Technical Memorandum

Completion Report for the Destruction of Soil Vapor Monitoring Wells and Soil Vapor Extraction Wells Located in Operable Unit 2

National Aeronautics and Space Administration, Jet Propulsion Laboratory, Pasadena, California

Final February 2009

INTRODUCTION

This technical memorandum provides a summary of the destruction activities for the 40 soil vapor monitoring wells (SVMWs) and four soil vapor extraction wells that were used as part of the final remedial action for Operable Unit 2 (OU-2).[1] OU-2 includes on-facility, vadose zone soils associated with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program at the National Aeronautics and Space Administration's (NASA's) Jet Propulsion Laboratory (JPL). Soil cleanup efforts at JPL are now complete and these monitoring wells and extraction wells have been destroyed in accordance with California Department of Water Resources (CDWR) requirements.[2]

This technical memorandum includes background information on the JPL site and the well destruction[3] procedures that were completed.

BACKGROUND

NASA is the lead federal agency for selecting, implementing, and funding remedial activities at JPL, while the United States Environmental Protection Agency (EPA), California Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB) provide oversight and technical assistance.

The JPL is a Federally-funded Research and Development Center in Pasadena, California, currently operated under contract by the California Institute of Technology (Caltech) for NASA. JPL's primary activities include the robotic exploration of the solar system and the design and operation of the Global Deep Space Tracking Network.

Located in Los Angeles County, JPL adjoins the incorporated cities of La Cañada Flintridge and Pasadena, and is bordered on the east by the unincorporated community of Altadena. A NASA-owned facility, JPL encompasses approximately 176 acres of land and more than 150 buildings and other structures. Of the JPL facility's 176 acres, approximately 156 acres are federally-owned. The remaining land is leased for parking from the City of Pasadena and the Flintridge Riding Club. Development at JPL is primarily located on the southern half, in two regions — an early-developed northeastern area and a later-developed southwestern area. Figure 1 is a map showing the JPL facility and surrounding areas.

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[1] NASA. 2002. *Final Record of Decision and Remedial Action Plan for Operable Unit 2*. National Aeronautics and Space Administration, Jet Propulsion Laboratory, Pasadena, CA. September.

[2] California Department of Water Resources. 2002. *California Well Standards*. Southern District. Web site address: http://wwwdpla.water.ca.gov/sd/groundwater/california_well_standards/well_standards_content.html.

[3] NASA. 2007. *Technical Memorandum Destruction Plan for Soil Vapor Monitoring Well and Soil Vapor Extraction Wells Located in Operable Unit 2*. National Aeronautics and Space Administration Jet Propulsion Laboratory, Pasadena, CA. July.

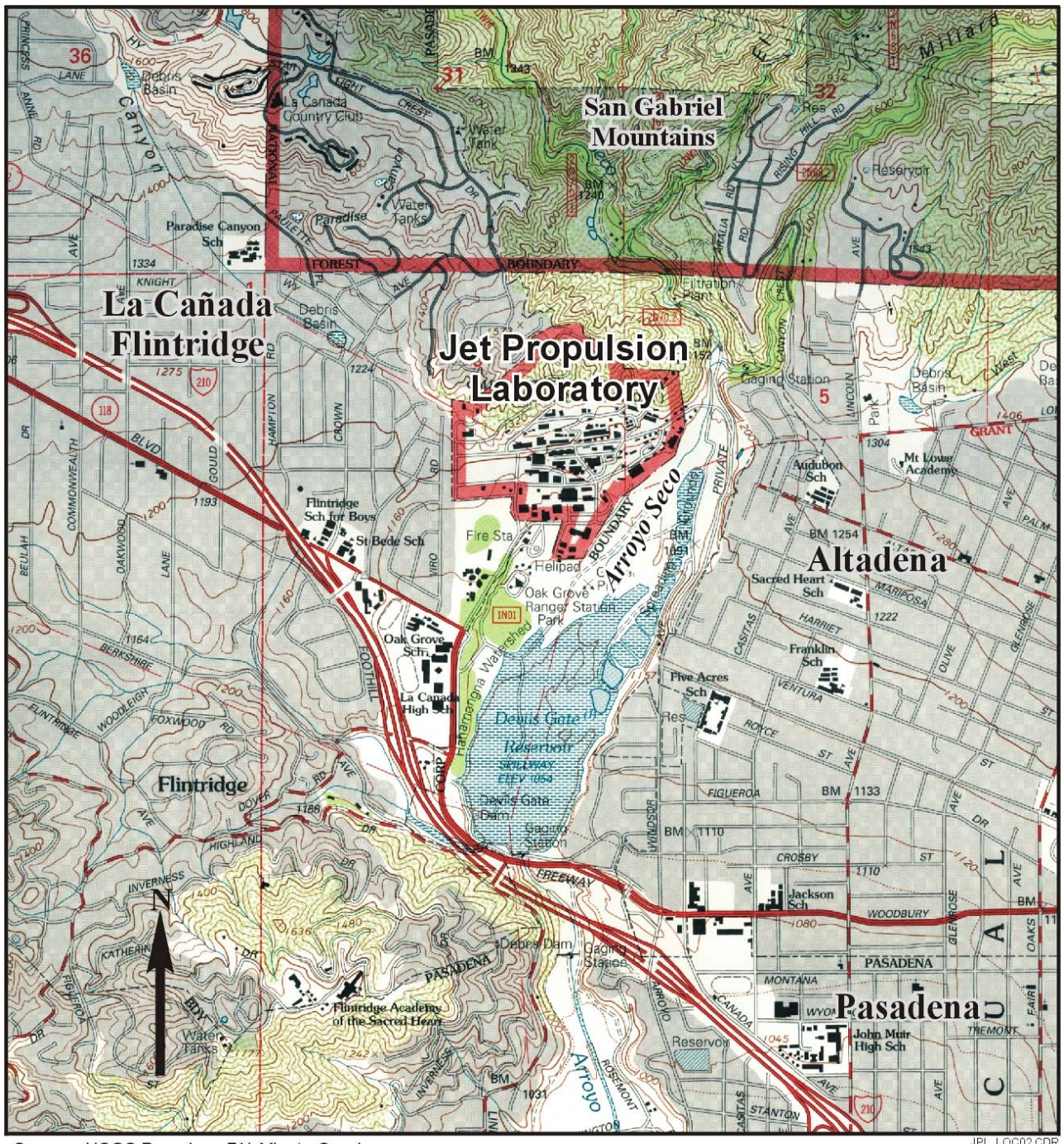

Figure 1. Map of JPL and the Surrounding Area

During the 1940s and 1950s, various chemicals, including volatile organic compounds (VOCs), were used at the JPL facility and disposed of in subsurface seepage pits. This disposal practice led to VOCs in soil and soil vapor at levels requiring cleanup. Remedial Investigation (RI)[4] activities between 1994 and 1998 revealed four VOCs that were frequently detected in soil vapor samples at elevated concentrations: carbon

[4] Foster Wheeler Environmental Corporation. 1999. *Final Remedial Investigation Report for Operable Unit 2: Potential On-Site Contaminant Source Areas*. National Aeronautics and Space Administration, Jet Propulsion Laboratory, Pasadena, CA. November.

tetrachloride (CCl_4), 1,1,2-trichloro-1,2,2-trifluoroethane (Freon™113), trichloroethene (TCE), and 1,1-dichloroethene (1,1-DCE). The VOCs were detected in soils within the JPL fence line at depths extending to the groundwater table (referred to as the vadose zone).

Based on these findings and a review of potential remediation technologies, pilot testing of soil vapor extraction (SVE) was initiated in 1998 to remove VOCs from the vadose zone. The pilot test was successful and NASA proposed to proceed with this alternative to address the removal of VOCs in soils. Following public comment, a Record of Decision (ROD) was finalized for OU-2 in September 2002, identifying SVE as the selected remedial alternative. The selected remedy for OU-2 provided cleanup of the vadose zone soil to prevent the migration of VOCs from soil to groundwater and to be protective of the beneficial uses of groundwater. JPL is located within the Raymond Basin Watershed, which is a current source of drinking water.

The SVE system consisted of four vapor extraction wells located within the JPL fence line and a mobile treatment unit. A trailer-mounted SVE unit was operated at each well location on a rotating basis, and the extracted vapor was treated using granular activated carbon (GAC) prior to being discharged to the atmosphere in accordance with state air quality requirements. The soil cleanup remedy also included a soil vapor monitoring program for the 40 soil vapor monitoring wells, which was used to evaluate SVE system effectiveness and remedial progress. Construction details for the four SVE wells can be found in Table 1.

The SVE system was operated from April 1998 (beginning as a pilot test) through September 2005. VOC mass removal rates by the SVE system and VOC concentrations in soil vapor decreased dramatically over that time period, removing approximately 260 lb of VOCs from the vadose zone soil and achieving the performance objectives established in the ROD. A Remedial Action Report[5] was finalized in March 2007, documenting the achievement of the system cleanup objectives and completion of SVE system operation and soil vapor monitoring activities at JPL.

WELL CONSTRUCTION AND MAINTENANCE

SVE and monitoring wells were constructed and maintained in accordance with CDWR requirements.[2] Figure 2 is a map showing the locations of the soil vapor monitoring and extraction well locations. Well construction and maintenance details are located in the well destruction plan.[6]

SUMMARY OF DESTRUCTION PROCEDURES

The soil vapor extraction wells and soil vapor monitoring wells were destroyed in accordance with Monitoring Well Standards established by the CDWR under Bulletin 74-90, and Los Angeles County Department of Health Services Environmental Health - Land Use Program.[7] These activities are described in the following sections.

All well destruction activities were performed under the supervision of a California-registered Professional Geologist. Well destruction was completed by Layne Christensen of Fontana, CA, a C-57 licensed Water Well Contractor. This technical memorandum will be submitted to the CDWR, 770 Fairmont Avenue, Suite 102, Glendale, CA 91203-1035, to meet the reporting requirements for well destruction.

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[5] NASA. 2007. *Final Remedial Action Report for Operable Unit 2*. National Aeronautics and Space Administration, Jet Propulsion Laboratory, Pasadena, CA. March.

[6] NASA. 2007. *Technical Memorandum. Destruction Plan for Soil Vapor Monitoring Wells and Soil Vapor Extraction Wells Located in Operable Unit 2*. National Aeronautics and Space Administration, Jet Propulsion Laboratory, Pasadena, CA. July.

[7] County of Los Angeles Department of Health Services Environmental Health – Land Use Program. Website address: http://lapublichealth.org/eh/docs/ehmtruralwellreq.pdf

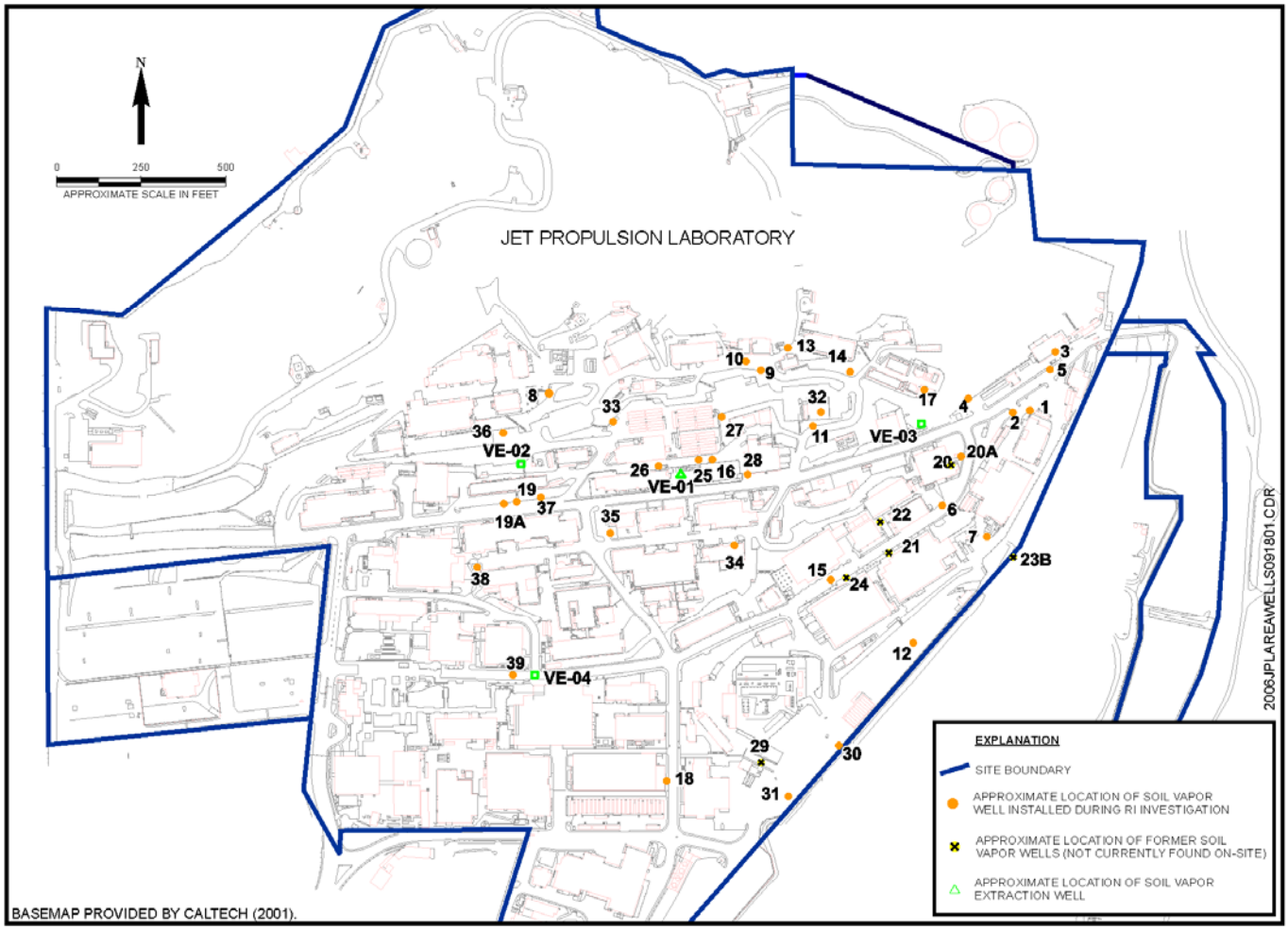


Figure 2. Soil Vapor Monitoring and Extraction Well Locations

Table 1. Construction Summary for the OU-2 Soil Vapor Extraction Wells

Soil-Vapor Extraction Well Number	Date Drilling/ Installation Completed	Drilling Method	Boring Depth (ft bgs)[a]	Borehole Diameter (inches)	Number of Screened Intervals	Well Elevation (ft amsl) [d]
1	1998	Unknown	185.0	9[b]	3	Unknown
2	2002	Sonic	279.0	9	4[c]	1235.57
3	2002	Sonic	163.0	9	2	1170.89
4	2002	Sonic	197.0	9	3	1149.67

(a) Below ground surface (bgs)
(b) Boring diameter assumed.
(c) The fourth screened interval in VE-02 collapsed following construction and is not usable.
(d) Above mean sea level (amsl)

Preliminary Work

An investigation to locate the SVMWs was performed on July 8, 2008 using maps and aerial to confirm locations. During this investigation all of the wells were located visually except for five: SVMW-21, -22, -23B, -24, and -29. Coordinate data were uploaded on to a Trimble GeoXT submeter global positioning system (GPS) receiver and utilized to relocate the remaining five SVMWs. The remaining five SVMWs were not located despite extensive investigation; the details of the investigation are located in Attachment 1.

On August 11, 2008, each of the four SVE wells were investigated before being destroyed to determine their current condition.

All SVE well screened intervals were video logged before pressure grouting to ensure that no obstructions existed in the well that would interfere with filling and sealing (see Figure 3). All intervals were free of obstruction. The summary sheets are located in Attachment 2, and copies of the DVDs can be made available upon request. Video logging was not performed for the soil vapor monitoring wells, as their construction made video logging impractical.

Figure 3. Video Logging Truck at VE-02

Soil Vapor Extraction Wells

Because the wells were constructed and maintained in accordance with CDWR requirements,[2] decommissioning of the SVE wells was accomplished by first pressure grouting the intervals where the depth exceeded 150 ft bgs (e.g., VE-01-C; VE-02-C and VE-02-D; VE-03-C; and VE-04-C). Next, each soil vapor extraction well was overdrilled to 150 feet below grade (see Figure 4) and filled with a Bentonite/Portland cement mixture pumped through a tremie pipe. After the seal had set and cured, concrete was poured into the borehole to complete the seal from 5 ft bgs to surface grade. To meet the CDWR requirements for wells located in urban areas, such as JPL, the cement seal was finished to match surrounding conditions (see Figure 5). Well abandonment diagrams of the soil vapor extraction well destructions can be found in Attachment 3.

Figure 4. Drill Rig Set up at VE-02

Soil Vapor Monitoring Wells

The decommissioning of the soil vapor monitoring wells was performed by excavating a small area to a depth of 5 feet below the ground surface. The 0.25-inch diameter nylon tubes of the soil gas monitoring wells were cut off at the bottom of the excavation, and a cement seal was poured at the bottom of the excavation to the ground surface. To meet the CDWR requirements for wells located in urban areas, such as JPL, the cement seal was finished to match surrounding conditions (see Figure 5). A summary of the soil vapor monitoring well destructions can be found in Attachment 3.

Figure 5. Concrete Surface Seal after Soil Vapor Monitoring Well Abandonment

The type and amount of the sealing and fill materials used for each well abandonment were recorded by the field geologist. In addition, the field geologist verified that the volume of sealing and fill material placed during destruction operations equaled and/or exceeded the volume to be filled and sealed. This procedure was followed in order to confirm that the well had been properly destroyed and that no jamming or bridging of the fill or sealing material had occurred.

Waste

Battelle prepared all required waste profiles and manifests for transportation and disposal of the soil cuttings that were generated during well destruction activities. The waste was sampled for profiling and then transported on November 14, 2008, by EFR Environmental Services, Inc., a licensed transporter, to Siemens Water Technologies Corp. in Vernon, California for off-site disposal. All waste transported off-site was accompanied by the nonhazardous waste manifest signed by the Caltech Environmental Affairs Officer. The disposal of the waste was in accordance with federal, state, and local laws, regulations, and instructions. Analytical reports for the waste samples are included as Attachment 4, and a copy of the nonhazardous waste manifest is included as Attachment 5.

Permitting

CERCLA Section 121(e)(1) provides that no Federal, State, or local permit shall be required for the portion of any response action conducted entirely on-site. On-site is defined as the "areal extent (including surface area, air, soil, and groundwater) of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action."[8] Because the well destruction activities were conducted on the JPL CERCLA Site, well permits were not required. However, NASA complied with the substantive provisions of the CDWR requirements as described in the previous sections.

Table 2 provides a summary of project activities.

Table 2. Activities Summary

Description	Start Date	Finish Date	Total Working Days
Submit Destruction Plan	--	7/13/2007	--
Regulator Review	7/13/2007	7/27/2007	14
Site meeting with NASA and JPL	--	7/7/2008	1
Coordination with NASA and JPL	6/18/2008	7/30/2008	42
Mobilization	--	8/11/2008	1
SVE Well and Soil Monitoring Vapor Well Abandonment Field Activities	8/11/2008	8/31/2008	20
Waste Removal	8/18/2008	11/14/2008	88
Submit Destruction Completion Report	--	2/27/2009	1

[8] EPA. 1992. Permits and Permit "Equivalency" Processes for CERCLA On-site Response Actions. OSWER Directive 9355.7-03. Office of Solid Waste and Emergency Response. http://www.epa.gov/superfund/whatissf/sfproces/rdrapdfs/permit.pdf. February.

ATTACHMENTS

Attachments to this technical memorandum include the following:

- Attachment 1: Attempt to Locate Missing Soil Vapor Monitoring Points
- Attachment 2: Video log summary sheets
- Attachment 3: Well Abandonment Diagrams
- Attachment 4: Waste Analytical Reports
- Attachment 5: Waste Manifests

ATTACHMENT 1: ATTEMPT TO LOCATE MISSING SOIL VAPOR WELLS

All wells were located visually except for six: SVMW-21, -22, -23B, -24, -29, and -30. SVMW-30 appeared to be in a construction laydown area and due to materials that covered the area, the SVMV was not visible, but has been located prior to the recent construction activity on the campus.

Coordinate data were uploaded on to a Trimble GeoXT submeter global positioning system (GPS) receiver and utilized to relocate the remaining five SVMWs (SVMW-21, -22, -23B, -24, and -29) that have yet to be located by Battelle. GPS signals were decreased or lost when the receiver was within close proximity to satellite obstructions (i.e., trees or buildings). Although the GPS signal was not continuous, the receiver obtained readings no less than approximately 40 feet away from the supposed locations. Once the general area/location was determined, a visual search was conducted for the SVMW. All five of the SVMW locations were within the general areas indicated on our map. Below is a brief description of each of the five possible SVMW locations according to the coordinate data. The corresponding photos are attached.

SVMV-21
The GPS receiver was not able to receive satellite readings closer than approximately 40 feet from SVMW-21's supposed location. SVMW-21's coordinates indicate the location is under Bldg. 302; approximately 10 feet southeast of the northwest side of the building. Landscaping is directly adjacent to this side of the building and the area was visually scanned. Due to the landscaping, the ground surface was difficult to observe. SVMW-21 was not located. (No photos were taken).

SVMV-22
Coordinate data for SVMW-22 indicated the well to be beneath the western portion of Bldg. 1722. The area near this side of the building was visually scanned, but SVMW-22 was not observed. See Photo 1.

SVMV-23B
SVMW-23B's coordinates appear to be approximately 60 feet east of the eastern fence that divides JPL's main campus from the adjacent spreading basin. The general area consists of uneven terrain and is covered with various kinds of vegetation. The general area was visually searched. Scanning the area was made difficult due to the surrounding environment. SVMW-23B was not located. See Photos 2 through 4.

SVMW-24
Coordinate data for SVMW-24 appears to be located in a low lying dirt area between Bldg. 300 and the adjacent sidewalk. Due to inaccessibility to the dirt area, a visual scan was conducted from street level. SVMW-24 was not found. See Photos 5 through 7.

SVMV-29
SVMW-29's coordinate data indicated the location of the well should to be in a concrete paved area south of the current construction activity. Metal roll-off bins were in the immediate vicinity. The ground surface was visually searched underneath and around the bins. A SVMW was not observed. See Photos 8 through 9.

None of the above five SVMWs were located, but were attempted to the best of our ability. According to the coordinate data, these well locations were either beneath a building, in an area where mobilization would have been difficult or not observed at all.

Photo 1. General Location of SVMW-22
Battelle personnel standing adjacent to Bldg. 1722, approximately 20 feet from SVMW-22, and pointing east in the direction of the supposed location. Twenty feet east of the personnel is under Bldg. 1722. (Photo looking southeast. Bldg. 302 is in the background.)

Photo 2. Fence Line near SVMW-23B
Eastern fence line separating JPL's main campus and spreading basin. SVMW-23B's supposed location is approximately 50 feet east-southeast of this area. (Photo looking northeast.)

Photo 3. Area Near SVMW-23B
SVMW-23B's supposed location is approximately 40 feet southwest of the culvert (approximately 30 inch diameter). (Photo looking west. Eastern fence line is in the background.)

Photo 4. General Location of SVMW-23B
SVMW-23B's coordinates are approximately within 15 feet of the Battelle personnel. (Photo looking southwest.)

Photo 5. Location Towards of SVMW-24
Battelle personnel standing on Mariner Rd., approximately 35 feet from SVMW-24, and pointing southwest in the direction of the supposed location. Bldg. 300 is in the background. (Photo looking south.)

Photo 6. General Location of SVMW-24
Battelle personnel standing adjacent to Bldg. 300, approximately 10 feet from SVMW-24, and pointing southwest in the direction of the supposed location. (Photo looking west.)

Photo 7. **General Location of SVMW-24**
The coordinate data indicated SVMW-24 is possibly located in a low lying dirt area between Bldg. 300 and the adjacent sidewalk. (Photo looking west.)

Photo 8. Location Towards SVMW-29
Battelle personnel standing approximately 80 feet to the southwest of SVMW-29's supposed location. (Photo looking northwest.)

Photo 9. General Location of SVMW-29
Battelle personnel standing approximately 2 feet within SVMW-29's supposed location. (Photo looking northwest. Bldg. 306 is the white building in the background.)

ATTACHMENT 2: VIDEO LOG SUMMARY SHEETS

Layne Christensen Co.

11001 Etiwanda Ave.
Fontana, Ca. 92337
Phone: (909) 390-2833
CA Lic.#: 510011

Well Inspection Report

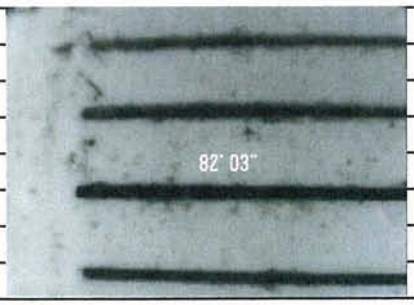
CLIENT:	Battelle Memorial Institute		
ADDRESS:	Unknown		
CONTACT:	Derek Payne	**PHONE:**	760-427-8013
JOB LOCATION:	JPL 4800 Oak Grove Drive, Pasadena, CA		
GPS LOCATION:	Latitude: N 34° 12' 06.3"		Longitude: W 118° 10' 16.5"

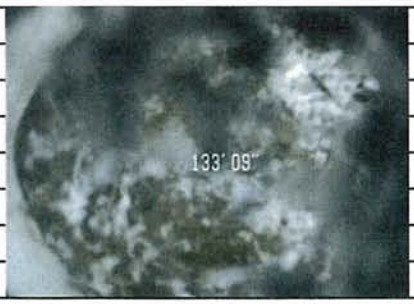
WELL NUMBER:	VE-01-A-B-C	**Well Abandonment**	**JOB NUMBER:** 1000-0227
SURVEYED BY:	Damien Sandoval		**DATE:** 11-Aug-08
REVIEWED BY:			**WATER LEVEL:** (B 133' 9") (C 176' 5")
WATER CONDITION:	Clear		**TOTAL DEPTH:** 185' 4"
CASING DIAMETER:	1 7/8"ID		**SURVEY DEPTH:** 185'

*All Depths Shown are relative to the center of the side camera perspective.

DEPTH	REMARKS
	VE-01-A
0 - 42' 11"	Blank pvc.
42' 11" - 82' 5"	Perforations on pvc.
82' 5"	Camera enters fill at side view perspective.
	VE-01-B
0 - 94' 2"	Blank pvc.
94' 2" - 133' 5"	Perforations on pvc.
133' 9"	Camera enters static water level.
133' 11"	Camera enters fill at side view perspective.
	VE-01-C
0 - 145' 4"	Blank pvc.
145' 4" - 185'	Perforations on pvc.
176' 5"	Camera enters static water level.
185' 4"	Camera enters fill at side view perspective.

Perforation:	
Mills Slot "A"	42 - 82' 5"
Mills Slot "B"	94 - 133' 5"
Mills Slot "C"	145 - 185'





Layne Christensen Co.

11001 Etiwanda Ave.
Fontana, Ca. 92337
Phone: (909) 390-2833
CA Lic.#: 510011

Well Inspection Report

CLIENT:	Battelle Memorial Institute		
ADDRESS:	Unknown		
CONTACT:	Derek Payne	**PHONE:**	760-427-8013
JOB LOCATION:	JPL 4800 Oak Grove Drive, Pasadena, CA		
GPS LOCATION:	Latitude: N 34° 12' 07.1"		Longitude: W 118° 10' 24.8"

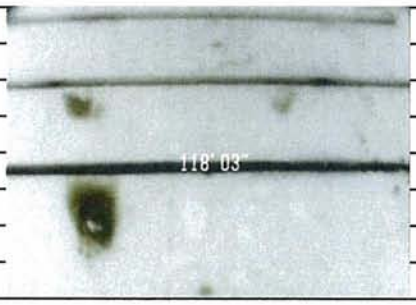
WELL NUMBER:	VE-02-A-B-C-D	**JOB NUMBER:**	1000-0227
SURVEYED BY:	Damien Sandoval	**DATE:**	11-Aug-08
REVIEWED BY:		**WATER LEVEL:**	143' 3"
WATER CONDITION:	Clear	**TOTAL DEPTH:**	279'
CASING DIAMETER:	1 7/8"ID	**SURVEY DEPTH:**	177' 5"

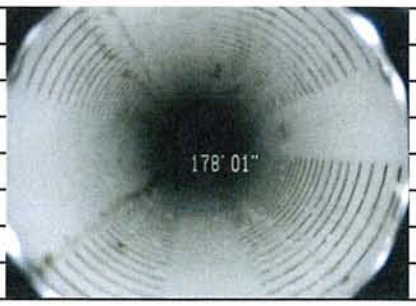
Well Abandonment

*All Depths Shown are relative to the center of the side camera perspective.

DEPTH	REMARKS
	VE-02-A
0 - 88' 8"	Blank pvc.
88' 8" - 98' 7"	Perforations on pvc.
98' 7" - 108' 6"	Blank pvc.
108' 6" - 143'	Perforations on pvc.
143' 3"	Camera enters static water level.
143' 5"	Camera comes to rest on fill at side view perspective.
	VE-02-B
0 - 20'	Blank pvc.
20 - 74'	Perforations on pvc.
74' 1"	Camera stuck on bent pvc.
	VE-02-C
0 - 154'	Blank pvc.
154 - 210'	Perforations on pvc.
177' 5"	Camera stuck on bent pvc.
	VE-02-D
0 - 73'	Blank pvc.
73' 4"	Camera comes to rest on gravel pack.

Perforation:	
Mills Slot "A"	88 - 98'
	108 - 143'
Mills Slot "B"	20 - 75'
Mills Slot "C"	154 - 210'
Mills Slot "D"	224 - 279'





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Fontana, Ca. 92337
Phone: (909) 390-2833
CA Lic.#: 510011

Well Inspection Report

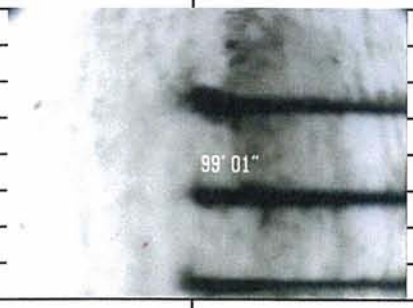
CLIENT:	Battelle Memorial Institute		
ADDRESS:	Unknown		
CONTACT:	Derek Payne	**PHONE:**	760-427-8013
JOB LOCATION:	JPL 4800 Oak Grove Drive, Pasadena, CA		
GPS LOCATION:	Latitude: N 34° 12' 06.5"		Longitude: W 118° 10' 08.9"

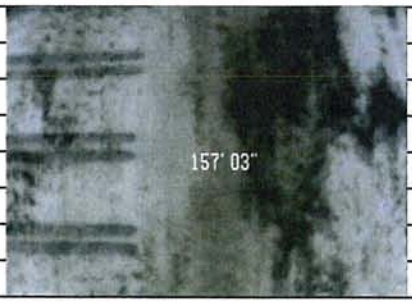
WELL NUMBER:	VE-03-A-B **Well Abandonment**	**JOB NUMBER:**	1000-0227
SURVEYED BY:	Damien Sandoval	**DATE:**	11-Aug-08
REVIEWED BY:		**WATER LEVEL:**	(A 85' 6") (B 155' 10")
WATER CONDITION:	Clear	**TOTAL DEPTH:**	(A 85') (B 159')
CASING DIAMETER:	1 7/8"ID	**SURVEY DEPTH:**	(A 85' 6") (B158' 6")

*All Depths Shown are relative to the center of the side camera perspective.

DEPTH	REMARKS
	VE-03-A
0 - 25' 7"	Blank pvc.
25' 7" - 85' 4"	Perforations on pvc.
85' 4" - 85' 6"	Blank pvc.
85' 6"	Camera enters fill at down hole view.
	VE-03-B
0 - 99'	Blank pvc.
99 - 158' 6"	Perforations on pvc.
155' 10"	Camera enters static water level.
158' 6"	Camera enters fill at down hole view.

Perforation:	
Mills Slot "A"	25' 7" - 85' 4"
Mills Slot "B"	99' - 158' 6"





Layne Christensen Co.

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Fontana, Ca. 92337
Phone: (909) 390-2833
CA Lic.#: 510011

Well Inspection Report

CLIENT: Battelle Memorial Institute
ADDRESS: Unknown
CONTACT: Derek Payne **PHONE:** 760-427-8013
JOB LOCATION: JPL 4800 Oak Grove Drive, Pasadena, CA
GPS LOCATION: Latitude: N 34° 11' 59.9" Longitude: W 118° 10' 21.4"

WELL NUMBER: VE-04-A-B-C **Well Abandonment** **JOB NUMBER:** 1000-0227

SURVEYED BY: Damien Sandoval **DATE:** 11-Aug-08

REVIEWED BY: **WATER LEVEL:** (B 122' 9") (C 136' 2")

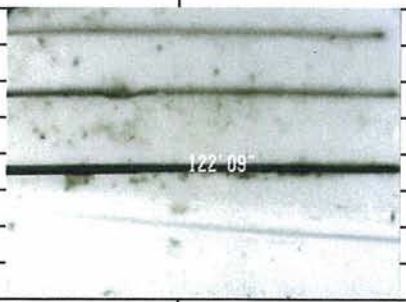
WATER CONDITION: Clear **TOTAL DEPTH:** (A 62') (B 126') (C 195')

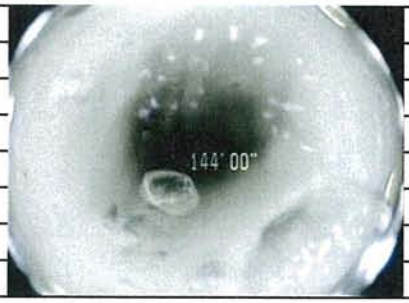
CASING DIAMETER: 1 7/8"ID **SURVEY DEPTH:** (A 59' 11") (B 122' 10")

*All Depths Shown are relative to the center of the side camera perspective.

DEPTH	REMARKS
	VE-04-A
0 - 11' 3"	Blank pvc.
11' 3" - 62'	Perforations on pvc.
59' 11"	Camera enters fill at side view perspective.
	VE-04-B
0 - 73'	Blank pvc.
73 - 122'	Perforations on pvc.
122' 9"	Camera enters static water level.
122' 10"	Camera enters fill at side view perspective.
	VE-04-C
0 - 142'	Blank pvc.
142 - 195'	Perforations on pvc.
136' 2"	Camera enters static water level.
156' 8"	Camera stuck on bent pvc.

