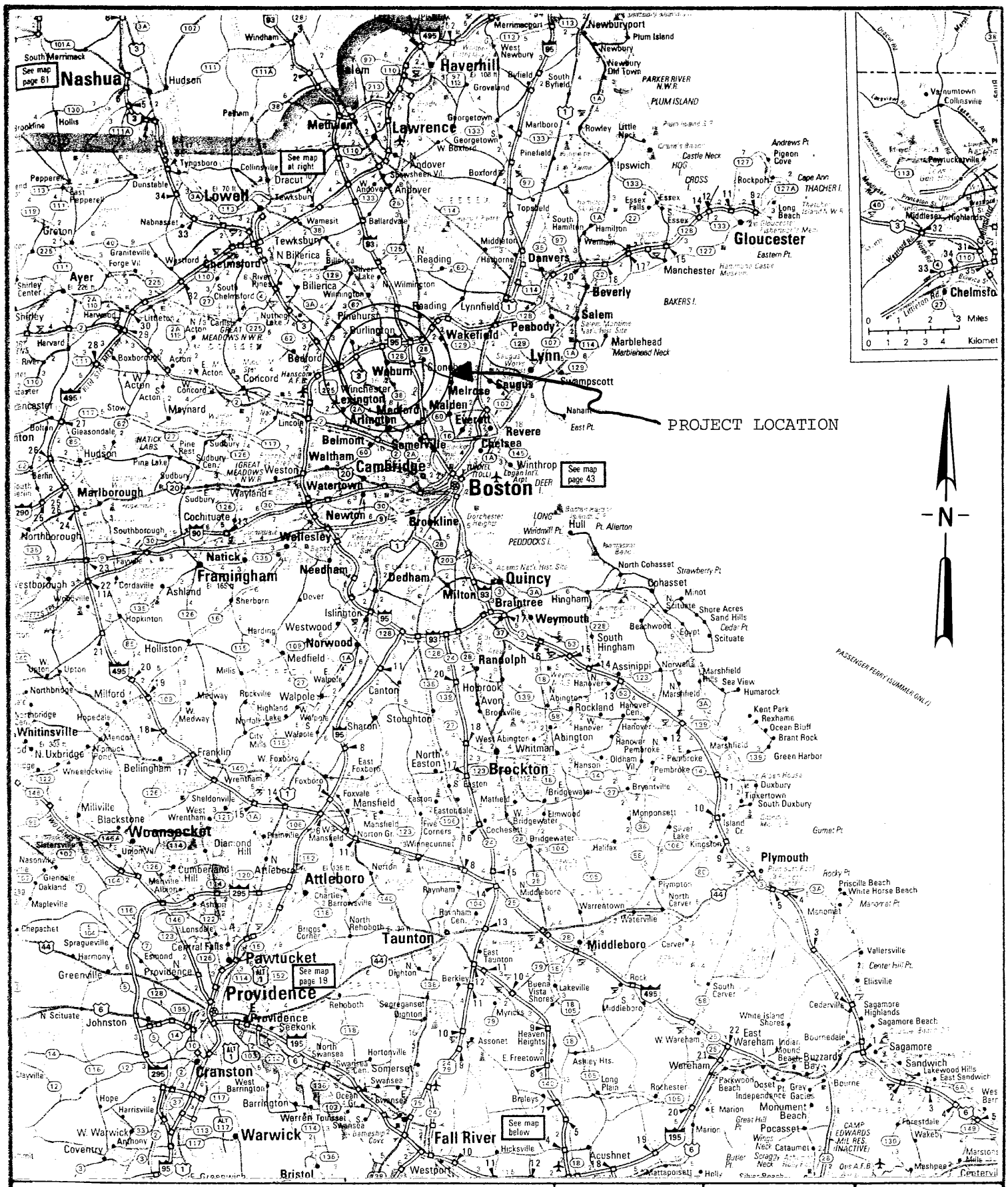
OF: ATL 37
CORP 0
OTHERS 1

NED FL 251 APR 82

SECTION 8

FIELD INSPECTOR'S LOGS

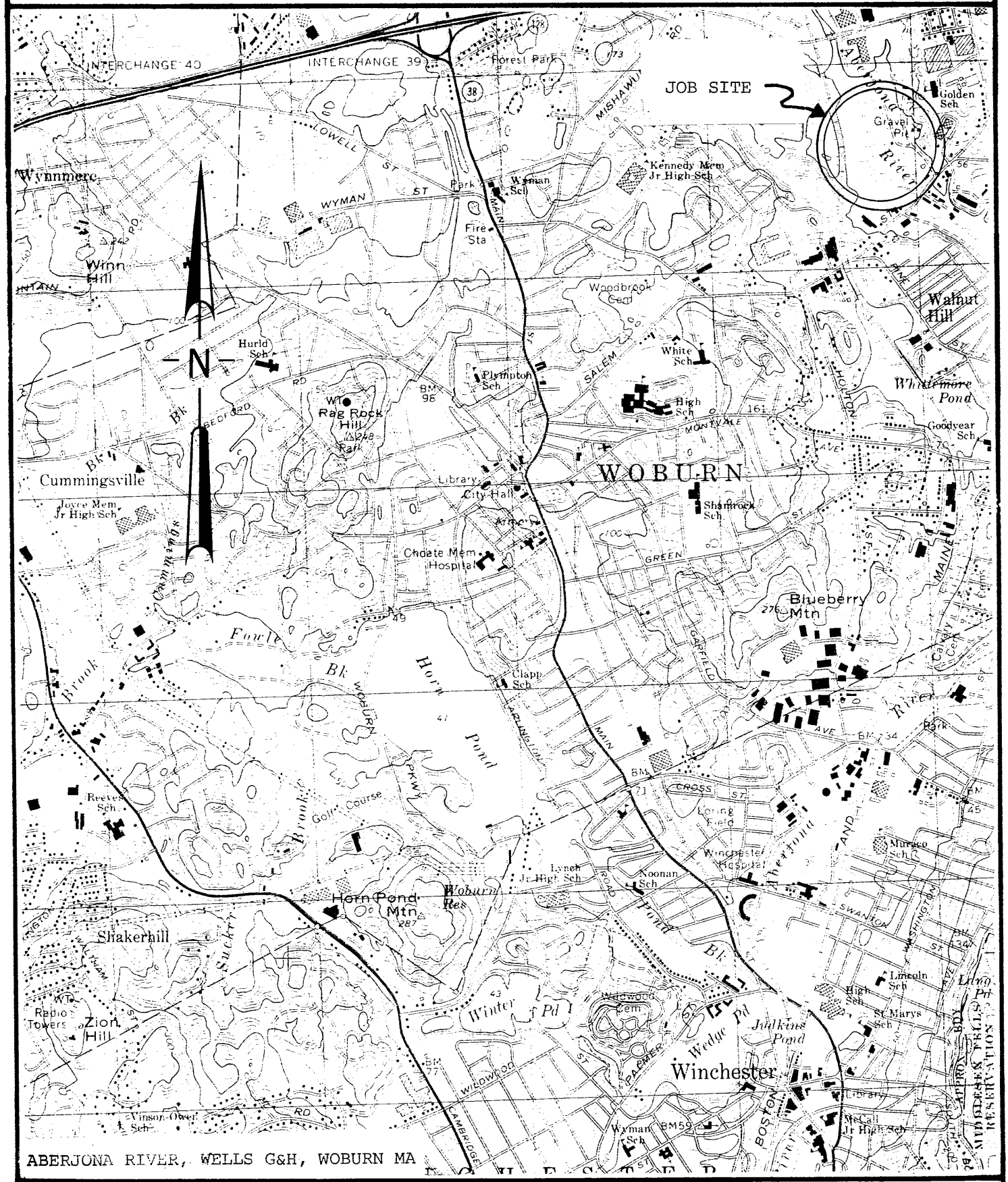
FIGURE 1



GENERAL PROJECT MAP	SCALE 1" = 9 mi	PROJECT No. CD002	DATE 11/19/85
ABERJONA RIVER, WELLS G&H, WOBURN MA	ATLANTIC TESTING LABORATORIES, Limited CANTON NY CICERO NY ENDICOTT NY BURLINGTON VT MANCHESTER NH		

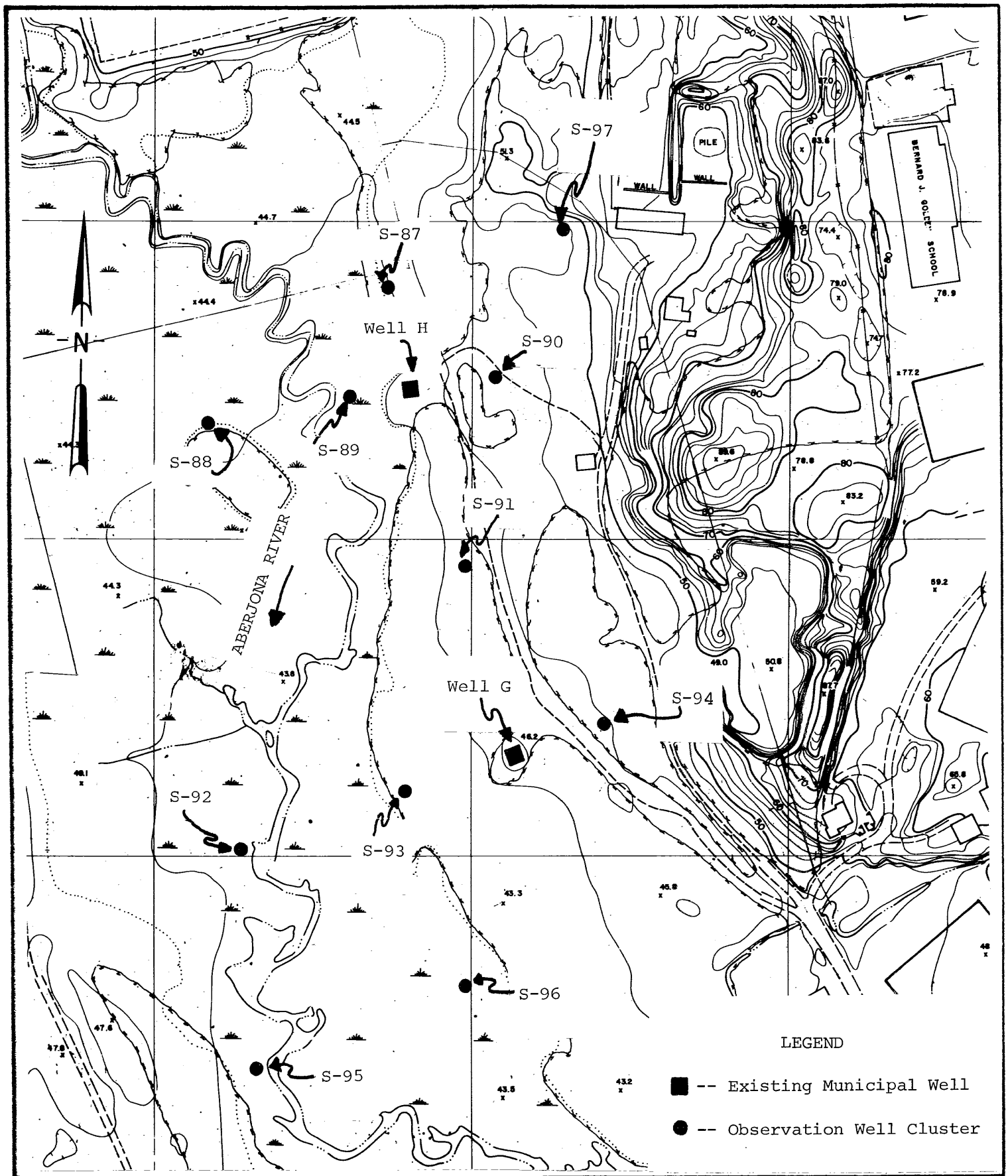
FIGURE 2

SITE LOCATION MAP



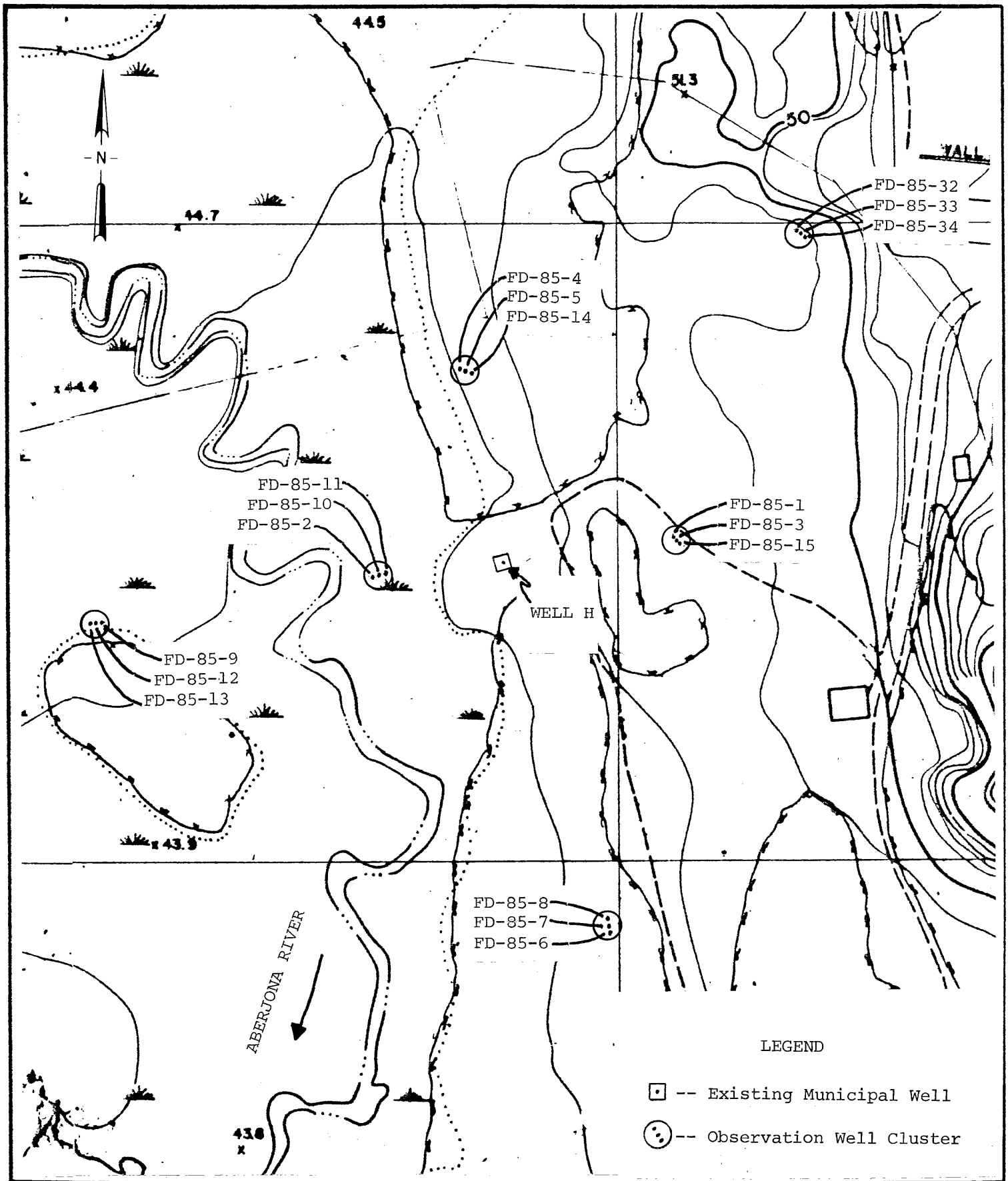
PROJECT No	CD002	SCALE:	1:25,000	U.S.G.S. QUAD:	Lexington MA

FIGURE 3



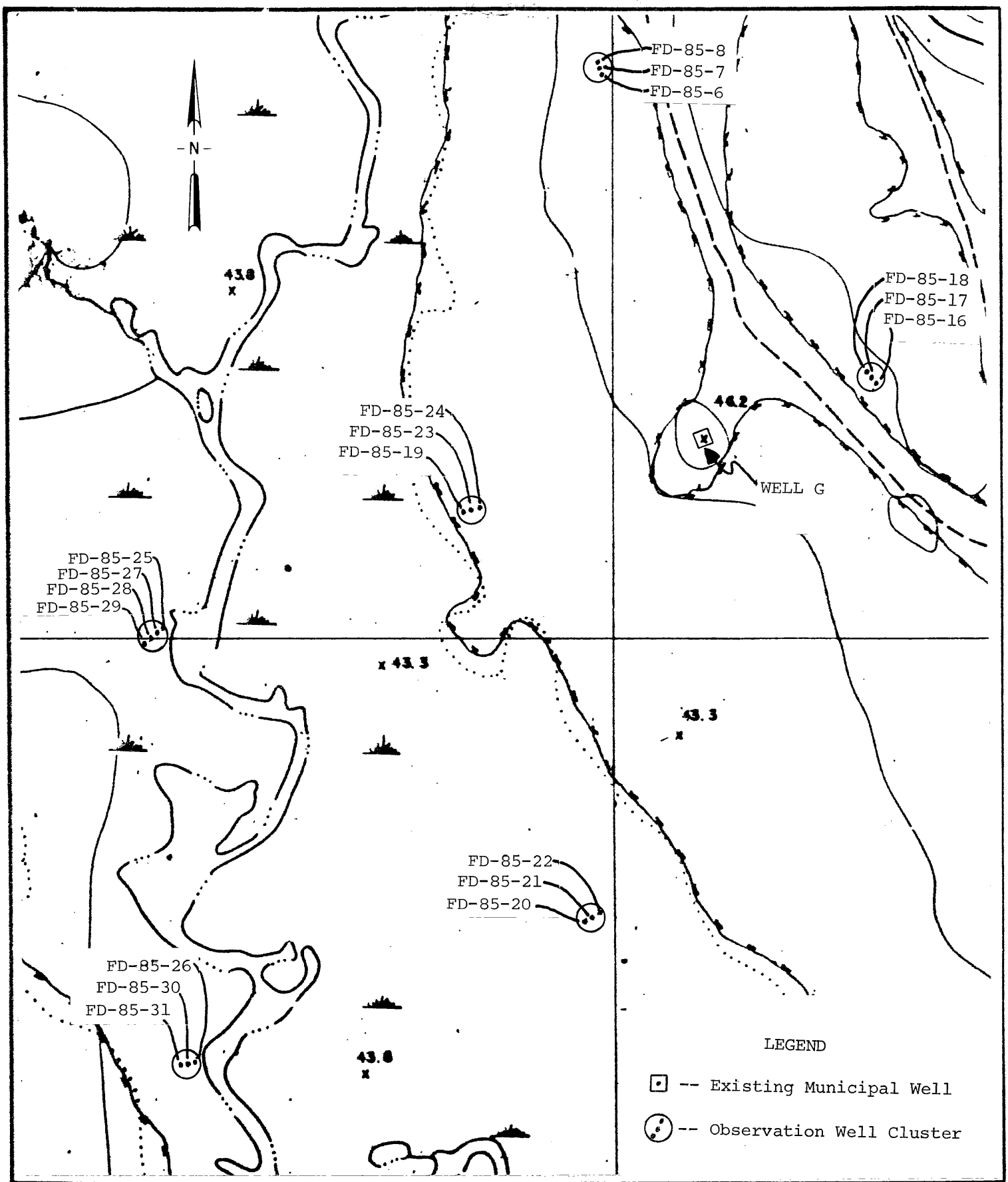
CLUSTER LOCATION PLAN	SCALE 1" = 200'	PROJECT No. CD002	DATE 11/19/85
ABERJONA RIVER, WELLS G&H, WOBURN MA	ATLANTIC TESTING LABORATORIES, Limited CANTON NY CICERO NY ENDICOTT NY BURLINGTON VT MANCHESTER NH		

FIGURE 4



BORING LOCATION PLAN, NORTH	SCALE 1" = 100'	PROJECT No. CD002	DATE 11/19/85
ABERJONA RIVER, WELLS G&H, WOBURN MA	ATLANTIC TESTING LABORATORIES, Limited CANTON NY CICERO NY ENDICOTT NY BURLINGTON VT MANCHESTER NH		

FIGURE 5



BORING LOCATION PLAN, SOUTH	SCALE 1" = 100'	PROJECT No. CD002	DATE 11/19/85
ABERJONA RIVER, WELLS G&H, WOBURN MA	ATLANTIC TESTING LABORATORIES, Limited CANTON NY CICERO NY ENDICOTT NY BURLINGTON VT MANCHESTER NH		

Table III : Summary of Well Installation

CLUSTER	PZ. No.	START	DEPTH	FINISH	RIG	
S-87	5	10/2	10	10/2	45	
	4	10/1	40	10/1	45	
	14	10/11	80	10/16	55	
S-88	12	10/11	10	10/11	45	
	13	10/11	40	10/11	45	
	9	10/9	82.5	10/10	45	
S-89	10	10/9	32	10/9	55	
	11	10/9	56	10/10	55	
	2	9/30	121.5	10/8	55	
S-90	3	10/1	10	10/1	45	
	1	9/30	40	10/1	45	
	15	10/14	74	10/23	45	
S-91	7	10/2	10	10/2	45	
	6	10/2	40	10/2	45	
	8	10/3	80	10/8	45	
S-92	27	11/1	15	11/1	45	
	28	11/1	40	11/1	45	
	25	10/30	80	10/31	45	
	29	11/1	57	11/1	45	ADDITIONAL
S-93	23	10/29	15	10/29	55	
	24	10/29	45	10/29	55	
	19	10/24	80	10/29	55	
S-94	17	10/22	15	10/22	55	
	18	10/22	40	10/22	55	
	16	10/17	80	10/21	55	
S-95	30	11/9	15	11/9	55	
	31	11/9	40	11/9	55	
	26	10/31	80	11/9	55	
S-96	21	10/29	15	10/29	45	
	22	10/29	40	10/29	45	
	20	10/24	80	10/28	45	
S-97	34	11/11	15	11/11	55	ADDITIONAL
	33	11/11	26	11/11	55	"
	32	11/10	44	11/11	55	"

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

(1)

CLUSTER S-90 FD-85-1

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. DACW-33-85-D-0011 O.O. #3

Site [illegible] RIVER, [illegible]

Page 1 of 4 Pages

Hole No. FD-85-1 Diam. (Casing) 4"

Boring Started 9/30/85

Co-ordinates: N — E SEE DRAWING

Boring Completed [illegible]

Drilled by PAUL DAVIS & HAWKINS

Report Submitted

Purpose of Exploration [illegible]

Elevation Top of Hole 47 M.S.L.

Total Overburden Drilled [illegible] Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 7.0 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole [illegible] Feet

Core Recovered %

Core Recovered — Ft.; — Diam. — In.

Soil Samples 1 3/8 In. Diam. 8 No.

Soil Samples — In. Diam. — No.

Casing Left in Place [illegible] Feet
2.4' [illegible]

Water Table Depth 3.26' (G[illegible] DURING DRILLING)

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	4[illegible]	4" I.D. Hollow Stem Auger
		HYDRANT WATER USE DURING ALL
		DRILLING

INDEX

Ground Water	Back of Page 1
Boring Location Sketch	Back of Page 1
Overburden Record	Page [illegible]
Rock Drilling	Page
	Page
	Page
	Page

Prepared by [illegible]
Field Data Lab. Data

Submitted by [illegible]

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS

AVERAGE GROUND WATER ELEVATION ____________

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

U.S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site [illegible] Wells N. Me. Page 1 of ___ Pages

Boring No. FD-85-1 Desig. PZ-7 Diam. (Casing) 4"

Co-ordinates: N See Drawing E —

Elevation Top of Boring 47 M.S.L. Hammer Wt. 140.0 Boring Started 7/20

Total Overburden Drilled 40 Feet Hammer Drop 30" Boring Completed 7/20/85

Elevation Top of Rock ___ M.S.L. Casing Left ___

Total Rock Drilled 0 Feet Subsurface Water Date ___ Page ___

Elevation Bottom of Boring 7' M.S.L. Obs. Well 2" ID

Total Depth of Boring 40 Feet Drilled By [illegible]

Core Recovered ___ % No. Boxes ___ Mfg. Des. Drill Track Mounted CME 45

Core Recovered ___ Ft. ___ Diam. ___ in. Inspected By: [illegible]

Soil Samples Yes ___ in. Diam. ___ No. Classification By: [illegible] ATL

Soil Samples ___ in. Diam. ___ No. Classification By: ___

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
2.0	SS-1	1 3/8	75%	2/4/6	4" [illegible]	[illegible]
5.0	[illegible]	1 3/8	50%	3/6/8/11		[illegible]
10.0	[illegible]		80%	[illegible]		[illegible]
15	SS-4			[illegible]	7/21/85	[illegible] SAND, [illegible] w/[illegible] [illegible] SAND [illegible] [illegible] SAND
20.0	SS-5		100	[illegible]		[illegible] m SAND; Little Gravel [illegible]
21.5						

GENERAL REMARKS: SAND WASHED [illegible] 17.0 [illegible]

NED FORM 58 (Test) MAR 71

Boring No. FD-85-1

Site	Boring No.	Page ___ of ___
ABERDEEN RIVER	FD-85-1	

DEPTH		CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
6.5		SS-6	1¾	65	7-3-7	AUGER, 4" CONT.	M F SAND, little [illegible] (SP)
30.0							
31.5		[illegible]		[illegible]	21/31/24		[illegible] Tr [illegible] wet [illegible]
35							
[illegible]		SS-8		75			[illegible] wet [illegible]
40.0							
						BOTTOM OF HOLE.	

D. FORM 58A (Test)

Boring No. FD-85-1

PIEZOMETER INSTALLATION REPORT

PROJECT: [illegible] | DATE: [illegible] 1, [illegible]

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-1

PIEZ TYPE: CASAGRANDE 2"X2' .010" | DEPTH OF PIEZ: [illegible] | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): [illegible] | SOIL SAMPLE NO.: [illegible] | BORING DIAM:

METHOD OF INSTALLATION: AUGER

TYPE OF PROTECTION FOR PIEZ: [illegible] | VENT: LOCK CAP

GROUND ELEV.: 47 | ELEV. TOP OF RISER: 49.4' | ELEV PIEZ TIP: 8'

FILTER: SAND #2 | FROM ELEV: 7' | TO ELEV: 11'

SEAL: BENTONITE, 3/8" | FROM ELEV: 11' | TO ELEV: 16'

INSTALLED BY: [illegible] DAVIS & HAWKINS | CONTRACT NO.: DO #3 | FOREMAN: [illegible]

DATE OF INSTALLATION: 10-1-85 | DATE OF OBSERVATIONS: 10/24/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
814	—	5.55	1046	[illegible]	5.00			
1040	0	.22	1050	[illegible]	5.75			
	[illegible]	1.[illegible]	1057	15.0	[illegible]			
1043	[illegible]	[illegible]	1110	30.0	5.95			
1044	[illegible]	3.73						

REMARKS: [illegible] soil [illegible] [illegible] in [illegible] [illegible] to a [illegible] [illegible]

[illegible] well pipe [illegible]

[illegible]

INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

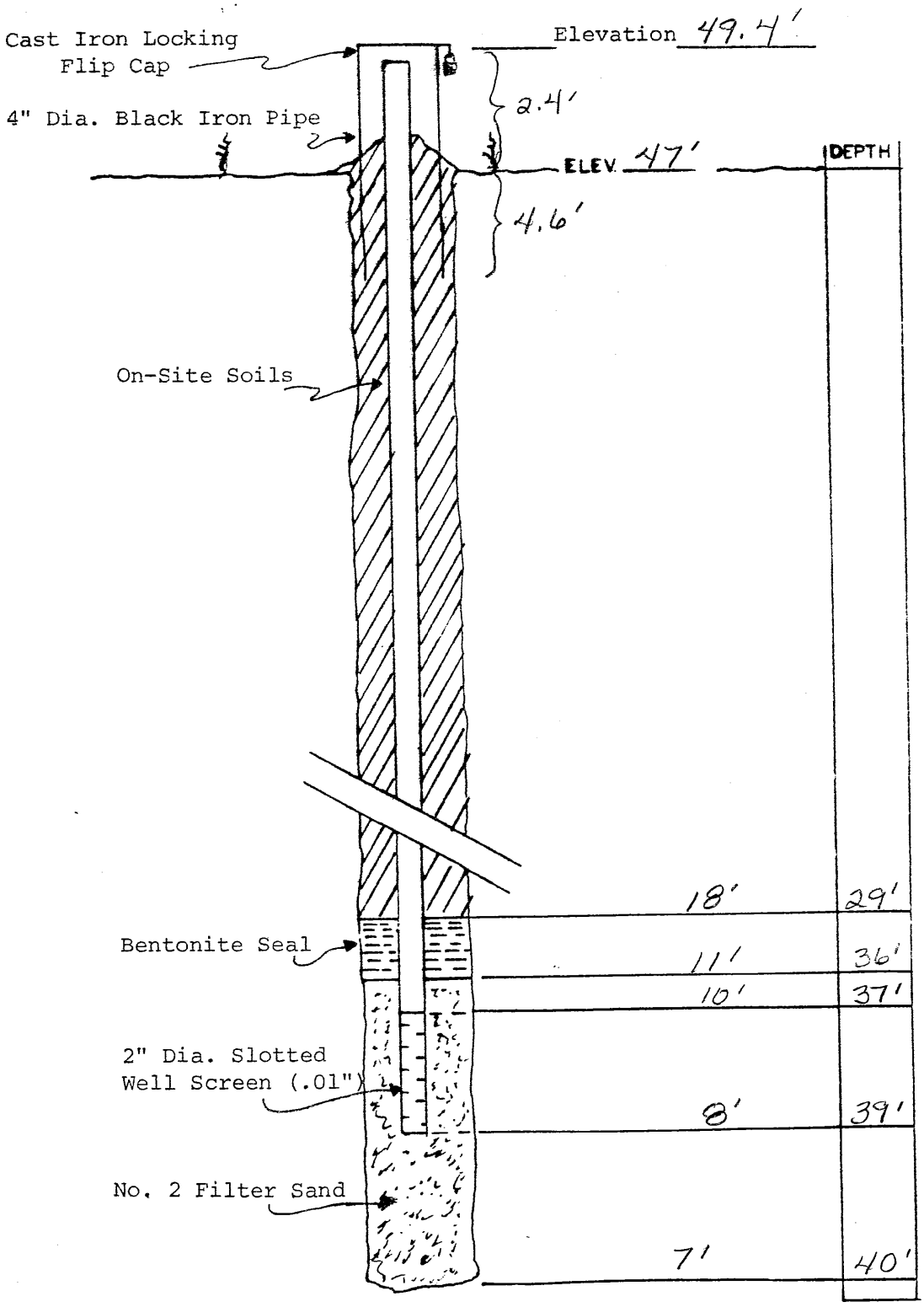
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 1

Cluster No. S- 90



(2)

CLUSTER S-89 FD-85-2

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. [illegible]

Site Aberjona River, Woburn — Page 1 of 4 Pages

Hole No. FD-85-2 Diam. (Casing) 4" — Boring Started 9/30/85

Co-ordinates: N see map E — — Boring Completed 10/8/85

Drilled by Cambridge and Boyce — Report Submitted

Purpose of Exploration observation wells are required by FEH for hydrologic modeling by others

Elevation Top of Hole 43 M.S.L.
Total Overburden Drilled 121.5 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -78.5 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 121.5 Feet
Core Recovered — %
Core Recovered — Ft.; — Diam. — In.
Soil Samples 1 3/8 In. Diam. 24 No.
Soil Samples — In. Diam. — No.

Casing Left in Place 10' [illegible] Feet
3.0 STICKUP

Water Table Depth at surface (0.6' during drilling)

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	45'	Hollow Stem Auger (pulled)
0	120'	4" drive casing
		HYDRANT WATER USED DURING ALL
		DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER — Field Data — Lab. Data

Submitted by [illegible]

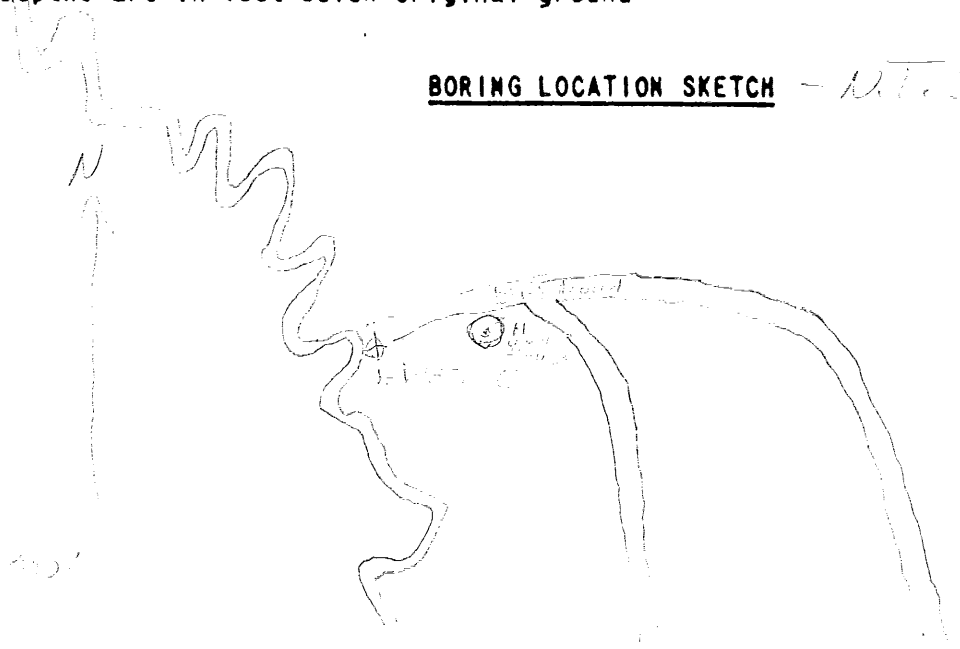
NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH – NTS



U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site ABERJONA RIVER, WOBURN, MA (WELLS G+H) Page 1 of 4 Pages
Boring No. FD-85-2 Desig. 2 Diam. (Casing) 4"
Co-ordinates: N SEE DRAWING E —

Elevation Top of Boring 43 M.S.L.
Total Overburden Drilled 121.5 Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled 0 Feet
Elevation Bottom of Boring -78.5 M.S.L.
Total Depth of Boring 121.5 Feet
Core Recovered — % No. Boxes —
Core Recovered — Ft. — Diam. — in.
Soil Samples 1½ in. Diam. 24 No.
Soil Samples — in. Diam. — No.

