

October 12, 1995

Mr. James C. Coffey  
Supervisor - Permitting  
Solid Waste Section  
NC Department of Environmental  
Health, and Natural Resources  
Post Office Box 27687  
Raleigh, NC 27611-7687

**APPROVED**  
DIVISION OF SOLID WASTE MANAGEMENT  
DATE 5/17/96 BY SLC

Re: Notification of Expansion  
Halifax County Coal Ash Monofill  
Cell 2 Construction  
H&S No. 3786

Dear Mr. Coffey:

In accordance with the Permit To Operate (Permit No. 42-04) for the Halifax County Coal Ash Monofill issued February 17, 1994, Halifax County is providing notification of expansion of the facility. The expansion, referred to as Cell 2, is to be constructed to the lines and grades shown on the permit drawings. The expansion, which is approximately 8.7 acres in size, will be used for disposal of coal ash residue generated at the Roanoke Valley Energy Facility located in Weldon, N.C.

Cell 1 of the Coal Ash Monofill has been in operation since May, 1994. It was originally designed for residue disposal for a period of five years. Several factors have contributed to the need for accelerating construction of Cell 2, which must be in operation by late 1996. The actual volume of residue generated by the two power generating units has exceeded initial projection. The bulk density of the coal ash is lower than anticipated, thereby requiring more disposal volume. Cell 1 size was also predicated on an aggressive beneficial re-use program which would divert residue for use as structural fill or landfill daily cover. This re-use program did not come into full operation until mid-1995; resulting in significant use of Cell 1 airspace. Lastly, because of access considerations for the ash hauling vehicles, relatively steep access roads cannot be effectively maintained by the operations personnel. This has resulted in

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relatively flat monofill slopes. The elevations of the initial operations phase will not be as high as anticipated and shown on the original permit drawings.

The County plans to issue documents for bidding in February, 1996 and begin construction by April, 1996. Cell 2 construction should be completed by November, 1996. Operations will move into Cell 2 sometime in late 1996 or early 1997.

There have been several minor design improvements for Cell 2. Cell 2 drawings, which reflect these changes, are attached. Each improvement is discussed below.

- **Geomembrane** - A 30 mil polypropylene (PP) geomembrane is proposed for Cell 2 construction, replacing 60 mil HDPE. This reinforced geomembrane has mechanical properties comparable with or superior to 60 mil HDPE. This is especially true in puncture and burst resistance, which model the most common modes of failure of a geomembrane in a base liner. It is not prone to stress cracking or significant temperature expansion and contraction. This is especially important for this facility since much of the geomembrane will be exposed during the first months of operation. Polypropylene, in our experience, is easier to install, easier to repair and remains flexible. Although not as chemically inert as HDPE, PP possesses excellent chemical resistance. For the Coal Ash Monofill, no aggressive chemicals are contained in the residue, and chemical compatibility is not an issue.

As the facility designers, Hazen and Sawyer believes that PP is a superior geomembrane for this facility. We intended to use PP on Cell 1, but its production was limited at the time the permit application was being prepared. It is now in general use and has proven quiet successful.

- **Internal Stormwater Collection** - For Cell 2, a perforated collection pipe will replace the risers and solid pipe used for Cell 1 construction. The risers were designed to accept runoff from the ash surface once it was built well above the perimeter berms.

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Due to changes in the way Cell 1 (and future Cell 2) is operated, the risers are not necessary and will be removed during Cell 2 construction.

The perforated pipe proposed for the south end of Cell 2 will be enveloped by gravel to provide additional temporary storage capacity during heavy rainfall events. This approach will still allow suspended residue to settle out inside the cell while increasing efficiency during operations. The pipe and gravel will remain in place and be covered with residue when operations expand into Cell 3. The pipes will conduct water to the Cell 2 sump. Cleanout access, if necessary, is provided at the ends of the pipe and from inside the sump riser.