Perforation:	
Mills Slot "A"	11' 3" - 62'
Mills Slot "B"	73' - 126'
Mills Slot "C"	142 - 195'





ATTACHMENT 3: WELL ABANDOMENT DIAGRAMS/SUMMARY

JPL OU-2 Soil Vapor Monitoring Wells

Soil-Vapor Monitoring Well Number	Date Drilling/ Installation Completed	Drilling Method	Boring Depth (ft bgs)	Borehole Diameter (inches)	Number of Monitoring Points	Well Elevation (ft amsl)	Destruction Method	Destruction Date
1	8/30/1994	Percussion Hammer	38	10	3	1124.5	Excavation to 5' and concrete seal	8/23/2008
2	8/30/1994	Percussion Hammer	38.5	10	3	1126.2	Excavation to 5' and concrete seal	8/23/2008
3	9/1/1994	Percussion Hammer	52	10	4	1133.9	Excavation to 5' and concrete seal	8/30/2008
4	9/2/1994	Percussion Hammer	60.5	10	4	1137.6	Excavation to 5' and concrete seal	8/30/2008
5	9/3/2001	Percussion Hammer	12	10	2	1126.8	Excavation to 5' and concrete seal	8/23/2008
6	9/5/1994	Percussion Hammer	100.5	10	5	1137.5	Excavation to 5' and concrete seal	8/23/2008
7	9/8/1994	Percussion Hammer	60.5	10	2	1115.8	Excavation to 5' and concrete seal	8/23/2008
8	9/9/1994	Percussion Hammer	101.5	10	5	1256.6	Excavation to 5' and concrete seal	8/16/2008
9	9/11/1994	Percussion Hammer	90	10	5	1230.8	Excavation to 5' and concrete seal	8/16/2008
10	9/13/1994	Percussion Hammer	72	10	4	1232.8	Excavation to 5' and concrete seal	8/16/2008
11	9/18/1994	Percussion hammer	100	10	5	1193.1	Excavation to 5' and concrete seal	8/23/2008
12	9/19/1994	Percussion Hammer	81	10	4	1097.9	Excavation to 5' and concrete seal	8/23/2008
13	9/21/1994	Percussion Hammer	48	10	4	1239.2	Excavation to 5' and concrete seal	8/15/2008
14	9/22/1994	Percussion Hammer	18	10	3	1213	Excavation to 5' and concrete seal	8/16/2008
15	9/24/1994	Percussion Hammer	95	10	5	1123.5	Excavation to 5' and concrete seal	8/31/2008
16	9/29/1994	Percussion Hammer	101.5	10	5	1199.2	Excavation to 5' and concrete seal	8/16/2008
17	9/30/1994	Percussion Hammer	40	10	3	1214.1	Excavation to 5' and concrete seal	8/15/2008
18	10/2/1994	Percussion Hammer	89.5	10	5	1109.4	Excavation to 5' and concrete seal	8/30/2008
19A	10/4/1994	Percussion Hammer	101	10	5	1196.4	Excavation to 5' and concrete seal	8/31/2008
20[(a)]	10/13/1994	Percussion Hammer	41.5	10	4	1142.7	Excavation to 5' and concrete seal	Previously Abandoned [(b)]
20A	10/23/1994	Percussion Hammer	72	10	4	1142.7	Excavation to 5' and concrete seal	8/23/2008
21[(a)]	10/9/1994	Percussion Hammer	90	10	5	1127.1	Excavation to 5' and concrete seal	**Not Located**
22[(a)]	10/12/1994	Percussion Hammer	100.5	10	5	1129	Not Destroyed	**Not Located**
23B[(a)]	10/18/1994	Percussion Hammer	21	10	3	1094.9	Not Destroyed	**Not Located**
24[(a)]	10/15/1994	Percussion Hammer	100	10	5	1125	Not Destroyed	**Not Located**
25	3/31/1997	Sonic	202	8.5	10	1199.6	Excavation to 5' and concrete seal	8/16/2008
26	3/28/1997	Sonic	204	8.5	10	1201.8	Excavation to 5' and concrete seal	8/17/2008
27	3/18/1997	Sonic	214	8.5	10	1214.2	Excavation to 5' and concrete seal	8/15/2008
28	3/14/1997	Sonic	179	8.5	8	1176.7	Excavation to 5' and concrete seal	8/30/2008
29[(a)]	4/12/1997	Sonic	83	8.5	5	1086.8	Not Destroyed	**Not Located**
30	4/2/1997	Sonic	72	8.5	5	1088.9	Excavation to 5' and concrete seal	8/30/2008

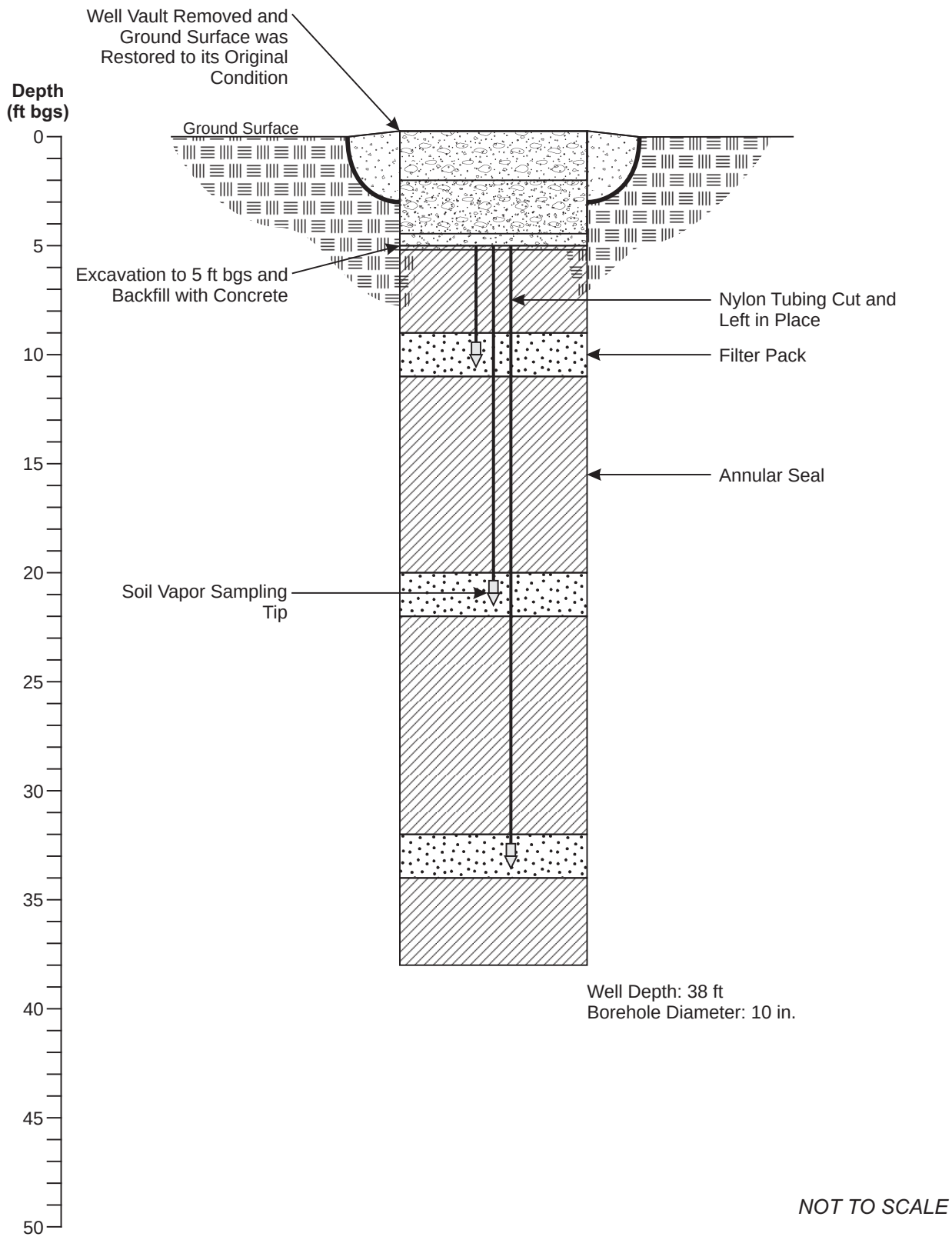
Soil-Vapor Monitoring Well Number	Date Drilling/ Installation Completed	Drilling Method	Boring Depth (ft bgs)	Borehole Diameter (inches)	Number of Monitoring Points	Well Elevation (ft amsl)	Destruction Method	Destruction Date
31	4/9/1997	Sonic	73	8.5	5	1083.1	Excavation to 5' and concrete seal	8/31/2008
32	3/29/1998	Sonic	210	8.5	10	1206.6	Not Destroyed	**Not Located**
33	4/1/1998	Sonic	213	8.5	10	1214	Excavation to 5' and concrete seal	8/16/2008
34	4/8/1998	Sonic	135	8.5	8	1164.3	Excavation to 5' and concrete seal	8/17/2008
35	4/14/1998	Sonic	161.8	8.5	10	1183.2	Excavation to 5' and concrete seal	8/17/2008
36	3/27/1998	Sonic	117	8.5	5	1232.8	Excavation to 5' and concrete seal	8/30/2008
37	4/7/1998	Sonic	193	8.5	10	1195.7	Excavation to 5' and concrete seal	8/17/2008
38	4/15/1998	Sonic	178.5	8.5	10	1185.6	Excavation to 5' and concrete seal	8/31/2008
39	4/17/1998	Sonic	138	8.5	9	1144.1	Excavation to 5' and concrete seal	8/17/2008

Notes:

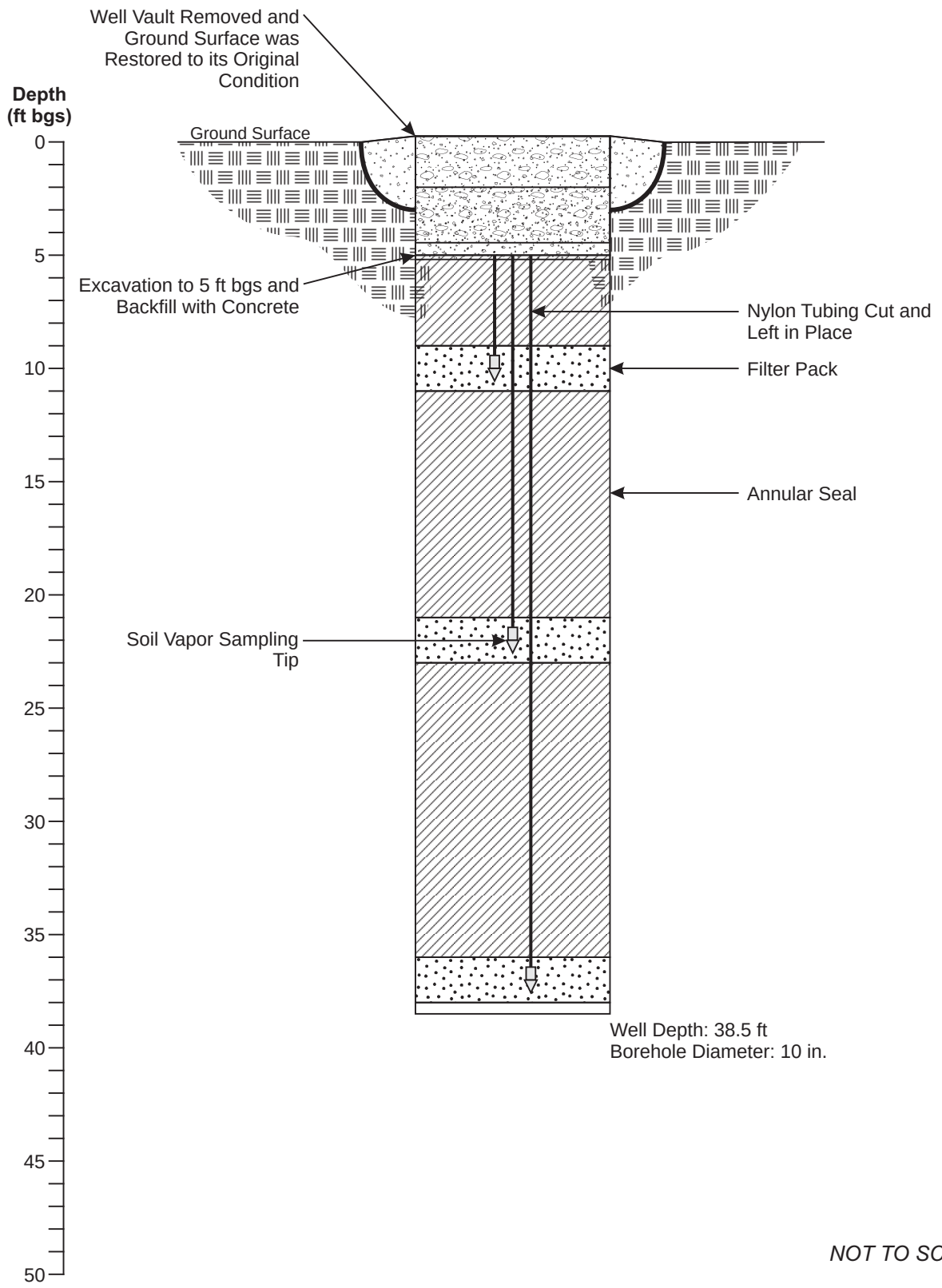
[a] These soil vapor monitoring wells have not been located since 2000. Battelle attempted to locate these monitoring wells utilizing a Trimble (Surveyor's Grade) Global Positioning Satellite device loaded with the coordinates (Table 3) on July 8, 2008.

[b] This location was previously decommissioned and replaced by 20A; verbal communication with Insight (formerly Geofon).

Soil Vapor Monitoring Well Abandonment - SV-01



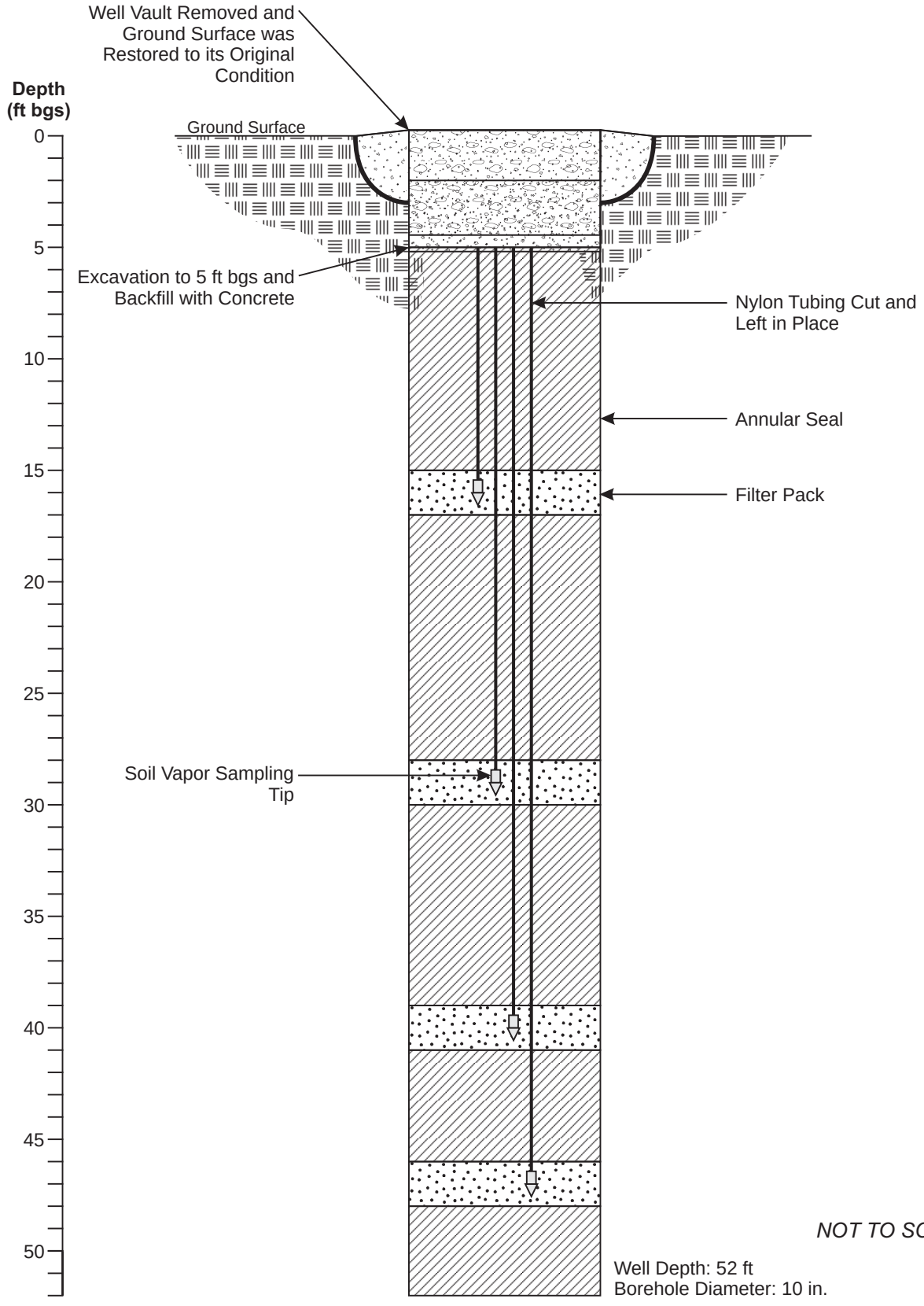
Soil Vapor Monitoring Well Abandonment - SV-02



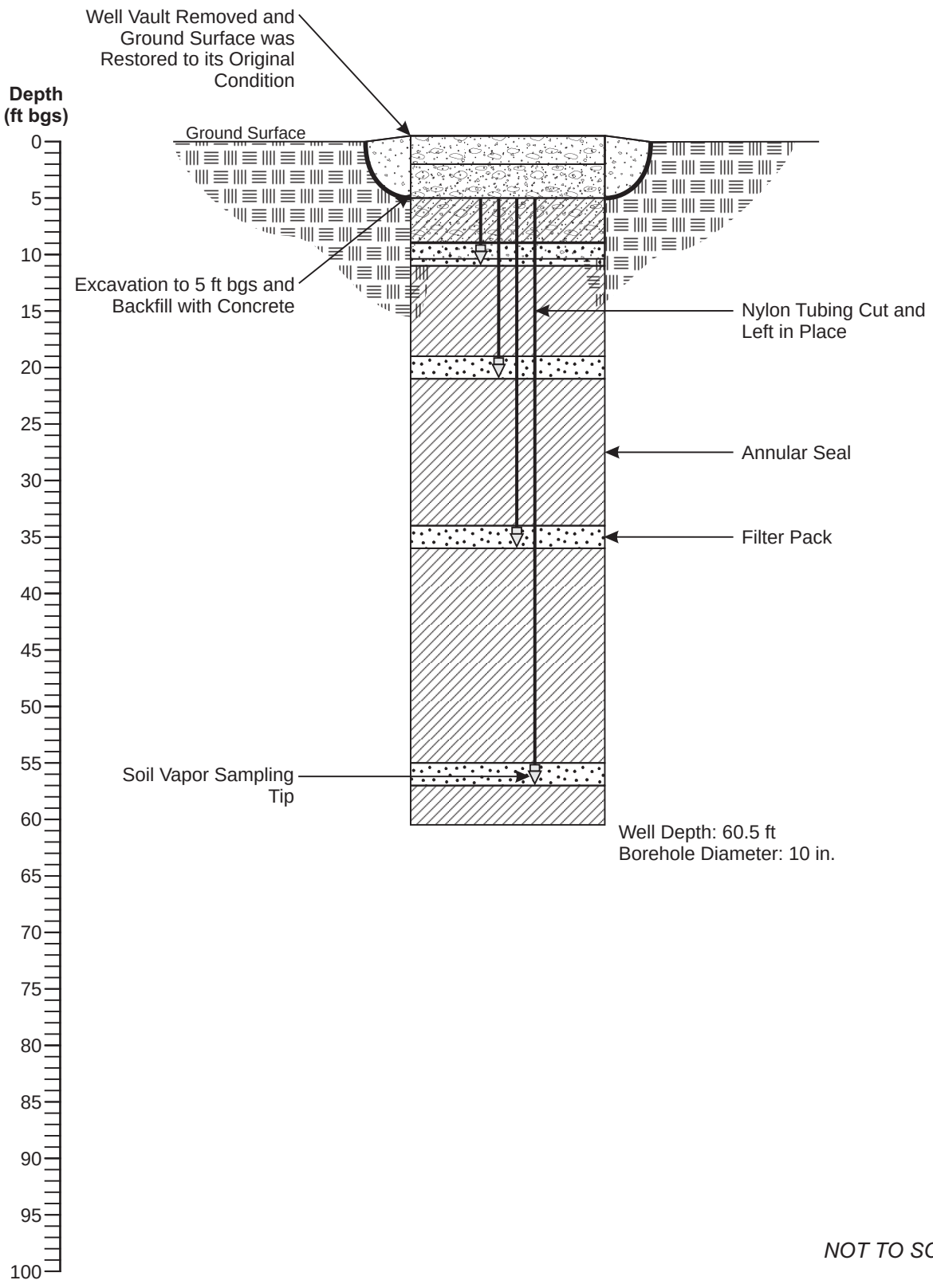
NOT TO SCALE

SV-02.CDR

Soil Vapor Monitoring Well Abandonment - SV-03



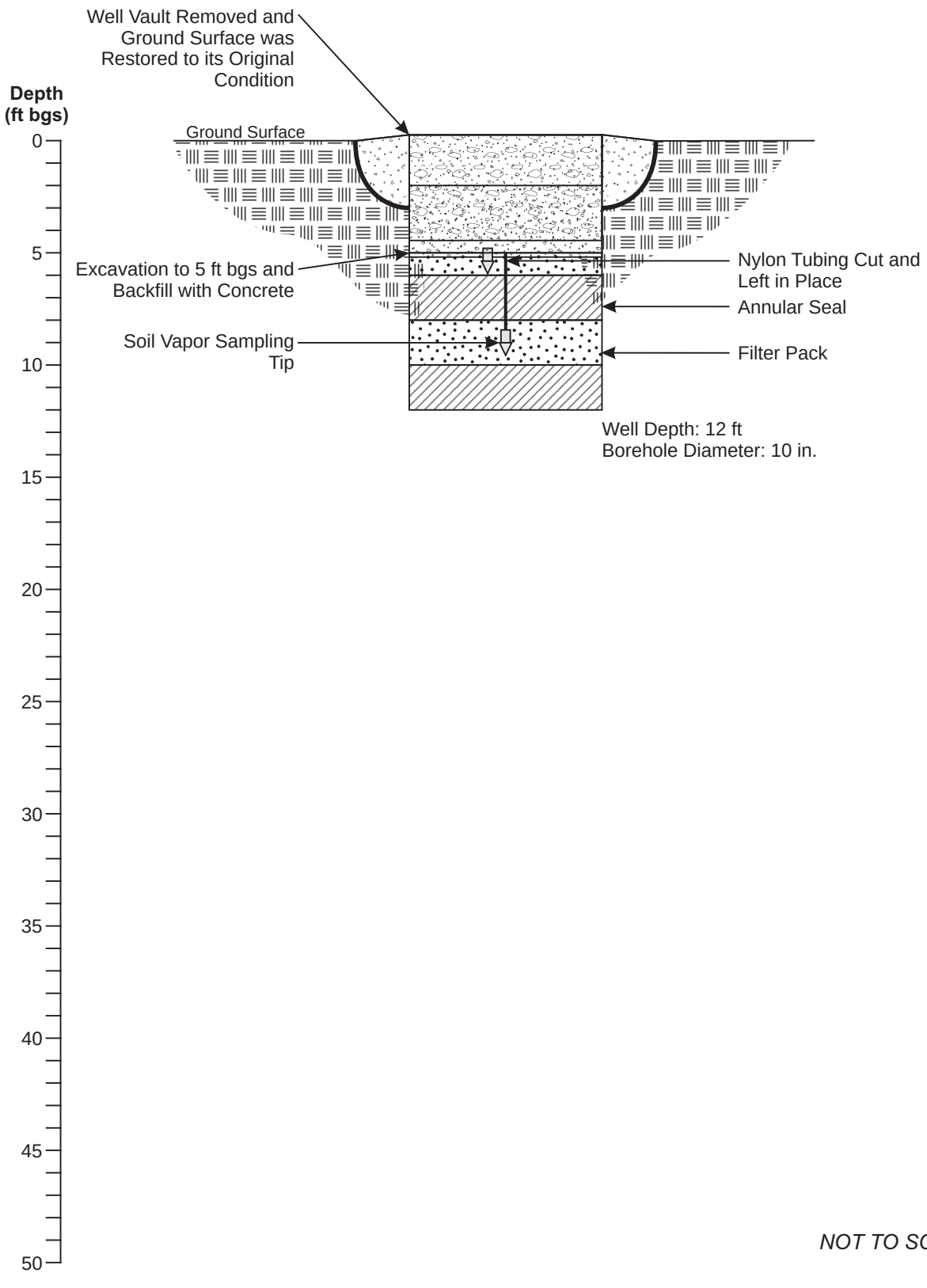
Soil Vapor Monitoring Well Abandonment - SV-04



NOT TO SCALE

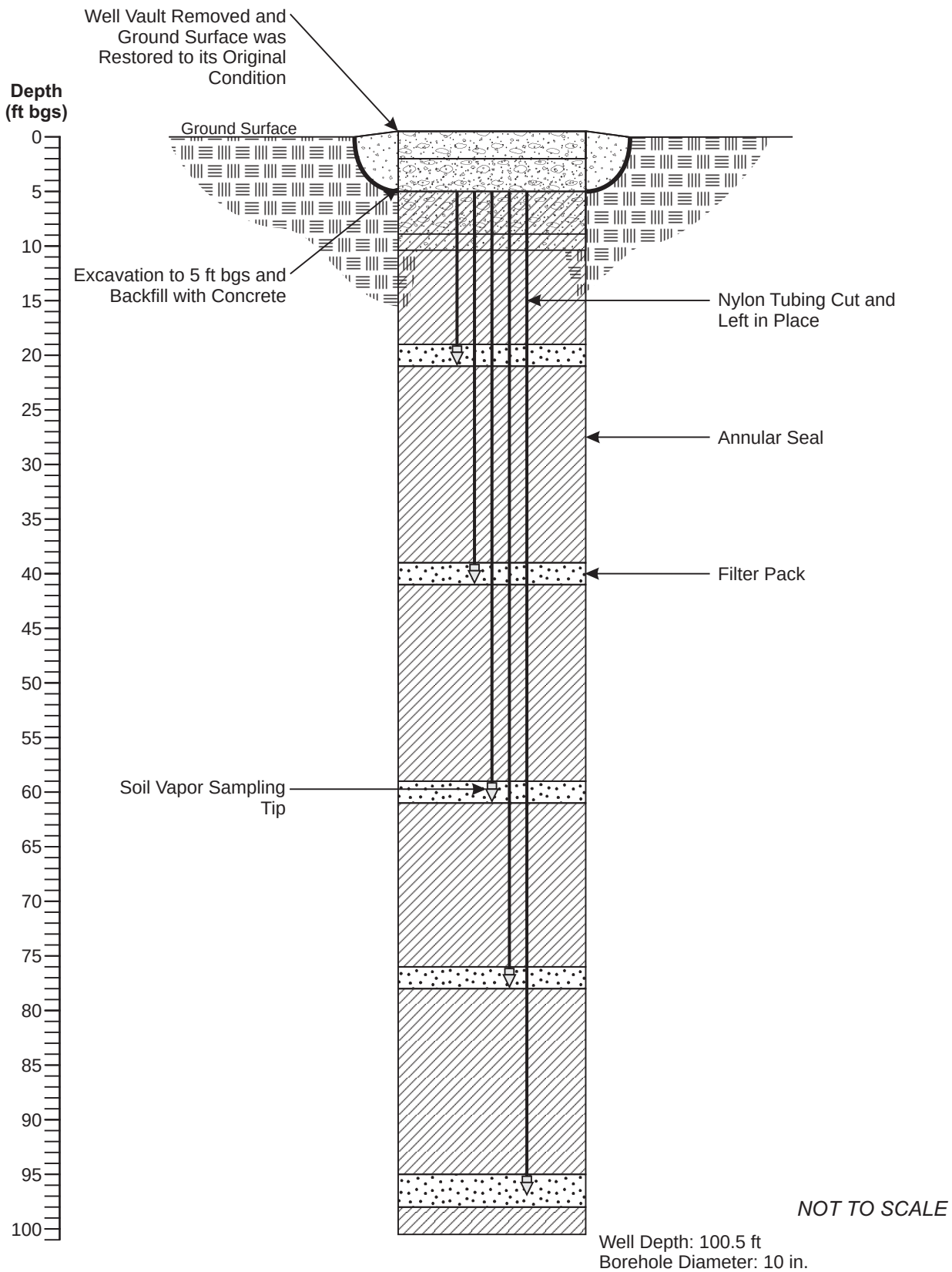
SV-04.CDR

Soil Vapor Monitoring Well Abandonment - SV-05



SV-05.CDR

Soil Vapor Monitoring Well Abandonment - SV-06

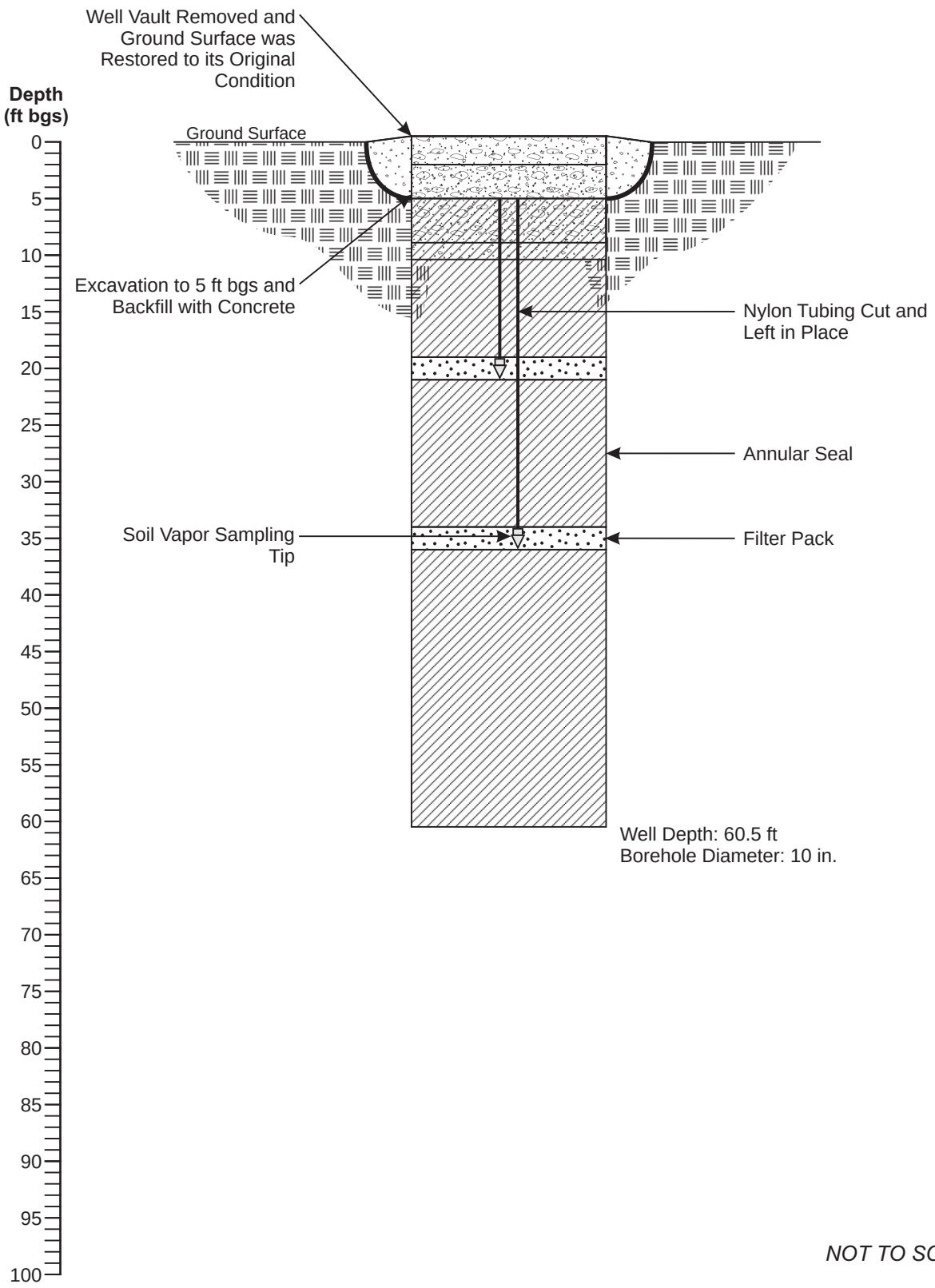


NOT TO SCALE

Well Depth: 100.5 ft
Borehole Diameter: 10 in.