Hammer Wt. 140# Boring Started 9/30/85
Hammer Drop 30" Boring Completed 10/2/85
Casing Left 10' of 4"
Subsurface Water Date — Page —
Obs. Well 2" PZ
Drilled By GERRY CAMBRIDGE, JIM BOYER
Mfg. Des. Drill TRACK MOUNT CME 55
Inspected By: PAUL FISHER
Classification By: PAUL FISHER
Classification By: GREG HETZLER

DEPTH 1" = 2.5	CORE/SAMPLE NO.	SIZE	~~DEPTH REC RANGE~~	BLOWS PER FT. ~~CORE REC'V~~	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0					4" AUGER	
1.5	SS-1	1 3/4	5%	WT. OF RODS		ORGANICS - PEAT, BK, MOIST (PT)
5.0						PEAT, BK, MOIST (PT)
6.5	SS-2		70%	1-2-1		ORGANIC M. SAND, BK, MOIST (OL)
10.0						ORGANIC SILT, BK, WET, TR SAND ROOT HAIR, WOOD (OH)
11.5	SS-3		70%	1-1-1		
15.0						
16.5	SS-4		100%	WT. OF HAMMER		SAME AS SS 3
20.0						
21.5	SS-5		100%	WT OF HAMMER		SAME AS SS-3

GENERAL REMARKS:

NED FORM MAR 71 58 (Test)

Boring No. FD-85-2

Site ABERJONA RIVER, WOBURN, MA
WELLS G + H

Boring No. FD-85-2

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH REC FEET	BLOWS PER FT CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
1"=2.5 25.0						SAME AS SS-3
26.5	SS-6	1 3/8	100%	5-5-6		M. SAND, GR, WET, (SP)
					10/1/85 CONT. 8" HOLLOW STEM AUGER	
30.2						
31.5	SS-7		100%	17-22-20		F-M. SAND, GR, WET (SP) (SAME AS SS-6)
35.2						
36.5	SS-8		40%	9-9-12		SAME AS SS-7
40.2						
41.5	SS-9		60%	9-7-3		F. SAND, TR SILT, TAN, MOIST (SP)
45.					FLOWING SANDS POURED HOLE AWAY	
46.5	SS-10		60%	11-7-5	10/2/85 STARTED 15" CASING 4' BELOW SURFACE	SAME AS SS-9
50.0						
51.5	SS-11		10%	13-12-5		F. SAND, LITTLE SILT, BR, WET (SP-SM)
55.0						
56.5	SS-12		100%	4-6-6		F. SAND, TR M-C SAND, TAN, WET (SP)
60.0						
61.5	SS 13		40%	10-14-18		F. SAND, TAN, WET (SP)
65.0						
66.	SS 14		40%	6-11-18		SAME AS SS-13

BOX 1
BOX 2

Site ABERJONA RIVER
WELL G&M, WOBURN MA

Boring No. FD-85-2

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH REC	BLOWS PER FT	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
70.0						
71.5	SS-15		40%	5 7 9	10/3/85 Cont. 4" DRIVE CASING @ 70'	f SAND; tr SILT (SP) wet TAN.
75.0						
76.5	SS-16		60%	10 10 11		f SAND; tr SILT (SP) 1/8" LAYER OF M SAND.
80					100 BLOWS/FT [illegible]	
80.5	SS-17		15%	5 7 8	10/4/85 WITH 20' OF 4" CASING, USED ROLLER BIT TO WASH TO 90'	f SAND; [illegible]
90						
	SS-18			WASH	DROVE 4" CASING TO 90' (@ 170 BLOWS/FT). 10/4 ROLLER WASH TO 100' LOOK FOR GRAVEL SEAM.	[illegible] (SP) (ASSUMED)
					BEG. 10/5/85.	
97.5	SS-19			WASH		f SAND; [illegible] (SP) (ASSUMED).
100						
101	SS-20A		100%	8 22-33	DROVE 4" CASING TO 100' (@ 300 BLOWS/FT).	[illegible]
102	SS-20B					SOME [illegible]
					[illegible] STANDARD [illegible]	
110	S21			WASH	[illegible] 10-7-85	f SAND; [illegible] (SP) sample from 104'-110'

D. FORM 58A (Test)

Boring No. FD-85-2

Site ABERDEEN RIVER
WELL G&H, WA

Boring No. FD-85-2

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RECOVERY RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
115.5	SS 22		WASHED		DRIVE 1½" WASH PIPE, 280 BLOWS/FT.	F. SAND
117						
118	SS 23		WASHED			M SAND, TAN, GREY ASSUMED
120					CASING TO 120' SET PZ	
121.5	SS 24		30%	45 175 111	END OF EXPLORATION	GRAVELLY C.M.F. SAND TR SILT TAN-BK

D FORM 58A (Test)

Boring No. FD-85-2

PIEZOMETER INSTALLATION REPORT

PROJECT: [illegible] River, Woburn, MA | DATE: 10-8-85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: [illegible]

PIEZ TYPE: slotted .010" [illegible] 2"x2' | DEPTH OF PIEZ: 118.5 | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): TAN M. SAND | SOIL SAMPLE NO.: SS-23 | BORING DIAM: 4"

METHOD OF INSTALLATION: ROLLER BIT + DRIVE CASING

TYPE OF PROTECTION FOR PIEZ: 10' LONG X 4" DIA CASING | VENT: LOCK CAP

GROUND ELEV.: 43 | ELEV. TOP OF RISER: 46 | ELEV PIEZ TIP: -75.5'

FILTER: #2 SAND | FROM ELEV: -78.5 | TO ELEV: -72.5

SEAL: BENTONITE SLURRY | FROM ELEV: -72.5 | TO ELEV: -5.0

INSTALLED BY: Boyer and Cambridge | CONTRACT NO.: [illegible] | FOREMAN: [illegible]

DATE OF INSTALLATION: 10-8-85 | DATE OF OBSERVATIONS: 10/12/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
		2.93						
	0	0						
	1/4	2.90						
	1/2	2.93						

REMARKS:

PAUL FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

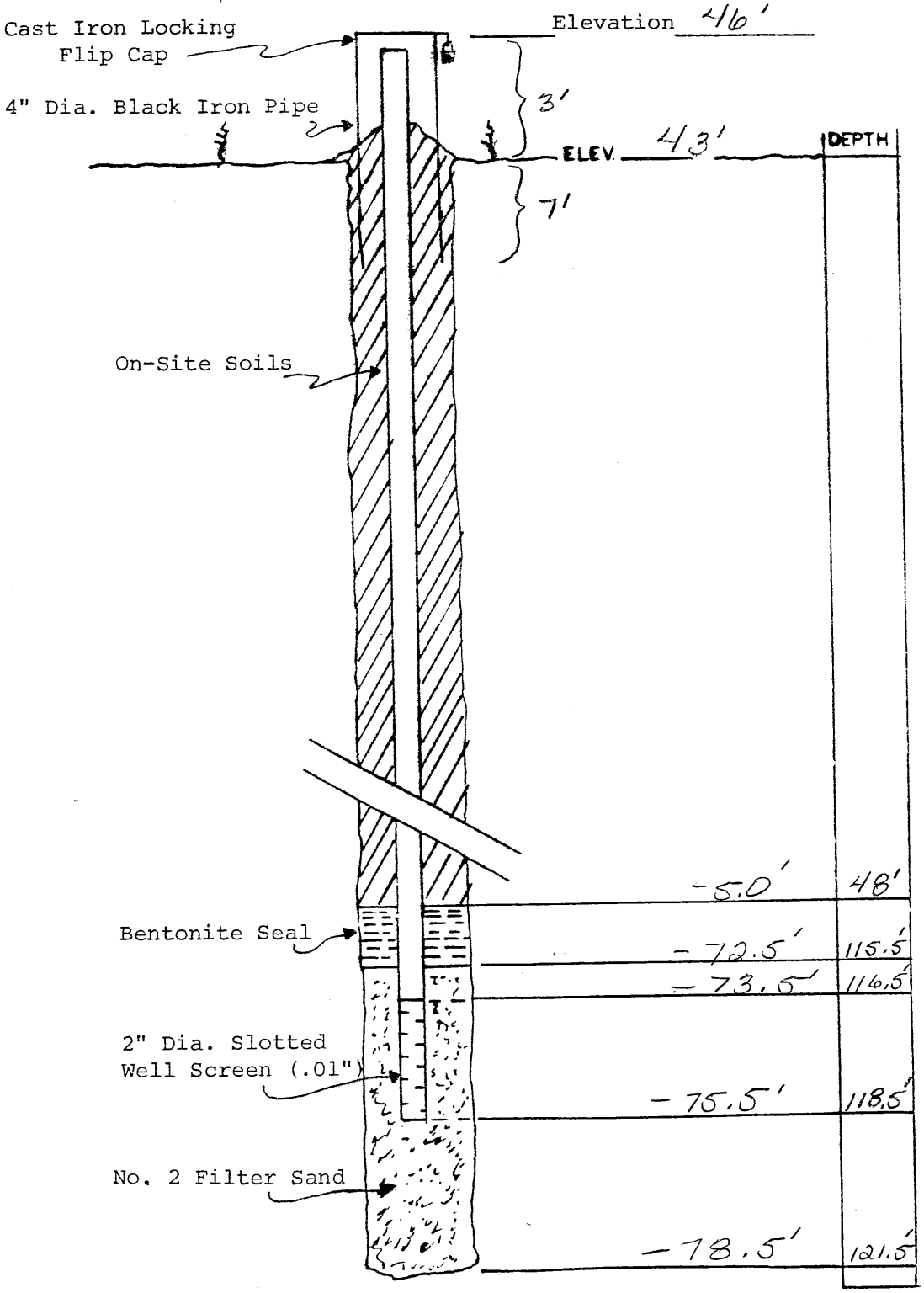
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 2
Cluster No. S-89



(3)

CLUSTER S-90 FD-85-3

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. DACW-33-85-D-0011 D0.43

Site [illegible]

Page 1 of 2 Pages

Hole No. FD-85-3 Diam. (Casing) 4"

Boring Started 10-1-85

Co-ordinates: N — E SEE DRAWING

Boring Completed 10-1-85

Drilled by PAUL DAVIS, KEVEN HAWKINS

Report Submitted

Purpose of Exploration INSTALL [illegible]

Elevation Top of Hole 47 M.S.L.

Total Overburden Drilled [illegible] Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 37 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 10.0 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place 7' TOTAL 3.0' STICKUP Feet

SEE FD85-1 FOR DRILLING LOG

Water Table Depth 4.0 on 9/31/85 3.35 on 10/24/85

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	10	AUGER 4" I.D.
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page 1
Boring Location Sketch	Back of Page 1
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by GREG [illegible]
Field Data Lab. Data

Submitted by [illegible]

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERDEEN [illegible] (Cell [illegible]) | DATE: 10/1/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: | PIEZ NO.: FD-85-3

PIEZ TYPE: Casagrande 2" x 2' .010" | DEPTH OF PIEZ: 91' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): M Sand | SOIL SAMPLE NO.: FD-85-1 [illegible] | BORING DIAM: 8"

METHOD OF INSTALLATION: [illegible] 4" ID

TYPE OF PROTECTION FOR PIEZ: 4" Casing | TOTAL LENGTH: [illegible] | VENT: Lock Cap

GROUND ELEV.: 47 | ELEV. TOP OF RISER: 50.0' | ELEV PIEZ TIP: 3[illegible]'

FILTER: #2 Sand | FROM ELEV: 37 | TO ELEV: 41

SEAL: Bentonite 4' | FROM ELEV: 41 | TO ELEV: 46

INSTALLED BY: [illegible] / HAWKINS | CONTRACT NO.: D.O. #003 | FOREMAN: [illegible]

DATE OF INSTALLATION: 10/1/85 | DATE OF OBSERVATIONS: [illegible]

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
817		6.35	838	4.0	5.71			
8:34	0	.46	842	8.0	6.20			
	0.5	2.24	849	15.0	6.33			
835	1.0	3.38	904	30.0	6.35			
836	2.0	4.70						

REMARKS:

[illegible]
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

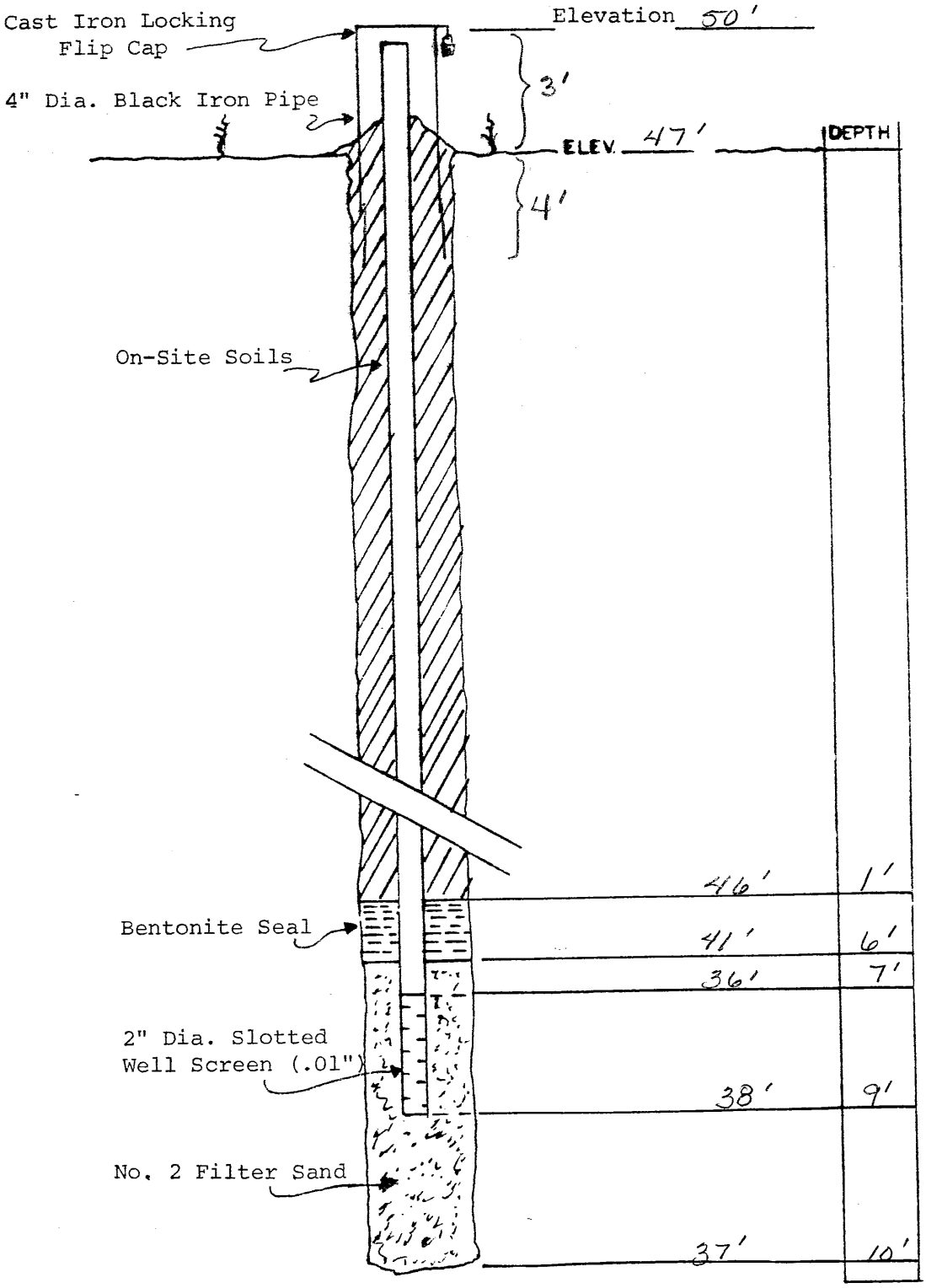
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 3
Cluster No. S-90



(4)

CLUSTER S-87 FD-85-4

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. DACW 33-3[illegible]-D-0011 D.O. #3

Site ABERJONA River, WOBURN MASS. Page 1 of ___ Pages

Hole No. FD-85-4 Diam. (~~Casing~~) 4 1/4 Boring Started 10/1/85

Co-ordinates: N SEE MAP E — Boring Completed 10/1/85

Drilled by PAUL DAVIS / KEVEN HAWKINS Report Submitted ___

Purpose of Exploration [illegible]

Elevation Top of Hole 44' M.S.L.
Total Overburden Drilled 40 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole 4' M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 40.0 Feet
Core Recovered — %
Core Recovered ___ Ft.; ___ Diam. ___ In.
Soil Samples 1 3/8" In. Diam. 8 No.
Soil Samples — In. Diam. — No.

Casing Left in Place 7.00 TOTAL Feet
2.9' STICKUP

Water Table Depth 1.23'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	40.0	AUGER [illegible]
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page	1
Boring Location Sketch	Back of Page	1
Overburden Record	Page	2
Rock Drilling	Page	3
	Page	
	Page	
	Page	

Prepared by Greg J HETZLER — Field Data — Lab. Data

Submitted by [illegible]

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site [illegible] RJ [illegible], MA Page 1 of 2 Pages

Boring No. ED-85-4 Desig. 4 Diam. (Casing) 4"

Co-ordinates: N See Drawing E —

Elevation Top of Boring 44 M.S.L.
Total Overburden Drilled 40 Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled 0 Feet
Elevation Bottom of Boring 4 M.S.L.
Total Depth of Boring 40.0 Feet
Core Recovered — % No. Boxes —
Core Recovered — Ft. — Diam. — in.
Soil Samples 1 3/8 in. Diam. 8 No.
Soil Samples — in. Diam. — No.

Hammer Wt. 140# Boring Started 10/1/85
Hammer Drop 30" Boring Completed [illegible]
Casing Left 7 [illegible] 4" C[illegible]
Subsurface Water Date — Page —
Obs. Well 2"
Drilled By Paul Davis / Hawkins
Mfg. Des. Drill Track Mount CME 45
Inspected By: Paul Fisher
Classification By: Paul Fisher
Classification By: [illegible]

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH REC RANGE	BLOWS PER FT. CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0						
1.5	SS 1	1 3/8	35%	1-1-2	8" Hollow Stem Auger	Peat, Br, Moist (Pt)
						Organic F. Sand, Tr Silt, Br Moist (OL-SM)
						Missing Core
5.0						
6.5	SS-2		100%	3-1-4		Organic Silt, Br Moist, Roots (OL-ML)
						Clay, Lt Br, Gy, Moist (CH)
						M. Sand, Br (SP)
10.0						
11.5	SS-3		100%	WOR-3-2		M. Sand, Br, Moist, (SP)
						F. Sand, Gy, Moist (SP)
15.0						
16.5	SS4		75%	2-5-11		Silty F. Sand, Gy, Wet (SM)
20					Flowing Sands, Roller Wash	
21.5	SS5		[illegible]	3 2 3		[illegible]

GENERAL REMARKS:
Piezometer Installed to Elev. 39'
NO Noted Indication of Contaminants.
From Approx. 15' — 40'

NED FORM MAR 71 58 (Test)

Boring No. ED-85-4

Site	Boring No.	Page ___ of ___
Aberjona River, Woburn	FD-85-4	

DEPTH 25.0	DEPTH 1" =	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
		SS-6	1⅜	55	25/6		Same as above
30							
31.5		SS-7		60	12/4 11		Same as above
35							
36.5		SS-8		65	20/9 3		CH Brown, wet, Tr (SW)
40.0							
						Bottom of Boring	

FORM 58A (Test)

Boring No. FD-85-4

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA River, WOBURN MASS | DATE: 10/1/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: 4

PIEZ TYPE: CASAGRANDE 2"x2' SLOTTED .010" SLOT | DEPTH OF PIEZ: 39' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): CM SAND, WET, TN, SW | SOIL SAMPLE NO.: S-8 | BORING DIAM: 8"

METHOD OF INSTALLATION: AUGER 4" ID

TYPE OF PROTECTION FOR PIEZ: 4" ID Casing 7' Length | VENT: Lock Cap

GROUND ELEV.: 44' | ELEV. TOP OF RISER: 46.9 | ELEV PIEZ TIP: 5'

FILTER: S NO #2 | FROM ELEV: 4' | TO ELEV: [illegible]

SEAL: Bentonite Pellets 3/8 | FROM ELEV: [illegible] | TO ELEV: [illegible]

INSTALLED BY: PAUL DAVIS / HAWKINS | CONTRACT NO.: D.O. #3 | FOREMAN: PAT SULLIVAN

DATE OF INSTALLATION: 10/1/85 | DATE OF OBSERVATIONS: 10/16/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
		4.13	3	4.13 end of test				
4:09	0	0.16						
	1/2	3.21						
	1	3.91						
	2	4.12						

REMARKS:

Gregory J Hetzler
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

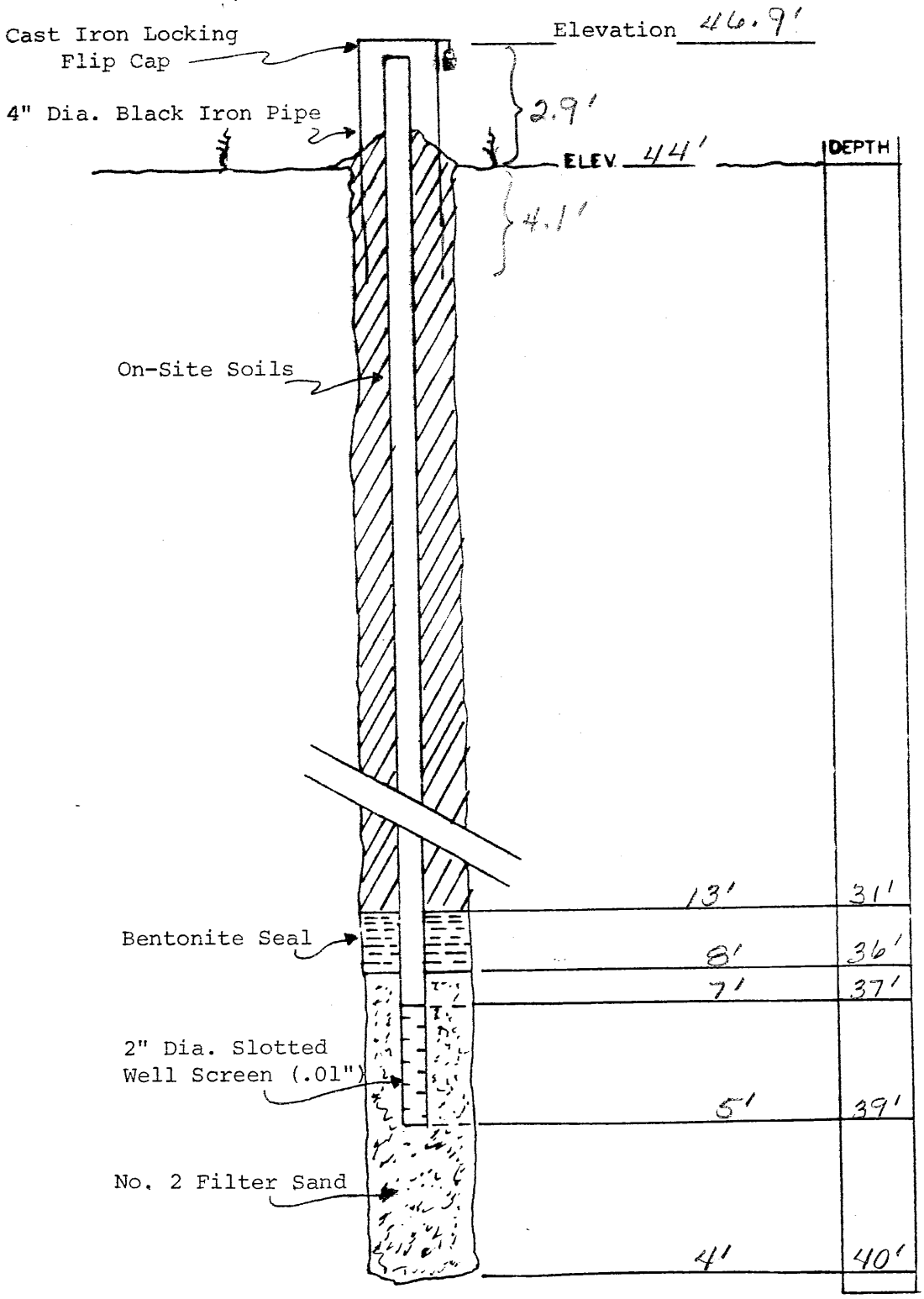
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 4
Cluster No. S- 87



(5)

CLUSTER 5-87 FD-85-5

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. DACW 33-84-D-0011 D.O. #3

Site Aberjona River, Woburn

Page 1 of 2 Pages

Hole No. FD-85-5 Diam. (Casing) 4"

Boring Started 10/9/85

Co-ordinates: N [illegible] E —

Boring Completed 10/9/85

Drilled by Lewis and Lawrence

Report Submitted

Purpose of Exploration [illegible]

Elevation Top of Hole 44' M.S.L.

Total Overburden Drilled 10 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 34' M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 10 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 7.0 Feet
3.1' STICK U

SEE FD-85-4 FOR SOIL LOG

Water Table Depth 1.31

Depth From	Depth To	Method of Drilling and Type of Bit Used
		[illegible]
		HYDRANT WATER USED
		DURING ALL DRILLING

INDEX

Ground Water	Back of Page	1
Boring Location Sketch	Back of Page	1
Overburden Record	Page	2
Rock Drilling	Page	2
	Page	
	Page	
	Page	

Prepared by [illegible]
Field Data Lab. Data

Submitted by [illegible]

NED FORM DEC 63 121

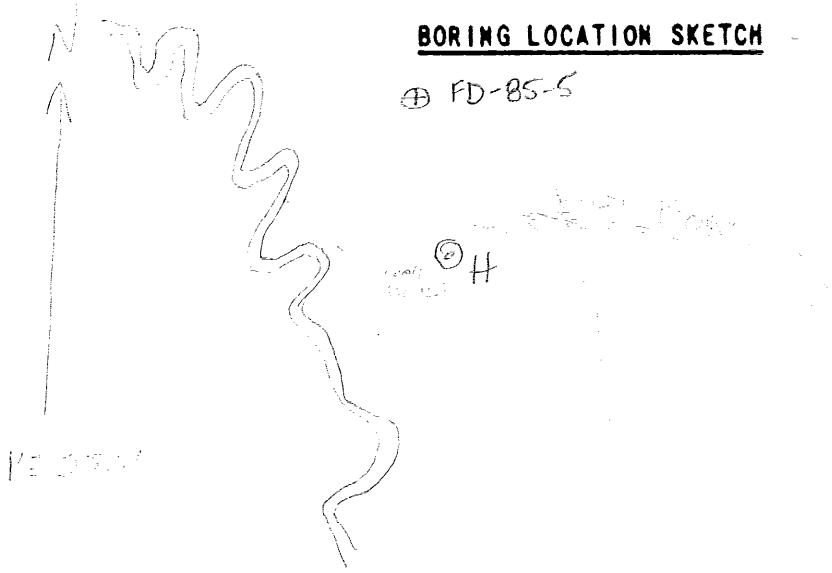
REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH



PIEZOMETER INSTALLATION REPORT

PROJECT: [illegible] | DATE: 20 Oct 85

LOCATION (STA): [illegible] | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-5

PIEZ TYPE: [illegible] 2"x2" | DEPTH OF PIEZ: [illegible] | RISER PIPE DIAM: [illegible]

PIEZ TIP SET IN (SOIL TYPE): [illegible] wed. Sand | SOIL SAMPLE NO.: [illegible] | BORING DIAM: 8"

METHOD OF INSTALLATION: Hollow [illegible]

TYPE OF PROTECTION FOR PIEZ: 4" Casing 7' Total | VENT: [illegible]

GROUND ELEV.: 44' | ELEV. TOP OF RISER: 47.1' | ELEV PIEZ TIP: 35'

FILTER: [illegible] | FROM ELEV: 34' | TO ELEV: 38'

SEAL: [illegible] | FROM ELEV: 38' | TO ELEV: 43'

INSTALLED BY: [illegible] | CONTRACT NO.: DACW33-85-D-0011 D.O. #3 | FOREMAN: [illegible]

DATE OF INSTALLATION: 20 Oct 85 | DATE OF OBSERVATIONS: 10/16/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
		4.41	3	4.41				
4.14	0	0.18						
	1/2	3.28						
	1	4.11						
	2	4.37						

REMARKS:

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

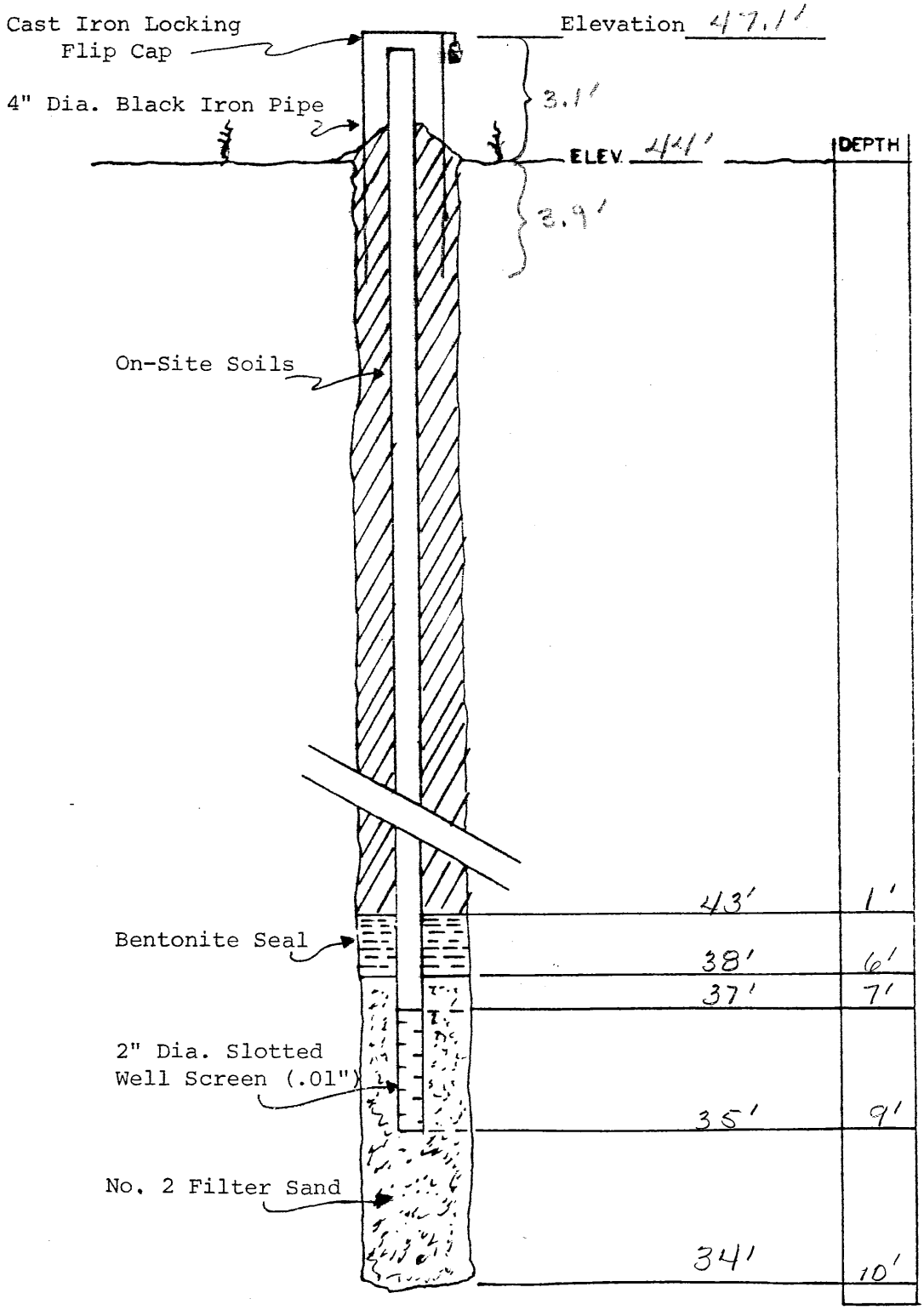
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85- 5

Cluster No. S- 87



CLUSTER S-91 FD-85-6

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

WELL G+H

PROJECT NO. [illegible]

Site [illegible], MA — Page 1 of 1 Pages

Hole No. FD-85-6 Diam. (Casing) 4" — Boring Started 10/2/85

Co-ordinates: N [illegible] E [illegible] — Boring Completed 10/2/85

Drilled by [illegible] — Report Submitted [illegible]

Purpose of Exploration observation wells are required by EPA for hydrologic [illegible]

Elevation Top of Hole 45 M.S.L.
Total Overburden Drilled 40 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole 5 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 40 Feet
Core Recovered — %
Core Recovered — Ft.; — Diam. — In.
Soil Samples 1 3/8 In. Diam. 1-8 No.
Soil Samples — In. Diam. — No.

Casing Left In Place 7.00 Feet
4.0' stickup

Water Table Depth 1.041'

Depth From	Depth To	Method of Drilling and Type of Bit Used
2	[illegible]	[illegible]
		HYDRANT WATER USED DURING ALL DRILLING

INDEX

Ground Water	Back of Page	
Boring Location Sketch	Back of Page	1
Overburden Record	Page	2+3
Rock Drilling	Page	
	Page	
	Page	
	Page	

Prepared by [illegible] Field Data — Lab. Data

Submitted by Atlantic [illegible]

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

ABERJONA R.

BORING LOCATION SKETCH

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Aberdeen Proving Ground — Page 1 of 2 Pages

Boring No. FD-85-6 Desig. PZ6 Diam. (Casing) 4"

Co-ordinates: N see map E —

Elevation Top of Boring 45 M.S.L.
Total Overburden Drilled 40 Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled 0 Feet
Elevation Bottom of Boring 5 M.S.L.
Total Depth of Boring 40 Feet
Core Recovered — % No. Boxes —
Core Recovered — Ft: — Diam. — In.
Soil Samples 1 3/8 In. Diam. — No.
Soil Samples — In. Diam. — No.

Hammer Wt. 140 lb
Hammer Drop 30"
Casing Left 70'7" of 4" casing
Subsurface Water Data — Page —
Obs. Well 2"
Drilled By Davis and Hawkins (ATL)
Mfg. Des. Drill CME-45 Track Mounted
Inspected By: Rodder (ATL)
Classification By: Rodder (ATL)
Classification By: —

Boring Started 20 Oct 85
Boring Completed 20 Oct 85

DEPTH 1" = 0	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
1.5	SS1	1 5/8	REC 100%	1 2 4	4.25" ID Hollow Stem Augur	Jar 1 of 2: OL/OH peat, some mf sand, black, mg: SP note change @ 0.5-1.0'. Jar 2 of 2: SP dark brown mf sand, little organic matter
5.0						
6.5	SS2	1 5/8	100 %	2 5 7		SP - mf sand, trace organics wet, brown changing to grey with depth, trace contaminants
10.0						
11.5	SS3	1 5/8	70 %	WOR 2-3		SP-SM mf sand, some silt, trace organics brown, saturated
15.0						
16.5	SS4	1 5/8	100 %	3 3 3		SP-SM fine sand, tan with and silt rust horizons saturated
20.0						
21.5	SS5	1 5/8	50 %	2 2 1		SP-SM fine sand / tan with and silt rust horizons saturated, trace contaminant

GENERAL REMARKS:
Set pieg @ 39'

NED FORM MAR 71 58 (Test)

Boring No. FD-85-6

Site	Boring No.	Page 2 of 2
Abandoned [illegible]	FD-85-6	

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
25.0						
26.5	SS6	1 5/8	Rec 40%	2 1 1		SP-SM - fine sand and silt fan with rust horizons, wet trace contaminants
30.0						
31.5	SS7	1 5/8	65%	3 7 7		SP-SM mf sand, some silt, brown, wet trace contaminant
35.0						
36.5	SS8	1 5/8	40%	8 10 12		SW-GP mf sand, some mf gravel, brown, wet
40.0					END OF EXPLORATIONS	

PIEZOMETER INSTALLATION REPORT

PROJECT: Aberjona River, Woburn MA | DATE: 8 Oct 85

LOCATION (STA): see map | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-6

PIEZ TYPE: slotted 2" 2"x2' | DEPTH OF PIEZ: 29' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): [illegible] | SOIL SAMPLE NO.: | BORING DIAM: [illegible]

METHOD OF INSTALLATION: [illegible]

TYPE OF PROTECTION FOR PIEZ: 4" [illegible] 4.0 stickup | VENT: lock cap

GROUND ELEV.: 45' | ELEV. TOP OF RISER: 49 | ELEV PIEZ TIP: [illegible]

FILTER: [illegible] | FROM ELEV: 5' | TO ELEV: [illegible]

SEAL: 1/8" bentonite pellets | FROM ELEV: 9' | TO ELEV: 14'

INSTALLED BY: Davis and Hamilton | CONTRACT NO.: DO #3 | FOREMAN: [illegible]

DATE OF INSTALLATION: 8 Oct 85 | DATE OF OBSERVATIONS: 10/12/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1611		5.04	1650	4	4.52			
1646	0	0	1654	8	4.98			
	1/2	1.27	1659	15	5.04			
	1	2.28						
1648	2	3.40						

REMARKS:

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

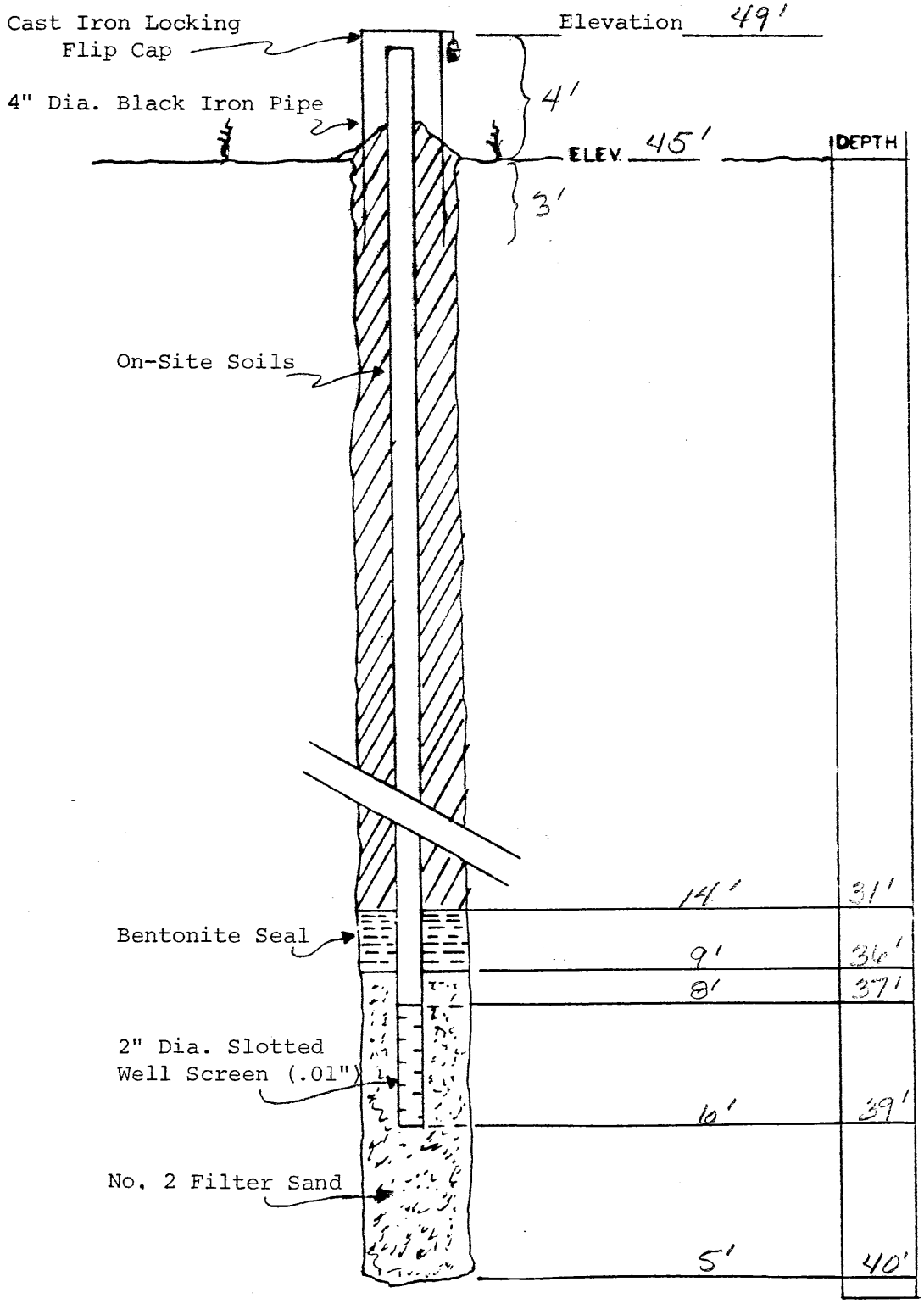
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 6

Cluster No. S- 91



CLUSTER S-91 FD-85-7

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. DACW33-85-D-0011 D.O. #3

Site Aberjona River, Woburn MA (WELLS G+H)

Page 1 of 3 Pages

Hole No. FD-85-7 Diam. (Casing) 4"

Boring Started 10/8/85

Co-ordinates: N see map E

Boring Completed 10/8/85

Drilled by Davis and Hawkins

Report Submitted

Purpose of Exploration observation wells are installed by EPA for hydrologic modeling by others.

