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Name & Return Address:

Tom Middleton

Department of Ecology Southwest Regional Office

PO Box 47775 Olympia WA 98504-7775

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Document Title(s)	Model Restrictive (Environmental) Covenant
Grantor(s)	Birds Eye Foods LLC
<u>1</u> Additional Names on Page <u>1</u> of Document	
Grantee(s)	State of Washington, Department of Ecology
<u>1</u> Additional Names on Page <u>1</u> of Document	
Legal Description (Abbreviated: i.e., lot, block & subdivision name or number OR section/township/range and quarter/quarter section) SE 1/4 of the SE 1/4 of Section 7, Township 20 N, Range 3 E Complete Legal Description on Page <u>6-7</u> of Document	
Auditor's Reference Number(s)	
Assessor's Property Tax Parcel/Account Number(s) 0320073062	
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WA State Department  
of Ecology (SWRO)

## Model Restrictive (Environmental) Covenant

After Recording Return to:  
Tom Middleton  
Department of Ecology – Southwest Regional Office  
PO Box 47775  
Olympia, WA 98504-7775

### Environmental Covenant

Grantor: Birds Eye Foods LLC

Grantee: State of Washington; Department of Ecology

Legal: Legal Description of Property presented in Exhibit A; Property in portion of Southeast ¼ of the Southeast ¼ of Section 7, Township 20 North, Range 3 East, W. M., Pierce County, Washington

Tax Parcel Nos.: 0320073062

Cross Reference: NA

Grantor, Birds Eye Foods LLC, hereby binds Grantor, its successors and assigns to the land use restrictions identified herein and grants such other rights under this environmental covenant ( hereafter "Covenant" ) made this 26 day of March, 2013 in favor of the State of Washington Department of Ecology (Ecology). Ecology shall have full right of enforcement of the rights conveyed under this Covenant pursuant to the Model Toxics Control Act, RCW 70.105D.030(1)(g), and the Uniform Environmental Covenants Act, 2007 Wash. Laws ch. 104, sec. 12.

This Declaration of Covenant is made pursuant to RCW 70.105D.030(1)(f) and (g) and WAC 173-340-440 by Birds Eye Foods, its successors and assigns, and the State of Washington Department of Ecology, its successors and assigns (hereafter "Ecology").

A remedial action (hereafter "Remedial Action") occurred at the property that is the subject of this Covenant. The Remedial Action conducted at the property is described in the following document:

Pacific Groundwater Group, 2011. Birds Eye Foods Tacoma, WA 2011 Remedial Investigation/Feasibility Study. Consultant's report prepared for Pinnacle Foods Group, December 16, 2011.

These documents are on file at Ecology's Southwest Regional Office.

This Covenant is required because the Remedial Action resulted in residual concentrations of Total Petroleum Hydrocarbon (TPH) Diesel extended (TPH-Dx), TPH-Gasoline range organics (TPH-G), benzene, benzo(a)pyrene toxic equivalents of carcinogenic polyaromatic hydrocarbons, and naphthalene that exceed the Model Toxics Control Act Method A Industrial Land Use Cleanup Level(s) for soil established under WAC 173-340-745 (3).

The undersigned, Birds Eye Foods, is the fee owner of real property (hereafter "Property") in the County of Pierce, State of Washington, that is subject to this Covenant. The Property is legally described in Exhibit A of this Covenant and made a part hereof by reference.

Birds Eye Foods makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, as provided by law and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereafter "Owner").

#### Section 1.

1. A portion of the Property contains soil containing TPH-Dx, TPH-G, benzene, benzo(a)pyrene toxic equivalents of carcinogenic polyaromatic hydrocarbons, and naphthalene. The contaminated soil within the Property extends under the western portion of the Boiler Room and Potato Warehouse buildings (see Exhibit A, Figure A1). Contaminated soil in this area is covered by at least 9 feet of clean fill or native soil and most of the contaminated soil is capped by asphalt, which will be maintained as part of the Remedial Action. The contaminated soil is also covered by the western 12 feet of the Boiler Room Building and Potato Storage Warehouse, which are adjacent to one another (see Exhibit A, Figure A1).

2. Any activity on the Property that may result in the release or exposure to the environment of the contaminated soil that was contained as part of the Remedial Action, or create a new exposure pathway, is prohibited without prior written approval from Ecology. Some examples of activities that are prohibited in the capped areas include: drilling, digging, placement of any objects or use of any equipment which deforms or stresses the surface

beyond its load bearing capability, piercing the surface with a rod, spike or similar item, bulldozing or earthwork.

3. The Owner shall not alter, modify, or remove the existing structure[s] in the area of contaminated soil in any manner that may result in the release or exposure to the environment of that contaminated soil or create a new exposure pathway without prior written approval from Ecology.

4. Monitoring will occur per the Groundwater Monitoring Plan approved by Ecology (see Exhibit B). Monitoring locations are shown in Exhibit B, Figure 3. Groundwater monitoring will be conducted at eight monitoring wells to assess the effectiveness of the Remedial Action. Monitoring will occur every quarter for one year; with the 1st Quarter commencing with May 7-8, 2012 monitoring. After four quarters of monitoring with no exceedances of cleanup levels, groundwater monitoring will occur at a frequency of once every 18 months pending a periodic review by Ecology to determine if continued monitoring is required. Additional details on the monitoring are provided in the Groundwater Monitoring Plan. The monitoring wells will be maintained pending Ecology's review of monitoring results and determination of the need for continued monitoring and pending Ecology's approval to decommission or relocate a well.

5. The Property shall be used only for traditional industrial uses as described in RCW 70.105D.020(14) or such other uses specifically approved by the Department of Ecology for this site and defined in and allowed under the City of Tacoma's zoning regulations (Land Use Regulatory Code) codified as Title 13 of the Tacoma Municipal Code as of the date of this Restrictive Covenant.

Section 2. Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited.

Section 3. Any activity on the Property that may result in the release or exposure to the environment of a hazardous substance that remains on the Property as part of the Remedial Action, or create a new exposure pathway, is prohibited without prior written approval from Ecology.

Section 4. The Owner of the Property must give 30 days advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement,

lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.

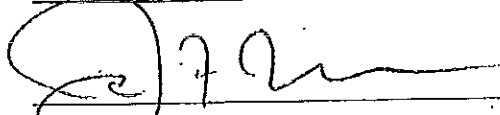
Section 5. The Owner must restrict leases to uses and activities of the Property consistent with the Covenant and notify all lessees of the restrictions on the use of the Property.

Section 6. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Covenant. Ecology may approve any inconsistent use only after public notice and comment.

Section 7. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, to determine compliance with this Covenant, and to inspect records that are related to the Remedial Action.

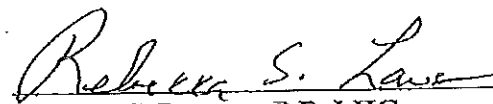
Section 8. The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

Birds Eye Foods

  
\_\_\_\_\_  
John Krøeger  
Deputy General Counsel

Dated: 2-22-13

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

  
\_\_\_\_\_  
Rebecca S. Lawson, P.E. LHG,  
Section Manager, Toxics Cleanup Program  
Southwest Regional Office

Dated: 3/18/2013

[CORPORATE ACKNOWLEDGMENT]

STATE OF NEW JERSEY  
COUNTY OF MORRIS

On this 22<sup>ND</sup> day of FEBRUARY, 2013, I certify that JOHN KROEGER personally appeared before me, acknowledged that he/she is the VICE PRESIDENT of the corporation that executed the within and foregoing instrument, and signed said instrument by free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument for said corporation.

Melissa O'Malley  
Notary Public in and for the State of  
New Jersey, residing at

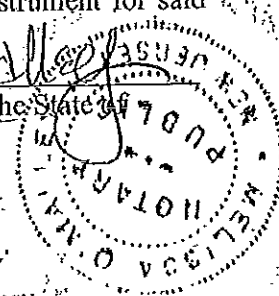
SPARTA, NJ.

My appointment

expires 4-27-15

**MELISSA O'MALLEY**

Notary Public of New Jersey  
My Commission Expires April 27, 2015



## Exhibit A

That portion of Government Lot 4, being the Southwest quarter of the Southwest quarter of Section 7, Township 20 North, Range 3 East Willamette Meridian, in Pierce County, Washington, described as follows:

Commencing at the Southwest corner of said Government Lot 4;

Thence South 88 degrees, 25 minutes and 49 seconds East, along the South line of said Government Lot 4 and the centerline of South 35th Street, a distance of 299.52 feet, to an existing monument;

Thence continuing, along the centerline of South 35th Street, South 88 degrees, 26 minutes and 40 seconds East, a distance of 300.06 feet to the intersection with the centerline of South Windom Street;

Thence North 01 degrees, 37 minutes and 56 seconds East, along the centerline of South Windom Street, a distance of 40 feet to the Northerly margin of South 35th Street;

Thence North 88 degrees, 26 minutes and 40 seconds West, along said Northerly margin, a distance of 30 feet to the Westerly margin of South Windom Street, vacated by Ordinance No. 16754 of the City of Tacoma, as recorded March 15, 1966 under Pierce County Recording Number 1919333;

Thence North 01 degrees, 37 minutes and 56 seconds East, along said Westerly margin, a distance of 150.15 feet to the TRUE POINT OF BEGINNING;

Thence North 89 degrees, 19 minutes and 40 seconds West, a distance of 2.54 feet;

Thence North 02 degrees, 38 minutes and 27 seconds East, a distance of 22.68 feet;

Thence North 54 degrees, 11 minutes and 31 seconds East, a distance of 17.04 feet;

Thence North 22 degrees, 29 minutes and 21 seconds West, a distance of 11.76 feet;

Thence North 00 degrees, 17 minutes and 35 seconds East, a distance of 18.57 feet;

Thence North 54 degrees, 24 minutes and 53 seconds East, a distance of 17.09 feet;

Thence North 43 degrees, 31 minutes and 21 seconds West, a distance of 20.27 feet;

Thence North 00 degrees, 52 minutes and 48 seconds East, a distance of 27.41 feet;

Thence South 88 degrees, 25 minutes and 27 seconds East, a distance of 84.44 feet;



Thence South 01 degrees, 56 minutes and 26 seconds West, a distance of 118.98 feet;

Thence South 15 degrees, 31 minutes and 56 seconds West, a distance of 54.81 feet;

Thence North 88 degrees, 14 minutes and 57 seconds West, a distance of 37.80 feet;

Thence North 01 degrees, 21 minutes and 53 seconds East, a distance of 58.32 feet;