SV-06.CDR

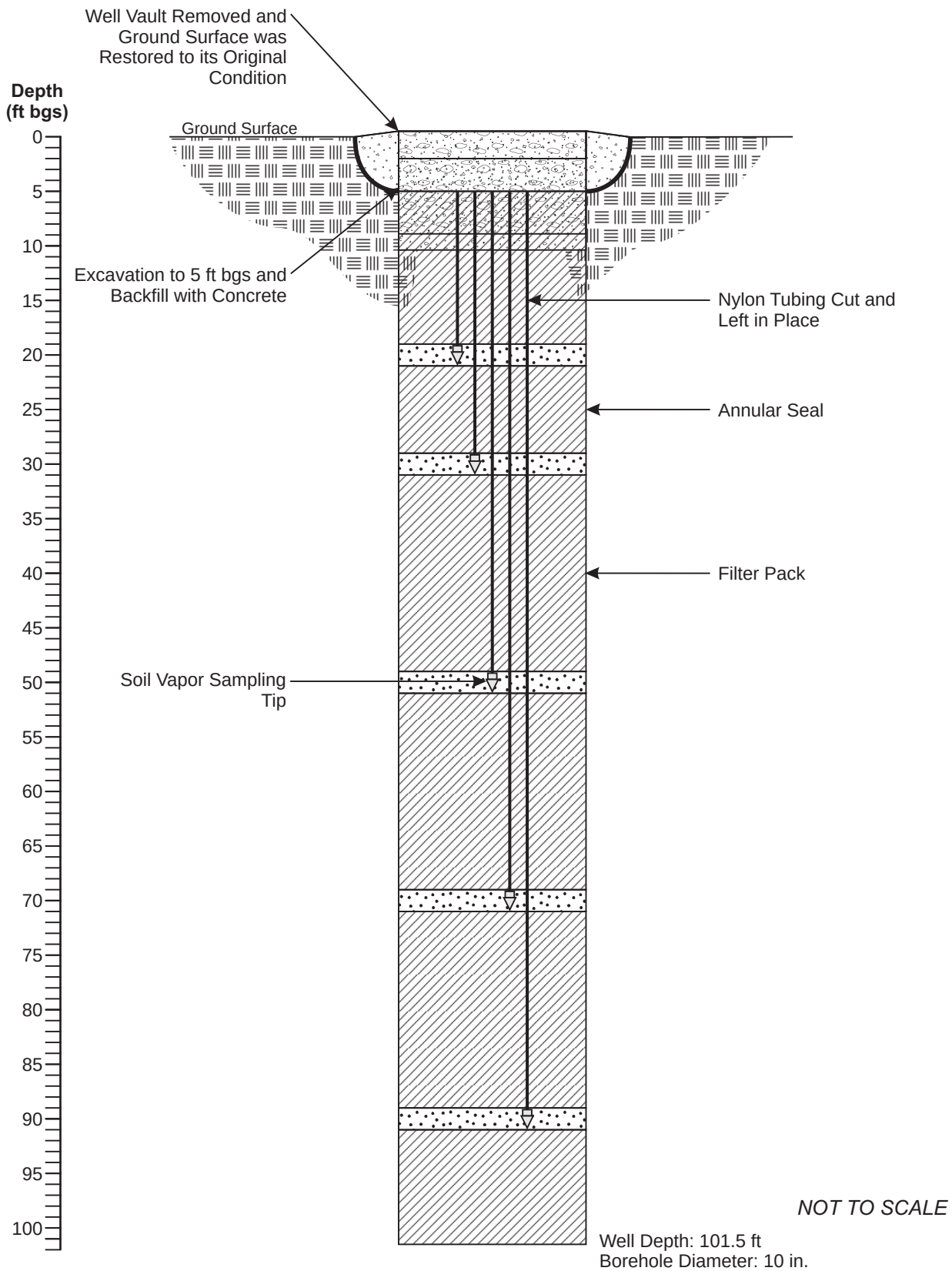
Soil Vapor Monitoring Well Abandonment - SV-07



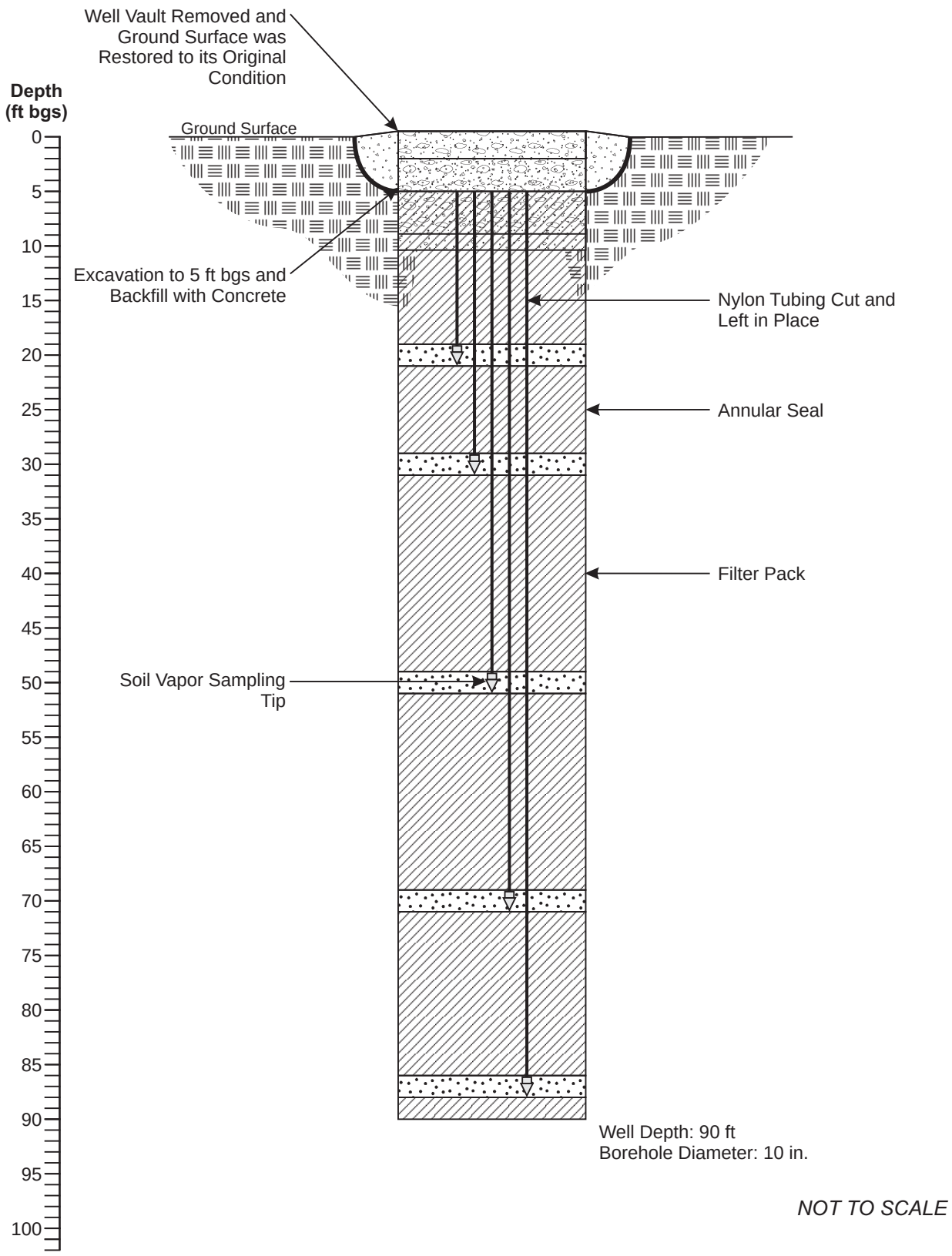
NOT TO SCALE

SV-07.CDR

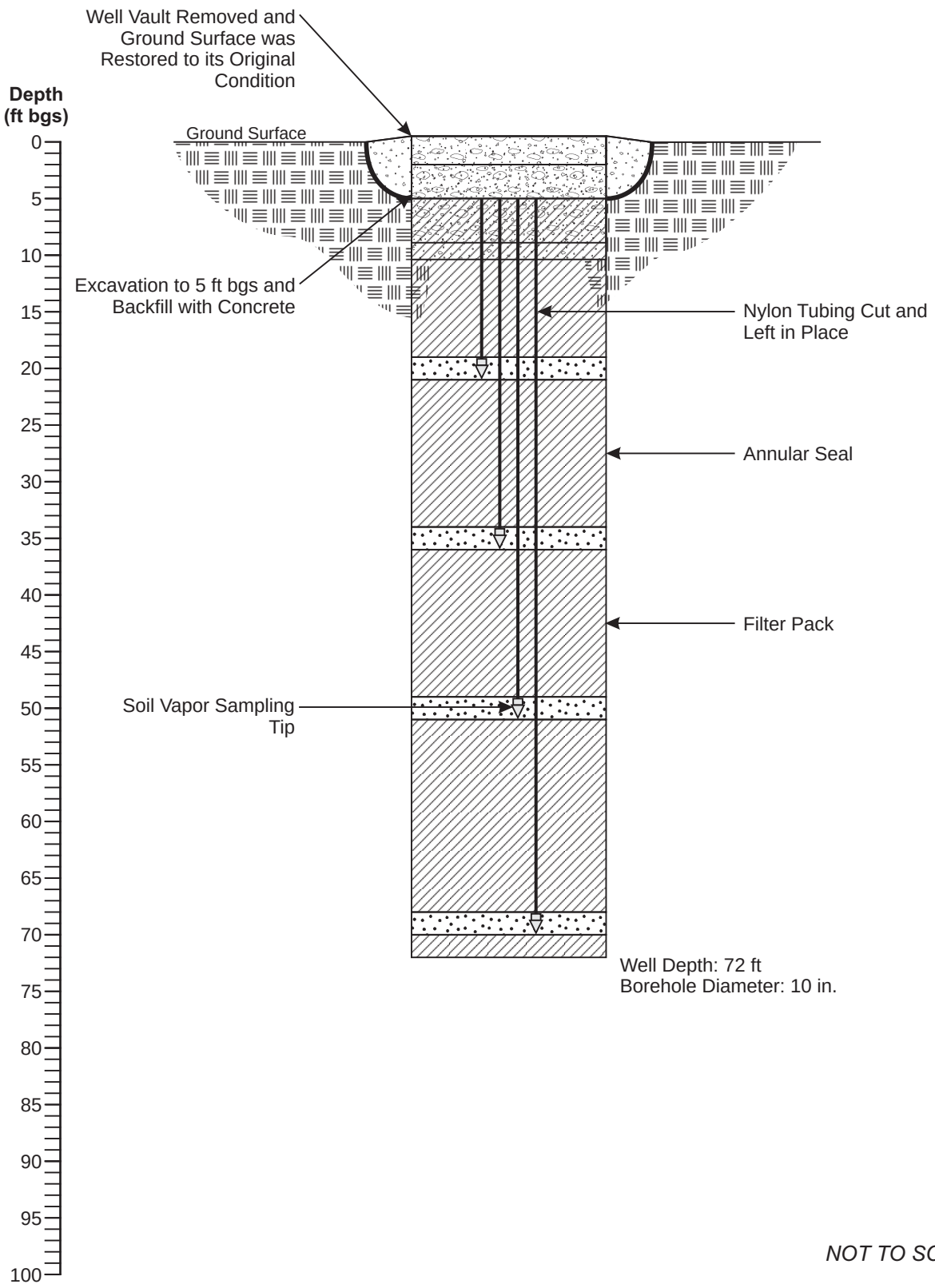
Soil Vapor Monitoring Well Abandonment - SV-08



Soil Vapor Monitoring Well Abandonment - SV-09



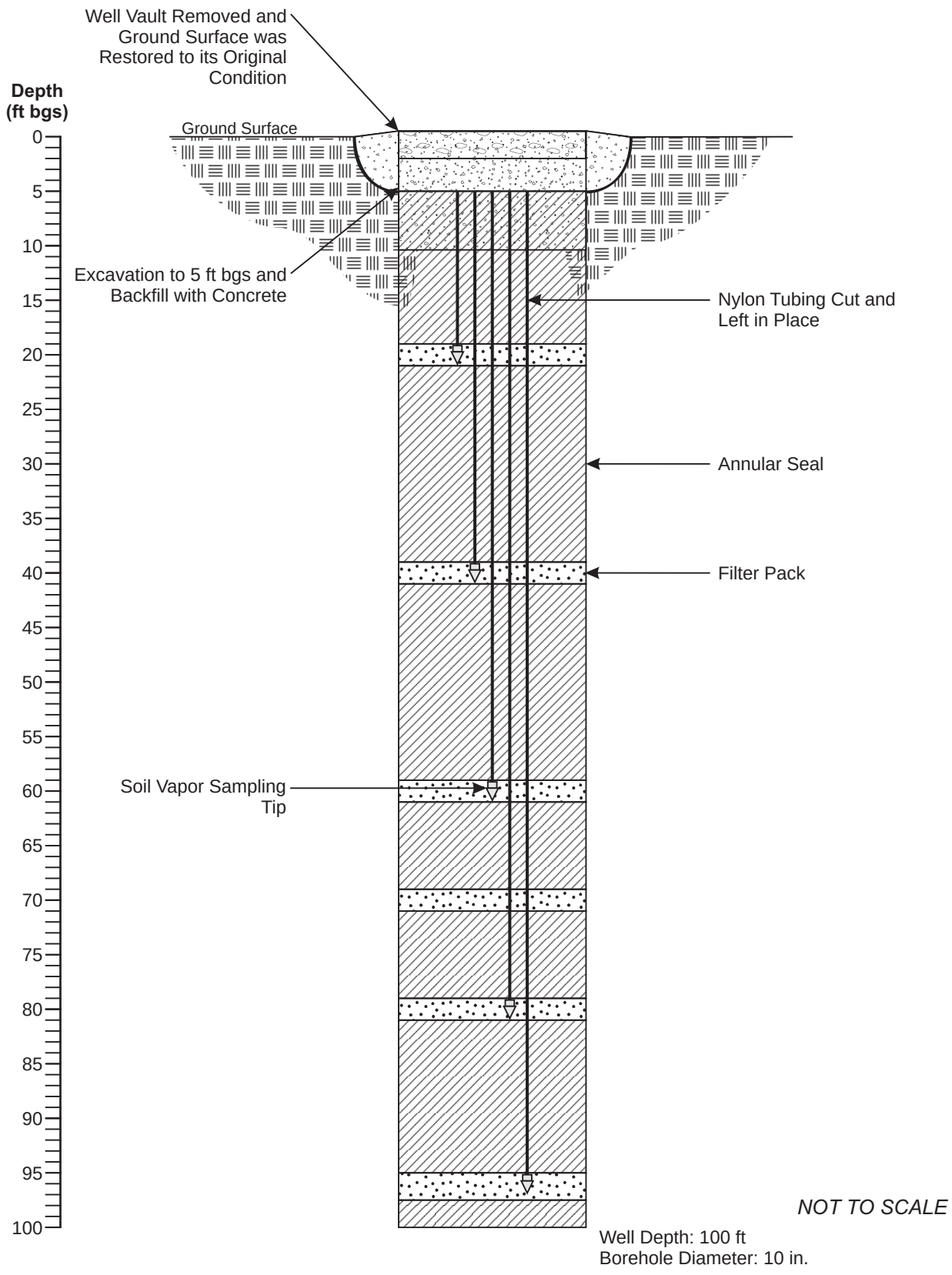
Soil Vapor Monitoring Well Abandonment - SV-10



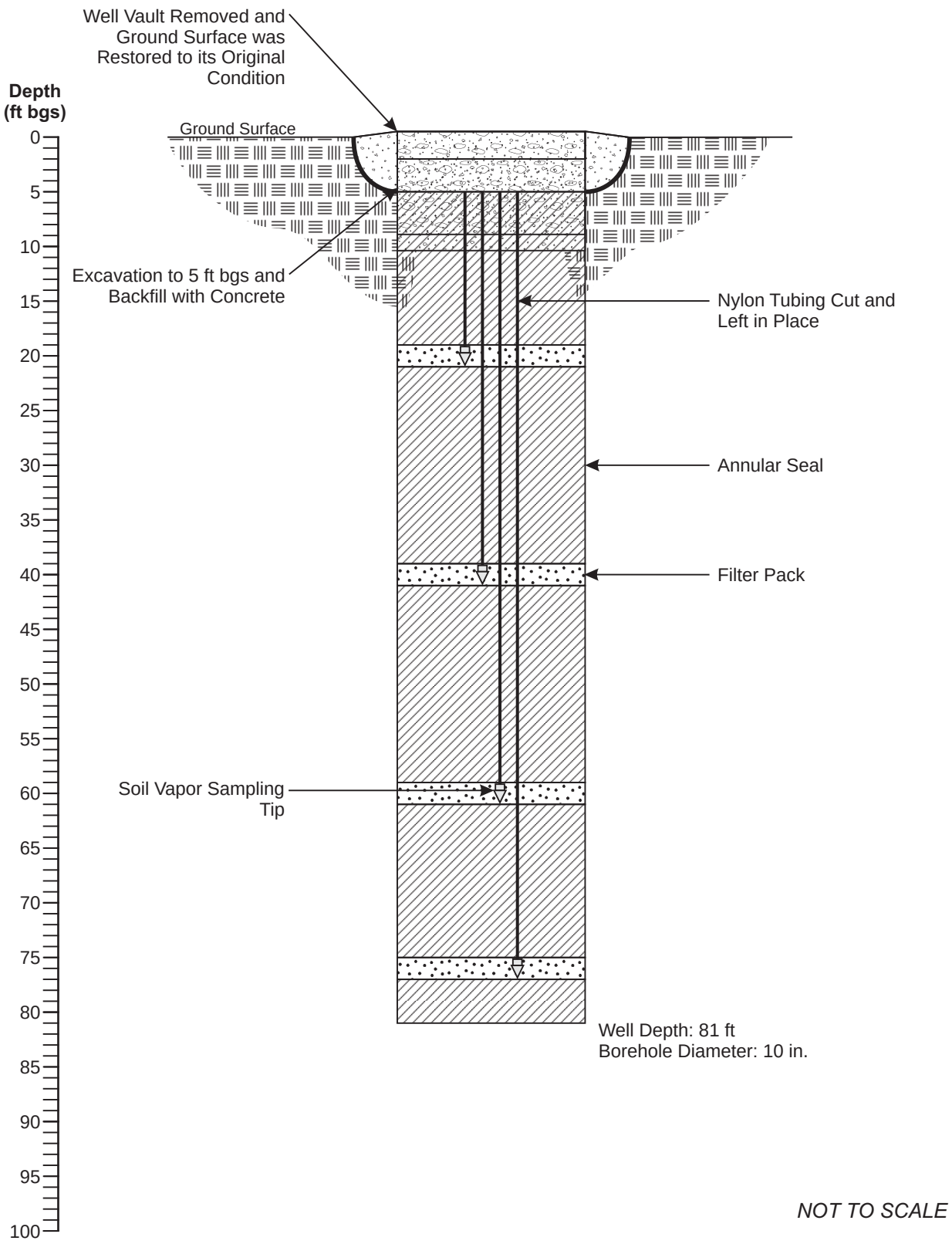
NOT TO SCALE

SV-10.CDR

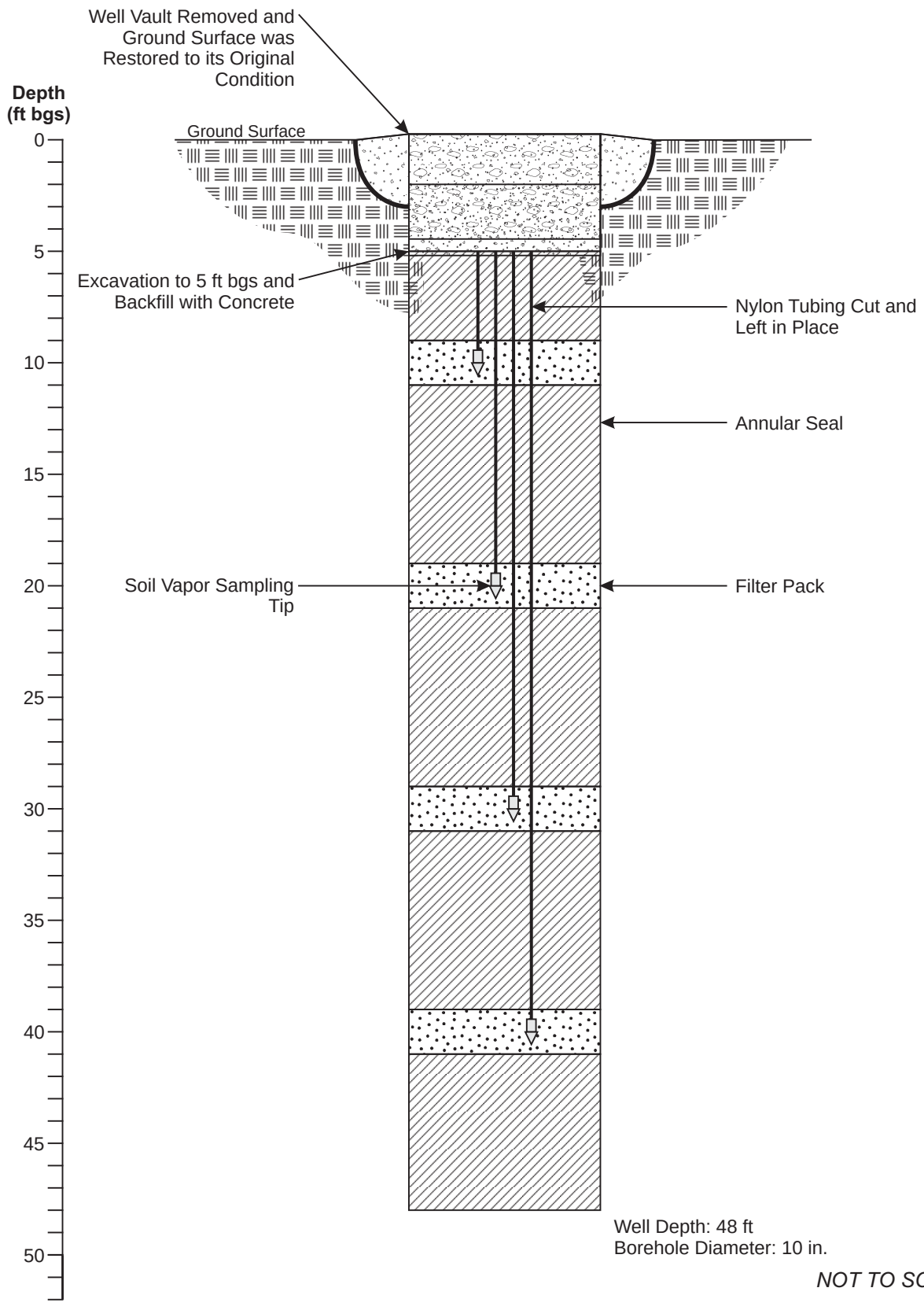
Soil Vapor Monitoring Well Abandonment - SV-11



Soil Vapor Monitoring Well Abandonment - SV-12



Soil Vapor Monitoring Well Abandonment - SV-13

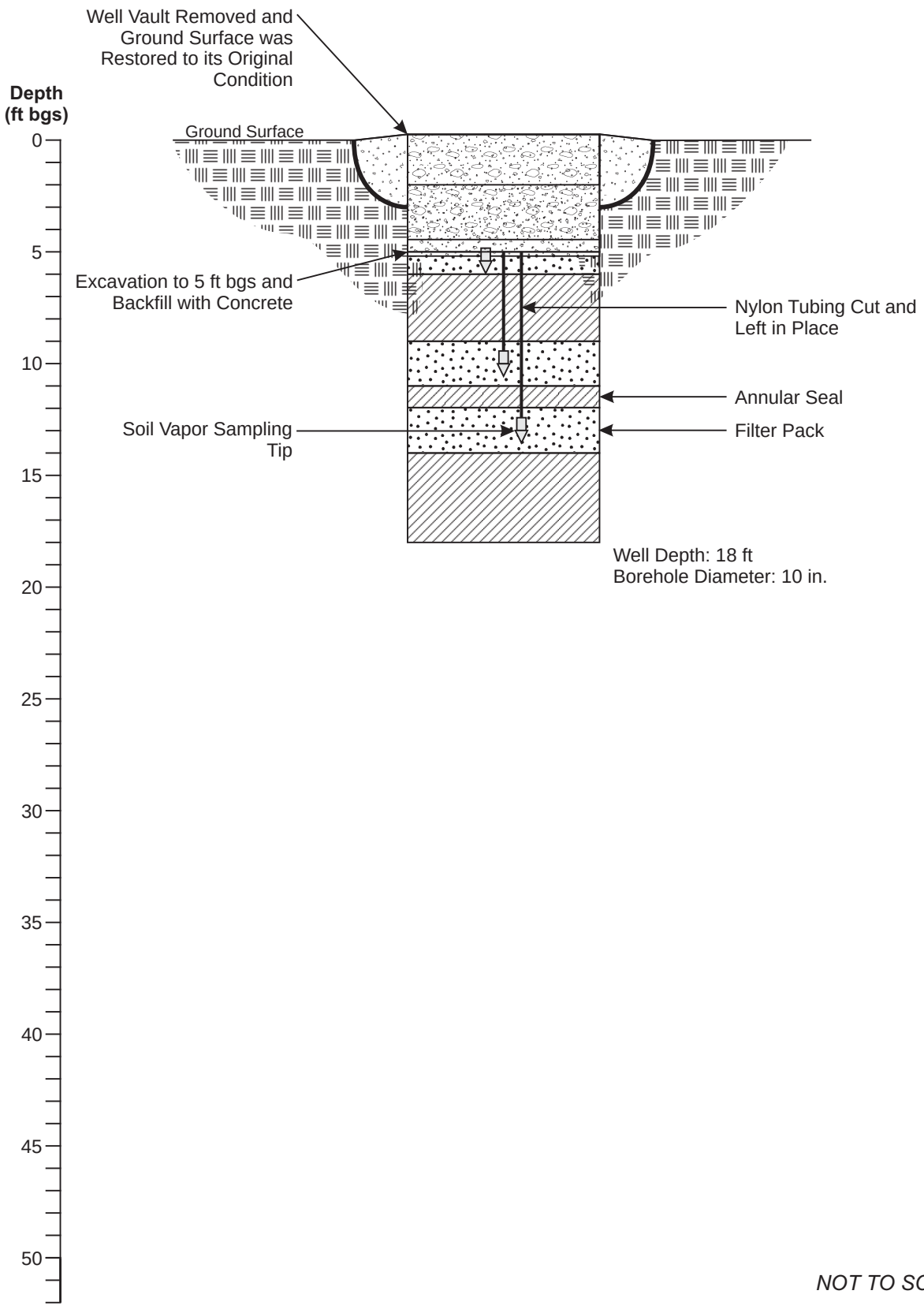


Well Depth: 48 ft
Borehole Diameter: 10 in.

NOT TO SCALE

SV-13.CDR

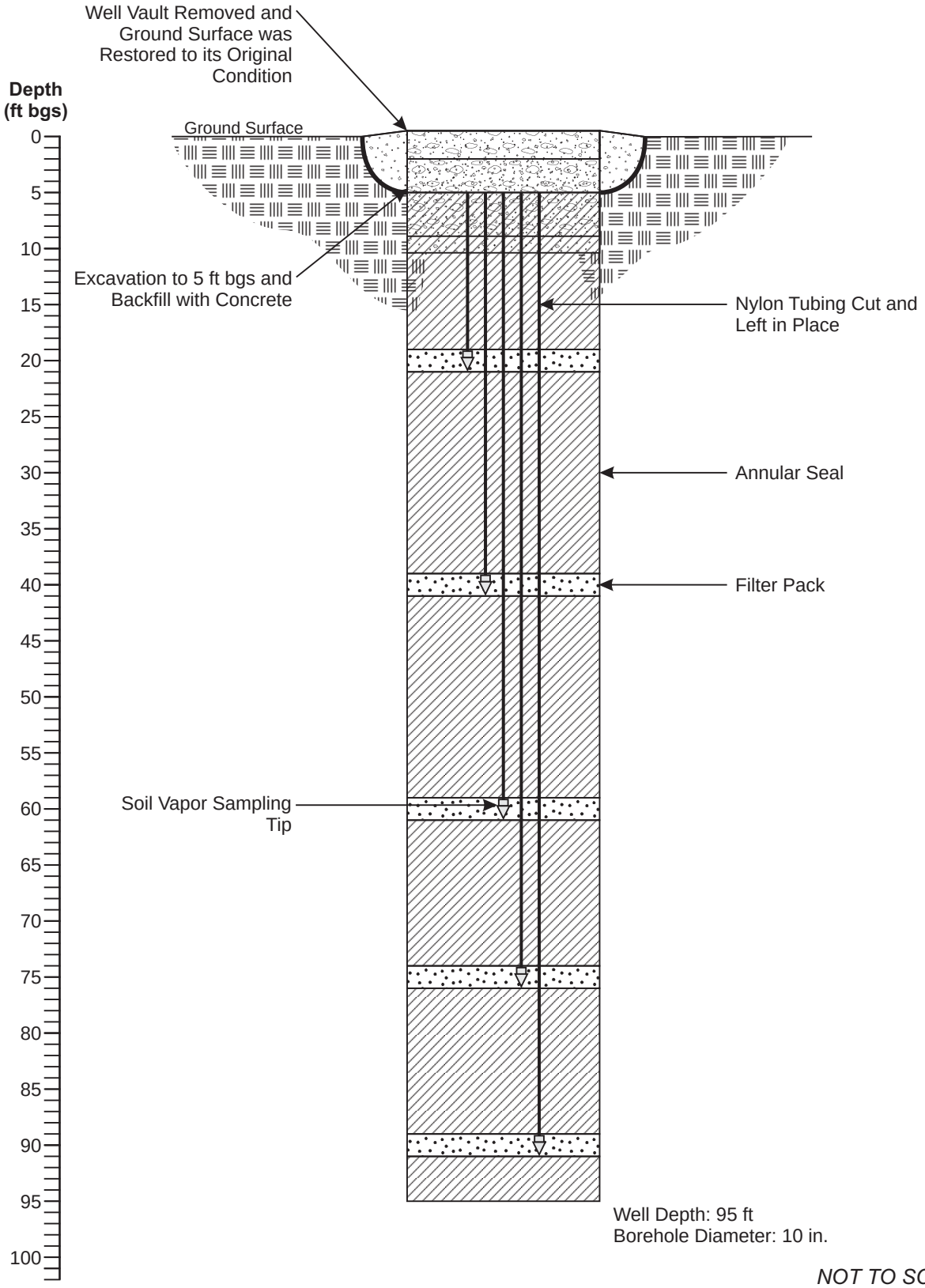
Soil Vapor Monitoring Well Abandonment - SV-14



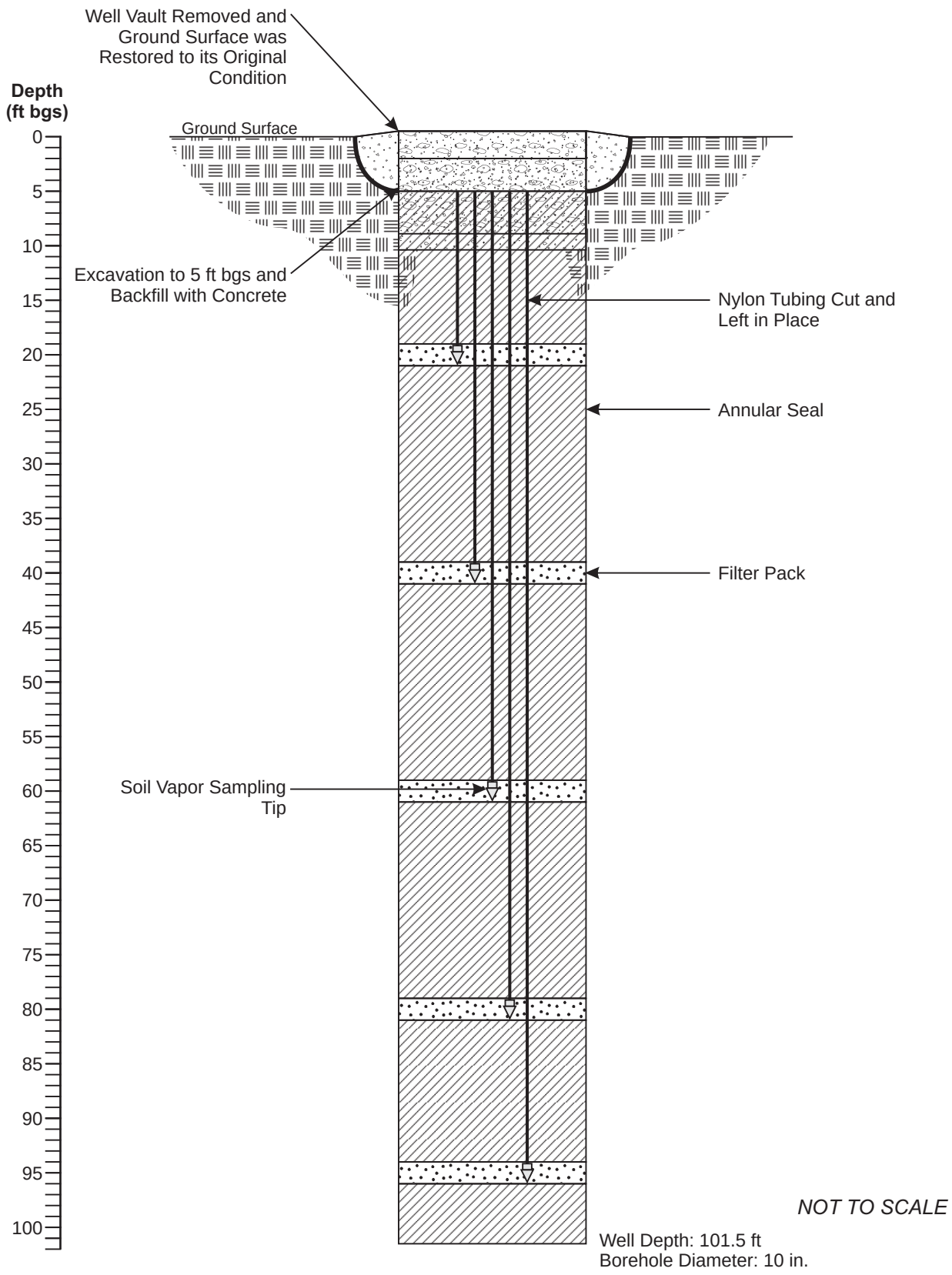
NOT TO SCALE

SV-14.CDR

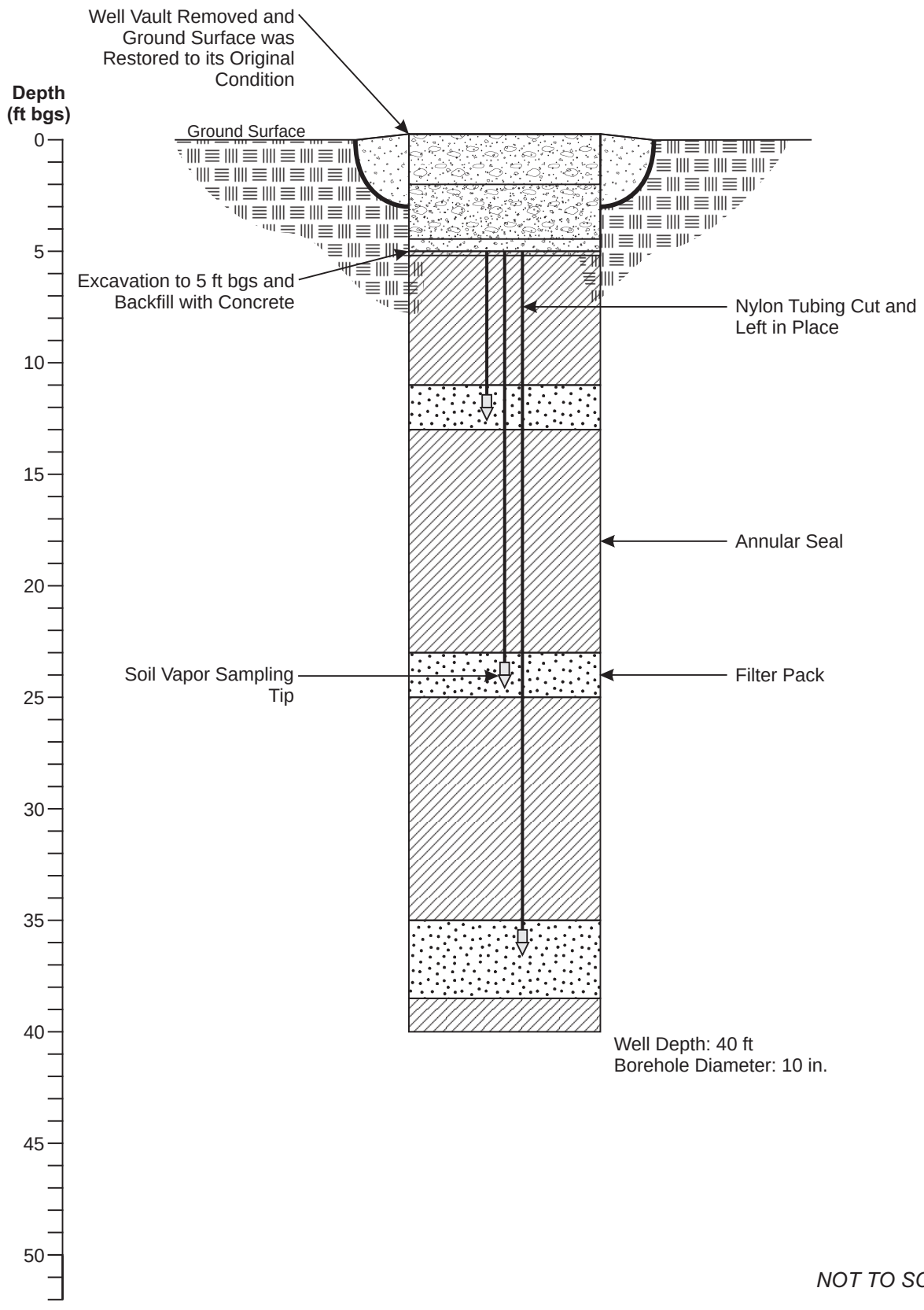
Soil Vapor Monitoring Well Abandonment - SV-15



Soil Vapor Monitoring Well Abandonment - SV-16



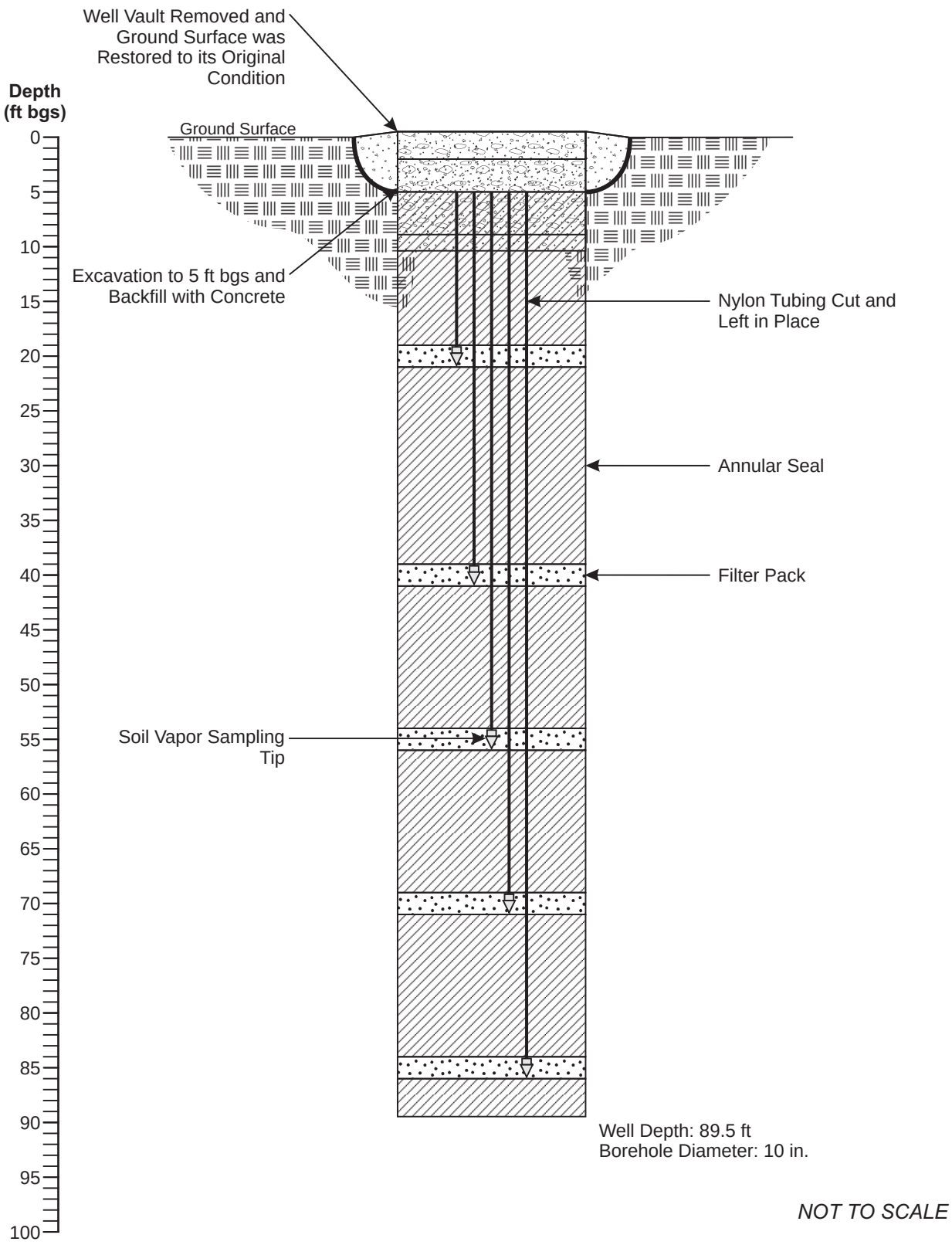
Soil Vapor Monitoring Well Abandonment - SV-17