Elevation Top of Hole 45 M.S.L.

Total Overburden Drilled 10 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 35 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 10 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — in.

Soil Samples — in. Diam. — No.

Soil Samples — in. Diam. — No.

Casing Left in Place 7.00 Feet
3.10' stickup

- SEE FD-85-6 FOR SOIL LOG

Water Table Depth 1.18'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	10.0	4.25" ID Hollow Stem Auger
		HYDRANT WATER USED DURING ALL DRILLING

INDEX

Ground Water	Back of Page	
Boring Location Sketch	Back of Page	1
Overburden Record	Page	2
Rock Drilling	Page	
	Page	
	Page	
	Page	

Prepared by Roddoe

Field Data

Lab. Data

Submitted by Atlantic Testing Laboratory Ltd.

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

PIEZOMETER INSTALLATION REPORT

PROJECT: [illegible] | DATE: [illegible]

LOCATION (STA): [illegible] | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-7

PIEZ TYPE: slotted .010" Casa Grande typ 2"φ x 2' long | DEPTH OF PIEZ: 9' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): SP-SM m-f sand some silt, trace clay | SOIL SAMPLE NO.: FD85-6 | BORING DIAM: 8"

METHOD OF INSTALLATION: Hollow Stem Auger Cavity

TYPE OF PROTECTION FOR PIEZ: 4" Casing, 7' Total, 2.10' Stick Up | VENT: lock cap

GROUND ELEV.: 45' | ELEV. TOP OF RISER: 48.1' | ELEV PIEZ TIP: 36'

FILTER: [illegible] | FROM ELEV: 35' | TO ELEV: 39'

SEAL: 3/8" bentonite pellets | FROM ELEV: 39' | TO ELEV: 44'

INSTALLED BY: Lewis and Lewis | CONTRACT NO.: DACW 33-85-D-0014 D.O. 43 | FOREMAN: Beddoe

DATE OF INSTALLATION: 2 Oct 85 | DATE OF OBSERVATIONS: 10/12/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
		4.28	1638	4	4.06			
1634	0	0.15	1642	8	4.28			
	1/2	1.45						
	1	2.35						
1636	2	3.36						

REMARKS:

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

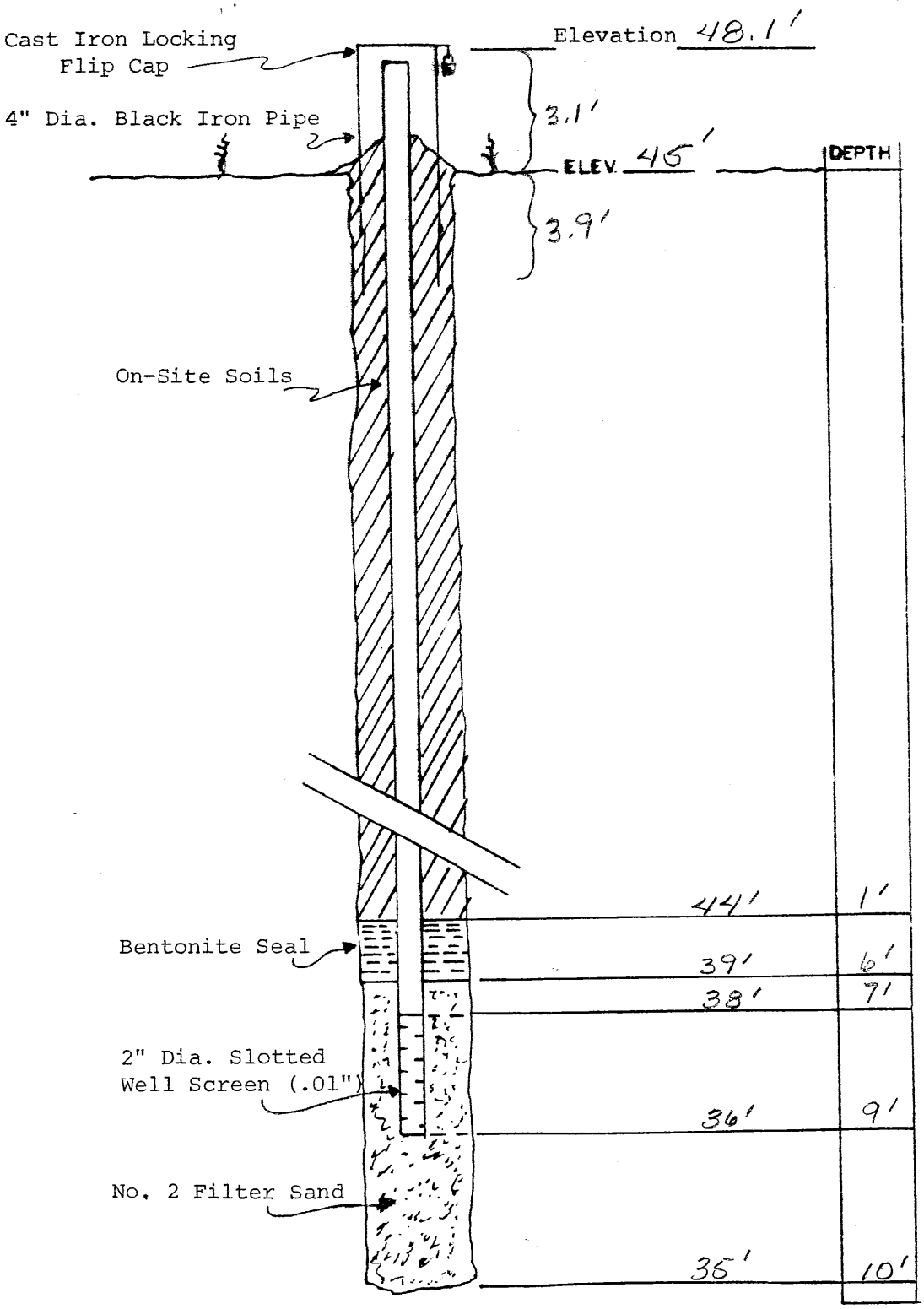
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 7
Cluster No. S-91



CLUSTER S-91 FD-85-8

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJUNA RIVER WELL G+H, WOBURN, MA PROJECT NO. DACW 33-85-D-0011 D.O. #003

Page 1 of ___ Pages

Hole No. FD-85-8 Diam. (Casing) 4"

Boring Started 10-3-85

Co-ordinates: N SEE DRAWING

Boring Completed 10-8-85

Drilled by DAVIS + HAWKINS (ATL)

Report Submitted

Purpose of Exploration SOIL SAMPLING + PIEZOMETER INSTALLATION FOR EPA CONTAMINATION STUDY

Elevation Top of Hole 45 M.S.L.

Total Overburden Drilled 80 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -35 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 80 Feet

Core Recovered — %

Core Recovered — Ft.: — Diam. — in.

Soil Samples 1 3/8 in. Diam. 5 No.

Soil Samples ~ in. Diam. — No.

Casing Left in Place 4" ϕ TOTAL 7 Feet
3.1 STICKUP

SEE FD-85-6 FOR SOIL LOG FROM 0 TO 40'

Water Table Depth 1.25'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	30.0	3" ROLLER BIT FOLLOWED BY 4" ϕ
		CASING WASH WITH WATER
30.0	70.0	3" ROLLER BIT FOLLOWED BY 4" ϕ
		CASING WASH WITH BENTONITE MIX
70.0	80.0	FLUSHED OUT BENTONITE AND
		CONTINUED, AS ABOVE, WITH WATER

INDEX

Ground Water ___ Back of Page ___
Boring Location Sketch ___ Back of Page 1
Overburden Record ___ Page 2+3
Rock Drilling ___ Page ___
___ Page ___
___ Page ___
___ Page ___

Prepared by PAUL FISHER
Field Data

Lab. Data

Submitted by ATLANTIC TESTING LAB

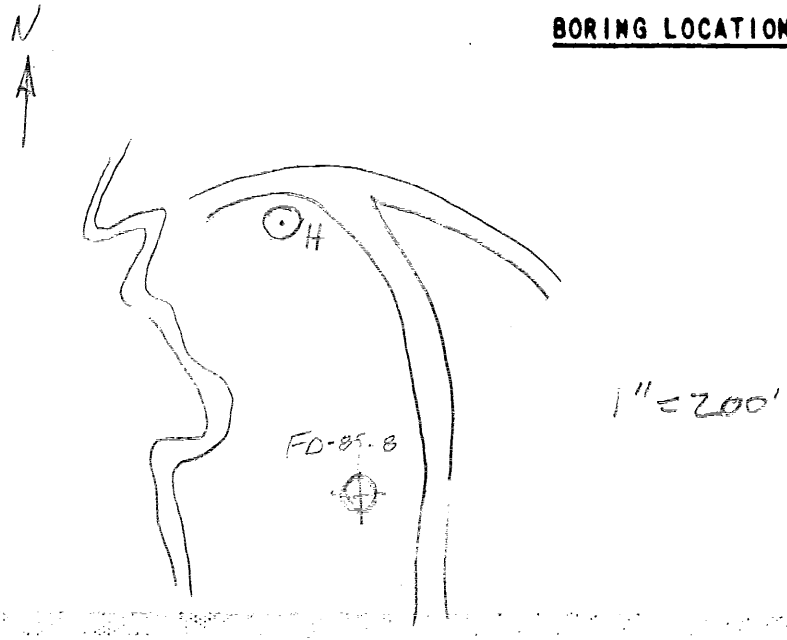
NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH



ABERJONA RIVER

U.S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site WELL G&H SITE, WOBURN, MA Page 1 of 2 Pages

Boring No. FD-85-8 Desig. PZ-8 Diam. (Casing) 4"

Co-ordinates: N SEE DRAWING E —

Elevation Top of Boring 45 M.S.L.
Total Overburden Drilled 80 Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled — Feet
Elevation Bottom of Boring -35 M.S.L.
Total Depth of Boring 80 Feet
Core Recovered — % No. Boxes —
Core Recovered — Ft. — Diam. — in.
Soil Samples 1 3/8 in. Diam. 5 No.
Soil Samples — in. Diam. — No.

Hammer Wt. 140# Boring Started 10-3-85
Hammer Drop 30"
Casing Left 7' OF 4"ϕ Boring Completed 10-8-85
Subsurface Water Date — Page —
Obs. Well 2"
Drilled By DAVIS, HAWKINS
Mfg. Des. Drill TRACK MOUNTED CME 45
Inspected By: PAUL FISHER
Classification By: PAUL FISHER
Classification By: BEDDOE

DEPTH 1"=	CORE/SAMPLE NO.	SIZE	~~DEPTH~~ REC RANGE	~~CORE~~ REC'Y	BLOWS PER FT.	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
			REC			cont. of 10/3/85 4" CASING WAS WASH (WITH WATER) + TURNED TO 30'. LOST WATER, MIX + ADD DRILL MUD, USED DUG MUD PIT. CONT. DRILLING 4" CASING. STARTED SAMPLING @ 40'	SEE BORING FD-85-6 FOR SOIL INFORMATION FROM 0.0 TO 40.0 FT
40.0							GRAVELLY F-C SAND, TAN, (SP-GP)
41.5	SS-1		97%		16 15 19		
45.0						10/4/85	ASSUMED SAME AS SS-1
46.5			NO		33-21-15		
50.0			NO				did not ADVANCE due to gravel, assumed same as SS-1
55.0	SS-2		WASH SAMPLE				F.M.C. sand, ox. frags; assumed same as SS-1
60.0							

GENERAL REMARKS:
HYDRANT WATER USED DURING ALL DRILLING

NED FORM MAR 71 58 (Test)

Boring No. FD-85-8

Site ABERJONA RIVER WELL G & H SITE WOBURN

Boring No. FD-85-8

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RECOVERY RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
60.0			NO		10/8/85 - Rec'd. washing, 35 to 60' beginning of trip	
65.0						
66.5	SS-3		72	22/16/33		Gravelly, C.M.F. sand, little silt; tan, wet (SW-GP)
70.0						
71.5	SS-4		75	28/65/48	WASHED DRILL MUD FROM HOLE AND ADVANCED THE REMAINING 10' WITH HYDRANT WATER ONLY	Sand and gravel, little silt; tan moist (GP-SM)
75.0						
	SS-5		100	150/3"		GRAVELLEY F.M.C. SAND GY (SW)
80.0					END OF EXPLORATION	

D. FORM 58A (Test)

Boring No. FD-85-8

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA RIVER, WELLGHT WOBURN, MA | DATE: 10/12/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FO-85-9

PIEZ TYPE: SLOTTED (.010") 2"φ x 2' | DEPTH OF PIEZ: 79' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): (SW) | SOIL SAMPLE NO.: SS-5 | BORING DIAM: 4"

METHOD OF INSTALLATION: 4" TURNED CASING

TYPE OF PROTECTION FOR PIEZ: 4" CASING, 7' TOTAL, 3.1 STICKUP | VENT: LOCK CAP

GROUND ELEV.: 45' | ELEV. TOP OF RISER: 48.1 | ELEV PIEZ TIP: -34

FILTER: #2 SAND | FROM ELEV: -35 | TO ELEV: -31

SEAL: BENTONITE SLURRY | FROM ELEV: -31 | TO ELEV: -11

INSTALLED BY: DAVIS & HAWKINS | CONTRACT NO.: DACW 33-85-D-0011 DO. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/8/85 | DATE OF OBSERVATIONS: 10/12/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
4:27	—	4.35		2	4.35			
	0	.32						
	1/4	2.73						
	1/2	3.70						
	1	4.20						

REMARKS:

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

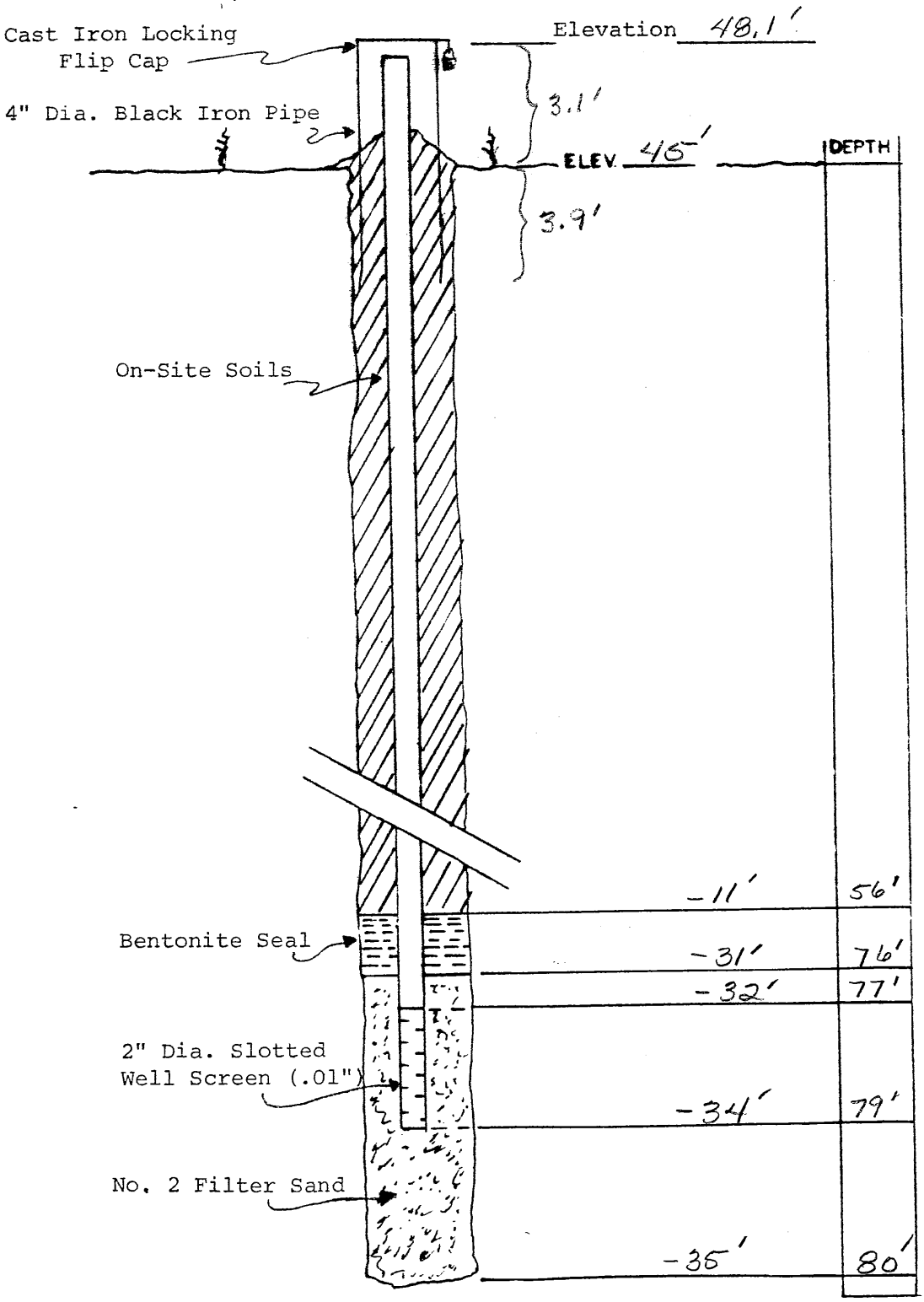
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 8
Cluster No. S- 91



CLUSTER S-88 FD-85-9

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER, WELL G+H, WOBURN, MA

PROJECT NO. DACW-33-85-D-0011 D.O. #003

Page 1 of ___ Pages

Hole No. FD-85-9 Diam. (Casing) 4"

Boring Started 10/9/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/10/85

Drilled by DAVIS + HAWKINS

Report Submitted ___

Purpose of Exploration OBTAIN SOIL SAMPLES + INSTALL PIEZOMETER

Elevation Top of Hole 44 M.S.L.

Total Overburden Drilled 82.5 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -38.5 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 82.5 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — in.

Soil Samples 1 3/8 in. Diam. 13 No.

Soil Samples — in. Diam. — No.

Casing Left in Place 4" x TOTAL 10' Feet
3.8' STICKUP

Water Table Depth 0.41'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	82.5	3" ROLLER BIT FLUSHED WITH HYDRANT WATER, FOLLOWED BY 4" DRIVEN CASING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site ABERJONA R. WOBURN MA Page 1 of 3 Pages

Boring No. FD-85-9 Desig. PZ-9 Diam. (Casing) 4"

Co-ordinates: N SEE DRAWING E —

Elevation Top of Boring 44 M.S.L.
Total Overburden Drilled 82.5 Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled 0 Feet
Elevation Bottom of Boring -38.5 M.S.L.
Total Depth of Boring 82.5 Feet
Core Recovered — % No. Boxes —
Core Recovered — Ft. — Diam. — In.
Soil Samples 1 3/8 In. Diam. 13 No.
Soil Samples — In. Diam. — No.

Hammer Wt. 140# Boring Started 10/9/85
Hammer Drop 30"
Casing Left 4" Boring Completed 10/10/85
Subsurface Water Data — Page —
Obs. Well 2"
Drilled By DAVIS + HAWKINS
Mfg. Des. Drill TRACK MOUNTED CME 45
Inspected By: PAUL FISHER
Classification By: PAUL FISHER
Classification By: —

DEPTH 1"=5.0'	CORE/SAMPLE NO.	SIZE	~~DEPTH RANGE~~	BLOWS PER FT. ~~CORE RECVY~~	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
1.5	SS-1	1½	REC 52	WT OF ROD.	TURNED 3" ROLLER BIT FOLLOWED BY A DRIVEN 4" CASING USING A 300 LB HAMMER	PEAT, ORGANICS, WET, BR (PT)
5.0						
6.5	SS-2		100%	7 7 10		F.M. SAND, BR, MOIST (SP)
						ASSUMED CHANGE
10.0						
11.5	SS-3		15	7 6 7		M.C. SAND + GRAVEL (SP-GP) GREY
15.0						
16.5	SS-4		20	7 24 37		SAME AS SS-3
20.0					30 BLOW/FT @ 20' ON 4" CASING	
21.5	SS-5		0	21 8 5		NOTED GRAVEL CUTTINGS

GENERAL REMARKS: HYDRANT WATER USED DURING EXPLORATION

NED FORM MAR 71 58 (Test)

Boring No. FD-85-9

Site ABERJONA RIVER
WELL G+H, WOBURN, MA

Boring No. FD-85-9

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
25.0						
26.5	SS-6	1½	10	37 12 10		SAME AS SS-3
30.0						
31.5	SS-7		10	16 21 11		SAME AS SS-3
35.0						
36.5	SS-8		10	14 20 16	90 BLOWS/FT	SAME AS SS-3
40.0						
41.5	SS-9		10	17 6 3		GRAVELLY F. SAND, TR SILT BR, WET (SP)
45.0						
46.5	SS-10		100	4 5 7		F.M SAND, LITTLE GRAV, GR, MOIST (SP)
50.0						
51.5	\		0	15 15 11	100 BLOW/FT ON 4" CASING	NO SAMPLE ASSUME SAME AS SS-10
55.0					END 10/9/85, START 10/10/85	
60.0	\		0			SAMPLER ON TOP OF COBBLE NO ADVANCEMENT WITH BLOWS
61.5	SS-11		50	23 10 6		GRAVELLY F.M.C. SAND, TR SILT BR WET, (SW-GP)

Site ABERJONA R
WELL G+H, WOBURN MA

Boring No. FD-85-9

DEPTH 1" = 5.0	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
65.0	SS-12	1¾	40%	38 74 54		SAME AS SS-11 (SW-GP)
66.5					DIFFICULTIES WITH ROLLER BIT IN COARSE GRAVEL	
70						
			0			SAMPLER ON TOP OF COBBLE NO ADVANCEMENT WITH BLOWS
75						
			0			SAMPLER ON TOP OF COBBLE NO ADVANCEMENT WITH BLOWS
80					4" CASING DRIVEN TO 80'	
	SS-13	SAMPLE OF CUTTINGS				SAMPLER ON TO OF COBBLE - EXTENDED ROLLER BIT TO 82.5, NO CHANGE IN MATERIAL
82.5					END OF EXPLORATION	

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA RIVER, WOBURN MA | DATE: 10/12/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-9

PIEZ TYPE: 2'x2" ϕ SLOTTED .010" | DEPTH OF PIEZ: 79' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): SANDY GRAVEL | SOIL SAMPLE NO.: SS-13 | BORING DIAM: 4"

METHOD OF INSTALLATION: 3" ROLLER BIT FOLLOWED BY 4" CASING

TYPE OF PROTECTION FOR PIEZ: 4" ϕ PIPE X TOTAL 10' LENGTH | VENT: LOCK CAP

GROUND ELEV.: 44 | ELEV. TOP OF RISER: 47.8 | ELEV PIEZ TIP: -35

FILTER: #2 SAND | FROM ELEV: -36 | TO ELEV: -32

SEAL: BENTONITE SLURRY | FROM ELEV: -32 | TO ELEV: -10

INSTALLED BY: DAVIS + HAWKINS | CONTRACT NO.: DACW-33-85-D-0011 DO #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/10/85 | DATE OF OBSERVATIONS: 10/12/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
		4.21						
10:36:30	0	.60						
10:36:45	1/4	4.21						
10:37:00	1/2	4.21						

REMARKS:

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

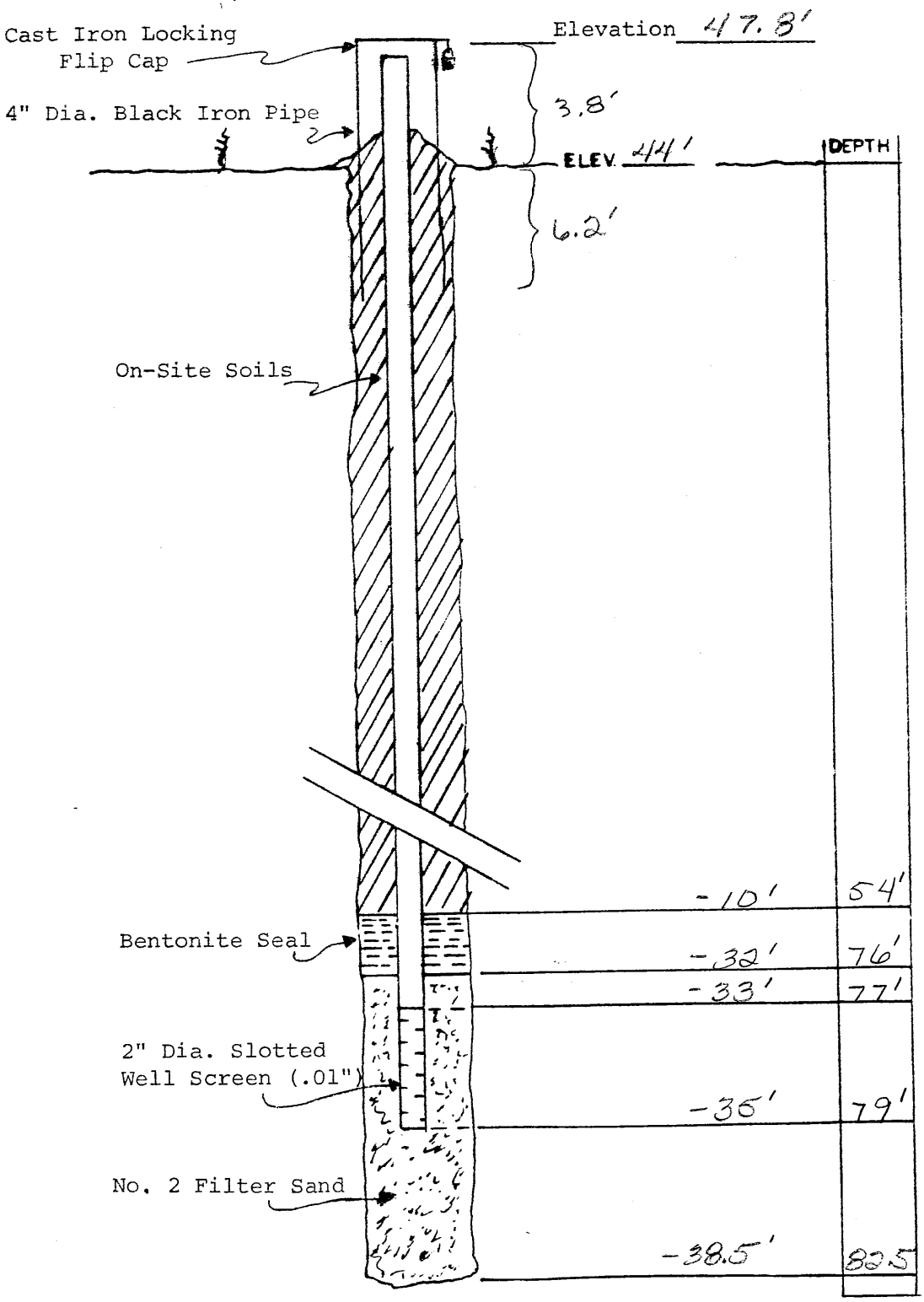
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 9
Cluster No. S-88



CLUSTER S-89 FD-85-10

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELL G+H, WOBURN, MA

PROJECT NO. DACW-33-85-D-0011, D.O. #003

Page 1 of 2 Pages

Hole No. FD-85-10 Diam. (Casing) 4"

Boring Started 10/9/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/9/85

Drilled by CAMBRIDGE + BOYER

Report Submitted

Purpose of Exploration INSTALLATION OF PIEZOMETER

Elevation Top of Hole 43 ± M.S.L.

Total Overburden Drilled 32.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 11 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 32 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples NONE In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place 4"ϕ, TOTAL 10 Feet
3.1 STICKUP

SEE FD-85-2 FOR SOIL LOG

Water Table Depth AT SURFACE

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	32.0	3" ROLLER AND 4" DRIVEN CASING
		USING HYDRANT WATER ONLY
		DURING DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER — Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R, WOBURN, MA | DATE: 10/12/85

LOCATION (STA): JEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-10

PIEZ TYPE: 2"x2" ϕ SLOTTED .010" | DEPTH OF PIEZ: 31 | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): F.M. SAND | SOIL SAMPLE NO.: FD-85-2 SS-7 | BORING DIAM: 4"

METHOD OF INSTALLATION: 3" ROLLER + 4" DRIVEN CASING

TYPE OF PROTECTION FOR PIEZ: 4" ϕ PIPE X 10' TOTAL LENGTH | VENT: LOCK CAP

GROUND ELEV.: 43 | ELEV. TOP OF RISER: 46.1 | ELEV PIEZ TIP: 12

FILTER: #2 SAND | FROM ELEV: 11 | TO ELEV: 15

SEAL: PELONITE 3/8" | FROM ELEV: 15 | TO ELEV: 20

INSTALLED BY: CAMBRIDGE + BOYER | CONTRACT NO.: DACW-33-85-D-0011 DO#3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/9/85 | DATE OF OBSERVATIONS: 10/12/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1151		3.16		4	3.16			
	0	0.10						
	1/2	3.10						
	1	3.11						
	2	3.15						

REMARKS:

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

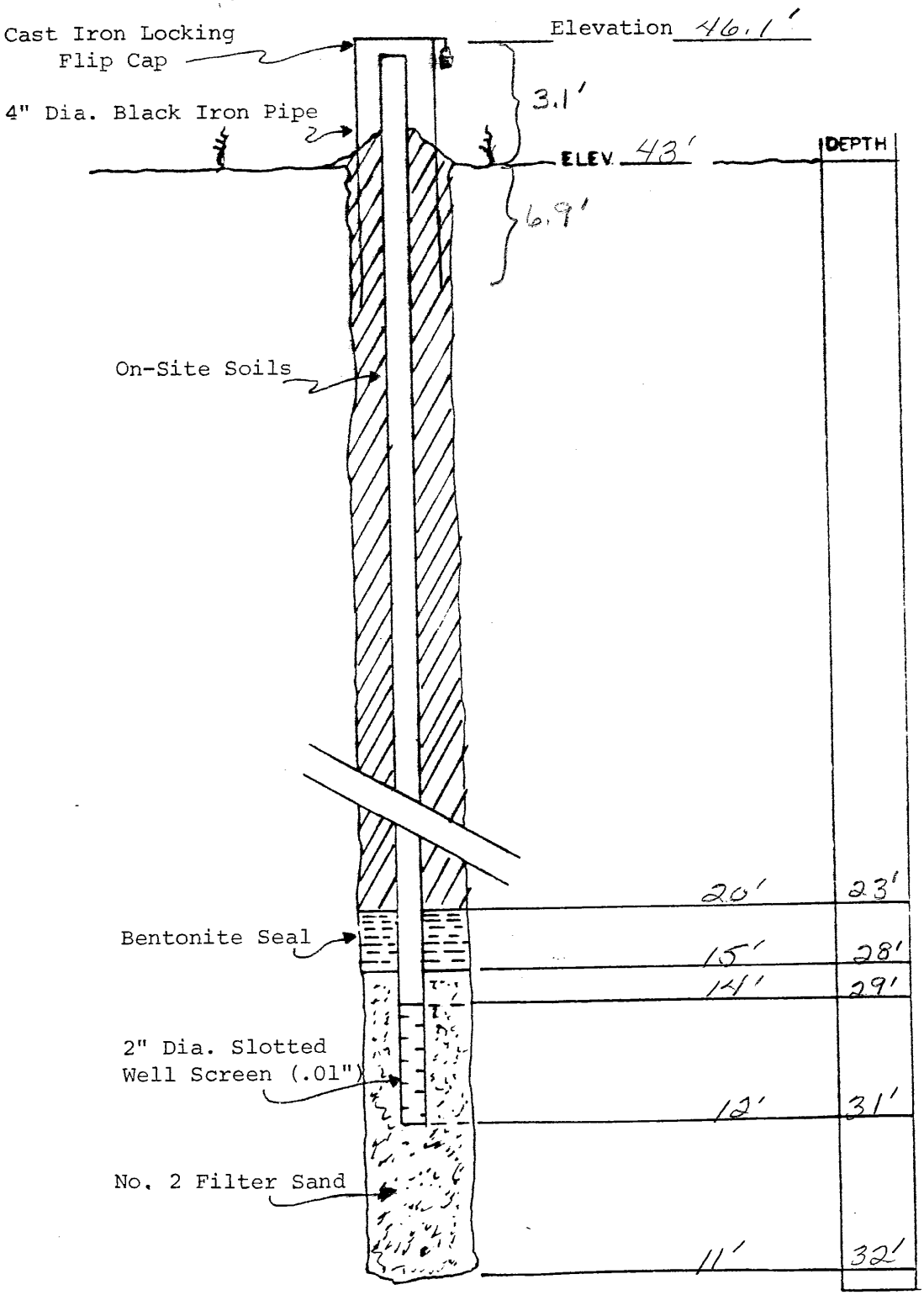
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 10
Cluster No. S- 89



CLUSTER S-39 FD-85-11

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

ABERJONA RIVER PROJECT NO. DACW-33-85-0-0011 D.O. #3

Site WELLS G+H, WOBURN MA — Page 1 of 2 Pages

Hole No. FD-85-11 Diam. (Casing) 4" — Boring Started 10/9/85

Co-ordinates: N SEE E DRAWING — Boring Completed 10/10/85

Drilled by CAMBRIDGE + BOYER — Report Submitted

Purpose of Exploration INSTALLATION OF PIEZOMETER

Elevation Top of Hole 43 M.S.L.
Total Overburden Drilled 56 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -13 M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 56 Feet
Core Recovered — %
Core Recovered — Ft.: — Diam. — In.
Soil Samples ____ In. Diam. ____ No.
Soil Samples ____ In. Diam. ____ No.