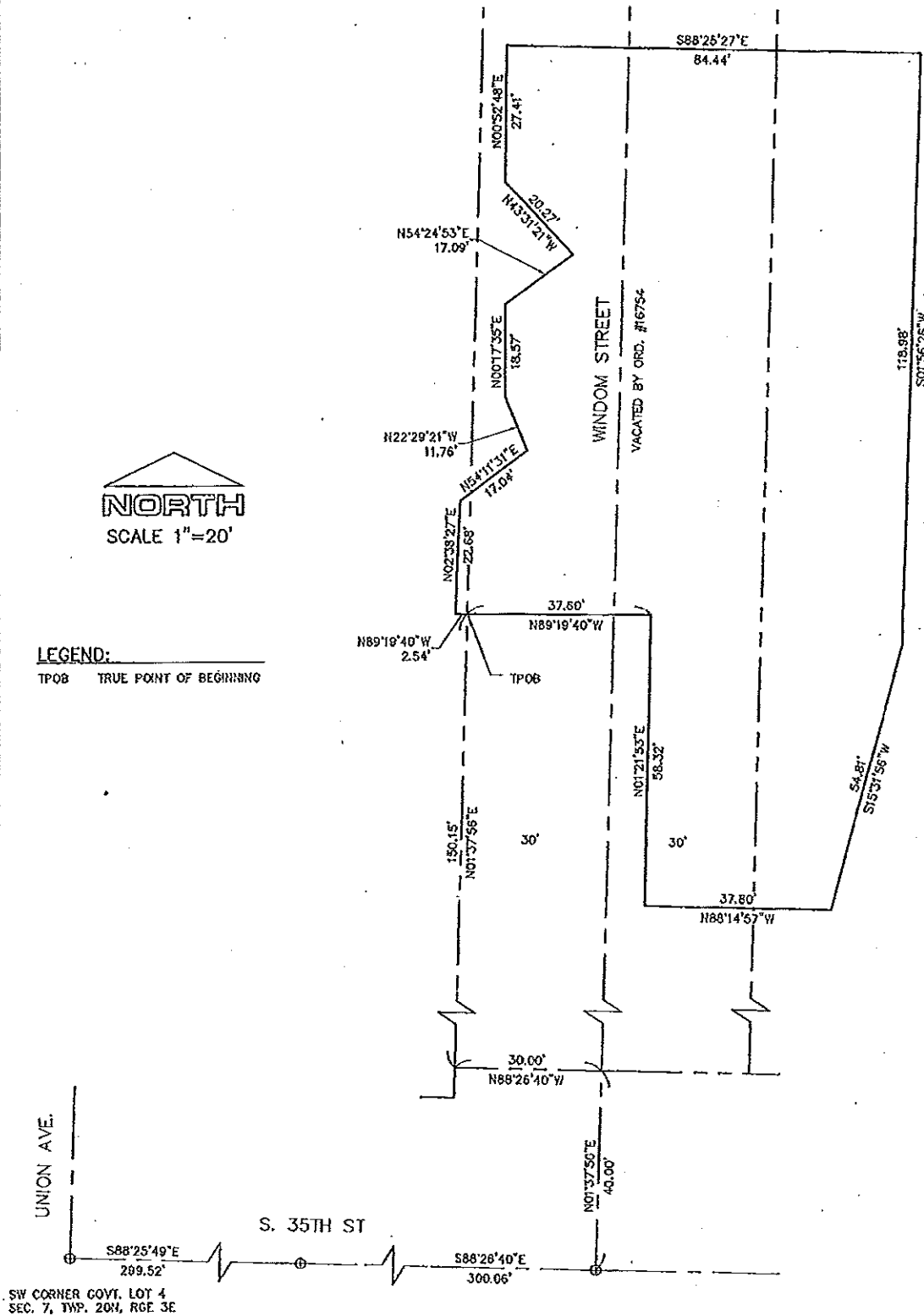
Thence North 89 degrees, 19 minutes and 40 seconds West, a distance of 37.60 feet to the  
TRUE POINT OF BEGINNING.

Containing 0.3 acres.



**LEGEND:**

TP08 TRUE POINT OF BEGINNING



SW CORNER COYT. LOT 4  
SEC. 7, TWP. 20N, R0E. 3E



355 NW Gilman Boulevard, #201  
Issaquah, Washington 98027  
(425) 313-9378 (fax) 313-9379

**PACIFIC GROUNDWATER GROUP  
LEGAL DESCRIPTION EXHIBIT**

JOB NO.

12023

SHEET

1 of 1



Exhibit B  
Birds Eye Foods, Tacoma Boiler Room Site  
Long-Term Groundwater Monitoring Plan  
VCP Site Number SW1187

**PACIFIC groundwater GROUP**

**BIRDS EYE FOODS, TACOMA BOILER ROOM SITE  
LONG-TERM GROUNDWATER MONITORING PLAN  
VCP SITE NUMBER SW1187**

**October 23, 2012**

**BIRDS EYE FOODS, TACOMA BOILER ROOM SITE  
LONG-TERM GROUNDWATER MONITORING PLAN  
VCP SITE NUMBER SW1187**

*Prepared for:*

**Pinnacle Foods Group LLC  
399 Jefferson Road  
Parsippany, NJ 07054**

*Prepared by:*

**Pacific Groundwater Group  
2377 Eastlake Avenue East, Suite 200  
Seattle, Washington 98102  
206.329.0141  
[www.pgwg.com](http://www.pgwg.com)**

*October 23, 2012*

*J11001.04*

*ExhibitB-Text-102312.docx*

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Table 2:	Summary of Analytical Methods and Site Cleanup Levels

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## FIGURES

Figure 1:	Site Vicinity
Figure 2:	Birds Eye Foods Facility and Boiler Room Site
Figure 3:	Long-Term Monitoring Well Network

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## APPENDICES

Appendix A:	Long-Term Monitoring Well Network Well Logs
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## 1.0 INTRODUCTION

This Long-term Groundwater Monitoring Plan (Monitoring Plan) identifies and describes groundwater monitoring tasks to be conducted at the Boiler Room Site located on the Birds Eye Foods facility in Tacoma, Washington (Figure 1). Monitoring will be performed under the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) and in compliance with the Birds Eye Facility Restrictive Environmental Covenant. The Boiler Room Site entered the VCP in 2011 and was assigned site number SW1187.

This Monitoring Plan has been developed for compliance with requirements of the preferred remedial alternative, *Alternative 1: Soil Containment and Natural Source Zone Depletion Remedy*, identified in the independent Birds Eye Foods Tacoma, WA 2011 Remedial Investigation/Feasibility Study (2011 RI/FS; Pacific Groundwater Group, 2011). The 2011 RI/FS was developed under the Washington State Model Toxics Control Act (MTCA; Washington Administrative Code [WAC] Chapter 173-340) framework.

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### 1.1 OBJECTIVES AND DATA NEEDS

This Monitoring Plan describes groundwater monitoring tasks that will take place during a review period of 5 years, in preparation for Ecology's 5-Year Site Review<sup>1</sup>. The objective of the Monitoring Plan is to collect data to confirm that the preferred containment remedy for petroleum-contaminated soil at the Boiler Room Site is protective of groundwater quality.

---

## 2.0 SITE DESCRIPTION AND BACKGROUND

The Birds Eye Foods property is a former food processing facility located approximately 3 miles southwest of downtown Tacoma and the southernmost tip of Commencement Bay (Figure 1). Locally, the facility is also known as Nalley's Fine Foods, the original food processing company at this location.

The subject of the 2011 RI/FS and this Monitoring Plan is a portion of the Birds Eye facility, referred to as the "Former Boiler Room UST Site" or "Boiler Room Site" (Figure 2). The Boiler Room Site is located in the south-western portion of the Birds Eye facility.

As presented in Figures 2 and 3, the Boiler Room Site is located in the main internal vehicle corridor through the facility. A railroad spur, overhead power lines, and underground utilities transect the Site as described in the 2011 RI/FS. Three buildings are located in the vicinity of the Boiler Room Site: the Potato Warehouse (currently vacant), the Boiler Room Building, and the former Pallet Room Building (currently vacant).

The Boiler Room Site is largely paved or covered with buildings. Crushed rock and gravel lies between the rails in the southern 350 feet of track and to approximately 2.5 feet on

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<sup>1</sup> The 2011 RI/FS preferred remedy identifies a 10-year monitoring schedule, which is described in Section 3.4 of this Monitoring Plan.



either side of the rails. There is also a gravel covered area approximately 1,200 square feet along the southern 100 feet of track.

Two underground storage tanks (USTs) were removed from the Boiler Room Site in 1990 (Figure 2). Soil at the Site is impacted with petroleum compounds from former UST releases of diesel and Bunker C fuels (Figure 3). The 2011 RI/FS assessed the nature and extent of soil contamination at the Boiler Room Site and concluded that non-aqueous phase liquid (NAPL) is present in soil and that dissolution of the contaminant mass to groundwater is no longer occurring. Information on the nature and extent of Site contamination is presented in the 2011 RI/FS. This is a mature Site and not the result of a recent or new release of hazardous materials to the subsurface.

---

## 2.1 SITE HYDROGEOLOGIC UNITS

The following discussion of Site hydrogeology is based on information presented in the 2011 RI/FS. Please refer to the 2011 RI/FS for more detail.

During previous Boiler Room Site investigations three stratigraphic units were encountered:

- Fill
- Upper Sand
- Upper Gravel

### Fill

A layer of structural fill, approximately 4 to 12 feet thick and consisting of sand and gravel occurs at ground surface at the Boiler Room Site. The fill is approximately 15 to 19 feet thick where it was used to backfill the former UST excavations. The lateral extent of fill is unknown. The unit is generally not saturated with groundwater and field observations of the texture suggest this unit is relatively permeable.

### Upper Sand

The Upper Sand is the shallowest naturally occurring unit at the Site. It is a 30 to 50 foot thick layer of fine to medium sand with minor gravel. At the Boiler Room Site the water table occurs in the Upper Sand.

### Upper Gravel

The Upper Gravel is a layer of approximately 50 to 100 feet of sandy gravel with significant interbeds of sand that range in thickness from 3 to 30 feet. The Upper Gravel may represent the Vashon advance outwash, a unit of interbedded coarse sand and gravel. The Upper Gravel is in direct contact with the overlying Upper Sand in the Birds Eye vicinity.

## Shallow Aquifer

The saturated portions of the Upper Sand and Upper Gravel units are part of the Shallow Aquifer. Depth to groundwater in Boiler Room Site wells is typically 17 to 28 feet below ground.

The Shallow Aquifer is highly productive and has been developed by a number of City production wells. In particular, emergency municipal supply Well 2B, which is located approximately 300 feet south-west of the Boiler Room Building (Figure 2), is completed in this aquifer between 58 and 78 feet below ground.

---

## 2.2 GROUNDWATER FLOW

Groundwater recharge originates as precipitation in the Tacoma upland with shallow groundwater flow east toward the Puyallup River and west toward Puget Sound. As described in the 2011 RI/FS, previous studies have mapped a natural groundwater divide in the Shallow Aquifer in the vicinity of the South Tacoma Channel and the Birds Eye facility. The axis of the divide is generally oriented north-south and groundwater flows away from the divide both east toward the Puyallup River and west toward Puget Sound. The axis of the divide can shift to the east or west under the influence of production well pumping. Therefore, groundwater flow directions in the vicinity of the axis can vary by nearly 180-degrees.

Groundwater level monitoring at the Boiler Room Site between 1991 and 1999 indicate the transient nature of local groundwater flow directions in the Shallow Aquifer. Groundwater flow directions rotate from west to north to southeast or east. The water table at the Birds Eye facility is relatively flat. With very low horizontal gradients across the Site, a minor change in groundwater level could suggest a shift in groundwater flow direction. The local groundwater flow system is very dynamic and responds to local stresses like pumping.