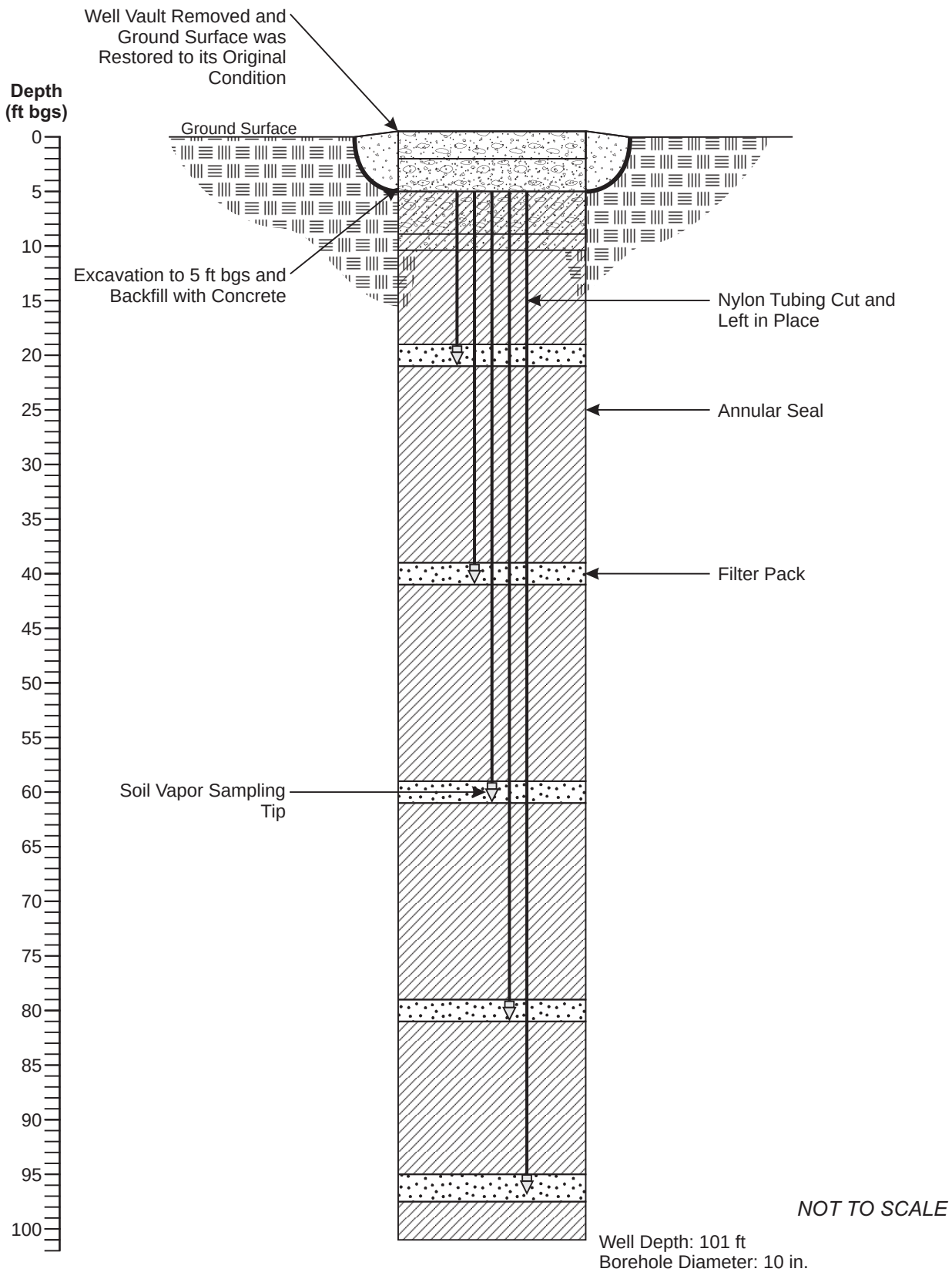
NOT TO SCALE

SV-17.CDR

Soil Vapor Monitoring Well Abandonment - SV-18



Soil Vapor Monitoring Well Abandonment - SV-19A

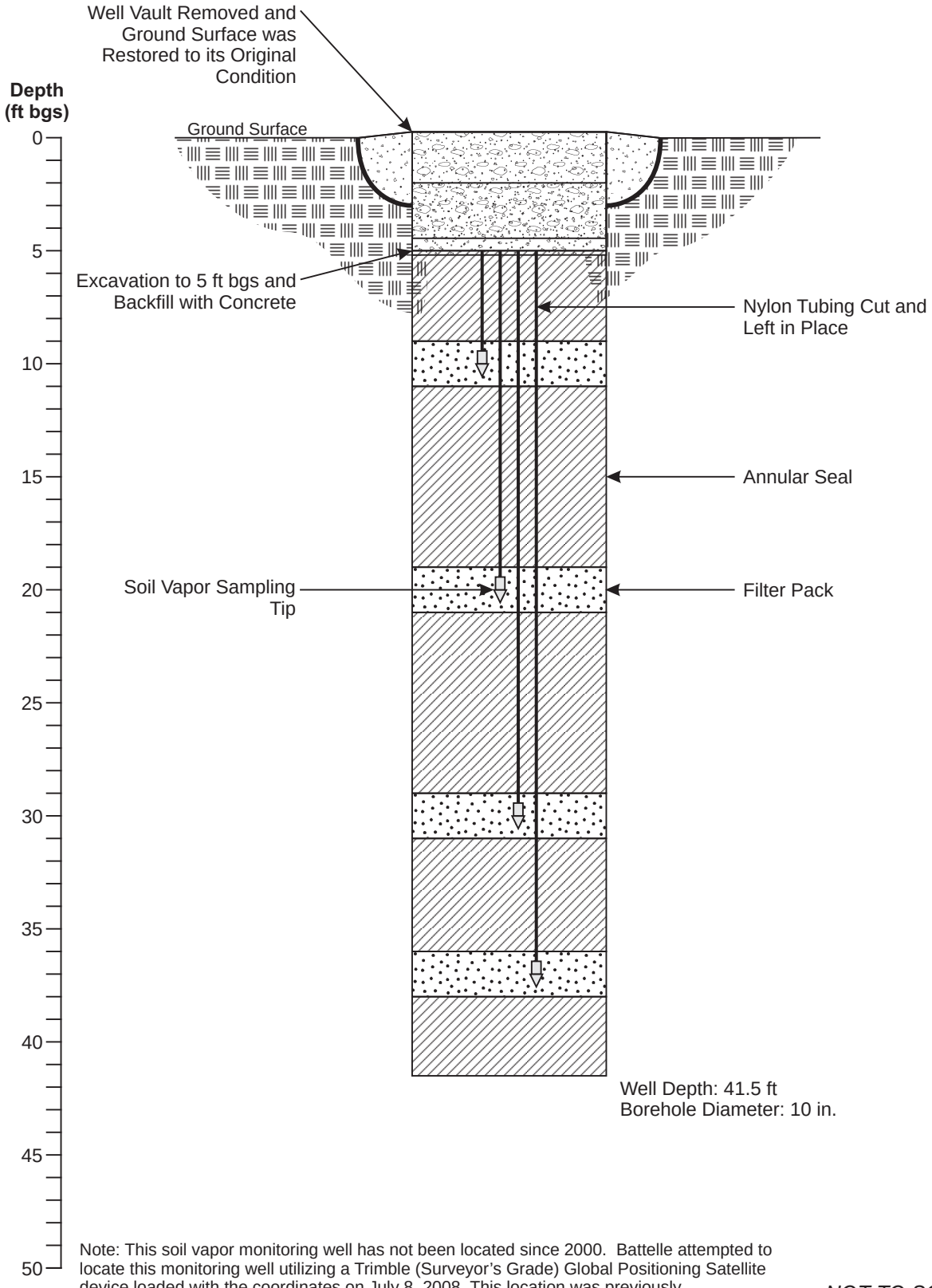


NOT TO SCALE

Well Depth: 101 ft
Borehole Diameter: 10 in.

SV-19A.CDR

Soil Vapor Monitoring Well Abandonment - SV-20

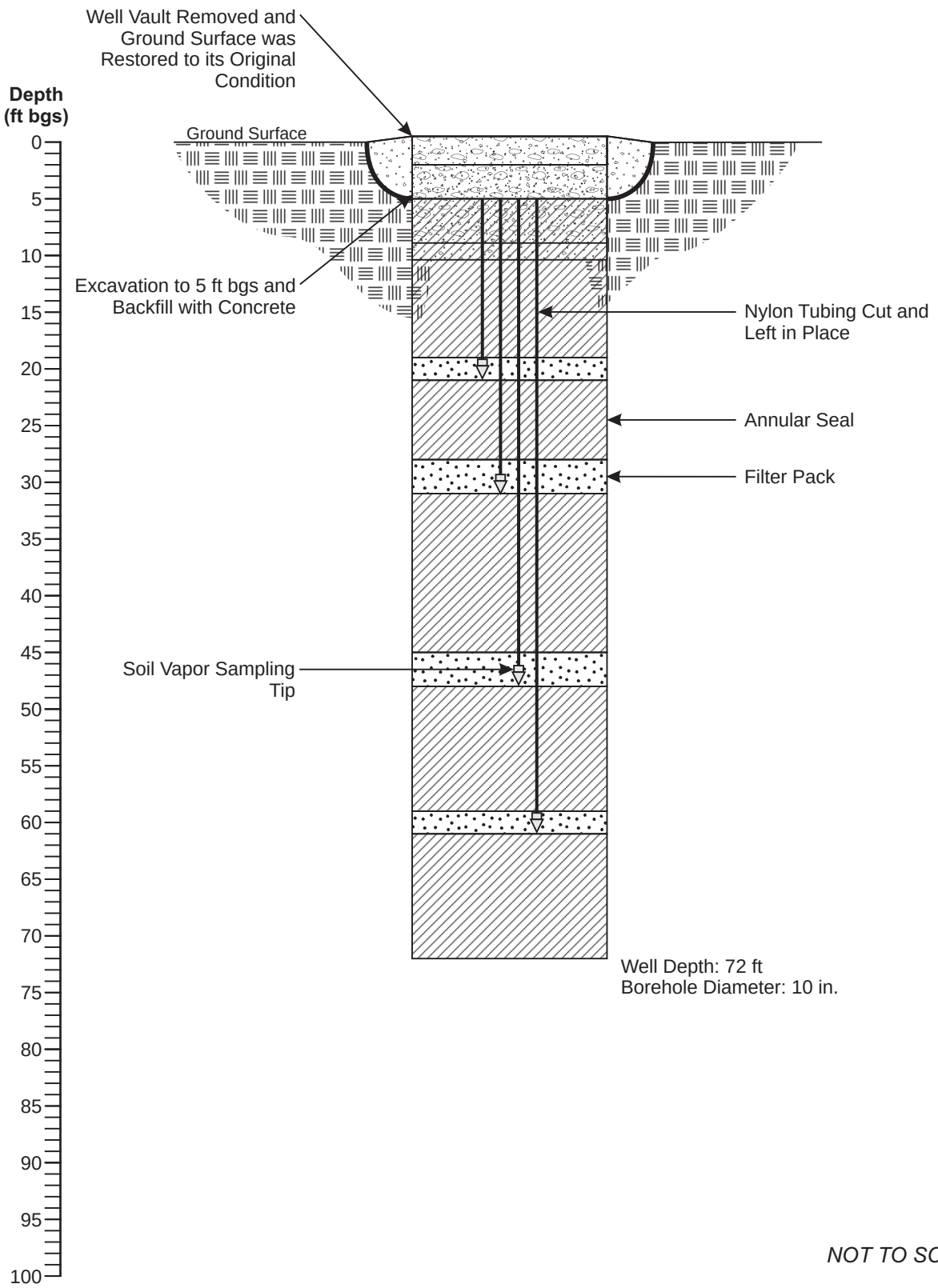


Note: This soil vapor monitoring well has not been located since 2000. Battelle attempted to locate this monitoring well utilizing a Trimble (Surveyor's Grade) Global Positioning Satellite device loaded with the coordinates on July 8, 2008. This location was previously decommissioned and replaced by 20A; verbal communication with Insight (formerly Geofon).

NOT TO SCALE

SV-20.CDR

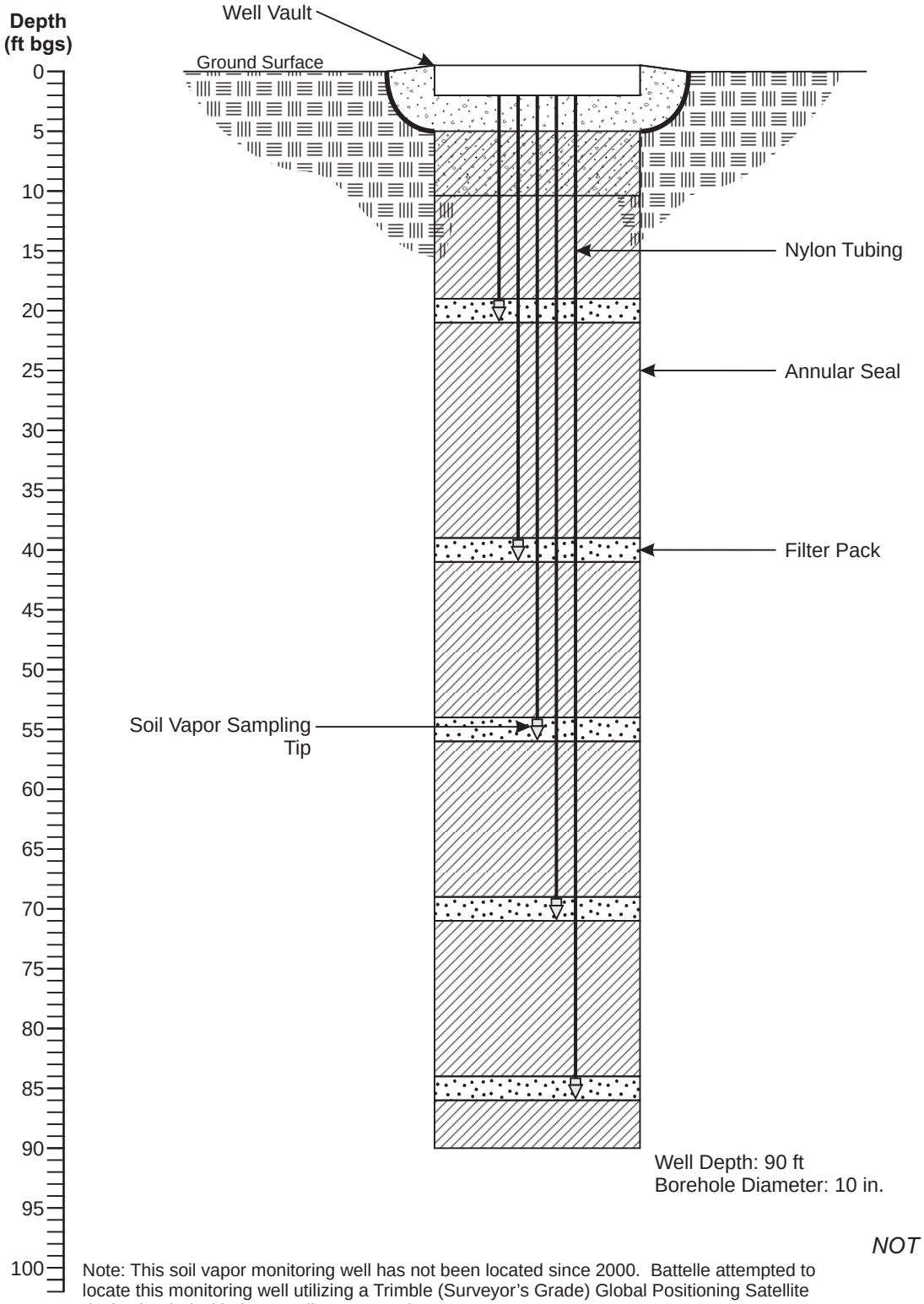
Soil Vapor Monitoring Well Abandonment - SV-20A



NOT TO SCALE

SV-20A.CDR

Soil Vapor Monitoring Well Abandonment - SV-21 (Not Destroyed)

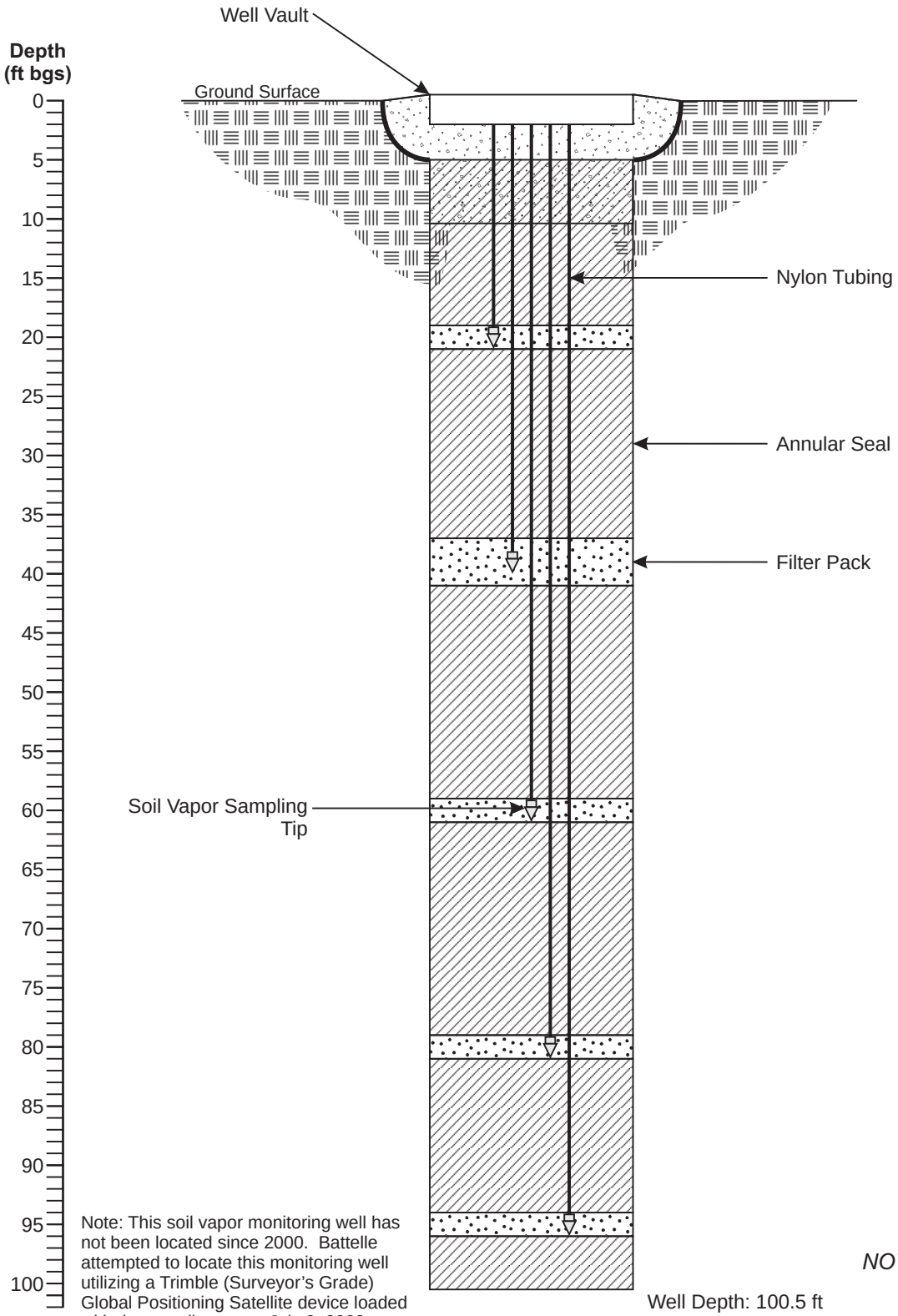


NOT TO SCALE

Note: This soil vapor monitoring well has not been located since 2000. Battelle attempted to locate this monitoring well utilizing a Trimble (Surveyor's Grade) Global Positioning Satellite device loaded with the coordinates on July 8, 2008.

SV-21.CDR

Soil Vapor Monitoring Well Abandonment - SV-22 (Not Destroyed)



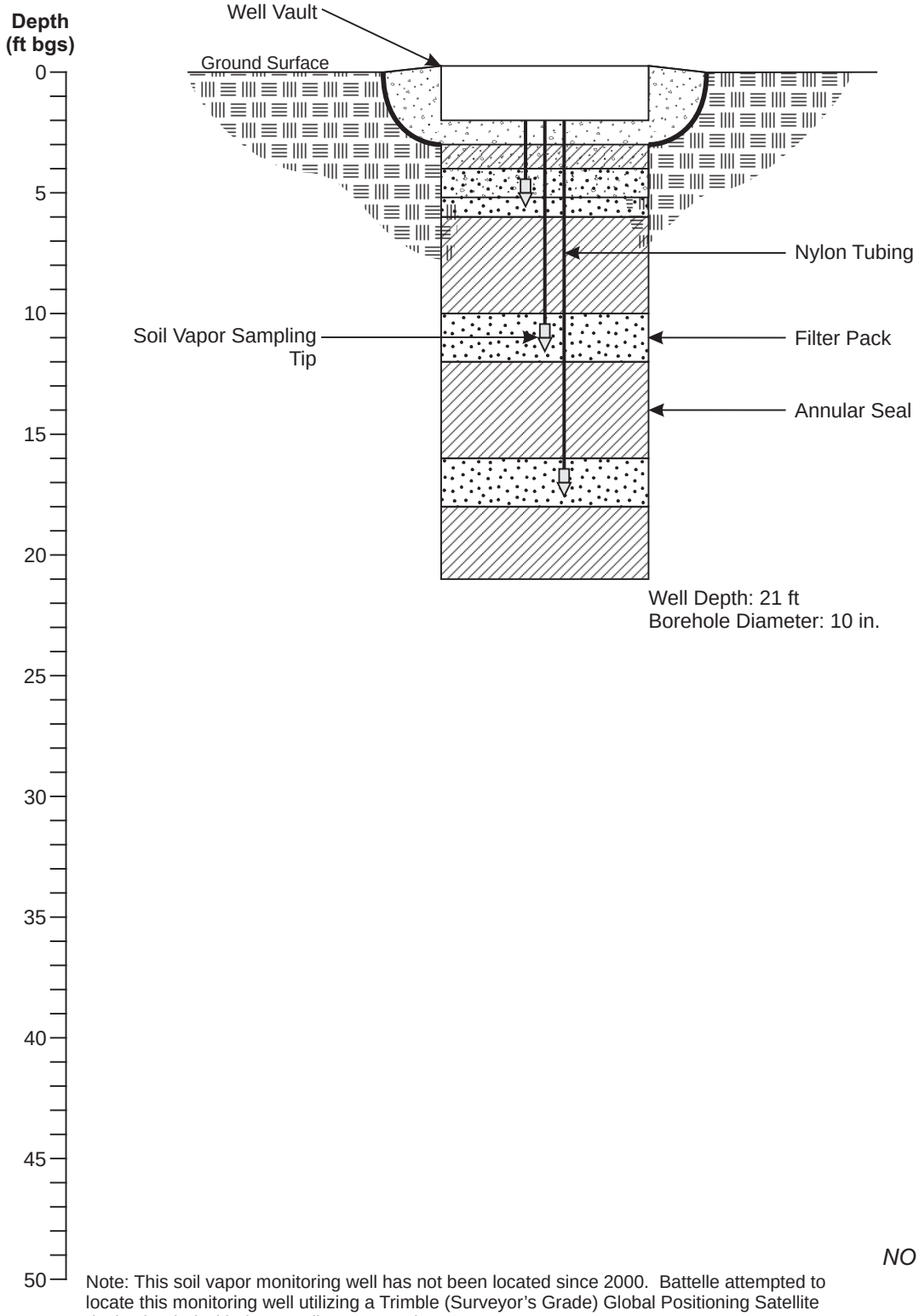
Note: This soil vapor monitoring well has not been located since 2000. Battelle attempted to locate this monitoring well utilizing a Trimble (Surveyor's Grade) Global Positioning Satellite device loaded with the coordinates on July 8, 2008.

NOT TO SCALE

Well Depth: 100.5 ft
Borehole Diameter: 10 in.

SV-22.CDR

Soil Vapor Monitoring Well Abandonment - SV-23B (Not Destroyed)

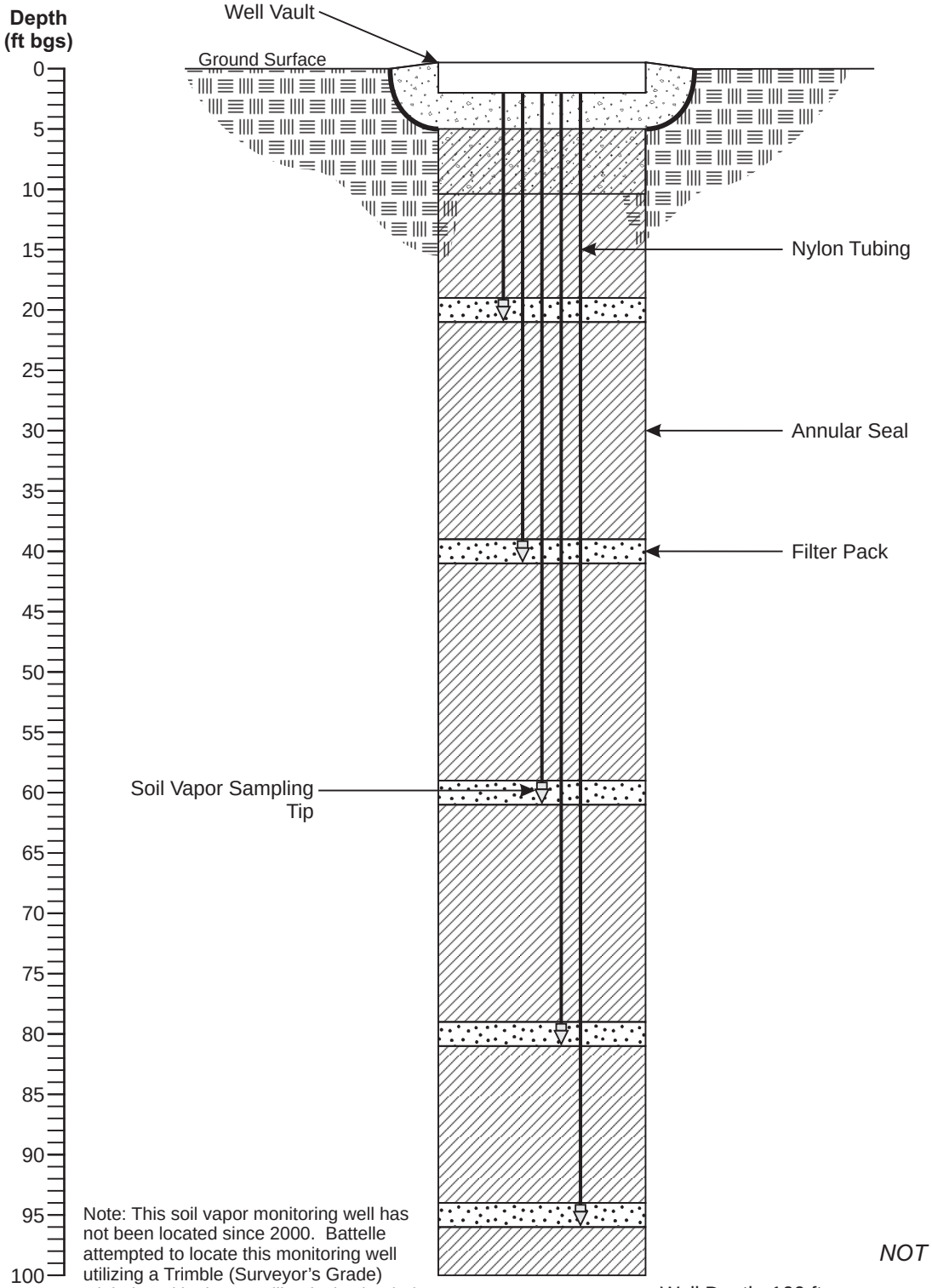


NOT TO SCALE

Note: This soil vapor monitoring well has not been located since 2000. Battelle attempted to locate this monitoring well utilizing a Trimble (Surveyor's Grade) Global Positioning Satellite device loaded with the coordinates on July 8, 2008.

SV-23B.CDR

Soil Vapor Monitoring Well Abandonment - SV-24 (Not Destroyed)



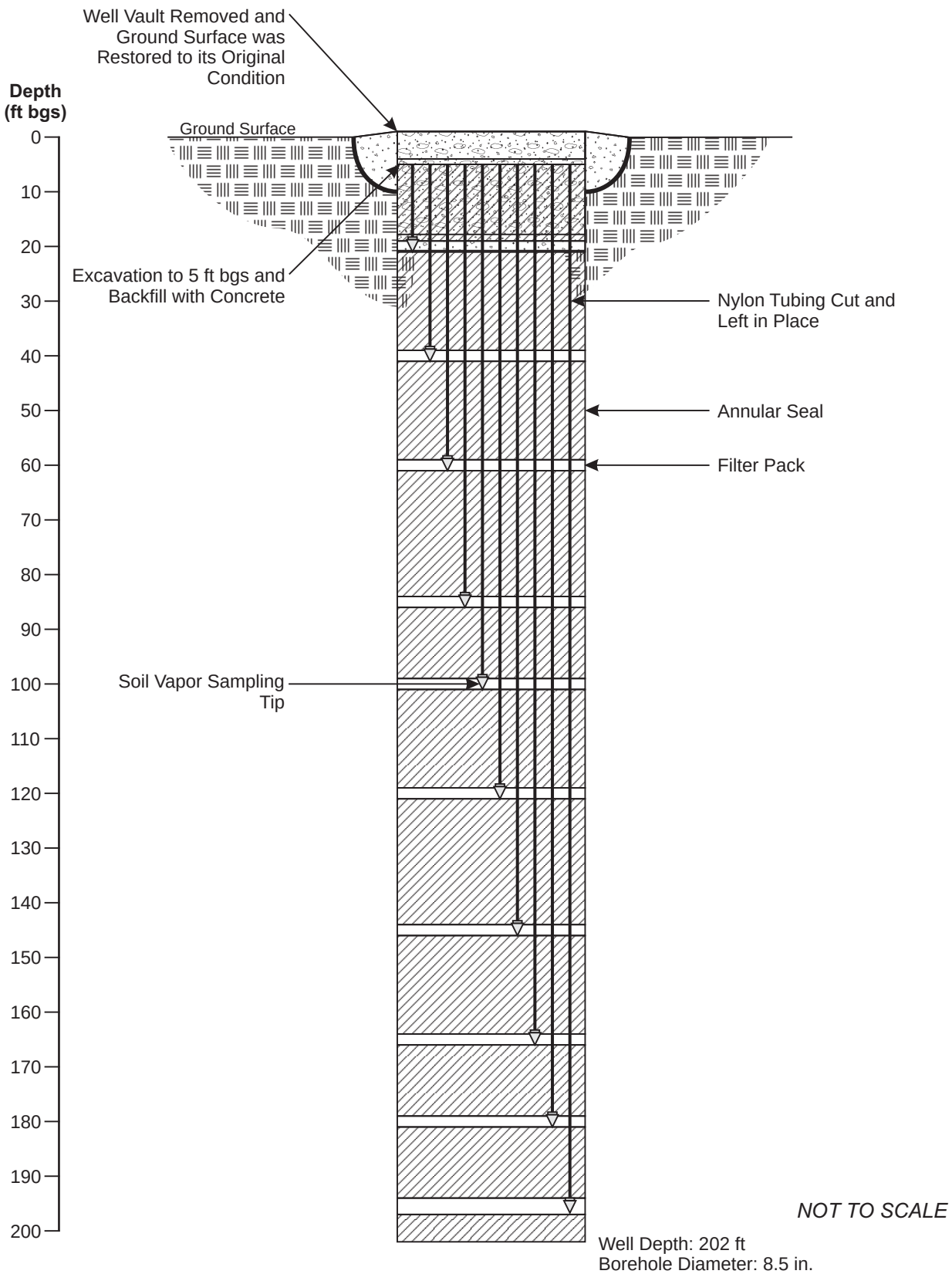
Note: This soil vapor monitoring well has not been located since 2000. Battelle attempted to locate this monitoring well utilizing a Trimble (Surveyor's Grade) Global Positioning Satellite device loaded with the coordinates on July 8, 2008.

NOT TO SCALE

Well Depth: 100 ft
Borehole Diameter: 10 in.