Casing Left in Place 4" X TOTAL 10 Feet
2.7' STICKUP

SEE FD-85-2 FOR SOIL LOG

Water Table Depth -0.16'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	56	3" ROLLER WASH + 4" DRIVEN
		CASING. HYDRANT WATER
		USED DURING ALL DRILLING

INDEX

Ground Water ____ Back of Page ____
Boring Location Sketch ____ Back of Page ____
Overburden Record ____ Page ____
Rock Drilling ____ Page ____
____ Page ____
____ Page ____
____ Page ____

Prepared by FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R., WOBURN, MA | DATE: 10/12/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-11

PIEZ TYPE: 2"ϕ SLOTTED X 2' LONG | DEPTH OF PIEZ: 55' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): F. SAND TR M.C. SAND | SOIL SAMPLE NO.: FD-85-2 55-12 | BORING DIAM: 4"

METHOD OF INSTALLATION: 3" ROLLER + 4" DRIVEN CASING

TYPE OF PROTECTION FOR PIEZ: 4"ϕ X 10' TOTAL LENGTH | VENT: LOCK CAP

GROUND ELEV.: 43 | ELEV. TOP OF RISER: 45.7 | ELEV PIEZ TIP: -12

FILTER: # 2 SAND | FROM ELEV: -9 | TO ELEV: -13

SEAL: BENTONITE SLURRY | FROM ELEV: -9 | TO ELEV: 11

INSTALLED BY: CAMBRIDGE + BOYER | CONTRACT NO.: DACW-33-85-D-0011 0.0. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/10/85 | DATE OF OBSERVATIONS: 10/12/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
11:44		2.54	4	2.54				
	0	.68						
	1/2	2.25						
	1	2.46						
	2	2.50						

REMARKS:

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

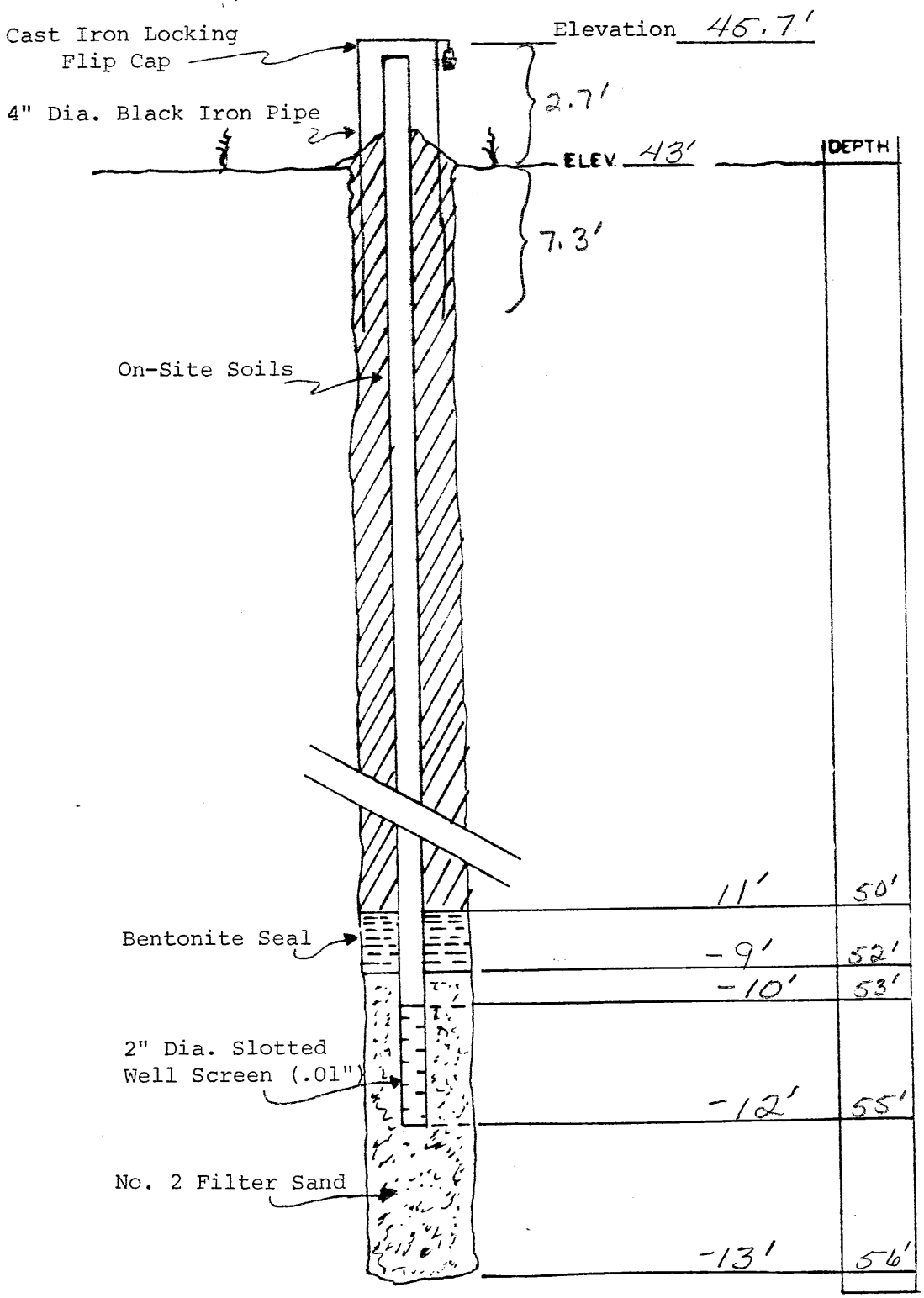
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 11
Cluster No. S- 89



CLUSTER 5-88 FD-85-12

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. DACW-33-85-D-0011 D.O. 3

Site ABERJONA RIVER WELLS G&H, WOBURN, MA

Page 1 of 2 Pages

Hole No. FD-85-12 Diam. (Casing) 4"

Boring Started 10/11/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/11/85

Drilled by DAVIS & HAWKINS

Report Submitted

Purpose of Exploration FOR INSTALLATION OF PIEZOMETER

Elevation Top of Hole 44 M.S.L.

Total Overburden Drilled 10 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 34 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 10 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place 4" ϕ x TOTAL 10 Feet
3.4 STICKUP

SEE FD-85-9 FOR SOIL LOG

Water Table Depth 0.53'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	10	3" ROLLER, FOLLOWED BY 4"
		DRIVEN CASING. HYDRANT WATER
		USED FOR ALL DRILLING.

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page 1
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by FISHER — Field Data — Lab. Data

Submitted by ATL

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA RIVER, WOBURN, MA | DATE: 10/12/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-12

PIEZ TYPE: 2" SLOTTED .010" x 2' LONG | DEPTH OF PIEZ: 9' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): M.C. SAND + GRAVEL | SOIL SAMPLE NO.: FD-85-9 SS-3 | BORING DIAM: 4"

METHOD OF INSTALLATION: 3" ROLLER BIT FOLLOWED BY 4" DRIVEN CASING

TYPE OF PROTECTION FOR PIEZ: 4" ϕ PIPE X 10' TOTAL LENGTH | VENT: LOCK CAP

GROUND ELEV.: 44 | ELEV. TOP OF RISER: 47.4 | ELEV PIEZ TIP: 35

FILTER: #2 SAND | FROM ELEV: 34 | TO ELEV: 38

SEAL: PELONITE 3/8 | FROM ELEV: 38 | TO ELEV: 43

INSTALLED BY: DAVIS + HAWKINS | CONTRACT NO.: DACW-33-85-D-0011 D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/11/85 | DATE OF OBSERVATIONS: 10/12/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
10:48		3.93						
	0	0.55						
	1/4	3.70						
	1/2	3.90						
	1	3.93						

REMARKS:

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

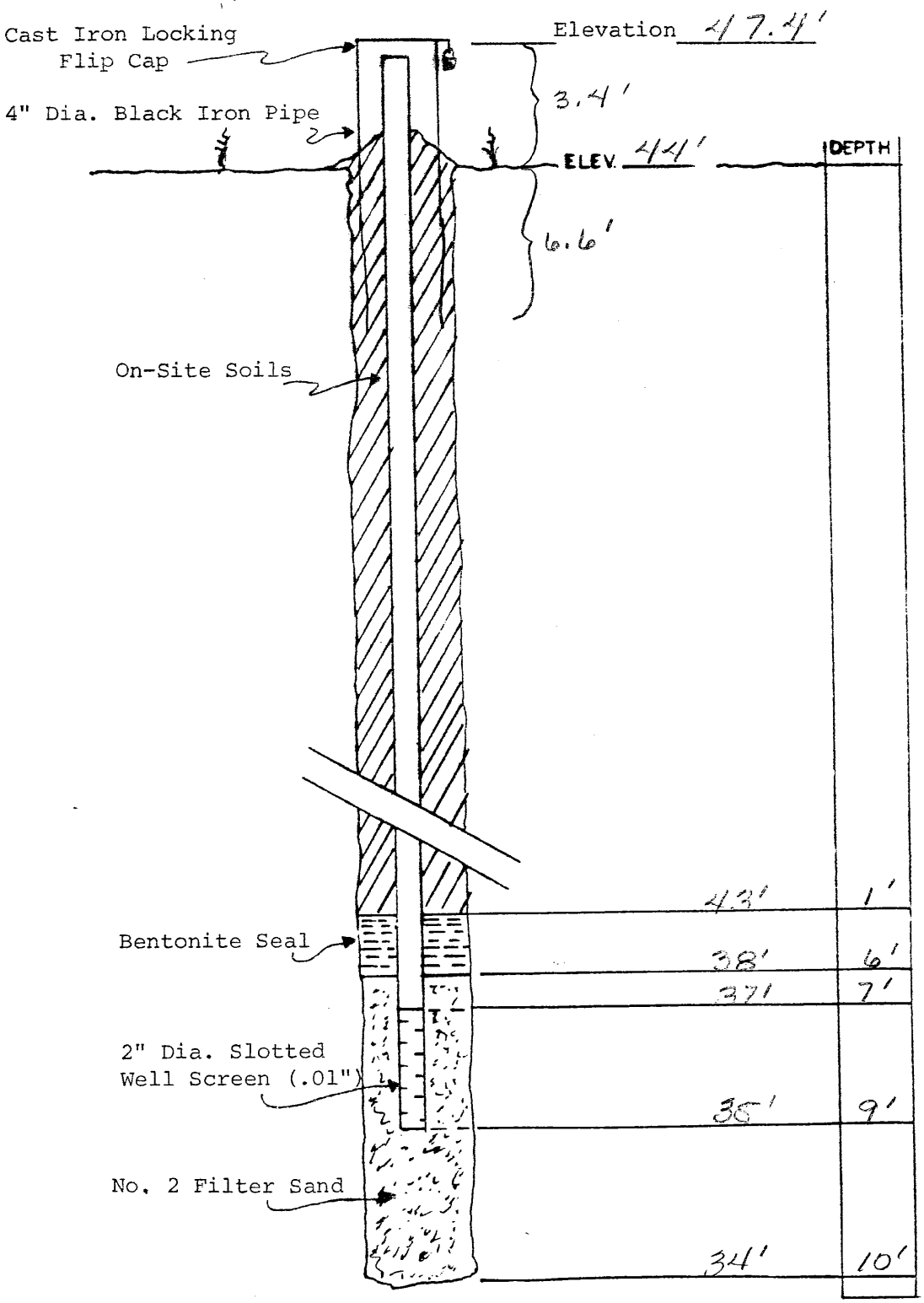
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 12
Cluster No. S-88



CLUSTER S-88 FD-85-13

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELL 6+1 WOBURN MA

PROJECT NO. DACW-33-85-D0011 D.O. #3

Page 1 of ___ Pages

Hole No. FD-85-13 Diam. (Casing) 4"

Boring Started 10/11/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/11/85

Drilled by DAVIS & HAWKINS

Report Submitted ___

Purpose of Exploration SOIL SAMPLING & PIEZOMETER INSTALLATION

Elevation Top of Hole 44 M.S.L.

Total Overburden Drilled 40 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 4 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 40 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place 4" X TOTAL 10' Feet
3.1 STICKUP

SEE FD-85-9 FOR SOIL LOG

Water Table Depth 0.51'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	40	3" ROLLER BIT FOLLOWED BY
		4" DRIVE CASING
		HYDRAULIC WATER USED DURING ALL
		DRILLING

INDEX

Ground Water	Back of Page ___
Boring Location Sketch	Back of Page 1
Overburden Record	Page ___
Rock Drilling	Page ___
	Page ___
	Page ___
	Page ___

Prepared by FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

PIEZOMETER INSTALLATION REPORT

PROJECT: Aberjona River Woburn | DATE: 10/12/85

LOCATION (STA): See Drawing | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-13

PIEZ TYPE: 2" ϕ Slotted .010" x 2' | DEPTH OF PIEZ: 39' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): Gravelly F Sand (SP) | SOIL SAMPLE NO.: FO-85-9 SS-9 | BORING DIAM: 4"

METHOD OF INSTALLATION: 4" Driven Casing

TYPE OF PROTECTION FOR PIEZ: 4" ϕ Pipe x 10' Length | VENT: Lock Cap

GROUND ELEV.: 44 | ELEV. TOP OF RISER: 47.1 | ELEV PIEZ TIP: 5

FILTER: #2 Sand | FROM ELEV: 4 | TO ELEV: 8

SEAL: Pelonite 3/8" ϕ | FROM ELEV: 8 | TO ELEV: 13

INSTALLED BY: Davis + Hawkins | CONTRACT NO.: DACW-33-85-D-0011 00 #3 | FOREMAN: Fisher

DATE OF INSTALLATION: 10/11/85 | DATE OF OBSERVATIONS: 10/12/85

METHOD OF TESTING PIEZ.: Falling Head Test

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1053		3.61						
	0	0						
	1/4	3.55						
	1/2	3.60						
	1	3.61						

REMARKS:

Fisher
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

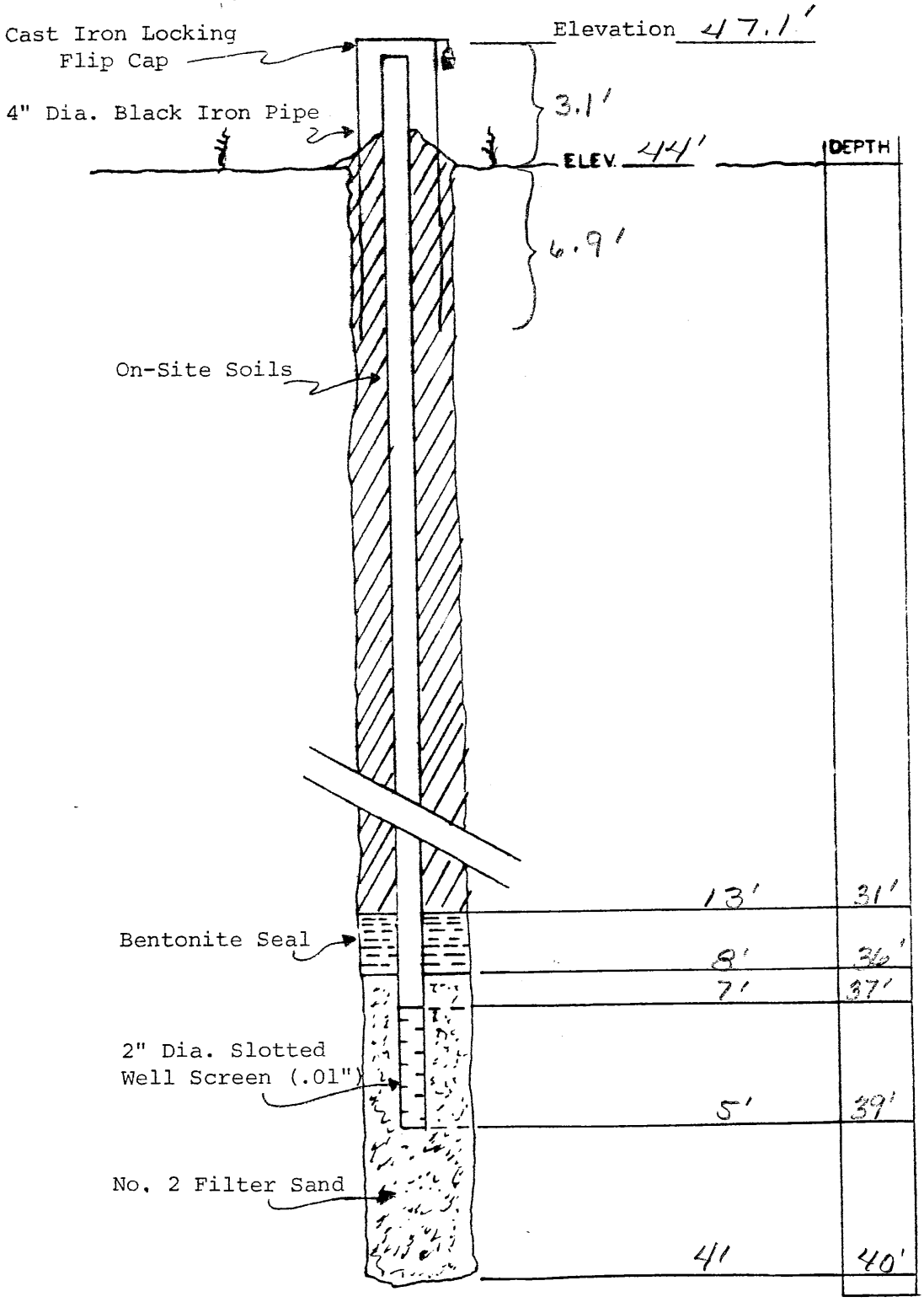
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 13
Cluster No. S- 88



CLUSTER 5-87 FD-85-14

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Site WELLS G+H, MERRIMACK RIVER, WOBURN, MA

Page 1 of 1 Pages

Hole No. PB-85-14 Diam. (Casing) 4"

Boring Started 10/11/85

Co-ordinates: N SEE E DRAWING

Boring Completed 11/16/85

Drilled by CAMBRIDGE & BOYLE

Report Submitted

Purpose of Exploration SOIL SAMPLING + INSTALL PIEZOMETER

Elevation Top of Hole 44' M.S.L.

Total Overburden Drilled 80.0 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -36 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 80.0 Feet

Core Recovered — %

Core Recovered — Ft.: — Diam. — In.

Soil Samples 1 3/8 In. Diam. 9 No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 7.0 Feet
3.1' STICK UP

Water Table Depth 1.47'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	80	3" ROLLER BIT FOLLOWED BY
		4" DRIVEN CASING. HYDRANT
		WATER USED DURING ALL
		DRILLING

INDEX

Ground Water — Back of Page
Boring Location Sketch — Back of Page
Overburden Record — Page
Rock Drilling — Page
— Page
— Page
— Page

Prepared by M. THEW
Field Data Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site [illegible] Page 1 of ___ Pages

Boring No. FD-85-14 Desig. 14 Diam. (Casing) 4"

Co-ordinates: N See Drawing E —

Elevation Top of Boring 44 M.S.L.
Total Overburden Drilled 80 Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled 0 Feet
Elevation Bottom of Boring -36 M.S.L.
Total Depth of Boring 80 Feet
Core Recovered — % No. Boxes —
Core Recovered — Ft. — Diam. — in.
Soil Samples 1 3/8 in. Diam. — No.
Soil Samples — in. Diam. — No.

Hammer Wt. 140
Hammer Drop 30"
Casing Left 4"
Subsurface Water Data — Page —
Obs. Well 2"
Drilled By Cambridge + Boyer
Mfg. Des. Drill Track Mounted CME 55
Inspected By: Paul Fisher
Classification By: M. Thew
Classification By: —

Boring Started 10/11/85
Boring Completed 10/16/85

DEPTH 1"=5'	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
			REC		ADVANCE BORING BY 3" ROLLER BIT FOLLOWED BY 4" DRIVEN CASING	SOIL LOGS FOR 0 TO 40 FT FOUND IN FD-85-4
40	SS 1	1 3/8		110-60		Brown-Black cmf SAND GRAVEL; wet (GP-SW)
41.5			10%	45		
45						
46.5	SS2	1 3/8	20%	43-17-6		SAME AS SS-1
50						
51.5	SS-3	1 3/8	100%	33-40-45		Brown cmf SAND; and GRAVEL (wet)
53						BOULDER ENCOUNTERED @ 52.0 + 53.0
55						
56.5	SS-4	1 3/8	100%	18-28-100/1"		Same as SS-3; NSU encountered trace amounts of contaminants TCE, Tetrachloroethylene BOULDER ENCOUNTERED @ 56.0' TO 57.5'
57.5						
60.0						

GENERAL REMARKS:

NED FORM 58 (Test) MAR 71

Boring No. FD-85-14

Site	Boring No.	Page 2 of 2
[illegible]	[illegible]	

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
61.5	S-5	13/8		50-94 104/1"		Gray cmf SAND; SOME GRAVEL; trace SILT (wet)
65.0	S-6	(WASH		SAMPLE)		BOULDERS ENCOUNTERED @ 61.0'-65.0' WASH SAMPLE 61.0'-65.0' (@ 63.5')
67.0						
68.5	S-7	13/8		93-123 143-132		Brown cmf SAND, and GRAVEL (wet) trace SILT
69.0						
70.0						[illegible]
75.0	S-8	13/8		WASH SAMPLE		
76.5	S-9	13/8	10%	19-100/1"	Water level 3'4" (10/16 AM)	Grey cmf SAND, and GRAVEL (wet)
78.5						BOULDER ENCOUNTERED @ 76.0' to 78.5'
80.0						BORING TERMINATED @ 80.0'

D FORM 58A (Test)

Boring No. FD-85-14

PIEZOMETER INSTALLATION REPORT

PROJECT: Aberjona River, Woburn | DATE: 10/15/85

LOCATION (STA): See Map | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-14

PIEZ TYPE: Slotted .010" Casa Grande Type 2"φ x 2' Long | DEPTH OF PIEZ: 78.5 | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): Coarse Sand + Gravel | SOIL SAMPLE NO.: S-9 | BORING DIAM: 4"

METHOD OF INSTALLATION: Hollow Stem Auger Soils

TYPE OF PROTECTION FOR PIEZ: 4" Casing 7' Total | VENT: lock cap

GROUND ELEV.: 44' | ELEV. TOP OF RISER: 47.1' | ELEV PIEZ TIP: -34.5'

FILTER: Silica sand #2 | FROM ELEV: -36' | TO ELEV: -31.5'

SEAL: Bentonite Slurry | FROM ELEV: -31.5' | TO ELEV: -10'

INSTALLED BY: Cambridge & Boyer | CONTRACT NO.: DO #3 | FOREMAN: Fisher

DATE OF INSTALLATION: 10/16/85 | DATE OF OBSERVATIONS: 10/16/85

METHOD OF TESTING PIEZ.: Falling Head Test

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
		4.57						
1623	0	0.10						
	1/2	4.57						

REMARKS:

Fisher
INSPECTOR

	15				Classification
500-515	15	1 3/8	100%	104-80-95	Gray cmf SAND, and GRAVEL (wet)

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

DACW-33-85-D-0011

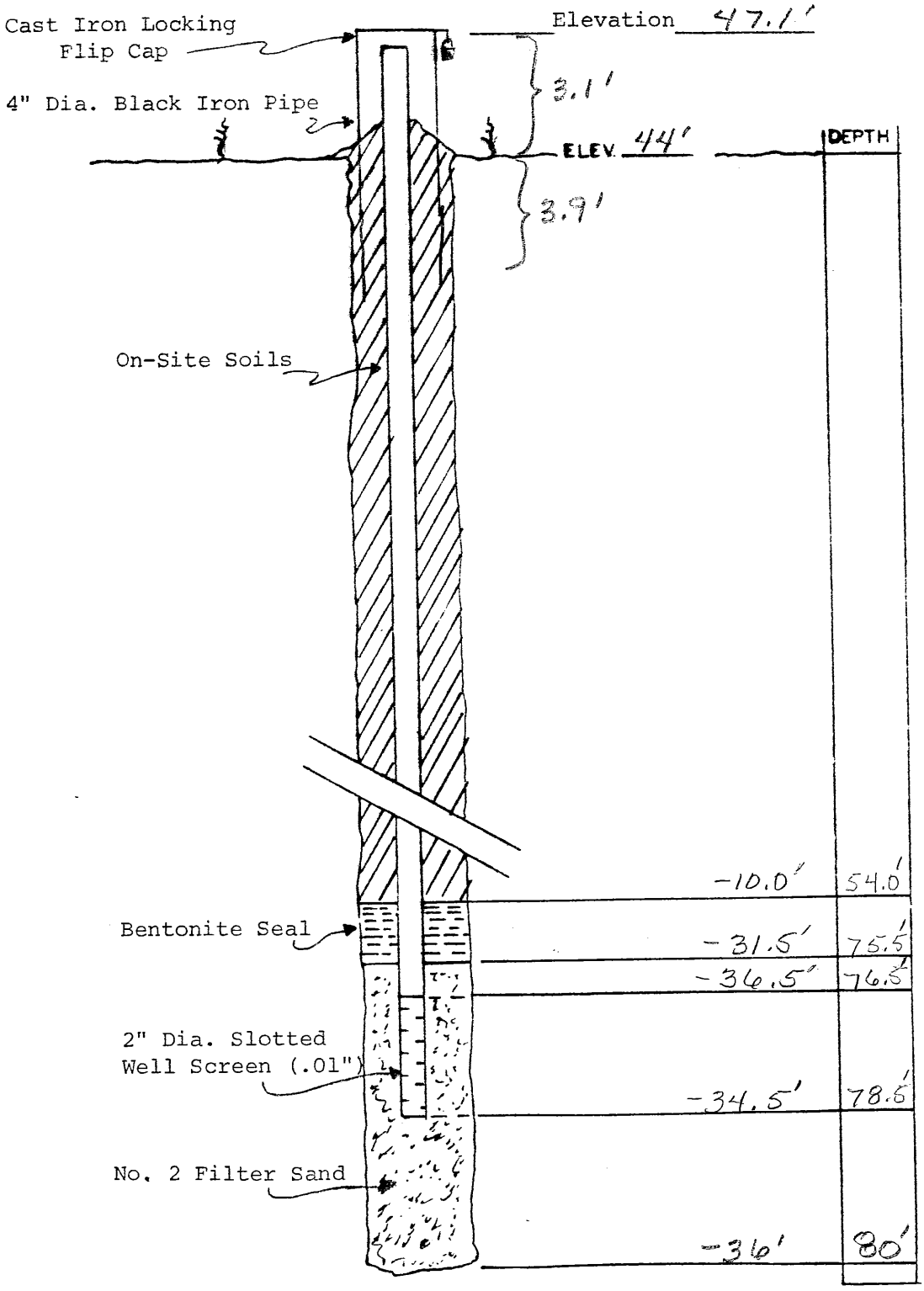
Client: ARMY CORPS OF ENGINEERS, NED

Project No. D.O.#0003

Project: Aberjona River, Wells G&H Woburn MA

Well No. FD85- 14

Cluster No. S- 87



CLUSTER S-90 FD-85-15

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

ABERJONA RIVER **PROJECT NO.** DACW33-85-D-0011 D.O. 003

Site WELL G+H SITE, WOBURN MA — Page 1 of ___ Pages

Hole No. FD-85-15 Diam. (Casing) 4" — Boring Started 10/14/85

Co-ordinates: N SEE E DRAWING — Boring Completed 10/23/85

Drilled by DAVIS + HAWKINS — Report Submitted ___

Purpose of Exploration SOIL SAMPLING + SET PIEZOMETER

Elevation Top of Hole 47 M.S.L.
Total Overburden Drilled 67 Feet
Elevation Top of Rock -20 M.S.L.
Elevation Bottom of Hole -27 M.S.L.
Total Rock Drilled 7 Feet
Total Depth of Hole 74 Feet
Core Recovered ROLLER BIT %
Core Recovered — Ft.; — Diam. — In.
Soil Samples 1 3/8 In. Diam. ___ No.
Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 7.0' Feet
3.0 SHOWN

Water Table Depth 3.87'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	67	3" ROLLER BIT FOLLOWED BY
		4" DRIVEN CASING HYDRAULIC
		WATER USED DURING ALL DRILLING
0	61	PULLED 4" CASING & REDRILLED
		WITH SPINNING SHOE DUE TO
		EXISTING BOULDERS OR BEDROCK
61	70	ADVANCED WITH 3" CASING
70	74	ADVANCED WITH ROLLER BIT

INDEX

Ground Water ___ Back of Page ___
Boring Location Sketch ___ Back of Page ___
Overburden Record ___ Page ___
Rock Drilling ___ Page ___
___ Page ___
___ Page ___
___ Page ___

Prepared by PAUL FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site ABERJONA R. WOBURN — Page 1 of ___ Pages

Boring No. FD-85-15 Desig. 15 Diam. (Casing) 4"

Co-ordinates: N See Drawing E —

Elevation Top of Boring 47 M.S.L.
Total Overburden Drilled 67 Feet
Elevation Top of Rock -20 M.S.L.
Total Rock Drilled 7 Feet
Elevation Bottom of Boring -27 M.S.L.
Total Depth of Boring 74 Feet
Core Recovered 0 % No. Boxes —
Core Recovered — Ft : — Diam. — in.
Soil Samples 1 3/8 in. Diam. 5 No.
Soil Samples — in. Diam. — No.

Hammer Wt. 140# Boring Started 10/14/85
Hammer Drop 30"
Casing Left 4" Boring Completed 10/23/85
Subsurface Water Data ___ Page ___
Obs. Well 2"
Drilled By DAVIS + HAWKINS
Mfg. Des. Drill TRACK MOUNTED CME 45
Inspected By: PAUL FISHER
Classification By: M. THEN
Classification By: P. FISHER

DEPTH (1"=)	CORE/SAMPLE NO.	SIZE	~~DEPTH~~ RANGE	~~CORE~~ RECOVERY	BLOWS PER FT.	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
							SEE FD-85-1 FOR SOIL LOG FROM 0' TO 40'
40.0			REC				
41.0	S-1	1 3/8	70	100	100 145 REFUSAL	ADVANCED BORING BY 3" ROLLER BIT FOLLOWED BY 4" DRIVE CASING	GRAVELLY CMF SAND TR SILT, GY/BR (SW)
45.0							
46.5	S-2	"	100		64 63 65		CMF SAND + GRAVEL GY/BR (SW-GP)
50.0							
51.5	S-3	"	100		104 80 95		SAME AS S-2
55.0							
56.5					360 400/in		no recovery due to boulders
60.0							

GENERAL REMARKS: A 4" DRIVE SHOE CASING WAS ADVANCED TO 67' (ROLLER BIT TO 70' IN ROCK) THEN PULLED. A 4" SPIN SHOE CASING WAS THEN ADVANCED TO 61'. A 3" SPIN SHOE WAS TELESCOPED TO 70' IN ROCK FOLLOWED BY A ROLLER BIT TO 74'.

NED FORM MAR 71 58 (Test)

Boring No. FD-85-15

Site ABERJONA R. WOBURN, MASS.	Boring No. FD-85-15	Page 2 of 2

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
60.0						
61.5	S-4	1 3/8	Rec 50%	85 150		Same as S-2
65.0						
65.5	S-5	1 3/8	90%	110-BOUNCE	400 BLOWS/FT	Same as S-2
67.0					casing refusal @ 67.0' (4")	refusal due to boulders or Rock
						BOULDER OR BEDROCK
70.0					3" SPIN CASING STORRED	
					ADVANCED 2 1/2" ROLLER BIT	
74.0					END OF EXPLORATION	

PIEZOMETER INSTALLATION REPORT

PROJECT: Aberjona R., Woburn | DATE: 10/15/85

LOCATION (STA): See Map | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85 15

PIEZ TYPE: Slotted .010" 2"ϕ x 2' Casagrande | DEPTH OF PIEZ: 67' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): C.M.F. SAND + GRAVEL | SOIL SAMPLE NO.: 5'-5 | BORING DIAM: 4"

METHOD OF INSTALLATION: 4" + 3" SPIN CASING + ROLLER BIT

TYPE OF PROTECTION FOR PIEZ: 4" Casing 7' Total 3.0 stickup | VENT: lock cap

GROUND ELEV.: 47 | ELEV. TOP OF RISER: 50.0' | ELEV PIEZ TIP: -20'

FILTER: #2 SAND + NATURAL GRAVEL | FROM ELEV: -27 | TO ELEV: -14

SEAL: BENTONITE SLURRY + 3/8 PELTONITE | FROM ELEV: -14 | TO ELEV: +6

INSTALLED BY: Hawkins & Davis | CONTRACT NO.: DW-33-85-D-0011 D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/23/85 | DATE OF OBSERVATIONS: 10/24/85

METHOD OF TESTING PIEZ.: Falling Head Test

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
819	—	6.87						

REMARKS: — took water faster than we could measure the falling level

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

DACW-33-85-D-0011

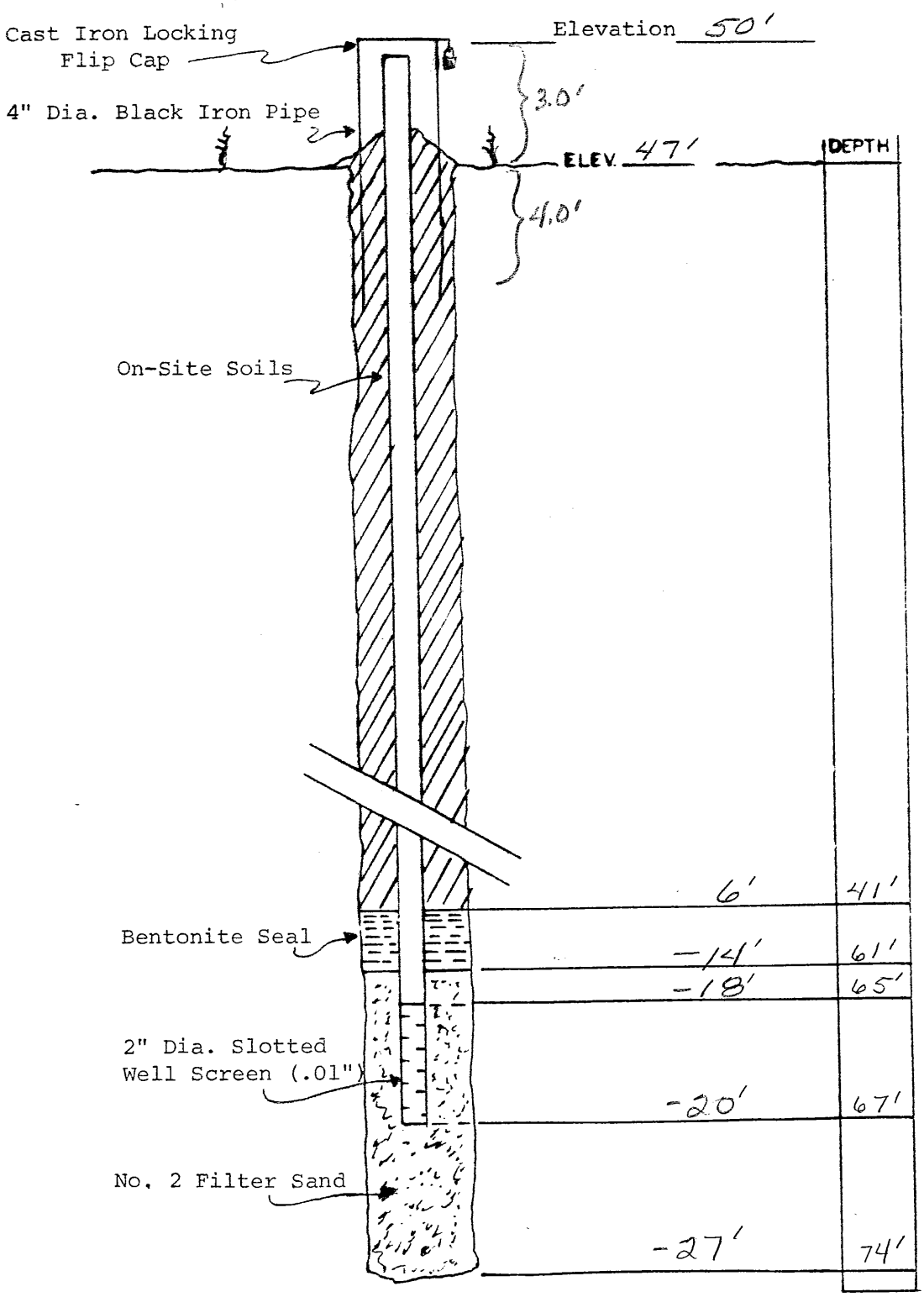
Client: ARMY CORPS OF ENGINEERS, NED

Project No. D.O.#0003

Project: Aberjona River, Wells G&H Woburn MA

Well No. FD85- 15

Cluster No. S- 90



CLUSTER S-94 FD-85-16

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELL G4H WOBURN MA

PROJECT NO. DACW-33-85-D-0011 DO. #3

Page 1 of 5 Pages

Hole No. FD-85-16 Diam. (Casing) 4"

Boring Started 10/17/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/21/85

Drilled by CAMBRIDGE + BOYER

Report Submitted

Purpose of Exploration SOIL SAMPLING + PIEZOMETER INSTALLATION

Elevation Top of Hole 46 M.S.L.