Historic groundwater level monitoring at the Birds Eye facility and at other sites in the South Tacoma Channel have revealed a downwards vertical component of groundwater flow within the Shallow Aquifer.

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## 3.0 GROUNDWATER MONITORING PROGRAM

The groundwater monitoring well network, contaminants-of-concern and analytical methods, cleanup levels, sampling protocols, and schedule are described in the following sections.

---

### 3.1 GROUNDWATER MONITORING WELL NETWORK

As described above, groundwater flow directions at the Boiler Room Site can vary by over 180 degrees. Therefore, for the purposes of groundwater monitoring, there is not one consistently downgradient direction from the contaminant mass in soil at the Boiler

Room Site. In addition, groundwater gradients in the vicinity of the Boiler Room Site include a downward component of vertical flow.

The long-term groundwater monitoring well network at the Boiler Room Site consists of 4 well pairs located outside the lateral extent of soil contamination delineated for the 2011 RI/FS. Ecology was consulted regarding the locations of three well pairs installed in April 2012. The fourth well pair (MW-9S and MW-9D) was installed in the 1990s. Well locations are on the Birds Eye property and are presented in Figure 3.

The shallow monitoring wells are completed in the Upper Sand unit and screened at depths comparable to shallow wells installed during remedial investigations in 1990. The deep monitoring wells are screened in the Upper Gravel unit at depths comparable to nearby emergency municipal supply Well 2B. Monitoring well construction details are summarized in Table 1 and well logs are included in Appendix A.

The well network described in this Monitoring Plan will be maintained to the extent possible. However, over time wells may require replacement if they are damaged, if they are found to not meet the goals of the long-term monitoring program, or as the property is re-developed. Consistent with the Restrictive Environmental Covenant, Ecology will be consulted in these events. Ecology will be consulted and well replacement work plans will be submitted for agency review. Damaged or discontinued monitoring wells will be decommissioned in accordance with WAC 173-160-460 and replacement wells will be installed in accordance with WAC 173-160.

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### 3.2 CONTAMINANTS OF CONCERN

The contaminants of concern (COCs) and analytical methods for the Monitoring Plan are:

- Northwest Total Petroleum Hydrocarbons – Gasoline, Diesel and Heavy Oil Range Organics (NWTPH-G and NWTPH-Dx)
- BTEX - Benzene, Toluene, Ethylbenzene, Xylenes (EPA Method 8021)
- Polynuclear Aromatic Hydrocarbons (EPA Method 8270 with selected ion monitoring modification to achieve required reporting limits)

To be consistent with groundwater samples collected at the Boiler Room Site previously, the NWTPH-Dx analyses will be performed with silica gel cleanup.

---

### 3.3 CLEANUP LEVELS

Standard MTCA Method A Unrestricted Land Use groundwater screening concentrations are applicable to the Boiler Room Site to evaluate the relative chemical effects from the site on groundwater quality. MTCA Method A meets the criteria of WAC 173-340-704(1) because there are few hazardous substances at the Site and numerical Method A standards have been established. Groundwater cleanup levels are summarized in Table 2 and are consistent with the 2011 RI/FS groundwater cleanup levels.

---

### 3.4 MONITORING PROGRAM SCHEDULE

The preferred remedial alternative identified in the 2011 RI/FS includes long-term groundwater quality monitoring in 8 wells at the following frequency:

- 4 quarters of monitoring in Year 1
- 1 event every 18 months in Years 2 – 10

This schedule is subject to change following Ecology 5-Year Reviews. The first quarterly sampling event was completed in May 2012 (PGG, 2012).

---

### 3.5 WELL INSPECTION AND SAMPLING PROTOCOLS

All completed monitoring wells are protected by secure, flush-mount monuments that are bolted in place. Expanding well caps provide a water-tight seal with the 2-inch well casing. An inspection of the condition of each in-service monitoring well will be completed during each sampling event. Field personnel will take note of the condition of the monument, well cap, and well casing, and identify required maintenance activities.

Water quality meters shall be used in the field to measure pH, specific conductance, temperature, and turbidity. The meters shall be calibrated at least daily, prior to sample collection, for pH, specific conductance, and turbidity.

To minimize turbidity, low-flow purging and sampling methods will be employed. A peristaltic pump is preferred; however, portable, submersible pumps may be used when groundwater levels are too deep for peristaltic pumps to lift water from. When submersible pumps are required, they should be capable of variable flow rates.

The general low-flow purging procedures are:

- At each monitoring station, the well name, sample ID, date, weather, and wellhead condition shall be recorded in the field notes, along with the name of the person collecting the samples.
- The static water level in the well shall be measured to the nearest hundredth of a foot and recorded in the field notes. Measuring points are black marks on the north side of each 2-inch well casing.
- A maximum purge volume of three casing volumes shall be calculated and recorded in the field notes. The formula for calculating three casing volumes is:

$$\text{Volume (gallons)} = \pi r^2 (\text{Height of Water Column}) \left( 7.48 \frac{\text{gallons}}{\text{foot}} \right)$$

- Pumps with new or dedicated polyethylene discharge tubing shall be installed in the wells making efforts to position the pump intake within the well screen interval. The type of pump used at each station shall be recorded in the field notes. For peristaltic pumps, new silicon tubing will be mounted in the pump head at each well.

- During purging, water levels will be measured to monitor drawdown and flow rates will be measured using a calibrated container (e.g. graduated cylinder or measuring cup). Typical flow rates should be less than 1 L/minute; however, the flow rates will be determined in the field by monitoring water levels and maintaining no more than 1 foot of drawdown in the well. Water levels and flow rates shall be recorded in the field notes.
- During purging, pH, specific conductance, temperature, and turbidity will be monitored for stabilization and recorded in field notes at least three times, or every 5 minutes, or every one-gallon purged. Stabilization is defined as three consecutive readings that do not indicate a trend (continuously increase or decrease between readings) and measurements between readings are within 0.1 pH units, within 10-percent for temperature and specific conductance, and within 10-percent for turbidity or below 10 NTU.
- Purge water shall be drummed and temporarily stored at the Birds Eye facility (Section 3.6).

Groundwater samples<sup>2</sup> will be collected in the following manner after field parameters have stabilized or after a minimum of three casing volumes have been purged.

- Groundwater samples will be collected from the pump discharge tubing directly into laboratory-provided containers preserved in compliance with the analytical method. During sample collection, field personnel shall wear clean, disposable gloves that will be changed when dirty and between samples.
- Vials for collection of volatile compounds (BTEX and gasoline-range hydrocarbons) shall be filled so that there is a meniscus at the top of the vial and no bubbles or headspace should be present in the vial after it is capped. After the cap is securely tightened, the vial should be inverted and tapped on the palm of one hand to see if any undetected bubbles are dislodged. If a bubble or bubbles are present, the vial should be topped off using a minimal amount of sample to re-establish the meniscus.
- Sample identification (name), date, time, and sampler's initials shall be recorded on each sample container and in the field notes.

Following collection, groundwater samples will be handled in the manner described below. A summary of analytical holding times is presented in Table 2.

- Samples shall be placed in clean, insulated ice chests containing frozen gel or ice to maintain temperature near, but not at or below, freezing. Sufficient cooling materials shall be used to maintain temperature near freezing during the time of transport to the lab.
- Maintain custody of samples from the time of sampling to receipt at the laboratory. Custody means that samples remain in direct possession of a person who is recorded on the chain-of-custody form, or locked in secure vehicles or offices.
- Complete the appropriate chain-of-custody forms and any other pertinent sampling/shipping documentation to accompany the samples.

<sup>2</sup> See Quality Assurance Project Plan for quality control samples to be collected in the field.

- Samples will be transferred to the analytical lab, accompanied by one set of chain-of-custody forms per lab shipment. All laboratory services shall be provided by labs accredited by Ecology.

Peristaltic pumps and new or dedicated discharge tubing do not require decontamination because they do not present a risk of cross contamination. Peristaltic pumps do not come in direct contact with purge water or groundwater samples and new or dedicated discharge tubing are not used in multiple wells. However, well sounders and submersible pumps shall be decontaminated before use in each monitoring well and at the end of the sampling event.

- Well sounders shall be decontaminated by scrubbing the length of the sounder that was submerged in the well with liquinox or similar environmental soap diluted in distilled water. The same length of sounder shall then be rinsed in distilled water.
- Submersible pumps shall be decontaminated by scrubbing the outside of the pump and the length of the electrical line that was submerged in the well with liquinox or similar environmental soap diluted in distilled water and pumping the liquinox solution through the pump. Distilled water shall then be rinsed over the outside of the pump and electrical line and pumped through the submersible pump.
- If an in-line flow regulator is used, it shall be scrubbed with liquinox or similar environmental soap diluted in distilled water and rinsed in distilled water.

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### 3.6 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

Purge water will be drummed and temporarily stored at the Birds Eye facility. Within one month of receipt of the groundwater quality analytical data, the purge water will be disposed of appropriately.

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### 3.7 REPORTING

Groundwater monitoring results will be documented in a summary report. The reports will include:

- Tables summarizing the analytical results and groundwater elevations
- Summary of findings relative to applicable cleanup levels
- Discussion of data outliers that could indicate the need for follow up action prior to the next scheduled sampling event and recommendations
- Quality Assurance/Quality Control review
- Laboratory data sheets

Reports will be submitted to Ecology, Tacoma Pierce County Health Department, and Tacoma Public Utilities Water Department.

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## 4.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PLAN

Quality Assurance will be achieved following sampling protocols described above, collecting additional sample volume in the field, and following analytical protocols established by the methods and lab standard operating procedures. Quality Control will be achieved by evaluating the analytical data relative to tolerance limits established by the lab in accordance with their standard operating procedures (e.g. statistical limits), established by the analytical method, or established by the CLP Guidelines.

---

### 4.1 FIELD QA/QC

During each sampling event, one blind field duplicate sample will be collected and analyzed for the monitoring program COCs. Field duplicate samples indicate both field and lab precision. Therefore, the results may have more variability than laboratory replicates, which measure only lab performance. The tolerance limit for relative percent differences between the field duplicates will be  $\pm 35$  percent.

During sampling events when submersible pumps are used, one rinsate blank will be collected and analyzed for the monitoring program constituents of concern. The objective of the rinsate blank is to assess possible sources of contamination that may be related to equipment decontamination and sample handling procedures. Following decontamination of the submersible pump, a rinsate blank shall be collected by:

- Placing the pump intake in a new jug of distilled water and attaching a clean piece of discharge line to the pump that is sufficient in length to fill sample bottles. If an inline flow regulator is used during sample collection, it should also be used during rinsate blank collection.
- Use the pump assembly to fill laboratory-provided containers with distilled water directly from the discharge line. Containers will be preserved in compliance with the analytical method. During sample collection, field personnel shall wear clean, disposable gloves that will be changed when dirty and between samples.

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### 4.2 LABORATORY QA/QC

The analytical lab will follow quality control protocols consistent with analytical methods and may include method blanks, trip blanks, surrogate spikes, lab duplicates, and laboratory control samples (LCS).

Method and trip blanks should have no detectable contaminants. If contamination is detected in the blank samples, the nature of the interference and the effect on the analysis of each sample in the batch will be evaluated. The source of contamination will be investigated and measures shall be taken to minimize or eliminate the problem. Affected samples may be reprocessed or qualified following the analytical lab's standard operating procedure and/or the USEPA Contract Laboratory Program National Functional Guidelines (CLP Guidelines).

Accuracy is commonly assessed using percent recoveries of spike samples, including surrogate spikes and LCS. Surrogate spikes are relatively pure organic compounds that are added to field samples and QC samples prior to preparation and analysis. The spike compound should have analytical properties similar to the target compounds. Surrogate spike recoveries assess overall performance on a sample-specific basis. Spikes simulate matrix effects found in the actual samples and the calculated percent recovery of the spike is a measure of the accuracy of the total analytical method. The lab shall calculate and report the surrogate spike recoveries. Tolerance limits applied to this project for acceptable percent recovery will be established by the lab in accordance with their standard operating procedures (e.g. statistical limits), established by the analytical method, or established by the CLP Guidelines.

LCS are prepared in the laboratory and contain analytes that are representative of the analytes of interest in project groundwater samples. Known concentrations of analytes are added to either pure water and are processed in the same manner as the project samples. The results of the LCS are used to demonstrate that the laboratory is in control of the processes involved in the preparation and analysis of specific tests. Tolerance limits applied to this project for acceptable percent recovery will be established by the lab in accordance with their standard operating procedures (e.g. statistical limits), established by the analytical method, or established by the CLP Guidelines.

Lab duplicates are aliquots of the same sample and treated the same throughout the analytical method. The relative percent difference between the values of the lab duplicates is taken as a measure of the precision of the analytical method. Lab duplicates shall be analyzed in compliance with the analytical method. Tolerance limits applied to this project for acceptable percent recovery will be established by the lab in accordance with their standard operating procedures (e.g. statistical limits), established by the analytical method, or established by the CLP Guidelines.

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#### 4.3 DATA MANAGEMENT AND VALIDATION

The groundwater quality data shall be managed in a project database and uploaded to Ecology's Environmental Information Management (EIM) database. Field and laboratory quality control will be validated in accordance with EPA National Functional Guidelines for organic and inorganic analyses (EPA 1999 and 2004, respectively), and laboratory-defined QC limits, with regard to the following, as appropriate to the particular analysis: sample documentation/custody, holding times, reporting limits, blank/rinsate samples, and surrogate percent recoveries, laboratory duplicates, field duplicates, comparability, and completeness.

---

#### 5.0 REFERENCES

- Pacific Groundwater Group, 2011. Birds Eye Foods Tacoma, WA 2011 Remedial Investigation/Feasibility Study. Consultant's report prepared for Pinnacle Foods Group, LLC. December 16, 2011.
- Pacific Groundwater Group, 2012. Birds Eye Foods, Tacoma Monitoring Well Installation and May 2012 Groundwater Quality Report. Consultant's report prepared for Pinnacle Foods Group, LLC. September 7, 2012.



US Environmental Protection Agency Office of Emergency and Remedial Response. October 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.

US Environmental Protection Agency Office of Superfund Remediation and Technology Innovation. October 2004. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review Final.

Washington State Department of Ecology, 2012. Cleanup Levels and Risk Calculations (CLARC) tool. Online database accessed July 6, 2012.

Washington State Department of Ecology, 2007. Model Toxics Control Act Statute and Regulation. WAC 173-340. Publication No. 94-06. Revised November 2007.

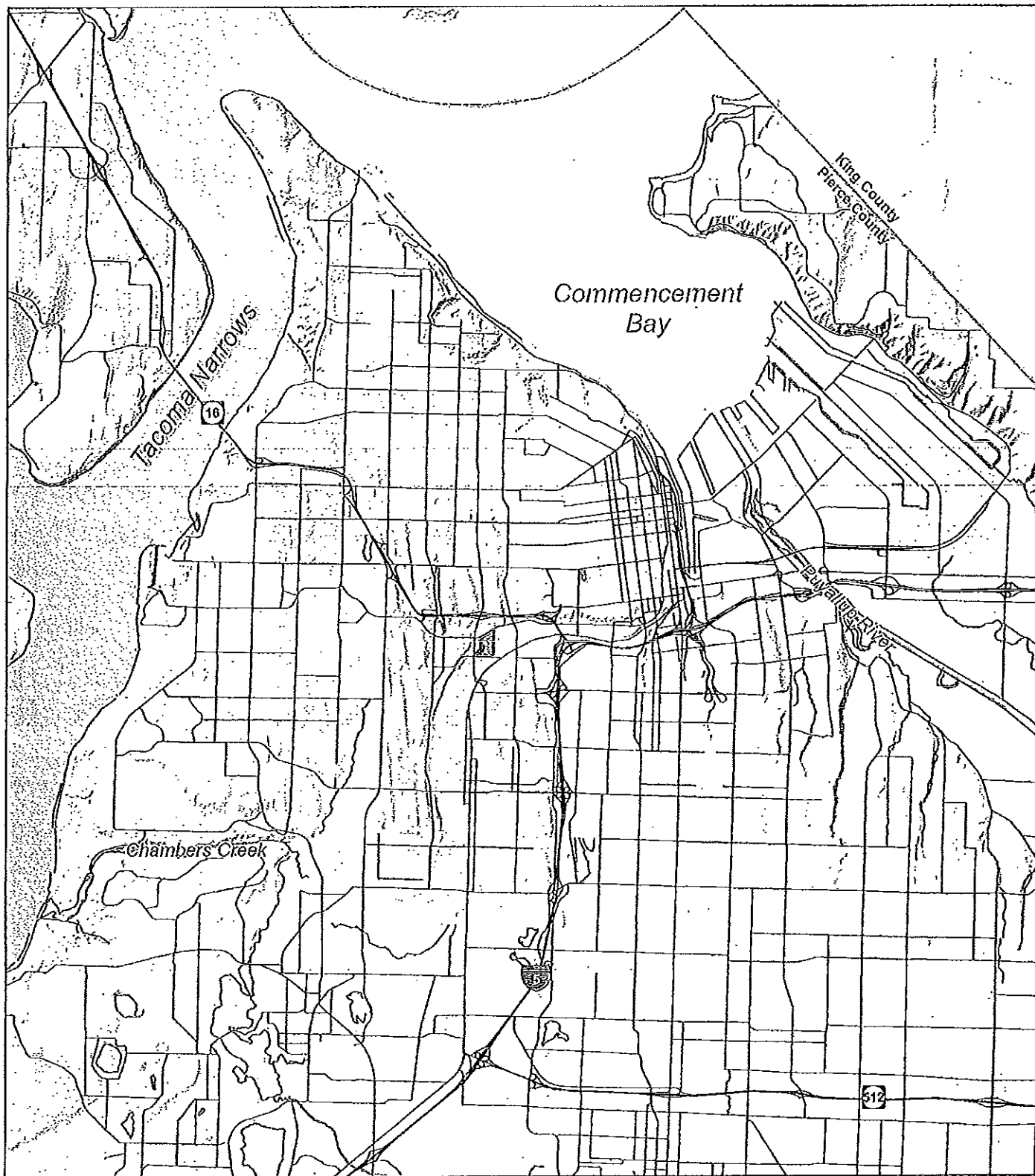




Table 2. Summary of Analytical Methods and Site Cleanup Levels

Analysis	Analytical Method	Holding Time	Site Cleanup Level MTCA Method A - Unrestricted	Comment
Northwest Total Petroleum Hydrocarbons				
Gasoline Range Organics	NWTPH-G	14 days (7 days unpreserved)	0.8 mg/L	Cleanup level is 1 mg/L if no detectable benzene
Diesel Range Organics	NWTPH-Dx with Silica Gel Cleanup	7 days	0.5 mg/L	
Heavy Oil Range Organics			0.5 mg/L	
BTEX Compounds				
Benzene			5 ug/L	
Toluene		14 days (7 days unpreserved)	1,000 ug/L	
Ethylbenzene	EPA 8021		700 ug/L	
Xylenes			1,000 ug/L	
Polynuclear Aromatic Hydrocarbons (PAHs)				
Acenaphthene				
Anthracene				
Benzo(a)anthracene			TEF Method Applies	carcinogenic, TEF = 0.1
Benzo(a)pyrene			0.1 ug/L	carcinogenic, TEF = 1
Benzo(b)fluoranthene			TEF Method Applies	carcinogenic, TEF = 0.1
Benzo(k)fluoranthene			TEF Method Applies	carcinogenic, TEF = 0.1
Chrysene		7 days	TEF Method Applies	carcinogenic, TEF = 0.01
Dibenzo(a,h)anthracene	EPA 8270		TEF Method Applies	carcinogenic, TEF = 0.1
Fluoranthene			TEF Method Applies	carcinogenic, TEF = 0.1
Fluorene				
Indeno(1,2,3-cd)pyrene			TEF Method Applies	carcinogenic, TEF = 0.1
Naphthalene			150 ug/L	
Pyrene				

TEF = Toxicity Equivalency Factors, reference WAC 173-340-900 Table 708-2

TEF Method = If other carcinogenic PAHs are suspected of being present at the site, test for them and use the cleanup level for benzo(a)pyrene as the total concentration that all carcinogenic PAHs must meet using the toxicity equivalency methodology in WAC 173-340-708(3)



-  Birds Eye Parcels
-  City of Tacoma



0 Miles 2

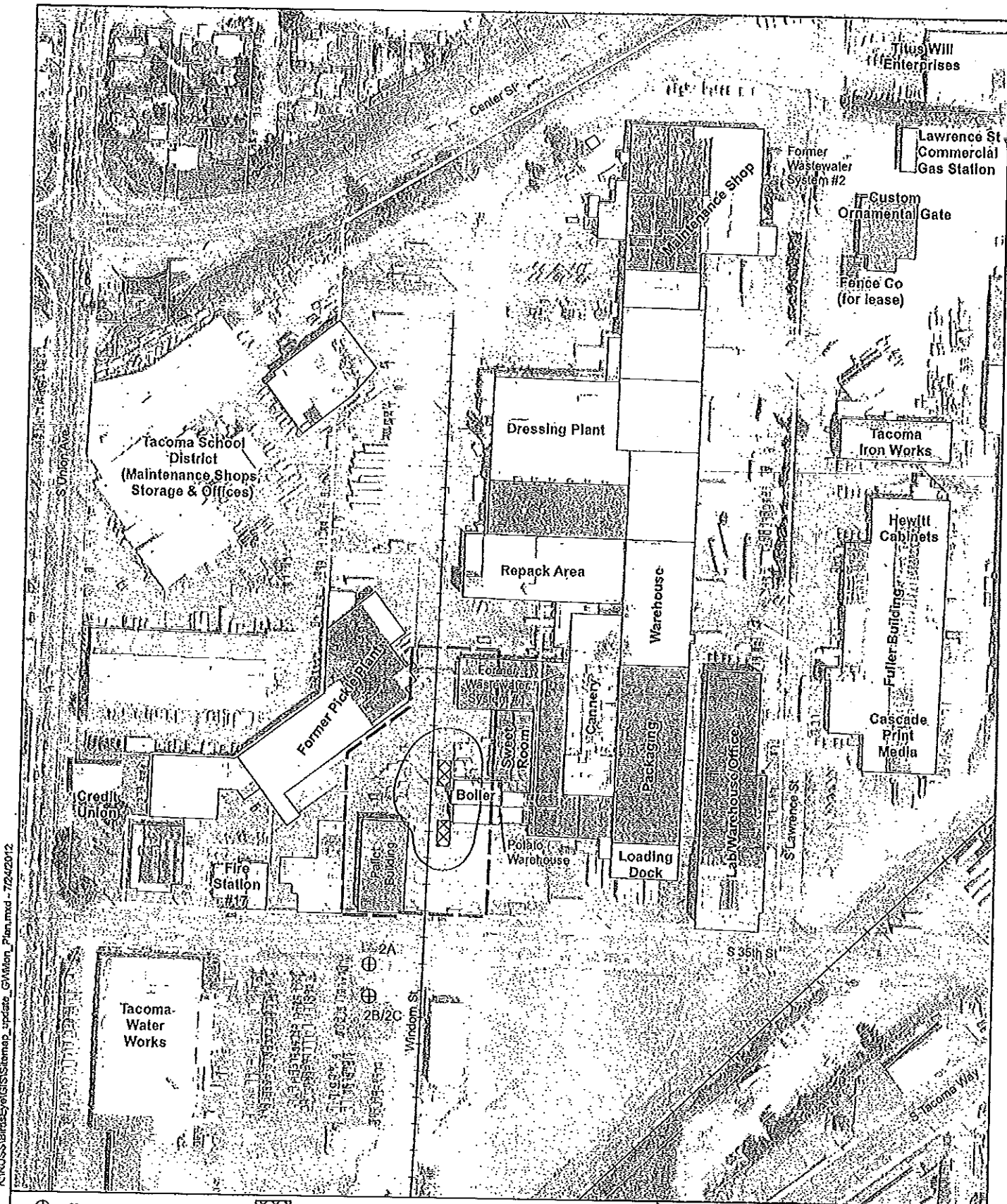


Figure 1  
Site Vicinity

Birds Eye

pgg

K:\RUSS\BirdsEye\GIS\SiteMap\_update\_G\Main\_Plan.mxd - 7/24/2012



- ⊕ Tacoma Production Wells
- ⊗ Approximate UST Excavation Areas
- Boiler Room Site Vicinity
- ⋈ 2011 Soil Investigation Area
- ▭ Birds Eye Parcels
- ▭ Building Footprints

0 Feet 200  
2009 Orthophoto

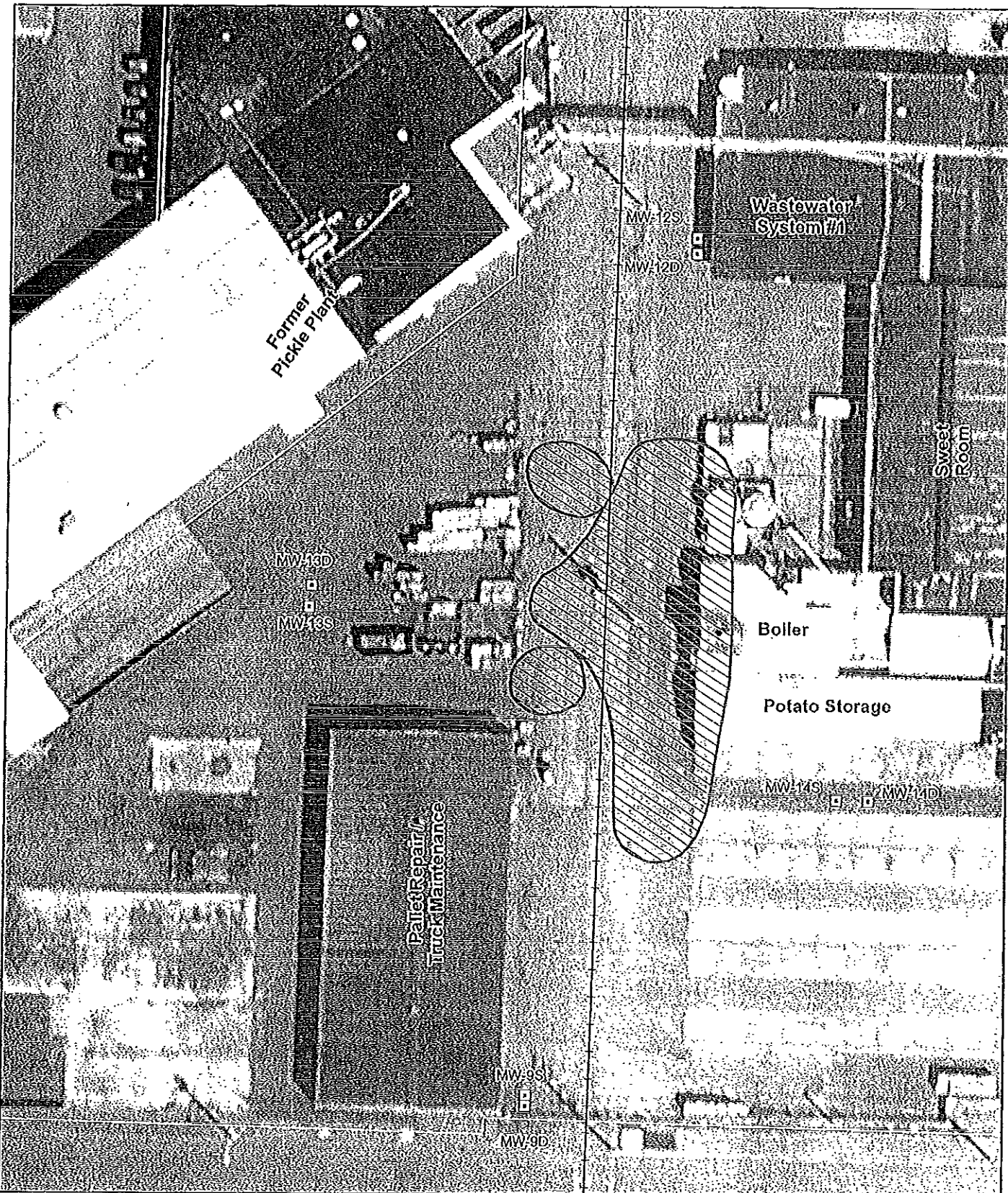


Figure 2  
Birds Eye Foods Facility  
& Boiler Room Site

Birds Eye  
Groundwater Monitoring Plan

pgg

K:\RUSS\BirdsEye\GIS\MonitoringNetwork\_LongTerm.mxd - 7/24/2012



RI/FS Preferred Alternative

- Long-Term Monitoring Well Network
- ▨ 2011 Delineated Petroleum Contaminated Soil Areas

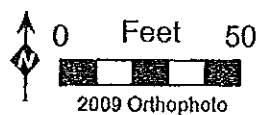


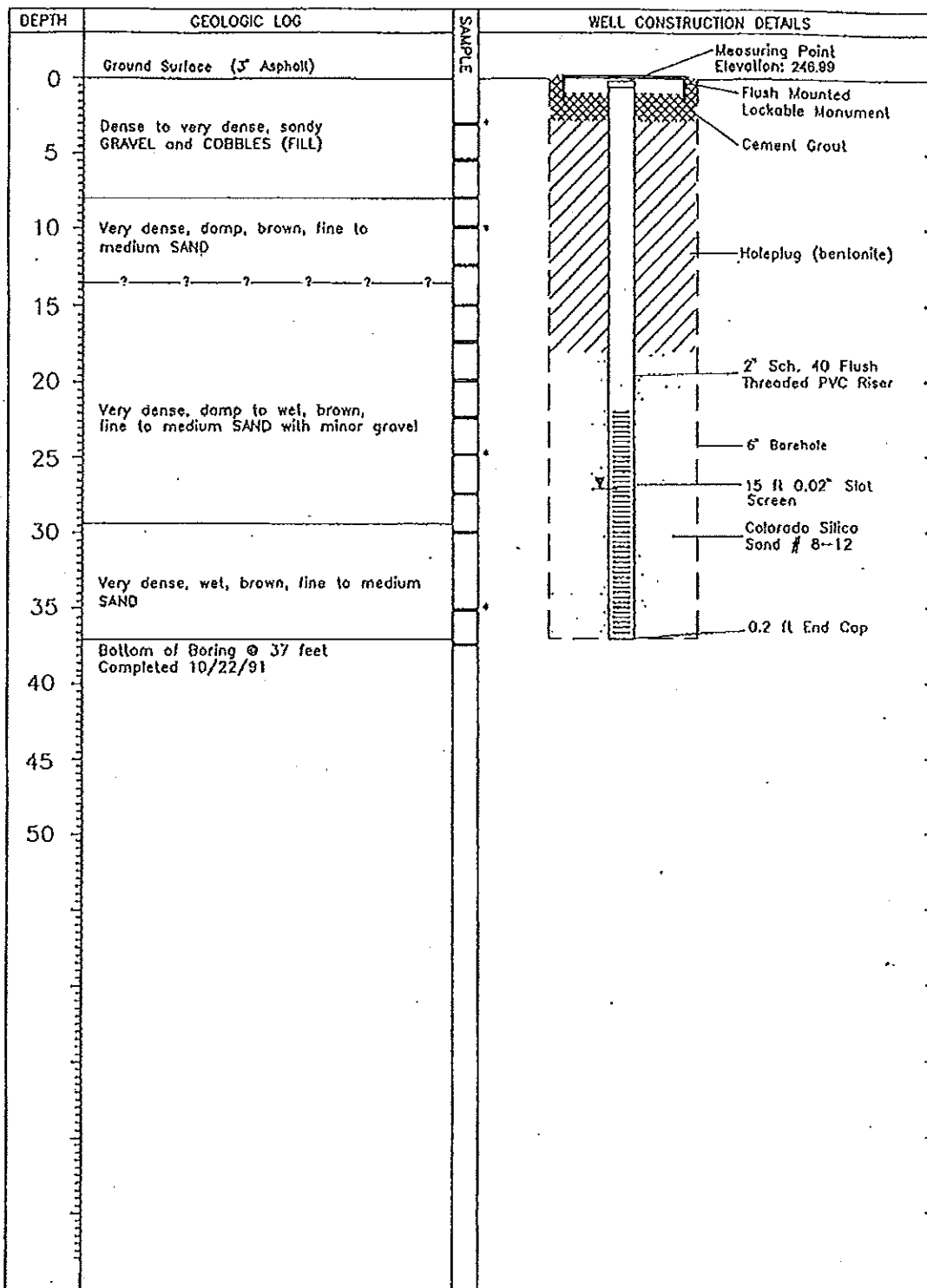
Figure 3  
Long-Term  
Monitoring Well Network

Birds Eye Groundwater Monitoring Plan

PGG

**APPENDIX A**  
**LONG-TERM MONITORING WELL NETWORK WELL LOGS**

FIGURE A1 MW-9S GEOLOGIC LOG AND AS-BUILT



\* Laboratory Chemical Analysis Performed on Sample

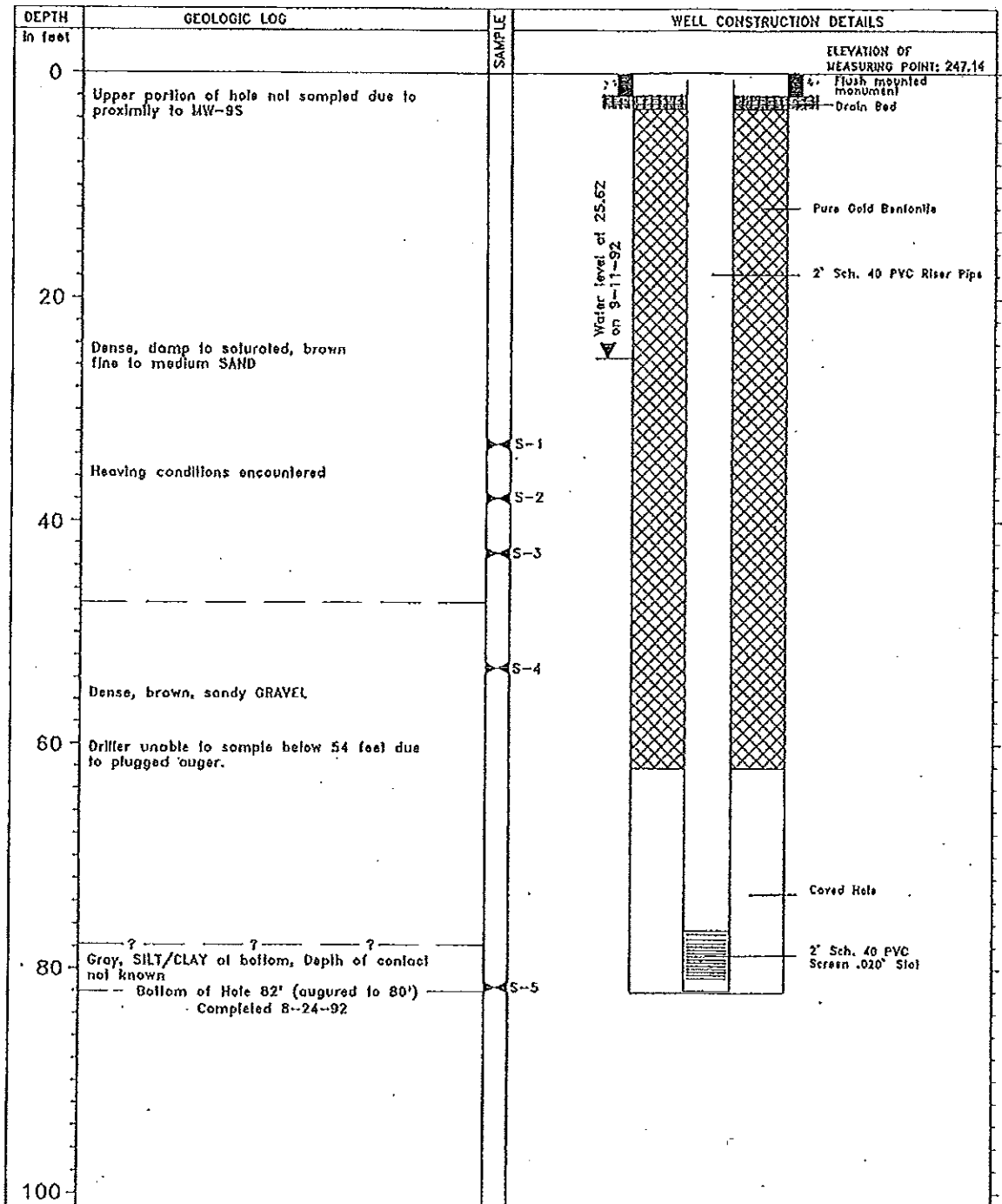
PROJECT NAME: Nalleys Fine Foods  
WELL IDENTIFICATION NUMBER: MW-9S  
DRILLING METHOD: Hollow Stem Auger  
DRILLER: Virgil Atkins  
FIRM: Geoboring & Development, Inc.  
CONSULTING FIRM: Pacific Groundwater Group  
REPRESENTATIVE: Peter Schwartzman

LOCATION: SE 1/4, SE 1/4, Sec. 7, T 20 N, R 3 E  
DATUM: NGVD  
WATER LEVEL ELEVATION: 216.76 on 11/5/91  
INSTALLED: October 1991  
DEVELOPED: November 1991





# FIGURE A2 MW-9D GEOLOGIC LOG AND AS-BUILT



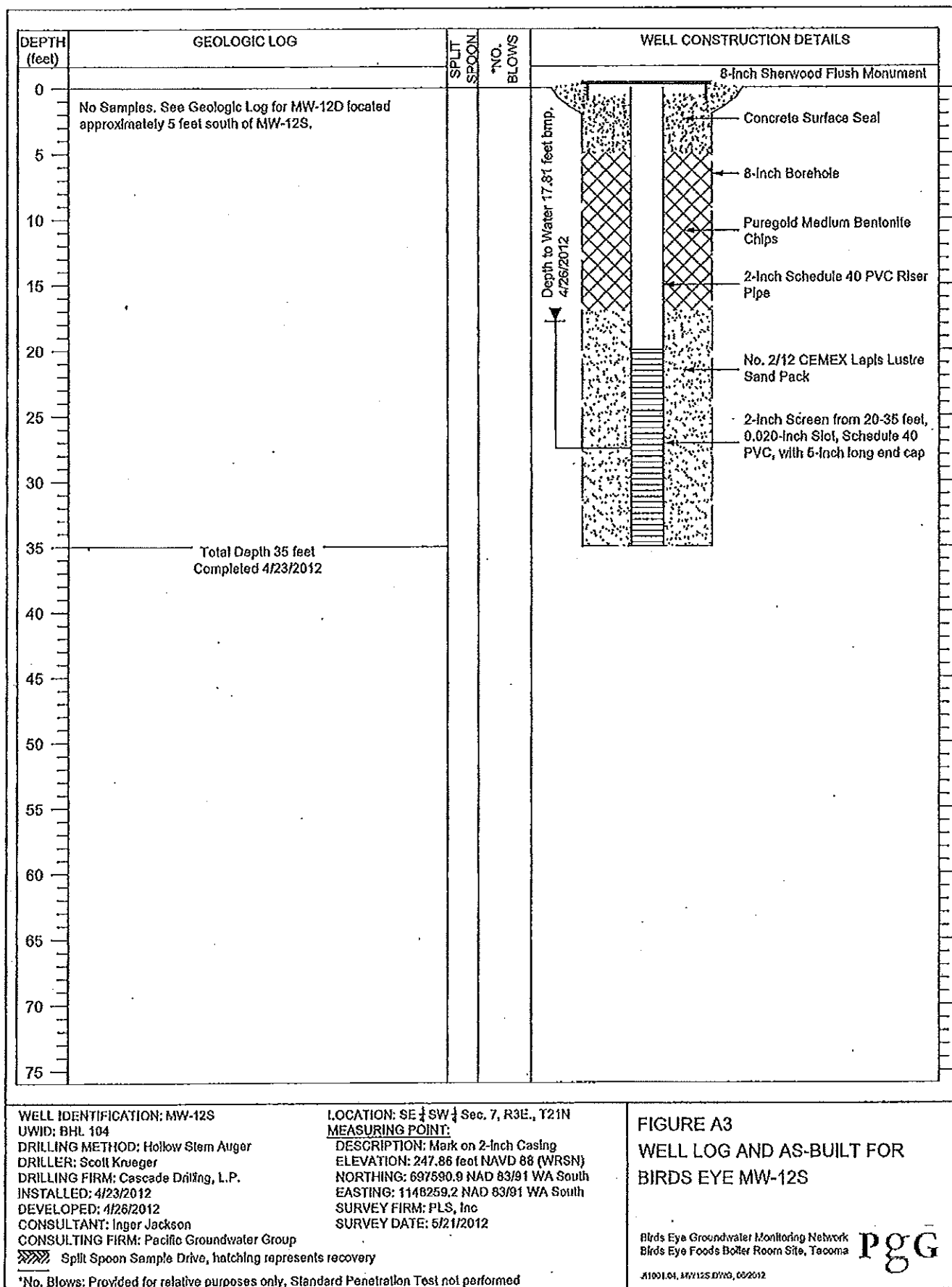
\* Sample Submitted for Chemical Analysis

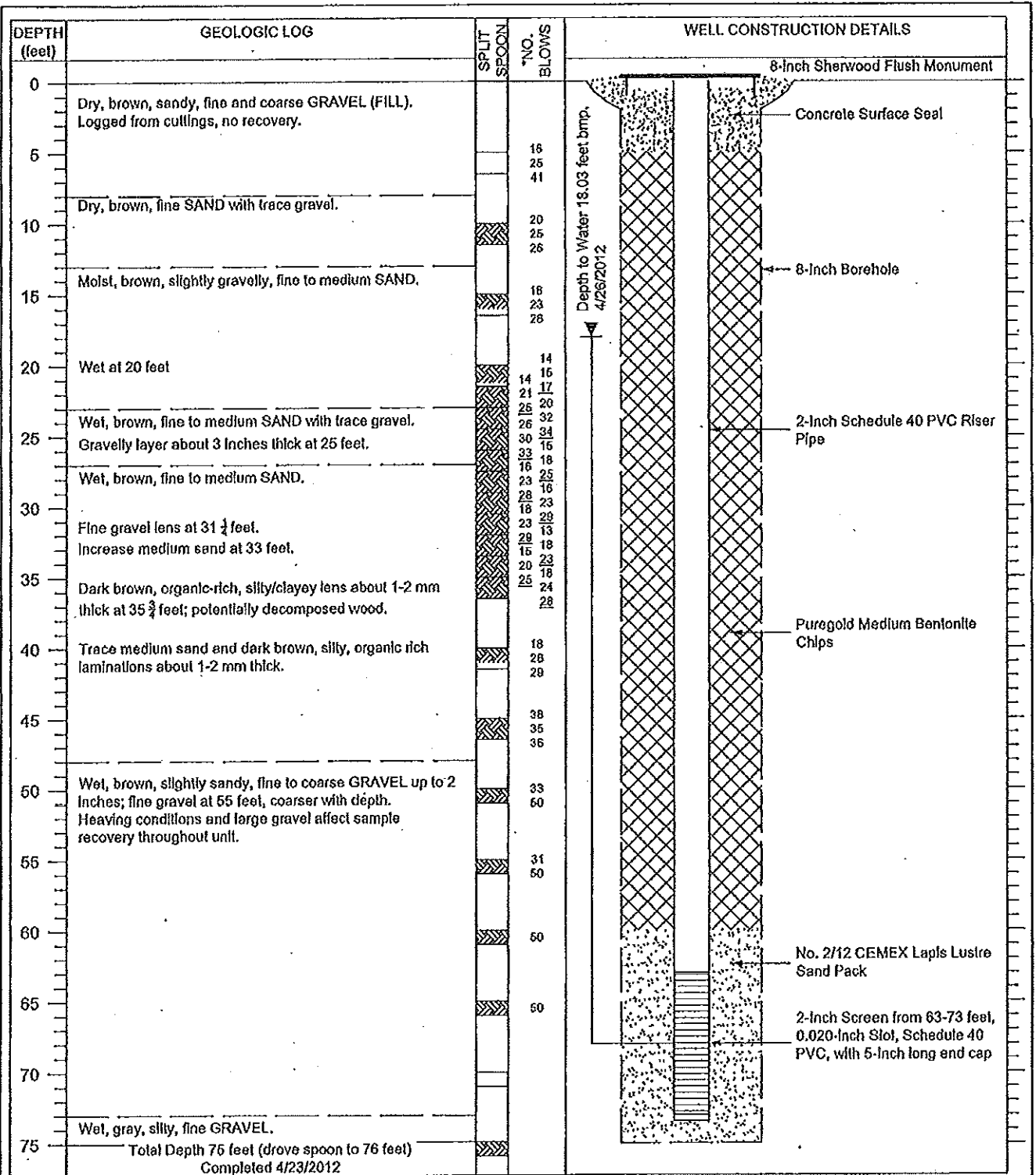
FIGURE A2

PROJECT NAME: Nolley's Fine Foods  
WELL IDENTIFICATION NUMBER: MW-9D  
DRILLING METHOD: Hollow Stem Auger  
DRILLER: Dale  
FIRM: GeoBoring and Development  
CONSULTING FIRM: Nowicki & Assoc. / PGG  
REPRESENTATIVE: Ron Nowicki / Chad Brigg

LOCATION: SE 1/4 SW 1/4 Sec. 7, R3E, T21N  
DATUM: NGVD  
WATER LEVEL ELEVATION:  
INSTALLED: 8-24-92  
DEVELOPED: 9-9-92

Pacific  
Groundwater  
Group





WELL IDENTIFICATION: MW-12D  
 UWID: BHL 103  
 DRILLING METHOD: Hollow Stem Auger  
 DRILLER: Scott Krueger  
 DRILLING FIRM: Cascade Drilling, L.P.  
 INSTALLED: 4/23/2012  
 DEVELOPED: 4/26/2012  
 CONSULTANT: Inger Jackson  
 CONSULTING FIRM: Pacific Groundwater Group  
 Split Spoon Sample Drive, hatching represents recovery

LOCATION: SE 1/4 SW 1/4 Sec. 7, R3E., T21N  
 MEASURING POINT:  
 DESCRIPTION: Mark on 2-Inch Casing  
 ELEVATION: 247.90 feet NAVD 88 (WRSN)  
 NORTHING: 697585.0 NAD 83/91 WA South  
 EASTING: 1148259.1 NAD 83/91 WA South  
 SURVEY FIRM: PLS, Inc  
 SURVEY DATE: 5/21/2012

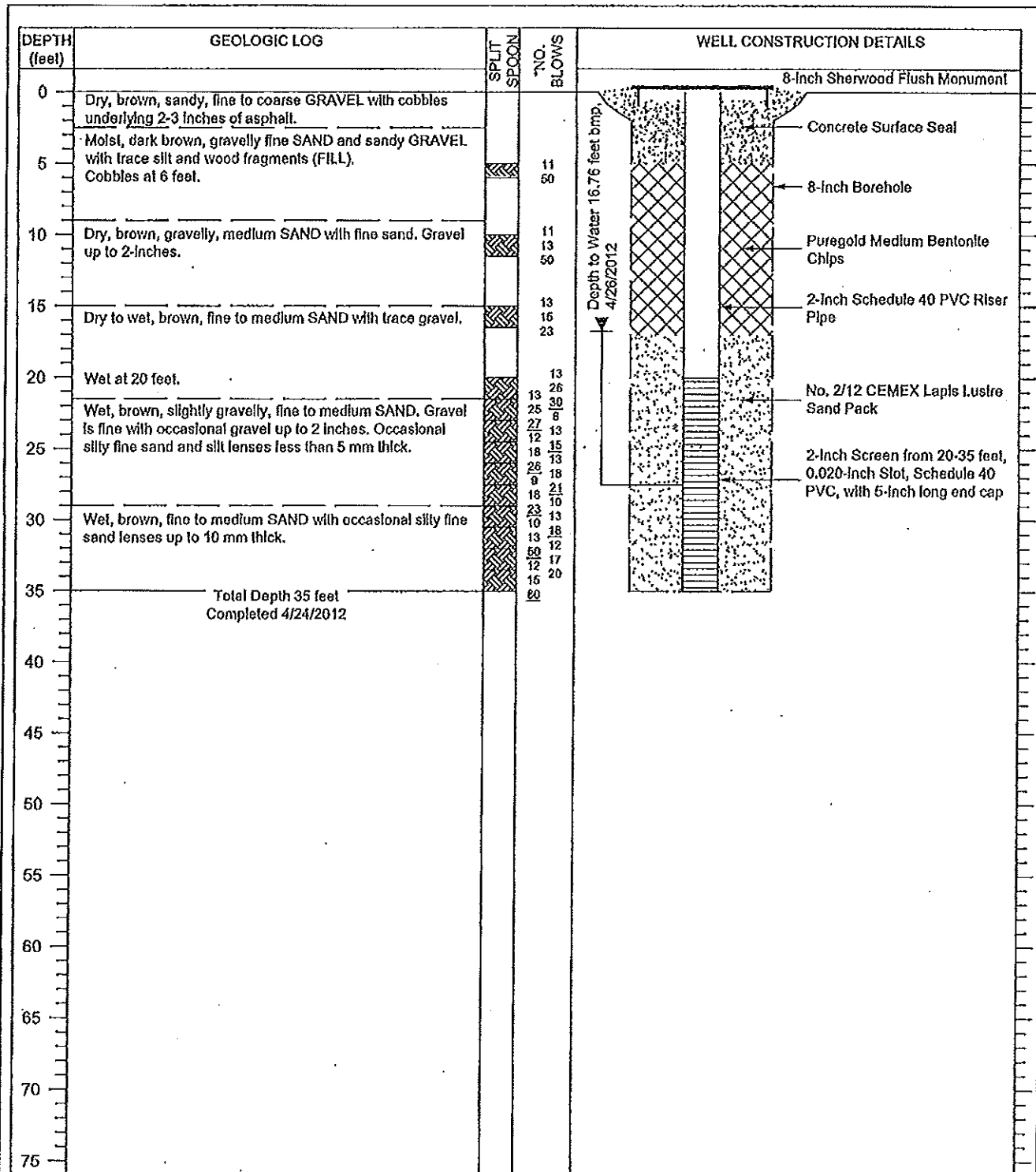
\*No. Blows: Provided for relative purposes only, Standard Penetration Test not performed

FIGURE A4  
 WELL LOG AND AS-BUILT FOR  
 BIRDS EYE MW-12D

Birds Eye Groundwater Monitoring Network  
 Birds Eye Foods Boiler Room Site, Tacoma

PGG

J1101.04, MW12D.DWG, 06/2012



WELL IDENTIFICATION: MW-13S  
 UWID: BHL 108  
 DRILLING METHOD: Hollow Stem Auger  
 DRILLER: Scott Krueger  
 DRILLING FIRM: Cascade Drilling, L.P.  
 INSTALLED: 4/24/2012  
 DEVELOPED: 4/26/2012  
 CONSULTANT: Inger Jackson  
 CONSULTING FIRM: Pacific Groundwater Group

Split Spoon Sample Drive, hatching represents recovery

LOCATION: SE 1/4 SW 1/4 Sec. 7, R3E., T21N  
 MEASURING POINT:  
 DESCRIPTION: Mark on 2-Inch Casing  
 ELEVATION: 246.89 feet NAVD 88 (WRSN)  
 NORTHING: 697449.3 NAD 83/91 WA South  
 EASTING: 1148109.1 NAD 83/91 WA South  
 SURVEY FIRM: PLS, Inc  
 SURVEY DATE: 5/21/2012

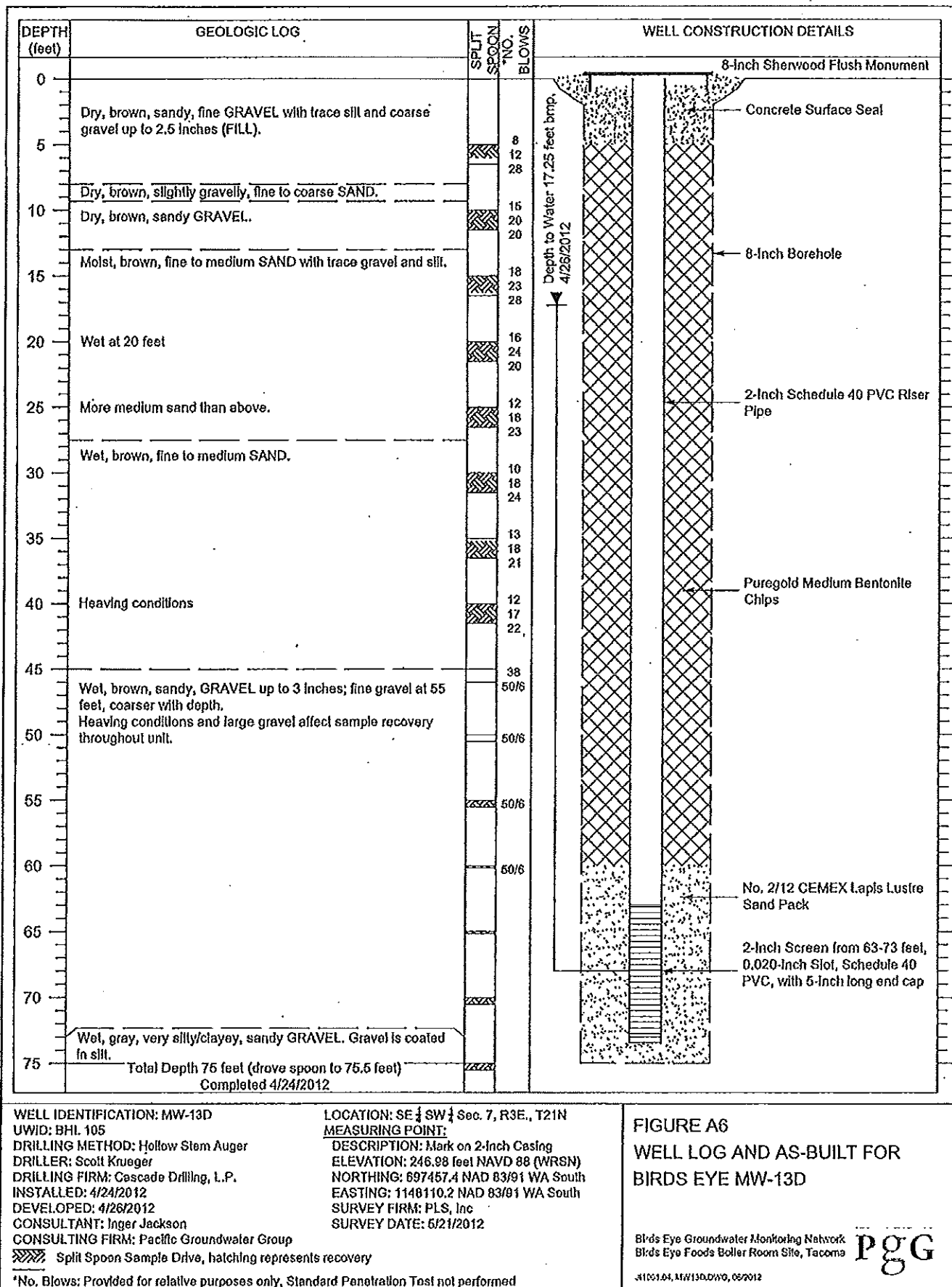
\*No. Blows: Provided for relative purposes only, Standard Penetration Test not performed

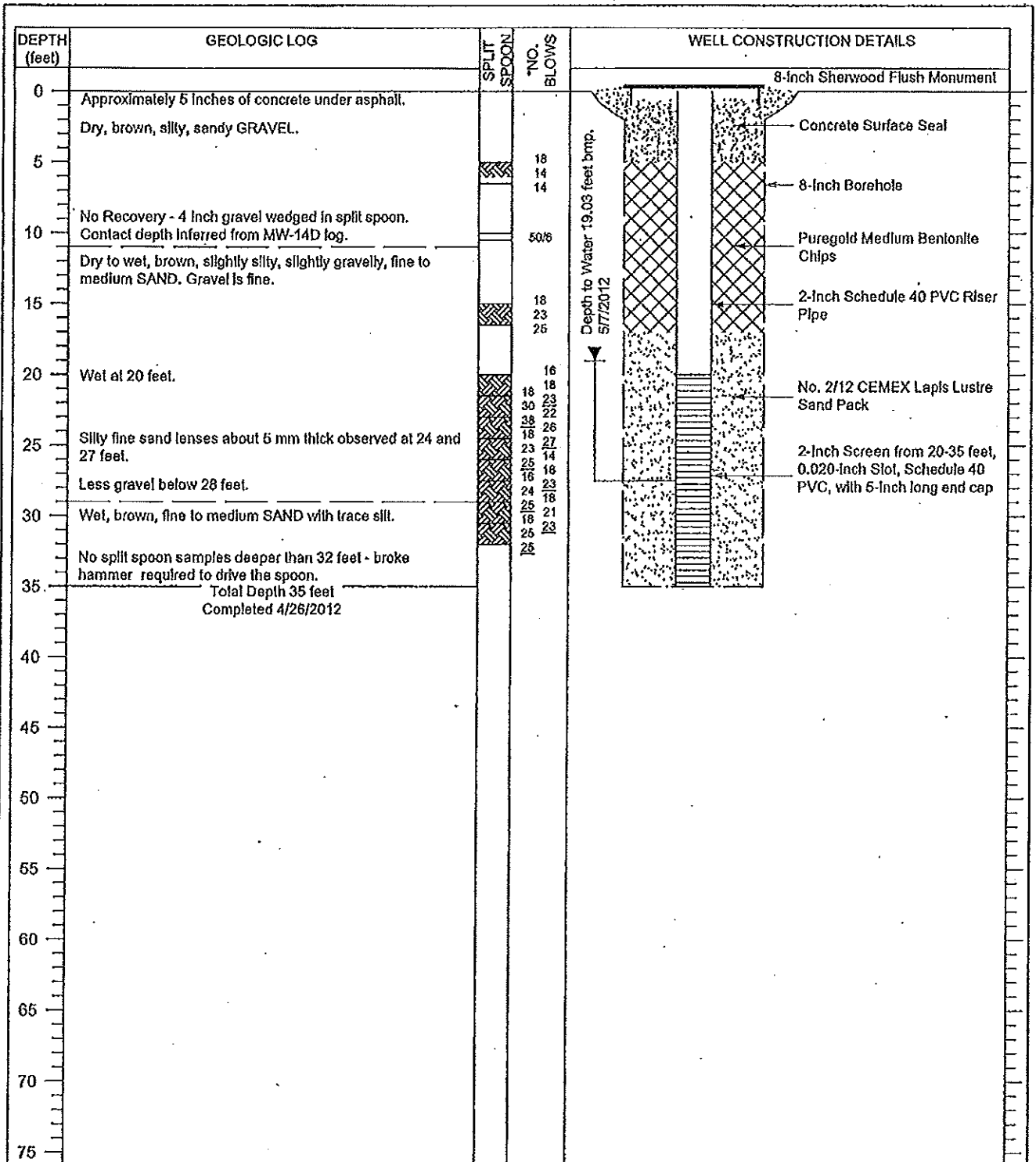
FIGURE A5  
 WELL LOG AND AS-BUILT FOR  
 BIRDS EYE MW-13S

Birds Eye Groundwater Monitoring Network  
 Birds Eye Foods Boiler Room Site, Tacoma

pgg

A100104, MW13S.DWG, 05/2012





WELL IDENTIFICATION: MW-14S

UWID: BHL 108

DRILLING METHOD: Hollow Stem Auger

DRILLER: Scott Krueger

DRILLING FIRM: Cascade Drilling, L.P.

INSTALLED: 4/26/2012

DEVELOPED: 4/26/2012

CONSULTANT: Inger Jackson

CONSULTING FIRM: Pacific Groundwater Group

Split Spoon Sample Drive, hatching represents recovery

LOCATION: SE 1/4 SW 1/4 Sec. 7, R3E., T21N

MEASURING POINT:

DESCRIPTION: Mark on 2-Inch Casing

ELEVATION: 249.08 feet NAVD 88 (WRSN)

NORTHING: 697375.4 NAD 83/91 WA South

EASTING: 1148314.6 NAD 83/91 WA South

SURVEY FIRM: PLS, Inc

SURVEY DATE: 5/21/2012

FIGURE A7

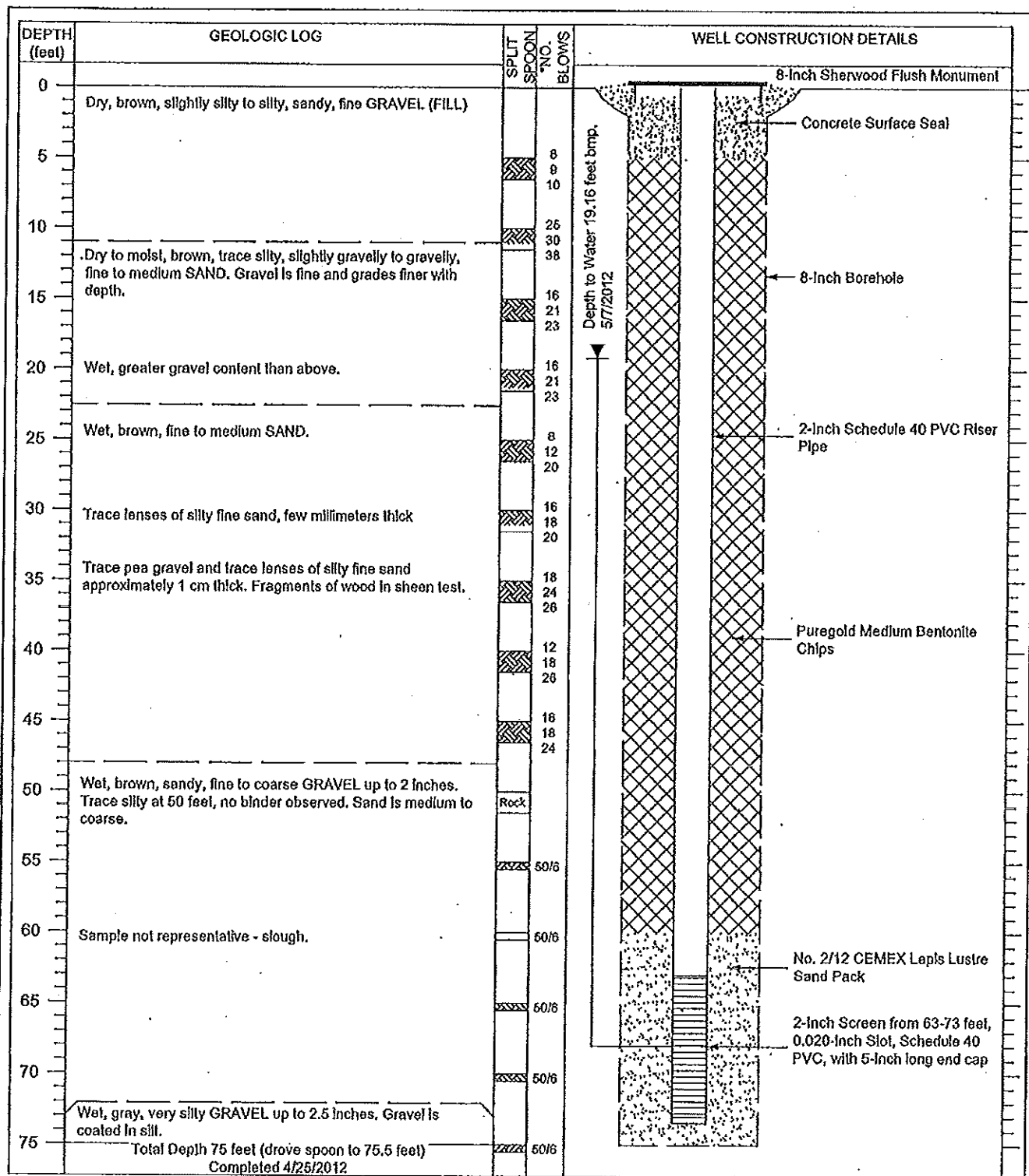
WELL LOG AND AS-BUILT FOR  
BIRDS EYE MW-14S

Birds Eye Groundwater Monitoring Network  
Birds Eye Foods Boiler Room Site, Tacoma

**pgg**

\*No. Blows: Provided for relative purposes only, Standard Penetration Test not performed

J100104, MW14S.DWG, 06/2012



WELL IDENTIFICATION: MW-14D  
 UWID: BHL 107  
 DRILLING METHOD: Hollow Stem Auger  
 DRILLER: Scott Krueger  
 DRILLING FIRM: Cascade Drilling, L.P.  
 INSTALLED: 4/25/2012  
 DEVELOPED: 4/26/2012  
 CONSULTANT: Inger Jackson  
 CONSULTING FIRM: Pacific Groundwater Group

Split Spoon Sample Drive, hatching represents recovery

\*No. Blows: Provided for relative purposes only, Standard Penetration Test not performed

LOCATION: SE 1/4 SW 1/4 Sec. 7, R3E., T21N  
 MEASURING POINT:  
 DESCRIPTION: Mark on 2-Inch Casing  
 ELEVATION: 249.10 feet NAVD 88 (WRSN)  
 NORTHING: 697375.0 NAD 83/91 WA South  
 EASTING: 1148326.9 NAD 83/91 WA South  
 SURVEY FIRM: PLS, Inc  
 SURVEY DATE: 5/21/2012

FIGURE A8  
 WELL LOG AND AS-BUILT FOR  
 BIRDS EYE MW-14D

Birds Eye Groundwater Monitoring Network  
 Birds Eye Foods Boiler Room Site, Tacoma

PGG

J11001.04, MW14D.DWG, 05/2012