SV-24.CDR

Soil Vapor Monitoring Well Abandonment - SV-25

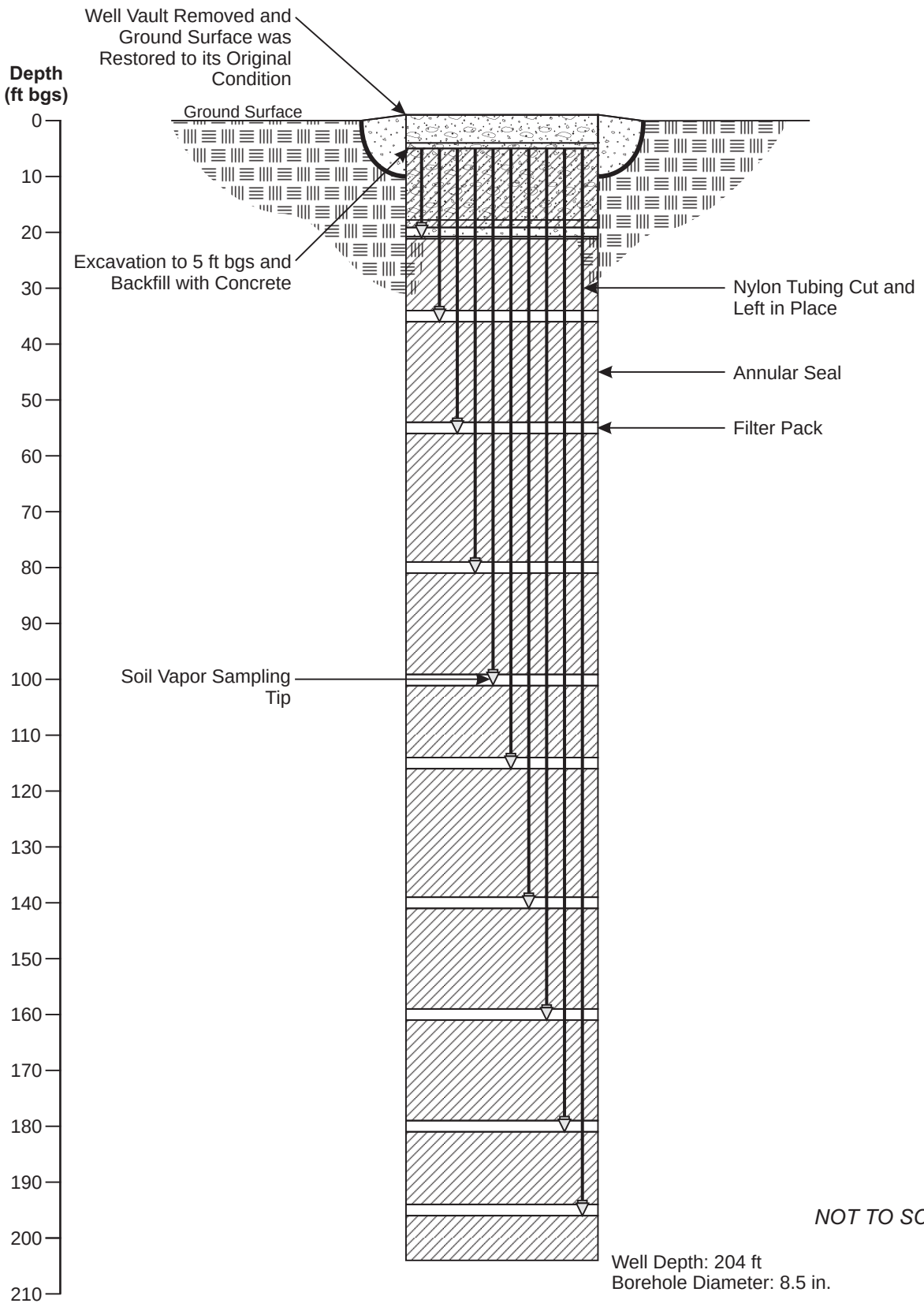


NOT TO SCALE

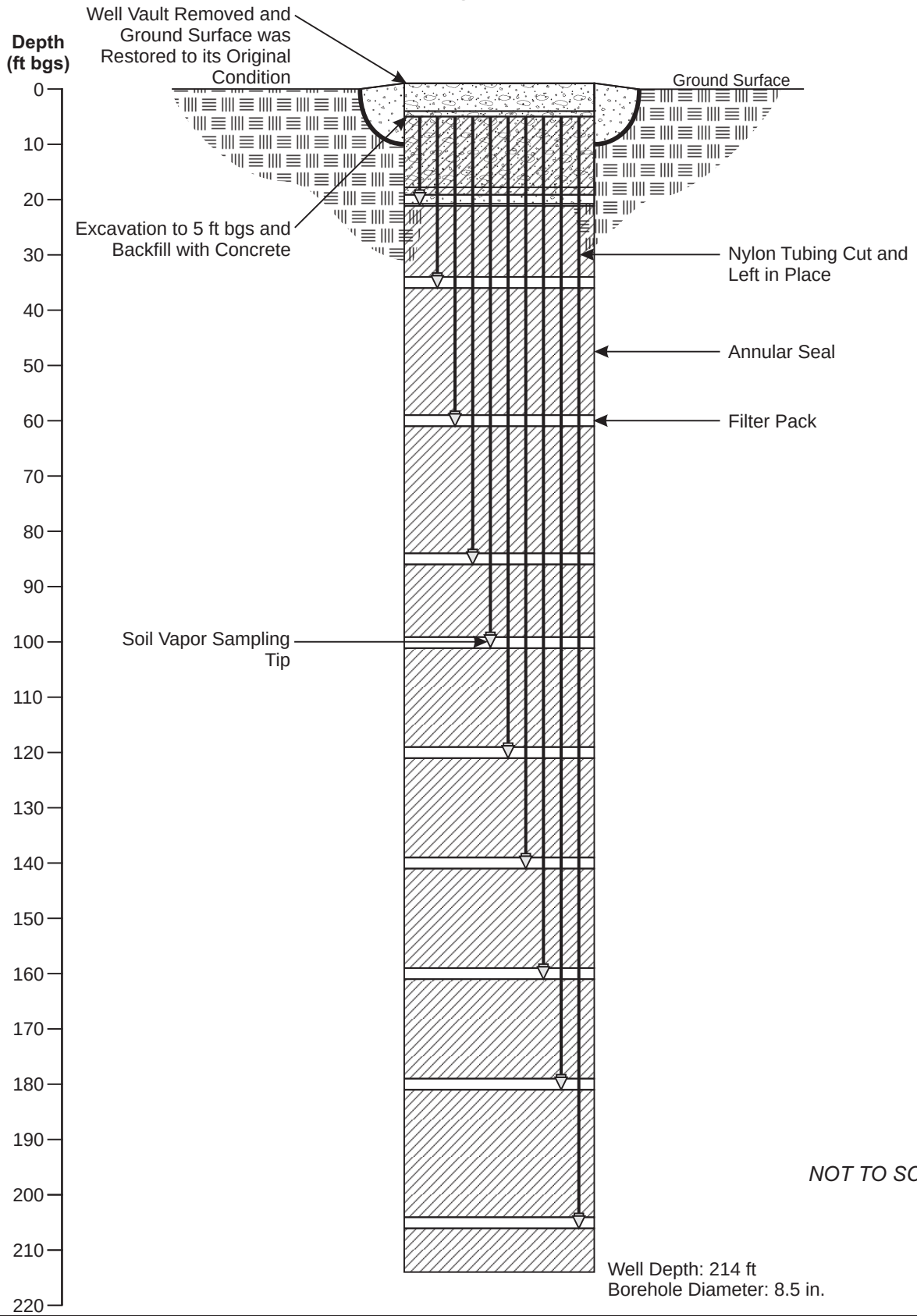
Well Depth: 202 ft
Borehole Diameter: 8.5 in.

SV-25.CDR

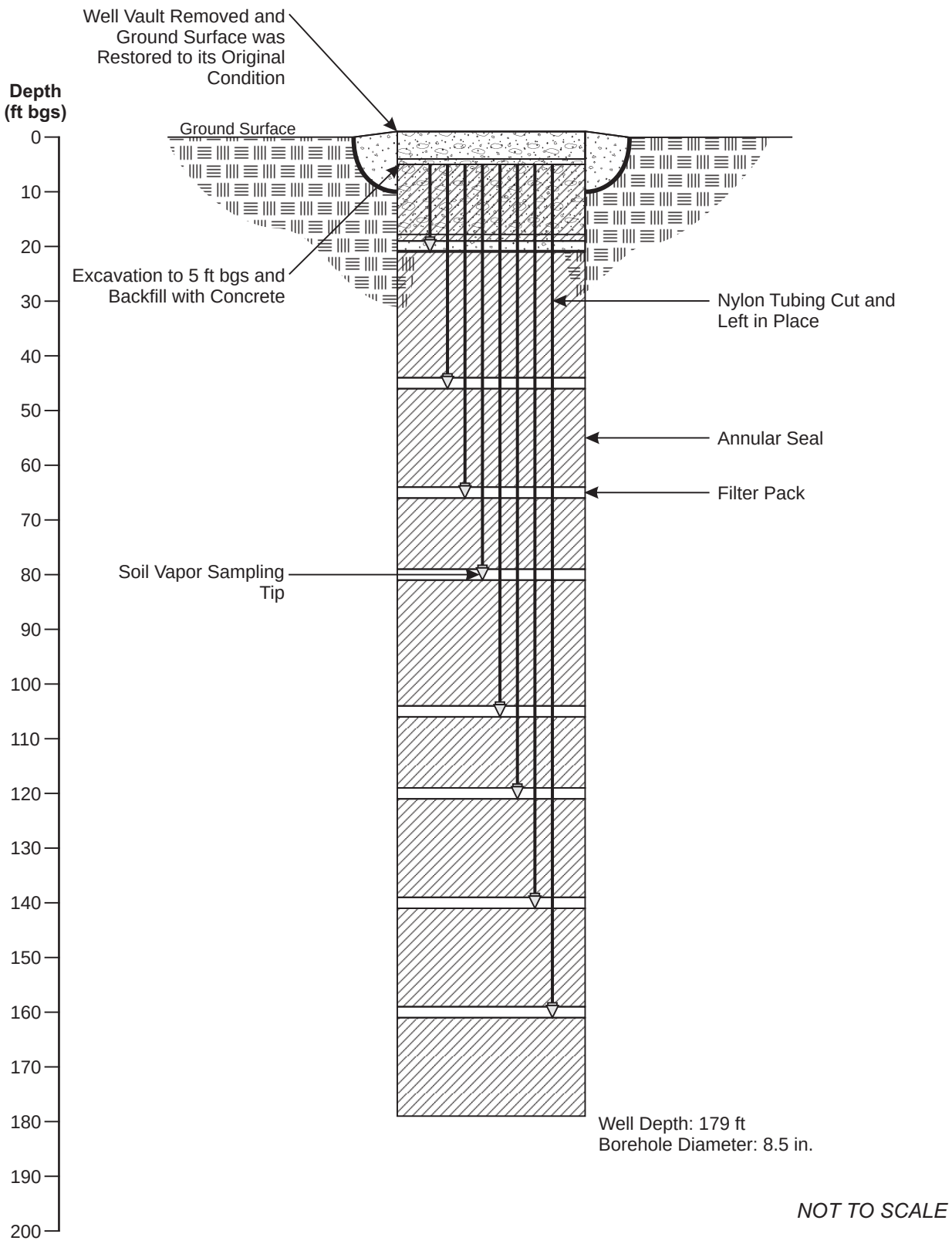
Soil Vapor Monitoring Well Abandonment - SV-26



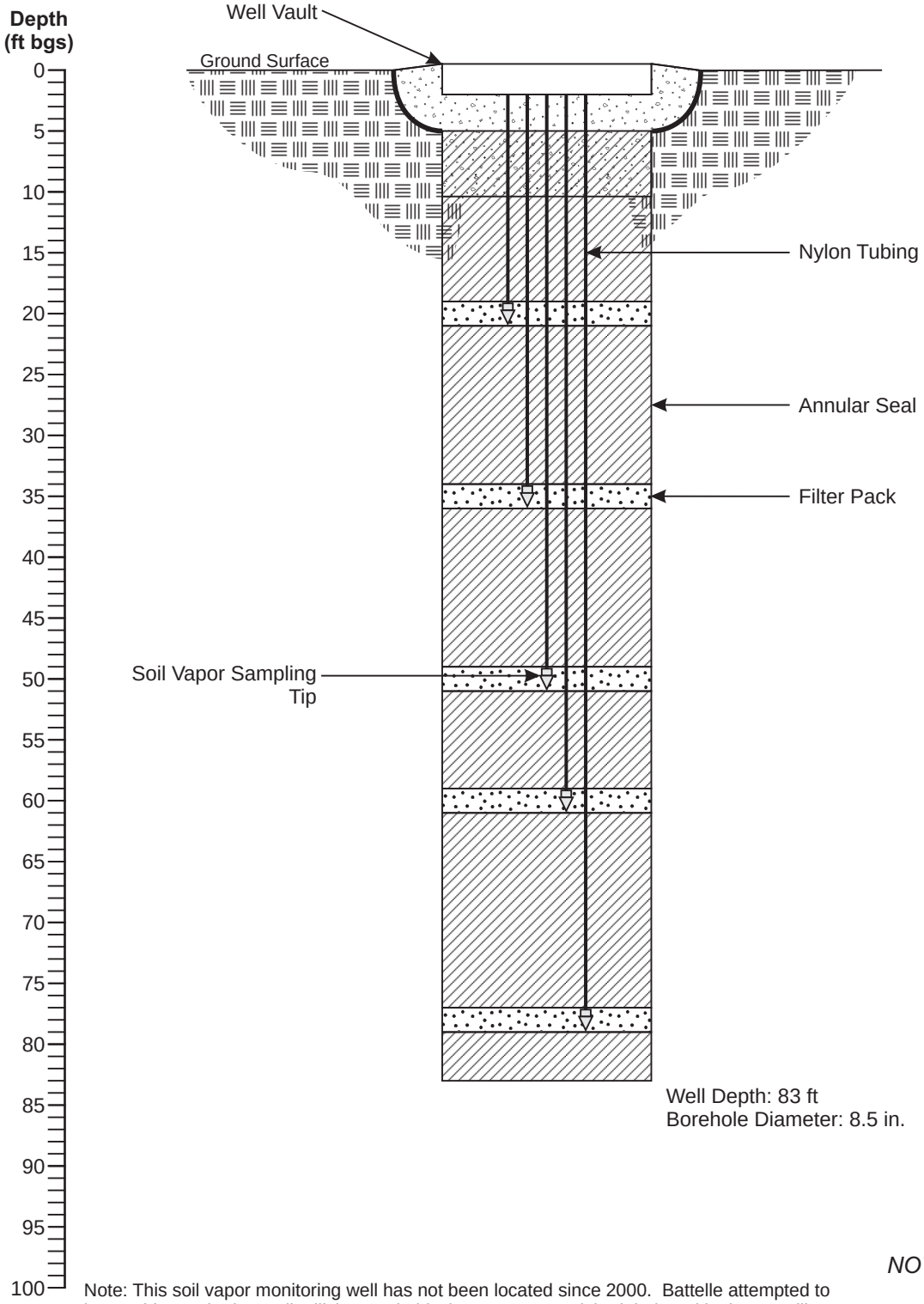
Soil Vapor Monitoring Well Abandonment - SV-27



Soil Vapor Monitoring Well Abandonment - SV-28



Soil Vapor Monitoring Well Abandonment - SV-29 (Not Destroyed)

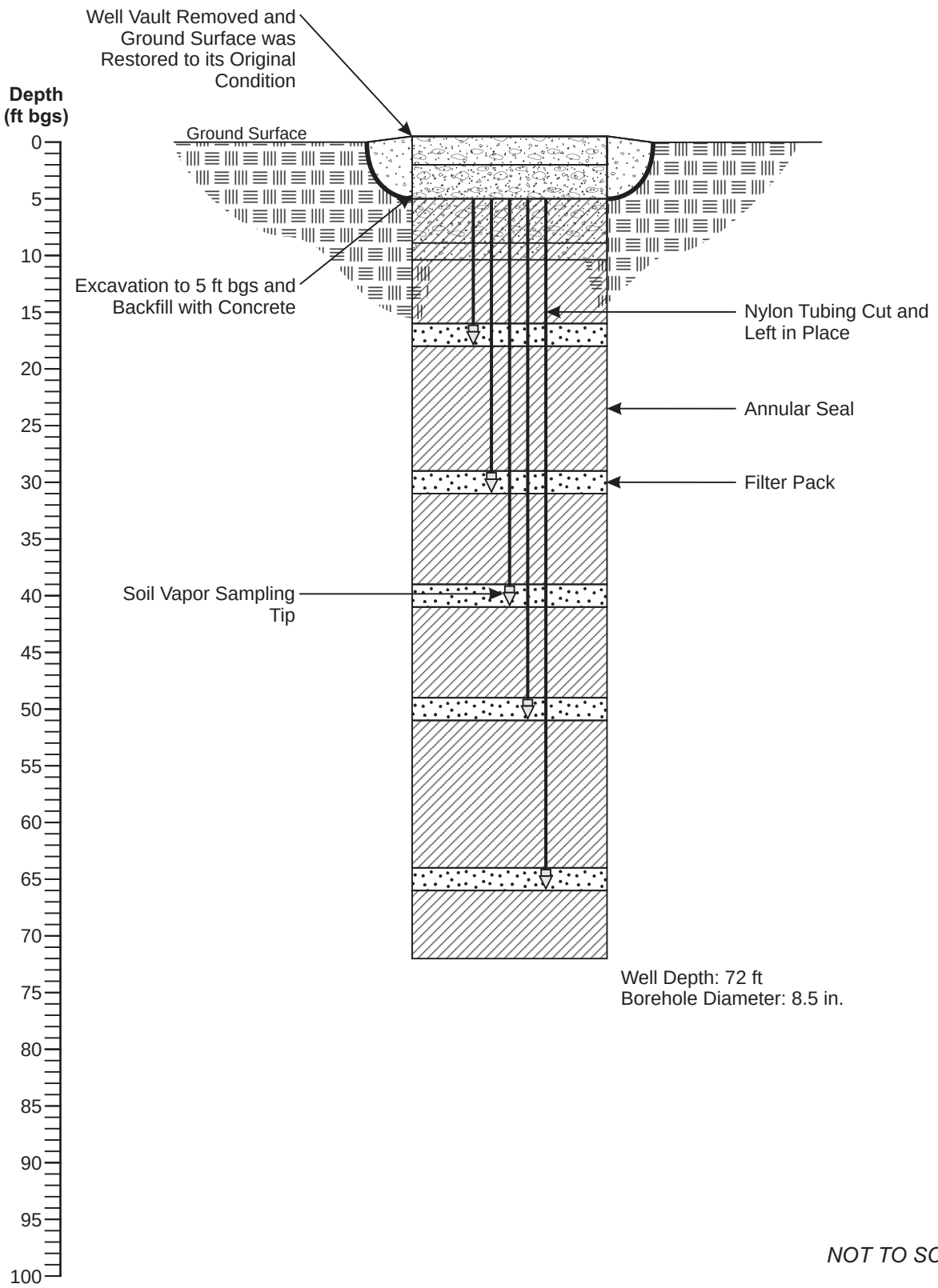


NOT TO SCALE

Note: This soil vapor monitoring well has not been located since 2000. Battelle attempted to locate this monitoring well utilizing a Trimble (Surveyor's Grade) Global Positioning Satellite device loaded with the coordinates on July 8, 2008.

SV-29.CDR

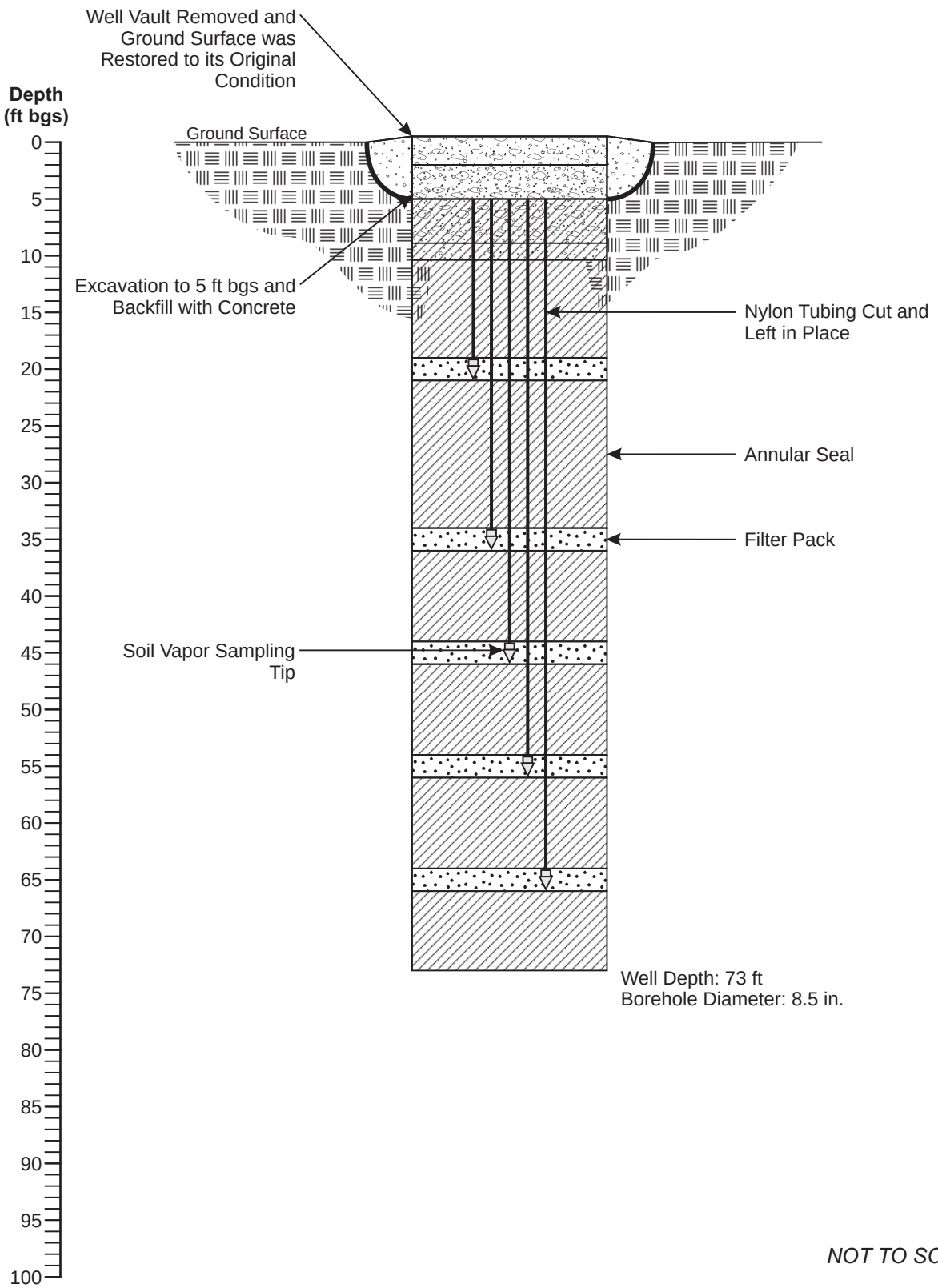
Soil Vapor Monitoring Well Abandonment - SV-30



NOT TO SCALE

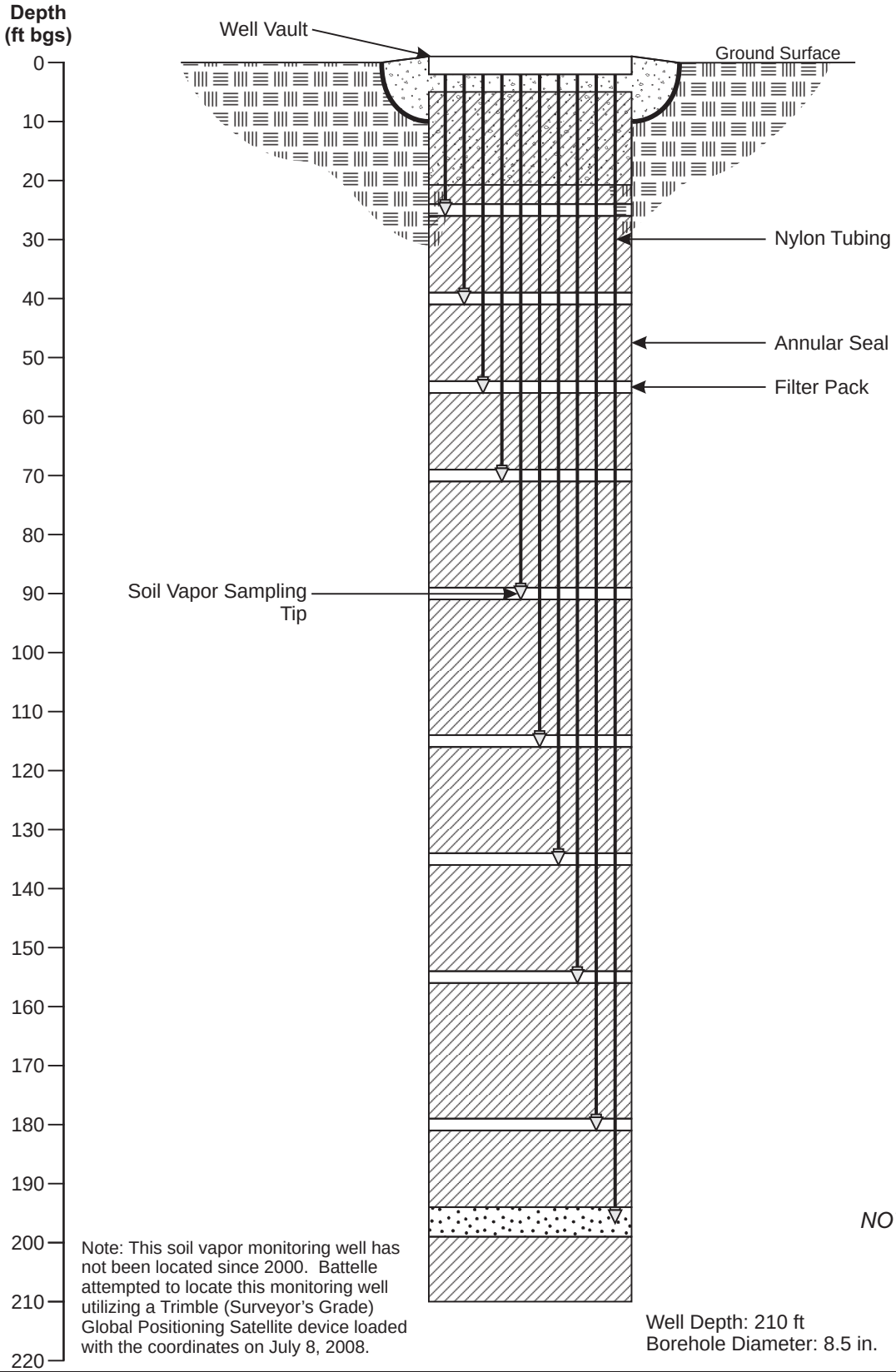
SV-30.CDR

Soil Vapor Monitoring Well Abandonment - SV-31



SV-31.CDR

Soil Vapor Monitoring Well Abandonment - SV-32 (Not Destroyed)



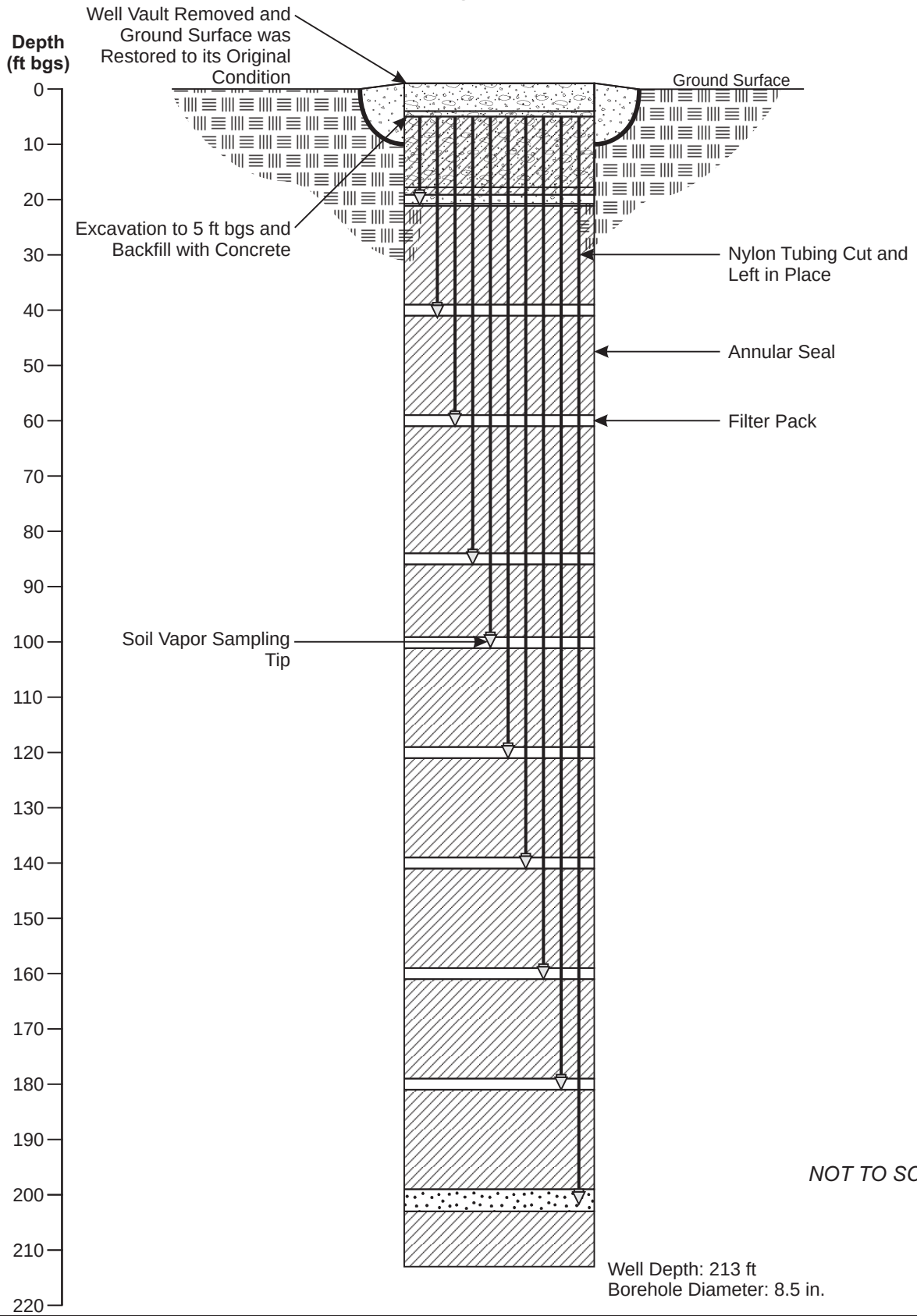
NOT TO SCALE

Note: This soil vapor monitoring well has not been located since 2000. Battelle attempted to locate this monitoring well utilizing a Trimble (Surveyor's Grade) Global Positioning Satellite device loaded with the coordinates on July 8, 2008.

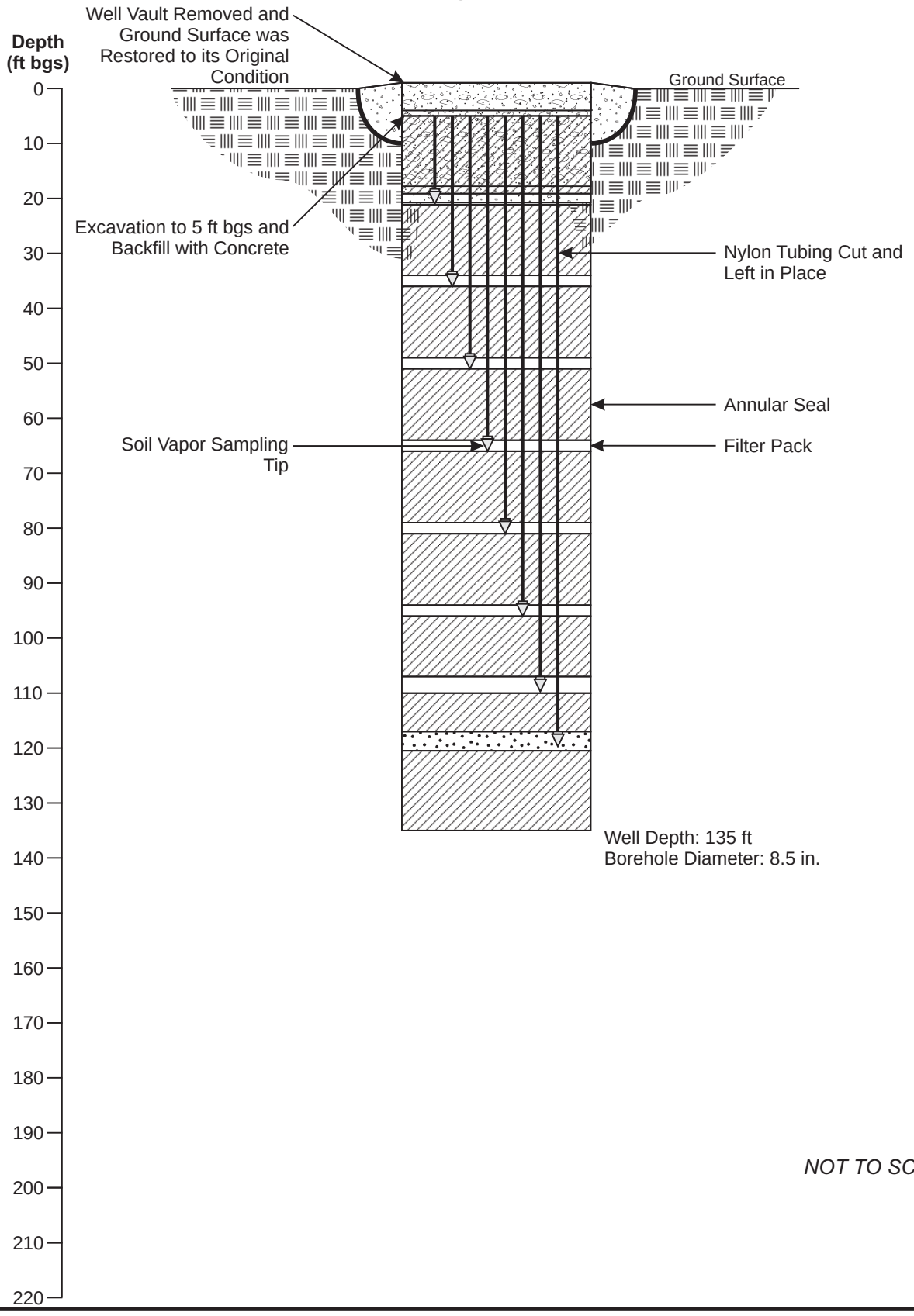
Well Depth: 210 ft
Borehole Diameter: 8.5 in.