Total Overburden Drilled 80 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -34 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 80 Feet

Core Recovered %

Core Recovered — Ft.: — Diam. — In.

Soil Samples 1 3/8 In. Diam. 18 No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10' Feet
3.3 STICKUP

Water Table Depth 2.68'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	80	3" ROLLER BIT FOLLOWED BY
		4" DRIVEN CASING
		HYDRANT WATER USED FOR ALL
		DRILLING

INDEX

Ground Water — Back of Page

Boring Location Sketch — Back of Page

Overburden Record — Page

Rock Drilling — Page

— Page

— Page

— Page

Prepared by PAUL FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site ABERDEEN P. Wells 5 & 14 Page 1 of 3 Pages

Boring No. FD-85-16 Desig. 16 Diam. (Casing) 4"

Co-ordinates: N SEE DRAWING E —

Elevation Top of Boring 46 M.S.L. Hammer Wt. 140# Boring Started 10/17/85

Total Overburden Drilled 80 Feet Hammer Drop 30" Boring Completed 10/21/85

Elevation Top of Rock — M.S.L. Casing Left 4"

Total Rock Drilled 0 Feet Subsurface Water Data — Page —

Elevation Bottom of Boring -34 M.S.L. Obs. Well 2"

Total Depth of Boring 80 Feet Drilled By CANRAMAN & ANDER

Core Recovered — % No. Boxes — Mfg. Des. Drill TRUCK MOUNTED [illegible]

Core Recovered — Ft: — Diam. — In. Inspected By: [illegible]

Soil Samples 1 3/8 In. Diam. 17 No. Classification By: [illegible]

Soil Samples — In. Diam. — No. Classification By: —

DEPTH 1"=	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
					ADVANCE BORING BY 3" ROLLER BIT [illegible]	
0.0						Reddish Brown [illegible] SAND; ORGANICS
1.5	S-1	1 3/8	85%	1-2-1		TILL (MOIST) [illegible]
5.0						
6.5	S-2	1 3/8	60%	9-13-20		Brown [illegible] SAND (wet) * trace contam [illegible] recorded by NVS
10.0						
11.5	S-3	1 3/8	60%	6-5-2		Brown [illegible] SAND (wet)
14.0						[illegible]
15.0						Brown
16.5	S-4	1 3/8	100%	13-19-14		[illegible] SAND; some f [illegible] (wet)

GENERAL REMARKS:
- Hit water @ 9.8'

Site	Boring No.	Page 2 of 3
ABERJONA R. WOBURN, MASS.	FD-85-16	

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH REC RANGE	BLOWS PER FT / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
21.5	S-5	1 3/8	5%	50 BLOWS/ no rec't		Boulders encountered @ 21.0 Brown cmf SAND, and GRAVEL (wet)
22.0						Cobbles encountered @ 20-22'
25.0						
26.5	S-6	1 3/8	30%	20-15-10		Brown cmf SAND, and mf GRAVEL (wet)
30.0						
31.5	S-7	1 3/8	30%	25-10-11		WASH sample
35.0	S-8	1 3/8				WASH SAMPLE
36.5	S-9	1 3/8	20%	30-21-19		Grey cmf SAND, and GRAVEL (wet)
37.0						
40.0						Numerous cobbles encountered @ 37.0 to 40.0'
41.5						
45.0	S-10	1 3/8	WASH			Boulders & cobbles encountered @ 40.0 to 45.0' WASH SAMPLE (40.0-45.0)
46.5	S-11	1 3/8	5%	17-23-26		Same as S-9
50.0						
51.5	S-12	1 3/8	100%	[illegible]	end of day (10-17-85)	Same as S-9.
55.0						
56.5	S-13	1 3/8	100%	19-20-23		Grey MC SAND, and mf GRAVEL (wet) TR fm SAND
60.0						
61.5	S-14	1 3/8	60%	27-46-19		Same as S-13

Water Depth: 3' from ground surface (10/10/85)

Site ABERJONA R.
WOBURN, MASS.

Boring No. FD-85-16

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
65.0						
66.5	S-15	1 3/8	50%	19-32-36		SAME AS S-13
70.0						
71.5	S-16		100	38 35 22	← END 10/18/85 START 10/21/85	SAME AS S-13
75.0						— COBBLE AT 72'
76.5	S-17					SAME AS S-13
80'	S-18			WASH SAMPLE	END OF EXPLORATION	ASSUMED SAME AS S-13

D. FORM 58A (Test)

Boring No. FD-85-16

PIEZOMETER INSTALLATION REPORT

ABERJONA R. WELL G+H

PROJECT: WOBURN MA | DATE: 10/21/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-16

PIEZ TYPE: 2"φ SLOTTED .010" | DEPTH OF PIEZ: 78.6' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): MC SAND + F.M. GRAVEL | SOIL SAMPLE NO.: S-17 S-18 | BORING DIAM: 4"

METHOD OF INSTALLATION: 3" ROLLER FOLLOWED BY 4" DRIVEN CASING

TYPE OF PROTECTION FOR PIEZ: 10' LONG X 4"φ PIPE | VENT: LOCK CAP

GROUND ELEV.: 46 | ELEV. TOP OF RISER: 49.3' | ELEV PIEZ TIP: -32.6'

FILTER: # 2 SAND | FROM ELEV: -34' | TO ELEV: -29'

SEAL: BENTONITE SLURRY | FROM ELEV: -29' | TO ELEV: -9

INSTALLED BY: CAMBRIDGE + BOYER | CONTRACT NO.: DACW-33-85-D-0011 D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/21/85 | DATE OF OBSERVATIONS: 10/22/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1723	—	5.98	1732	4	5.98			
1728	0	.37	1736	8				
	1/2	5.89						
1729	1	5.95						
1730	2	5.97						

REMARKS: 2' SCREEN USED

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

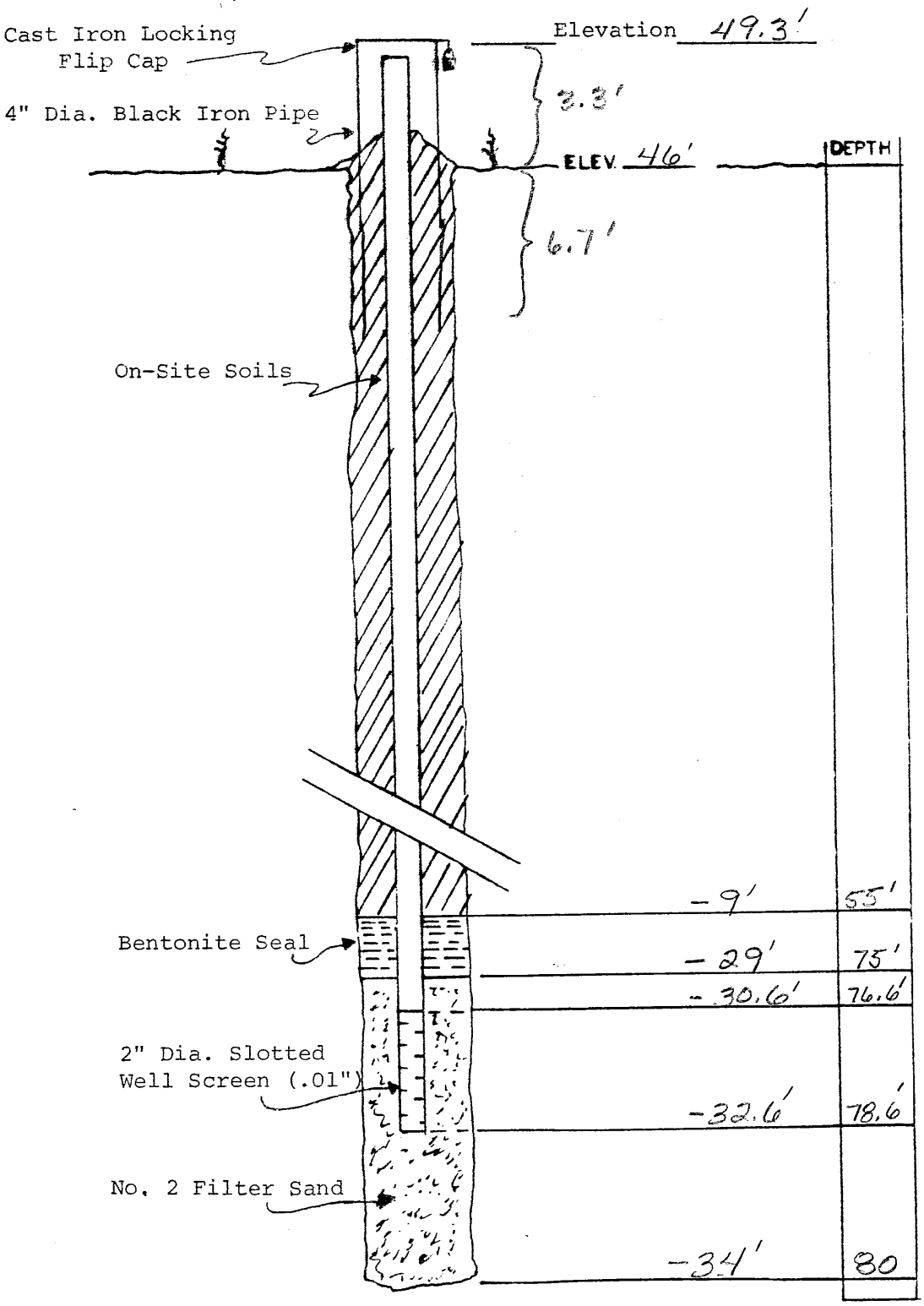
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 16

Cluster No. S- 94



CLUSTER S-94 FD-85-17

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELL GYM, WOBURN, MA

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Page 1 of 2 Pages

Hole No. FD-85-17 Diam. (Casing) 4"

Boring Started 10/22/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/22/85

Drilled by CAMBRIDGE + BOYER

Report Submitted

Purpose of Exploration SET PIEZOMETER

Elevation Top of Hole 46 M.S.L.

Total Overburden Drilled 15 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 31 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10 Feet
3.0 STICKUP

SEE BORING FD-85-16 FOR SOIL LOG

Water Table Depth 2.5'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	15	8" AUGER, HYDRANT WATER
		USED DURING ALL DRILLING

INDEX

Ground Water — Back of Page

Boring Location Sketch — Back of Page

Overburden Record — Page

Rock Drilling — Page

Page

Page

Page

Prepared by PAUL FISHER
Field Data

Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R. WOBURN, MA | DATE: 10/22/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-17

PIEZ TYPE: 2"ϕ SLOTTED 2' LONG .010" | DEPTH OF PIEZ: 14' | RISER PIPE DIAM: 4"

PIEZ TIP SET IN (SOIL TYPE): FINE SAND | SOIL SAMPLE NO.: FD-85-16 5-3 | BORING DIAM: 8"

METHOD OF INSTALLATION: 8" AUGER

TYPE OF PROTECTION FOR PIEZ: 10' LONG X 4"ϕ PIPE | VENT: LOCK CAP

GROUND ELEV.: 46' | ELEV. TOP OF RISER: 49.0' | ELEV PIEZ TIP: 32'

FILTER: #2 SAND | FROM ELEV: 31' | TO ELEV: 37'

SEAL: 3/8 PELLONITE | FROM ELEV: 37' | TO ELEV: 42'

INSTALLED BY: CAMBRIDGE + BOYER | CONTRACT NO.: DACW-33-85-D-0011 D.O. 3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/22/85 | DATE OF OBSERVATIONS: 10/22/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1724	—	5.50	1743	4	5.48			
1739	0	.15	1747	8	5.50			
	1/2	4.41						
1740	1	5.11						
1741	2	5.42						

REMARKS:

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

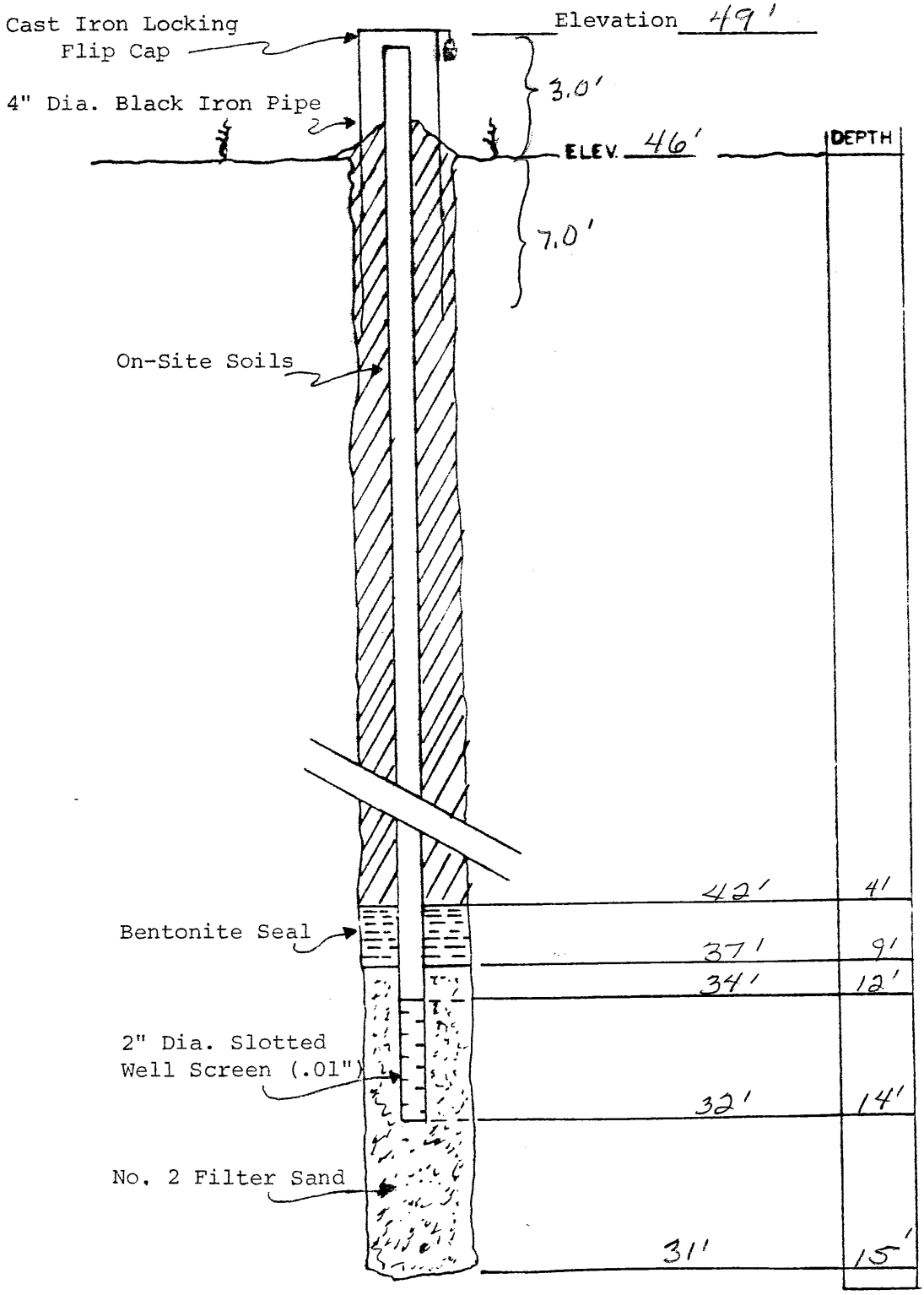
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 17
Cluster No. S-94



CLUSTER 5-94 FD-85-18

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELL 69-H, WOBURN, MA

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Page 1 of 2 Pages

Hole No. FD-85-18 Diam. (Casing) 4"

Boring Started 10/22/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/22/85

Drilled by CAMBRIDGE T BOYER

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 46 M.S.L.

Total Overburden Drilled 40 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 6 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 40 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — in.

Soil Samples — in. Diam. — No.

Soil Samples — in. Diam. — No.

Casing Left in Place TOTAL 10' Feet
3.0 STICKUP

SEE BORING FD-85-16 FOR SOIL LOG

Water Table Depth 2.84'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	40	8" AUGER, HYDRANT WATER
		USED DURING ALL DRILLING

INDEX

Ground Water — Back of Page
Boring Location Sketch — Back of Page
Overburden Record — Page
Rock Drilling — Page
— Page
— Page
— Page

Prepared by PAUL FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA RIVER, WOBURN MA | DATE: 10/22/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: ——— | PIEZ NO.: FD-85-18

PIEZ TYPE: 2" ϕ SLOTTED .010" | DEPTH OF PIEZ: 39' | RISER PIPE DIAM: 4"

PIEZ TIP SET IN (SOIL TYPE): FINE SAND + GRAVEL | SOIL SAMPLE NO.: FD-85-16 S-9 | BORING DIAM: 8"

METHOD OF INSTALLATION: 8" AUGER

TYPE OF PROTECTION FOR PIEZ: 10' LONG X 4" ϕ PIPE | VENT: LOCK CAP

GROUND ELEV.: 46' | ELEV. TOP OF RISER: 49' | ELEV PIEZ TIP: 7'

FILTER: #2 SAND | FROM ELEV: 6' | TO ELEV: 10'

SEAL: 3/8" PELLONITE | FROM ELEV: 10' | TO ELEV: 15

INSTALLED BY: CAMBRIDGE + BOYER | CONTRACT NO.: DACW-33-85-D-0011 D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/22/85 | DATE OF OBSERVATIONS: 10/23/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1418	—	5.84	1425	4	5.84			
1421	0	.15						
	1/2	5.29						
1422	1	5.74						
1423	2	5.82						

REMARKS: PIEZO FLUSHED OUT PRIOR TO TEST

2' SCREEN

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

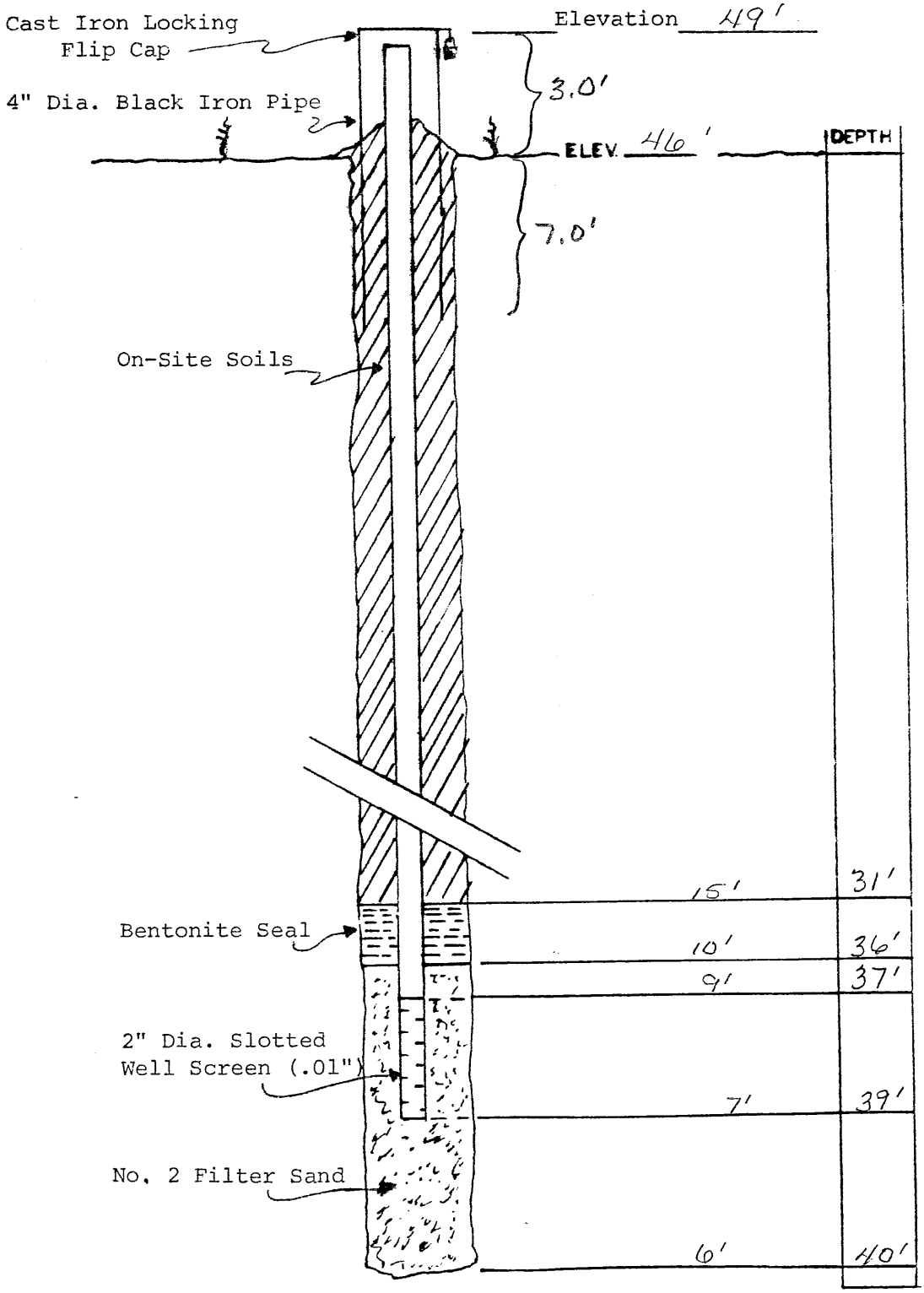
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 18
Cluster No. S- 94



CLUSTER S-93 FD-85-19

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Site Aberjona River, Woburn MA — Page 1 of ___ Pages

Hole No. FD-85-19 Diam. (Casing) 4" — Boring Started 24 Oct 85

Co-ordinates: N see sketch E — Boring Completed 10/29/85

Drilled by Cambridge + Boyer — Report Submitted

Purpose of Exploration soil sampling and piezometer installation to monitor contaminant plume at EPA Superfund Site

Elevation Top of Hole 43' M.S.L.
Total Overburden Drilled 80' Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole -37' M.S.L.
Total Rock Drilled 0 Feet
Total Depth of Hole 80 Feet
Core Recovered — %
Core Recovered — Ft.; — Diam. — In.
Soil Samples 1 3/8 In. Diam. 16 No.
Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10' Feet
3.0' stickup

Water Table Depth 0.35'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0'	80.0	4" driven casing washed out using
		3 7/8" Tricone Roller bit
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page 1
Boring Location Sketch	Back of Page 1
Overburden Record	Page 2
Rock Drilling	Page 2
	Page
	Page
	Page

Prepared by T A Boddie — Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
[illegible]	[illegible]	50'	50'	[illegible]	[illegible]	

AVERAGE GROUND WATER ELEVATION ____________

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

U.S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site Aberjona River Woburn MA Page 1 of 3 Pages

Boring No. FD-85-19 Desig. 19 Diam. (Casing) 4"

Co-ordinates: N see sketch E —

Elevation Top of Boring 43' M.S.L.
Total Overburden Drilled 80' Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled 0 Feet
Elevation Bottom of Boring -37 M.S.L.
Total Depth of Boring 80 Feet
Core Recovered — % No. Boxes —
Core Recovered — Ft. — Diam. — in.
Soil Samples 1 3/8 in. Diam. 16 No.
Soil Samples — in. Diam. — No.

Hammer Wt. 140 lb Boring Started 24 Oct 85
Hammer Drop 30"
Casing Left 4"
Boring Completed 10/29/85
Subsurface Water Date — Page —
Obs. Well —
Drilled By Cambridge Boring
Mfg. Des. Drill Tri-State Rotary
Inspected By: [illegible]
Classification By: [illegible]
Classification By: P. Fisher

DEPTH 1" = 5'	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
2.5	S-1	1 3/8	15%	hammer weight	4" driven casing washed out using 3 7/8" Tricone roller bit	peat, wet, OM-OL, loose trace contamination
						change @ 3.0'
5.0						
6.5	S-2	1 3/8	100%	3 4 11		grey brown c-m f sand SW wet, loose
10.0						
11.5	S-3	1 3/8	100%	2 2 2		similar soils : SP no coarse fraction, gray
15.0						
16.5		1 3/8	0%	1 2 2		No recovery : soils too fine - washed out
20.0						
21.5	S-4	1 3/8	100%	2 2 2		similar soils : SP
25.0						

GENERAL REMARKS:
contam. is suspected 1,2 trans dichloroethylene

NED FORM MAR 71 58 (Test)

Boring No. FD-85-19

Site	Boring No.	Page 2 of 3
Aberjona River, Woburn MA	FD-85-19	

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
26.5	SS-5	1 3/8	Pen 85%	3 2 2		similar soils : SP
30.0						
31.5	SS-6	1 3/8	80%	1 1 2		similar soils : SP
35.0						
36.5	SS-7	1 3/8	70%	3 2 3		similar soils : SP
40.0						
41.5	SS-8	1 3/8	[illegible]	[illegible]		[illegible]
45.0						
46.5	SS-9	1 3/8	[illegible]	[illegible]		
50.0						
51.5	SS-10	1 3/8	100%	4 4 3		similar soils : SP
55.0					end of explorations 10/24/85 water level 4 inches below ground surface at start of exploration 10/16/85	- change @ 57'
56.5	SS-11	1 3/8	100%	33 100/3"		grey brown [illegible] GRAVEL with SILT, wet, medium dense Sand with gravel
60.0						
61.5	SS-12	1 3/8	100%	8 [illegible]		similar soils : SP SAME As SS-11
65.0						- cobbles @ 63.0' and 64.0'
66.5	SS-13	1 3/8	0%	34 34 20	end of explorations 10/2/85 START 10/2	SAME As SS-11

D FORM 58A (Test)

Boring No. FD-85-19

Site	Boring No.	Page 4 of 3
Abernone River	FD-85-19	

DEPTH	CORE/SAMPLE NO.	SIZE	~~DEPTH RANGE~~	BLOWS PER FT. ~~CORE RECOVERY~~	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
67.5						
70.0			REC			
71.5	S-14	1 3/8	3%	56 32 20		SAME AS SS-11
74						
75.0	S-15	WASH SAMPLE				SAME AS SS-11
76.5	S 16	1 3/8	10%	73 40 18		SAME AS SS-11
80.0					END OF EXPLORATION	

D. FORM 58A (Test)

Boring No. FD-85-19

PIEZOMETER INSTALLATION REPORT

PROJECT: Aberjona River Woburn MA | DATE: 10/24/85

LOCATION (STA): see sketch | OFFSET FROM CENTER LINE: | PIEZ NO.: FD-85-19

PIEZ TYPE: 2" ϕ Slotted .010" | DEPTH OF PIEZ: 79.5' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): Sand & Gravel, Little Silt | SOIL SAMPLE NO.: SS-16 | BORING DIAM: 4"

METHOD OF INSTALLATION: 3 7/8 Roller Bit Followed By 4" Driven Casing

TYPE OF PROTECTION FOR PIEZ: 4" ϕ x 10' Long Pipe | VENT: Lock Cap

GROUND ELEV.: 43 | ELEV. TOP OF RISER: 46' | ELEV PIEZ TIP: -36.5'

FILTER: #2 Sand | FROM ELEV: -37' | TO ELEV: -33.5'

SEAL: Bentonite Slurry | FROM ELEV: -33.5' | TO ELEV: -17'

INSTALLED BY: Cambridge & Boyer (ATL) | CONTRACT NO.: DACW-33-85-D-0011 DO #3 | FOREMAN: Fisher

DATE OF INSTALLATION: 10/29/85 | DATE OF OBSERVATIONS: 10/30/85

METHOD OF TESTING PIEZ.: Falling Head Test

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
0929	—	3.35						
	0	0						
0942	1/2	3.31						
0943	1	3.35						
0943								

REMARKS: 3.0 Riser Stick up

2.0' Screen

Paul Fisher
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

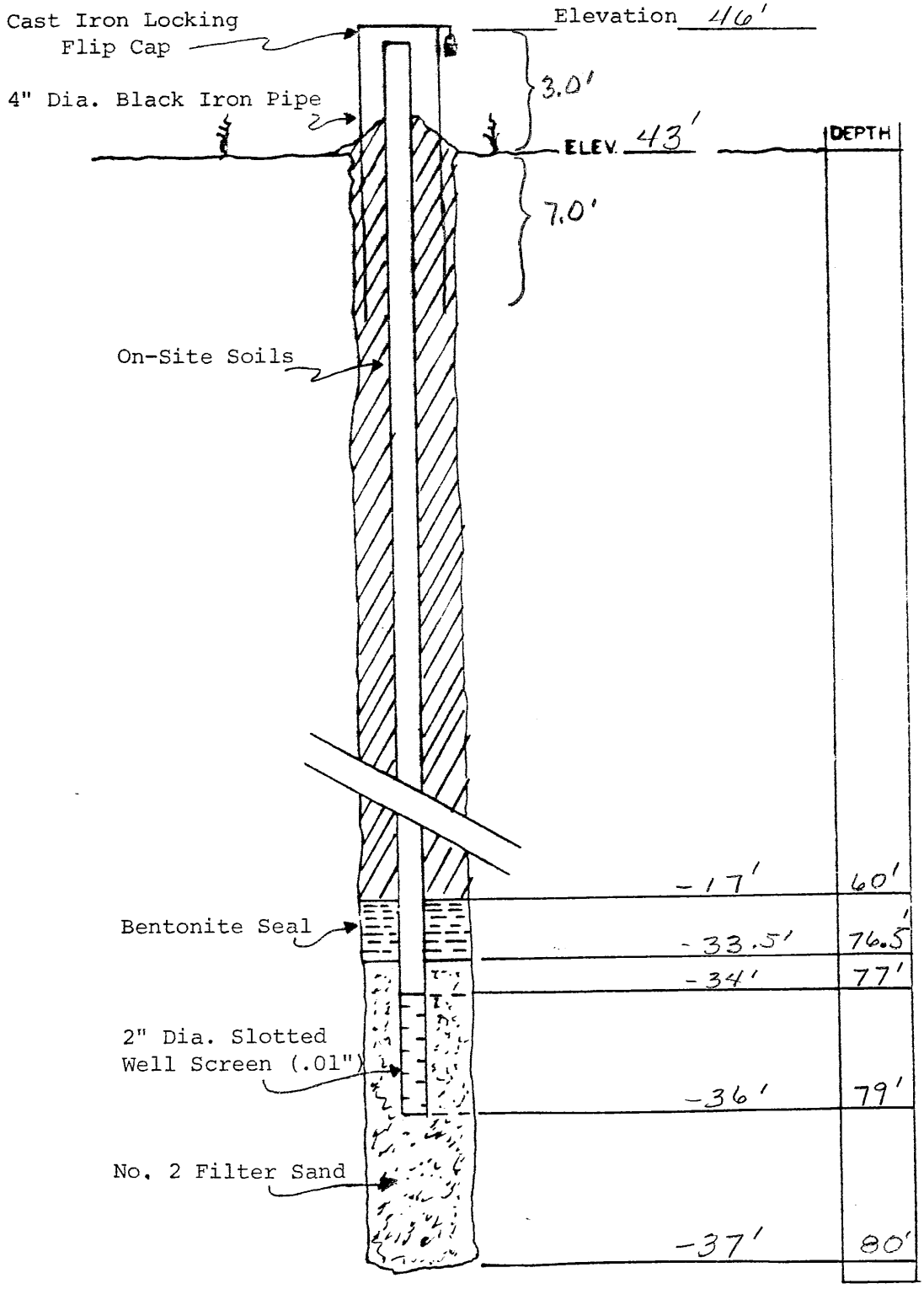
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 19
Cluster No. S- 93



CLUSTER S-96 FD-85-20

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Site Aberjone River, Woburn MA

Page 1 of 5 Pages

Hole No. FD-85-20 Diam. (Casing) 4"

Boring Started 24 Oct 85

Co-ordinates: N see sketch E —

Boring Completed 10/28/85

Drilled by Davis and Hawkins (ATL)

Report Submitted

Purpose of Exploration soil samples and piezometer installation to monitor contaminant plume at EPA Superfund site

Elevation Top of Hole 43' M.S.L.

Total Overburden Drilled 80' Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -37 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 80' Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples 1 3/8 In. Diam. 16 No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10 Feet

Water Table Depth -0.06'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0'	80.0	4" driven casing washed out using 3 7/8"
		Tricone roller bit
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page 1
Boring Location Sketch	Back of Page 1
Overburden Record	Page 2
Rock Drilling	Page 2
	Page
	Page
	Page

Prepared by TA Reddoe
Field Data — Lab. Data

Submitted by Atlantic Testing Labs, Ltd

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF HOLE	DEPTH TO WATER	ELEVATION WATER	REMARKS
AVERAGE GROUND WATER ELEVATION _____						

Note: Depths are in feet below original ground

BORING LOCATION SKETCH

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site: Housatonic River, Pittsfield, MA — Page 1 of 3 Pages

Boring No. FD-85-20 Desig. 20 Diam. (Casing) 4"

Co-ordinates: N see sketch E —

Elevation Top of Boring: 43 M.S.L.
Total Overburden Drilled: 80 Feet
Elevation Top of Rock: —
Total Rock Drilled: 0 Feet
Elevation Bottom of Boring: −37 M.S.L.
Total Depth of Boring: 80 Feet
Core Recovered: — % No. Boxes: —
Core Recovered: — Ft: — Diam. — in.
Soil Samples: 1 3/8 in. Diam. 16 No.
Soil Samples: — in. Diam. — No.

Hammer Wt.: —
Hammer Drop: —
Casing Left: 4"
Subsurface Water Date: — Page —
Obs. Well: 2"
Drilled By: Davis & Hawkins
Mfg. Des. Drill: Trackmounted CME 45
Inspected By: P. Fisher
Classification By: P. Fisher
Classification By: T. Beudoe

Boring Started: 24 Oct 85
Boring Completed: 10/28/85

DEPTH (1" = 5' 0.0)	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
1.5	S-1	1 3/8	rec	hammer weight	4" driven casing washed out using 3 7/8" Tricone roller bit	peat, wet, loose OM-OL no recovery in split spoon, so grabbed sample at 6" depth — change @ 2.0'
5.0						
6.5	S-2	1 3/8	80%	5 9 11		grey with iron staining c-m f sand wet, loose (SP) trace contaminant
10.0						
11.5	S-3	1 3/8	100%	3 4 4		similar soils (SP) no iron staining
15.0						
16.5	S-4	1 3/8	65	1 1 1		SAME AS S-3 trace contaminant
20.0						
21.5	S-5	1 3/8	100	1 1 1		similar soils (SP) trace contaminant
25.0						

GENERAL REMARKS:
contam is suspected 1,2 trans dichloroethylene

NED FORM 58 (Test) MAR 71

Boring No. FD-85-20

Site	Boring No.	Page ___ of ___
Aberdeen [illegible]	FD-85-20	

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
25.0						
26.5	SS-6	1 3/8	65%	2 3 5		similar soils (SP)
30.0						
31.5	SS-7	1 3/8	100%	2 2 3		Similar Soils (SP)
35.0						
36.5	SS 8	1 3/8	100%	10 7 6		Similar Soils (SP)
						– change @ 39'
40.0						
41.5	SS 9	1 3/8	100%	3 5 5		similar soils (SP) only red
						– change @ 43'
45.0						
46.5	SS-10	1 3/8	100%	3 5 5		similar soils (SP) gray again
50.0						
51.5	SS-11	1 3/8	50%	2 2 6	End of exploration (drilled 51') water level @ surface at start of exploration (capped)	change @ 51' – similar soils (SP) to SM.0 change to [illegible] GRAVEL, gray, moist, loose (SM)
55.0						
56.5	SS-12	1 3/8	50%	3 6 2		Gray [illegible] SAND and [illegible] GRAVEL, little SILT, wet, loose, [illegible]
60.0						– [illegible]
61.5	SS-13	1 3/8	60%	16 9 12		[illegible] (SP)
65.0						
66.5	SS-14	1 3/8	50%	59 15 7		similar soils to [illegible], loose, moist (SP) to (SP) [illegible]
67.5						

D. FORM 58A (Test)

Boring No. FD-85-20

Site	Boring No.	Page 3 of 3
Aberjona River, Woburn MA	FD-85-20	

DEPTH	CORE/SAMPLE NO.	SIZE	~~DEPTH RUNS~~	~~CORE RECV~~	BLOWS PER FT.	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
1" = 5' 62.5							
			REC				
70.0							
					26 18 17		brown CMF SAND, some of GRAVEL, trace SILT, trace stained cobbles, wet, [illegible] size SW with gravel
71.5						END 10/25/85	
						START 10/28/85	
							73.5' POSSIBLE CHANGE
75.0							
	55-16		0%	ON COBBLE		WASH SAMPLE	CMF SAND + GRAVEL, LITTLE COBBLE, BR.
76.5							
80.0						END OF EXPLORATION	

PIEZOMETER INSTALLATION REPORT

PROJECT: Aberjona [illegible] Woburn, MA | DATE: [illegible]

LOCATION (STA): [illegible] | OFFSET FROM CENTER LINE: | PIEZ NO.: FD-85-20

PIEZ TYPE: 2" ϕ Slotted .010" | DEPTH OF PIEZ: 79' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): CMF Sand + Gravel, Little Cobbles | SOIL SAMPLE NO.: SS-16 | BORING DIAM: 4"

METHOD OF INSTALLATION: 3 3/4 Roller Bit Followed by 4" Driven Casing

TYPE OF PROTECTION FOR PIEZ: 10' Long x 4" ϕ Pipe | VENT: Lock Cap

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 46' | ELEV PIEZ TIP: -36'

FILTER: #2 Sand | FROM ELEV: -37' | TO ELEV: -33'

SEAL: Bentonite Slurry | FROM ELEV: -33 | TO ELEV: -13

INSTALLED BY: Davison Anderson (ATC) | CONTRACT NO.: DACW-33-85-D-0011 D.O. # 3 | FOREMAN: Fisher

DATE OF INSTALLATION: 10/28/85 | DATE OF OBSERVATIONS: 10/30/85

METHOD OF TESTING PIEZ.: Falling Head Test

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
0906	—	2.94	0922	3	2.94			
0919	0	0						
	1/4	2.84						
0920	1	2.90						
0921	2	2.93						

REMARKS: 2' Screen Use

→ 3.0 Riser Stickup

P. Fisher
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

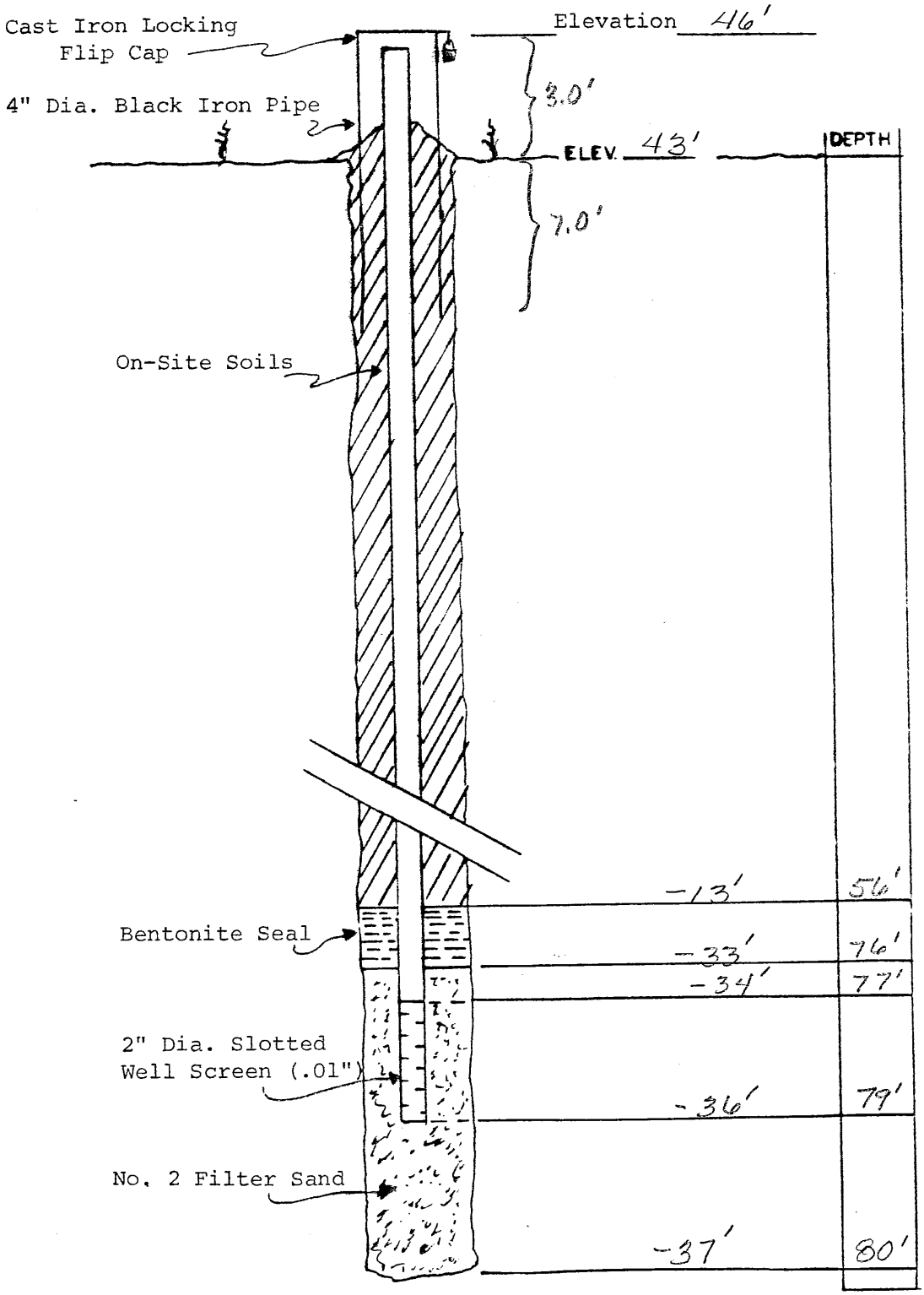
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 20
Cluster No. S- 96



CLUSTER S-96 FD-85-21

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. DACW-33-85-D-0011 D0 03

Site ABERJONA RIVER WELLS G+H, WOBURN, MA

Page 1 of 2 Pages

Hole No. FD-85-21 Diam. (Casing) 4"

Boring Started 10/29/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/29/85

Drilled by DAVIS J HAWKINS

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 43' M.S.L.

Total Overburden Drilled 15' Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 28' M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15' Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples NONE In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10' Feet

SEE FD-85-20 FOR SOIL LOG

Water Table Depth 0.28'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	15	4" ID AUGER
		HYDRANT WATER USED DURING
		HOLE DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R WOBURN | DATE: 10/29/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-21

PIEZ TYPE: 2" ϕ SLOTTED .010" | DEPTH OF PIEZ: 14' | RISER PIPE DIAM: 4"

PIEZ TIP SET IN (SOIL TYPE): CMF SAND | SOIL SAMPLE NO.: FD-85-20 S-3 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID AUGER

TYPE OF PROTECTION FOR PIEZ: 4" ϕ X 10' LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 45.4 | ELEV PIEZ TIP: 29'

FILTER: #2 SAND | FROM ELEV: 28' | TO ELEV: 34'

SEAL: 3/8 BELTONITE | FROM ELEV: 34' | TO ELEV: 39'

INSTALLED BY: DAVIS & HAWKINS | CONTRACT NO.: DACW-33-85-D-0011 D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/29/85 | DATE OF OBSERVATIONS: 10/30/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
0905	—	2.65						
0915	0	0						
	1/2	2.61						
0916	1	2.63						
0917	2	2.65						

REMARKS: - 2 - 2' SCREENS USED FOR PIEZO

- 2.4 RISER STICKUP

P. FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

DACW-33-85-D-0011

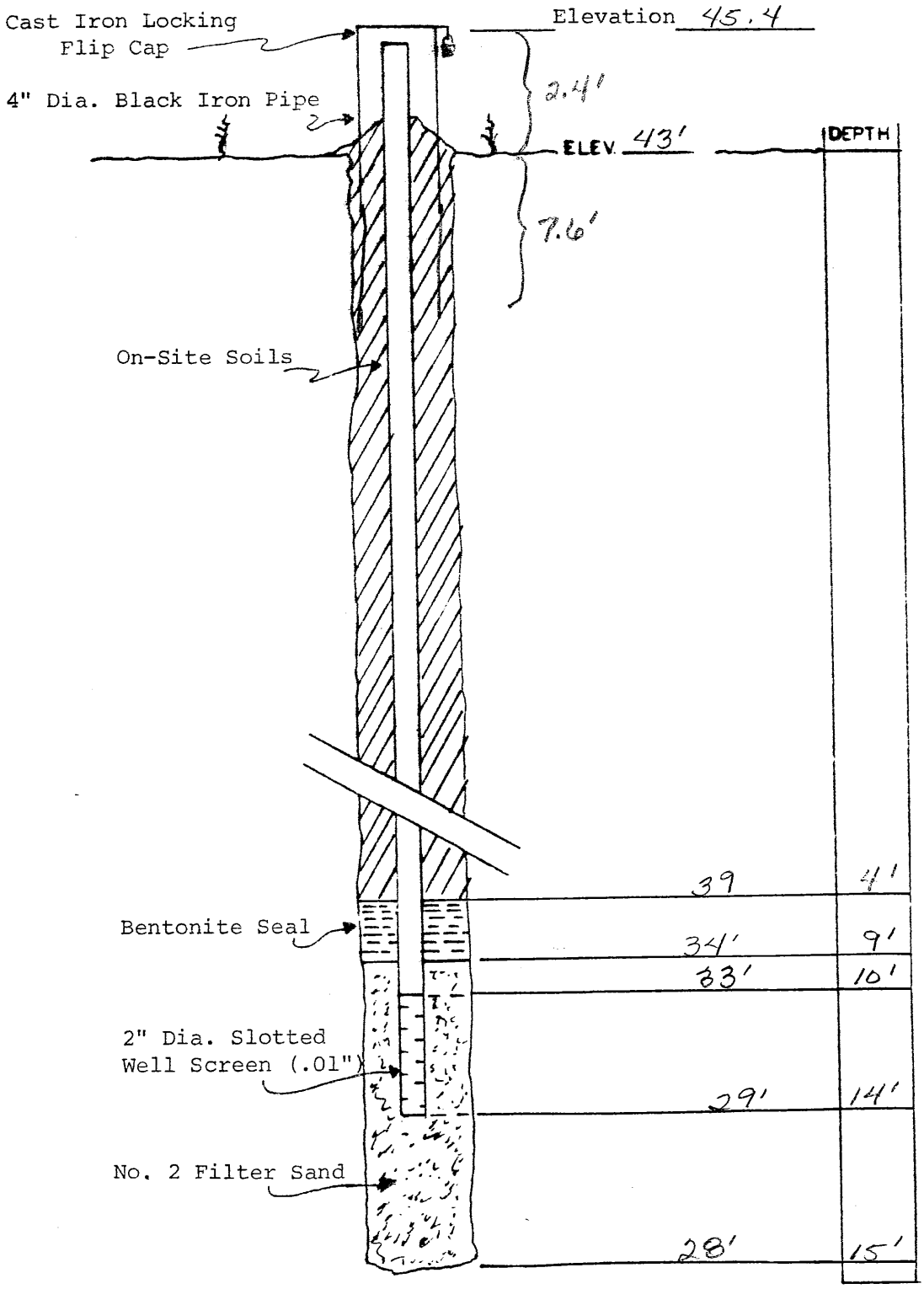
Client: ARMY CORPS OF ENGINEERS, NED

Project No. D.O.#0003

Project: Aberjona River, Wells G&H Woburn MA

Well No. FD85- 21

Cluster No. S-



CLUSTER S-96 FD-85-22

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELLS G+H, WOBURN MA

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Page 1 of 2 Pages

Hole No. FD-85-22 Diam. (Casing) 4"

Boring Started 10/29/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/29/85

Drilled by DAVIS + HAWKINS

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 43 M.S.L.

Total Overburden Drilled 40 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 3 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 40 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10 Feet

SEE FD-85-21 FOR SOIL LOG

Water Table Depth 0.18'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	40	4" ID AUGER
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA RIVER WOBURN | DATE: 10/29/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-22

PIEZ TYPE: 2" ϕ SLOTTED .010" | DEPTH OF PIEZ: 39' | RISER PIPE DIAM: 3"

PIEZ TIP SET IN (SOIL TYPE): M.F. SAND (SP) | SOIL SAMPLE NO.: FD-85-20 55 9 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID AUGER

TYPE OF PROTECTION FOR PIEZ: 4" ϕ x 10 LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 43 | ELEV. TOP OF RISER: 46.4 | ELEV PIEZ TIP: 4'

FILTER: # 2 SAND | FROM ELEV: 3' | TO ELEV: 7'

SEAL: 3/8 BENTONITE | FROM ELEV: 7' | TO ELEV: 12'

INSTALLED BY: DAVIS + HAWKINS | CONTRACT NO.: DACW-33-85-D-0011 D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/29/85 | DATE OF OBSERVATIONS: 10/30/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
0904	—	3.58	0913	3	3.58			
0910	0	0						
	1/2	2.97						
0911	1	3.44						
0912	2	3.56						

REMARKS: → 3.4' RISER STICKUP

– 2' SCREEN USE

P. FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

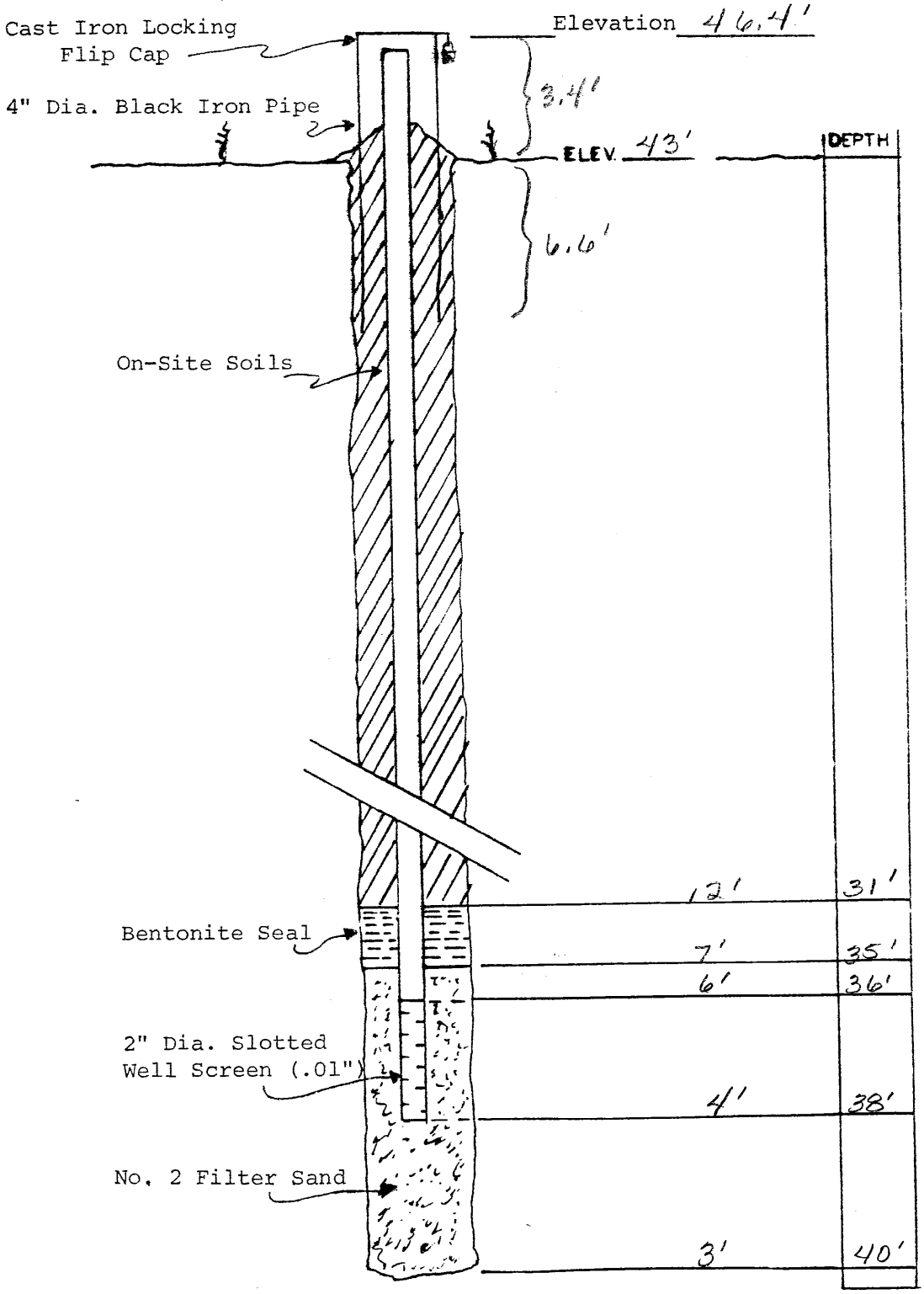
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85-22
Cluster No. S-96



CLUSTER S-93 FD-85-23

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site: AMERJONA RIVER WELLS G+H, WOBURN MA

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Page 1 of 2 Pages

Hole No. FD-85-23 Diam. (Casing) 4

Boring Started 10/29/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/29/85

Drilled by CAMBRIDGE + BOYER

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 43 M.S.L.

Total Overburden Drilled 15 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 28 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15 Feet

Core Recovered — %

Core Recovered — Ft.: — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10 Feet

SEE FD-85-19 FOR SOIL LOG

Water Table Depth 0.21'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	15	4" ID AUGER
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R. WOBURN | DATE: 10/29/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-23

PIEZ TYPE: 2" ϕ SLOTTED .010" | DEPTH OF PIEZ: 14 | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): MF SAND (SP) | SOIL SAMPLE NO.: FD-85-19 S3 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID AUGER

TYPE OF PROTECTION FOR PIEZ: 4" ϕ x 10' LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 46.1' | ELEV PIEZ TIP: 29'

FILTER: #2 SAND | FROM ELEV: 28' | TO ELEV: 34'

SEAL: 3/8 BENTONITE | FROM ELEV: 34' | TO ELEV: 39'

INSTALLED BY: CAMBRIDGE + BOYER | CONTRACT NO.: DACW-33-85-D-0011 D.O. 3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/29/85 | DATE OF OBSERVATIONS: 10/30/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
0930	—	3.31						
0945	0	0						
	1/2	3.24						
0946	1	3.31						

REMARKS: 3.1 RISER STICK UP

2 - 2' SLOTTED SCREEN USED FOR PIEZO

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

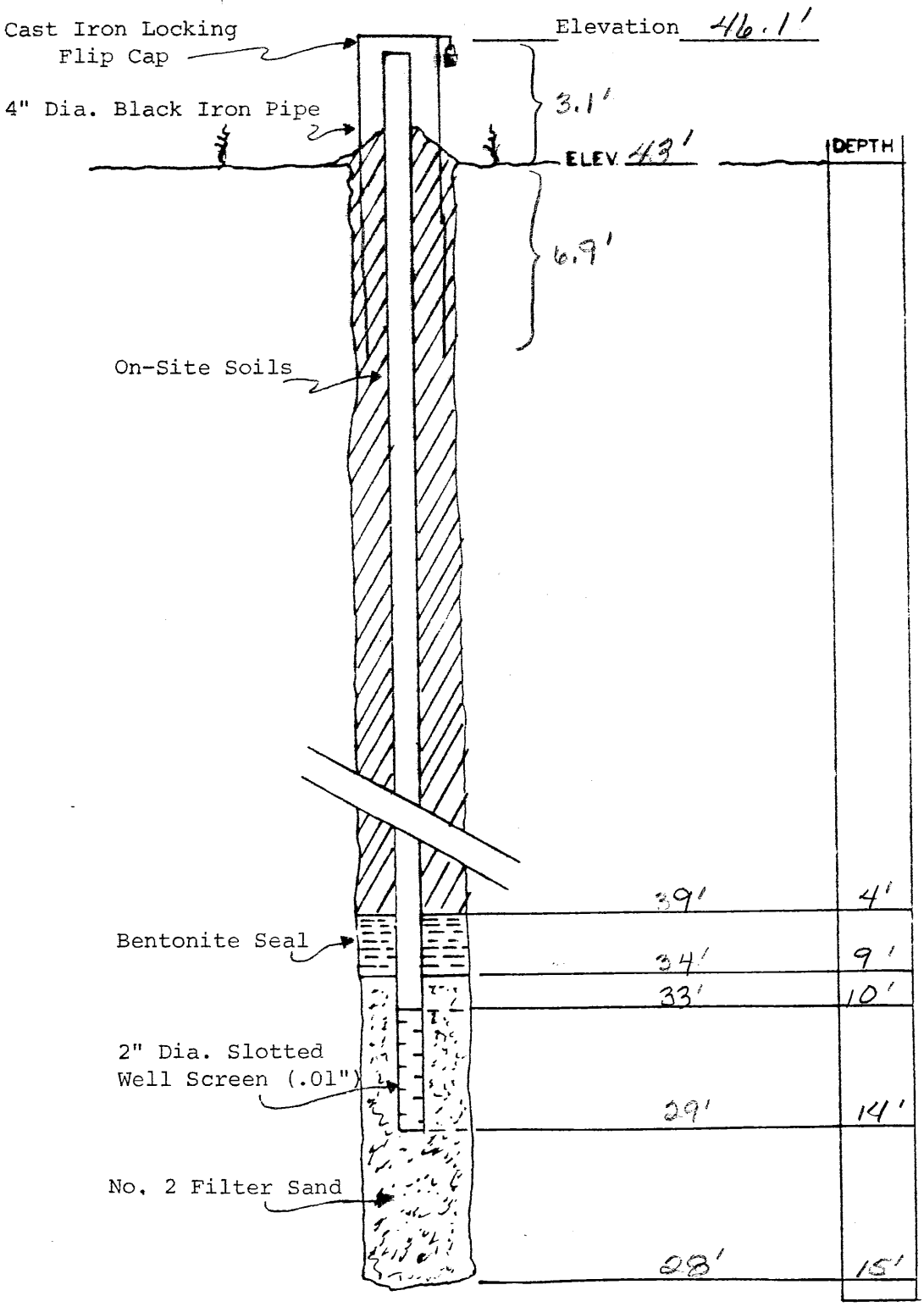
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85-23
Cluster No. S-93



CLUSTER S-93 FD-85-24

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELLS G+H, WOBURN, MA

PROJECT NO. DACW-33-85-D-0011 D.O. 3

Page 1 of 2 Pages

Hole No. FD-85-24 Diam. (Casing) 4

Boring Started 10/29/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/29/85

Drilled by CAMBRIDGE T BOYER

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 43 M.S.L.

Total Overburden Drilled 45 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -2 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 45 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10 Feet

SEE FD-85-19 FOR SOIL LOG

Water Table Depth 0.37'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	45	4" ID AUGER
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: Aberjona R. Woburn | DATE: 10/29/85

LOCATION (STA): See Drawing | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-24

PIEZ TYPE: 2" ϕ Slotted .010" | DEPTH OF PIEZ: 43.5 | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): MF Sand (SP) | SOIL SAMPLE NO.: FD-85-19 SS-9 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID Auger

TYPE OF PROTECTION FOR PIEZ: 4" ϕ x 10' Long Pipe | VENT: Lock Cap

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 46' | ELEV PIEZ TIP: -0.5'

FILTER: #2 Sand | FROM ELEV: -2' | TO ELEV: 2.5'

SEAL: 3/8 Peltonite | FROM ELEV: 2.5' | TO ELEV: 7.5'

INSTALLED BY: Cambridge + Boyer | CONTRACT NO.: DACW-33-85-D-0011 D.O. #3 | FOREMAN: Fisher

DATE OF INSTALLATION: 10/29/85 | DATE OF OBSERVATIONS: 10/30/85

METHOD OF TESTING PIEZ.: Falling Head Test

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
0931	—	3.37	0951	3	3.37			
0948	0	0						
	1/2	2.20						
0949	1	3.00						
0950	2	3.31						

REMARKS: 3.0 Riser Stickup

-2' Screen Used

Fisher
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

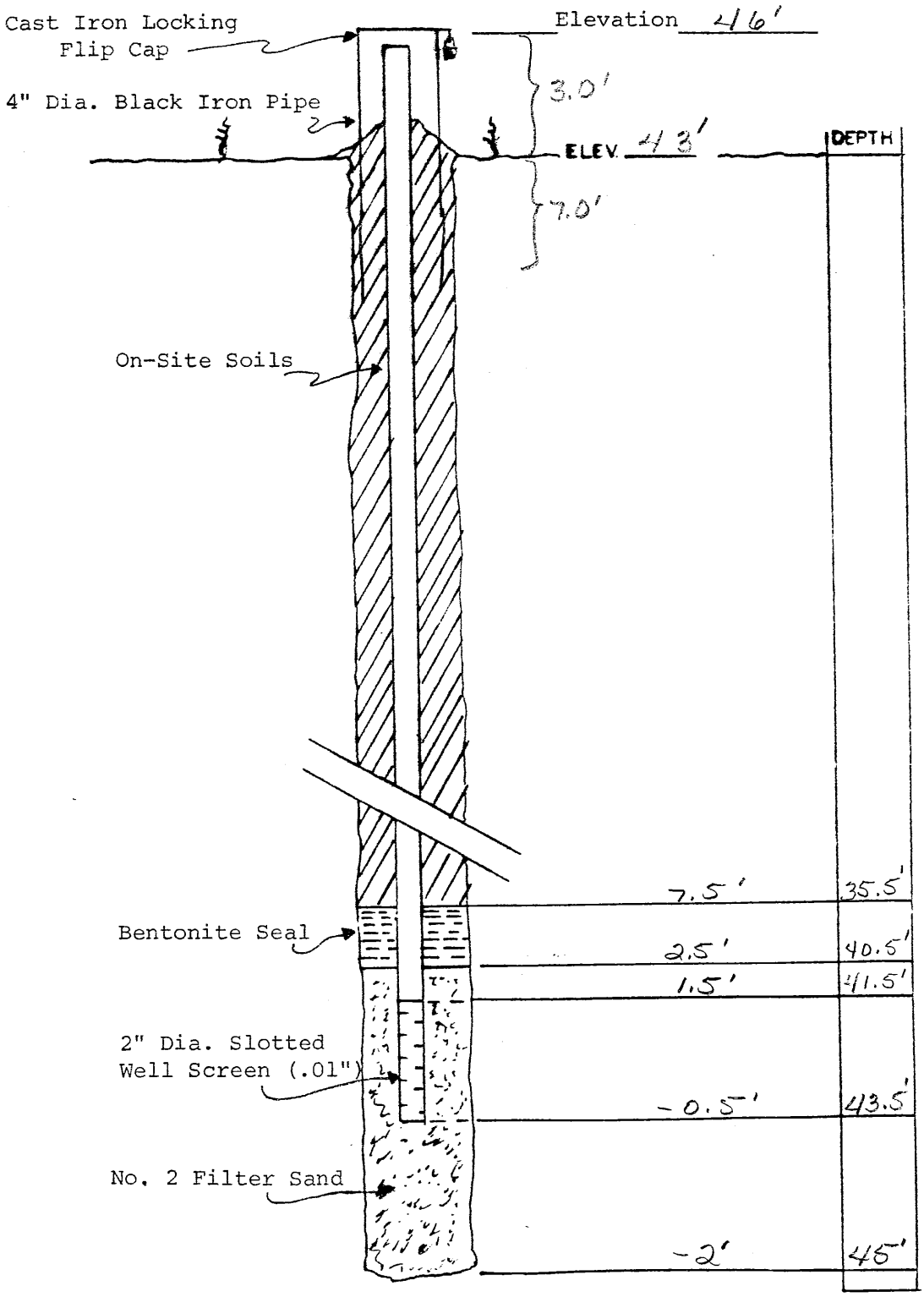
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85- 24

Cluster No. S- 93



CLUSTER S-92 FD-85-25

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELLS G+H WOBURN, MA

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Page 1 of 5 Pages

Hole No. FD-85-25 Diam. (Casing) 4"

Boring Started 10/30/85

Co-ordinates: N SEE E DRAWING

Boring Completed 10/31/85

Drilled by DAVIS + HAWKINS

Report Submitted

Purpose of Exploration SOIL SAMPLING AND PIEZOMETER INSTALLATION

Elevation Top of Hole 43 M.S.L.

Total Overburden Drilled 80 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -37 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 80 Feet

Core Recovered — %

Core Recovered — Ft.: — Diam. — in.

Soil Samples 1 3/8 in. Diam. 16 No.

Soil Samples in. Diam. No.

Casing Left in Place TOTAL 10 Feet

Water Table Depth -0.04'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	80	4" DRIVEN CASING AND 3 7/8
		ROLLER BIT
		HYDRANT WATER USE DURING
		ALL DRILLING

INDEX

Ground Water Back of Page

Boring Location Sketch Back of Page

Overburden Record Page

Rock Drilling Page

Page

Page

Page

Prepared by PAUL FISHER
Field Data

Lab. Data

Submitted by ATLANTIC TEST LAB

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site ABERJONA R., WOBURN, MA Page 1 of ___ Pages

Boring No. FD-85-25 Desig. 25 Diam. (Casing) 4"

Co-ordinates: N SEE DRAWING E —

Elevation Top of Boring 43 M.S.L. Hammer Wt. 140 Boring Started 10/30/85

Total Overburden Drilled 80 Feet Hammer Drop 30" Boring Completed 10/31/85

Elevation Top of Rock — M.S.L. Casing Left 4"

Total Rock Drilled 0 Feet Subsurface Water Date ___ Page ___

Elevation Bottom of Boring -37 M.S.L. Obs. Well 2"

Total Depth of Boring 80 Feet Drilled By DAVIS + HAWKINS

Core Recovered — % No. Boxes — Mfg. Des. Drill TRACK MOUNTED CME 45

Core Recovered — Ft : — Diam. — in. Inspected By: PAUL FISHER

Soil Samples 1 3/8 in. Diam. 16 No. Classification By: PAUL FISHER

Soil Samples ___ in. Diam. ___ No. Classification By: MARY VO ART

DEPTH 1"=5'	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. ~~CORE REC'V'Y~~	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
1.5	SS 1	1 3/8	9/SEC	GRAB SAMPLE	DRIVEN 4" CASING WASHED WITH 3 7/8 ROLLER BIT	PEAT, BLK, MOIST, ORGAN GRASS ROOTS
5						
6.5	SS-2		10	WOH		peat, blk moist
10						
11.5	SS-3		100	2 3 4		gray m/f sand
15						
16.5	SS-4		0	1 1 1		ASSUMED SAME AS SS-3
20						
21.5	SS-5		100	3 5 4		black f/m sand to med moist

GENERAL REMARKS:

NED FORM MAR 71 58 (Test)

Boring No. FD-85-25

Site ABERJONA R. - WOBURN, MA	Boring No. FD-85-25	Page 2 of 3

DEPTH (ft)	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
26					Pound casing (4")	
26.5	SS-6		100	3 3 2	& Rotary wash (3 7/8)	Black Ash, Some Clay moist
30						
31.5	SS-7		100	9 6 5		Black m.f. sand
35						Brown, fine to coarse sand, moist
36.5	SS-8		0	5 4 9		ASSUMED MF SAND, TAN
40						
41.5	SS-9		0	5 4 6	WASH SAMPLE	Tan, m.f. sand
45						
46.5	SS-10		100	8 5 8		Similar Soil As SS-9
50						
51.5	SS-11		100	7 4 7		Similar Soil As SS9
55						
56.5	SS-12		100	13 9 9		Similar Soil As SS-9 NUS DETECTED CONTAMINANTS
60						
61.5	SS-13		100	11 7 7		Similar Soil As SS-9 NUS DETECTED CONTAMINANTS
65						
66.5	SS-14		100	7 4 2		Similar Soil As SS-9

Site ABERJONA R. WOBURN, MA	Boring No. FO-85-25	Page 3 of 3

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
70						
	SS-15		100	11 12 4		SAME AS SS-9
71.5						
75						
	SS-16		100	11 9 4		SAME AS SS-9
76.5						
80					END OF EXPLORATION	

D. FORM 58A (Test)

Boring No. FO-85-25

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R., WOBURN, MA | DATE: 10/31/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-25

PIEZ TYPE: 2" ϕ SLOTTED .010" | DEPTH OF PIEZ: 78.5' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): MF SAND (SP) | SOIL SAMPLE NO.: SS-16 | BORING DIAM: 4"

METHOD OF INSTALLATION: 4" DRIVEN CASING, 3 7/8 ROLLER BIT

TYPE OF PROTECTION FOR PIEZ: 4" ϕ X 10' LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 45.8' | ELEV PIEZ TIP: -35.5'

FILTER: #2 SAND | FROM ELEV: -37' | TO ELEV: -32.5'

SEAL: BENTONITE SLURRY | FROM ELEV: -32.5' | TO ELEV: -14.5'

INSTALLED BY: DAVIS + HAWKINS | CONTRACT NO.: D.O. 3 | FOREMAN: FISHER

DATE OF INSTALLATION: 10/31/85 | DATE OF OBSERVATIONS: 11/4/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1432		2.76	1441	3	2.71			
1438	0	0	1442	4	2.76			
	1/2	2.42						
1439	1	2.56						
1440	2	2.64						

REMARKS: 2.8 RISER STICKUP

P. FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

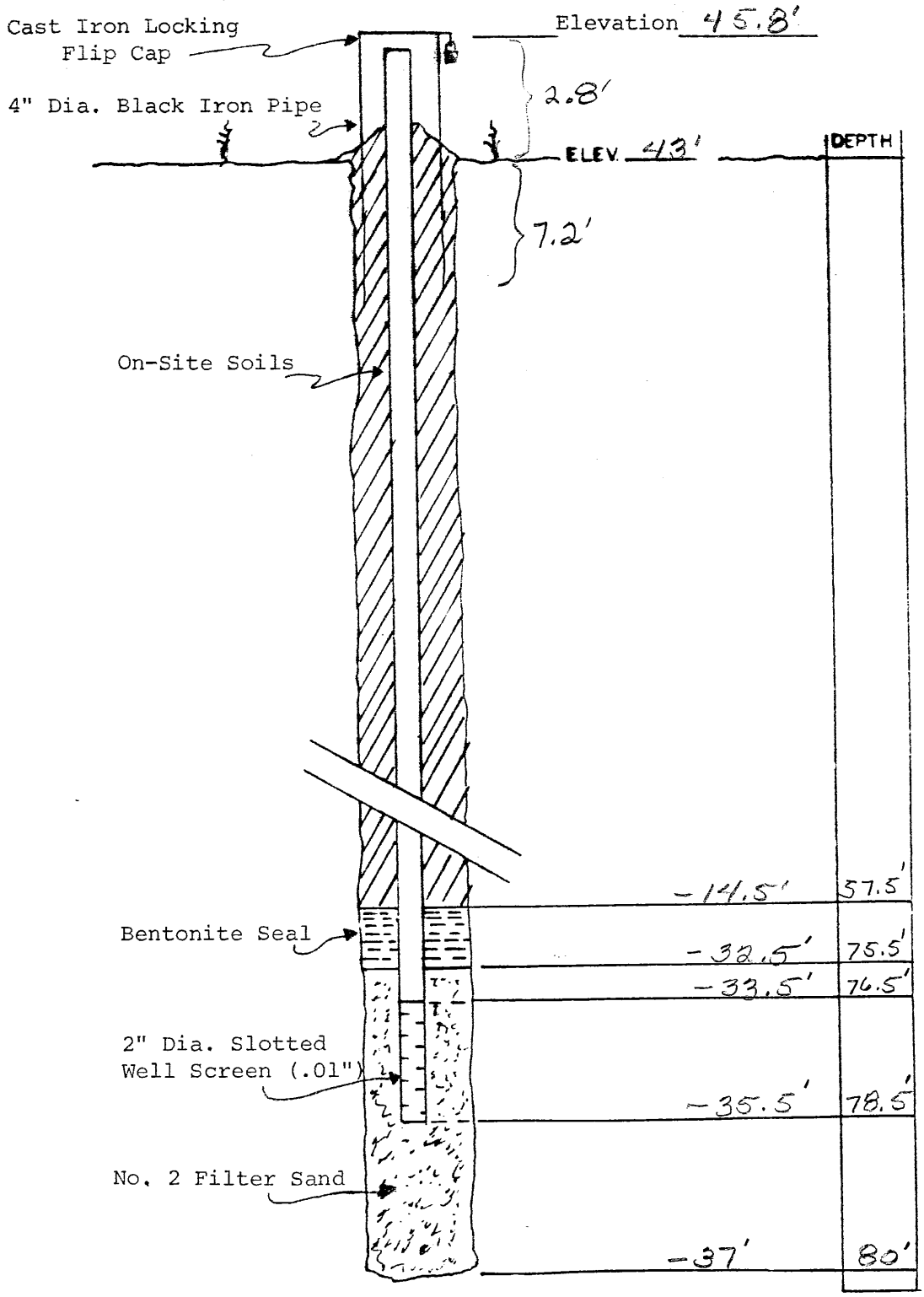
OBSERVATION WELL INSTALLATION DETAIL

Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H
Woburn MA

Project No. DACW-33-85-D-0011
D.O.#0003

Well No. FD85- 25
Cluster No. S-92



CLUSTER 5-95 FD-85-26

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELLS G+H, WOBURN, MA

PROJECT NO. DACW-33-95-D-0011 D.O. 3

Page 1 of 5 Pages

Hole No. FD-85-26 Diam. (Casing) 4

Boring Started 10/31/85

Co-ordinates: N SEE E DRAWING

Boring Completed 11/8/85

Drilled by CAMBRIDGE - BOYER

Report Submitted

Purpose of Exploration SOIL SAMPLING + PIEZOMETER INSTALLATION

Elevation Top of Hole 43' M.S.L.

Casing Left in Place TOTAL 10 Feet

Total Overburden Drilled 80 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -37 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 80 Feet

Core Recovered — %

Core Recovered — Ft.: — Diam. — In.

Soil Samples 1 3/8 In. Diam. — No.

Soil Samples — In. Diam. — No.

Water Table Depth 0.3'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	80	4" DRIVEN CASING, WASH
		WITH 3 7/8 ROLLER BIT
		HYDRANT WATER USED
		DURING ALL DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site ABERJONA RIVER, WOBURN, MA Page 1 of ___ Pages

Boring No. FD-85-26 Desig. 26 Diam. (Casing) 4"

Co-ordinates: N See Drawing E ___

Elevation Top of Boring 43 M.S.L. Hammer Wt. 140# Boring Started 10/31/85

Total Overburden Drilled 80 Feet Hammer Drop 30 Boring Completed 11/6/85

Elevation Top of Rock — M.S.L. Casing Left 4"

Total Rock Drilled 0 Feet Subsurface Water Data ___ Page ___

Elevation Bottom of Boring -37 M.S.L. Obs. Well 2"

Total Depth of Boring 80 Feet Drilled By CAMBRIDGE + BOYER

Core Recovered — % No. Boxes — Mfg. Des. Drill TRACK MOUNTED CME 55

Core Recovered — Ft. — Diam. — In. Inspected By: PAUL FISHER

Soil Samples 1 3/8 In. Diam. 17 No. Classification By: PAUL FISHER

Soil Samples ___ In. Diam. ___ No. Classification By: MARY JO ABT

DEPTH 1"=	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
1.5	SS-1	1 3/8	20	W.O.H	10/31/85 - pounding in 4" casing 5' increments - 3 7/8" roller bit to sampling depth	[illegible] mf sand, peat, wet
5 / 6.5	SS-2	"	80	2 2 6		mf sand, organic silt, [illegible]
						Possible Quicksand ?
10 / 11.5	SS-3	"	10	2 1 1		tan mf sand, clean, moist
15 / 16.5	SS-4	"	10	0 2 1		tan mf sand [illegible]
20 / 21.5	SS-5	"	80	0 2 4		tan mf sand, clean, wet

GENERAL REMARKS:

NED FORM MAR 71 58 (Test)

Boring No. FD-85-26

Site ABERJON R., WELLS G+H, WOBURN, MA

Boring No. FD-85-26

DEPTH (ft)	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / ~~CORE REC'VY~~	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
25						
26.5	SS-6	1 3/8"	10	2 2 3	Pounding in 4" casing - 5' increments - 3 7/8" roller wash	Similar soils (SS-4,5)
						NUS detected > trace contaminants in holes, not in air
30						
31.5	SS-7	"	100	3 3 3		Similar soils (SS-3)
35						
36.5	SS-8	"	75	3 2 3		Similar soils (SS-4,5)
					Casing to 40', not washed	
40						
41.5	SS-9	"	100	2 2 2	11/1/85 Pounding in 4" casing - 5' increments - 3 7/8" roller wash to sampling depth	Similar soils (SS-3)
45						
46.5	SS-10	"	100	2 1 1		Similar [illegible] fine grained
50						
51.5	SS-11	"	40	14 7 9		EMC gravel, little CMF sand
55					END 11/1/85 START 11/5/85	
56.5	SS-12	"	25	7 9 10		SAME AS SS-11
60					END 11/5/85 START 11/8/85	
61.5	SS-13	"	25	13 12 11		TRACE CONTAMINANTS FOUND BY NUS SAME AS SS-11
65						
66.5	SS-14	"	20	23 6 7		SAME AS SS-11

Site ABERJONA R
WOBURN MA

Boring No. FD-85-26

DEPTH (1")	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
65						
70.0						INCREASED GRAVEL FRACTION CHANGE NOTED @ 68'
71.5	SS-15	1 3/8	10	40 108 115		FC GRAVEL, LITTLE FMC SAND, TRACE COBBLE, BR + BR
75.0						
	SS-16	11	10	100/2"	ADVANCE WITH 3 7/8 ROLLER BIT	FC GRAVEL, SOME COBBLE, LITTLE FMC SAND GY/BR, POSSIBLE TILL
	SS-17	WASH SAMPLE				WASH SAMPLE (CUTTINGS). NOTED COLOR CHANGE + NO WATER LOSS, POSSIBLE TILL
80.0					END OF EXPLORATION	

FORM 58A (Test)

Boring No. FD-85-26

PIEZOMETER INSTALLATION REPORT

PROJECT: Aberjona R. Woburn MA | DATE: 11/8/85

LOCATION (STA): See Drawing | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-26

PIEZ TYPE: 2"ϕ Slotted, .010" | DEPTH OF PIEZ: 75 | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): FC Grav, Some Cobble, Little Sand | SOIL SAMPLE NO.: SS-16 | BORING DIAM: 4"

METHOD OF INSTALLATION: 4" Driven Casing + 3 7/8

TYPE OF PROTECTION FOR PIEZ: 4"ϕ x 10' Long Pipe | VENT: Lock Cap

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 44.8 | ELEV PIEZ TIP: -32

FILTER: #2 Sand | FROM ELEV: -37 | TO ELEV: -29

SEAL: Bentonite Slurry | FROM ELEV: -29 | TO ELEV: -9

INSTALLED BY: Cambridge & Boyer | CONTRACT NO.: D.0.43 | FOREMAN: Fisher

DATE OF INSTALLATION: 11/8/85 | DATE OF OBSERVATIONS: 11/9/85

METHOD OF TESTING PIEZ.: Falling Head Test

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1601	—	2.10						
1612	0	.97						
	1/2	2.00						
1613	1	2.10						

REMARKS: 1.8 Riser Stickup

- 2 ft screen (not longer because of till)

Fisher
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

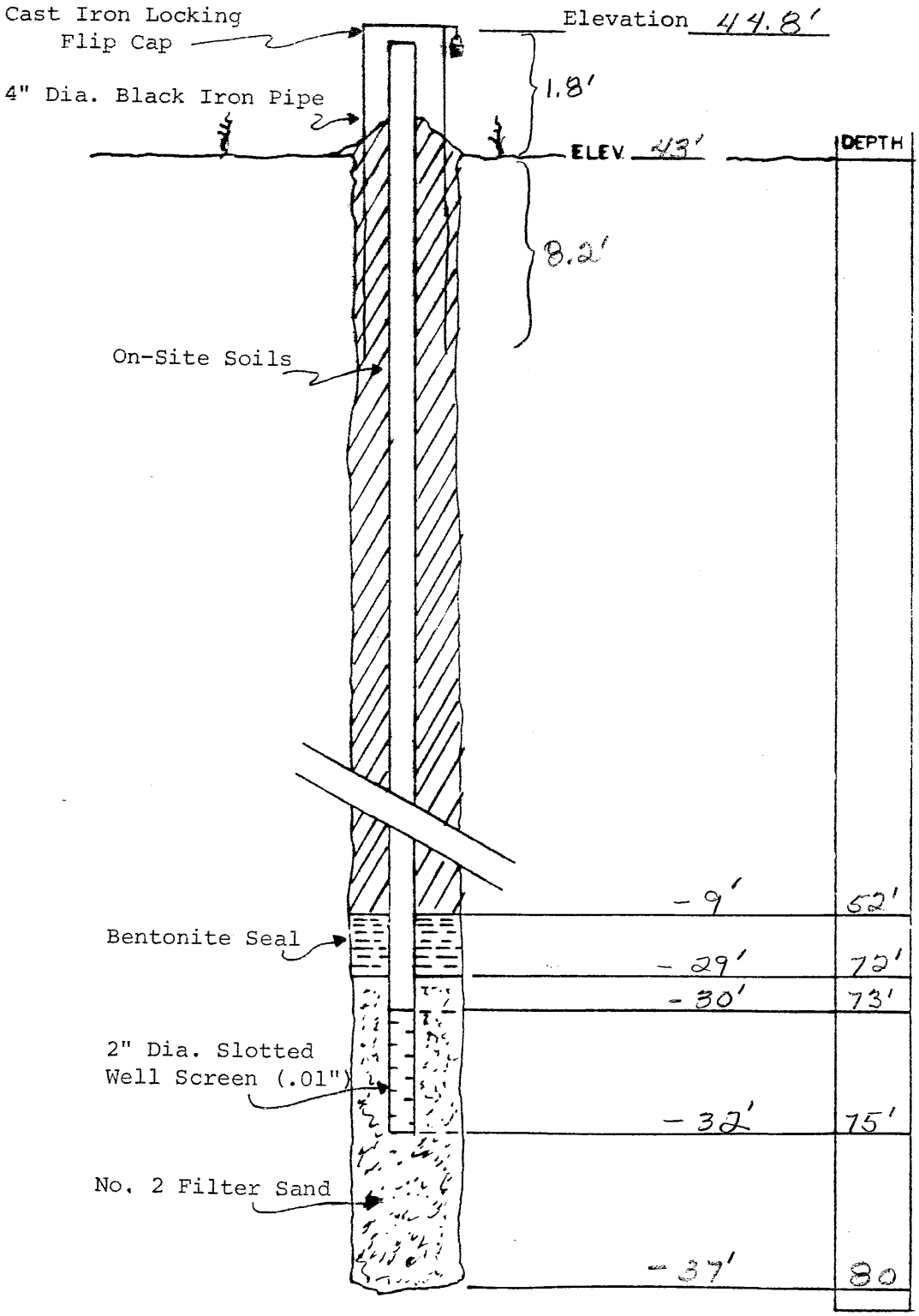
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85-26

Cluster No. S-95



CLUSTER S-92 FD-85-27

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELLS G+H, WOBURN, MA PROJECT NO. DACW-33-85-D 0011 D.O. 3

Page 1 of 2 Pages

Hole No. FD-85-27 Diam. (Casing) 4

Boring Started 11/1/85

Co-ordinates: N SEE E DRAWING

Boring Completed 11/1/85

Drilled by DAVIS + HAWKINS

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 43' M.S.L.

Total Overburden Drilled 15' Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 28 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10 Feet

SEE FD-85-25 FOR SOIL LOG

Water Table Depth 0.21'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	15	4" ID AUGER
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER
Field Data

Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R. WOBURN MA | DATE: 11/1/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-27

PIEZ TYPE: 2" ϕ SLOTTED .010" | DEPTH OF PIEZ: 14' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): M F SAND | SOIL SAMPLE NO.: FD-85-25 55-3 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID AUGER

TYPE OF PROTECTION FOR PIEZ: 4" ϕ X 10' LONG PIPE | VENT: CAP

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 45.4' | ELEV PIEZ TIP: 29'

FILTER: #2 SAND | FROM ELEV: 28' | TO ELEV: 35

SEAL: 3/8 PELTONITE | FROM ELEV: 35' | TO ELEV: 40'

INSTALLED BY: DAVIS & HAWKINS | CONTRACT NO.: 0.0. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 11/1/85 | DATE OF OBSERVATIONS: 11/4/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1433		2.61	1447	3	2.61			
1444	0	0						
	1/2	2.46						
1445	1	2.55						
1446	2	2.59						

REMARKS: 2.4 RISER STICKUP

5' SCREEN

P. FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

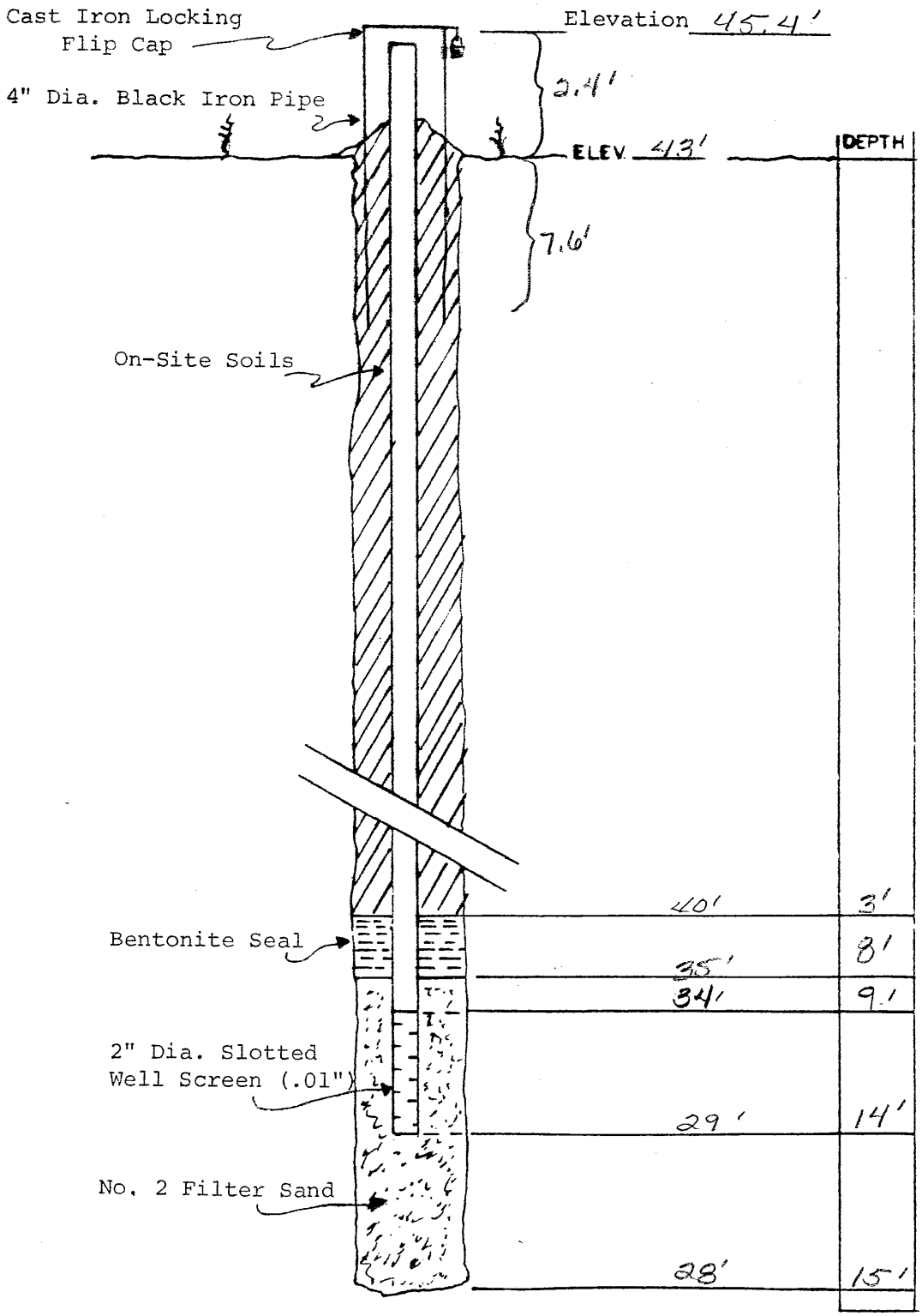
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85- 27

Cluster No. S-92



CLUSTER S-92 FD-85-28

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELLS G+H, WOBURN, MA

PROJECT NO. DACW-33-85-D0011 D.O. 3

Page 1 of 2 Pages

Hole No. FD-85-28 Diam. (Casing) 4

Boring Started 11/1/85

Co-ordinates: N SEE E DRAWING

Boring Completed 11/1/85

Drilled by DAVIS + HAWKINS

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 43 M.S.L.

Total Overburden Drilled 40 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 3 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 40 Feet

Core Recovered — %

Core Recovered — Ft.: — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10 Feet

SEE FD-85-25 FOR SOIL LOG

Water Table Depth 0.07'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	40	4" ID AUGER
		HYDRANT WATER USE DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER
Field Data — Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R, WOBURN MA | DATE: 11/1/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-28

PIEZ TYPE: 2" ϕ SLOTTED, .010" | DEPTH OF PIEZ: 39' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): MF SAND (SP) | SOIL SAMPLE NO.: FD-85-25 SS-9 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID AUGER

TYPE OF PROTECTION FOR PIEZ: 4" ϕ x 10' LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 45.7' | ELEV PIEZ TIP: 4'

FILTER: #2 SAND | FROM ELEV: 3 | TO ELEV: 7

SEAL: 3/8 BENTONITE | FROM ELEV: 7 | TO ELEV: 12

INSTALLED BY: DAVIS + HAWKINS | CONTRACT NO.: O.O. 3 | FOREMAN: FISHER

DATE OF INSTALLATION: 11/1/85 | DATE OF OBSERVATIONS: 11/4/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1434	—	2.77						
1449	0	0						
	1/2	2.74						
1450	1	2.76						
1451	2	2.77						

REMARKS: 2.7 RISER STICKUP

P. FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

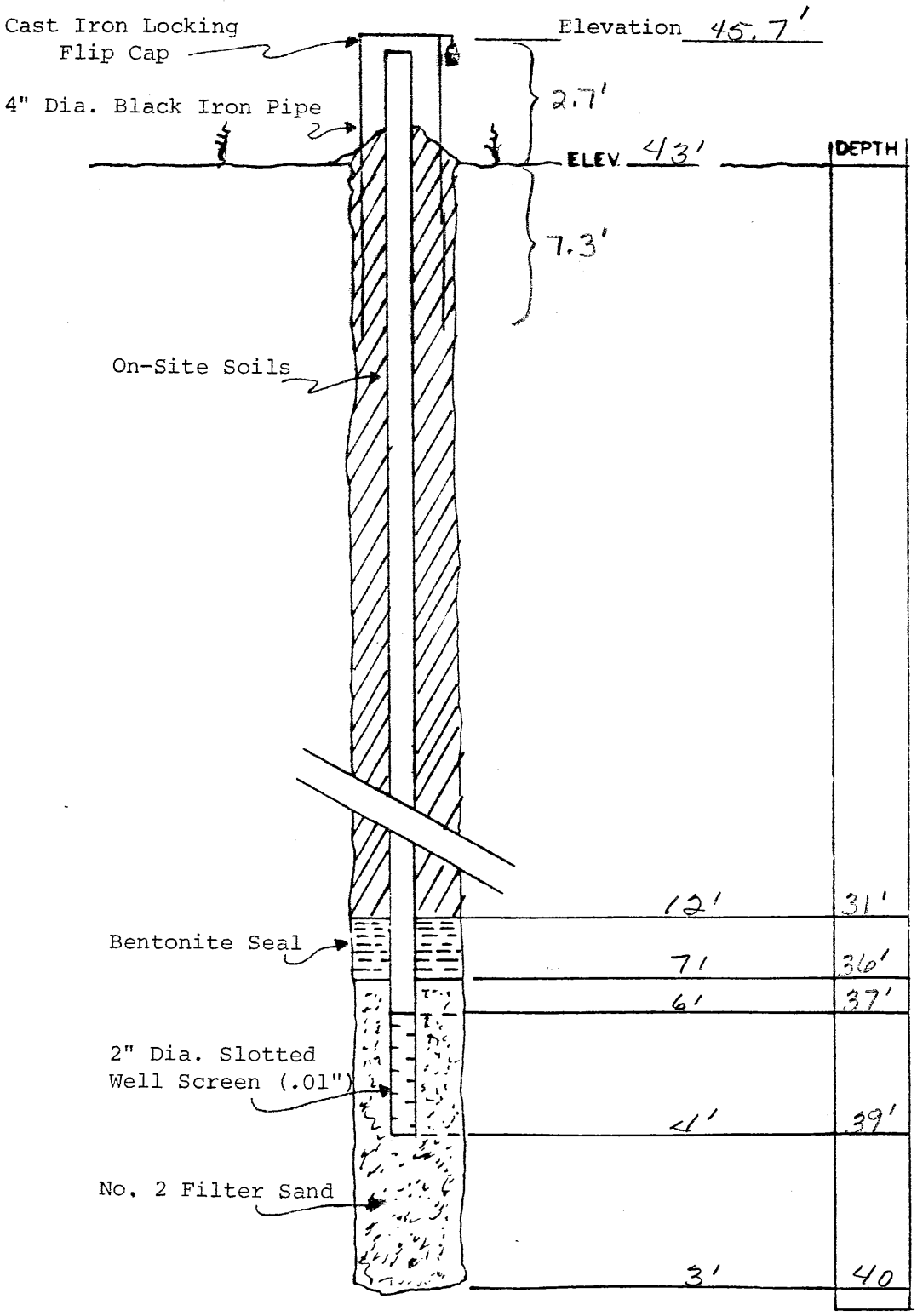
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85- 28

Cluster No. S-92



CLUSTER S-92 FD-85-29

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

ABERJONA RIVER PROJECT NO. DACW-33-85-D-0011 D.O. 3

Site WELLS G+H, WOBURN, MA

Page 1 of 2 Pages

Hole No. FD-85-29 Diam. (Casing) 4

Boring Started 11/1/85

Co-ordinates: N SEE E DRAWING

Boring Completed 11/1/85

Drilled by DAVIS + HAWKINS

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 43' M.S.L.

Total Overburden Drilled 57 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole -14 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 57 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No.

Casing Left in Place TOTAL 10 Feet

SEE FD-85-25 FOR SOIL LOG

Water Table Depth 0.19'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	57	4" ID AUGER
		HYDRANT WATER USED
		DURING ALL DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER
Field Data Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R., WOBURN, MA | DATE: 11/1/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-29

PIEZ TYPE: 2"φ SLOTTED .010" | DEPTH OF PIEZ: 57' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): MF SAND (SP) | SOIL SAMPLE NO.: FD-85-25 SS-12 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID AUGER

TYPE OF PROTECTION FOR PIEZ: 4"φ X 10' LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 45.4' | ELEV PIEZ TIP: -14'

FILTER: # 2 SAND | FROM ELEV: -14 | TO ELEV: -11

SEAL: NONE | FROM ELEV: — | TO ELEV: —

INSTALLED BY: DAVIS + HAWKINS | CONTRACT NO.: D.O. 3 | FOREMAN: FISHER

DATE OF INSTALLATION: 11/1/85 | DATE OF OBSERVATIONS: 11/4/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1435		2.59		3	2.59			
1456	0	0						
	1/2	2.22						
	1	2.50						
	2	2.58						

REMARKS: 2.4 RISER STICKUP

P. FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

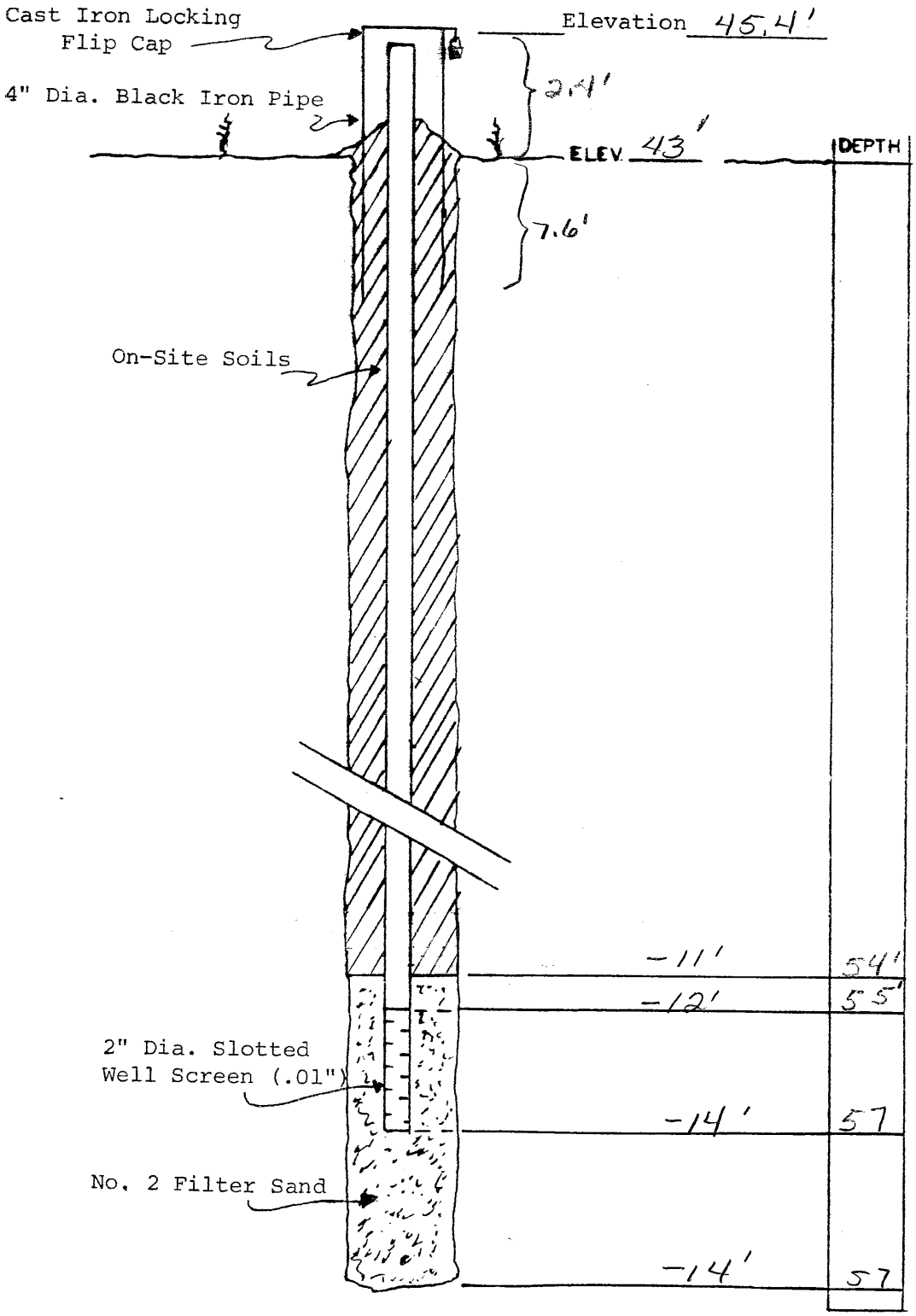
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85- 29

Cluster No. S- 92



CLUSTER S-95 FD-85-30

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELLS G+H, WOBURN, MA

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Page 1 of 2 Pages

Hole No. FD-85-30 Diam. (Casing) 4"

Boring Started 11/9/85

Co-ordinates: N SEE E DRAWING

Boring Completed 11/9/85

Drilled by CAMBRIDGE + BAKER

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 43 M.S.L.

Total Overburden Drilled 15 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 28 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15 Feet

Core Recovered — %

Core Recovered — Ft.: — Diam. — in.

Soil Samples — in. Diam. — No.

Soil Samples — in. Diam. — No.

Casing Left in Place TOTAL 10 Feet

SEE FD-85-26 FOR SOIL LOG

Water Table Depth -0.55'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	15	4" ID AUGER
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water — Back of Page

Boring Location Sketch — Back of Page

Overburden Record — Page

Rock Drilling — Page

Page

Page

Page

Prepared by PAUL FISHER
Field Data

Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA RIVER WOBURN MA | DATE: 11/9/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-30

PIEZ TYPE: 2" ϕ SLOTTED .010" | DEPTH OF PIEZ: 14' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): MF SAND (SP) | SOIL SAMPLE NO.: FD-85-26 SS-4 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID AUGER

TYPE OF PROTECTION FOR PIEZ: 4" ϕ X 10' LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 45.9' | ELEV PIEZ TIP: 29'

FILTER: #2 SAND | FROM ELEV: 28' | TO ELEV: 35'

SEAL: 3/8 PELTONITE | FROM ELEV: 35' | TO ELEV: 40'

INSTALLED BY: CAMBRIDGE & BOYER | CONTRACT NO.: D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 11/9/85 | DATE OF OBSERVATIONS: 11/9/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1603		2.35						
1615	0	0						
	1/2	2.28						
1616	1	2.35						

REMARKS: 5' SCREEN

2.9 RISER STICKUP

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

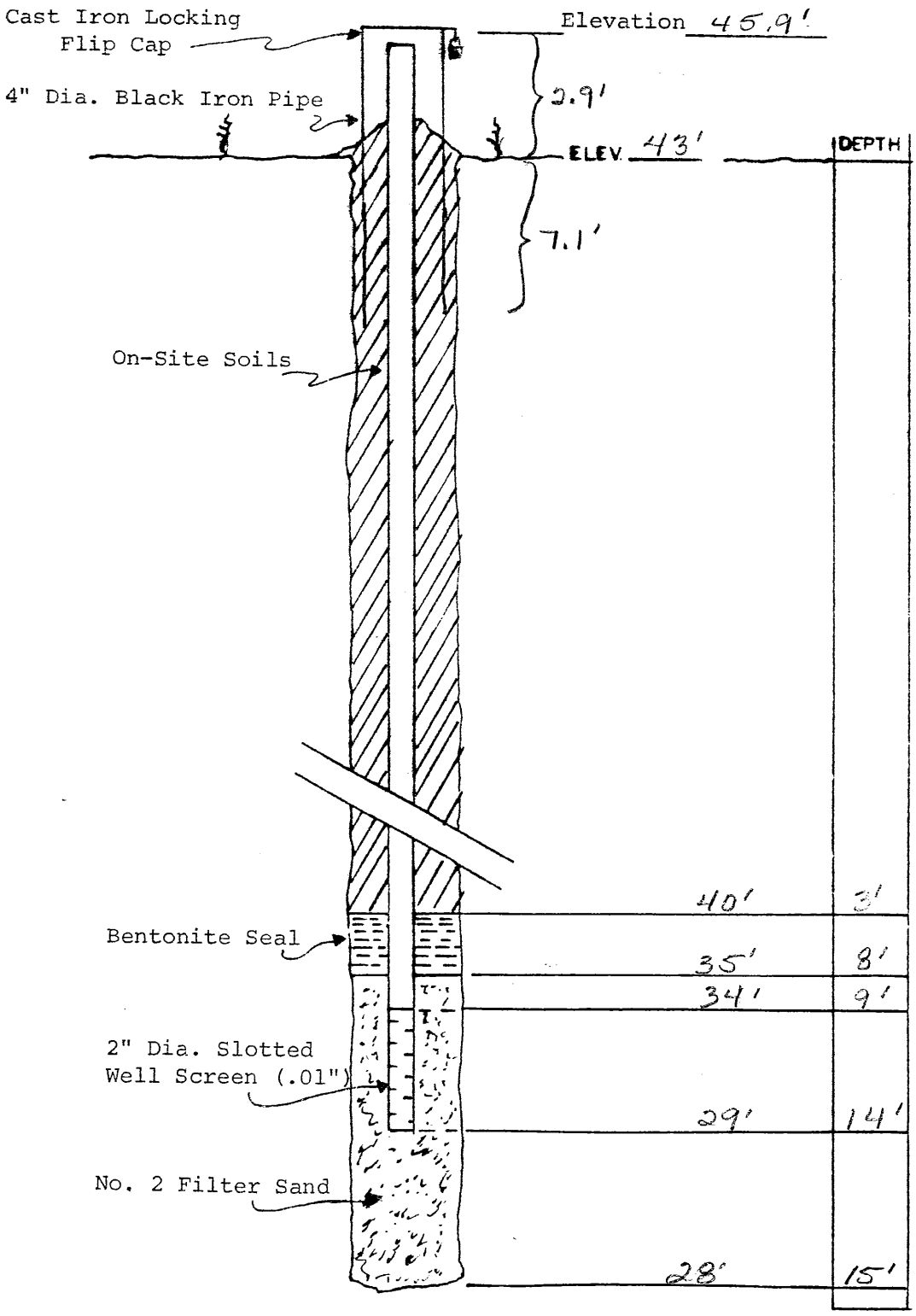
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85- 30

Cluster No. S-95



CLUSTER S-95 FD-85-31

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELLS G&H, WOBURN MA. PROJECT NO. DACW-33-85-D-0011 D.O. #3

Page 1 of 2 Pages

Hole No. FD-85-31 Diam. (Casing) 4

Boring Started 11/9/85

Co-ordinates: N SEE E DRAWING

Boring Completed 11/9/85

Drilled by CAMBRIDGE + BOYER

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 13 M.S.L.

Total Overburden Drilled 40 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 3 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 40 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — in.

Soil Samples — in. Diam. — No.

Soil Samples — in. Diam. — No.

Casing Left in Place TOTAL 10 Feet

SEE FD-85-26 FOR SOIL LOG

Water Table Depth 0.4'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	40	4" ID AUGER
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER (Field Data) — (Lab. Data)

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R. WOBURN, MA | DATE: 11/9/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-31

PIEZ TYPE: 2" ϕ SLOTTED, .010" | DEPTH OF PIEZ: | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): MF SAND (SP) | SOIL SAMPLE NO.: FD-85-26 SS-9 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID AUGER

TYPE OF PROTECTION FOR PIEZ: 4" ϕ X 10' LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 43' | ELEV. TOP OF RISER: 45.5' | ELEV PIEZ TIP: 4'

FILTER: #2 SAND | FROM ELEV: 3' | TO ELEV: 7'

SEAL: 3/8 PELTONITE | FROM ELEV: 7' | TO ELEV: 12'

INSTALLED BY: CAMBRIDGE + BOYER | CONTRACT NO.: D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 11/9/85 | DATE OF OBSERVATIONS: 11/9/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
1605		2.10	1622	3	1.93			
1619	0	.30	1623	4	2.06			
	½	.75	1624	5	2.10			
1620	1	1.48						
1621	2	1.87						

REMARKS: 2.5 STICK UP

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

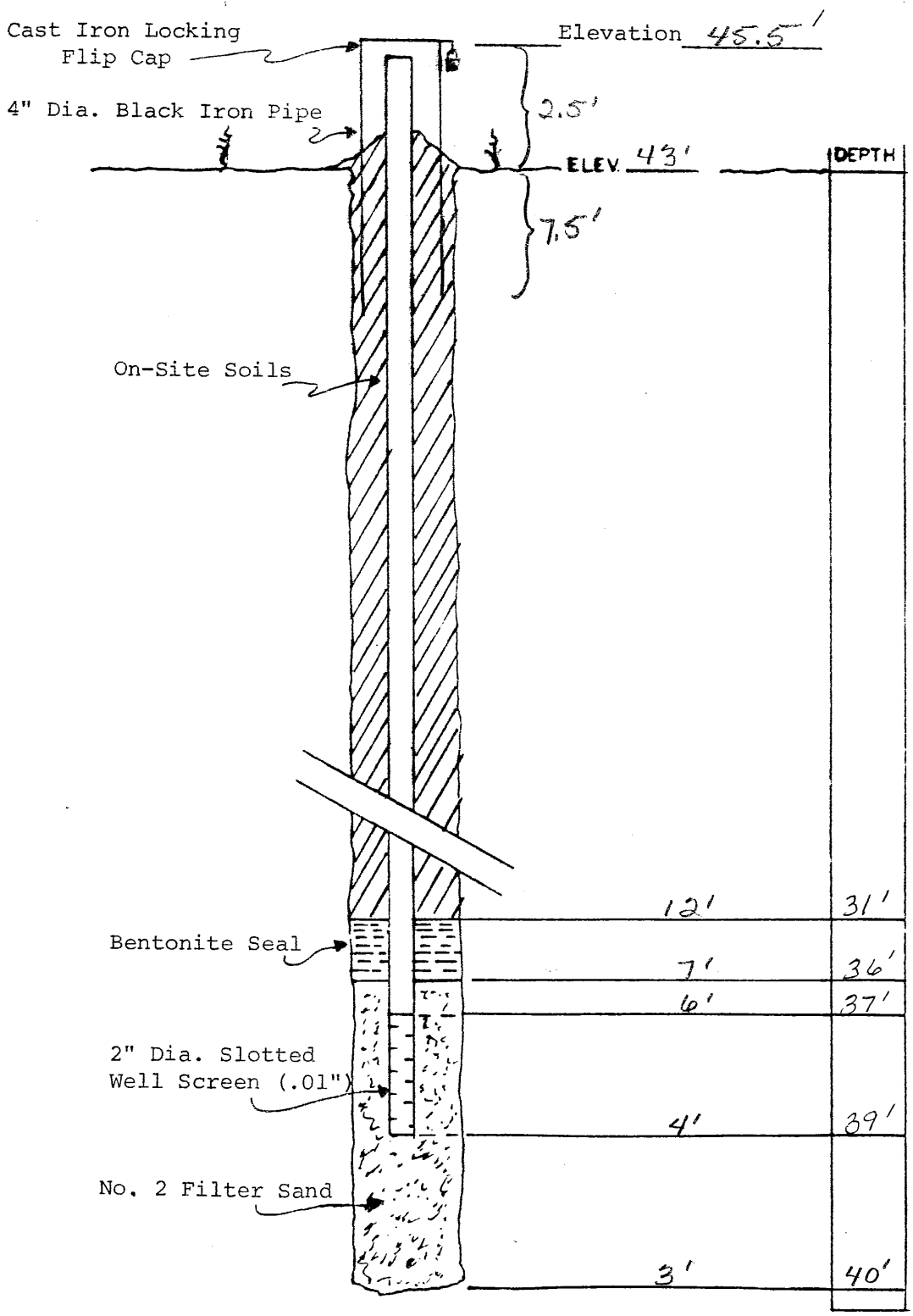
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85- 31

Cluster No. S- 95



CLUSTER S-97 FD-85-32

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER, WELLS G&H, WOBURN, MA

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Page 1 of 4 Pages

Hole No. FD-85-32 Diam. (Casing) 4"

Boring Started 11/10/85

Co-ordinates: N SEE E DRAWING

Boring Completed 11/11/85

Drilled by CAMBRIDGE + BOYER

Report Submitted

Purpose of Exploration SOIL SAMPLING + PIEZOMETER INSTALLATION

Elevation Top of Hole 48 M.S.L.

Total Overburden Drilled 33.5 Feet

Elevation Top of Rock 14.5 M.S.L.

Elevation Bottom of Hole 4 M.S.L.

Total Rock Drilled 10.5 Feet

Total Depth of Hole 44 Feet

Core Recovered ____ %

Core Recovered ____ Ft.; ____ Diam. ____ in.

Soil Samples 1 3/8 in. Diam. 8 No.

Soil Samples — in. Diam. — No.

Casing Left in Place TOTAL 10 Feet

Water Table Depth 3.10'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	33.5	4" ID x 8" OD AUGER
		HYDRANT WATER USED DURING
		ALL DRILLING
33.5	44.	2" ID CORE BARREL

INDEX

Ground Water ____ Back of Page ____

Boring Location Sketch ____ Back of Page ____

Overburden Record ____ Page ____

Rock Drilling ____ Page ____

____ Page ____

____ Page ____

____ Page ____

Prepared by PAUL FISHER
Field Data

Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site ABERJONA R. WOBURN, MA Page 1 of 2 Pages

Boring No. FD-85-32 Desig. 32 Diam. (Casing) 4

Co-ordinates: N SEE DRAWING E —

Elevation Top of Boring 48 M.S.L. Hammer Wt. 140 Boring Started 11/10/85

Total Overburden Drilled 33.5 Feet Hammer Drop 30 Boring Completed 11/11/85

Elevation Top of Rock 14.5 M.S.L. Casing Left 4" Subsurface Water Data _____ Page _____

Total Rock Drilled 10.5 Feet

Elevation Bottom of Boring 4 M.S.L. Obs. Well 2"

Total Depth of Boring 44 Feet Drilled By CAMBRIDGE + BOYER

Core Recovered ____ % No. Boxes 1 Mfg. Des. Drill TRACK MOUNT CME 55

Core Recovered ____ Ft ____ Diam. 2 in. Inspected By: PAUL FISHER

Soil Samples 1 3/8 in. Diam. 8 No. Classification By: FISHER

Soil Samples ____ in. Diam. ____ No. Classification By: ____

DEPTH 1"=5	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
1.5	SS-1	1 3/8	REC 60%	2 2 2	4" ID, 8" OD AUGER 3 1/8" ROLLER BIT	FM SAND, SOME TOP SOIL, ROOT MATTER BK TO TAN CONTAMINANTS NOTED BY NUS
						▽ WATER @ 3.5'
5.0						
6.5	SS-2	"	100	30 46 30		FM SAND, TAN (SP) CONTAMINANTS
						GRAVELLY FMC SAND, BK + TAN (SP)
10.0						
11.5	SS-3	"	65	30 27 14		FMC SAND + FC GRAVEL, TR SILT, TAN + BK TR COBBLES CONTAMINANTS
15.0						
16.5	SS 4	"	30	12 10 21		SAME AS SS-3 CONTAMINANTS
20.0						
21.5	SS-5	"	35	10 15 20		SAME AS SS-3 CONTAMINANTS

GENERAL REMARKS:

NED FORM 58 (Test) MAR 71

Boring No. FD-85-32

Site ABERJONA R WOBURN, MA	Boring No. FD-85-32	Page 2 of 2

DEPTH	CORE/SAMPLE NO.	SIZE	~~DEPTH RANGE~~	BLOWS PER FT. ~~CORE RECVY~~	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
1'.5' 25.0						
26.5	SS-6	1 3/8	REC 45%	15 45 100	4" ID AUGER	SAME AS SS-3 CONTAMINANTS
30.0						POSSIBLE CHANGE @ 28'
30.8	SS7	"	80%	40-10A 4"		GRAVELLY FINE SAND, LITTLE SILT, CONTAMINANTS
33.5	SS-8	WASH SAMPLE				WASH SAMPLE, SAND, SILT + ROCK CUTTINGS
34.0					TOP OF BEDROCK 3 7/8 ROLLER	
39.0		2"		49" / 60"	NX (2 3/4 OD x 2" ID) CORE BARREL (5' LONG)	GRANITE ROCK (RQD ⇒ 28"/60"). NOTED 3" VOID @ 37.5'.
44.0		2		64" / 60"	END OF EXPLORATION	CONT. BEDROCK (RQD ⇒ 22"/60") NOTED 3" VOID @ 40'

D FORM 58A (Test)

Boring No. FD-85-32

PIEZOMETER INSTALLATION REPORT

PROJECT: ACERSONA P. WOBURN | DATE: 11/11/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-32

PIEZ TYPE: 2"ϕ X 2' LONG SLOTTED .010" | DEPTH OF PIEZ: 43.5 | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): BEDROCK | SOIL SAMPLE NO.: CORE | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID AUGER + 2" ID CORE BARREL

TYPE OF PROTECTION FOR PIEZ: 4"ϕ X 10' LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 48' | ELEV. TOP OF RISER: 50.8 | ELEV PIEZ TIP: 4.5

FILTER: NONE | FROM ELEV: — | TO ELEV: —

SEAL: 3/8 PELTONITE | FROM ELEV: 11.5 TO 14.5 | TO ELEV: 19.5

INSTALLED BY: CAMBRIDGE + BOWER | CONTRACT NO.: D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 11/11/85 | DATE OF OBSERVATIONS: 11/11/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
		5.90	1501	10	2.89	1942	4HRS 5MIN	5.69 ?
1451	0	0	1513	22	4.44	0642	15HR 5MIN	5.62
1452	1	.42	1535	34	5.13	POSSIBLE RAIN CHANGE		
1453	2	.82	1551	60	5.61			
1456	5	1.75	1651	120	5.74			

REMARKS: 5' + 2' SCREEN IN ROCK

2.5 RISER STICKUP

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

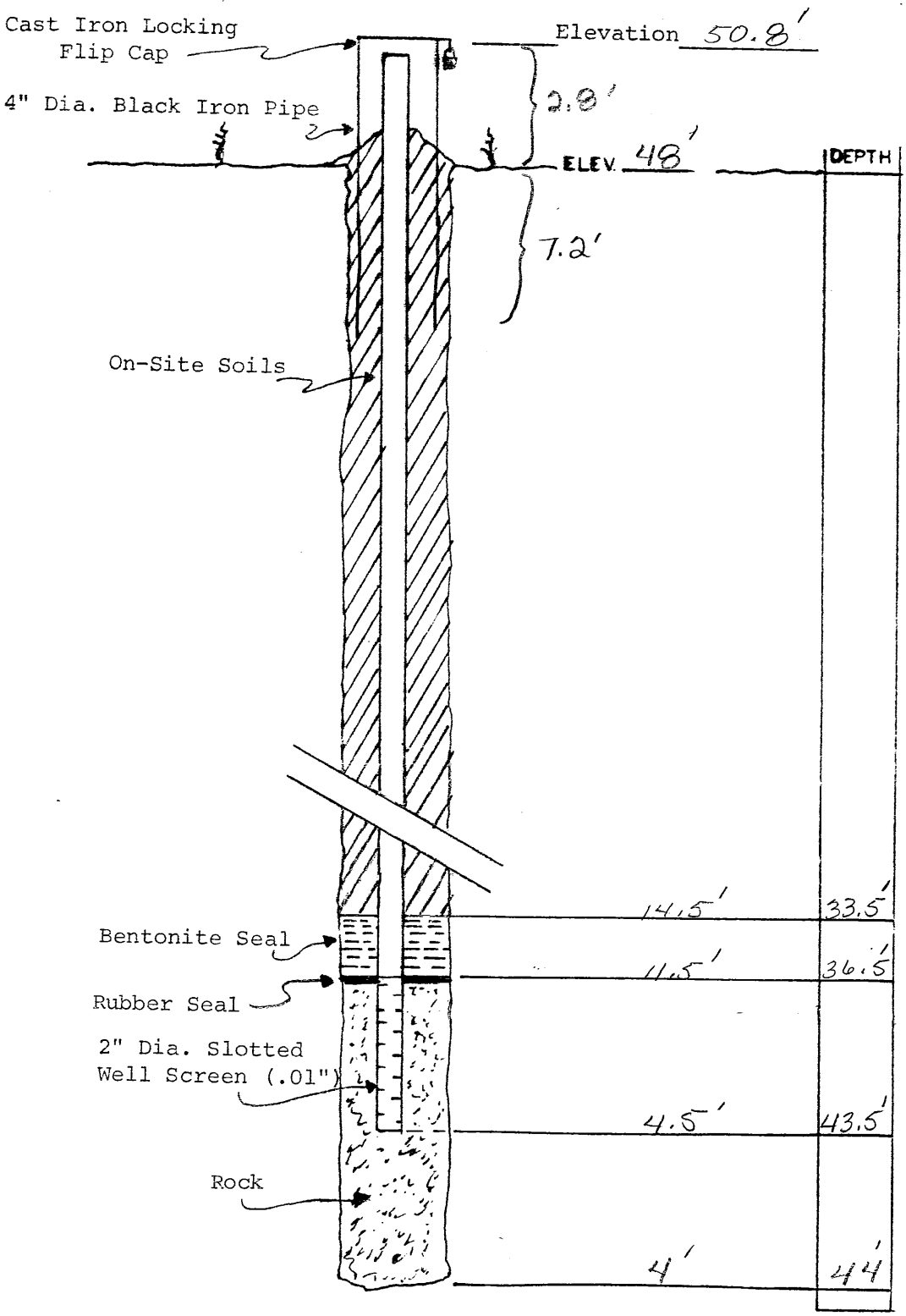
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85- 32

Cluster No. S- 97



CLUSTER S-97 FD-85-33

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELLS G&H, WOBURN, MA PROJECT NO. DACW-33-85-D-0011 P.O. #3

Page 1 of 4 Pages

Hole No. FD-85-33 Diam. (Casing) 4

Boring Started 11/11/85

Co-ordinates: N SEE E DRAWING

Boring Completed 11/11/85

Drilled by CAMBRIDGE + BOYER

Report Submitted

Purpose of Exploration SOIL SAMPLING AND PIEZOMETER INSTALLATION

Elevation Top of Hole 48 M.S.L.

Total Overburden Drilled 26.5 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 21.5 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 26.5 Feet

Core Recovered — %

Core Recovered — Ft.: — Diam. — in.

Soil Samples 1 3/8 in. Diam. 2 No.

Soil Samples — in. Diam. — No.

Casing Left in Place TOTAL 10 Feet

SEE FD-85-32 FOR TOTAL SOIL LOG

Water Table Depth 3.21'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	26.5	4" ID - 8" OD AUGER
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water	Back of Page
Boring Location Sketch	Back of Page
Overburden Record	Page
Rock Drilling	Page
	Page
	Page
	Page

Prepared by PAUL FISHER (Field Data)

Submitted by ATLANTIC TEST LAB

Lab. Data

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site ABERJONAR, WOBURN MA Page 1 of 2 Pages
Boring No. FD-85-33 Desig. 33 Diam. (Casing) 4"
Co-ordinates: N SEE DRAWING E —

Elevation Top of Boring 48 M.S.L.
Total Overburden Drilled 26.5 Feet
Elevation Top of Rock — M.S.L.
Total Rock Drilled 0 Feet
Elevation Bottom of Boring 21.5 M.S.L.
Total Depth of Boring 26.5 Feet
Core Recovered — % No. Boxes —
Core Recovered — Ft — Diam. — in.
Soil Samples 1 3/8 in. Diam. 2 No.
Soil Samples — in. Diam. — No.

Hammer Wt. 140 Boring Started 11/11/85
Hammer Drop 30
Casing Left 4" Boring Completed 11/11/85
Subsurface Water Date — Page —
Obs. Well 2"
Drilled By CAMBRIDGE & BOYER
Mfg. Des. Drill TRACK MOUNTED CME 55
Inspected By: PAUL FISHER
Classification By: FISHER
Classification By:

DEPTH 1"=5	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT.	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
0			REC		4" ID x 8" OD AUGER	
5						
10						
15						
20.0						
21.5	SS-1	1 3/8	30%	17, 37, 24		FMC SAND & F-C GRAVEL TR SILT, TAN & BK

GENERAL REMARKS:

NED FORM 58 (Test) MAR 71

Boring No. FD-85-33

Site	Boring No.	Page 2 of 2
ABERJONA R, WOBURN MA	FD-85-33	

DEPTH		CORE/SAMPLE NO.	SIZE	~~DEPTH RANGE~~	BLOWS PER FT. ~~CORE RECOVERY~~	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	1" 25.0						
	26.5	55-2	1 3/8	REC 20%	24 5 47	END ON EXPLORATION	SAND + GRAVEL TR. SILT SAME AS 55-1

D. FORM 58A (Test)

Boring No. FD-85-33

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R., WOBURN, MA | DATE: 11/11/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-33

PIEZ TYPE: 2"ϕ X 2' LONG SLOTTED .010" | DEPTH OF PIEZ: 25' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): SAND + GRAVEL TR SILT | SOIL SAMPLE NO.: SS-2 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID X 8" OD AUGER

TYPE OF PROTECTION FOR PIEZ: 4"ϕ X 10 LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 48' | ELEV. TOP OF RISER: 51.1' | ELEV PIEZ TIP: 23'

FILTER: #2 SAND | FROM ELEV: 21.5' | TO ELEV: 26'

SEAL: 3/8 BELTONITE | FROM ELEV: 26' | TO ELEV: 31'

INSTALLED BY: CAMBRIDGE & BOXER | CONTRACT NO.: D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 11/11/85 | DATE OF OBSERVATIONS: 11/11/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
		6.31	1508	3	6.24			
1505	0	0	1509	4	6.27			
	1/2	4.13	1510	5	6.29			
1506	1	5.37	1512	7	6.31			
1507	2	6.10						

REMARKS:

3.1' RISER STICKUP

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

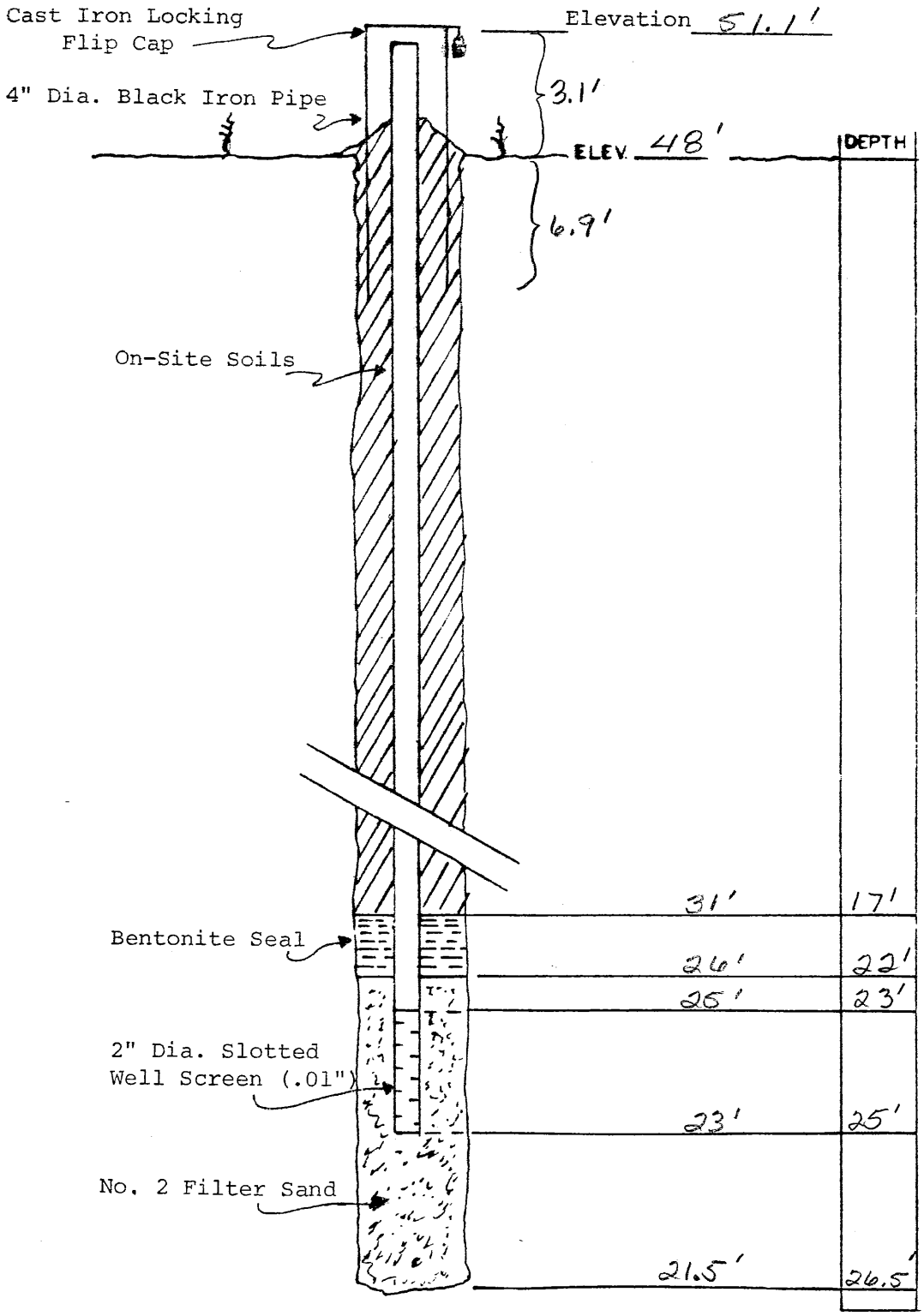
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85- 33

Cluster No. S- 97



CLUSTER S-97 FD-85-34

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

Site ABERJONA RIVER WELLS G & H, WOBURN, MA

PROJECT NO. DACW-33-85-D-0011 D.O. #3

Page 1 of 2 Pages

Hole No. FD-85-34 Diam. (Casing) 4"

Boring Started 11/11/85

Co-ordinates: N SEE E DRAWING

Boring Completed 11/11/85

Drilled by CAMBRIDGE & BOYER

Report Submitted

Purpose of Exploration PIEZOMETER INSTALLATION

Elevation Top of Hole 48 M.S.L.

Total Overburden Drilled 15 Feet

Elevation Top of Rock — M.S.L.

Elevation Bottom of Hole 33 M.S.L.

Total Rock Drilled 0 Feet

Total Depth of Hole 15 Feet

Core Recovered — %

Core Recovered — Ft.: — Diam. — in.

Soil Samples — in. Diam. — No.

Soil Samples — in. Diam. — No.

Casing Left in Place TOTAL 10 Feet

SEE FD-85-32 FOR SOIL LOG

Water Table Depth 4.4'

Depth From	Depth To	Method of Drilling and Type of Bit Used
0	15	4" ID X 8" OD AUGER
		HYDRANT WATER USED DURING
		ALL DRILLING

INDEX

Ground Water — Back of Page

Boring Location Sketch — Back of Page

Overburden Record — Page

Rock Drilling — Page

Page

Page

Page

Prepared by PAUL FISHER
Field Data

Lab. Data

Submitted by ATLANTIC TESTING LAB

NED FORM DEC 63 121

REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

PIEZOMETER INSTALLATION REPORT

PROJECT: ABERJONA R. WOBURN MA | DATE: 11/11/85

LOCATION (STA): SEE DRAWING | OFFSET FROM CENTER LINE: — | PIEZ NO.: FD-85-34

PIEZ TYPE: 2"Ø x 5' LONG SLOTTED .010" | DEPTH OF PIEZ: 14' | RISER PIPE DIAM: 2"

PIEZ TIP SET IN (SOIL TYPE): SAND & GRAVEL TO SILT | SOIL SAMPLE NO.: FD-85-32 SS-4 | BORING DIAM: 8"

METHOD OF INSTALLATION: 4" ID AUGER

TYPE OF PROTECTION FOR PIEZ: 4"Ø x 10' LONG PIPE | VENT: LOCK CAP

GROUND ELEV.: 48 | ELEV. TOP OF RISER: 50.6 | ELEV PIEZ TIP: 34'

FILTER: #2 SAND | FROM ELEV: 33' | TO ELEV: 40'

SEAL: 3/8 BENTONITE | FROM ELEV: 40' | TO ELEV: 45'

INSTALLED BY: CAMBRIDGE BORER | CONTRACT NO.: D.O. #3 | FOREMAN: FISHER

DATE OF INSTALLATION: 11/11/85 | DATE OF OBSERVATIONS: 11/11/85

METHOD OF TESTING PIEZ.: FALLING HEAD TEST

TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET	TIME	ELAPSED TIME MINUTES	DEPTH TO WATER FEET
		7.00	1518	3	7.00			
1515	0	.91						
1	1/2	6.58						
1516	1	6.92						
1517	2	6.98						

REMARKS:

2.6 RISER STICKUP

FISHER
INSPECTOR

ATLANTIC TESTING LABORATORIES, LIMITED

OBSERVATION WELL INSTALLATION DETAIL

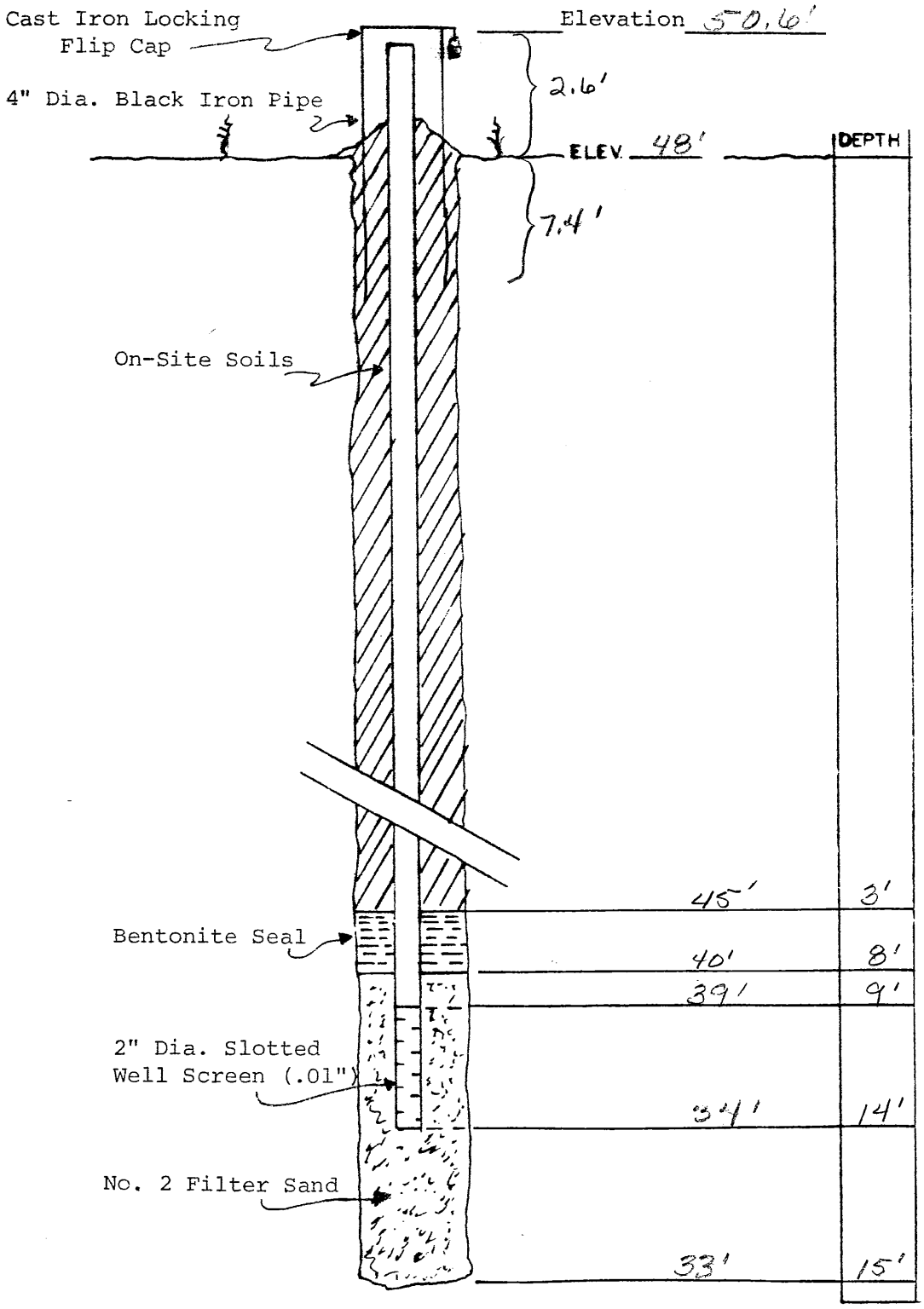
Client: ARMY CORPS OF ENGINEERS, NED

Project: Aberjona River, Wells G&H Woburn MA

Project No. DACW-33-85-D-0011 D.O.#0003

Well No. FD85- 34

Cluster No. S- 97



SECTION 9

OTHER RECORDS TAKEN

ATLANTIC TESTING LABORATORIES, LIMITED
Sustaining Member—N.Y.S. Society of Professional Engineers

Box 29
Canton, N.Y. 13617
(315) 386-4578

Box 356
Cicero, N.Y. 13039
(315) 699-5281

September 27, 1985

U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, Mass. 02254-9149

Attn: James Blair
Building 117 South

Re: Woburn, Mass.
ATL Project No. CD002-9-85
Delivery Order No. 0003

Gentlemen:

Mechanical analyses were performed on samples of Type No. 2, 3 and 4 silica sand at our laboratory. Test results are as follows:

PERCENT PASSING

Sieve Size	Type No. 2	Type No. 3	Type No. 4
1/4" (0.25")	100	100	100
#10 (0.787")	100	100	99
#20 (.0331")	90	55	11
#40 (.0165")	4.4	1.7	0.5
#80 (.0070")	0	0	0
#200 (.0029")	0	0	0

Based on the above sieve analyses, it appears that the material is predominantly coarser than the 0.010 inch particle size. We intend to use Type No. 3 silica sand on this job.
See attached grain size distribution graph.

Please feel free to contact our office should you have any questions.

Respectfully submitted,

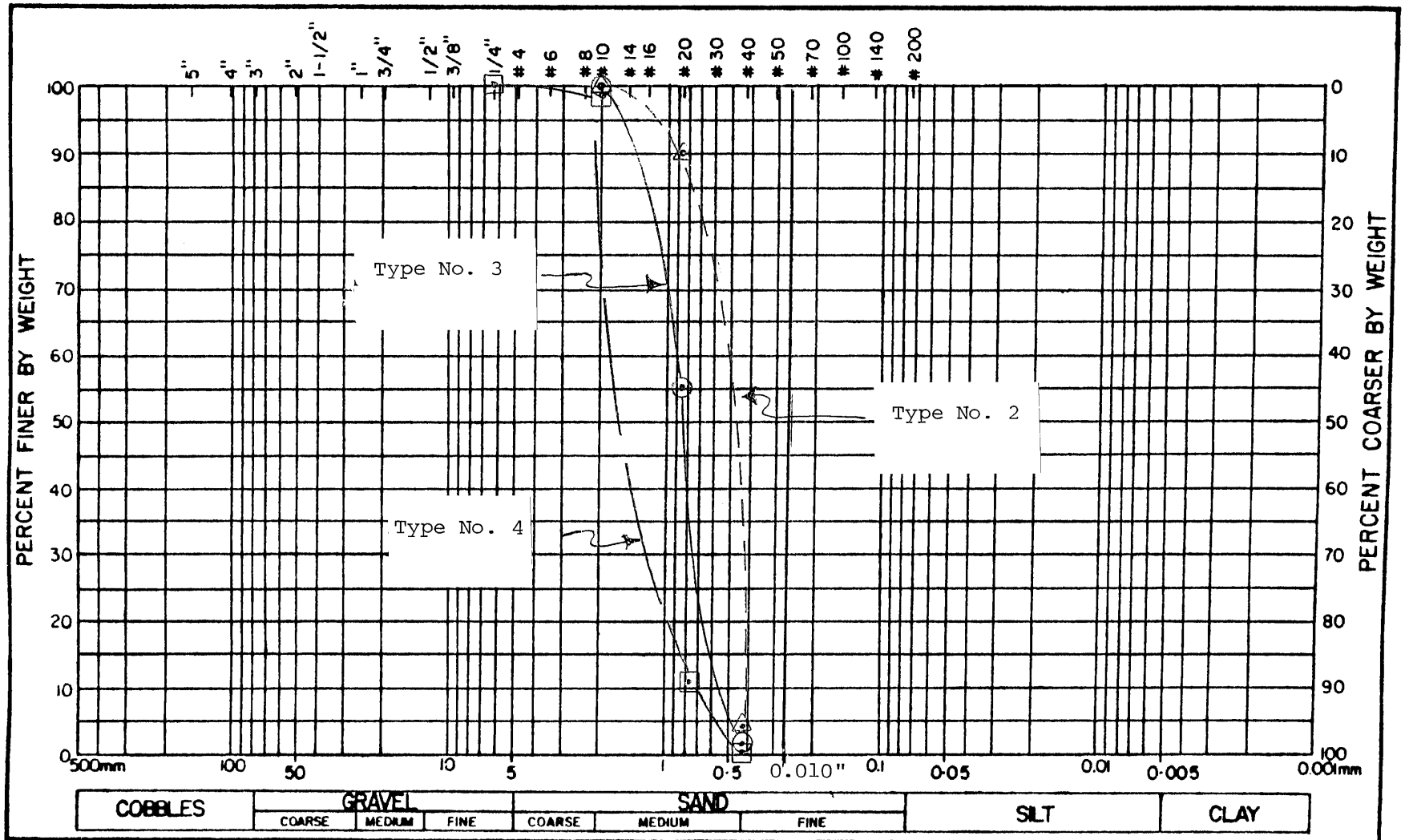
Judy Ames

Judy Ames, CET

JA/smf
att.

ATLANTIC TESTING LABORATORIES, Limited

GRAIN SIZE DISTRIBUTION GRAPH



Sample No.	Elev. / Depth	Classification	w%	LL	PL	PI

PROJECT: Woburn, Mass.

CLIENT: U.S. Army Corps Engineers
Waltham, Mass.

DATE: 9-27-85 JOB No. CD002-85

ATLANTIC TESTING LABORATORY

MECHANICAL ANALYSIS

PROJECT NO. CD 002

SAMPLE NO.: Silica #4 CLIENT: U.S. Army DATE: 3/26/85

PROJECT: Woburn, Mass. PERFORMED BY: JC

SUPPLIER: TYPE SAMPLE:

DATE PICKED UP BY OR DATE DELIVERED: BY

Sieve Size	Weight Retained	Percent Retained	Cumulative Percent Retained	Percent Passing	ASTM C 33-66 Specifications
4"					
2"					
1 1/2"					
1"					
3/4"					
5/8"					
1/2"					
3/8"					
5/16"					
1/4" ✓	0.0	0.0		100.0	
#4					
#5					
#6					
#8					
#10 ✓	4.4	0.9		99.1	
#12					
#16					
#20 ✓	406.2	87.8		11.3	
#30					
#40 ✓	49.8	10.8		0.5	
#50					
#80 ✓	2.4	0.5		0.0	
#100	0.0	0.0			
#200 ✓	0.0	0.0			
Pan Plus -#200 Material	0.1	0.0			
TOTAL	462.9	100.0			

Weight Oven Dry Soil and Tare (Before Washing) _____

Weight Tare _____

Original Weight Sample 462.8

Weight Sample After Washing _____

Weight - #200 Material _____

Weight Oven Dry Soil and Tare (After Washing) _____

Weight Tare _____

Weight Sample After Washing _____

Percent Error = _____

F.M. = _____

Percent Error = $\frac{\text{Original Weight - Total Weight Retained}}{\text{Original Weight}}$

F.M. = $\frac{\text{Cumulative Percent Retained}}{100}$

S-6

ATLANTIC TESTING LABORATORY

MECHANICAL ANALYSIS

PROJECT NO. CD 002

SAMPLE NO.: Silica #3 CLIENT: U.S. Army DATE: 2/26/85

PROJECT: Woburn, Mass. PERFORMED BY: JC

SUPPLIER: TYPE SAMPLE:

DATE PICKED UP BY OR DATE DELIVERED: BY

Sieve Size	Weight Retained	Percent Retained	Cumulative Percent Retained	Percent Passing	ASTM C 33-66 Specifications
4"					
2"					
1 1/2"					
1"					
3/4"					
5/8"					
1/2"					
3/8"					
5/16"					
1/4" ✓	0.0	0.0			
#4					
#5					
#6					
#8					
#10 ✓	0.0	0.0		100.0	
#12					
#16					
#20 ✓	198.1	44.5		55.5	
#30					
#40 ✓	239.1	53.8		1.7	
#50					
#80 ✓	7.7	1.7		0.0	
#100	0.0	0.0			
#200 ✓	0.0	0.0			
Pan Plus -#200 Material	0.1	0.0			
TOTAL	445.0				

Weight Oven Dry Soil and Tare (Before Washing) _____

Weight Tare _____

Original Weight Sample 445.0

Weight Sample After Washing _____

Weight - #200 Material _____

Weight Oven Dry Soil and Tare (After Washing) _____

Weight Tare _____

Weight Sample After Washing _____

Percent Error = _____

F.M. = _____

Percent Error = $\frac{\text{Original Weight} - \text{Total Weight Retained}}{\text{Original Weight}}$

F.M. = $\frac{\text{Cumulative Percent Retained}}{100}$

ATLANTIC TESTING LABORATORY

MECHANICAL ANALYSIS

PROJECT NO. CD 002

SAMPLE NO.: Silica #2 CLIENT: U.S. Army DATE: 9/26/85

PROJECT: Woburn, Mass. PERFORMED BY: ga

SUPPLIER: TYPE SAMPLE:

DATE PICKED UP BY OR DATE DELIVERED: BY

Sieve Size	Weight Retained	Percent Retained	Cumulative Percent Retained	Percent Passing	ASTM C 33-66 Specifications
4"					
2"					
1 1/2"					
1"					
3/4"					
5/8"					
1/2"					
3/8"					
5/16"					
1/4" ✓	0.0				
#4					
#5					
#6					
#8					
#10 ✓	0.0	0.0	100.0		
#12					
#16					
#20 ✓	56.0	9.9	90.1		
#30					
#40 ✓	485.8	85.7	4.4		
#50			0.0		
#80 ✓	25.1	4.4			
#100 ✓	0.2	0.0			
#200 ✓	0.1	0.0			
Pan Plus -#200 Material	0.1	0.0			
TOTAL	567.3	100.0			

Weight Oven Dry Soil and Tare (Before Washing) _____

Weight Tare _____

Original Weight Sample 567.3

Weight Sample After Washing _____

Weight - #200 Material _____

Weight Oven Dry Soil and Tare (After Washing) _____

Weight Tare _____

Weight Sample After Washing _____

Percent Error = _____

F.M. = _____

Percent Error = $\frac{\text{Original Weight - Total Weight Retained}}{\text{Original Weight}}$

F.M. = $\frac{\text{Cumulative Percent Retained}}{100}$

S-8