- **Ash Structural Fill** - We propose to incorporate coal ash into berm construction, as shown on Drawing G-4. The coal ash will be placed in accordance with beneficial reuse regulations. This not only reduces construction and disposal costs for the County, it helps in the earthwork balance. This minimizes the need to develop a new borrow area for Cell 2 construction.
- **Operational Cover** - For Cell 2, Operational Cover will consist of an 18 to 24 inch thick layer of coal ash instead of soil, as was used for Cell 1. Operational Cover will be placed by both the Contractor and County operations staff so that no vehicle will operate within 18 inches of the geomembrane. An access road will be installed by the Contractor during Cell 2 construction to provide access to the sump area.

The erosion and sediment control devices required for Cell 2 construction, with the exception of some diversion ditches and silt fence, were constructed during Cell 1. The Internal Stormwater Basin and surface water monitoring system are already in place and no additional construction is needed.

Two Cell 1 temporary groundwater monitoring wells (MW-13 and MW-14) will be removed during construction. Proposed locations of new temporary monitoring wells for Cell 2 are shown on Drawing G-2. Four new wells were drilled in September, 1994 as part of an exploration program to identify rock and

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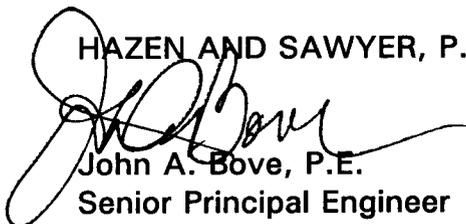
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groundwater levels in the Cell 2 area. We propose to use one of these wells, B-14, along with a new well as temporary monitoring wells for Cell 2. Logs and Well Completion Diagrams for the four new wells (B12 through 15) are attached.

Halifax County appreciates prompt review of this notification. If you have any questions or require additional information, please contact us. We would gladly meet with you at your office to discuss this project if necessary.

Very truly yours,

HAZEN AND SAWYER, P.C.



John A. Bove, P.E.  
Senior Principal Engineer

JAB/wp

**Attachments:**

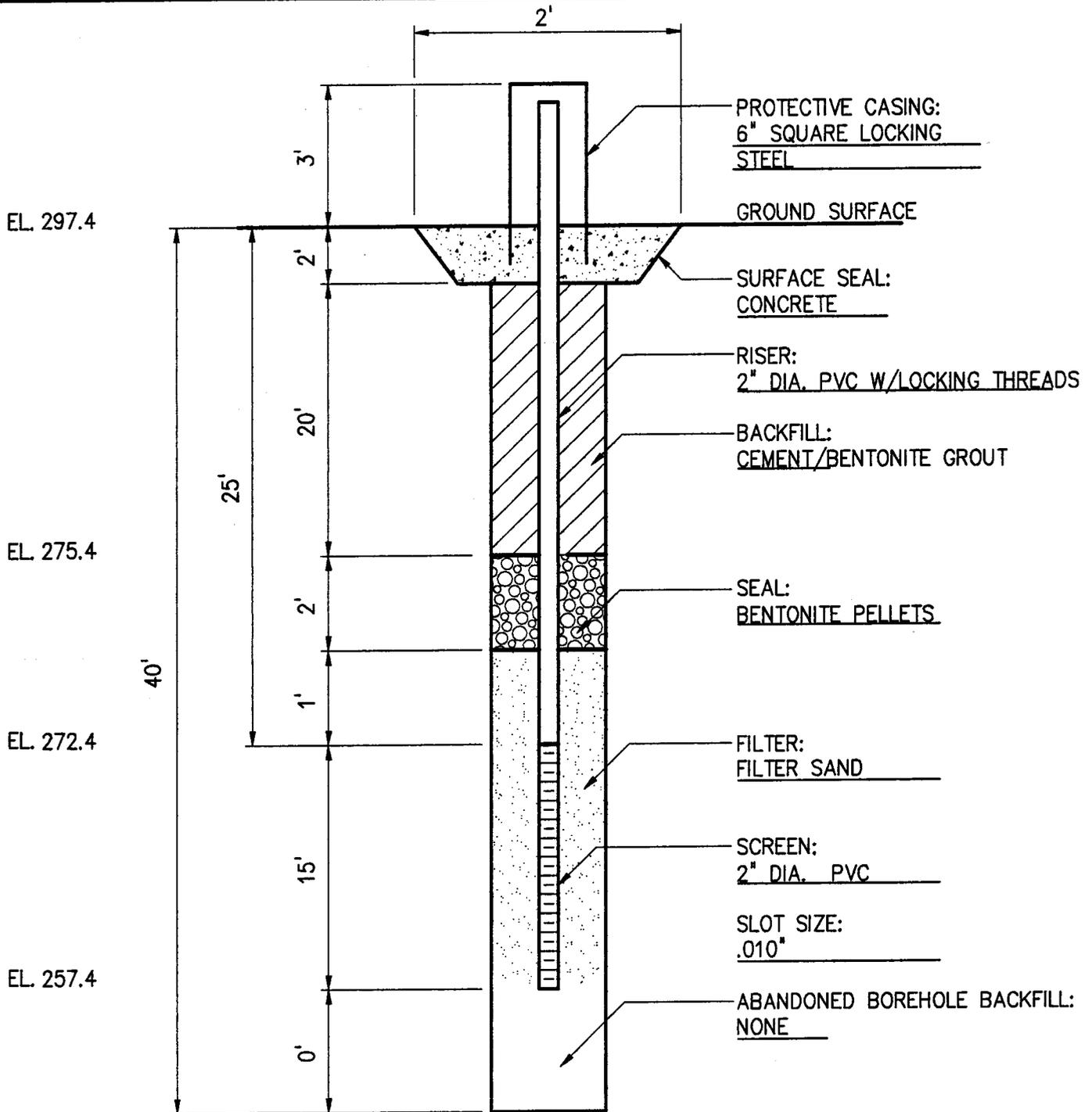
Cell 2 Drawings  
Boring Logs/Well Completion Diagrams

cc: Hazen Blodgett, Halifax County  
Don Ray, Westmoreland Energy

# WELL COMPLETION RECORD

Boring No: N/A  
 Project: HALIFAX COUNTY ASH MONOFILL  
 Monitoring Well No: B-13  
 Water Depth: 33.2

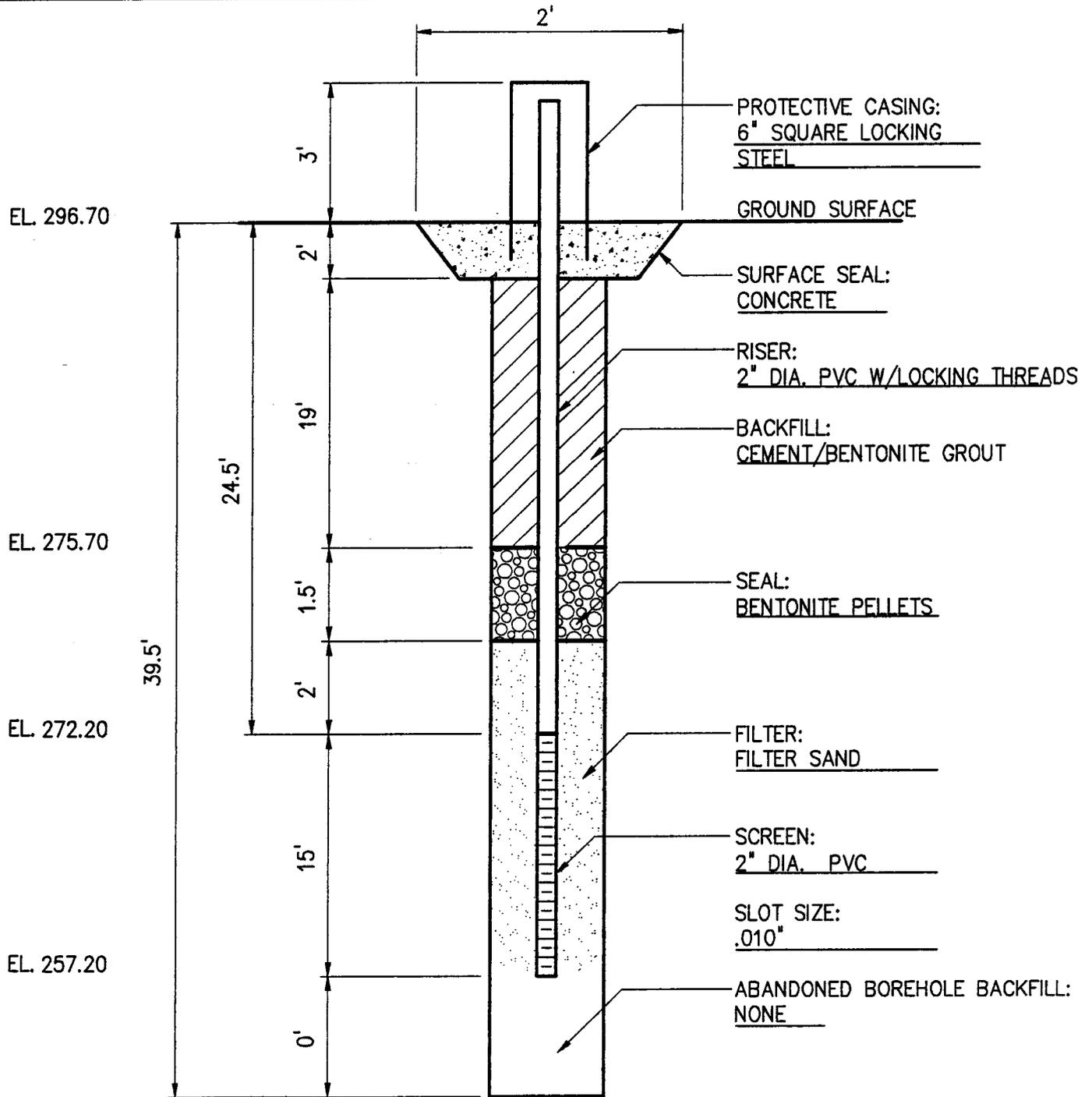
Installation Date: 9/26/94  
 Project No: 3764  
 Ground Surface El: 297.40  
 Measured: 9/26/94



# WELL COMPLETION RECORD

Boring No: N/A  
 Project: HALIFAX COUNTY ASH MONOFILL  
 Monitoring Well No: B-12  
 Water Depth: 30.8'

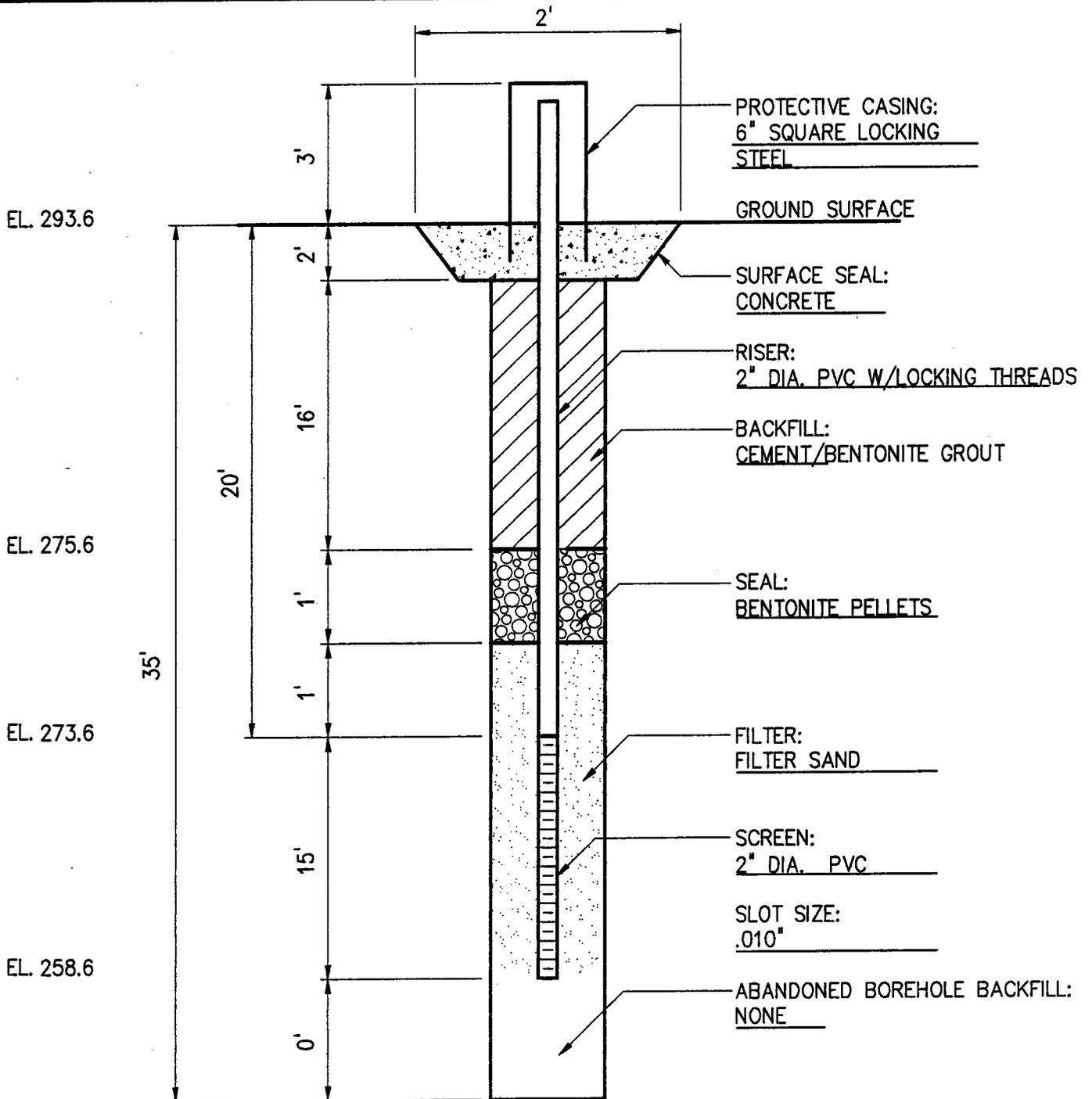
Installation Date: 9/26/94  
 Project No: 3764  
 Ground Surface El: 296.70  
 Measured: 9/26/94



# WELL COMPLETION RECORD

Boring No: N/A  
 Project: HALIFAX COUNTY ASH MONOFILL  
 Monitoring Well No: B-14  
 Water Depth: 25'

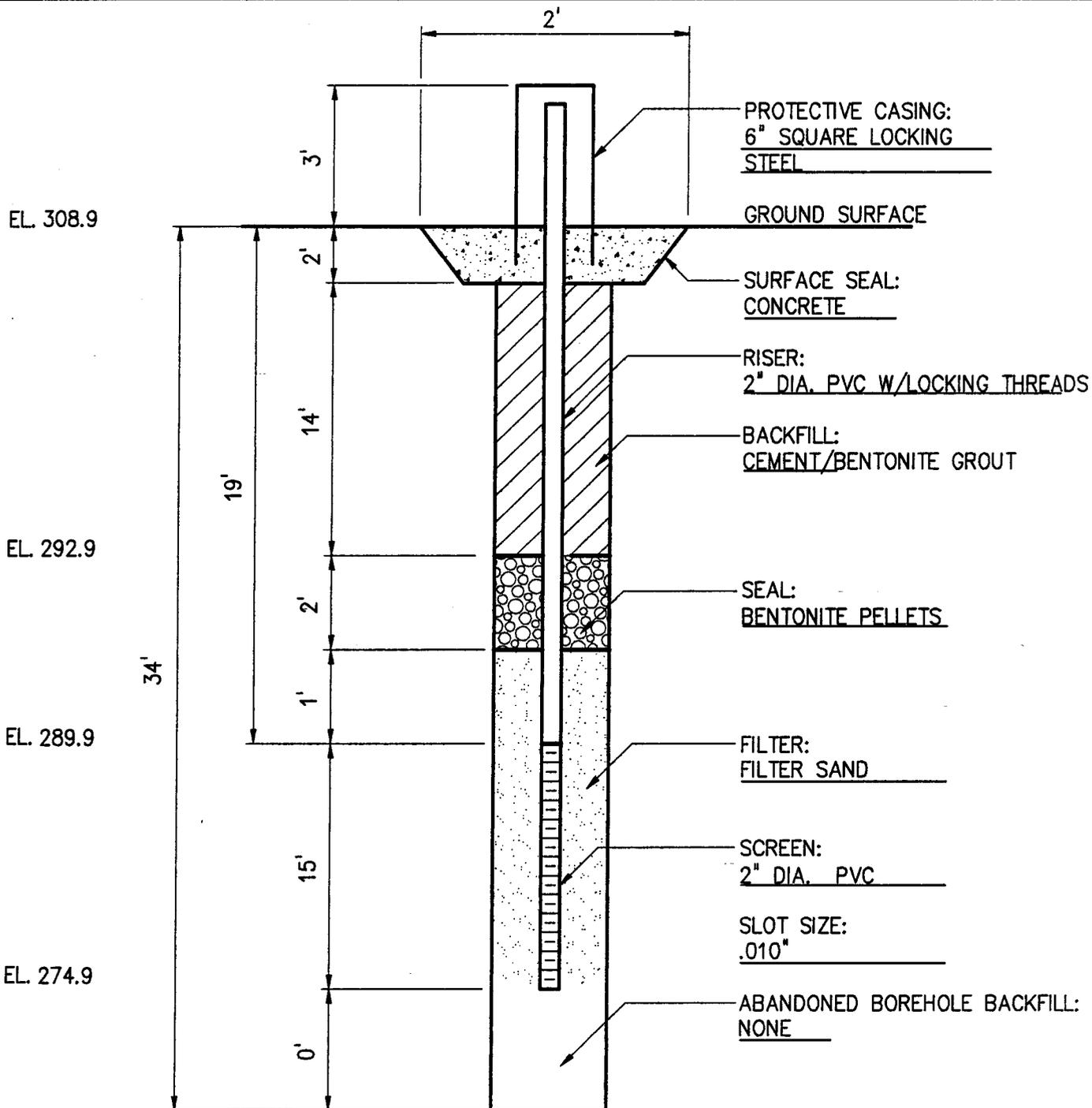
Installation Date: 9/27/94  
 Project No: 3764  
 Ground Surface El: 293.6  
 Measured: 9/27/94



# WELL COMPLETION RECORD

Boring No: N/A  
 Project: HALIFAX COUNTY ASH MONOFILL  
 Monitoring Well No: B-15  
 Water Depth: 23.8

Installation Date: 9/27/94  
 Project No: 3764  
 Ground Surface El: 308.9  
 Measured: 9/27/94



11/4/94 PLOT SCALE = 1:1 CAD FILE = C:\HALIFAX\DRAWINGS\B-15WCR BY JDB

**Job Name:** Halifax County Ash Monofill  
**Job Number:**  
**Boring / Well No.:** B-12 **Driller:** Mark Beck  
**Date Installed:** 9/26/94 **Assistant:** Jim Lansing  
**Installed By:** Parrat Wolff **Inspector:** John Barnard  
**Ground Surface Elevation:** 296.7 **N:** 958858.28  
**Top of PVC Elevation:** 299.11 **E:** 2349628.57

Depth	Standard Penetration Resistance	Description	Water Level
5'	5-6-7-8	Reddish Brown w/white slightly fine sandy SILT	
10'	4-6-10-10	Greyish pink and white coarse sandy SILT w/ gravel fragments	
15'	6-7-10-11	Greyish pink and white coarse sandy SILT w/ gravel fragments	
20'	6-7-10-14	Mottled grey/tan/pink/white fine to coarse sandy SILT (slightly moist)	
25'	9-7-13-13	Mottled grey/tan/pink/white fine to coarse sandy SILT (moist)	
30'	8-9-13-14	Mottled grey/tan/pink/white fine to coarse sandy SILT (spoon wet, water 27-30')	30.8' (T.O.B)
35'	6-9-14-19	Mottled grey/tan/pink/white fine to coarse sandy SILT	
39.5'	-----	Termination of Boring	
		Piezometer Construction Record Grout: -2' to -21' Bentonite: -21' to -22.5' Sand: -22.5' to -39.5' Screen: -24.5' to -39.5'  Stabilized Water Level:	

Job Name: **Halifax County Ash Monofill**

Job Number:

Boring / Well No.: B-13

Driller: Mark Beck

Date Installed: 9/26/94

Assistant: Jim Lansing

Installed By: Parrat Wolff

Inspector: John Barnard

Ground Surface Elevation: 297.4 N: 958701.12

Top of PVC Elevation: 299.9 E: 2349936.39

Depth	Standard Penetration Resistance	Description	Water Level
5'	3-3-4-3	Pinkish tan with white fine to coarse sandy SILT	
10'	3-3-4-4	Reddish tan fine to coarse sandy SILT	
15'	4-4-4-4	Reddish tan fine to coarse sandy SILT	
20'	5-6-7-8	Pinkish tan fine to medium sandy SILT	
25'	8-7-11-10	Mottled grey and pinkish tan fine to coarse sandy SILT w/mica traces.	
30'	6-6-8-9	Mottled grey and pinkish tan fine to coarse sandy SILT w/mica traces. (moist)	
35'	6-9-14-19	Mottled grey/tan/pink fine to coarse sandy SILT (wet)	33.2' (T.O.B)
40'	-----	Termination of Boring	
		Piezometer Construction Record	
		Grout: -2' to -22'	
		Bentonite: -22' to -24'	
		Sand: -24' to -40'	
		Screen: -25' to -40'	
		Stabilized Water Level:	

**Job Name:** Halifax County Ash Monofill  
**Job Number:**  
**Boring / Well No.:** B-14 **Driller:** Mark Beck  
**Date Installed:** 9/27/94 **Assistant:** Jim Lansing  
**Installed By:** Parrat Wolff **Inspector:** John Barnard  
**Ground Surface Elevation:** 293.6 **N:** 958515.06  
**Top of PVC Elevation:** 296.21 **E:** 2350201.05

Depth	Standard Penetration Resistance	Description	Water Level
5'	6-7-10-10	Reddish tan w/ white fine to coarse sandy SILT	
10'	3-4-6-7	Pink/red/white slightly fine sandy SILT	
15'	6-6-8-9	Reddish brown and grey clayey SILT	
20'	8-7-10-9	Brownish tan fine to medium sandy SILT (moist)	
25'	2-3-4-5	Whitish tan fine sand SILT Spoon and sample wet	25' T.O.B
30'	3-5-8-10	Grey fine sandy SILT Wet	
35'	-----	Termination of Boring	
Piezometer Construction Record Grout: -2' to -18' Bentonite: -18' to -19' Sand: -19' to -35' Screen: -20' to -35'  Stabilized Water Level:			

**Job Name:** Halifax County Ash Monofill  
**Job Number:**  
**Boring / Well No.:** B-15 **Driller:** Mark Beck  
**Date Installed:** 9/27/94 **Assistant:** Jim Lansing  
**Installed By:** Parrat Wolff **Inspector:** John Barnard  
**Ground Surface Elevation:** 308.9 N: 958813.87  
**Top of PVC Elevation:** 310.97 E: 2350826.94

Depth	Standard Penetration Resistance	Description	Water Level
5'	5-5-6-8	Reddish tan fine to medium sandy SILT	
10'	2-2-4-4	Light reddish tan fine to medium sandy SILT	
15'	1-2-2-4	Light reddish tan slightly fine sandy SILT (slightly moist)	
20'	1-2-4-4	Mottled grey/white/tan fine to medium sandy SILT (very moist)	
25'	2-2-3-5	Mottled grey/white/tan fine to coarse sandy SILT Spoon and sample wet	23.8' T.O.B
30'	2-3-5-9	Mottled grey/white/tan fine to coarse sandy SILT Wet	
34'	-----	Termination of Boring	
Piezometer Construction Record Grout: -2' to -16' Bentonite: -16' to -18' Sand: -18' to -34' Screen: -19' to -34'  Stabilized Water Level:			