SV-32.CDR

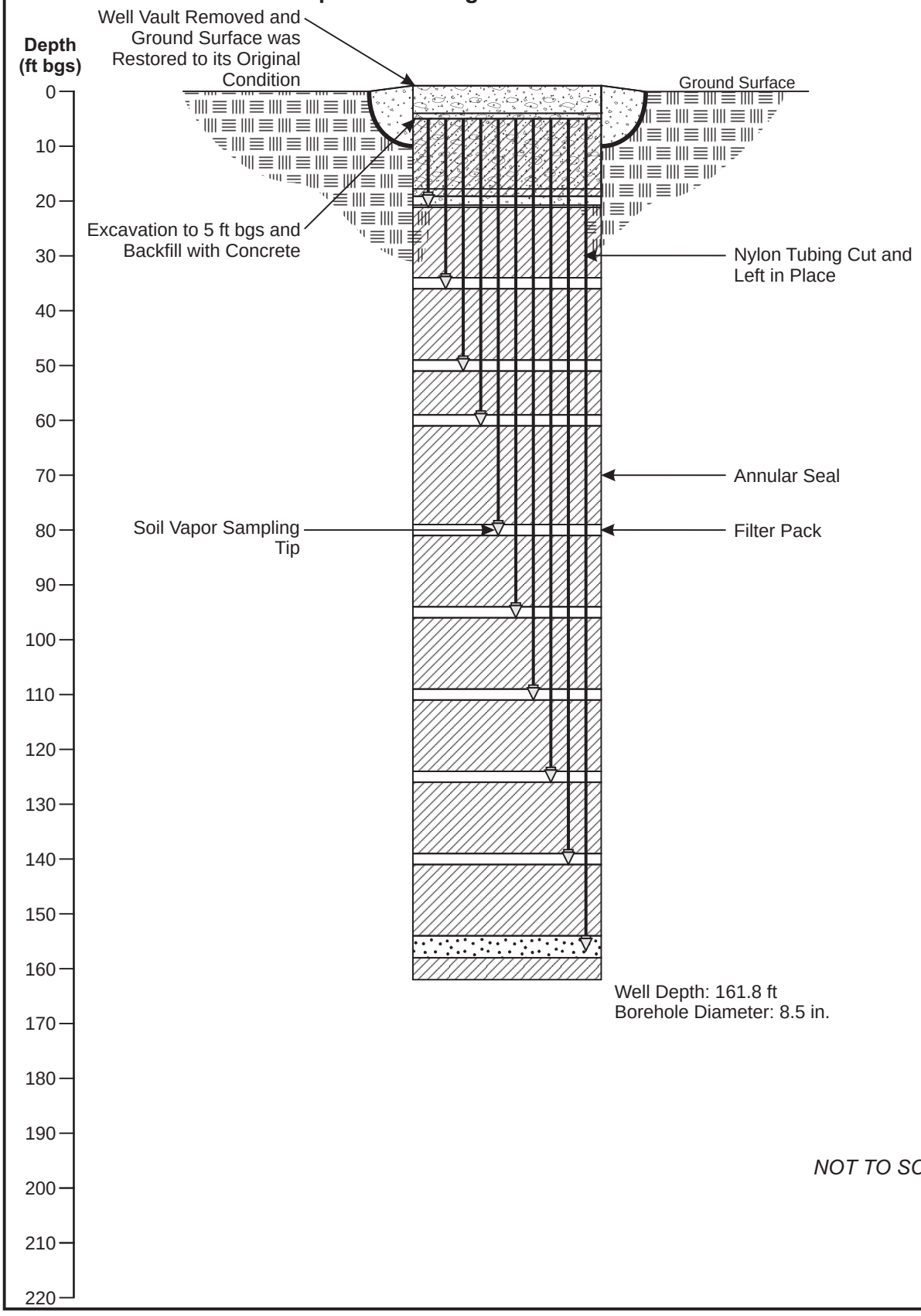
Soil Vapor Monitoring Well Abandonment - SV-33



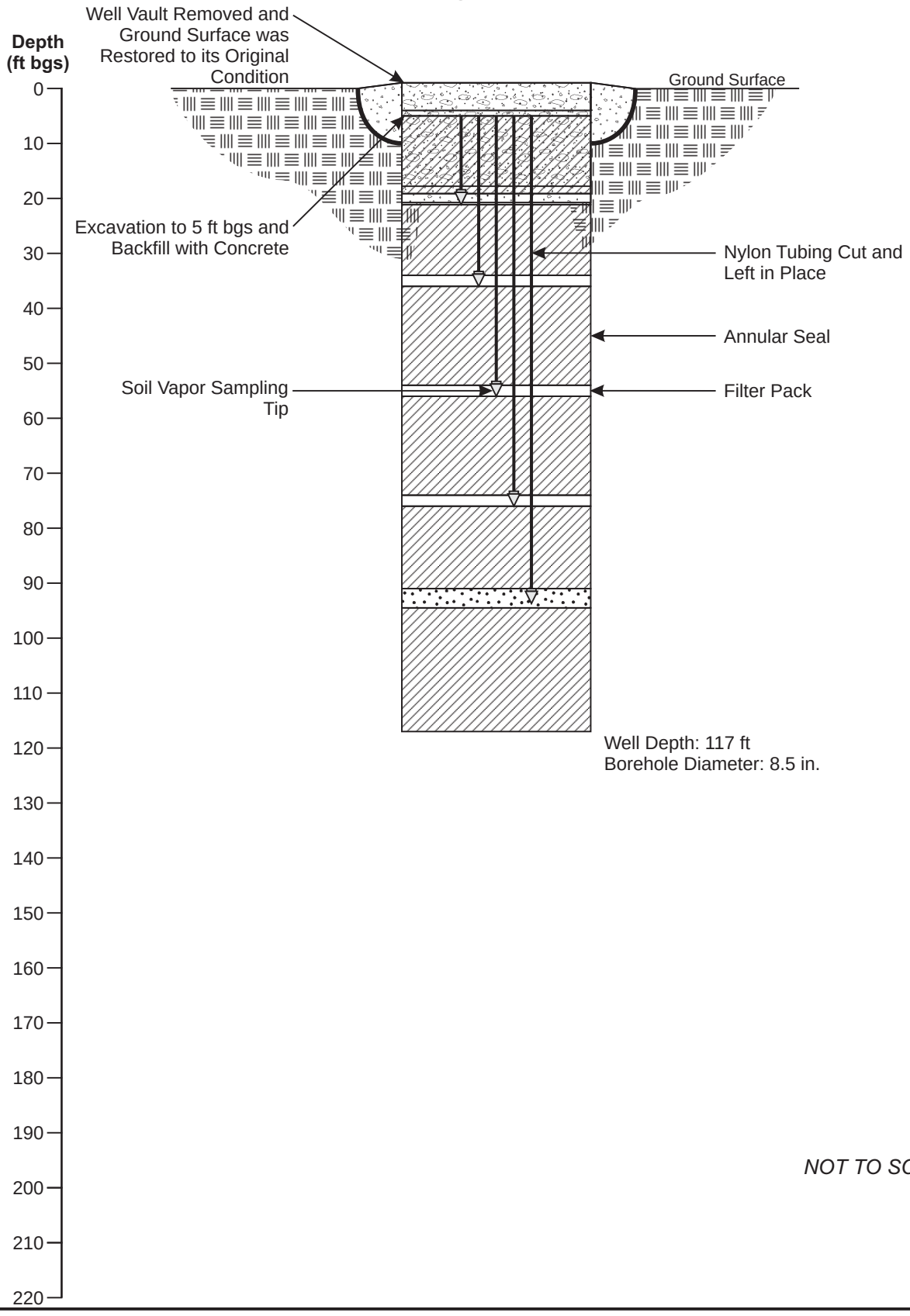
Soil Vapor Monitoring Well Abandonment - SV-34



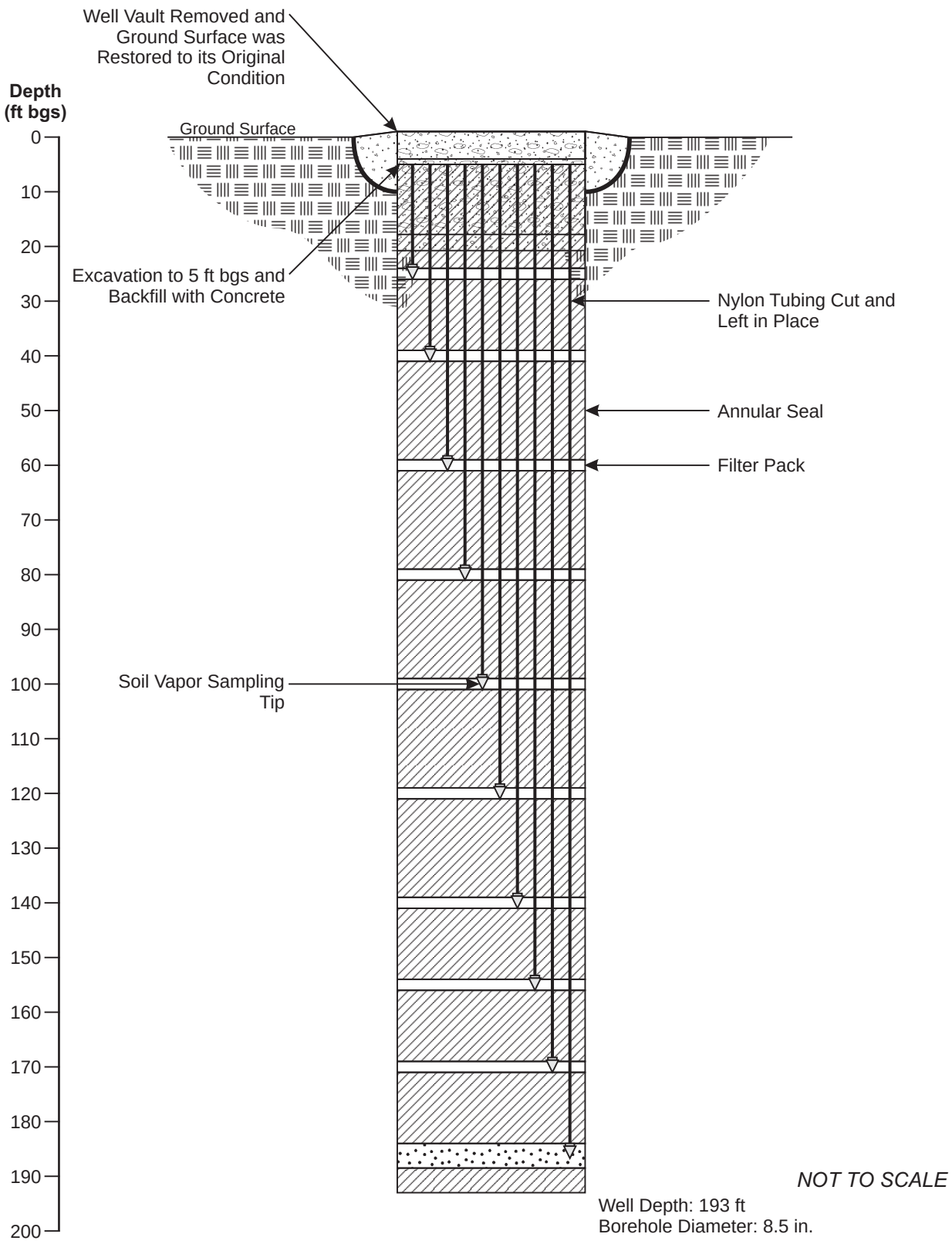
Soil Vapor Monitoring Well Abandonment - SV-35



Soil Vapor Monitoring Well Abandonment - SV-36

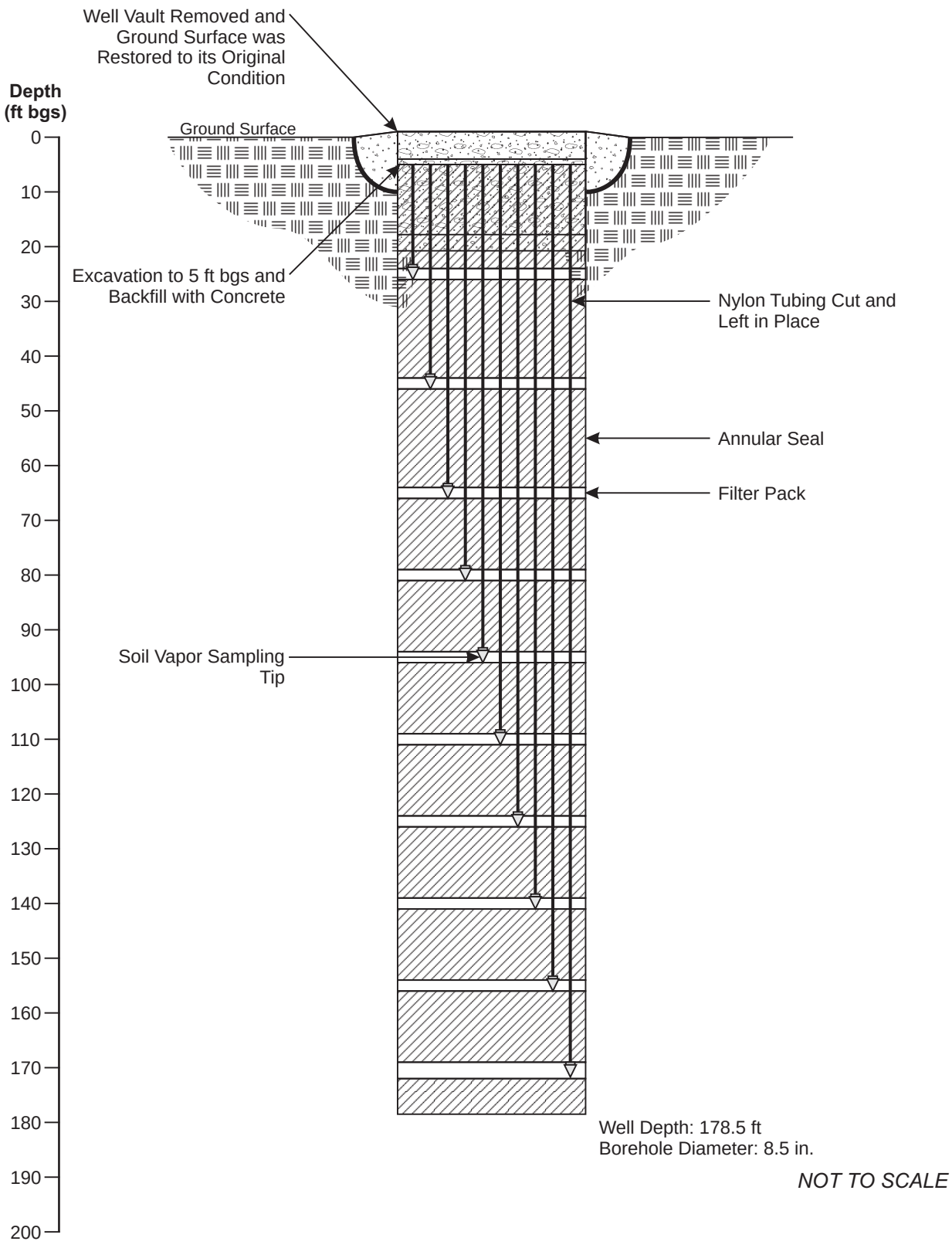


Soil Vapor Monitoring Well Abandonment - SV-37

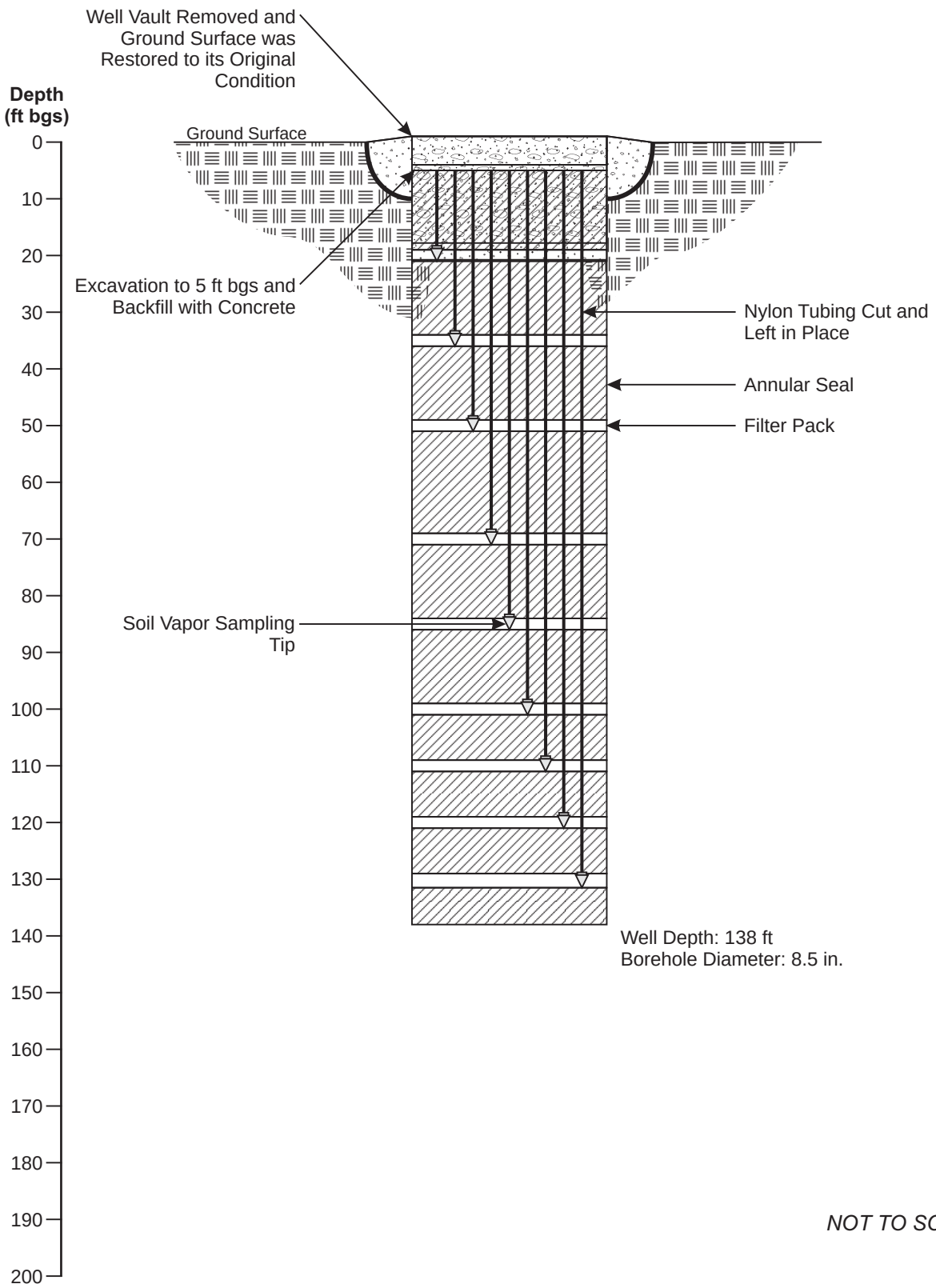


SV-37.CDR

Soil Vapor Monitoring Well Abandonment - SV-38



Soil Vapor Monitoring Well Abandonment - SV-39



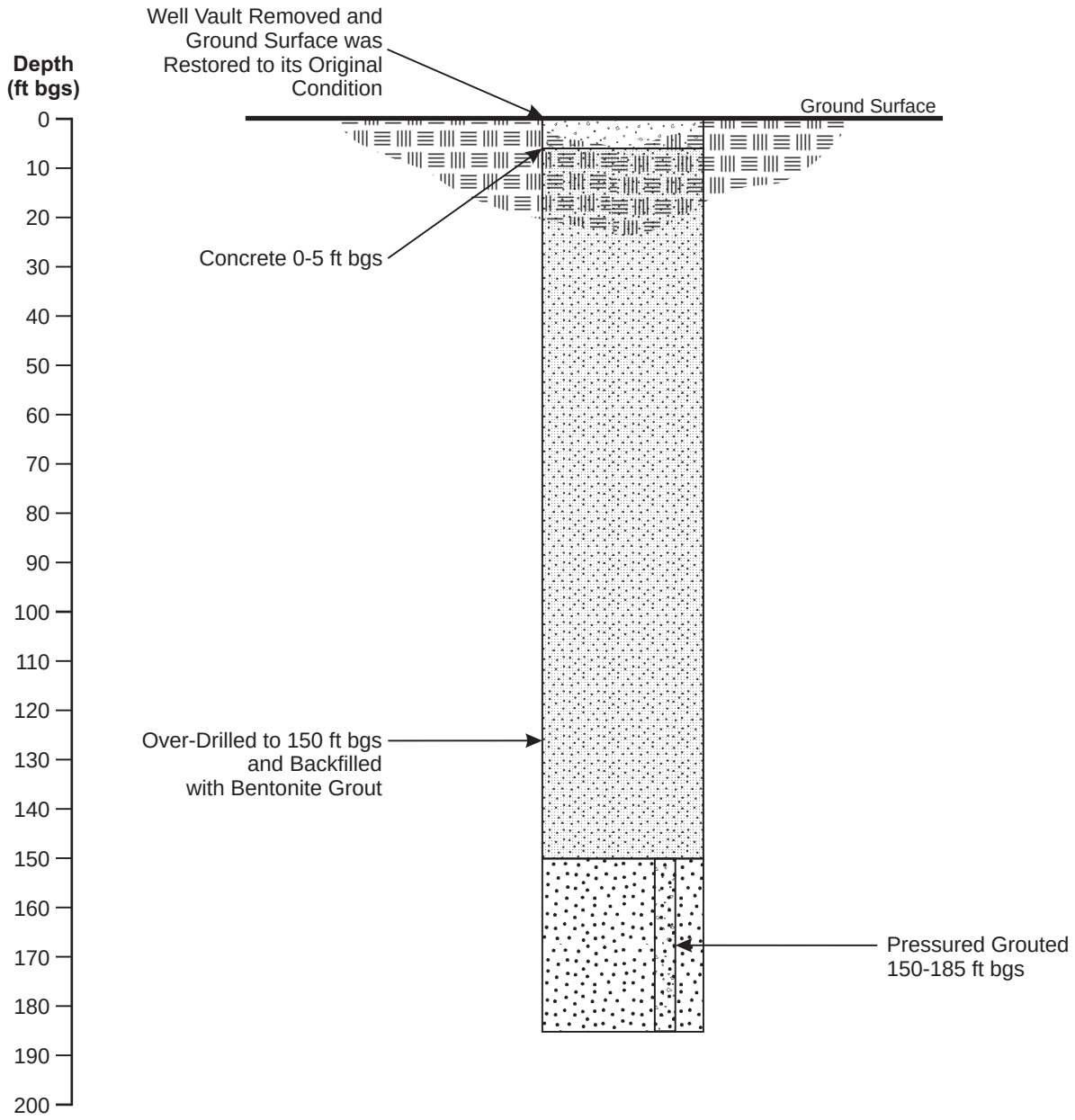
SV-39.CDR

JPL OU-2 Vapor Extraction Wells

Soil-Vapor Extraction Well Number	Date Drilling/ Installation Completed	Drilling Method	Boring Depth (ft bgs)	Borehole Diameter (inches)	Well Elevation (ft amsl)	Intervals	Screen Interval (ft bgs)	Date Video logged	Pressure Grouted	Overdrilled and grouted	Surface Completion	Destruction Dates
VE-01	1998	Unknown	185	9[(a)]	Unknown	A	44 - 84'	8/11/2008	No	0 - 150' bgs	Concrete 0 - 5' bgs	8/18/08 - 8/20/08
						B	94 - 134'		No			
						C	145 - 185'		145 - 150'			
VE-02	2002	Sonic	279	9	1235.57	A	20 - 75'	8/11/2008	No	0 - 150' bgs	Concrete 0 - 5' bgs	8/11/08 - 8/20/08
						B	88 - 98'		No			
							108 - 143'		No			
						C	155 - 210'		150 - 155'			
						D	224 - 279'		150 - 279'			
VE-03	2002	Sonic	163	9	1170.89	A	25 - 85'	8/11/2008	No	0 - 150' bgs	Concrete 0 - 5' bgs	8/12/08 - 8/19/08
						B	99 - 159'		150 - 159'			
VE-04	2002	Sonic	197	9	1149.67	A	12 - 62'	8/11/2008	No	0 - 150' bgs	Concrete 0 - 5' bgs	8/15/08 - 8/18/08
						B	76 - 126'		No			
						C	140 - 195'		150 - 195'			

Notes:
(a) Boring diameter assumed.

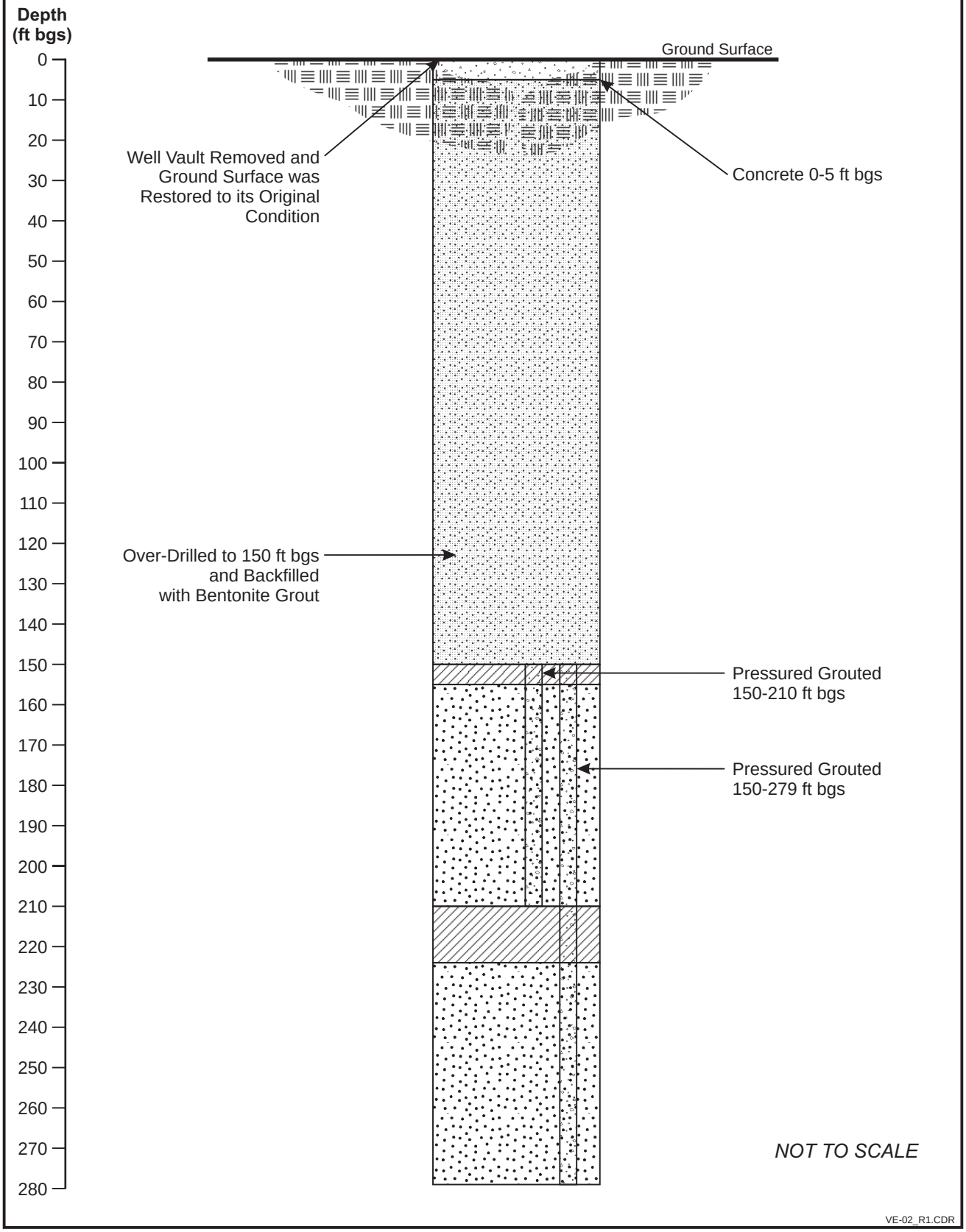
Well Abandonment Diagram - VE-01



NOT TO SCALE

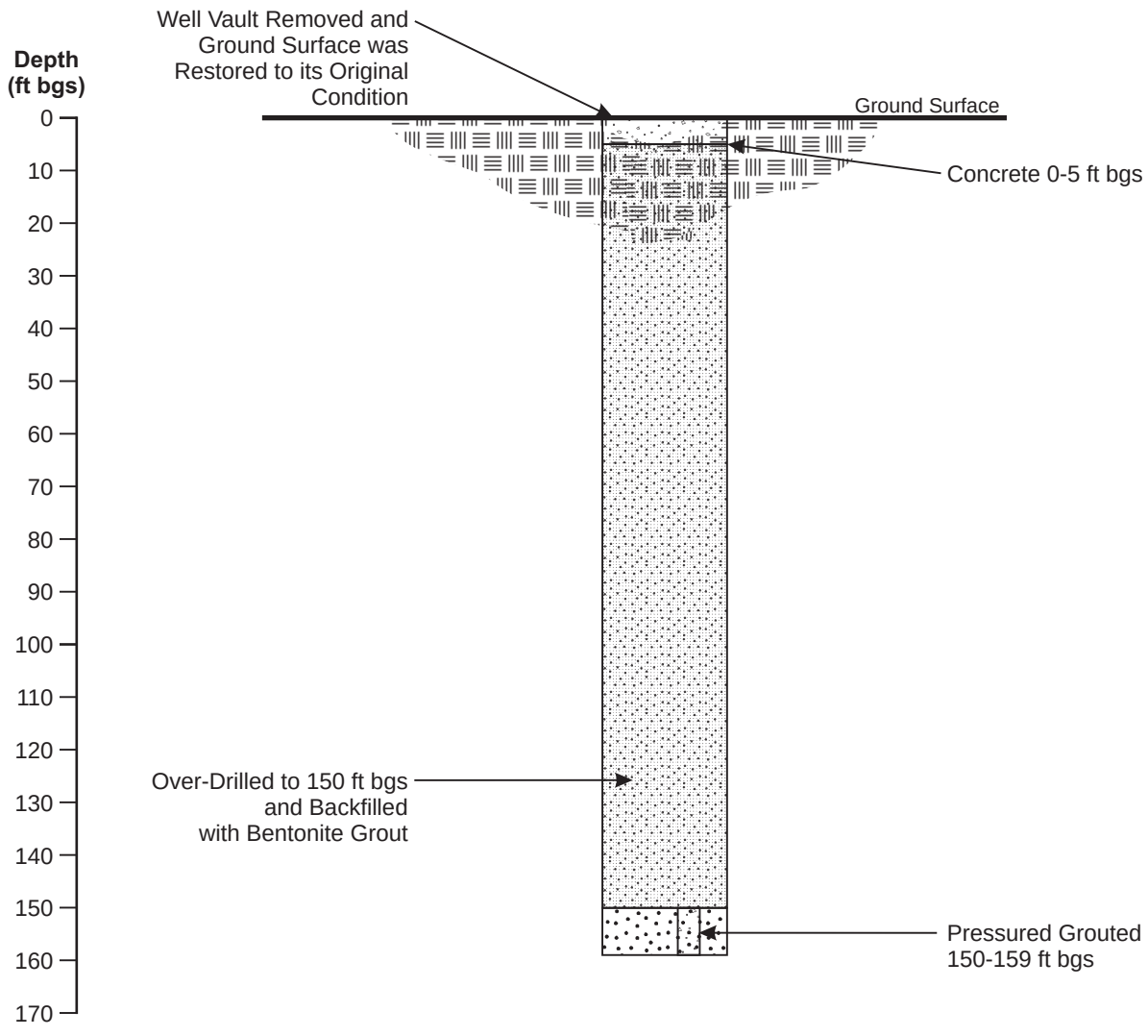
VE-01_R1.CDR

Well Abandonment Diagram - VE-02



VE-02_R1.CDR

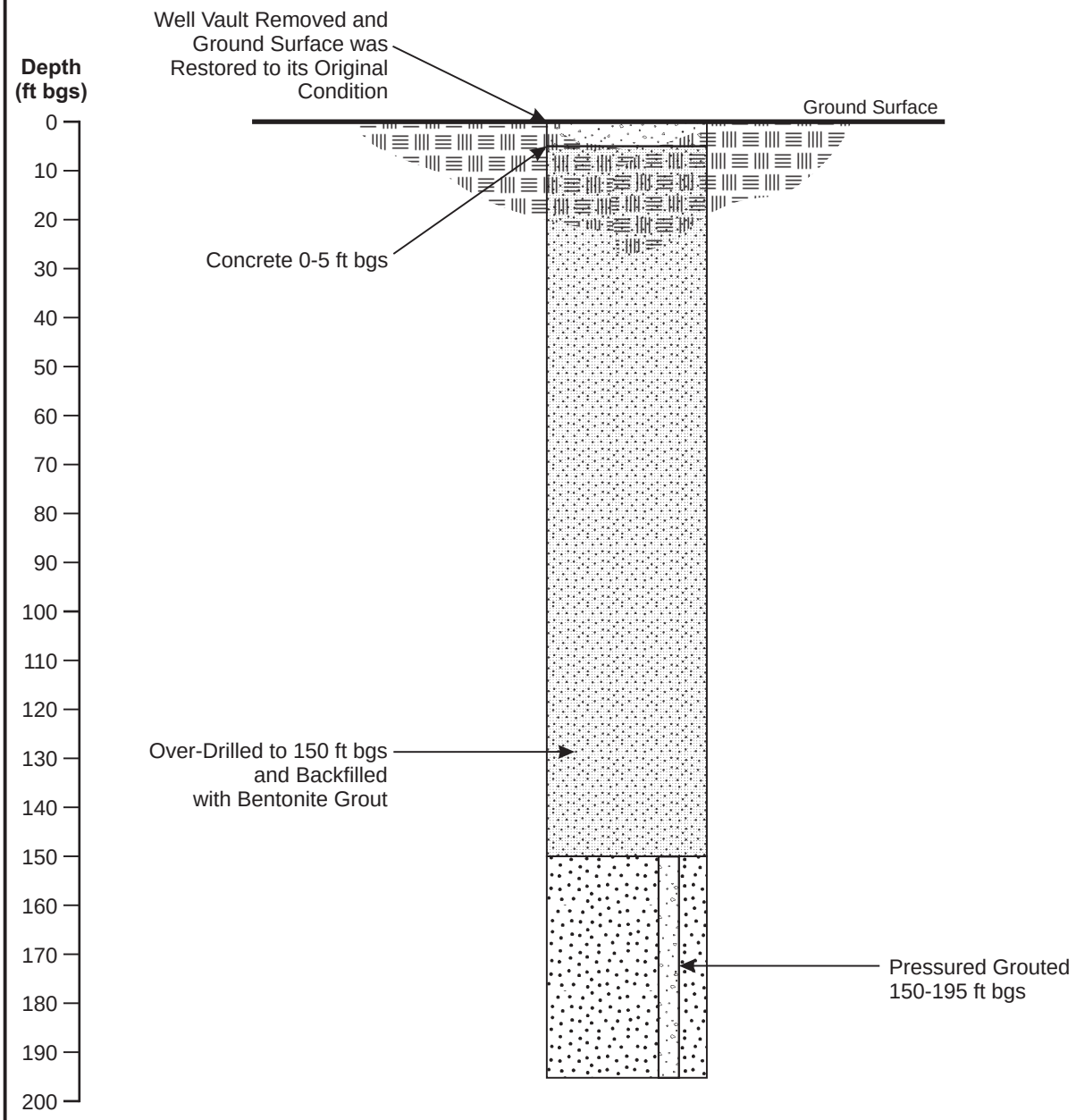
Well Abandonment Diagram - VE-03



NOT TO SCALE

VE-03_R1.CDR

Well Abandonment Diagram - VE-04



NOT TO SCALE

VE-04_R1.CDR

ATTACHMENT 4: WASTE ANALYTICAL REPORTS

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *22-Aug-08*

David Conner
Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
(619) 574-4827

CASE NARRATIVE

Project: JPL-OU2
Work Order: BMI08081441 **Cooler Temp:** °C

Alpha's Sample ID	Client's Sample ID	Matrix
08081441-01A	VE-02 comp	Soil
08081441-02A	VE-03 comp	Soil

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Note that while the Method Blank for the 8260B analysis contained concentrations of Chloromethane and Bromomethane above reporting limits, these analytes were not observed above one-half the reporting limits in the associated samples.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/14/08

Job#: JPL-OU2

Metals by ICPMS
EPA Method 1312 / SW6020 / SW6020A

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-02 comp**					
Lab ID :	BMI08081441-01A	Chromium (Cr)	1.1	0.10 mg/L	08/11/08	11/05/08
Client ID :	**VE-03 comp**					
Lab ID :	BMI08081441-02A	Chromium (Cr)	1.5	0.10 mg/L	08/13/08	11/05/08

This analysis was performed on an STLC extract.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com
Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

11/5/08
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/14/08

Job#: JPL-OU2

TCLP Metals by ICPMS
EPA Method SW6020 / SW6020A

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-02 comp**					
Lab ID :	BMI08081441-01A	Chromium (Cr)	ND	0.10 mg/L	08/11/08	10/14/08
Client ID :	**VE-03 comp**					
Lab ID :	BMI08081441-02A	Chromium (Cr)	ND	0.10 mg/L	08/13/08	10/14/08

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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10/15/08
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: JPL-OU2

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI08081441-01A
Client I.D. Number: VE-02 comp

Sampled: 08/11/08
Received: 08/14/08
Analyzed: 08/14/08

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration		Reporting Limit
1	Chloromethane	ND	B	40 µg/Kg
2	Vinyl chloride	ND		20 µg/Kg
3	Chloroethane	ND		20 µg/Kg
4	Bromomethane	ND	B	40 µg/Kg
5	Trichlorofluoromethane	ND		20 µg/Kg
6	1,1-Dichloroethene	ND		20 µg/Kg
7	Dichloromethane	ND		40 µg/Kg
8	trans-1,2-Dichloroethene	ND		20 µg/Kg
9	1,1-Dichloroethane	ND		20 µg/Kg
10	cis-1,2-Dichloroethene	ND		20 µg/Kg
11	Chloroform	ND		20 µg/Kg
12	1,2-Dichloroethane	ND		20 µg/Kg
13	1,1,1-Trichloroethane	ND		20 µg/Kg
14	Carbon tetrachloride	ND		20 µg/Kg
15	Benzene	ND		5.0 µg/Kg
16	1,2-Dichloropropane	ND		20 µg/Kg
17	Trichloroethene	ND		20 µg/Kg
18	Bromodichloromethane	ND		20 µg/Kg
19	cis-1,3-Dichloropropene	ND		20 µg/Kg
20	trans-1,3-Dichloropropene	ND		20 µg/Kg
21	1,1,2-Trichloroethane	ND		20 µg/Kg
22	Toluene	ND		5.0 µg/Kg
23	Dibromochloromethane	ND		20 µg/Kg
24	Tetrachloroethene	ND		20 µg/Kg
25	Chlorobenzene	ND		20 µg/Kg
26	Ethylbenzene	ND		5.0 µg/Kg
27	m,p-Xylene	ND		5.0 µg/Kg
28	Bromoform	ND		20 µg/Kg
29	o-Xylene	ND		5.0 µg/Kg
30	1,1,2,2-Tetrachloroethane	ND		20 µg/Kg
31	1,3-Dichlorobenzene	ND		20 µg/Kg
32	1,4-Dichlorobenzene	ND		20 µg/Kg
33	1,2-Dichlorobenzene	ND		20 µg/Kg
34	Surr: 1,2-Dichloroethane-d4	96		(69-126) %REC
35	Surr: Toluene-d8	99		(85-115) %REC
36	Surr: 4-Bromofluorobenzene	111		(85-120) %REC

B = Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.

This replaces the report originally signed 8/15/08, due to the addition of B qualifiers. See Case Narrative for further details.

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

8/22/08
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: JPL-OU2

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI08081441-02A
Client I.D. Number: VE-03 comp

Sampled: 08/13/08
Received: 08/14/08
Analyzed: 08/14/08

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration		Reporting Limit
1	Chloromethane	ND	B	40 µg/Kg
2	Vinyl chloride	ND		20 µg/Kg
3	Chloroethane	ND		20 µg/Kg
4	Bromomethane	ND	B	40 µg/Kg
5	Trichlorofluoromethane	ND		20 µg/Kg
6	1,1-Dichloroethene	ND		20 µg/Kg
7	Dichloromethane	ND		40 µg/Kg
8	trans-1,2-Dichloroethene	ND		20 µg/Kg
9	1,1-Dichloroethane	ND		20 µg/Kg
10	cis-1,2-Dichloroethene	ND		20 µg/Kg
11	Chloroform	ND		20 µg/Kg
12	1,2-Dichloroethane	ND		20 µg/Kg
13	1,1,1-Trichloroethane	ND		20 µg/Kg
14	Carbon tetrachloride	ND		20 µg/Kg
15	Benzene	5.4		5.0 µg/Kg
16	1,2-Dichloropropane	ND		20 µg/Kg
17	Trichloroethene	ND		20 µg/Kg
18	Bromodichloromethane	ND		20 µg/Kg
19	cis-1,3-Dichloropropene	ND		20 µg/Kg
20	trans-1,3-Dichloropropene	ND		20 µg/Kg
21	1,1,2-Trichloroethane	ND		20 µg/Kg
22	Toluene	36		5.0 µg/Kg
23	Dibromochloromethane	ND		20 µg/Kg
24	Tetrachloroethene	ND		20 µg/Kg
25	Chlorobenzene	ND		20 µg/Kg
26	Ethylbenzene	ND		5.0 µg/Kg
27	m,p-Xylene	ND		5.0 µg/Kg
28	Bromoform	ND		20 µg/Kg
29	o-Xylene	ND		5.0 µg/Kg
30	1,1,2,2-Tetrachloroethane	ND		20 µg/Kg
31	1,3-Dichlorobenzene	ND		20 µg/Kg
32	1,4-Dichlorobenzene	ND		20 µg/Kg
33	1,2-Dichlorobenzene	ND		20 µg/Kg
34	Surr: 1,2-Dichloroethane-d4	94		(69-126) %REC
35	Surr: Toluene-d8	101		(85-115) %REC
36	Surr: 4-Bromofluorobenzene	113		(85-120) %REC

B = Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.

This replaces the report originally signed 8/15/08, due to the addition of B qualifiers. See Case Narrative for further details.

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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8/22/08
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/14/08

Job#: JPL:OU-2

Chromium +6
EPA Method 7196A

	Parameter	Concentration	Reporting Limit	Date / Time Sampled	Date / Time Analyzed
Client ID : **VE-02 comp**	Chromium (Cr), Hexavalent (+6)	ND	2.0 mg/Kg	08/11/08 14:30	08/19/08 15:48
Lab ID : BMI08081441-01A					
Client ID : **VE-03 comp**	Chromium (Cr), Hexavalent (+6)	ND	2.0 mg/Kg	08/13/08 08:00	08/19/08 15:51
Lab ID : BMI08081441-02A					

Note: Vanadium, Iron, Molybdenum, and Mercury may enhance the absorption measured at the same wavelength as Cr+6.

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

C
8/20/08
Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/14/08

Job#: JPL:OU-2

Perchlorate by Ion Chromatography
EPA Method 314.0

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-02 comp**					
Lab ID :	BMI08081441-01A	Perchlorate	26.1	20.0 µg/Kg	08/11/08	08/14/08
Client ID :	**VE-03 comp**					
Lab ID :	BMI08081441-02A	Perchlorate	29.3	20.0 µg/Kg	08/13/08	08/14/08

Sample results were calculated on a wet weight basis.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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8/15/08
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/14/08

Job#: JPL:OU-2

Specific Conductance at 25°C
EPA Method 120.1 / SM2510B / SW9050A

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-02 comp**					
Lab ID :	BMI08081441-01A	Specific Conductance (at 25°C)	1,600	10 µS/cm	08/11/08	08/15/08
Client ID :	**VE-03 comp**					
Lab ID :	BMI08081441-02A	Specific Conductance (at 25°C)	1,600	10 µS/cm	08/13/08	08/15/08

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: JPL:OU-2

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI08081441-01A
Client I.D. Number: VE-02 comp

Sampled: 08/11/08
Received: 08/14/08
Analyzed: 08/14/08

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration		Reporting Limit			Compound	Concentration		Reporting Limit	
1	Phenol	ND		660	µg/Kg	36	Hexachlorobenzene	ND		660	µg/Kg
2	2-Chlorophenol	ND		660	µg/Kg	37	Pentachlorophenol	ND		3,300	µg/Kg
3	Bis(2-chloroethyl)ether	ND		660	µg/Kg	38	Phenanthrene	ND		660	µg/Kg
4	1,3-Dichlorobenzene	ND		1,300	µg/Kg	39	Anthracene	ND		660	µg/Kg
5	1,4-Dichlorobenzene	ND		1,300	µg/Kg	40	Di-n-butyl phthalate	ND		3,300	µg/Kg
6	1,2-Dichlorobenzene	ND		1,300	µg/Kg	41	Fluoranthene	ND		660	µg/Kg
7	Bis(2-chloroisopropyl)ether	ND		660	µg/Kg	42	Pyrene	ND		660	µg/Kg
8	N-Nitrosodi-n-propylamine	ND		660	µg/Kg	43	Butyl benzyl phthalate	ND		1,300	µg/Kg
9	Hexachloroethane	ND		1,300	µg/Kg	44	Benzo(a)anthracene	ND		660	µg/Kg
10	Nitrobenzene	ND		660	µg/Kg	45	3,3'-Dichlorobenzidine	ND		1,300	µg/Kg
11	Isophorone	ND		660	µg/Kg	46	Chrysene	ND		660	µg/Kg
12	2-Nitrophenol	ND	J	660	µg/Kg	47	Bis(2-ethylhexyl)phthalate	ND		3,300	µg/Kg
13	2,4-Dimethylphenol	ND	Q	660	µg/Kg	48	Di-n-octyl phthalate	ND		3,300	µg/Kg
14	Bis(2-chloroethoxy)methane	ND		660	µg/Kg	49	Benzo(b)fluoranthene	ND		660	µg/Kg
15	2,4-Dichlorophenol	ND	J	660	µg/Kg	50	Benzo(k)fluoranthene	ND		660	µg/Kg
16	1,2,4-Trichlorobenzene	ND		660	µg/Kg	51	Benzo(a)pyrene	ND		660	µg/Kg
17	Naphthalene	ND		660	µg/Kg	52	Indeno(1,2,3-cd)pyrene	ND		660	µg/Kg
18	Hexachlorobutadiene	ND		1,300	µg/Kg	53	Dibenz(a,h)anthracene	ND		660	µg/Kg
19	4-Chloro-3-methylphenol	ND		1,300	µg/Kg	54	Benzo(g,h,i)perylene	ND		660	µg/Kg
20	Hexachlorocyclopentadiene	ND		6,600	µg/Kg	55	Surr: 2-Fluorophenol	48		(35-105)	%REC
21	2,4,6-Trichlorophenol	ND	J	660	µg/Kg	56	Surr: Phenol-d5	71		(40-100)	%REC
22	2-Chloronaphthalene	ND		660	µg/Kg	57	Surr: Nitrobenzene-d5	83		(35-100)	%REC
23	Dimethyl phthalate	ND		660	µg/Kg	58	Surr: 2-Fluorobiphenyl	88		(45-105)	%REC
24	Acenaphthylene	ND	Q	660	µg/Kg	59	Surr: 2,4,6-Tribromophenol	22	S54	(35-125)	%REC
25	2,6-Dinitrotoluene	ND		660	µg/Kg	60	Surr: 4-Terphenyl-d14	76		(30-125)	%REC
26	Acenaphthene	ND		660	µg/Kg						
27	2,4-Dinitrophenol	ND	J	6,600	µg/Kg						
28	4-Nitrophenol	ND	J	3,300	µg/Kg						
29	2,4-Dinitrotoluene	ND		660	µg/Kg						
30	Diethyl phthalate	ND		660	µg/Kg						
31	Fluorene	ND		660	µg/Kg						
32	4-Chlorophenyl phenyl ether	ND		660	µg/Kg						
33	4,6-Dinitro-2-methylphenol	ND	J	6,600	µg/Kg						
34	N-Nitrosodiphenylamine	ND		660	µg/Kg						
35	4-Bromophenyl phenyl ether	ND		660	µg/Kg						

Data flags are DOD specified with criteria that may differ from EPA or inhouse statistical criteria.

J= Estimated: The analyte was positively identified; the quantitation is an estimation.

Q = One or more quality control criteria failed. Data usability should be carefully assessed by the project team.

S54 = Surrogate recovery was below laboratory acceptance limits.

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

8/15/08
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: JPL:OU-2

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI08081441-02A
Client I.D. Number: VE-03 comp

Sampled: 08/13/08
Received: 08/14/08
Analyzed: 08/15/08

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Phenol	ND	660	µg/Kg	36 Hexachlorobenzene	ND	660	µg/Kg
2	2-Chlorophenol	ND	660	µg/Kg	37 Pentachlorophenol	ND	3,300	µg/Kg
3	Bis(2-chloroethyl)ether	ND	660	µg/Kg	38 Phenanthrene	ND	660	µg/Kg
4	1,3-Dichlorobenzene	ND	1,300	µg/Kg	39 Anthracene	ND	660	µg/Kg
5	1,4-Dichlorobenzene	ND	1,300	µg/Kg	40 Di-n-butyl phthalate	ND	3,300	µg/Kg
6	1,2-Dichlorobenzene	ND	1,300	µg/Kg	41 Fluoranthene	ND	660	µg/Kg
7	Bis(2-chloroisopropyl)ether	ND	660	µg/Kg	42 Pyrene	ND	660	µg/Kg
8	N-Nitrosodi-n-propylamine	ND	660	µg/Kg	43 Butyl benzyl phthalate	ND	1,300	µg/Kg
9	Hexachloroethane	ND	1,300	µg/Kg	44 Benzo(a)anthracene	ND	660	µg/Kg
10	Nitrobenzene	ND	660	µg/Kg	45 3,3'-Dichlorobenzidine	ND	1,300	µg/Kg
11	Isophorone	ND	660	µg/Kg	46 Chrysene	ND	660	µg/Kg
12	2-Nitrophenol	ND	660	µg/Kg	47 Bis(2-ethylhexyl)phthalate	ND	3,300	µg/Kg
13	2,4-Dimethylphenol	ND	660	µg/Kg	48 Di-n-octyl phthalate	ND	3,300	µg/Kg
14	Bis(2-chloroethoxy)methane	ND	660	µg/Kg	49 Benzo(b)fluoranthene	ND	660	µg/Kg
15	2,4-Dichlorophenol	ND	660	µg/Kg	50 Benzo(k)fluoranthene	ND	660	µg/Kg
16	1,2,4-Trichlorobenzene	ND	660	µg/Kg	51 Benzo(a)pyrene	ND	660	µg/Kg
17	Naphthalene	ND	660	µg/Kg	52 Indeno(1,2,3-cd)pyrene	ND	660	µg/Kg
18	Hexachlorobutadiene	ND	1,300	µg/Kg	53 Dibenz(a,h)anthracene	ND	660	µg/Kg
19	4-Chloro-3-methylphenol	ND	1,300	µg/Kg	54 Benzo(g,h,i)perylene	ND	660	µg/Kg
20	Hexachlorocyclopentadiene	ND	6,600	µg/Kg	55 Surr: 2-Fluorophenol	90	(35-105)	%REC
21	2,4,6-Trichlorophenol	ND	660	µg/Kg	56 Surr: Phenol-d5	86	(40-100)	%REC
22	2-Chloronaphthalene	ND	660	µg/Kg	57 Surr: Nitrobenzene-d5	86	(35-100)	%REC
23	Dimethyl phthalate	ND	660	µg/Kg	58 Surr: 2-Fluorobiphenyl	93	(45-105)	%REC
24	Acenaphthylene	ND	660	µg/Kg	59 Surr: 2,4,6-Tribromophenol	74	(35-125)	%REC
25	2,6-Dinitrotoluene	ND	660	µg/Kg	60 Surr: 4-Terphenyl-d14	79	(30-125)	%REC
26	Acenaphthene	ND	660	µg/Kg				
27	2,4-Dinitrophenol	ND	6,600	µg/Kg				
28	4-Nitrophenol	ND	3,300	µg/Kg				
29	2,4-Dinitrotoluene	ND	660	µg/Kg				
30	Diethyl phthalate	ND	660	µg/Kg				
31	Fluorene	ND	660	µg/Kg				
32	4-Chlorophenyl phenyl ether	ND	660	µg/Kg				
33	4,6-Dinitro-2-methylphenol	ND	6,600	µg/Kg				
34	N-Nitrosodiphenylamine	ND	660	µg/Kg				
35	4-Bromophenyl phenyl ether	ND	660	µg/Kg				

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

8/15/08
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/14/08

Job#: JPL:OU-2

GC/MSD by Direct injection
EPA Method SW8260B-DI

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-02 comp**					
Lab ID :	BMI08081441-01A	1,4-Dioxane	ND	50 µg/Kg	08/11/08	08/15/08
		Surr: Hexafluoro-2-propanol	88	(70-133) %REC	08/11/08	08/15/08
Client ID :	**VE-03 comp**					
Lab ID :	BMI08081441-02A	1,4-Dioxane	ND	50 µg/Kg	08/13/08	08/15/08
		Surr: Hexafluoro-2-propanol	94	(70-133) %REC	08/13/08	08/15/08

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/14/08

Job#: JPL:OU-2

Total Petroleum Hydrocarbons - Extractable (TPH-E) EPA Method SW8015B
Total Petroleum Hydrocarbons - Purgeable (TPH-P) EPA Method SW8015B

		Parameter	Concentration		Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-02 comp**	TPH-E (DRO)	ND		5.0 mg/Kg	08/11/08	08/14/08
Lab ID :	BMI08081441-01A	TPH-E (ORO)	ND		10 mg/Kg	08/11/08	08/14/08
		Surr: Nonane	108		(44-159) %REC	08/11/08	08/14/08
		TPH-P (GRO)	ND		1.0 mg/Kg	08/11/08	08/14/08
		Surr: 1,2-Dichloroethane-d4	96		(69-126) %REC	08/11/08	08/14/08
		Surr: Toluene-d8	99		(80-120) %REC	08/11/08	08/14/08
		Surr: 4-Bromofluorobenzene	111		(80-120) %REC	08/11/08	08/14/08
Client ID :	**VE-03 comp**	TPH-E (DRO)	11	L	5.0 mg/Kg	08/13/08	08/14/08
Lab ID :	BMI08081441-02A	TPH-E (ORO)	90	G	10 mg/Kg	08/13/08	08/14/08
		Surr: Nonane	107		(44-159) %REC	08/13/08	08/14/08
		TPH-P (GRO)	ND		1.0 mg/Kg	08/13/08	08/14/08
		Surr: 1,2-Dichloroethane-d4	94		(69-126) %REC	08/13/08	08/14/08
		Surr: Toluene-d8	101		(80-120) %REC	08/13/08	08/14/08
		Surr: 4-Bromofluorobenzene	113		(80-120) %REC	08/13/08	08/14/08

Diesel Range Organics (DRO) C13-C22

G = ORO compounds have varying amounts of recovery.

Gasoline Range Organics (GRO) C4-C13

L = DRO concentration may include contributions from heavier-end hydrocarbons (e.g. motor oil) that elute in the DRO range.

Oil Range Organics (ORO) C22-C40+

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

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8/15/08
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/14/08

Job#: JPL:OU-2

Metals by ICPMS
EPA Method SW6020 / SW6020A

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-02 comp**					
Lab ID :	BMI08081441-01A	Beryllium (Be)	ND	1.0 mg/Kg	08/11/08	08/14/08
		Vanadium (V)	9.6	1.0 mg/Kg	08/11/08	08/14/08
		Chromium (Cr)	220	1.0 mg/Kg	08/11/08	08/14/08
		Cobalt (Co)	3.2	1.0 mg/Kg	08/11/08	08/14/08
		Nickel (Ni)	8.5	2.0 mg/Kg	08/11/08	08/14/08
		Copper (Cu)	12	2.0 mg/Kg	08/11/08	08/14/08
		Zinc (Zn)	64	20 mg/Kg	08/11/08	08/14/08
		Arsenic (As)	4.0	1.0 mg/Kg	08/11/08	08/14/08
		Selenium (Se)	ND	1.0 mg/Kg	08/11/08	08/14/08
		Strontium (Sr)	69	4.0 mg/Kg	08/11/08	08/14/08
		Molybdenum (Mo)	17	1.0 mg/Kg	08/11/08	08/14/08
		Silver (Ag)	ND	1.0 mg/Kg	08/11/08	08/14/08
		Cadmium (Cd)	ND	1.0 mg/Kg	08/11/08	08/14/08
		Antimony (Sb)	1.9	1.0 mg/Kg	08/11/08	08/14/08
		Barium (Ba)	95	1.0 mg/Kg	08/11/08	08/14/08
		Mercury (Hg)	ND	0.20 mg/Kg	08/11/08	08/14/08
		Thallium (Tl)	ND	1.0 mg/Kg	08/11/08	08/14/08
		Lead (Pb)	5.4	1.0 mg/Kg	08/11/08	08/14/08
Client ID :	**VE-03 comp**					
Lab ID :	BMI08081441-02A	Beryllium (Be)	ND	1.0 mg/Kg	08/13/08	08/14/08
		Vanadium (V)	12	1.0 mg/Kg	08/13/08	08/14/08
		Chromium (Cr)	240	1.0 mg/Kg	08/13/08	08/14/08
		Cobalt (Co)	4.2	1.0 mg/Kg	08/13/08	08/14/08
		Nickel (Ni)	9.2	2.0 mg/Kg	08/13/08	08/14/08
		Copper (Cu)	16	2.0 mg/Kg	08/13/08	08/14/08
		Zinc (Zn)	43	20 mg/Kg	08/13/08	08/14/08
		Arsenic (As)	2.6	1.0 mg/Kg	08/13/08	08/14/08
		Selenium (Se)	ND	1.0 mg/Kg	08/13/08	08/14/08
		Strontium (Sr)	49	4.0 mg/Kg	08/13/08	08/14/08
		Molybdenum (Mo)	19	1.0 mg/Kg	08/13/08	08/14/08
		Silver (Ag)	ND	1.0 mg/Kg	08/13/08	08/14/08
		Cadmium (Cd)	ND	1.0 mg/Kg	08/13/08	08/14/08
		Antimony (Sb)	ND	1.0 mg/Kg	08/13/08	08/14/08
		Barium (Ba)	160	1.0 mg/Kg	08/13/08	08/14/08
		Mercury (Hg)	ND	0.20 mg/Kg	08/13/08	08/14/08
		Thallium (Tl)	ND	1.0 mg/Kg	08/13/08	08/14/08
		Lead (Pb)	7.7	1.0 mg/Kg	08/13/08	08/14/08

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

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8/15/08

Report Date

Laboratory Report
Report ID: 92940

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 8/15/2008
Client: ALP-855
Taken by: Client
PO #:

Dear Alpha Analytical,

It is the policy of Sierra Environmental Monitoring, Inc to strictly adhere to a comprehensive Quality Assurance Plan that insures the data presented in this report are both accurate and precise. Sierra Environmental Monitoring, Inc. maintains accreditation in the State of Nevada (NV-15) and the State of California (ELAP 2526).

The data presented in this report were obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with appropriate explanation in the Analysis Report section of this Laboratory Report.

General Comments:

- There are no general comments for this report.

Individual Sample Comments:

- There are no specific comments that are associated with these samples.

Approved By: **Date:**

Sierra Environmental Monitoring, Inc. 8/15/2008

John Kobza, Ph.D.
Laboratory Director

1135 Financial Blvd.
Reno, NV 89502-2348
Phone (775) 857-2400
FAX (775) 857-2404
sem@sem-analytical.com

John C. Seher
Special Consultant
Quality Assurance Manager

Laboratory Report
Report ID: 92940

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 8/15/2008
Client: ALP-855
Taken by: Client
PO #:

Analysis Report

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S200808-0868	BMI08081441-01 - VE-02-comp	8/11/2008	2:30 PM	8/14/2008

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
Cyanide,Total	SM 4500 CN C	<0.5	mg/Kg	0.5	Kobza	8/14/2008	

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S200808-0869	BMI08081441-02 - VE-03-comp	8/13/2008	8:00 AM	8/14/2008

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
Cyanide,Total	SM 4500 CN C	<0.5	mg/Kg	0.5	Kobza	8/14/2008	

Data Flag Legend:

John Kobza, Ph.D.
Laboratory Director

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John C. Seher
Special Consultant
Quality Assurance Manager

Laboratory Report
Report ID: 92940

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 8/15/2008
Client: ALP-855
Taken by: Client
PO #:

Quality Control Report

Parameter	*LCS, % Recovery*	*MS, % Recovery*	*MSD, % Recovery*	*RPD, %*	*Method Blank*
Cyanide,Total	87.0	91.0			<0.005 mg/L

Legend: ***LCS- Laboratory Control Standard*** ***MS- Matrix Spike*** ***MSD- Matrix Spike Duplicate***
RPD- Relative Percent Difference

John Kobza, Ph.D.
Laboratory Director

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Reno, NV 89502-2348
Phone (775) 857-2400
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sem@sem-analytical.com

John C. Seher
Special Consultant
Quality Assurance Manager

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : none Job : JPL-OU2

CHAIN-OF-CUSTODY RECORD

RUSH AMENDED CA #3

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

WorkOrder : BMI08081441

Report Due By : 5:00 PM On : 15-Aug-08

Amendment #3 Due 11/5/08

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
°C	14-Aug-08	**03-Nov-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 314_S	ALCOHOL_S	BNA_S	CONDUCTIVITY	CYANIDE_TOTAL	METALS_CR6_S	METALS_SO	METALS_STLC	Sample Remarks
BMI08081441-01A	VE-02 comp	SO	08/11/08 14:30	3	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Total Cyanide	Cr6	CAM_17/Sr_TTLC	STLC Cr	
BMI08081441-02A	VE-03 comp	SO	08/13/08 08:00	3	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Total Cyanide	Cr6	CAM_17/Sr_TTLC	STLC Cr	

Comments: No security seals. Frozen ice. Temp blank #7771 rec'd @ 4°. 24hr TAT. Total Cyanide subbed to SEM. Client is aware that he will recieve results on 48hr for 8270 due: 8/18/08. Amended 10/10/08 14:02 to add STLC Cr to both samples on 48hr TAT. : Per David Conner. Due: 10/14/08. TP Amended #2 10/13/08 09:30 to remove STLC Cr and add TCLP Cr on 48 HR TAT,per David. Due 10/15/08.KM Amended #3 11/3/08 10:30 to add STLC Cr to both samples, per email from Ben on ASAP TAT- Due Wedneday 11/5/08. LE

	Signature	Print Name	Company	Date/Time
Logged in by:	Latricia Edrosa	Latricia Edrosa	Alpha Analytical, Inc.	11/3/08 10:30

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

CHAIN-OF-CUSTODY RECORD

CA AMENDED #3

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI08081441

Report Due By : 5:00 PM On : 15-Aug-08

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

EDD Required : **Yes**

Sampled by : Client

PO :

Client's COC # : none Job : JPL-OU2

Cooler Temp	Samples Received	Date Printed
°C	14-Aug-08	**03-Nov-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests: METALS_TCLP	TPH/E_S	TPH/P_S	VOC_S					Sample Remarks
BMI08081441-01A	VE-02 comp	SO	08/11/08 14:30	3	1	1	TCLP_Cr	TPH/E_C	GAS-C	8260_Cs					
BMI08081441-02A	VE-03 comp	SO	08/13/08 08:00	3	1	1	TCLP_Cr	TPH/E_C	GAS-C	8260_Cs					

Comments: No security seals. Frozen ice. Temp blank #7771 rec'd @ 4°. 24hr TAT. Total Cyanide subbed to SEM. Client is aware that he will recieve results on 48hr for 8270 due: 8/18/08. Amended 10/10/08 14:02 to add STLC Cr to both samples on 48hr TAT. : Per David Conner. Due: 10/14/08. TP Amended #2 10/13/08 09:30 to remove STLC Cr and add TCLP Cr on 48 HR TAT,per David. Due 10/15/08.KM Amended #3 11/3/08 10:30 to add STLC Cr to both samples, per email from Ben on ASAP TAT- Due Wednesday 11/5/08. LE

	Signature	Print Name	Company	Date/Time
Logged in by:	Latricia Edrosa	Latricia Edrosa	Alpha Analytical, Inc.	11/3/08 10:30

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
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Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : none Job : JPL-OU2

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

CAR... #2

WorkOrder : BMI08081441

Report Due By : 5:00 PM On : 15-Aug-08

Amendment due 10/15/08

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
°C	14-Aug-08	**13-Oct-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 314_S	ALCOHOL_S	BNA_S	CONDUCTIVITY	CYANIDE_TOTAL	METALS_CR6_S	METALS_SO	METALS_TCLP	Sample Remarks
BMI08081441-01A	VE-02 comp	SO	08/11/08 14:30	3	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Total Cyanide	Cr6	CAM_17/Sr_TTLC	TCLP_Cr	
BMI08081441-02A	VE-03 comp	SO	08/13/08 08:00	3	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Total Cyanide	Cr6	CAM_17/Sr_TTLC	TCLP_Cr	

Comments: No security seals. Frozen ice. Temp blank #7771 rec'd @ 4°. 24hr TAT. Total Cyanide subbed to SEM. Client is aware that he will recieve results on 48hr for 8270 due: 8/18/08. Amended 10/10/08 14:02 to add STLC Cr to both samples on 48hr TAT. : Per David Conner. Due: 10/14/08. TP Amended #2 10/13/08 09:30 to remove STLC Cr and add TCLP Cr on 48 HR TAT,per David. Due 10/15/08.KM

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	**Alpha Analytical, Inc.**	10/13/08 0930

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : none Job : JPL-OU2

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

AMENDED #2
CANCELLED!!

WorkOrder : BMI08081441

Report Due By : 5:00 PM On : 15-Aug-08

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
°C	14-Aug-08	**13-Oct-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests TPH/E_S	TPH/P_S	VOC_S						Sample Remarks
BMI08081441-01A	VE-02 comp	SO	08/11/08 14:30	3	1	1	TPH/E_C	GAS-C	8260_Cs						
BMI08081441-02A	VE-03 comp	SO	08/13/08 08:00	3	1	1	TPH/E_C	GAS-C	8260_Cs						

Comments: No security seals. Frozen ice. Temp blank #7771 rec'd @ 4°. 24hr TAT. Total Cyanide subbed to SEM. Client is aware that he will recieve results on 48hr for 8270 due: 8/18/08. Amended 10/10/08 14:02 to add STLC Cr to both samples on 48hr TAT. : Per David Conner. Due: 10/14/08. TP Amended #2 10/13/08 09:30 to remove STLC Cr and add TCLP Cr on 48 HR TAT,per David. Due 10/15/08.KM

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	Alpha Analytical, Inc.	10/13/08 0930

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
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AMENDED

CHAIN-OF-CUSTODY RECORD

RUSH! CA

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI08081441

Report Due By : 5:00 PM On : 15-Aug-08

Amendment due: 10/14/08 on 48 hr. TAT

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

EDD Required : **Yes**

Sampled by : Client

PO :

Client's COC # : none Job : JPL-OU2

Cooler Temp	Samples Received	Date Printed
°C	14-Aug-08	**10-Oct-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 314_S	ALCOHOL_S	BNA_S	CONDUCTIVITY	CYANIDE_TOTAL	METALS_CR6_S	METALS_SO	METALS_STLC	Sample Remarks
BMI08081441-01A	VE-02 comp	SO	08/11/08 14:30	3	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Total Cyanide	Cr6	CAM_17/Sr_TTLC	STLC Cr	
BMI08081441-02A	VE-03 comp	SO	08/13/08 08:00	3	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Total Cyanide	Cr6	CAM_17/Sr_TTLC	STLC Cr	

Comments: No security seals. Frozen ice. Temp blank #7771 rec'd @ 4°. 24hr TAT. Total Cyanide subbed to SEM. Client is aware that he will recieve results on 48hr for 8270 due: 8/18/08. Amended 10/10/08 14:02 to add STLC Cr to both samples on 48hr TAT. : Per David Conner. Due: 10/14/08. TP

	Signature	Print Name	Company	Date/Time
Logged in by:	Tasha Pascal	Tasha Pascal	Alpha Analytical, Inc.	10/10/08 1420

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
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Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : none Job : JPL-OU2

CHAIN-OF-CUSTODY RECORD

RUSH!
CA

Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

WorkOrder : BMI08081441

Report Due By : 5:00 PM On : 15-Aug-08

Amendment due: 10/14/08
48 hr. TAT

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
°C	14-Aug-08	**10-Oct-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests TPH/E_S	TPH/P_S	VOC_S	Sample Remarks
BMI08081441-01A	VE-02 comp	SO	08/11/08 14:30	3	1	1	TPH/E_C	GAS-C	8260_Cs	
BMI08081441-02A	VE-03 comp	SO	08/13/08 08:00	3	1	1	TPH/E_C	GAS-C	8260_Cs	

Comments: No security seals. Frozen ice. Temp blank #7771 rec'd @ 4°. 24hr TAT. Total Cyanide subbed to SEM. Client is aware that he will recieve results on 48hr for 8270 due: 8/18/08. Amended 10/10/08 14:02 to add STLC Cr to both samples on 48hr TAT. : Per David Conner. Due: 10/14/08. TP

	Signature	Print Name	Company	Date/Time
Logged in by:	Tasha Pascal	Tasha Pascal	**Alpha Analytical, Inc.**	10/10/081420

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RUSH!

CHAIN-OF-CUSTODY RECORD

CA

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : none Job : JPL:OU-2

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

WorkOrder : BMI08081441

Report Due By : 5:00 PM On : 15-Aug-08

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
°C	14-Aug-08	**14-Aug-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 314_S	ALCOHOL_S	BNA_S	CONDUCTIVITY	CYANIDE_TOTAL	METALS_CR6_S	METALS_SO	TPH/E_S	Sample Remarks
BMI08081441-01A	VE-02 comp	SO	08/11/08 14:30	3	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Total Cyanide	Cr6	CAM_17/Sr_TTLC	TPH/E_C	
BMI08081441-02A	VE-03 comp	SO	08/13/08 08:00	3	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Total Cyanide	Cr6	CAM_17/Sr_TTLC	TPH/E_C	

Comments: No security seals. Frozen ice. Temp blank #7771 rec'd @ 4°. 24hr TAT. Total Cyanide subbed to SEM. Client is aware that he will recieve results on 48hr for 8270 due: 8/18/08. ;

	Signature	Print Name	Company	Date/Time
Logged in by:	Tasha Pascal	Tasha Pascal	Alpha Analytical, Inc.	8/14/08 1000

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RUSH!
CHAIN-OF-CUSTODY RECORD

CA

WorkOrder : BMI08081441

Report Due By : 5:00 PM On : 15-Aug-08

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : none Job : JPL:OU-2

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

EDD Required : Yes

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
°C	14-Aug-08	14-Aug-08

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests TPH/P_S	VOC_S							Sample Remarks
BMI08081441-01A	VE-02 comp	SO	08/11/08 14:30	3	1	1	GAS-C	8260_Cs							
BMI08081441-02A	VE-03 comp	SO	08/13/08 08:00	3	1	1	GAS-C	8260_Cs							

Comments: No security seals. Frozen ice. Temp blank #7771 rec'd @ 4°. 24hr TAT. Total Cyanide subbed to SEM. Client is aware that he will recieve results on 48hr for 8270 due: 8/18/08. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Tasha Pascal	Tasha Pascal	Alpha Analytical, Inc.	8/14/08 1000

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
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Billing Information:
Name Battelle (Ben Headington)
Address 505 King Ave.
City, State, Zip Columbus OH 43201
Phone Number 614-424-5489 Fax 614-458-5489

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State? AZ ___ CA X NV ___ WA ___ ID ___ OR ___ OTHER ___

026507

Page # 1 of 1

Client Name	Battelle (~~David Conner~~)	P.O. #	Job # JPL: OU-2
Address	505 King Ave.	EMail Address	connerd@battelle.org
City, State, Zip	Columbus, OH 43201	Phone # 619-574-4827	Fax# 614-458-6641

Report Attention: David Conner

Analyses Required: VOCs 8260; TPH-g + TPH-E 8015; SVOC + 1,4-Dioxane 8270; Metals - Title 22 + Strontium; Perchlorate 314.0; Cyanide 335.2; Hex. Chrome 7196

Required QC Level? I II (III) IV

EDD / EDF? YES ___ NO ___

Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	Sampled by D. Payne / Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	Total and type of containers ** See below	VOCs 8260	TPH-g + TPH-E 8015	SVOC + 1,4-Dioxane 8270	Metals - Title 22 + Strontium	Perchlorate 314.0	Cyanide 335.2	Hex. Chrome 7196	REMARKS
1430	8/11/08	SO	BATT0808144l-01	VE-02 comp	24 hr.		4-4oz	X	X	X	X	X	X	X	
0800	8/13/08	SO	-02	VE-03 comp	24 hr.		4-4oz	X	X	X	X	X	X	X	
				Last Sample											

ADDITIONAL INSTRUCTIONS:

	Signature	Print Name	Company	Date	Time
Relinquished by		Derek Payne	Battelle	8/13/08	1545
Received by		Tasha Pascal	Alpha	8/14/08	950
Relinquished by					
Received by					
Relinquished by					
Received by					

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

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Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *25-Aug-08*

David Conner
Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
(619) 574-4827

CASE NARRATIVE

Project: JPL-OU2
Work Order: BMI08081920 **Cooler Temp:** 4 °C

Alpha's Sample ID	Client's Sample ID	Matrix
08081920-01A	VE-04 comp	Soil
08081920-02A	VE-01 comp	Soil

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/19/08

Job#: JPL-OU2

Metals by ICPMS
EPA Method 1312 / SW6020 / SW6020A

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-04 comp**					
Lab ID :	BMI08081920-01A	Chromium (Cr)	0.94	0.10 mg/L	08/16/08	11/05/08
Client ID :	**VE-01 comp**					
Lab ID :	BMI08081920-02A	Chromium (Cr)	1.2	0.10 mg/L	08/18/08	11/05/08

This analysis was performed on an STLC extract.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

11/5/08
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/19/08

Job#: JPL-OU2

TCLP Metals by ICPMS
EPA Method SW6020 / SW6020A

	Parameter		Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-04 comp**					
Lab ID :	BMI08081920-01A	Chromium (Cr)	ND	0.10 mg/L	08/16/08	10/15/08
Client ID :	**VE-01 comp**					
Lab ID :	BMI08081920-02A	Chromium (Cr)	ND	0.10 mg/L	08/18/08	10/15/08

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

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10/15/08
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/19/08

Job#: JPL-OU2

Total Petroleum Hydrocarbons - Extractable (TPH-E) EPA Method SW8015B
Total Petroleum Hydrocarbons - Purgeable (TPH-P) EPA Method SW8015B

		Parameter	Concentration		Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-04 comp**	TPH-E (DRO)	ND		5.0 mg/Kg	08/16/08	08/19/08
Lab ID :	BMI08081920-01A	TPH-E (ORO)	12	GC	10 mg/Kg	08/16/08	08/19/08
		Surr: Nonane	117		(44-159) %REC	08/16/08	08/19/08
		TPH-P (GRO)	ND	O	2.0 mg/Kg	08/16/08	08/19/08
		Surr: 1,2-Dichloroethane-d4	101		(69-126) %REC	08/16/08	08/19/08
		Surr: Toluene-d8	98		(80-120) %REC	08/16/08	08/19/08
		Surr: 4-Bromofluorobenzene	113		(80-120) %REC	08/16/08	08/19/08
Client ID :	**VE-01 comp**	TPH-E (DRO)	ND		5.0 mg/Kg	08/18/08	08/19/08
Lab ID :	BMI08081920-02A	TPH-E (ORO)	ND		10 mg/Kg	08/18/08	08/19/08
		Surr: Nonane	121		(44-159) %REC	08/18/08	08/19/08
		TPH-P (GRO)	ND		1.0 mg/Kg	08/18/08	08/19/08
		Surr: 1,2-Dichloroethane-d4	97		(69-126) %REC	08/18/08	08/19/08
		Surr: Toluene-d8	100		(80-120) %REC	08/18/08	08/19/08
		Surr: 4-Bromofluorobenzene	112		(80-120) %REC	08/18/08	08/19/08

C = Reported concentration includes additional compounds uncharacteristic of common fuels and lubricants.
Diesel Range Organics (DRO) C13-C22
G = ORO compounds have varying amounts of recovery.
Gasoline Range Organics (GRO) C4-C13
O = Reporting Limits were increased due to sample foaming.
Oil Range Organics (ORO) C22-C40+
Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

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8/20/08
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/19/08

Job#: JPL:OU-2

GC/MSD by Direct injection
EPA Method SW8260B-DI

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-04 comp**					
Lab ID :	BMI08081920-01A	1,4-Dioxane	ND	50 µg/Kg	08/16/08	08/19/08
		Surr: Hexafluoro-2-propanol	81	(70-133) %REC	08/16/08	08/19/08
Client ID :	**VE-01 comp**					
Lab ID :	BMI08081920-02A	1,4-Dioxane	ND	50 µg/Kg	08/18/08	08/19/08
		Surr: Hexafluoro-2-propanol	87	(70-133) %REC	08/18/08	08/19/08

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

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8/20/08
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: JPL-OU2

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI08081920-01A
Client I.D. Number: VE-04 comp

Sampled: 08/16/08
Received: 08/19/08
Analyzed: 08/19/08

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration		Reporting Limit
1	Chloromethane	ND	Q	80 µg/Kg
2	Vinyl chloride	ND	Q	20 µg/Kg
3	Chloroethane	ND	Q	20 µg/Kg
4	Bromomethane	ND	J	80 µg/Kg
5	Trichlorofluoromethane	ND	Q	20 µg/Kg
6	1,1-Dichloroethene	ND	Q	20 µg/Kg
7	Dichloromethane	ND		80 µg/Kg
8	trans-1,2-Dichloroethene	ND		20 µg/Kg
9	1,1-Dichloroethane	ND		20 µg/Kg
10	cis-1,2-Dichloroethene	ND		20 µg/Kg
11	Chloroform	ND		20 µg/Kg
12	1,2-Dichloroethane	ND		20 µg/Kg
13	1,1,1-Trichloroethane	ND		20 µg/Kg
14	Carbon tetrachloride	ND		20 µg/Kg
15	Benzene	ND		10 µg/Kg
16	1,2-Dichloropropane	ND		20 µg/Kg
17	Trichloroethene	ND		20 µg/Kg
18	Bromodichloromethane	ND	Q	20 µg/Kg
19	cis-1,3-Dichloropropene	ND		20 µg/Kg
20	trans-1,3-Dichloropropene	ND		20 µg/Kg
21	1,1,2-Trichloroethane	ND		20 µg/Kg
22	Toluene	ND		10 µg/Kg
23	Dibromochloromethane	ND		20 µg/Kg
24	Tetrachloroethene	ND		20 µg/Kg
25	Chlorobenzene	ND		20 µg/Kg

	Compound	Concentration	Reporting Limit
26	Ethylbenzene	ND	10 µg/Kg
27	m,p-Xylene	ND	10 µg/Kg
28	Bromoform	ND	20 µg/Kg
29	o-Xylene	ND	10 µg/Kg
30	1,1,2,2-Tetrachloroethane	ND	20 µg/Kg
31	1,3-Dichlorobenzene	ND	20 µg/Kg
32	1,4-Dichlorobenzene	ND	20 µg/Kg
33	1,2-Dichlorobenzene	ND	20 µg/Kg
34	Surr: 1,2-Dichloroethane-d4	101	(69-126) %REC
35	Surr: Toluene-d8	98	(85-115) %REC
36	Surr: 4-Bromofluorobenzene	113	(85-120) %REC

Data flags are DOD specified with criteria that may differ from EPA or inhouse statistical criteria.

Q = One or more quality control criteria failed. Data usability should be carefully assessed by the project team.

Some Reporting Limits were increased due to sample foaming.

J = Estimated: The analyte was positively identified; the quantitation is an estimation.
Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / info@alpha-analytical.com

8/20/08
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: JPL-OU2

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI08081920-02A
Client I.D. Number: VE-01 comp

Sampled: 08/18/08
Received: 08/19/08
Analyzed: 08/19/08

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration		Reporting Limit
1	Chloromethane	ND	Q	40 µg/Kg
2	Vinyl chloride	ND	Q	20 µg/Kg
3	Chloroethane	ND	Q	20 µg/Kg
4	Bromomethane	ND		40 µg/Kg
5	Trichlorofluoromethane	ND	Q	20 µg/Kg
6	1,1-Dichloroethene	ND	Q	20 µg/Kg
7	Dichloromethane	ND		40 µg/Kg
8	trans-1,2-Dichloroethene	ND		20 µg/Kg
9	1,1-Dichloroethane	ND		20 µg/Kg
10	cis-1,2-Dichloroethene	ND		20 µg/Kg
11	Chloroform	ND		20 µg/Kg
12	1,2-Dichloroethane	ND		20 µg/Kg
13	1,1,1-Trichloroethane	ND		20 µg/Kg
14	Carbon tetrachloride	ND		20 µg/Kg
15	Benzene	ND		5.0 µg/Kg
16	1,2-Dichloropropane	ND		20 µg/Kg
17	Trichloroethene	ND		20 µg/Kg
18	Bromodichloromethane	ND	Q	20 µg/Kg
19	cis-1,3-Dichloropropene	ND		20 µg/Kg
20	trans-1,3-Dichloropropene	ND		20 µg/Kg
21	1,1,2-Trichloroethane	ND		20 µg/Kg
22	Toluene	ND		5.0 µg/Kg
23	Dibromochloromethane	ND		20 µg/Kg
24	Tetrachloroethene	ND		20 µg/Kg
25	Chlorobenzene	ND		20 µg/Kg
26	Ethylbenzene	ND		5.0 µg/Kg
27	m,p-Xylene	ND		5.0 µg/Kg
28	Bromoform	ND		20 µg/Kg
29	o-Xylene	ND		5.0 µg/Kg
30	1,1,2,2-Tetrachloroethane	ND		20 µg/Kg
31	1,3-Dichlorobenzene	ND		20 µg/Kg
32	1,4-Dichlorobenzene	ND		20 µg/Kg
33	1,2-Dichlorobenzene	ND		20 µg/Kg
34	Surr: 1,2-Dichloroethane-d4	97		(69-126) %REC
35	Surr: Toluene-d8	100		(85-115) %REC
36	Surr: 4-Bromofluorobenzene	112		(85-120) %REC

Data flags are DOD specified with criteria that may differ from EPA or inhouse statistical criteria.

Q = One or more quality control criteria failed. Data usability should be carefully assessed by the project team.

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

8/20/08
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: JPL-OU2

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI08081920-01A
Client I.D. Number: VE-04 comp

Sampled: 08/16/08
Received: 08/19/08
Analyzed: 08/19/08

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration		Reporting Limit		Compound	Concentration		Reporting Limit	
1	Phenol	ND		660	µg/Kg	36 Hexachlorobenzene	ND		660	µg/Kg
2	2-Chlorophenol	ND		660	µg/Kg	37 Pentachlorophenol	ND		3,300	µg/Kg
3	Bis(2-chloroethyl)ether	ND		660	µg/Kg	38 Phenanthrene	ND		660	µg/Kg
4	1,3-Dichlorobenzene	ND		1,300	µg/Kg	39 Anthracene	ND		660	µg/Kg
5	1,4-Dichlorobenzene	ND		1,300	µg/Kg	40 Di-n-butyl phthalate	ND	Q	3,300	µg/Kg
6	1,2-Dichlorobenzene	ND	Q	1,300	µg/Kg	41 Fluoranthene	ND		660	µg/Kg
7	Bis(2-chloroisopropyl)ether	ND		660	µg/Kg	42 Pyrene	ND		660	µg/Kg
8	N-Nitrosodi-n-propylamine	ND		660	µg/Kg	43 Butyl benzyl phthalate	ND		1,300	µg/Kg
9	Hexachloroethane	ND		1,300	µg/Kg	44 Benzo(a)anthracene	ND		660	µg/Kg
10	Nitrobenzene	ND		660	µg/Kg	45 3,3´-Dichlorobenzidine	ND	UJ	1,300	µg/Kg
11	Isophorone	ND		660	µg/Kg	46 Chrysene	ND		660	µg/Kg
12	2-Nitrophenol	ND		660	µg/Kg	47 Bis(2-ethylhexyl)phthalate	ND		3,300	µg/Kg
13	2,4-Dimethylphenol	ND		660	µg/Kg	48 Di-n-octyl phthalate	ND		3,300	µg/Kg
14	Bis(2-chloroethoxy)methane	ND		660	µg/Kg	49 Benzo(b)fluoranthene	ND		660	µg/Kg
15	2,4-Dichlorophenol	ND		660	µg/Kg	50 Benzo(k)fluoranthene	ND		660	µg/Kg
16	1,2,4-Trichlorobenzene	ND		660	µg/Kg	51 Benzo(a)pyrene	ND		660	µg/Kg
17	Naphthalene	ND		660	µg/Kg	52 Indeno(1,2,3-cd)pyrene	ND		660	µg/Kg
18	Hexachlorobutadiene	ND		1,300	µg/Kg	53 Dibenz(a,h)anthracene	ND		660	µg/Kg
19	4-Chloro-3-methylphenol	ND		1,300	µg/Kg	54 Benzo(g,h,i)perylene	ND		660	µg/Kg
20	Hexachlorocyclopentadiene	ND		6,600	µg/Kg	55 Surr: 2-Fluorophenol	59		(35-105)	%REC
21	2,4,6-Trichlorophenol	ND		660	µg/Kg	56 Surr: Phenol-d5	70		(40-100)	%REC
22	2-Chloronaphthalene	ND		660	µg/Kg	57 Surr: Nitrobenzene-d5	83		(35-100)	%REC
23	Dimethyl phthalate	ND		660	µg/Kg	58 Surr: 2-Fluorobiphenyl	95		(45-105)	%REC
24	Acenaphthylene	ND	Q	660	µg/Kg	59 Surr: 2,4,6-Tribromophenol	40		(35-125)	%REC
25	2,6-Dinitrotoluene	ND		660	µg/Kg	60 Surr: 4-Terphenyl-d14	80		(30-125)	%REC
26	Acenaphthene	ND		660	µg/Kg					
27	2,4-Dinitrophenol	ND	J	6,600	µg/Kg					
28	4-Nitrophenol	ND	UJ J	3,300	µg/Kg					
29	2,4-Dinitrotoluene	ND		660	µg/Kg					
30	Diethyl phthalate	ND		660	µg/Kg					
31	Fluorene	ND		660	µg/Kg					
32	4-Chlorophenyl phenyl ether	ND		660	µg/Kg					
33	4,6-Dinitro-2-methylphenol	ND		6,600	µg/Kg					
34	N-Nitrosodiphenylamine	ND		660	µg/Kg					
35	4-Bromophenyl phenyl ether	ND		660	µg/Kg					

Data flags are DOD specified with criteria that may differ from EPA or inhouse statistical criteria.

Note: 4-Nitrophenol and 3,3´-Dichlorobenzidine failed the Method CV criteria of 80-120% recovery @ 68.5% and 74.8% respectively.

Q = One or more quality control criteria failed. Data usability should be carefully assessed by the project team.

J = Estimated: The analyte was positively identified; the quantitation is an estimation.
Sample results were calculated on a wet weight basis.
ND = Not Detected
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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8/20/08
Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: JPL:OU-2

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641

Alpha Analytical Number: BMI08081920-02A
Client I.D. Number: VE-01 comp

Sampled: 08/18/08
Received: 08/19/08
Analyzed: 08/19/08

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration		Reporting Limit		Compound	Concentration		Reporting Limit	
1	Phenol	ND		660	µg/Kg	36 Hexachlorobenzene	ND		660	µg/Kg
2	2-Chlorophenol	ND		660	µg/Kg	37 Pentachlorophenol	ND		3,300	µg/Kg
3	Bis(2-chloroethyl)ether	ND		660	µg/Kg	38 Phenanthrene	ND		660	µg/Kg
4	1,3-Dichlorobenzene	ND		1,300	µg/Kg	39 Anthracene	ND		660	µg/Kg
5	1,4-Dichlorobenzene	ND		1,300	µg/Kg	40 Di-n-butyl phthalate	ND		3,300	µg/Kg
6	1,2-Dichlorobenzene	ND		1,300	µg/Kg	41 Fluoranthene	ND		660	µg/Kg
7	Bis(2-chloroisopropyl)ether	ND		660	µg/Kg	42 Pyrene	ND		660	µg/Kg
8	N-Nitrosodi-n-propylamine	ND		660	µg/Kg	43 Butyl benzyl phthalate	ND		1,300	µg/Kg
9	Hexachloroethane	ND		1,300	µg/Kg	44 Benzo(a)anthracene	ND		660	µg/Kg
10	Nitrobenzene	ND		660	µg/Kg	45 3,3′-Dichlorobenzidine	ND	UJ	1,300	µg/Kg
11	Isophorone	ND		660	µg/Kg	46 Chrysene	ND		660	µg/Kg
12	2-Nitrophenol	ND		660	µg/Kg	47 Bis(2-ethylhexyl)phthalate	ND		3,300	µg/Kg
13	2,4-Dimethylphenol	ND		660	µg/Kg	48 Di-n-octyl phthalate	ND		3,300	µg/Kg
14	Bis(2-chloroethoxy)methane	ND		660	µg/Kg	49 Benzo(b)fluoranthene	ND		660	µg/Kg
15	2,4-Dichlorophenol	ND		660	µg/Kg	50 Benzo(k)fluoranthene	ND		660	µg/Kg
16	1,2,4-Trichlorobenzene	ND		660	µg/Kg	51 Benzo(a)pyrene	ND		660	µg/Kg
17	Naphthalene	ND		660	µg/Kg	52 Indeno(1,2,3-cd)pyrene	ND		660	µg/Kg
18	Hexachlorobutadiene	ND		1,300	µg/Kg	53 Dibenz(a,h)anthracene	ND		660	µg/Kg
19	4-Chloro-3-methylphenol	ND		1,300	µg/Kg	54 Benzo(g,h,i)perylene	ND		660	µg/Kg
20	Hexachlorocyclopentadiene	ND		6,600	µg/Kg	55 Surr: 2-Fluorophenol	87		(35-105)	%REC
21	2,4,6-Trichlorophenol	ND		660	µg/Kg	56 Surr: Phenol-d5	82		(40-100)	%REC
22	2-Chloronaphthalene	ND		660	µg/Kg	57 Surr: Nitrobenzene-d5	87		(35-100)	%REC
23	Dimethyl phthalate	ND		660	µg/Kg	58 Surr: 2-Fluorobiphenyl	99		(45-105)	%REC
24	Acenaphthylene	ND		660	µg/Kg	59 Surr: 2,4,6-Tribromophenol	70		(35-125)	%REC
25	2,6-Dinitrotoluene	ND		660	µg/Kg	60 Surr: 4-Terphenyl-d14	85		(30-125)	%REC
26	Acenaphthene	ND		660	µg/Kg					
27	2,4-Dinitrophenol	ND		6,600	µg/Kg					
28	4-Nitrophenol	ND	UJ	3,300	µg/Kg					
29	2,4-Dinitrotoluene	ND		660	µg/Kg					
30	Diethyl phthalate	ND		660	µg/Kg					
31	Fluorene	ND		660	µg/Kg					
32	4-Chlorophenyl phenyl ether	ND		660	µg/Kg					
33	4,6-Dinitro-2-methylphenol	ND		6,600	µg/Kg					
34	N-Nitrosodiphenylamine	ND		660	µg/Kg					
35	4-Bromophenyl phenyl ether	ND		660	µg/Kg					

Note: 4-Nitrophenol and 3,3′-Dichlorobenzidine failed the Method CV criteria of 80-120% recovery @ 68.5% and 74.8% respectively.

Sample results were calculated on a wet weight basis.
ND = Not Detected
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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8/20/08
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/19/08

Job#: JPL:OU-2

Perchlorate by Ion Chromatography
EPA Method 314.0

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-04 comp**					
Lab ID :	BMI08081920-01A	Perchlorate	ND	20.0 µg/Kg	08/16/08	08/19/08
Client ID :	**VE-01 comp**					
Lab ID :	BMI08081920-02A	Perchlorate	ND	20.0 µg/Kg	08/18/08	08/19/08

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

8/20/08
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/19/08

Job#: JPL:OU-2

Chromium +6
EPA Method 7196A

	Parameter	Concentration	Reporting Limit	Date / Time Sampled	Date / Time Analyzed
Client ID : **VE-04 comp**	Chromium (Cr), Hexavalent (+6)	ND	2.0 mg/Kg	08/16/08 10:00	08/19/08 15:52
Lab ID : BMI08081920-01A					
Client ID : **VE-01 comp**	Chromium (Cr), Hexavalent (+6)	ND	2.0 mg/Kg	08/18/08 12:00	08/19/08 15:54
Lab ID : BMI08081920-02A					

Note: Vanadium, Iron, Molybdenum, and Mercury may enhance the absorption measured at the same wavelength as Cr+6.

Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/19/08

Job#: JPL-OU2

Metals by ICPMS
EPA Method SW6020 / SW6020A

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-04 comp**					
Lab ID :	BMI08081920-01A	Beryllium (Be)	ND	1.0 mg/Kg	08/16/08	08/19/08
		Vanadium (V)	9.6	1.0 mg/Kg	08/16/08	08/19/08
		Chromium (Cr)	140	1.0 mg/Kg	08/16/08	08/19/08
		Cobalt (Co)	2.5	1.0 mg/Kg	08/16/08	08/19/08
		Nickel (Ni)	7.7	2.0 mg/Kg	08/16/08	08/19/08
		Copper (Cu)	7.8	2.0 mg/Kg	08/16/08	08/19/08
		Zinc (Zn)	23	20 mg/Kg	08/16/08	08/19/08
		Arsenic (As)	1.8	1.0 mg/Kg	08/16/08	08/19/08
		Selenium (Se)	ND	1.0 mg/Kg	08/16/08	08/19/08
		Strontium (Sr)	21	4.0 mg/Kg	08/16/08	08/19/08
		Molybdenum (Mo)	12	1.0 mg/Kg	08/16/08	08/19/08
		Silver (Ag)	ND	1.0 mg/Kg	08/16/08	08/19/08
		Cadmium (Cd)	ND	1.0 mg/Kg	08/16/08	08/19/08
		Antimony (Sb)	1.6	1.0 mg/Kg	08/16/08	08/19/08
		Barium (Ba)	39	1.0 mg/Kg	08/16/08	08/19/08
		Mercury (Hg)	ND	0.20 mg/Kg	08/16/08	08/19/08
		Thallium (Tl)	ND	1.0 mg/Kg	08/16/08	08/19/08
		Lead (Pb)	2.5	1.0 mg/Kg	08/16/08	08/19/08
Client ID :	**VE-01 comp**					
Lab ID :	BMI08081920-02A	Beryllium (Be)	ND	1.0 mg/Kg	08/18/08	08/19/08
		Vanadium (V)	8.3	1.0 mg/Kg	08/18/08	08/19/08
		Chromium (Cr)	150	1.0 mg/Kg	08/18/08	08/19/08
		Cobalt (Co)	2.1	1.0 mg/Kg	08/18/08	08/19/08
		Nickel (Ni)	6.9	2.0 mg/Kg	08/18/08	08/19/08
		Copper (Cu)	9.0	2.0 mg/Kg	08/18/08	08/19/08
		Zinc (Zn)	24	20 mg/Kg	08/18/08	08/19/08
		Arsenic (As)	3.5	1.0 mg/Kg	08/18/08	08/19/08
		Selenium (Se)	ND	1.0 mg/Kg	08/18/08	08/19/08
		Strontium (Sr)	40	4.0 mg/Kg	08/18/08	08/19/08
		Molybdenum (Mo)	12	1.0 mg/Kg	08/18/08	08/19/08
		Silver (Ag)	ND	1.0 mg/Kg	08/18/08	08/19/08
		Cadmium (Cd)	ND	1.0 mg/Kg	08/18/08	08/19/08
		Antimony (Sb)	ND	1.0 mg/Kg	08/18/08	08/19/08
		Barium (Ba)	47	1.0 mg/Kg	08/18/08	08/19/08
		Mercury (Hg)	ND	0.20 mg/Kg	08/18/08	08/19/08
		Thallium (Tl)	ND	1.0 mg/Kg	08/18/08	08/19/08
		Lead (Pb)	5.5	1.0 mg/Kg	08/18/08	08/19/08

Alpha Analytical, Inc.

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Sample results were calculated on a wet weight basis.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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8/20/08

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: David Conner
Phone: (619) 574-4827
Fax: (614) 458-6641
Date Received : 08/19/08

Job#: JPL-OU2

Specific Conductance at 25°C
EPA Method 120.1 / SM2510B / SW9050A

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**VE-04 comp**					
Lab ID :	BMI08081920-01A	Specific Conductance (at 25°C)	3,600	30 µS/cm	08/16/08	08/20/08
Client ID :	**VE-01 comp**					
Lab ID :	BMI08081920-02A	Specific Conductance (at 25°C)	2,100	30 µS/cm	08/18/08	08/20/08

Roger Scholl Randy Gardner Walter Hinchman

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8/20/08
Report Date

Revised Laboratory Report

Report ID: 93010

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/24/2008
Client: ALP-855
Taken by: Client
PO #:

Dear Alpha Analytical,

It is the policy of Sierra Environmental Monitoring, Inc to strictly adhere to a comprehensive Quality Assurance Plan that insures the data presented in this report are both accurate and precise. Sierra Environmental Monitoring, Inc. maintains accreditation in the State of Nevada (NV-15) and the State of California (ELAP 2526).

The data presented in this report were obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with appropriate explanation in the Analysis Report section of this Laboratory Report.

General Comments:

- There are no general comments for this report.

Individual Sample Comments:

- There are no specific comments that are associated with these samples.

Approved By:

Sierra Environmental Monitoring, Inc.

Date:

10/24/2008

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

John Kobza, Ph.D.
Laboratory Director

1135 Financial Blvd.
Reno, NV 89502-2348
Phone (775) 857-2400
FAX (775) 857-2404
sem@sem-analytical.com

John C. Seher
Special Consultant
Quality Assurance Manager

Revised Laboratory Report

Report ID: 93010

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/24/2008
Client: ALP-855
Taken by: Client
PO #:

Analysis Report

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S200808-1092	BMI08081920-01 - VE-04-comp	8/16/2008	10:00 AM	8/19/2008

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
Cyanide,Total	SM 4500 CN C	<0.5	mg/Kg	0.5	Kobza	8/19/2008	

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S200808-1093	BMI08081920-02 - VE-01-comp	8/18/2008	12:00 PM	8/19/2008

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
Cyanide,Total	SM 4500 CN C	<0.5	mg/Kg	0.5	Kobza	8/19/2008	

Data Flag Legend:

John Kobza, Ph.D.
Laboratory Director

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Reno, NV 89502-2348
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sem@sem-analytical.com

John C. Seher
Special Consultant
Quality Assurance Manager

Revised Laboratory Report

Report ID: 93010

Sierra Environmental Monitoring, Inc.

Alpha Analytical

255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 10/24/2008
Client: ALP-855
Taken by: Client
PO #:

Quality Control Report

Parameter	*LCS, % Recovery*	*MS, % Recovery*	*MSD, % Recovery*	*RPD, %*	*Method Blank*
Cyanide,Total	94.0	92.0			<0.005 mg/L

Legend: ***LCS- Laboratory Control Standard*** ***MS- Matrix Spike*** ***MSD- Matrix Spike Duplicate***
RPD- Relative Percent Difference

John Kobza, Ph.D.
Laboratory Director

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Reno, NV 89502-2348
Phone (775) 857-2400
FAX (775) 857-2404
sem@sem-analytical.com

John C. Seher
Special Consultant
Quality Assurance Manager

RUSH! CA AMENDED #3

CHAIN-OF-CUSTODY RECORD

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : 026506 Job : JPL-OU2

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

WorkOrder : BMI08081920

Report Due By : 5:00 PM On : 20-Aug-08

Amendment #3 Due 11/5/08

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
4 °C	19-Aug-08	03-Nov-08

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 314_S	ALCOHOL_S	BNA_S	CONDUCTIVITY	CYANIDE_TOTAL	METALS_CR6_S	METALS_SO	METALS_STLC	Sample Remarks
BMI08081920-01A	VE-04 comp	SO	08/16/08 10:00	1	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Cyanide	Cr6	CAM_17_TTLC+Sr	STLC Cr	
BMI08081920-02A	VE-01 comp	SO	08/18/08 12:00	1	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Cyanide	Cr6	CAM_17_TTLC+Sr	STLC Cr	

Comments: 24 HR TAT. No security seals. Frozen ice. Temp blank #7710 rec'd @ 4°. Total Cyanide subbed to SEM. Amended 10/10/08 14:00 to add STLC Cr on 48 HR TAT, per David. Due 10/14/08.KM Amended #2 10/13/08 09:30 to remove STLC Cr and add TCLP Cr on 48 HR TAT, : per David. Due 10/15/08.KM Amended #3 11/3/08 10:30 to add STLC Cr to both samples, per email from Ben on ASAP TAT- Due Wedneday 11/5/08. LE

	Signature	Print Name	Company	Date/Time
Logged in by:	Latricia Ednasa	Latricia Ednasa	Alpha Analytical, Inc.	11/3/08 10:30

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : 026506 Job : JPL-OU2

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

CA AMENDED #3

WorkOrder : BMI08081920

Report Due By : 5:00 PM On : 20-Aug-08

Amendment #3 Due 11/5/08

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
4 °C	19-Aug-08	**03-Nov-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests: METALS_T CLP	TPH/E_S	TPH/P_S	VOC_S					Sample Remarks
BMI08081920-01A	VE-04 comp	SO	08/16/08 10:00	1	1	1	TCLP_Cr	TPH/E_C	GAS-C	8260_Cs					
BMI08081920-02A	VE-01 comp	SO	08/18/08 12:00	1	1	1	TCLP_Cr	TPH/E_C	GAS-C	8260_Cs					

Comments: 24 HR TAT. No security seals. Frozen ice. Temp blank #7710 rec'd @ 4°. Total Cyanide subbed to SEM. Amended 10/10/08 14:00 to add STLC Cr on 48 HR TAT, per David. Due 10/14/08.KM Amended #2 10/13/08 09:30 to remove STLC Cr and add TCLP Cr on 48 HR TAT, : per David. Due 10/15/08.KM Amended #3 11/3/08 10:30 to add STLC Cr to both samples, per email from Ben on ASAP TAT- Due Wedneday 11/5/08. LE

	Signature	Print Name	Company	Date/Time
Logged in by:	Latricia Edrosa	Latricia Edrosa	Alpha Analytical, Inc.	11/3/08 10:30

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
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Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : 026506 Job : JPL-OU2

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

CA AMENDED #2

WorkOrder : BMI08081920

Report Due By : 5:00 PM On : 20-Aug-08

Amendment due 10/15/08

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
4 °C	19-Aug-08	**13-Oct-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 314_S	ALCOHOL_S	BNA_S	CONDUCTIVITY	CYANIDE_TOTAL	METALS_CR6_S	METALS_SO	METALS_TCLP	Sample Remarks
BMI08081920-01A	VE-04 comp	SO	08/16/08 10:00	1	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Cyanide	Cr6	CAM_17_TTLC+Sr	TCLP_Cr	
BMI08081920-02A	VE-01 comp	SO	08/18/08 12:00	1	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Cyanide	Cr6	CAM_17_TTLC+Sr	TCLP_Cr	

Comments: 24 HR TAT. No security seals. Frozen ice. Temp blank #7710 rec'd @ 4°. Total Cyanide subbed to SEM. Amended 10/10/08 14:00 to add STLC Cr on 48 HR TAT, per David. Due 10/14/08.KM Amended #2 10/13/08 09:30 to remove STLC Cr and add TCLP Cr on 48 HR TAT, : per David. Due 10/15/08.KM

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	Alpha Analytical, Inc.	10/13/08 0930

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : 026506 Job : JPL-OU2

CHAIN-OF-CUSTODY RECORD

AMENDED #2

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

WorkOrder : BMI08081920

Report Due By : 5:00 PM On : 20-Aug-08

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
4 °C	19-Aug-08	**13-Oct-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests TPH/E_S	TPH/P_S	VOC_S						Sample Remarks
BMI08081920-01A	VE-04 comp	SO	08/16/08 10:00	1	1	1	TPH/E_C	GAS-C	8260_Cs						
BMI08081920-02A	VE-01 comp	SO	08/18/08 12:00	1	1	1	TPH/E_C	GAS-C	8260_Cs						

Comments: 24 HR TAT. No security seals. Frozen ice. Temp blank #7710 rec'd @ 4°. Total Cyanide subbed to SEM. Amended 10/10/08 14:00 to add STLC Cr on 48 HR TAT, per David. Due 10/14/08.KM Amended #2 10/13/08 09:30 to remove STLC Cr and add TCLP Cr on 48 HR TAT, : per David. Due 10/15/08.KM

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	Alpha Analytical, Inc.	10/13/08 0930

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
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Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

CA

WorkOrder : BMI08081920

Report Due By : 5:00 PM On : 20-Aug-08

Amendment due 10/14/08

EDD Required : **Yes**

Sampled by : Client

PO :

Client's COC # : 026506 Job : JPL-OU2

Cooler Temp	Samples Received	Date Printed
4 °C	19-Aug-08	**10-Oct-08**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 314_S	ALCOHOL_S	BNA_S	CONDUCTIVITY	CYANIDE_TOTAL	METALS_CR6_S	METALS_SO	METALS_STLC	Sample Remarks
BMI08081920-01A	VE-04 comp	SO	08/16/08 10:00	1	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Cyanide	Cr6	CAM_17_TTLC+Sr	STLC Cr	
BMI08081920-02A	VE-01 comp	SO	08/18/08 12:00	1	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Cyanide	Cr6	CAM_17_TTLC+Sr	STLC Cr	

Comments: 24 HR TAT. No security seals. Frozen ice. Temp blank #7710 rec'd @ 4°. Total Cyanide subbed to SEM. Amended 10/10/08 14:00 to add STLC Cr on 48 HR TAT, per David. Due 10/14/08.KM :

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	**Alpha Analytical, Inc.**	10/10/08 1400

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
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AMENDED

CHAIN-OF-CUSTODY RECORD

CA R...!!

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMI08081920

Report Due By : 5:00 PM On : 20-Aug-08

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

EDD Required : **Yes**

Sampled by : Client

PO :

Client's COC # : 026506 Job : JPL-OU2

Cooler Temp	Samples Received	Date Printed
4 °C	19-Aug-08	10-Oct-08

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests TPH/E_S	TPH/P_S	VOC_S						Sample Remarks
BMI08081920-01A	VE-04 comp	SO	08/16/08 10:00	1	1	1	TPH/E_C	GAS-C	8260_Cs						
BMI08081920-02A	VE-01 comp	SO	08/18/08 12:00	1	1	1	TPH/E_C	GAS-C	8260_Cs						

Comments: 24 HR TAT. No security seals. Frozen ice. Temp blank #7710 rec'd @ 4°. Total Cyanide subbed to SEM. Amended 10/10/08 14:00 to add STLC Cr on 48 HR TAT, per David. Due 10/14/08.KM :

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	Alpha Analytical, Inc.	10/10/08 1400

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
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Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : 026506 Job : JPL:OU-2

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

CAF !

WorkOrder : BMI08081920

Report Due By : 5:00 PM On : 20-Aug-08

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
4 °C	19-Aug-08	19-Aug-08

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 314_S	ALCOHOL_S	BNA_S	CONDUCTIVITY	CYANIDE_TOTAL	METALS_CR6_S	METALS_SO	TPH/E_S	Sample Remarks
BMI08081920-01A	VE-04 comp	SO	08/16/08 10:00	1	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Cyanide	Cr6	CAM_17_TT LC+Sr	TPH/E_C	
BMI08081920-02A	VE-01 comp	SO	08/18/08 12:00	1	1	1	Perchlorate	Low Level 1,4-Dioxane	8270	Perchlorate	Cyanide	Cr6	CAM_17_TT LC+Sr	TPH/E_C	

Comments: 24 HR TAT. No security seals. Frozen ice. Temp blank #7710 rec'd @ 4°. Total Cyanide subbed to SEM. :

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	Alpha Analytical, Inc.	8/19/08 0955

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

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Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

PO :

Client's COC # : 026506 Job : JPL:OU-2

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

Report Attention	Phone Number	EMail Address
David Conner	(619) 574-4827 x	connerd@battelle.org

WorkOrder : BMI08081920

Report Due By : 5:00 PM On : 20-Aug-08

EDD Required : **Yes**

Sampled by : Client

Cooler Temp	Samples Received	Date Printed
4 °C	19-Aug-08	19-Aug-08

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests TPH/P_S	VOC_S							Sample Remarks
BMI08081920-01A	VE-04 comp	SO	08/16/08 10:00	1	1	1	GAS-C	8260_Cs							
BMI08081920-02A	VE-01 comp	SO	08/18/08 12:00	1	1	1	GAS-C	8260_Cs							

Comments: 24 HR TAT. No security seals. Frozen ice. Temp blank #7710 rec'd @ 4°. Total Cyanide subbed to SEM. :

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	Alpha Analytical, Inc.	8/19/08 0955

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
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Billing Information:
Name Battelle (Ben Headington)
Address 505 King Ave
City, State, Zip Columbus OH 43201
Phone Number 614-424-5489 Fax 614-458-5489

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State? AZ ___ CA X NV ___ WA ___ ID ___ OR ___ OTHER ___

026506

Page # 1 of 1

Client Name	P.O. #	Job #
Battelle		JPL : OU-2
Address	EMail Address	
505 King Ave.	connerd@battelle.org	
City, State, Zip	Phone #	Fax #
Columbus, OH 43201	614-574-4827	614-458-6641
Report Attention		
David Conner		

Time Sampled	Date Sampled	Matrix* See Key Below	Sampled by / Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	Total and type of containers ** See below	VOC's 8260	TPH-P & TPH-E 8015	SVOC & 1,4-Dioxane 8270	Metals - Title 22 Strontium	Perchlorate 314.0	Cyanide 335.2	Hex. Chrome. 7196	REMARKS
1000	8/18/08	SO	BM1080819 20-01	VE-04 comp	24hr	N/A	4-4oz	X	X	X	X	X	X	X	
1200	8/18/08	SO	02	VE-01 comp	24hr	N/A	4-4oz	X	X	X	X	X	X	X	

Analyses Required

Required QC Level? I II III IV

EDD / EDF? YES ___ NO ___

Global ID # ___

ADDITIONAL INSTRUCTIONS:

	Signature	Print Name	Company	Date	Time
Relinquished by		Derek Payne	Battelle	8/18/08	1500
Received by		K Murray	AAI	8/19/08	0925
Relinquished by					
Received by					
Relinquished by					
Received by					

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
CA9800013030	1	1-800-424-9300	32489

GENERATOR

5. Generator's Name and Mailing Address: JET PROPULSION LABORATORY
4800 OAK GROVE DRIVE, 171-225
PASADENA, CA 91009
Generator's Phone: 818 354-0635 CONTACT: MARK ARAKI

Generator's Site Address (if different than mailing address): SAME

6. Transporter 1 Company Name: EFR ENVIRONMENTAL SERVICES, INC.
U.S. EPA ID Number: CAR000011205

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address: SIEMENS WATER TECHNOLIGIES CORP.
5375 S. BOYLE AVE.
VERNON, CA 90058
Facility's Phone: 323-277-1500
U.S. EPA ID Number: CAD097030993

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	NON-HAZARDOUS WASTE SOLID (SOIL CUTTINGS)	34	DM	22848	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
9B-1 PROFILE NO. P181241

14. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.
Generator's/Offeror's Printed/Typed Name: Mark Araki
Signature: Mark Araki
Month: 11 Day: 14 Year: 08

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Octavio Quintero
Signature: Octavio Quintero
Month: 11 Day: 14 Year: 08
Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name:
Signature:
Month: Day: Year: