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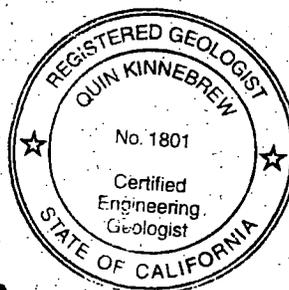
# Monitoring Well Installation Report

• Final •

*Operable Unit No. 2  
Brown & Bryant Superfund Site  
Arvin, California*

Prepared for:  
U.S. Army Corps of Engineers  
Los Angeles District  
Los Angeles, California

Prepared by:  
Panacea, Inc.

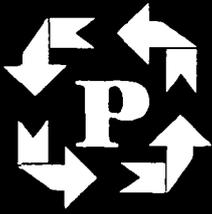


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November 1, 2002

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**SUBJECT: Final - Monitoring Well Installation Report for  
Brown and Bryant Superfund Site, Arvin,  
California**

Dear Mr. Fukushige:

Please find enclosed a copy of the final Monitoring Well Installation Report for Brown and Bryant Superfund Site, Arvin, California.

If you have any questions, please do not hesitate to contact me at (714) 228-1286.

Very truly yours,

PANACEA, INC.

Mohammad Estiri, Ph.D.  
Project Director

Enclosure

cc: Mr. Travis Cain (1 copy)  
Ms. Cecilia Horner (1 copy and The Laboratory Report from Associated Laboratories of Orange, California)  
Mr. Emmanuel Mensah (1 copy)  
Ms. Monique Ostermann (1 copy)  
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*RISK  
ASSESS*

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B*

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# Monitoring Well Installation Report

*Operable Unit No. 2*

*Brown & Bryant Superfund Site*

*Arvin, California*

## 1.0 INTRODUCTION

The former Brown & Bryant, Inc. facility (site) is a United States Environmental Protection Agency (USEPA) Superfund site in the city of Arvin, California. Chlorinated solvents and pesticides were introduced to soil and groundwater underlying this facility during Brown & Bryant's occupancy.

The purpose of this report is to document the installation of 10 groundwater monitoring wells and present the data collected during monitoring well installation. The monitoring wells were installed to further define the horizontal and vertical extent of groundwater contamination beneath and extending from the site. Soil and groundwater data collected to date are not considered sufficient to define the horizontal and lateral extent of soil and groundwater beneath and out from the site impacted by chemicals of concern (COCs) previously documented at the site.

Mr. Felix R. Mascareno of the U.S. Army Corps of Engineers (USACE) was onsite during all field work performed.

## 2.0 BACKGROUND INFORMATION

### 2.1 SITE BACKGROUND

The site is located at 600 South Derby Street in Arvin, California, approximately 18 miles southeast of the city of Bakersfield (Figure 1). The site is bordered on the east by irrigated agricultural fields, on the north and south by food packing and shipping facilities, and on the west by a residential area. Two schools (Gospel Tabernacle of Arvin and Stepping Stones Child Care Center) and a park (Bear Mountain Recreation and Park Center) are within 0.5 mile of the site. The Morning Star Preschool, at 416 North Hill Street, is within 1 mile of the site.

The Brown & Bryant facility operated as a pesticide reformulator and custom applicator facility from 1960 to 1989. This facility formulated agricultural chemicals, including pesticides, herbicides, fumigants, and fertilizers. In 1981, the Brown & Bryant facility was licensed under the Resource Conservation and Recovery Act (RCRA) as a hazardous waste transporter. Contamination of soil and groundwater resulted from inadequate procedural controls, poor housekeeping, chemical spills during operations, and leaks from a surface wastewater pond and sumps. The largest releases onsite were from a waste pond, a sump area, and a dinoseb spill area.

The waste pond, in the southwest portion of the site, was originally excavated as an unlined earthen pond in 1960. The pond was used to collect runoff water from the yard and from two sumps (since excavated). The pond was also used to collect rinse water from rinsing tanks used for fumigants. Excess pond water and rainwater runoff also collected in a topographically low area to the east and south of the pond. In addition, ponded water from precipitation and irrigation from the east has occasionally breached the berm in the southeast corner of the pond, and drained into the pond. The pond was double lined with a

synthetic liner in November 1979. The liner and additional soil were excavated in August 1987. Approximately 640 cubic yards of soil that showed visible signs of contamination were removed from the pond at that time. The depths of this excavation ranged from approximately 1.5 feet on the sides to 5 feet near the center.

In 1960, an unlined earthen sump was constructed in the center of the site (near wells AMW-2P and AMW-4R). The sump was used to collect washwater from a pad where equipment and tanks used for liquid fertilizers and fumigants were washed. Water from the sump was drained to the pond through an underground pipeline. In 1980, the unlined sump was replaced with two double-lined sumps.

Dinoseb was stored in a smaller tank storage area along the eastern fence, just north of the pond. In 1983, there was a significant dinoseb spill in this area. As a result, the soil and groundwater underlying this portion of the site has been reported to contain the highest concentrations of dinoseb. The USEPA excavated highly contaminated soil from this area in the mid 1990s.

In 1989, the site was listed on the National Priorities List (NPL). Subsequently, various emergency and removal actions were initiated to minimize or eliminate immediate threats to human health and the environment.

The site is currently vacant. A warehouse, an open metal shed, and an aboveground storage tank are on the property. The property is secured by a chain-link fence and paved with asphalt. The asphalt acts as a RCRA cap in the site's southern portion, and a non-RCRA cap in the site's northern portion (Figure 2).

## 2.2 SITE GEOLOGY AND HYDROGEOLOGY

Geology beneath the site is comprised of an alluvial deposit of alternating layers and mixtures of unconsolidated sands, silts, and clay. Soil underlying the site to a depth of 80 feet generally consists of silty fine sand to fine sandy silt. Clean, well-graded sand lenses and thin seams of silty clay occur locally within these soils. The soils are thinly interbedded, with textural changes occurring every few vertical inches. These textural changes are also believed to occur laterally.

The site geology and hydrogeology in this investigation has been divided into two zones: the A-zone and the B-zone. The A-zone includes unsaturated soil to 65 to 75 feet below ground surface (bgs) and includes the first water-bearing unit, the A-zone groundwater. The depth to the saturated zone (see depths to groundwater listed in Section 2.5) varied between 65 and 85 feet bgs in recent groundwater depth measurements. The base of the A-zone is a thin sandy clay layer from 75 to 85 feet bgs. The clay layer and the A-zone groundwater occur beneath the entire site but disappear within 900 feet south of the site.

The B-zone includes unsaturated soil beneath the A-zone and the second-water-bearing unit (B-zone groundwater) at 150 to 165 feet bgs. The B-zone extends to at least 250 feet bgs and ends at a clay layer known as the Corcoran Clay that confines the drinking water aquifer beneath it. The thickness of this clay layer beneath the site is unknown. Specific data regarding the alluvial soil types within the B-zone were not encountered in previous reports prepared for the site or the adjoining properties. We understand that these materials comprise mixtures and layers of clay, silt, sand, and gravel.

Groundwater in the A-zone flows in a generally southerly direction, with some mounding of the water table observed extending south from the southwest corner of the site. The saturated thickness of the A-zone groundwater ranges from 0 to 10 feet. The groundwater velocity in the A-zone has been estimated at 53 feet/year. Slug test results suggest that a yield of less than 100 gallons per day can be expected for wells in the A-zone. Aquifer testing of three of the onsite extraction wells showed a groundwater yield of

approximately ¼ gallon per minute (gpm) (Morrison Knudson Corporation [MK], 1999b). It is Panacea's opinion, however, that the wells tested were in a portion of the site that typically yields low water quantities. Wells south of the site, within the A-zone, have significantly greater yield.

The B-zone groundwater comprises a series of water-bearing units. All of the wells in the B-zone were installed in the water-bearing unit located at approximately 170 feet bgs. The direction of flow in this unit is to the south, and the gradient is flat (0.0004). Permeabilities are much higher than for the A-zone groundwater. Past pump tests indicated that wells screened in the B-zone could be pumped at 7 gpm (MK, 1999b) for an extended period.

### 2.3 PREVIOUS AGENCY INSPECTIONS AND FINDINGS

Inspections by the California Water Quality Control Board have documented numerous instances of poor housekeeping practices during Brown & Bryant's occupancy of the site. As noted above, an onsite tank holding dinoseb and two unlined ponds for pesticide rinse water were noted as being potential contaminant release areas. One 250,000-gallon pond was noted as overflowing twice. The onsite tank, 560,000 gallons in capacity, is also reported to have leaked. In 1984, the California Department of Health Services identified various pesticides in onsite wells, including 1,2-dibromo-3-chloropropane, ethylene dibromide, dinoseb, 1,2-dichloropropane, and chlorobenzene.

Subsurface investigations conducted onsite to date (briefly described in Section 2.4) have confirmed the presence of a number of potentially hazardous substances in the groundwater. Fifty-six organic compounds were found within the A-zone groundwater samples and 11 were found in the B-zone groundwater samples. The primary COCs include:

- Chloroform;
- 1,2-dibromo-3-chloropropane (DBCP);
- 1,2-dichloropropane (1,2-DCP);
- 1,3-dichloropropane (1,3-DCP);
- 1,2,3-trichloropropane (1,2,3-TCP);
- Ethylene dibromide (EDB); and
- Dinoseb.

These chemicals were detected during the Operable Unit No. 1 (OU1) investigation. Other COCs were encountered during this investigation.

The contamination in the perched aquifer poses a potential threat to the underlying unconfined regional aquifer (B-zone) and the aquifer beneath the B-zone that is used for municipal drinking water. Public and private wells within 3 miles of the site provide drinking water to 7,200 people and irrigate 19,600 acres of cropland. City of Arvin Well #1 is 1,500 feet downgradient from the site.

### 2.4 PREVIOUS INVESTIGATIONS BY OTHERS

Panacea's background information is based primarily on data presented in reports listed in Section 11. These reports, dated between 1987 and 1999, generally present the results of onsite soil and groundwater

investigations, feasibility studies, and remedial action plans. A brief review of some of the more pertinent studies is provided in the following paragraphs.

The earliest document reviewed, prepared by Hargis & Associates (H&A) in June 1987, presented a work plan to assess the extent of soil and groundwater contamination from the release of onsite chemicals (H&A, 1987). That work plan presents the results of shallow soil sampling and groundwater testing (Wells AMW-1 through AMW-4) conducted in 1984 by H&A. Water and soil samples collected from these wells/borings were noted as having elevated concentrations of COCs. Data gathered during that work was used to plan further onsite assessment. H&A implemented this work plan in 1987 and 1988. H&A's investigation included sampling vadose zone soils and installing six monitoring wells (AP-1 through AP-5, and AR-1) (H&A, 1988). COCs were detected in samples collected from each of the wells.

Shallow impacted soils (up to 12-foot depths) beneath the former onsite sumps and pond were excavated in August 1987 by Canonie Environmental (Canonie Environmental, 1987). Soil samples collected from the base of the excavations were noted as containing elevated concentrations of COCs. Groundwater testing was not conducted during this remedial action.

The USEPA presented a remedial investigation/feasibility study report in 1993 (USEPA, 1993b). That report presents the findings of a remedial investigation that included an assessment of groundwater in the A-zone aquifer and the B-zone aquifer. Seven COCs (listed in Section 2.3) and approximately 49 other organic compounds were found widely distributed and at elevated concentrations in water in the A-zone. The highest concentrations were observed in a well near the former sump (AMW-2P), a well west of the sump (WA-6), and wells near the former pond (AMW-1P, EPAS, and EPAS-3). Distribution of the contaminants was consistent with the locations of the major source areas and followed a pattern consistent with groundwater flow in the A-zone. The compound 1,2-dichloropropane was found to be the most widely ranging contaminant in the A-zone (over 5.5 acres). This contaminant was also reported to be present in water samples collected from wells in the B-zone.

In February 1999, Ecology and Environment presented the results (via memoranda) of groundwater sampling conducted in July 1998 and January 1999 (Ecology and Environment, 1999a,b). Analytical results indicated that relatively elevated concentrations of the COCs continued to be present in the onsite and offsite wells. The real distribution of four COCs was provided with the July 1998 results (Ecology and Environment, 1999a). These COCs were shown as underlying most of the site's central and southern portions, and extending offsite to the southwest, south, and southeast.

In June 1999, Morrison Knudson Corporation (MK) presented a monitoring well completion report for Wells MW-1, MW-2, and MW-3 (MK, 1999a). These three wells were installed to serve as observation wells during aquifer testing of the three adjacent extraction wells (EW-1, EW-2, and EW-3). The new monitoring wells were placed 8 to 15 feet from the extraction wells. The MK (1999a) report generally presented well construction procedures and physical properties of soil collected.

In August 1999, MK presented the results of a series of aquifer tests that were performed on the newly installed extraction wells (EW-1, EW-2, and EW-3) and injection wells (IW-1 and IW-2) (MK, 1999b). The objectives of the aquifer tests were to determine the sustainable yield at each of the five test locations and the efficiency, specific capacity, and hydraulic properties of the perched aquifer. Data collected were used to assess the viability of using the pump-and-treat method for remediating the perched aquifer. Test results indicated a relatively low yield for extraction and injection wells, suggesting only limited success with the pump-and-treat method.

## 2.5 PREVIOUS GROUNDWATER ASSESSMENT BY PANACEA

Since July 2000, Panacea has sampled 11 onsite wells and 13 offsite wells as part of a continuing groundwater assessment program. Sixteen of these wells are screened within the A-zone aquifer, seven are screened within the B-zone aquifer, and one is a city well screened within the C-zone aquifer. Well depths, screen intervals, well diameters, depths to groundwater (measured on July 17, 2000), and surveyed casing elevations are listed in the following table:

WELL ID	WELL DEPTH (ft btoc)	WELL SCREEN INTERVAL (ft bgs)	WELL DIAMETER (inches)	DEPTH TO GROUNDWATER (ft btoc)	CASING ELEVATION (reamsl)
<b>A-Zone Wells</b>					
AMW-1P	70.80	60.8-70.8	4	72.82	435.38
AMW-2P	75.30	63.6-73.6	4	70.59	433.52
AP-1	71.15	59.5-69.5	4	69.90	434.30
AP-4	75.19	60-70	4	73.45	435.90
WA-1	78.5	63-78	4	66.92	429.35
WA-2	75.5	63-73	4	68.28	430.96
WA-3	80.08	68-78	4	74.91	435.85
WA-4	78.58	66-76	4	76.28	436.73
WA-5	80±	67-77	4	73.36	435.62
WA-6	78.1	64-74	4	72.71	434.60
WA-7	79.0	66-76	4	73.65	434.65
WA-8	73.5	61-71	4	71.88	433.12
WA-9	78.5	68-78	4	68.60	429.07
EPAS-2	86.2	64-84	4	71.75	433.69
EPAS 3	86.3	64-86	4	71.64	432.18
EPAS 4	84.2	62-82	4	71.96	435.99
<b>B-Zone Wells</b>					
AMW-3R*	200±	121.5-201.5±	4	152.33	433.55
AMW-4R*	200+	138-198	4	153.72	434.79
AR-1	185±	140-182	4	153.90	435.07
WB2-1	186.0	169.5-179.5	4	151.15	432.29
WB2-2	182.5	168-178	4	153.82	434.88
WB2-3	186.5	172-182	4	149.62	430.70
WB2-4	180.0	168-178	4	163.46	425.27
<b>C-Zone Well</b>					
CW-1	730.0	350-700**	Unknown	Unknown	Unknown

Notes for above tables (where applicable):

1. ft btoc = feet below top of casing
2. ft bgs = feet below ground surface (from well construction diagrams)

3. reamsl = relative elevation above mean sea level (based on survey data)
4. \* = Wells may be screened in A and B zones
5. \*\*= The gravel pack for the city well is reported at 24 to 730 ft bgs

The wells initially chosen for this study were spaced widely within the known contaminant plume, and along portions of the plume's perimeter (based on data provided by Ecology and Environment [1999b]). These wells, similar to those used by Ecology and Environment, were intended to provide sufficient data to delineate the onsite and offsite extent of the seven COCs listed in Section 2.3 of this report.

### 3.0 OBJECTIVE OF WELL INSTALLATION

The objective of this planned investigation was to install 10 additional groundwater monitoring wells that will be used to further define the extent of COC contamination onsite and offsite. As noted earlier, the extent of COC contamination has not been adequately assessed in either the A-zone or the B-zone. This report documents the installation of the 10 additional groundwater monitoring wells in areas where the COCs must be further assessed. Five of the wells were installed within the A-zone, and five were installed within the B-zone.

### 4.0 WELL LOCATIONS

As noted in Section 3.0, 10 wells were installed during this investigation. The well locations, shown on Figure 2, are described in the following table:

WELL ID	WELL LOCATION (see Figure 2)	WELL DEPTH (ft bgs)	SCREEN INTERVAL (ft bgs)
<b>A-ZONE</b>			
PWA-1	East side of Derby Street; southwest of WA-7	85	65-85
PWA-2	Southeast corner of site; adjacent to AP-3	85	65-85
PWA-3	Directly between EPAS-3 and WA-2	85	65-85
PWA-4	Between WA-9 & AP-4; southwest of EPAS-1	85	65-85
PWA-5	Approximately 150 feet east of WA-8	85	65-85
<b>B-ZONE</b>			
PWB-1	Immediately north of AP-2; north side of fence	185	165-185
PWB-2	East of Franklin & Derby Streets	160	140-160
PWB-3	Immediately south of AP-3	165	145-165
PWB-4	Adjacent to EPAS-1	165	145-165
PWB-5	Between WB2-3 and WB2-4	165	145-165

Note:

ft bgs = feet below ground surface

## 5.0 METHODOLOGY

### 5.1 PRE-WELL-INSTALLATION ACTIVITIES

Prior to installation of the monitoring wells, well installation permits were obtained through the Kern County Environmental Health Department (KCEHD). The well permits are included as Appendix A.

The KCEHD, the USACE, the California Environmental Protection Agency (Cal/EPA), and property owners were notified 5 days prior to monitoring well installation. Panacea contacted the property owners and secured right-of-entry for the proposed borings/monitoring wells where appropriate.

Underground Service Alert (USA) was notified of Panacea's intent to conduct subsurface investigations at least 48 hours prior to initiation of intrusive field sampling. All planned monitoring well locations were clearly marked with white paint, wooden lath, and/or surveyor's flagging, as required by USA. USA contacted all utility owners of record within the site vicinity and notified them of Panacea's intention to conduct a subsurface investigation near buried utilities. All utility owners of record, or their designated agents, were expected to clearly mark the position of their utilities on the ground surface throughout the area designated for investigation.

### 5.2 SOIL BORING AND SAMPLING

Borings for each of the A-zone wells were drilled using a truck-mounted continuous-flight hollow-stem auger drill rig equipped with 8.25-inch- and 10-inch-outer-diameter (OD) hollow-stem augers. Each of the borings was drilled to a total depth of 85 feet.

Borings for B-zone wells PWB-2 through PWB-5 were drilled using a truck-mounted continuous-flight hollow-stem auger drill rig equipped with 8.25-inch- and 10-inch-OD hollow-stem augers. The boring for B-zone well PWB-1 was drilled using a mud rotary drill rig equipped with 5-inch and 10-inch-OD drill bits. Each of the wells within the B-zone was drilled to a total depth from 160 feet bgs to 185 feet bgs, depending on the depth water was encountered within the B-zone.

Borings for wells PWA-1 and PWA-5 were drilled to depths of 85 feet without the collection of soil samples. Soil samples were collected during the installation of wells PWA-2, PWA-3, PWA-4, and PWB-1 through PWB-5. Continuous soil sampling was conducted for borings PWB-1 and PWB-2, and the remaining borings/wells were sampled at 5-foot intervals to the total depth of the borings, starting at 5 feet bgs. Borings from which soil samples were collected were first drilled with either 8.25-inch-OD augers or a 5-inch-outer-diameter drill bit, then overdrilled with 10-inch-OD augers or a 10-inch-OD drill bit to set the well.

During drilling, a split-spoon sampler was used to collect undisturbed soil at each sampling interval. Three brass tubes (each with a 2-inch diameter and 6-inch length) lined the inside of the split-spoon sampler. Each soil container used during this investigation was new and unused or had been thoroughly washed and rinsed prior to reuse. Soil was driven into the liners at each planned sampling interval. When the sampler was filled, it was pulled to the surface via a wire line and the sample collected. Immediately upon collection, the bottom soil-filled tube from the sampler was immediately capped, labeled, placed on ice in a cooler with the appropriate chain-of-custody records, and stored for possible chemical analyses (at a fixed laboratory). The upper tubes were used for lithologic description in the field, as well as for testing of the soil's physical properties. All soil samples scheduled for physical property testing were placed into a separate storage container at the time of sampling for delivery to a fixed laboratory.

A State of California-registered geologist (Mr. Quin Kinnebrew or Mr. Wilson Cablk) reviewed and described the soil samples collected from each sampling interval. The soil description included a lithologic description (using the Unified Soil Classification System), color (using the Munsell color system), general moisture content, general porosity, mineral content (if visible; including evaporites), fracturing, and shearing. All soil descriptions were recorded onto Panacea's standard boring log form. Borings logs are included in Appendix B.

A portion of each soil sample collected was placed into a glass mason jar or resealable plastic bag and allowed to volatilize. The headspace of each jar or bag was measured in the field for volatile organic compounds (VOCs) using a photoionization detector (PID). Headspace measurements were recorded on the boring logs.

### **5.3 WELL INSTALLATION ACTIVITIES**

#### **5.3.1 A-ZONE WELLS**

After completion of drilling, the borings were converted to groundwater monitoring wells constructed of 4-inch-diameter schedule 40 polyvinyl chloride (PVC) Johnson wire-wrap screen and solid schedule 40 PVC casing. The screened portion of the wells, consisting of 0.01-inch-wide slots, were placed between approximately 65 and 85 feet bgs, similar to previously installed A-zone wells. Solid PVC casing was placed between 0.5 and 65 feet bgs. Number 2/12 Monterey sand was placed in the annulus of the screened interval, with an additional 2 feet above the screen and 1 foot below the screen. A 5-foot-thick bentonite-chip seal was placed above the filter pack. Neat cement (Portland cement with approximately 5 percent bentonite) was placed to within 2 feet of the surface. The setting time for the neat cement was approximately 24 hours. The upper 2 feet of each well was sealed with concrete.

#### **5.3.2 B-ZONE WELLS**

After completion of drilling, the borings within the B-zone were converted to groundwater monitoring wells constructed of 4-inch-diameter schedule 40 PVC Johnson wire-wrap screen and solid schedule 40 PVC casing. All of the B-zone wells were originally to be screened from approximately 165 feet to 185 feet bgs, similar to previously installed B-zone wells. Because saturated soil was encountered within the B-zone above 165 feet bgs, the screen for each well was set approximately 5 feet above and 15 feet below the depth water was encountered. The screened portion of the wells, consisting of 0.02-inch-wide slots, was placed between approximately 140 and 185 feet bgs. All wells were constructed with 20 feet of screen. Solid PVC casing was placed between 0.5 feet bgs and the top of the screen. Number 3 Monterey sand was placed in the annulus of the screened interval with an additional 2 feet above the screen, and 1 foot below the screen. A 5-foot-thick bentonite-chip seal was placed above the filter pack. Neat cement (Portland cement with approximately 5 percent bentonite) was placed to within 2 feet of the surface. The setting time for the neat cement was approximately 24 hours. The upper 2 feet of each well was sealed with concrete.

In accordance with the Well Installation Permits, at least 24 hours prior to placing the bentonite chip and neat cement seal for each well, Panacea personnel notified Kern County Well Inspector Marty Brownfield.

#### **5.3.3 WELL INSTALLATION COMPLETION**

The wells were finished either with a traffic-rated Christy™ box set in concrete, or within a locked standpipe secured with crash posts. Well construction details are presented in Table 1.

### 5.3.4 WELL DEVELOPMENT

After installation, the drilling crew developed the groundwater monitoring wells using a combination of surging, bailing, and pumping. Surging took place following the placement of sand into the well annulus. Bailing and pumping were conducted after the cement grout had time to set sufficiently. At least five well volumes of water were removed from each well. Groundwater collected during development was containerized within a portable tank onsite.

Prior to purging and groundwater sampling, the crew used an electronic sounder, accurate to the nearest  $\pm 0.01$  foot, to measure each well for depth to water from the top of the casing. The sounder's probe was lowered down the casing to the top of the water. Upon contacting the surface of the water column the sounder emits a constant tone, and the graduated markings on the probe wire or tape were used to measure the depth to water from the surveyed point on the rim of the well casing.

Total well depth was sounded from the top of casing by lowering the weighted probe to the bottom of the well. The weighted probe would sink into silt, if present, at the bottom of well screen. Total well depths were measured by lowering the weighted probe to the bottom of well and recording the depth to the nearest 0.01 foot. Water-level sounding and total well depth equipment was decontaminated before and after use in each well.

Well volume was calculated based on total well depth, standing water level, and casing diameter. One casing volume was calculated as

$$V = \pi r^2 h (7.48)$$

where

$V$  = volume of one well casing of water (in gallons);

$\pi$  = 3.14

$r$  = inner radius (diameter/2) of the well casing (in feet);

$h$  = total height of water in the well (in feet); and

7.48 = number of gallons per cubic foot.

During purging, water temperature, pH, and specific conductance were measured using field test meters, and the measurements were recorded. After five casing volumes had been removed, purging ceased and the well was considered developed. If a well dewatered during development and five casing volumes had not been purged, the well was allowed to recharge up to 80 percent of the static water column and be dewatered once more. The well was then considered developed.

## 5.4 DECONTAMINATION PROCEDURES

Drilling and sampling equipment was decontaminated by washing with a mild solution of Alconox® and rinsing with tap water or steam cleaning between each sampling interval.

All equipment (e.g., water depth meters) that came into contact with potentially contaminated soil or water was decontaminated. Equipment was decontaminated before and after each use. Disposable equipment intended for one-time use was not decontaminated but was packaged for appropriate disposal. All sampling devices used were decontaminated according to USEPA Region IX-recommended

procedures. The following steps, conducted in sequence, comprise the decontamination procedure for sampling equipment:

1. Nonphosphate detergent (Alconox<sup>®</sup> detergent was used for this project) and tap-water wash, using a brush,
2. Tap-water rinse, and
3. Deionized/distilled water rinse (twice).

## 6.0 LABORATORY ANALYSIS

### 6.1 CHEMICAL AND METAL ANALYSIS

Select soil samples were submitted to Associated Laboratories of Orange, California (a USACE-certified analytical laboratory), using proper chain-of-custody protocol. The samples were analyzed for the following:

- Volatile organic compounds (VOCs) by USEPA Test Method 8260B;
- Semi-volatile organic compounds (SVOCs) by USEPA Test Method 8270;
- Herbicides by USEPA Test Method 8151;
- Pesticides by USEPA Test Method 8081, and
- Metals by USEPA Test Methods 6010/7000.

The chain-of-custody and the laboratory reports are available upon request , and the analytical results are summarized in Table 2 and Table 3.

### 6.2 SOIL PHYSICAL CHARACTERISTIC ANALYSIS

Representative soil types from each boring were tested for moisture content, dry density, grain size distribution by ASTM D422, and hydraulic conductivity by ASTM D5084. AP Engineering and Testing, Inc. (AP Engineering and Testing) of Pomona, California, an independent fixed laboratory, conducted the testing. AP Engineering and Testing's reports are included as Appendix D, and the test results are summarized in Table 4.

## 7.0 WASTE DISPOSAL

Soil cuttings were placed into six soil bins located immediately adjacent to the onsite building. Composite samples were collected from the soil bins and submitted for analyses to determine appropriate disposal (please see Appendix C). A review of the analytical results indicated that the waste was hazardous. Following a review of the results, the generated waste was transported off-site by Dome Rock Transportation, Inc. (Dome Rock Transportation), of Bakersfield, California. The waste was transported to Resource Renewal Technology, Inc. (Resource Renewal Technology), in Bakersfield, California, for recycling/disposal.

Decontamination water and groundwater generated during development of the monitoring wells was stored onsite in a Baker Tank. To characterize the liquid waste, a water sample was collected and submitted to the USACE/California Certified Laboratory for chemical analysis. The characterization data are provided in Appendix C. Upon review of the data, the liquid waste was also transported by Dome Rock Transportation to Resource Renewal Technology for recycling/disposal.

The analytical results for all the wastes generated during the installation of monitoring wells were assessed to be non-hazardous; therefore, no waste manifest was required.

## 8.0 RESULTS

### 8.1 A-ZONE WELLS

#### 8.1.1 PWA-1

Boring PWA-1 was drilled on November 9, 2001, using the hollow-stem auger drilling method with 10-inch-OD augers. No soil samples were collected during drilling. The total depth of well PWA-1 is 85 feet and its screened interval is 65 to 85 feet bgs. On December 4, 2001, depth to water was measured at 77.90 feet below the top of the casing (btoc), and the well was developed. Twenty-five gallons (five well volumes) of water were removed from the well during development.

#### 8.1.2 PWA-2

Boring PWA-2 was drilled on November 7, 2001, using the hollow-stem auger drilling method with 8.25-inch-OD augers. During drilling, soil samples were collected every 5 feet for lithologic descriptions. Soil samples collected from 20, 40, 60, and 80 feet bgs were submitted for laboratory analysis for chemicals and metals. Soil samples collected from 45 and 65 feet bgs were submitted for soil characteristic tests. A summary PWA-2's boring log in tabulature format is included in Appendix B.

All depths indicated are below ground surface (bgs) and are approximate. From 5 feet to 20 feet the soil consisted of fine sand to silty fine sand. From 20 feet to 37.5 feet, a silt to clayey silt was encountered. At 37.5 feet, an olive-gray silty clay with calcium carbonate inclusions was encountered to 48.5. Beneath the clay to 78.5, the soil consisted of sandy silt to silty sand. At 65 feet, the soil (fine sandy silt) becomes moist to wet.

At 78.5 feet a saturated fine to medium sand is encountered and extends to 80 feet. At 80 feet, a damp olive-gray silty clay was encountered, which grades to a clayey silt by 85.6 feet, the maximum depth explored.

After soil sampling was completed, the boring was overdrilled with a 10-inch OD auger to 86 feet bgs and converted into monitoring well PWA-2. The screened interval for Well PWA-2 was set from 65 to 85 feet bgs. On December 4, 2001, depth to water was measured at 70.50 feet btoc, and the well was developed. Fifty gallons of water (five well volumes) were removed from the well during development.

None of the soil samples collected from PWA-2 contained detectable concentrations of SVOCs, herbicides, or pesticides. The soil samples collected from 20 and 40 feet bgs did not contain detectable concentrations of VOCs. The 60 feet bgs sample contained 2.1 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ) of 1,2,3-TCP. The 80 feet bgs sample contained 12  $\mu\text{g}/\text{kg}$  1,2,3-TCP, 11  $\mu\text{g}/\text{kg}$  1,2-dibromo-3-chloropropane (DBCP), and 65  $\mu\text{g}/\text{kg}$  1,2-dichloropropane (1,2-DCP).

Arsenic, barium, chromium, cobalt, copper, lead, nickel, thallium, vanadium, and zinc were detected in all of the samples analyzed. Mercury was detected in the 60 feet bgs sample at 0.12 milligrams per kilogram (mg/kg). See Table 3 for a summary of analytical results.

The sample collected from 45 feet bgs was an olive-brown sandy clay (CL), with 67.9 percent passing by weight through a No. 4 sieve. Its moisture content was 17.27 percent, dry density 112.33 pounds per cubic foot (pcf), and hydraulic conductivity  $2.39 \times 10^{-8}$  centimeters per second (cm/sec). The sample collected from 65 feet bgs was an olive-brown silty sand (SM) with 22.5 percent passing by weight through a No. 4 sieve. Its moisture content was 21.90 percent, dry density 101.87 pcf, and hydraulic conductivity  $5.47 \times 10^{-6}$  cm/sec.

### **8.1.3 PWA-3**

Boring PWA-3 was drilled on November 8, 2001, using the hollow-stem auger drilling method with 8.25-inch-OD augers. During drilling, soil samples were collected every 5 feet for lithologic descriptions. Soil samples collected from 20, 40, 60, and 80 feet bgs were submitted for laboratory analysis for chemicals and metals. No soil samples were submitted for soil characteristic tests. A summary PWA-3's boring log in tabulature format is included in Appendix B.

All depths indicated are below ground surface (bgs) and are approximate. From 5 feet to approximately 37.5 feet, the soil consisted of silty fine sand with coarser sand at approximately 10 feet. From 37.5 feet to 50 feet, an olive-gray sandy clay, locally grading to clayey fine to coarse sandy silt, was encountered. Beneath the clay to 71 feet, the soil consisted of sandy silt to silty sand, which at 65 feet (fine sandy silt to silt) became saturated.

At 71 feet to 72.5 feet, a moist to wet gray silty clay layer is encountered. Below the clay to 80.5 feet, a saturated silt to fine sandy silt with a 1-foot-thick moist olive-gray clay at the bottom was found.

Beneath the moist clay, a moist clayey silt was found, grading to a moist olive-gray clay by 85 feet and extending to at least 86.5 feet (the maximum depth explored).

After soil sampling was completed, the boring was overdrilled with a 10-inch OD auger to 86 feet bgs and converted into monitoring well PWA-3. The screened interval for Well PWA-3 was set from 65 to 85 feet bgs. On December 4, 2001, depth to water was measured at 74.8 feet btoc and the well was developed. Thirty-five gallons of water (five well volumes) were removed from the well during development.

None of the soil samples collected from PWA-3 contained detectable concentrations of SVOCs, herbicides, or pesticides. The soil samples collected from 20, 40, and 60 feet bgs did not contain detectable concentrations of VOCs. The sample collected at 80 feet bgs contained 2.1  $\mu\text{g}/\text{kg}$  of 1,2-DCP, the only VOC detected.

Arsenic, barium, chromium, cobalt, copper, lead, nickel, thallium, vanadium, and zinc were detected in all of the samples analyzed. Antimony was detected at 4.18 mg/kg in sample PWA-3/60, and selenium was detected in the sample collected at 40 feet bgs at a concentration of 0.56 mg/kg. See Table 3 for a summary of analytical results.

### **8.1.4 PWA-4**

Boring PWA-4 was drilled to a total depth of 85 feet bgs on November 8, 2001, using the hollow-stem auger drilling method with 8.25-inch-OD augers. Soil samples were collected every 5 feet for lithologic

descriptions. Soil samples collected from 20, 40, 60, and 80 feet bgs were submitted for laboratory analysis for chemicals and metals. Soil samples collected from 65 feet bgs and 85 feet bgs were submitted for soil characteristic tests. A summary PWA-4's boring log in tabulation format is included in Appendix B.

All depths indicated are below ground surface (bgs) and are approximate. From 5 feet to 25 feet, the soil consisted of fine sandy silt to fine sand. At 25 feet and extending to 40 feet, silty clay was encountered, with a silty fine sand layer from 33 feet to 35 feet. At 40 feet, an olive-gray clay with calcium carbonate inclusions was encountered to 52.5 feet. Beneath the clay to 57.5 feet, the soil consisted of silty fine sand. From 57.5 feet to 73 feet, clayey silt to silt was encountered, which at 65 feet the soil (clayey silt to silt) became moist to wet with thin (less than ½-inch-thick) fine sand laminate.

At 73 feet and extending to 81 feet, the soil became saturated silty clay to clayey silt. At 81 feet, a 4-foot-thick saturated silty fine to coarse sand was encountered. Beneath the sand to 86.5 feet (the maximum depth explored), saturated olive-gray clay was encountered.

After soil sampling was completed, the boring was overdrilled with a 10-inch OD auger to 86 feet bgs and converted into monitoring well PWA-4. The screened interval for Well PWA-4 was set from 65 to 85 feet bgs. On December 4, 2001, depth to water was measured at 82.35 feet btoc and the well was developed. Nine gallons of water (five well volumes) were removed from the well during development.

None of the soil samples collected from PWA-4 contained detectable concentrations of SVOCs, herbicides, or pesticides. The soil samples collected from 20, 40, and 60 feet bgs did not contain detectable concentrations of VOCs. The sample collected at 80 feet bgs contained 48 µg/kg 1,2,3-TCP, 301 µg/kg 1,2-DCP, and 3 µg/kg of chloroform.

Arsenic, barium, chromium, cobalt, copper, lead, nickel, thallium, vanadium, and zinc were detected in all of the samples analyzed. Mercury was detected at 0.15 mg/kg in the sample collected at 20 feet bgs. Antimony was detected in samples collected at 20, 40, and 60 feet bgs at concentrations ranging from 3.07 to 3.79 mg/kg. See Table 3 for a summary of analytical results.

The sample collected from 65 feet was a gray-brown silty sand (SM) with 37.6 percent passing by weight through a No. 4 sieve. Its moisture content was 10.21 percent, dry density 109.34 pcf, and hydraulic conductivity  $1.68 \times 10^{-5}$  cm/sec. The sample collected from 80 feet was a gray-brown silty sand (SM) with 18.8 percent passing by weight through a No. 4 sieve. Its moisture content was 17.08 percent, dry density 113.47 pcf, and hydraulic conductivity  $5.05 \times 10^{-7}$  cm/sec.

### **8.1.5 PWA-5**

Boring PWA-5 was drilled on November 9, 2001, using the hollow-stem auger drilling method with 10-inch-OD augers. No soil samples were collected during drilling. The total depth of well PWA-5 is 85-feet bgs and its screened interval is 65 to 85 feet bgs. On December 9, 2001, groundwater sampling was initiated for this well and the well was found to have no water. Consequently, the well could not be developed. Because seasonal changes in groundwater elevation could result in the presence of water in this well, Panacea, in concurrence with USACE, decided to install a BarCad® unit in this well in the hope of an opportunity for future groundwater sampling. Section 9.0 provides more information on the BarCad® system.

## 8.2 B-ZONE WELLS

### 8.2.1 PWB-1

Boring PWB-1 was drilled on November 13 and 14, 2001, using the mud rotary drilling method with a 5-inch-OD drill bit. The boring was continuously soil sampled from 10 feet bgs to total depth for lithologic descriptions. The soil was not observed or sampled to 10 feet bgs because the conductor casing was set. Soil samples collected from 25, 50, 75, and 100 feet bgs were analyzed for VOCs, herbicides, pesticides, and metals. The soil sample collected from 70 feet bgs was tested for moisture content, dry density, particle size, and hydraulic conductivity. A summary PWB-1's boring log in tabulature format is included in Appendix B.

All depths indicated are below ground surface (bgs) and are approximate. From 10 feet to 17 feet, the soil consisted of sand. From 17 feet to approximately 45 feet, the soil was interbedded silts and sands with infrequent silty clay to clay lenses. From 45 feet to 50 feet, an olive-gray silty clay with calcium carbonate inclusions was encountered. Beneath the clay to 70 feet, the soil consisted of interbedded silts and sands with silty clay to clay layers encountered from 56.5 feet to 57 feet, 58 feet to 59.5 feet, and 60 feet to 63 feet. From 70 feet to 76.5 feet, a dark grayish-brown fine sandy silt with silty clay lenses was encountered. From 76.5 feet to 78 feet, the soil consisted of silty fine sand to fine sandy silt. To 88.5 feet, clay with trace silt and fine sand was found. From 88.5 feet to approximately 114 feet, the soil consisted of silty fine sand to fine to coarse sand with silt and clay lenses (less than 1-foot thick) from 101 feet to 104 feet. At 114 feet, silty soil with sandier and clayey lenses 2 to 4 inches thick (with clay to silty clay layer from 124.5 feet to 126 feet) existed to 130 feet. From 130 feet to approximately 145 feet, sandy soil was encountered. At 145 feet bgs to 161.5 feet, alternating layers of silts and clays varying in thickness from approximately 0.5 foot to 3 feet were encountered. At 161.5 feet, a light yellowish-brown fine to medium sand extended to approximately 164.5 feet where an approximately 1-foot-thick layer of fine sandy and clayey silt was encountered. Below the silt is a generally fine sandy silt to silty fine sand with silty clay lenses 0.5 foot to 1 foot thick at 167 feet, 172 feet, and 175 feet. At 175.5 feet, a fine to medium sand layer extends to 177.5 feet where the sand alternates in layers of fine sandy silt and silty fine to coarse sand to 185 feet, the maximum depth explored.

After soil sampling was completed, the boring was overdrilled with a 10-inch OD drill bit to 185 feet bgs and converted into monitoring well PWB-1. The screened interval for Well PWB was set from 165 to 185 feet bgs. On December 4, 2001, depth to water was measured at 150 feet btoc, and the well was developed. One hundred twenty gallons of water (five well volumes) were removed from the well during development.

None of the soil samples collected from PWB-1 contained detectable concentrations of SVOCs, herbicides, or pesticides. The soil samples collected from 25, 50, and 75 feet bgs did not contain detectable concentrations of VOCs. The sample collected at 100 feet bgs contained 1.3 µg/kg of 1,2-DCP, the only VOC detected.

Arsenic, barium, chromium, cobalt, copper, lead, nickel, thallium, vanadium, and zinc were detected in all of the samples analyzed. Mercury and antimony were detected in the sample collected at 50 feet bgs at 0.14 mg/kg and 4.12 mg/kg, respectively. Beryllium was detected at 0.60 mg/kg in the sample collected at 75 feet bgs. See Table 3 for a summary of analytical results.

The sample collected from 70 feet bgs was a dark-gray silty sand (SM) with 20.4 percent passing by weight through a No. 4 sieve. Its moisture content was 16.84 percent, dry density 97.95 pcf, and hydraulic conductivity  $3.53 \times 10^{-5}$  cm/sec.

### 8.2.2 PWB-2

Boring PWB-2 was drilled on November 30 and December 3 and 4, 2001, using the hollow-stem auger drilling method with 8.25-inch-OD augers. The boring was continuously soil sampled from ground surface to total depth for lithologic descriptions. Soil samples collected from 25, 50, 75, 100, 125, and 150 feet bgs were analyzed for VOCs, herbicides, pesticides, and metals. No soil samples were tested for moisture content, dry density, particle size, or hydraulic conductivity. A summary PWB-2's boring log in tabulature format is included in Appendix B.

All depths indicated are below ground surface (bgs) and are approximate. From ground surface to 20 feet, the soil consisted of fine sand. From 20 feet to 46 feet, the soil was interbedded fine sand to silt and sands with silty clay lenses approximately 1 foot thick at 24.5 feet, 33.5 feet, and 42 feet. From 46 feet to 51 feet, an olive-gray clay with calcium carbonate inclusions was encountered. Beneath the clay to 65 feet, the soil consisted of sands and silts, with a 0.5-foot clay lens encountered at approximately 56 feet. From 65 feet to 85 feet, no sample was recovered due to the sampling shoe getting lodged in the bit of the auger, subsequently obstructing the sampler. At 85 feet, a light olive-brown silty clay was encountered, which graded to a sandy clay at 87 feet. From 87 feet to 112.5 feet, the soil was a fine to coarse sand, with an 8-inch-thick silt/clay layer at 104 feet. From 112.5 feet to approximately 130 feet, the soil consisted of silts and sands, with silty clay encountered from 118 120 feet and from 125 126 feet. From 130 feet to 140 feet, sandy soil was encountered with a clay lens 3 inches thick at 139 feet, and a fine sandy silt beneath the clay lens to 140 feet.

At 140 feet, a saturated fine to medium sand was encountered to 145 feet, with a 4-inch clay lens at 142 feet. At 145 feet, an 1.5-foot-thick moist silty clay was encountered. Beneath the silty clay to 148 feet was a wet fine sandy silt. From 148 feet to 150 feet was a moist yellowish-brown clay with calcium carbonate inclusions. From 150 feet (below the clay) was a wet silty fine sand, with increasing medium- and coarse-grained sand content at approximately 158 feet. A moist grayish-brown clay was encountered from 158 to 160 feet, the maximum depth explored.

After soil sampling was completed, the boring was overdrilled with 10-inch augers to 161 feet bgs and converted into monitoring well PWB-2. The screened interval for Well PWB-2 was set from 140 to 160 feet bgs. On December 6, 2001, depth to water was measured at 147 feet btoc, and the well was developed. Sixty-one gallons of water (five well volumes) were removed from the well during development. During development, the water remained turbid and could not be pumped due to fine-grained micaceous sand infiltrating the well through the sand pack and well screen. The well was repeatedly surged and bailed, but the turbidity did not visibly decrease during development.

None of the soil samples collected from well PWB-2 contained detectable concentrations of SVOCs, herbicides, or pesticides. The soil samples collected from 25, 50, 75, 100, and 150 feet bgs did not contain detectable concentrations of VOCs. Sample PWB-2/125 contained 5.5 µg/kg of 1,2-DCP, the only VOC detected.

Barium, chromium, cobalt, copper, lead, nickel, selenium, thallium, vanadium, and zinc were detected in all of the samples analyzed. Mercury was detected in the sample collected at 50 feet bgs at 0.12 mg/kg. Arsenic was detected in all of the samples collected except the sample collected at 125 feet bgs. Beryllium was detected at 0.66 mg/kg in the sample collected from 25 feet bgs and 0.54 mg/kg in the sample collected from 125 feet bgs. See Table 3 for a summary of analytical results.

### 8.2.3 PWB-3

Boring PWB-3 was drilled on December 5, 2001, using a hollow-stem auger drill rig with 8.25-inch-OD augers. Soil samples were collected every 5 feet for lithologic descriptions. Soil samples collected from 25, 50, 75, and 100 feet bgs were submitted for laboratory analysis for chemicals and metals. Soil samples collected from 75, 80, and 150 feet bgs were submitted for soil characteristic tests. A summary PWB-3's boring log in tabulature format is included in Appendix B.

All depths indicated are below ground surface (bgs) and are approximate. From 5 to 26 feet, the soil was generally sand with a silt layer from 16 to 18.5 feet. At 26 feet, the soil became a fine sandy silt, then from 30 to 32.5 feet, a silty clay to clay was encountered. From 32.5 to 36 feet, a fine sand was encountered, which turned into a silt at 36 feet and extended to 37.5 feet. At 37.5 feet, an olive-brown, to olive-gray clay with calcium carbonate stringers was encountered to 47.5 feet bgs. Beneath the clay to 55.5 feet, silty soil was encountered with a light olive-brown clay extending to 57.5 feet. From 57.5 to 61 feet, the soil was a silty fine sand.

From 61 to 65 feet, a wet brown silty clay was encountered with an 1-foot-thick moist silt lens at 65 feet. A saturated silty fine to medium sand was encountered to 67.5 feet, where a moist silt was encountered to 72.5 feet. A saturated fine sand to silt was encountered from 72.5 to 80.5 feet, where an olive-brown clay was encountered to 86.5 feet. The clay contained calcium carbonate stringers at 85 feet, and directly beneath the clay to 88.5 feet was a wet sand layer.

Beneath the wet sand to 93.5 feet was a moist silty layer with a 1-foot-thick silty clay lens at 91 feet. From 93.5 feet to approximately 103.5 feet a moist sandy unit was encountered. The soil from 103.5 to 150 feet comprised alternating layers (generally 1 foot to 5 feet thick) of moist sands, silts, and clays. At 150 feet, the soil became a wet fine sandy silt. Between 150 and 155 feet, the soil became a saturated coarse sand and graded to a fine to coarse sand to 160.5 feet. At approximately 160.5 feet, a moist olive-brown clay was encountered, and no sample was recovered from 165 feet.

After soil sampling was completed, the boring was overdrilled with 10-inch-OD augers to 166 feet bgs and converted into monitoring well PWB-3. The screened interval for Well PWB was set from 145 to 165 feet bgs. On December 7, 2001, depth to water was measured at 147.00 feet btoc and the well was developed. Fifty-six gallons of water (five well volumes) were removed from the well during development. During development, the water remained turbid and could not be pumped due to fine-grained micaceous sand infiltrating the well through the sand pack and well screen. The well was repeatedly surged and bailed, but the turbidity did not visibly decrease during development.

None of the soil samples collected from well PWB-3 contained detectable concentrations of SVOCs or pesticides. Dinoseb was the only herbicide detected and was only detected in the soil sample collected from 75 feet at a concentration of 0.5 µg/kg. The soil samples collected from 25 and 50 feet bgs did not contain detectable concentrations of VOCs. The sample collected at 75 feet bgs contained 74 µg/kg of 1,2,3-TCP, 90 µg/kg DBCP, 45 µg/kg of EDB, and 286 µg/kg of 1,2-DCP. The sample collected from 100 feet bgs contained 15 µg/kg of 1,2,3-TCP, 44 µg/kg of DBCP, and 13 µg/kg of 1,2-DCP.

Arsenic, barium, chromium, cobalt, copper, lead, nickel, selenium, vanadium, and zinc were detected in all of the samples analyzed. Mercury and beryllium were also detected in sample collected at 75 feet bgs at 0.40 mg/kg and 0.60 mg/kg, respectively. See Table 3 for a summary of analytical results.

The following table summarizes the soil characteristics for the samples tested from boring PWB-3:

Sample	ASTM 5084 Hydraulic Conductivity (cm/sec)	Soil Description	USCS (visual)	Percent Passing No. 4 Sieve (%)	Moisture Content (%)	Dry Density (pcf)
PWB-3/70	$1.03 \times 10^{-6}$	Olive Silty Sand	SM	27.0	28.32	97.32
PWB-3/85	$1.05 \times 10^{-6}$	Dark Olive Silty Sand	SM	15.1	14.12	119.02
PWB-3/150	$6.15 \times 10^{-7}$	Olive Sandy Silt	ML	62.0	22.55	103.94

Notes:

cm/sec = centimeters per second

visual = visual observation

% = percent

pcf = pounds per cubic foot

#### 8.2.4 PWB-4

Boring PWB-4 was drilled on November 26 and 27, 2001, using a hollow-stem auger drill rig with 8.25-inch-OD augers. Soil samples were collected every 5 feet for lithologic descriptions. Soil samples collected from 25, 50, 75, 100, 125, and 150 feet bgs were submitted for laboratory analysis for chemicals and metals. Soil samples collected from 45, 65, and 150 feet bgs were submitted for soil characteristic tests. A summary PWB-4's boring log in tabulature format is included in Appendix B.

All depths indicated are below ground surface (bgs) and are approximate. From 5 feet to 45 feet, the soil graded between (or was interbedded) fine sandy silts and fine to medium sands, with a silty clay from 24 to 25 feet. At 45 feet, an olive gray clay with calcium carbonate inclusions was encountered and ended before 50 feet. Beneath the clay was silty fine sand that graded to silt at 55 feet. The silt extended to approximately 70 feet.

At 70 feet the soil became saturated and consisted of alternating layers of/or interbedded sands, silts, and clays.

At 85 feet, the soil was moist dark grayish-brown clay with calcium carbonate inclusions, and at 90 feet the soil had become fine sandy silty clay to fine sandy clayey silt. From 90 feet to 125 feet were alternating layers of sands and silts, sandy silts, and silty sands. At 125 feet the soil was silt to silty clay, and beneath the silt to silty clay was medium sand, which graded to a moist to wet silty fine sand by 140 feet and ended before 145 feet.

From 145 feet to 152 feet, the soil was saturated silt. Beneath the silt to 165.5 feet, the maximum depth explored, the soil consisted of saturated fine sand with an occasional lens (approximately 1-inch-thick) of medium to coarse sand.

After soil sampling was completed, the boring was overdrilled with 10-inch-OD augers to 166 feet bgs and converted into monitoring well PWB-4. The screened interval for Well PWB-4 was set from 145 to 165 feet bgs. On December 6, 2001, depth to water was measured at 146.55 feet btoc, and the well was developed on December 6 and 7, 2001. Forty-four gallons of water (five well volumes) were removed from the well during development. During development, the water remained turbid and could not be

pumped due to fine-grained micaceous sand infiltrating the well through the sand pack and well screen. The well was repeatedly surged and bailed, but the turbidity did not visibly decrease during development.

None of the soil samples collected from PWB-4 contained detectable concentrations of SVOCs, herbicides, or pesticides. The soil samples collected from 25, 50, 100, and 150 feet bgs did not contain detectable concentrations of VOCs. The sample collected at 75 feet bgs contained 118 µg/kg of 1,2,3-TCP, 444 µg/kg of 1,2-DCP, and 24 µg/kg of chloroform. The sample collected from 125 feet bgs contained 1.4 µg/kg of 1,2,3-TCP, 107 µg/kg of 1,2-DCP, and 3.4 µg/kg of chloroform.

Arsenic, barium, chromium, cobalt, copper, lead, nickel, selenium, vanadium, and zinc were detected in all of the samples analyzed from PWB-4. Mercury was also detected in the samples collected at 50 and 100 feet bgs at 0.18 mg/kg and 0.15 mg/kg, respectively. Beryllium was detected in samples collected from 25, 50, 75, 125, and 150 feet bgs at concentrations ranging from 0.62 to 0.78 mg/kg. See Table 3 for a summary of analytical results.

The following table summarizes the soil characteristics for the samples tested from boring PWB-4:

Sample	ASTM 5084 Hydraulic Conductivity (cm/sec)	Soil Description	USCS (visual)	Percent Passing No. 4 Sieve (%)	Moisture Content (%)	Dry Density (pcf)
PWB-4/45	$7.86 \times 10^{-6}$	Olive Sandy Clay	CL	75.6	18.28	97.75
PWB-4/65	$1.67 \times 10^{-6}$	Olive Sandy Silt	ML	83.0	32.64	90.32
PWB-4/150	$6.67 \times 10^{-6}$	Brown Silty Sand	SM	15.7	15.22	113.04

Notes:

cm/sec = centimeters per second  
 visual = visual observation  
 % = percent  
 pcf = pounds per cubic foot

### 8.2.5 PWB-5

Boring PWB-5 was drilled on November 28, 2001, using a hollow-stem auger drill rig with 8.25-inch OD augers. Soil samples were collected every 5 feet for lithologic descriptions. Soil samples collected from 25, 50, 75, 100, 125, and 150 feet bgs were submitted for laboratory analysis for chemicals and metals. Soil samples collected from 40, 95, and 135 feet bgs were submitted for soil characteristic tests. A summary PWB-5's boring log in tabulature format is included in Appendix B.

All depths indicated are below ground surface (bgs) and are approximate. From 5 feet to 17 feet, sandy soil was encountered. From 17.5 feet to 22.5 feet, a silt layer was encountered. Beneath the silt to 31 feet was silty clay. From 31 feet to 52.5 feet, alternating layers of sands, silts, and clays. At 52.5 feet, light olive-brown clay with calcium carbonate inclusions was encountered and ended by 65 feet bgs. Beneath the clay to 77.5 feet was fine sandy silt to fine sandy clayey silt with a clay layer at 70 feet. From 77.5 to 90.5 feet, fine sand was encountered. Beneath the sand to 100 feet was clay with a thin sand lens. From 100 feet to 122.5 feet were alternating and/or interbedded sands, silts, and clays. At 122.5 feet, the soil consisted of a fine to medium sand that extended to 135 feet, where a clay was encountered to 142.5 feet.

At 142.5 feet, the soil became saturated and consisted of sand that extended to 166.5 feet, the maximum depth explored.

After soil sampling was complete, the boring was overdrilled with 10-inch augers to 165 feet bgs and converted into monitoring well PWB-5. The screened interval for Well PWB-5 was set from 145 to 165 feet bgs. On December 7, 2001, depth to water was measured at 144.2 feet btoc and the well was developed. Seventy-one gallons of water (five well volumes) were removed from the well during development. During development, the water remained turbid and could not be pumped due to fine-grained micaceous sand infiltrating the well through the sand pack and well screen. The well was repeatedly surged and bailed, but the turbidity did not visibly decrease during development.

None of the soil samples collected from PWB-5 contained detectable concentrations of SVOCs, herbicides, or pesticides. The soil samples collected from 25, 50, 75, 100, and 150 feet did not contain detectable concentrations of VOCs. The only VOC detected was 1,2-DCP, which was detected in the sample collected at 125 feet bgs at a concentration of 4.8 µg/kg.

Barium, chromium, cobalt, copper, lead, nickel, selenium, vanadium, and zinc were detected in all of the samples analyzed. Arsenic was also detected in all of the samples except the sample collected at 75 feet bgs. Beryllium was detected in the samples from 25, 75, 100, and 125 feet bgs at concentrations ranging from 0.51 to 0.72 µg/kg. See Table 3 for a summary of analytical results.

The following table summarizes the soil characteristics for the samples tested from boring PWB-5:

Sample	ASTM 5084 Hydraulic Conductivity (cm/sec)	Soil Description	USCS (visual)	Percent Passing No. 4 Sieve (%)	Moisture Content (%)	Dry Density (pcf)
PWB-5/40	$8.19 \times 10^{-9}$	Olive Lean Clay	CL	81.3	21.47	106.80
PWB-5/95	$6.93 \times 10^{-6}$	Olive Brown Silt w/ fine sand	ML	82.4	16.22	95.69
PWB-5/135	$2.76 \times 10^{-7}$	Olive Brown Sandy Silt	ML	58.4	21.57	108.20

Notes:

cm/sec = centimeters per second

visual = visual observation

% = percent

pcf = pounds per cubic foot

## 9.0 BARCAD® SYSTEM

All wells were installed with the BarCad® groundwater sampling system (see Appendix E). The BarCad® system is a groundwater sampling instrument designed for permanent installation at a fixed elevation in groundwater monitoring wells. The BarCad® system uses an inert gas drive system (i.e. nitrogen or helium) to retrieve samples. The BarCad® unit is constructed of PVC, stainless steel and/or steel, with a porous ceramic, stainless steel or polyethylene screen that allows formation water to enter the BarCad® unit hydrostatically. A steel mesh screen inside the unit permits collection of a clear groundwater sample. A one-way check valve at the top of the unit allows water to rise up the unit and into PVC or stainless steel piping for groundwater collection. The valve also prevents inert gas from entering the unit itself and aerating the formation water.

Installation of the BarCad<sup>®</sup> system consisted of attaching the PVC stinger pipe to the BarCad<sup>®</sup> unit and lowering the BarCad<sup>®</sup> unit inside the well casing to within 0.5 foot of the bottom of the well. Next, Monterey No. 2/12 sand was added to the inside of the well, encasing the BarCad<sup>®</sup> unit, to at least 1.5 feet above the top of the well screen. Then, a layer of bentonite chips, at least 0.5 foot thick, was added on top of the sand inside the well.

The BarCad<sup>®</sup> groundwater sampling system works by applying pressurized inert gas (nitrogen) to the inside of the PVC stinger pipe, which in turn pressurizes the water column inside the BarCad<sup>®</sup> unit and drives the existing water into the stainless steel probe and up the polyethylene tubing to the surface. Subsequently, the inert gas displaces all of the water in the BarCad<sup>®</sup> unit and PVC stinger pipe through the stainless steel probe and polyethylene tubing, purging the BarCad<sup>®</sup> system of all existing water. Once the system is purged, inert gas pressure is removed from the BarCad<sup>®</sup> system, and groundwater is able to flow into the BarCad<sup>®</sup> unit. Inert gas pressure is then reapplied and the resulting water can be collected for laboratory analysis.

The following table summarizes the construction of the BarCad<sup>®</sup> sampler in the wells:

A-Zone Wells							
WELL ID	WELL DEPTH (ft btoc)	WELL SCREEN INTERVAL (ft bgs)	WELL DIAMETER (inches)	BARCAD DEPTH (ft btoc)	BARCAD SAND INTERVAL (ft btoc)	BARCAD BENTONITE INTERVAL (ft btoc)	APPROXIMATE DEPTH TO WATER (ft btoc)
PWA-1	85.05	65-85	4	85.05	61.4-84.55	60.2-61.8	76
PWA-2	84.30	64-84	4	84.30	63.5-84.30	61.5-63.5	66
PWA-3	84.90	64.5-84.5	4	84.90	58.0-84.90	56.8-58.0	77
PWA-4	84.65	64.5-84.5	4	84.65	62.0-84.65	60.4-62.0	83
PWA-5	84.65	64.5-84.5	4	84.65	58.2-84.65	57.1-58.2	DRY
B-Zone Wells							
WELL ID	WELL DEPTH (ft btoc)	WELL SCREEN INTERVAL (ft bgs)	WELL DIAMETER (inches)	BARCAD DEPTH (ft btoc)	BARCAD SAND INTERVAL (ft btoc)	BARCAD BENTONITE INTERVAL (ft btoc)	APPROXIMATE DEPTH TO WATER (ft btoc)
PWB-1	186.2	166-186	4	≈185.5	163.5-186.2	162.5-163.5	149
PWB-2	160.2	140-160	4	≈159.5	138.8-160.2	137.3-138.8	146
PWB-3	164.9	144.5-164.5	4	≈164.5	137.4-164.9	135.9-137.4	147
PWB-4	164.55	144.5-164.5	4	≈164.0	143.3-164.55	141.8-143.3	145
PWB-5	164.9	144.5-164.5	4	≈164.5	143.4-164.9	141.9-143.4	143

Notes:

ft btoc = feet below top of casing

ft bgs = feet below ground surface (from well construction diagrams)

≈ = approximately

**10.0 DISTRIBUTION**

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Environmental Construction Branch  
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South El Monte, CA 91733  
Attn: Thad Fukushige

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Ecology and Environment, Inc., 1999a, *Memorandum presenting a Summary of July 1998 Groundwater Sampling, Brown & Bryant, Arvin, California*, dated February 25, 1999.

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H&A (see Hargis & Associates)

Hargis & Associates, Inc. (H&A), 1987, *Remedial Investigation Work Plan, Brown & Bryant Facility, Arvin, California*, dated June 1987.

\_\_\_\_\_, 1988, *Interim Assessment Report, Brown & Bryant Facility, Arvin, California*, dated July 27, 1988.

MK (see Morrison Knudson)

Morrison Knudson (MK), 1999a, *Groundwater Monitoring Well Completion Report, Brown and Bryant Superfund Site, U.S. Army Corps of Engineers*, dated June 1999.

\_\_\_\_\_, 1999b, *Aquifer Test Report, Brown and Bryant Superfund Site, U.S. Army Corps of Engineers*, dated August 1999.

USEPA (see United States Environmental Protection Agency)

United States Environmental Protection Agency (USEPA), Region IX, 1993b, *Remedial Investigation/Feasibility Study Report, Brown & Bryant Superfund Site, Arvin, California*, dated May 28, 1993.

Panacea, Inc.

# Tables



**TABLE 1**  
**Well Construction Details**

	Well PWA-1	Well PWA-2	Well PWA-3	Well PWA-4	Well PWA-5	Well PWB-1	Well PWB-2	Well PWB-3	Well PWB-4	Well PWB-5
Installed By:	BC <sup>2</sup> Drilling	BC <sup>2</sup> Drilling	BC <sup>2</sup> Drilling	BC <sup>2</sup> Drilling	BC <sup>2</sup> Drilling					
Driller:	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron
Method of Installation:	Hollow Stem Auger	Mud Rotary	Hollow Stem Auger	Hollow Stem Auger	Hollow Stem Auger	Hollow Stem Auger				
Boring Diameter:	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"
Boring Depth:	85'	85'	85'	85'	85'	185'	161'	166'	166'	166'
Casing Interval:	0-65'	0-65'	0-65'	0-65'	0-65'	0-165'	0-140'	0-145'	0-145'	0-145'
Casing Diameter:	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"
Casing Type:	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC					
Grout Type:	Cement Slurry (Portland w/~5% Bent)	Cement Slurry (Portland w/~5% Bent)	Cement Slurry (Portland w/~5% Bent)	Cement Slurry (Portland w/~5% Bent)	Cement Slurry (Portland w/~5% Bent)					
Grout Interval:	~2 to 58' 15 bags cement (94 lb bags)	~2 to 58' 15 bags cement (94 lb bags)	~3 to 58' 15 bags cement (94 lb bags)	~2 to 58' 15 bags cement (94 lb bags)	~2 to 58' 15 bags cement (94 lb bags)	~2 to 158' 15 bags cement (94 lb bags)	~2 to 133' 15 bags cement (94 lb bags)	~2 to 138' 15 bags cement (94 lb bags)	~2 to 138' 15 bags cement (94 lb bags)	~2 to 138' 15 bags cement (94 lb bags)
Seal Type:	Bentonite chips (Enviroplus medium)	Bentonite chips (Enviroplus medium)	Bentonite chips (Enviroplus medium)	Medium coarse chips (Enviroplus medium)	Medium coarse chips (Enviroplus medium)					
Seal Interval:	58 to 62 feet 2 bags bentonite chips	158 to 162 feet 2 bags bentonite chips	133 to 138 feet 2 bags bentonite chips	138 to 145 feet 2 bags bentonite chips	138 to 143 feet 3 bags bentonite chips	138 to 143 feet 2 bags bentonite chips				
Filter Type:	Monterey 2/12 sand	Monterey # 3 sand	Monterey # 3 sand	Monterey # 3 sand	Monterey # 3 sand	Monterey # 3 sand				
Filter Interval:	62-85' 13 bags (100 lb bags) sand	162-185' 13 bags (100 lb bags) sand	138-161' 13 bags (100 lb bags) sand	143-166' 13 bags (100 lb bags) sand	143-166' 12 bags (100 lb bags) sand	143-166' 12 bags (100 lb bags) sand				
Screen Interval:	65-85'	65-85'	65-85'	65-85'	65-85'	165-185'	140-160'	145-165'	145-165'	145-165'
Screen Diameter:	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"
Screen Type:	Johnson wire-wrap (sch. 40 PVC)	Johnson wire-wrap (sch. 40 PVC)	Johnson wire-wrap (sch. 40 PVC)	Johnson wire-wrap (sch. 40 PVC)	Johnson wire-wrap (sch. 40 PVC)					
Slot Size:	0.01"	0.01"	0.01"	0.01"	0.01	0.01	0.020	0.020	0.020	0.020

**TABLE 2**  
**Soil Sampling Results-Organics**

Well No.	Depth	Date Sampled	EPA Method 8151A	EPA Method 8260B Volatile Organic Compounds				
			Herbicides	TCP	DBCP	EDB	1,2-DCP	Chloroform
			Dinoseb	Concentrations Reported as micrograms per liter				
PWA-1	WELL NOT SAMPLED							
PWA-2	20'	11/7/01	ND	ND	ND	ND	ND	ND
	40'	11/7/01	ND	ND	ND	ND	ND	ND
	60'	11/7/01	ND	2.10	ND	ND	ND	ND
	80'	11/7/01	ND	12.00	11.00	ND	65.00	ND
PWA-3	20'	11/8/01	ND	ND	ND	ND	ND	ND
	40'	11/8/01	ND	ND	ND	ND	ND	ND
	60'	11/8/01	ND	ND	ND	ND	ND	ND
	80'	11/8/01	ND	ND	ND	ND	2.10	ND
PWA-4	20'	11/8/01	ND	ND	ND	ND	ND	ND
	40'	11/8/01	ND	ND	ND	ND	ND	ND
	60'	11/8/01	ND	ND	ND	ND	ND	ND
	80'	11/8/01	ND	48.00	ND	ND	301.00	3.00
PWA-5	WELL NOT SAMPLED							
PWB-1	25'	11/13/01	ND	ND	ND	ND	ND	ND
	50'	11/13/01	ND	ND	ND	ND	ND	ND
	75'	11/14/01	ND	ND	ND	ND	ND	ND
	100'	11/14/01	ND	ND	ND	ND	1.30	ND
PWB-2	25'	11/30/01	ND	ND	ND	ND	ND	ND
	50'	11/30/01	ND	ND	ND	ND	ND	ND
	100'	12/3/01	ND	ND	ND	ND	ND	ND
	125'	12/3/01	ND	ND	ND	ND	5.50	ND
	150'	12/3/01	ND	ND	ND	ND	ND	ND
PWB-3	25'	12/5/01	ND	ND	ND	ND	ND	ND
	50'	12/5/01	ND	ND	ND	ND	ND	ND
	75'	12/5/01	0.5	74	90.00	45.00	268.00	ND
	100'	12/5/01	ND	15.00	44.00	ND	13.00	ND
PWB-4	25'	11/26/01	ND	ND	ND	ND	ND	ND
	50'	11/26/01	ND	ND	ND	ND	ND	ND
	75'	11/27/01	ND	118.00	ND	ND	444.00	24.00
	100'	11/27/01	ND	ND	ND	ND	ND	ND
	125'	11/27/01	ND	1.40	ND	ND	107.00	3.4 J
	150'	11/27/01	ND	ND	ND	ND	ND	ND
PWB-5	25'	11/28/01	ND	ND	ND	ND	ND	ND
	50'	11/28/01	ND	ND	ND	ND	ND	ND
	75'	11/28/01	ND	ND	ND	ND	ND	ND
	100'	11/28/01	ND	ND	ND	ND	ND	ND
	125'	11/28/01	ND	ND	ND	ND	4.80	ND
	155'	11/28/01	ND	ND	ND	ND	ND	ND

Notes:

DBCP = 1,2-Dibromo-3-chloropropane (8260 analysis value used).

TCP = 1,2,3-Trichloropropane.

1,2-DCP = 1,2-Dichloropropane.

EDB = Ethylene dibromide, also called 1,2-Dibromoethane

Only detected species are listed; see attached laboratory report for full list of tested species.

Analysis done by Associated Laboratories, Orange, Ca.

**TABLE 3**  
**Soil Sampling Results-Metals**

Well No.	Depth	Date Sampled	Mercury	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdeum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
			Concentrations Reported as milligrams per kilogram																
PWA-1			WELL NOT SAMPLED																
PWA-2	20'	11/7/01	ND	ND	17.40	81	ND	ND	8.83	7.73	1.98	2.95	ND	4.59	ND	ND	3.00	25.70	44.40
	40'	11/7/01	ND	ND	3.52	177	ND	ND	22.40	14.90	10.70	3.79	ND	9.51	ND	ND	5.82	54.10	77.00
	60'	11/7/01	0.12	ND	29.00	219	ND	ND	23.00	19.70	7.13	5.60	ND	10.60	ND	ND	6.77	78.80	82.00
	80'	11/7/01	ND	ND	6.16	84	ND	ND	14.80	8.91	2.79	1.64	ND	4.50	ND	ND	3.14	37.20	33.30
PWA-3	20'	11/8/01	ND	ND	15.60	182	ND	ND	10.10	9.74	2.60	5.88	ND	5.51	ND	ND	4.05	34.00	46.80
	40'	11/8/01	ND	ND	2.87	122	ND	ND	16.50	11.50	4.90	2.17	ND	6.07	0.56	ND	3.95	41.00	45.40
	60'	11/8/01	ND	4.18	16.70	153	ND	ND	15.10	12.30	3.95	5.07	ND	7.53	ND	ND	4.57	45.90	66.50
	80'	11/8/01	ND	ND	8.54	173	ND	ND	16.10	14.00	10.20	3.02	ND	7.23	ND	ND	5.11	57.10	50.30
PWA-4	20'	11/8/01	0.15	3.07	36.80	250	ND	ND	17.80	14.90	5.95	5.16	ND	8.57	ND	ND	5.59	52.60	77.70
	40'	11/8/01	ND	3.79	2.72	206	ND	ND	20.00	13.80	7.47	2.50	ND	7.22	ND	ND	4.47	49.00	53.90
	60'	11/8/01	ND	3.36	4.36	127	ND	ND	16.80	12.60	4.46	4.12	ND	7.19	ND	ND	3.66	42.90	66.30
	80'	11/8/01	ND	ND	4.96	123	ND	ND	12.20	10.00	1.85	1.70	ND	5.94	ND	ND	3.98	38.40	35.70
PWA-5			WELL NOT SAMPLED																
PWB-1	25'	11/13/01	ND	ND	22.90	131	ND	ND	12.20	9.50	5.15	4.27	ND	5.87	ND	ND	4.16	37.10	45.60
	50'	11/13/01	0.14	4.12	4.68	173	ND	ND	17.10	9.74	7.80	3.91	ND	9.03	ND	ND	3.81	38.30	47.90
	75'	11/14/01	ND	ND	9.85	228	0.60	ND	29.60	18.50	15.70	8.16	ND	13.00	ND	ND	7.25	72.00	80.40
	100'	11/14/01	ND	ND	5.96	75	ND	ND	6.90	6.35	2.05	2.09	ND	3.37	ND	ND	2.22	21.30	28.30
PWB-2	25'	11/30/01	ND	ND	10.90	183	0.66	ND	17.10	10.50	7.28	2.14	ND	7.65	4.29	ND	ND	41.80	63.20
	50'	11/30/01	0.12	ND	6.26	139	ND	ND	10.30	5.95	4.75	1.12	ND	4.48	1.57	ND	ND	22.20	58.30
	100'	12/3/01	ND	ND	5.52	72	ND	ND	3.63	2.65	2.56	1.53	ND	2.23	1.35	ND	ND	13.10	21.10
	125'	12/3/01	ND	ND	ND	250	0.54	ND	19.60	11.30	9.07	3.09	ND	9.25	4.06	ND	ND	44.10	61.60
	150'	12/3/01	ND	ND	4.71	75	ND	ND	8.59	5.08	4.41	1.46	ND	4.27	1.52	ND	ND	20.40	45.40
PWB-3	25'	12/5/01	ND	ND	7.97	105	ND	ND	7.57	5.91	4.94	2.30	ND	3.96	1.54	ND	ND	26.30	42.50
	50'	12/5/01	ND	ND	7.12	191	ND	ND	17.30	9.51	8.05	3.21	ND	6.54	1.88	ND	ND	48.40	58.90
	75'	12/5/01	0.40	ND	27.40	362	0.60	ND	23.80	14.50	9.46	4.65	ND	10.80	2.30	ND	ND	81.70	83.60
	100'	12/5/01	ND	ND	7.19	151	ND	ND	12.50	9.26	4.92	3.05	ND	6.19	1.88	ND	ND	35.10	66.00
PWB-4	25'	11/26/01	ND	ND	10.40	183	0.67	ND	14.60	11.40	3.88	2.37	ND	6.33	2.52	ND	ND	40.10	56.10
	50'	11/26/01	0.18	ND	11.50	254	0.62	ND	18.40	10.30	5.39	2.09	ND	8.74	1.63	ND	ND	45.90	48.30
	75'	11/27/01	ND	ND	15.30	237	0.78	ND	25.10	15.20	11.20	4.07	ND	10.80	2.05	ND	ND	66.30	83.40
	100'	11/27/01	0.15	ND	3.32	60	ND	ND	7.22	3.75	2.90	0.99	ND	3.27	0.68	ND	ND	13.80	44.80
	125'	11/27/01	ND	ND	7.88	189	0.68	ND	19.60	11.80	5.75	3.17	ND	8.71	2.25	ND	ND	50.60	58.20
	150'	11/27/01	ND	ND	1.18	185	ND	ND	11.90	8.24	5.85	1.06	ND	6.61	2.80	ND	ND	29.90	44.30
PWB-5	25'	11/28/01	ND	ND	1.22	184	0.72	ND	19.10	13.40	7.44	4.06	ND	9.03	2.77	ND	ND	47.70	72.20
	50'	11/28/01	ND	ND	8.98	112	ND	ND	8.45	6.05	3.97	1.45	ND	4.28	1.41	ND	ND	26.20	31.00
	75'	11/28/01	ND	ND	ND	265	0.76	ND	24.50	16.10	15.20	5.20	ND	11.10	3.86	ND	ND	62.70	64.30
	100'	11/28/01	ND	ND	16.10	154	0.51	ND	16.10	10.30	7.58	4.51	ND	7.79	1.90	ND	ND	48.60	57.50
	125'	11/28/01	ND	ND	2.43	222	0.59	ND	25.80	15.20	13.10	2.16	ND	9.77	1.78	ND	ND	67.80	57.80
	155'	11/28/01	ND	ND	3.60	105	ND	ND	10.30	6.08	6.06	1.80	ND	4.64	1.90	ND	ND	24.60	35.00

Notes:

Mercury found using 245.5 mercury in soils by manual cold vapor testing, remaining metals found using 6010B metals testing.

Analysis done by Associated Laboratories, Orange, Ca.

**TABLE 4**  
**Soil Characteristics**

<b>Sample</b>	<b>ASTM 5084 Hydraulic Conductivity</b>	<b>Soil Description</b>	<b>USCS</b>	<b>Percent Passing No. 4 Sieve</b>	<b>Moisture Content</b>	<b>Dry Density</b>
	<b>cm/sec</b>		<b>(visual)</b>	<b>%</b>	<b>%</b>	<b>pcf</b>
PWA-2-45	2.39E-08	Olive Brn Sandy Clay	CL	67.9	17.27	112.33
PWA-2-65	5.47E-06	Olive Brn Silty Sand	SM	22.5	21.90	101.87
PWA-4-65	1.68E-05	Gray Brown Silty Sand	SM	37.6	10.21	109.34
PWA-4-80	5.05E-07	Gray Brown Silty Sand	SM	18.8	17.08	113.47
PWB-1-70	3.53E-05	Drk Gray Silty Sand	SM	20.4	16.84	97.95
PWB-3-70	1.03E-06	Olive Silty Sand	SM	27.0	28.32	97.32
PWB-3-85	1.05E-06	Drk Olive Silty Sand	SM	15.1	14.12	119.02
PWB-3-150	6.15E-07	Olive Sandy Silt	ML	62.0	22.55	103.94
PWB-4-45	7.86E-06	Olive Sandy Clay	CL	75.6	18.28	97.75
PWB-4-65	1.67E-06	Olive Sandy Silt	ML	83.0	32.64	90.32
PWB-4-150	6.76E-06	Brown Silty Sand	SM	15.7	15.22	113.04
PWB-5-40	8.19E-09	Olive Lean Clay	CL	81.3	21.47	106.80
PWB-5-95	6.93E-06	Olive Brn Silt w/fine sand	ML	82.4	16.22	95.69
PWB-5-135	2.76E-07	Olive Brn Sandy Silt	ML	58.4	21.57	108.20

Notes:

cm/sec = centimeters per second.

pcf = pounds per cubic foot of material

Percent Passing No. 4 Sieve is based on Grain Size Distribution Curve by test method ASTM D 422.

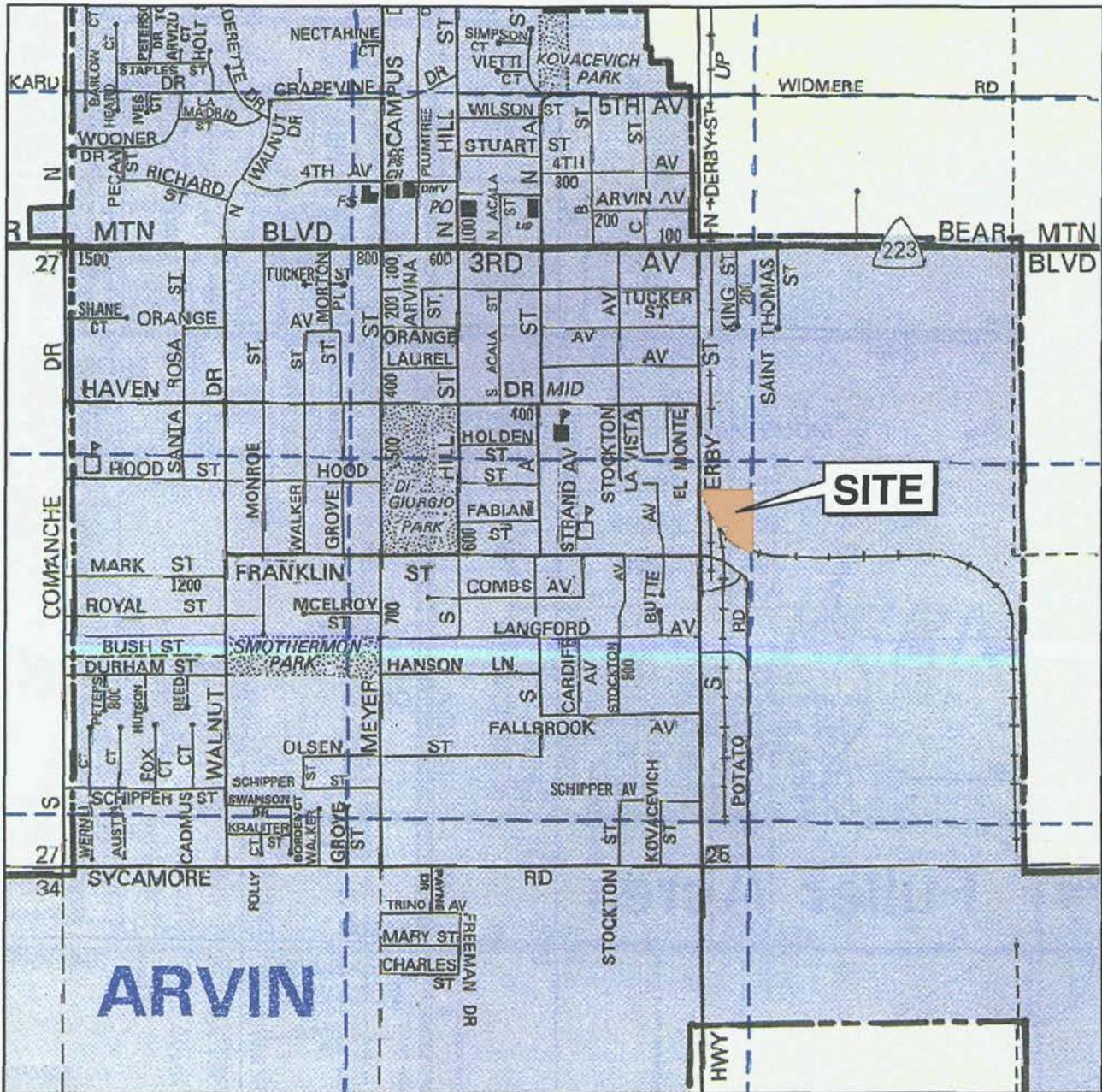
Panacea, Inc.

# Figures



Project No. C00-266

October 2002



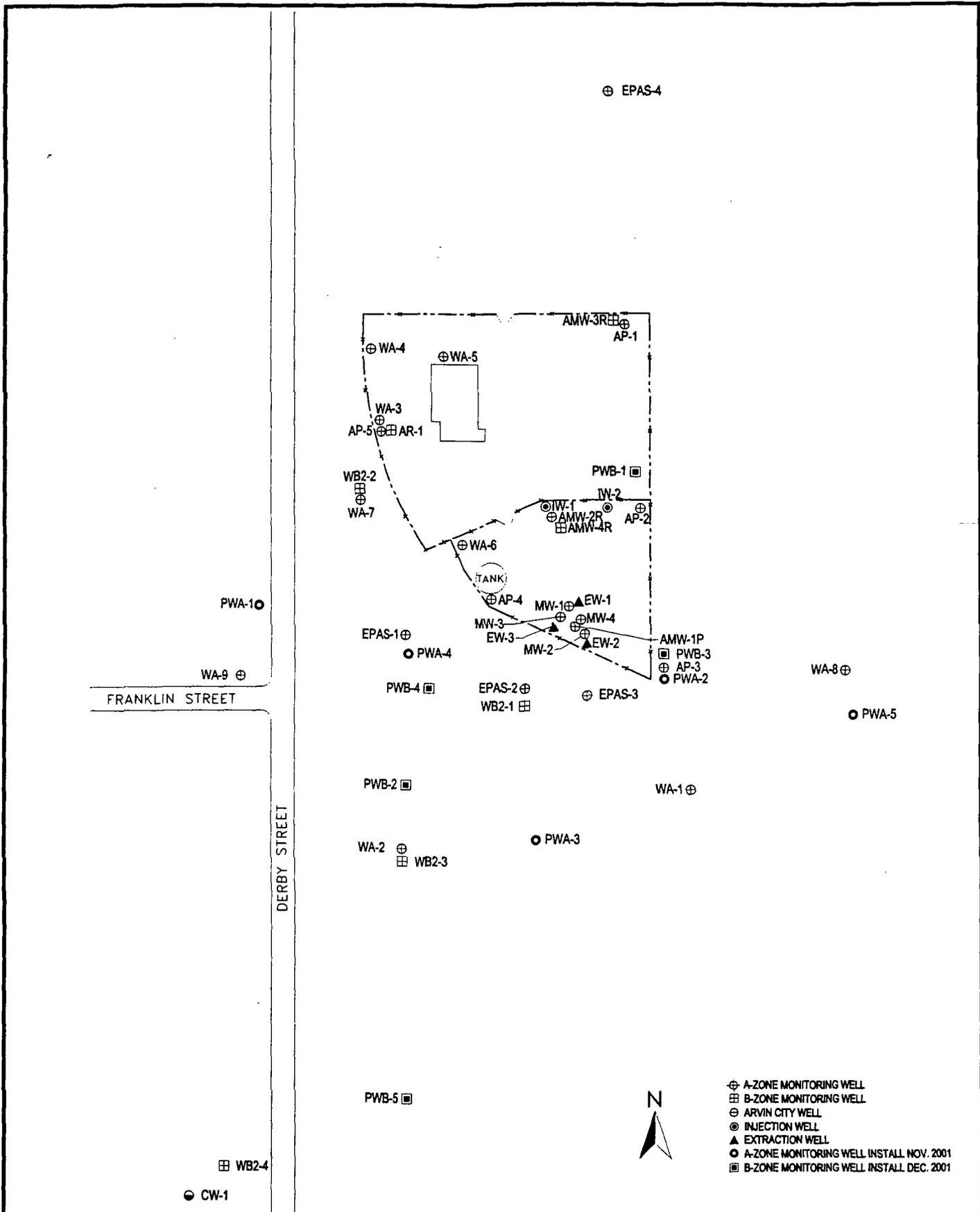
Base map from *The Thomas Guide, 1998 Central Valley Cities Street Guide and Directory*. Reproduced with permission granted by THOMAS BROS. MAPS®. This map is copyrighted by THOMAS BROS. MAPS®. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission. All rights reserved.



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SITE LOCATION MAP  
 Brown & Bryant Superfund Site  
 600 South Derby Road  
 Arvin, California

<b>PANACEA, INC.</b> <i>Environmental Services</i>	
Project No. C00-266	Figure <b>1</b>



NEW AND EXISTING MONITORING WELLS FOR A AND B ZONE  
 BROWN & BRYANT SUPERFUND SITE  
 600 SOUTH DERBY STREET  
 ARVIN, CALIFORNIA



**PANACEA, INC.**  
*Environmental Services*

PROJECT NO.  
 C00-266

FIGURE  
 2

Panacea, Inc.

# Appendix A

*Permits*



Project No. C00-266

October 2002

KERN COUNTY  
 ENVIRONMENTAL HEALTH SERVICES DEPARTMENT  
 2700 "M" STREET, SUITE 300  
 BAKERSFIELD, CA 93301  
 T: 661.862.2700

Application Date: 9-28-01  
 No. of Wells/Borings: 10  
 PTO No.:  
 Well No(s): MW 4017  
 Thru MW 4026

APPLICATION AND PERMIT FOR MONITORING WELLS

This application is to:  Construct  Modify  Destroy  
 Type of well/boring  Groundwater  Cathodic Protection  Test Hole  Other

FACILITY INFORMATION		OWNER'S INFORMATION	
Name	BROWN & BRYANT (FORMER)	Name	U.S. E.P.A., REGION IX
Address	600 S. DERBY ROAD T/R/Sec / / 25	Address	75 HAWTHORNE STREET
City	ARVIN Zip 93203	City	SAN FRANCISCO State CA Zip 94105
Cross Street	FRANKLIN STREET Phone NONE	Phone	(TRAVIS CAINE) 415. 744. 2341
Project Contact	MOHAMMAD ESTIRI	Phone	714. 222. 1226

CONTRACTOR'S INFORMATION		DRILLING CONTRACTOR	
Environmental Contractor	PANACEA, INC.	License # and Type	No. 626255 C57
Address	14700 FIRESTONE BLVD STE 112	Address	1212 EAST ASH AVENUE
City	LA MIRADA State CA Zip 90638	City	FULLERTON State CA Zip 92831
Phone	714. 222. 1226	Drilling Method	Hollow Stem & Percussion Hammer

Proposed start date: 10-15-01 Depth to groundwater: 70'

GENERAL CONDITIONS OF THIS PERMIT FOR CONSTRUCTION:

- Well site approval is required before beginning any work related to well construction. It is unlawful to continue work past the stage at which an inspection is required unless inspection is waived or completed.
- Other required inspections include: conductor casing, all annular seals, and final construction features.
- A phone call to the Department office is required on the morning of the day that work is to commence and 24 hours before the placement of any seals or plugs.
- Construction under this Permit is subject to any instructions by Department representatives.
- All wells constructed of PVC located at a contaminated site where degradation may occur must be destroyed after two years or prove no degradation is occurring or has occurred.
- Any misrepresentation or noncompliance with required Permit Conditions or Ordinance will result in issuance of a "STOP WORK ORDER."
- A copy of the Department of Water Resources Driller's Report, as well as copies of logs, water quality analyses, and as-buits of wells must be submitted to the Environmental Health Services Department within 14 days after completion of the work.

GENERAL CONDITIONS OF THIS PERMIT FOR DESTRUCTION:

- A well destruction application must be filed with this Department if a well is being destroyed that is not in conjunction with a test hole permit.
- Destruction procedures must be followed as per UT-50.
- Placement of the seal must be witnessed by a representative of this Department. Twenty-four-hour advanced notice is required for an appointment.

SPECIAL CONDITIONS:

THIS APPLICATION BECOMES A PERMIT WHEN APPROVED

**WELL CONSTRUCTION INFORMATION**

	WELL # PWA-1	WELL # PWA-2	WELL # PWA-3	WELL # PWA-4
WELL DEPTH	85'			
GROUND ELEVATION (IF KNOWN)	429'	—————>		
BOREHOLE DIAMETER	12"			
CASING-INSIDE DIAMETER	4"			
CASING MATERIAL & GAUGE	Sch. 40 PVC			
SCREEN MATERIAL & GAUGE	Sch. 40 PVC - Johnson Wire wrap	—————>		
TYPE OF BENTONITE PLUG & DEPTH	Bentonite chips 58-63'			
ANNULUS SEALANT & DEPTH	Pc: 11 and w/ 5% Bent. slurry (2-58')			
FILTER PACK MATERIAL & SIZE	2/12 Mont. Sand			
SCREEN SLOT SIZE & LENGTH	0.01" / 20'	—————>		
SEALANT PLACEMENT METHOD	tremie pipe			
LOCKING WELL CAP	VPS			

**FACILITY PLOT PLAN** Provide a description of the facility to be monitored, including: location of tanks, proposed monitoring and placement, nearest street or intersection, location of any water wells or surface water within 500' radius of facility; please attach.

**ZONE OF INFLUENCE** Information on zone of influence, such as mathematical calculations or field test data, may be required upon review of the application.

**VADOSE ZONE WELLS**

**WELL DESTRUCTION INFORMATION**

	WELL #	WELL #	WELL #	WELL #
WELL DEPTH				
CASING MATERIAL				
SEALANT MATERIAL				
SEALANT PLACEMENT METHOD				
DESCRIBE DESTRUCTION PROCEDURE:				

*I have read and agree to comply with the general conditions noted. This permit must be signed by either the contractor or owner.*

Owner's Signature \_\_\_\_\_ Date \_\_\_\_\_ Contractor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Approved By: _____	Total Fee <u>375.00</u>	Paid On <u>9/27/01</u>
Issue Date: <u>9/28/01</u>	Receipt # <u>22098</u> Cash _____	Check # <u>9208</u>
Permit Expiration Date: <u>3/28/02</u>	Work Order # _____	

**THIS APPLICATION BECOMES A PERMIT WHEN APPROVED**

**WELL CONSTRUCTION INFORMATION**

	WELL # PWA-5	WELL # PWB-1	WELL # PWB-2	WELL # PWB-3
WELL DEPTH	85'	185'		
GROUND ELEVATION (IF KNOWN)	429'	429'	—————>	
BOREHOLE DIAMETER	12"	10"		
CASING—INSIDE DIAMETER	4"	4"		
CASING MATERIAL & GAUGE	Sch. 40 PVC	Sch. 40 PVC		
SCREEN MATERIAL & GAUGE	Sch. 40 PVC - Johnson Wirewrap	Sch. 40 PVC w/ Johnson wirewrap	—————>	
TYPE OF BENTONITE PLUG & DEPTH	Bentonite Chips 58-63'	Bentonite Chips 158-163'		
ANNULUS SEALANT & DEPTH	Portland c. w/ 5% Bent. slurry (2-58')	Portland Cem. w/ 5% Bent. (2-158')		
FILTER PACK MATERIAL & SIZE	2/12 Mant. Sand	No. 3 Mant. Sand		
SCREEN SLOT SIZE & LENGTH	0.01"/20'	0.02"/20'	—————>	
SEALANT PLACEMENT METHOD	tremie pipe	tremie pipe		
LOCKING WELL CAP	405	405		

**FACILITY PLOT PLAN** Provide a description of the facility to be monitored, including: location of tanks, proposed monitoring and placement, nearest street or intersection, location of any water wells or surface water within 500' radius of facility; please attach.

**ZONE OF INFLUENCE** Information on zone of influence, such as mathematical calculations or field test data, may be required upon review of the application.

**VADOSE ZONE WELLS**

**WELL DESTRUCTION INFORMATION**

	WELL #	WELL #	WELL #	WELL #
WELL DEPTH				
CASING MATERIAL				
SEALANT MATERIAL				
SEALANT PLACEMENT METHOD				
DESCRIBE DESTRUCTION PROCEDURE:				

*I have read and agree to comply with the general conditions noted. This permit must be signed by either the contractor or owner.*

Owner's Signature \_\_\_\_\_ Date \_\_\_\_\_ Contractor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Approved By: _____	Total Fee _____	Paid On _____
Issue Date: _____	Receipt # _____	Cash _____ Check # _____
Permit Expiration Date: _____	Work Order # _____	

**THIS APPLICATION BECOMES A PERMIT WHEN APPROVED**

# WELL CONSTRUCTION INFORMATION

	WELL # <i>PLW8-4</i>	WELL # <i>PLW8-5</i>	WELL #	WELL #
WELL DEPTH	<i>185'</i>			
GROUND ELEVATION (IF KNOWN)	<i>429'</i>	—————>		
BOREHOLE DIAMETER	<i>10"</i>			
CASING—INSIDE DIAMETER	<i>4"</i>			
CASING MATERIAL & GAUGE	<i>Sch. 40 PVC</i>			
SCREEN MATERIAL & GAUGE	<i>Sch. 40 PVC w/ Johnson wire wrap</i>	—————>		
TYPE OF BENTONITE PLUG & DEPTH	<i>Bentonite chips 158-163'</i>			
ANNULUS SEALANT & DEPTH	<i>Portland Cem. w/5% Bent. (2-158')</i>			
FILTER PACK MATERIAL & SIZE	<i>No. 3 Mant. Sand</i>			
SCREEN SLOT SIZE & LENGTH	<i>0.02" / 20'</i>	—————>		
SEALANT PLACEMENT METHOD	<i>tremie pipe</i>			
LOCKING WELL CAP	<i>yes</i>			

**FACILITY PLOT PLAN** Provide a description of the facility to be monitored, including: location of tanks, proposed monitoring and placement, nearest street or intersection, location of any water wells or surface water within 500' radius of facility; please attach.

**ZONE OF INFLUENCE** Information on zone of influence, such as mathematical calculations or field test data, may be required upon review of the application.

**VADOSE ZONE WELLS**

## WELL DESTRUCTION INFORMATION

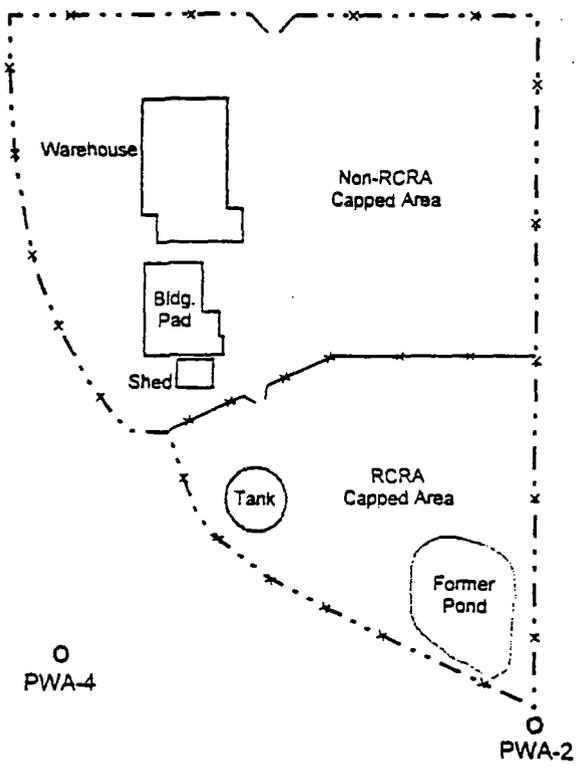
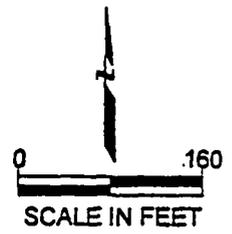
	WELL #	WELL #	WELL #	WELL #
WELL DEPTH				
CASING MATERIAL				
SEALANT MATERIAL				
SEALANT PLACEMENT METHOD				
DESCRIBE DESTRUCTION PROCEDURE:				

*I have read and agree to comply with the general conditions noted. This permit must be signed by either the contractor or owner.*

Owner's Signature \_\_\_\_\_ Date \_\_\_\_\_ Contractor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Approved By: _____	Total Fee <u>3350.00</u> Paid On <u>9/28/01</u>
Issue Date: _____	Receipt # <u>22498</u> Cash _____ Check # <u>9208</u>
Permit Expiration Date: _____	Work Order # _____

**THIS APPLICATION BECOMES A PERMIT WHEN APPROVED**

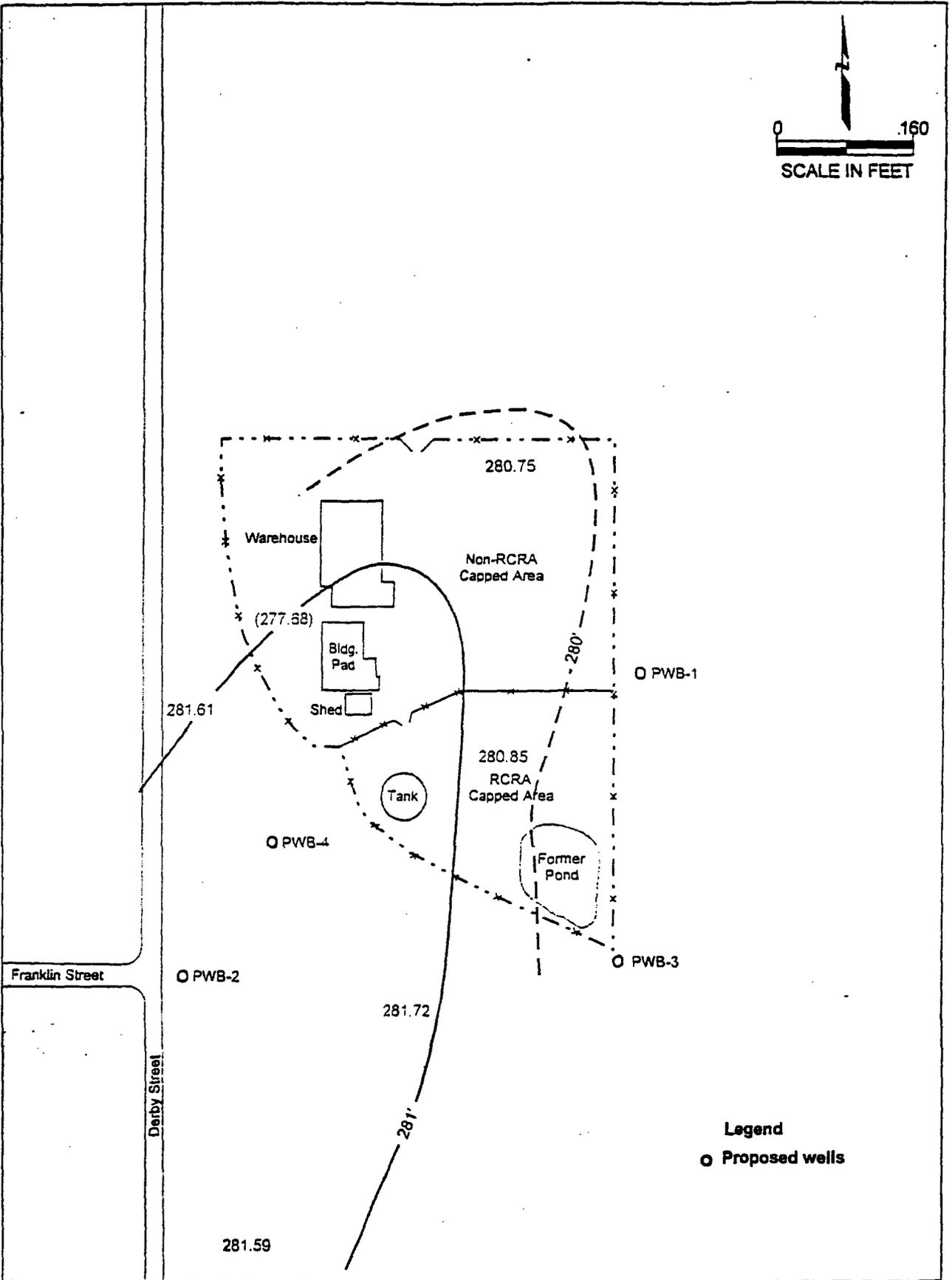
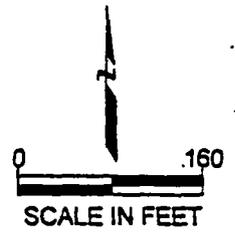


**Legend**  
 O Proposed wells

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**PROPOSED MONITORING WELLS FOR A-ZONE**  
 Brown & Bryant Superfund Site  
 600 South Derby Street  
 Arvin, California

 <b>PANACEA, INC.</b> <i>Environmental Services</i>	
Project No. C00-218	Figure 11



Map\_W13X.pn

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CHECKED:

Legend  
 ○ Proposed wells

PROPOSED MONITORING WELLS FOR B-ZONE  
 Brown & Bryant Superfund Site  
 600 South Derby Street  
 Arvin, California

 <b>PANACEA, INC.</b> <i>Environmental Services</i>	
Project No. C00-218	Figure 12

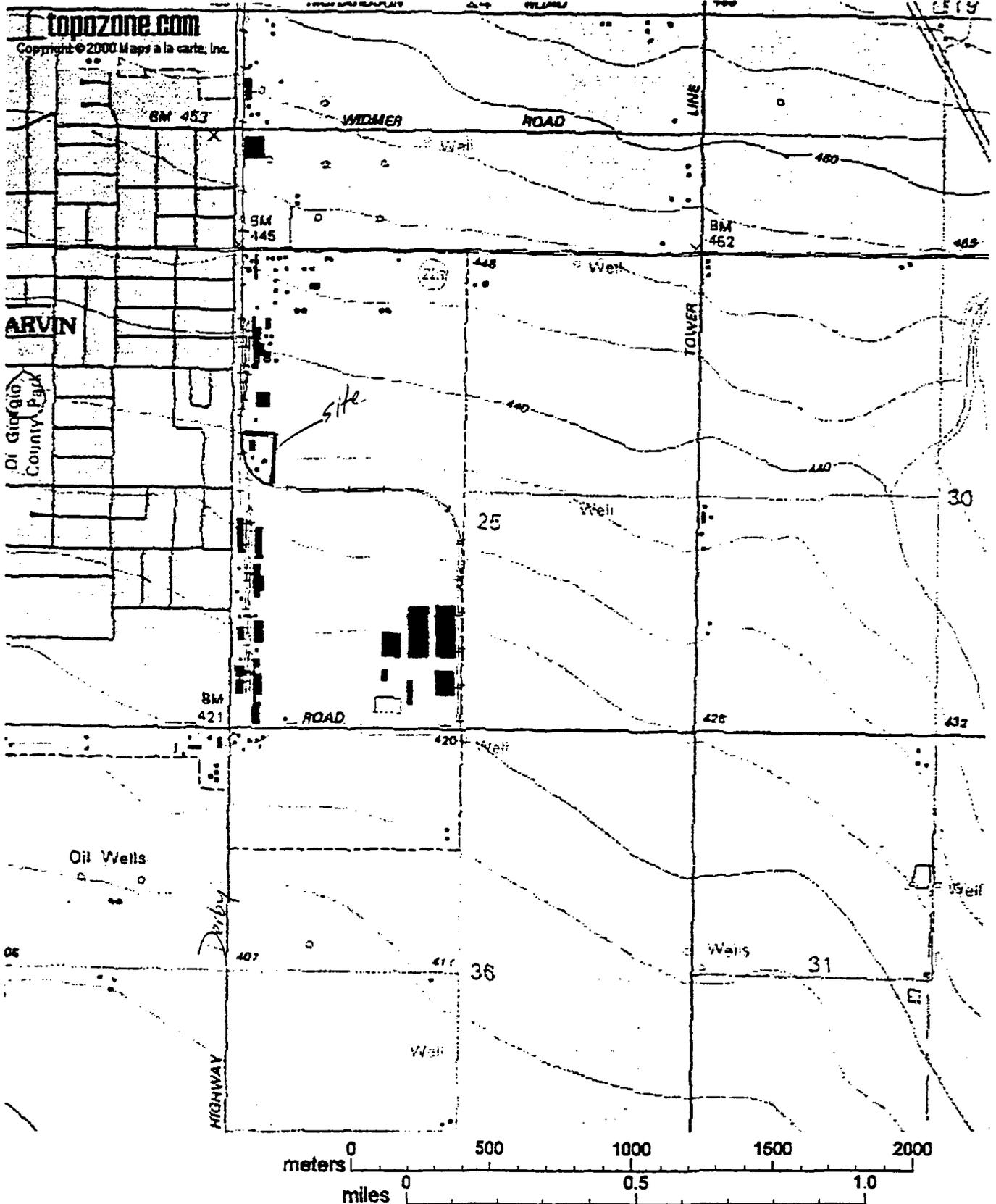
○ PWB-5

UTM: 11334142E  
3896827N



35.2025°N  
118.8219°W

Map center is UTM 11 335788E 3896492N - ARVIN quad [Quad Info]



# Resource Management Agency

Phone (661) 862-8800  
Fax (661) 862-8801

2700 'M' Street  
Bakersfield, Ca. 93301

For Building Inspection:  
(661) 862-8681

Transaction ID 22498      Transaction Date 09/28/2001      Transaction Time 8:05 AM      Cashier DP

Customer Name PANACEA INC

Zone Map or Area HO928011

Permit Number /  
Description

Tracts or Parcel Maps  
Lot or Parcel #

Fee Code	Price	Quantity	Description	Cost
HMW03A	\$335.00	10	4751 MONITORING (1ST WELL)	\$3,350.00

Total \$3,350.00

Amount	Type	Check No.	Description
\$3,350.00	Check	9208	
<span style="border: 1px solid black; padding: 2px;">\$3,350.00</span>	Total Payment		

Amount Due	\$3,350.00
Amount Collected	\$3,350.00
Change	<hr/> \$0.00

Panacea, Inc.

# Appendix B

*Boring Logs*



Project No. C00-266

October 2002

## SUMMARY OF THE BORING LOGS

## PWA-2

Approximate Depth (feet bgs)	Lithologic Description
5 to 20	Fine sand to silty fine sand
20 to 37.5	Silt to clayey silt
37.5 to 48.5	Olive gray silty clay with calcium carbonate inclusions
48.5 to 78.5	Sandy silt to silty sand, moist to wet at 65 feet bgs
78.5 to 80	Fine to medium sand, saturated
80 to 85	Olive gray silty clay, damp
85.6*	Clayey silt

\*Maximum depth explored

## PWA-3

Approximate Depth (feet bgs)	Lithologic Description
5 to 37.5	Silty fine sand with coarser sand at approximately 10 feet bgs
37.5 to 50	Olive gray sandy clay, locally grading to clayey fine to coarse sandy silt
50 to 71	Sandy silt to silty sand, saturated at 65 feet
71 to 72.5	Gray silty clay layer, moist to wet
72.5 to 80.5	Silt to fine sandy silt, saturated, with a 1-foot-thick moist olive gray clay layer at the bottom
80.5 to 86.5*	Clayey silt, moist, grading to olive gray moist clay by 85 feet bgs

\*Maximum depth explored

## PWA-4

Approximate Depth (feet bgs)	Lithologic Description
5 to 25	Fine sandy silt to fine sand
25 to 40	Silty clay, with a silty fine sand layer from 33 to 35 feet bgs
40 to 52.5	Olive gray clay with calcium carbonate inclusions
52.5 to 57.5	Silty fine sand
57.5 to 73	Clayey silt to silt, moist to wet at 65 feet bgs with thin (less than ½-inch thick) fine sand laminate
73 to 81	Silty clay to clayey silt, saturated
81 to 85	Silty fine to coarse sand, saturated
85 to 86.5*	Olive gray clay, saturated

\*Maximum depth explored

## PWB-1

Approximate Depth (feet bgs)	Lithologic Description
10 to 17	Sand
17 to 45	Interbedded silts and sands with infrequent silty clay to clay lenses
45 to 50	Olive gray silty clay with calcium carbonate inclusions
50 to 70	Interbedded silts and sands with silty clay to clay layers encountered from 56.5 to 57 feet bgs, 58 to 59.5 feet bgs, and 60 to 63 feet bgs
70 to 76.5	Dark grayish brown fine sandy silt with silty clay lenses
76.5 to 78	Silty fine sand to fine sandy silt
78 to 88.5	Clay with trace silt and fine sand
88.5 to 114	Silty fine sand to fine to coarse sand with silt and clay lenses (less than 1 foot thick) from 101 feet bgs to 104 feet bgs
114 to 130	Silty soil with sandier and clayey lenses 2 to 4 inches thick (with clay to silty clay layer from 124.5 feet bgs to 126 feet bgs)
130 to 145	Sandy soil
145 to 161.5	Alternating layers of silts and clays varying in thickness from approximately 0.5 foot to approximately 3 feet
161.5 to 164.5	Light yellowish brown fine to medium sand
164.5 to 165.5	Fine sandy and clayey silt
165.5 to 175.5	Generally fine sandy silt to silty fine sand, with silty clay lenses 0.5 foot to 1 foot thick at approximately 167, 172, and 175 feet bgs
175.5 to 177.5	Fine to medium sand layer
177.5 to 185*	Alternating layers of fine sandy silt and silty fine to coarse sand

\*Maximum depth explored

## PWB-2

Approximate Depth (feet bgs)	Lithologic Description
Ground surface to 20	Fine sand
20 to 46	Interbedded fine sand to silt and sands, with silty clay lenses approximately 1 foot thick at 24.5, 33.5, and 42 feet bgs
46 to 51	Olive gray clay, with calcium carbonate inclusions
51 to 65	Sands and silts, with a 0.5-foot clay lens encountered at approximately 56 feet bgs
65 to 85	No sample was recovered due to sampling shoe getting lodged in auger bit, subsequently obstructing sampler
85 to 87	Light olive brown silty clay, grading to sandy clay at 87 feet bgs
87 to 112.5	Fine to coarse sand, with 8-inch-thick silt/clay layer at 104 feet bgs
112.5 to 130	Silts and sands, with silty clay from 118 to 120 feet bgs and from 125 to 126 feet bgs
130 to 140	Sandy soil with a clay lens 3 inches thick at 139 feet bgs, and a fine sandy silt beneath the clay lens to 140 feet bgs
140 to 145	Fine to medium sand, saturated, with a 4-inch clay lens at 142 feet bgs

Approximate Depth (feet bgs)	Lithologic Description
145 to 146.5	Silty clay, moist
146.5 to 148	Fine sandy silt, wet
148 to 150	Yellowish brown clay, moist, with calcium carbonate inclusions
150 to 158	Silty fine sand, wet, to 150 feet bgs with increasing medium- and coarse-grained sand content at approximately 158 feet bgs
158 to 160*	Grayish brown clay, moist

\*Maximum depth explored

PWB-3

Approximate Depth (feet bgs)	Lithologic Description
5 to 26	Generally sand, with a silt layer from 16 feet bgs to approximately 18.5 feet bgs
26	Fine sandy silt
30 to 32.5	Silty clay to clay
32.5 to 36	Fine sand was encountered which turned into a silt at 36 bgs feet and extended to approximately 37.5 feet bgs
37.5 to 47.5	Olive brown, to olive gray clay with calcium carbonate stringers
47.5 to 55.5	Silty soil
55.5 to 57.5	Light olive brown clay
57.5 to 61	Silty fine sand
61 to 65	Brown, silty clay, wet, with an approximately 1-foot-thick moist silt lens at 65 feet bgs
65 to 67.5	Silty fine to medium sand, saturated
67.5 to 72.5	Silt, moist
72.5 to 80.5	Saturated fine sand to silt
80.5 to 86.5	Olive brown clay, with calcium carbonate stringers at 85 feet
86.5 to 88.5	Sand, wet
88.5 to 93.5	Silt, moist, with a 1-foot-thick silty clay lens at 91 feet bgs
93.5 to 103.5	Sand, moist
103.5 to 150	Sands, silts, and clays, moist, alternating layers (generally 1 foot to 5 feet thick)
150	Fine sandy silt, wet
152.5 to 160.5	Coarse sand, saturated, grading to a fine to coarse sand to 160.5 feet bgs
160.5	Olive brown clay, moist
165	No sample was recovered

## PWB-4

Approximate Depth (feet bgs)	Lithologic Description
5 to 45	Interbedded fine sandy silts to fine to medium sands, with a silty clay from approximately 24 to 25 feet bgs
45 to 50	Olive gray clay with calcium carbonate inclusions
50 to 55	Silty fine sand, grading to silt
50 to 70	Silt
70 to 82.5	Interbedded sands, silts, and clays, saturated
82.5 to 87.5	Dark grayish brown clay with calcium carbonate inclusions, moist
87.5 to 92.5	Fine sand silty clay to fine sandy clayey silt
92.5 to 125	Alternating layers of sands and silts and sandy silts and silty sands
125 to 128.5	Silt to silty clay
128.5 to 137.5	Medium sand, grading to a silty fine and by 140 feet bgs, moist to wet
137.5 to 142.5	Silty fine sand, moist to wet
142.5 to 152	Silt, saturated
152 to 165.5*	Fine sand, saturated, with occasional lens (approximately 1 inch thick) of medium to coarse sand

\*Maximum depth explored

## PWB-5

Approximate Depth (feet bgs)	Lithologic Description
5 to 17	Sand
17.5 to 22.5	Silt
22.5 to 31	Silty clay
31 to 52.5	Alternating layers of sands, silts and clays
52.5 to 65	Light olive brown clay with calcium carbonate inclusions
65 to 77.5	Fine sandy silt to fine sandy clayey silt with a clay layer at 70 feet bgs
77.5 to 90.5	Fine sand
90.5 to 100	Clay with very thin sand lens
100 to 122.5	Interbedded sands, silts, and clays
122.5 to 135	Fine to medium sand
135 to 142.5	Clay
145 to 166.5*	Sand, saturated

\*Maximum depth explored

**Project: Brown & Bryant / Arvin**  
**Project Location: 600 South Derby Street**  
**Project Number: C00-218**

**Key to Log of Boring / Well**

Sheet 1 of 1

Elevation, feet	Depth, feet	SAMPLES						MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blow Count or Recovery	Headspace PID, ppm	Graphic Log	Unified Soil Classification			
1	2	3	4	5	6	7	8	9	10	11

**COLUMN DESCRIPTIONS**

- |  |  |
|--|--|
| <p><b>1 Elevation:</b> Elevation in feet relative to mean sea level (MSL).</p> <p><b>2 Depth:</b> Depth in feet below the ground surface.</p> <p><b>3 Sample Type:</b> Type of soil sample collected at depth interval shown; graphic symbols are explained below.</p> <p><b>4 Sample Number [Time]:</b> Identification number of sample retained for possible physical or chemical analyses; sample time recorded in brackets. Analytical samples are designated by an asterisk.</p> <p><b>5 Blow Count or Recovery:</b> Number of blows required to advance drive sampler each 6-inch interval of an 18-inch drive (or distance indicated). Recovery in percent for continuous soil core or drive sampler for which no blows were recorded. "NA" indicates no data were recorded on the field log.</p> | <p><b>6 Headspace PID:</b> Photoionization field sample headspace reading, in parts per million.</p> <p><b>7 Graphic Log:</b> Graphic depiction of subsurface material encountered; typical symbols are explained below.</p> <p><b>8 Unified Soil Classification:</b> Unified Soil Classification System (USCS) code for associated soil stratum.</p> <p><b>9 Material Description:</b> Description of material encountered; may include color, moisture, grain size, and consistency.</p> <p><b>10 Well Completion Schematic:</b> Schematic diagram of well installation; materials are listed alongside well schematic; graphic symbols are explained below.</p> <p><b>10 Completion Details and Field Notes:</b> Well construction materials and installation details. Notes about drilling/sampling.</p> |
|--|--|

**TYPICAL SOIL GRAPHIC SYMBOLS**

 SAND (SP)	 SAND (SW)	 Clayey SAND (SC)	 Silty SAND (SM)
 Lean CLAY (CL)	 Plastic CLAY (CH)	 Silty CLAY (CL)	 Clayey SILT (ML)
 SAND with silt (SP-SM)	 SILT (ML)	 Plastic SILT (MH)	 GRAVEL (GP/GW)

**TYPICAL WELL GRAPHIC SYMBOLS**

 Blank casing in concrete	 Blank casing in filter sand
 Blank casing in neat cement	 Slotted casing in filter sand
 Blank casing in bentonite pellets or chips	 Blank casing in native fill

**TYPICAL SAMPLER GRAPHIC SYMBOLS**

 California split spoon (2-inch ID)
 Continuous soil core (2.5-inch ID)
 Retained sample interval

**OTHER GRAPHIC SYMBOLS**

-  First water encountered at time of drilling (ATD)
-  Water level measured in well on specified date
-  Change in material properties within a stratum
-  Inferred contact between strata or gradational change in lithology

**GENERAL NOTES**

- Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

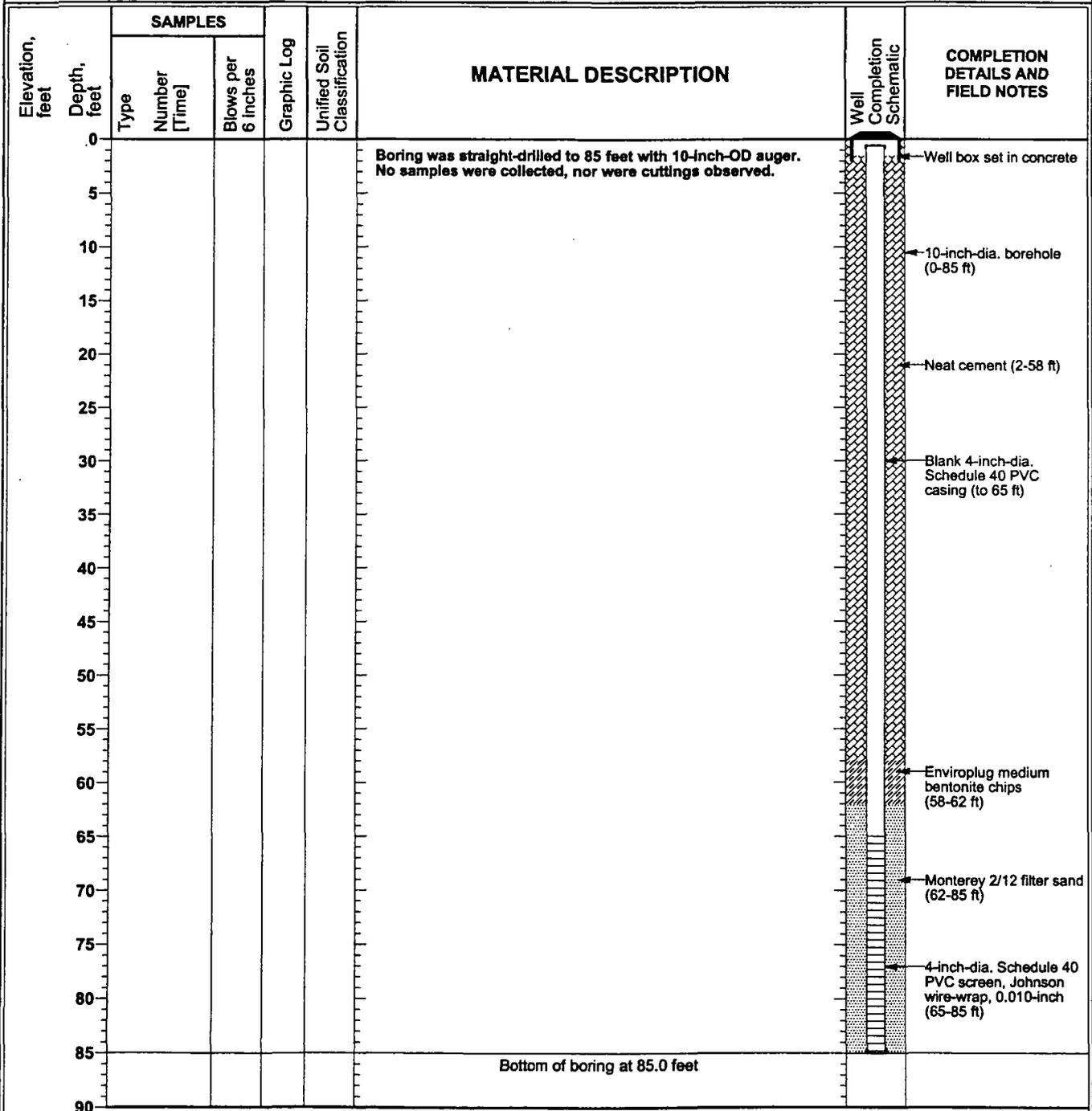
Report: BLKROK\_4W/PID\_KEY; File: BROWNBRY.GPJ; 3/12/2002

**Project: Brown & Bryant / Arvin**  
**Project Location: 600 South Derby Street**  
**Project Number: C00-218**

# Log of Well PWA-1

Sheet 1 of 1

Date(s) Drilled	11/9/01	Logged By	Q. Kinnebrew	Checked By	Q. Kinnebrew
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	10-inch-OD auger	Total Depth of Borehole	85.0 feet
Drill Rig Type	CME 85	Drilling Contractor	BC <sup>3</sup> Environmental Corp.	Approximate Surface Elevation	Not available
Sampling Method	Not sampled	Depth to Groundwater	Not recorded	Top of Casing Elevation	Not available
Borehole Completion	Converted to monitoring well PWA-1; refer to well schematic/details below		Comments	Located west of site, on Hayden Tidwell's property; refer to site plan	



Report: BLKROK\_4WIPID; File: BROWNBRY.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

## Log of Boring / Well PWA-2

Sheet 1 of 3

Date(s) Drilled	11/7/01	Logged By	Q. Kinnebrew	Checked By	Q. Kinnebrew
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-1/4-inch-OD auger to sample; 10-inch-OD auger to ream for well	Total Depth of Borehole	86.5 feet
Drill Rig Type	CME 85	Drilling Contractor	BC <sup>2</sup> Environmental Corp.	Approximate Surface Elevation	Not available
Sampling Method	California (2-inch-ID) split spoon with stainless steel liners	Depth to Groundwater	Not recorded	Top of Casing Elevation	Not available
Borehole Completion	Converted to monitoring well PWA-2; refer to well schematic/details below		Comments	Located immediately south of site SEC; refer to site plan	

Elevation, feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches	Headspace PID, ppm			
0						Soil not observed or sampled to 5 feet.		Well box set in concrete
5		PWA-2/5 [112]		12 18 20	0	SM Very pale brown (10YR 7/4), silty fine SAND, trace medium to coarse sand, damp, medium dense, no visible staining		10-inch-dia. borehole (0-85 ft)
10		PWA-2/10 [118]		3 7 11	0	SP Light brownish gray (10YR 6/2), fine SAND, damp, medium dense, friable, no visible staining		Neat cement (2-58 ft)
15		PWA-2/15 [121]		5 9 10	0	SM Sand grades fine to medium with trace coarse grains		Blank 4-inch-dia. Schedule 40 PVC casing (to 65 ft)
20		PWA-2/20 [124]		10 14 16	0	ML Brown (10YR 5/3), fine sandy SILT, trace medium to coarse sand, damp, very stiff, no visible staining		
25		PWA-2/25 [127]		10 12 15	0	ML Dark grayish brown (10YR 4/2), clayey SILT, moist to wet, very stiff, micaceous, no visible staining		
30								

Report: BLKROK\_4W/PID; File: BROWNBRY.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

## Log of Boring / Well PWA-2

Sheet 2 of 3

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
30		PWA-2/30 [1129]	6 13 17	0		ML	Brown (10YR 4/3) SILT, moist to wet, very stiff, micaceous, no visible staining	10-inch-dia. borehole (0-85 ft)	
						SM	Brown (10YR 5/3), silty fine SAND, moist, medium dense, no visible staining		
35		PWA-2/35 [1133]	12 16 19	0		ML/SP	Brown (10YR 5/3), clayey SILT, trace fine to coarse sand, damp, very stiff, no visible staining; intermittent lenses (1/2 to 1 inch thick) of brown (10YR 5/3), fine SAND, moist, medium dense, friable	Neat cement (2-58 ft)	
40		PWA-2/40 [1137]	12 16 19	0		CL	Olive gray (5Y 4/2), silty CLAY, locally with trace fine to coarse sand, moist, very stiff, micaceous, no visible staining	Blank 4-inch-dia. Schedule 40 PVC casing (to 65 ft)	
45		PWA-2/45 [1142]	5 8 11	0			↓ Becomes stiff, with calcium carbonate inclusions; few thin laminae (<1/4 inch thick) of brown, silty fine sand		
50		PWA-2/50 [1148]	4 9 14	0		ML	Grayish brown (10YR 5/2), fine to coarse sandy SILT, moist, very stiff, no visible staining		
55		PWA-2/55 [1157]	4 9 13	0		SM	Light brownish gray (10YR 6/2), silty fine SAND, moist, medium dense, micaceous, no visible staining		
						ML	Brown (10YR 5/3 to 10YR 4/3), fine to coarse sandy SILT, moist, stiff, micaceous, no visible staining		
60		PWA-2/60 [1201]	11 15 20	0			↓ Becomes very stiff	Enviroplug medium bentonite chips (58-62 ft)	
								Monterey 2/12 filter sand (62-85 ft)	
65									

Report: BLKROK\_4W/PID; File: BROWNBRYP.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWA-2

Sheet 3 of 3

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches	Headspace PID, ppm					
65		PWA-2/65 [1206]		5 14 22	0		ML	Olive gray (5Y 5/2), fine sandy SILT, trace medium to coarse sand, moist to wet, very stiff, micaceous, no visible staining		10-inch-dia. borehole (0-85 ft)  Monterey 2/12 filter sand (62-85 ft)  4-inch-dia. Schedule 40 PVC screen, Johnson wire-wrap, 0.010-inch (65-85 ft)  Lowermost sample interval
70		PWA-2/70 [1212]		12 15 19	0		Becomes olive brown (2.5Y 4/3), saturated; slight odor			
75		PWA-2/75 [1215]		5 9 10	0	ML/SM	Dark grayish brown (2.5Y 4/2), fine sandy SILT, locally with silty fine SAND, saturated, stiff / medium dense, micaceous, no visible staining			
80		PWA-2/80 [1219]		7 7 12	0	SP CL	Light brownish gray (10YR 6/2), fine to medium SAND, saturated, medium dense, no visible staining, slight odor  Olive gray (5Y 4/2), silty CLAY, trace fine to medium sand, damp, no visible staining, slight odor			
85		PWA-2/85 [1222]		4 11 12	0	ML/SM	Olive gray (5Y 4/2), clayey SILT, with lenses of silty fine SAND, damp, very stiff / medium dense, micaceous, no visible staining, slight odor			
							Bottom of boring at 86.5 feet			
90										
95										
100										

Report: BLKROK\_4W/PID; File: BROWNBRY.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

## Log of Boring / Well PWA-3

Sheet 1 of 3

Date(s) Drilled	11/8/01	Logged By	Q. Kinnebrew	Checked By	Q. Kinnebrew
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-1/4-inch-OD auger to sample; 10-inch-OD auger to ream for well	Total Depth of Borehole	86.5 feet
Drill Rig Type	CME 85	Drilling Contractor	BC <sup>2</sup> Environmental Corp.	Approximate Surface Elevation	Not available
Sampling Method	California (2-inch-ID) split spoon with stainless steel liners	Depth to Groundwater	Not recorded	Top of Casing Elevation	Not available
Borehole Completion	Converted to monitoring well PWA-3; refer to well schematic/details below	Comments	Located south of site, on Bristo-Lag property; refer to site plan		

Elevation, feet	Depth, feet	SAMPLES				Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches	Headspace PID, ppm				
0							Soil not observed or sampled to 5 feet.		Well box set in concrete
5		PWA-3/5 [0751]		5 5 10	0	SM	Very pale brown (10YR 7/3), silty fine SAND, damp, loose, no visible staining		10-inch-dia. borehole (0-85 ft)
10		PWA-3/10 [0754]		3 7 11	0	SM	Yellowish brown (10YR 5/4), silty fine to coarse SAND, damp, medium dense, no visible staining		Neat cement (2-58 ft)
15		PWA-3/15 [0756]		9 10 12	0	SM/SP	Pale brown (10YR 6/3) to light gray (10YR 7/1), silty fine SAND to fine SAND, damp, medium dense, micaceous, no visible staining		Blank 4-inch-dia. Schedule 40 PVC casing (to 65 ft)
20		PWA-3/20 [0800]*		7 11 14	0	SM	Brown (10YR 5/3), silty fine SAND, moist, medium dense, no visible staining		
25		PWA-3/25 [0803]		7 8 13	0		↓ Becomes grayish brown (10YR 5/2), micaceous		
30									

Report: BLKROK\_4W/PID; File: BROWNBRV.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWA-3

Sheet 2 of 3

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
30		PWA-3/30 [0805]		6 6 8	0	SP	Light yellowish brown (10YR 6/4), fine SAND, damp, loose, friable, no visible staining; clay in sampler shoe		←10-inch-dia. borehole (0-85 ft)  ←Neat cement (2-58 ft)  ←Blank 4-inch-dia. Schedule 40 PVC casing (to 65 ft)
35		PWA-3/35 [0808]		8 11 12	0	SM/ML	Yellowish brown (10YR 5/4), silty fine SAND grading to fine sandy SILT, moist, medium dense / very stiff, micaceous, no visible staining		
40		PWA-3/40 [0810]		8 16 18	0	CL/ML	Olive gray (5Y 5/2), fine to coarse sandy CLAY, locally grading to clayey fine to coarse sandy SILT, moist, very stiff, no visible staining		
45		PWA-3/45 [0813]*		10 12 14	0				
50		PWA-3/50 [0820]		10 10 17	0	SM	Pale yellow (2.5Y 7/4), silty fine to coarse SAND, damp, medium dense, no visible staining		
55		PWA-3/55 [0823]		12 17 21	0	SP ML	Yellowish brown (10YR 5/4), fine SAND, moist, medium dense, no visible staining Yellowish brown (10YR 5/4), fine sandy SILT, moist, very stiff, no visible staining		
60		PWA-3/60 [0826]		7 11 16	0	SW ML	Very pale brown (10YR 7/4), fine to coarse SAND, damp, medium dense, friable, no visible staining Dark grayish brown (10YR 4/2), fine to coarse sandy SILT, moist, very stiff, no visible staining		
65									

Report: BLKROK\_4W/PID; File: BROWNBRY.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWA-3

Sheet 3 of 3

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches	Headspace PID, ppm					
65		PWA-3/65 [0829]		5 9 12	0		ML	Dark grayish brown (10YR 4/2), fine sandy SILT to SILT, wet, stiff, micaceous, no visible staining		← 10-inch-dia. borehole (0-85 ft)  ← Monterey 2/12 filter sand (62-85 ft)  ← 4-inch-dia. Schedule 40 PVC screen, Johnson wire-wrap, 0.010-inch (65-85 ft)
70		PWA-3/70 [0833]		4 9 16	0		ML	← Becomes gray (10YR 5/1) to grayish brown (10YR 5/2), sandy, moist to wet, very stiff  Gray (10YR 5/1) to grayish brown (10YR 5/2), silty CLAY, moist to wet, very stiff, micaceous, no visible staining		
75		PWA-3/75 [0836]		4 9 11	0		ML	Yellowish brown (10YR 5/4) SILT, moist to wet, stiff, micaceous, no visible staining		
80		PWA-3/80 [0838]		5 6 11	0		ML CL	Dark olive gray (5Y 3/2), fine sandy SILT, trace medium to coarse sand, wet, stiff, micaceous, no visible staining Olive gray (5Y 4/2) CLAY, slightly plastic, moist, stiff		
85		PWA-3/85 [0841]		4 7 17	0		ML CL	Olive brown (2.5Y 4/3), clayey SILT, moist, stiff, micaceous, no visible staining Olive gray (5Y 4/2) CLAY, slightly plastic, moist, very stiff, no visible staining		
								Bottom of boring at 86.5 feet		
90										
95										
100										

Report: BLKROK\_4/W/PID: File: BROWNBRJ.GPJ: 3/13/2002

**Project: Brown & Bryant / Arvin**  
**Project Location: 600 South Derby Street**  
**Project Number: C00-218**

**Log of Boring / Well PWA-4**

Sheet 1 of 3

Date(s) Drilled	11/8/01	Logged By	Q. Kinnebrew	Checked By	Q. Kinnebrew
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-1/4-inch-OD auger to sample; 10-inch-OD auger to ream	Total Depth of Borehole	86.5 feet
Drill Rig Type	CME 85	Drilling Contractor	BC <sup>2</sup> Environmental Corp.	Approximate Surface Elevation	Not available
Sampling Method	California (2-inch-ID) split spoon with stainless steel liners	Depth to Groundwater	Not recorded	Top of Casing Elevation	Not available
Borehole Completion	Converted to monitoring well PWA-4; refer to well schematic/details below		Comments: Located immediately southwest of site, on RR property; refer to site plan		

Elevation, feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type Number [Time]	Blows per 6 inches	Headspace PID, ppm	Graphic Log			
0						Soil not observed or sampled to 5 feet.		Well box set in concrete
5	5-6	PWA-4/5 [1309]	5-6	0	ML/SM	Yellowish brown (10YR 5/4), fine sandy SILT to silty fine SAND, dry, stiff / medium dense, no visible staining		10-inch-dia. borehole (0-85 ft)
10	10-11	PWA-4/10 [1312]	5-10	0	SM	Very pale brown (10YR 7/3), silty fine SAND, dry, medium dense, no visible staining		Neat cement (2-58 ft)
15	12-14	PWA-4/15 [1315]	6-12	0	SP	Light yellowish brown (10YR 6/4), fine SAND, trace medium to coarse sand, damp, medium dense, micaceous, no visible staining		Blank 4-inch-dia. Schedule 40 PVC casing (to 65 ft)
20	12-15	PWA-4/20 [1317]	10-12	0	SP/SM	Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/4), fine SAND to silty fine SAND, damp, medium dense, micaceous, no visible staining		
25	13-18	PWA-4/25 [1320]	9-13	0		↓ Becomes pale brown (10YR 6/3)		
30					CL	Pale brown (10YR 6/3), silty CLAY, moist, very stiff, micaceous, no visible staining		

Report: BLKROK\_4W/PID; File: BROWNBRY GP-I; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWA-4

Sheet 2 of 3

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
30		PWA-4/30 [1323]		10 10 16	0	CL	Brown (10YR 4/3), silty CLAY, moist, very stiff, micaceous, no visible staining	10-inch-dia. borehole (0-85 ft)	
35		PWA-4/35 [1327]		8 13 15	0	SM	Yellowish brown (10YR 5/4), silty fine SAND, damp, medium dense, micaceous, no visible staining	Neat cement (2-58 ft)	
						CL	Yellowish brown (10YR 5/4), silty CLAY, moist, very stiff, micaceous, no visible staining		
40		PWA-4/40 [1329]		8 8 19	0	ML	Olive gray (5Y 4/2), fine sandy SILT, moist, very stiff, micaceous, no visible staining	Blank 4-inch-dia. Schedule 40 PVC casing (to 65 ft)	
						CL	Olive gray (5Y 4/2) CLAY, moist, very stiff, no visible staining		
45		PWA-4/45 [1332]		8 14 15	0		With white (10YR 8/1) calcium carbonate inclusions		
50		PWA-4/50 [1335]		5 7 13	0		Becomes stiff; increase in calcium carbonate inclusions		
55		PWA-4/55 [1340]		11 14 15	0	SM	Dark grayish brown (2.5Y 4/2), silty fine SAND, moist, medium dense, micaceous, no visible staining	Enviroplug medium bentonite chips (58-62 ft)	
60		PWA-4/60 [1344]		12 16 20	0	ML	Olive gray (5Y 4/2), clayey SILT to SILT, moist to wet, very stiff, micaceous, no visible staining	Monterey 2/12 filter sand (62-85 ft)	
65									

Report: BLKROK\_AW/PID; File: BROWNBRYP.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWA-4

Sheet 3 of 3

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
65		PWA-4/65 [1348]		7 12 14	0	ML	Light olive brown (2.5Y 5/3), clayey SILT to SILT, trace fine to medium sand and thin (<1/2 inch thick) fine sand laminae, moist to wet, very stiff, micaceous, no visible staining	<p>10-inch-dia. borehole (0-85 ft)</p> <p>Monterey 2/12 filter sand (62-85 ft)</p> <p>4-inch-dia. Schedule 40 PVC screen, Johnson wire-wrap, 0.010-inch (65-85 ft)</p>	
70		PWA-4/70 [1350]		5 8 10	0		Becomes olive brown (2.5Y 4/3), less clayey, wet, stiff, no sand or fine sand laminae		
75		PWA-4/75 [1355]		4 6 16	0	CL/ML	Dark grayish brown (2.5Y 4/2), silty CLAY to clayey SILT, saturated, stiff, micaceous, no visible staining		
80		PWA-4/80 [1359]		5 9 10	0	SW	Gray (10YR 5/1), fine to coarse SAND, saturated, medium dense, no visible staining		
85		PWA-4/85 [1402]		4 7 11	0	CL	Olive gray (5Y 4/2), fine to medium sandy CLAY, wet, stiff, some calcium carbonate, no visible staining		
							Bottom of boring at 86.5 feet		Lowermost sample interval
90									
95									
100									

Report: BLKROK\_4W/PID; File: BROWNBRYP.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

# Log of Well PWA-5

Sheet 1 of 1

Date(s) Drilled	11/9/01	Logged By	Q. Kinnebrew	Checked By	Q. Kinnebrew
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	10-inch-OD auger	Total Depth of Borehole	85.0 feet
Drill Rig Type	CME 85	Drilling Contractor	BC <sup>2</sup> Environmental Corp.	Approximate Surface Elevation	Not available
Sampling Method	Not sampled	Depth to Groundwater	Not recorded	Top of Casing Elevation	Not available
Borehole Completion	Converted to monitoring well PWA-5; refer to well schematic/details below		Comments Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
0						Boring was straight-drilled to 85 feet with 10-inch-OD auger. No samples were collected, nor were cuttings observed.		Well box set in concrete 10-inch-dia. borehole (0-85 ft) Neat cement (2-58 ft) Enviroplug medium bentonite chips (58-62 ft) Monterey 2/12 filter sand (62-85 ft) 4-inch-dia. Schedule 40 PVC screen, Johnson wire-wrap, 0.010-inch (65-85 ft)	
5									
10									
15									
20									
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									
75									
80									
85									
90									Bottom of boring at 85.0 feet

Report: BLKROK\_4W/PID: File: BROWNBRYP.GPJ; 3/13/2002

**Project: Brown & Bryant / Arvin**  
**Project Location: 600 South Derby Street**  
**Project Number: C00-218**

## Log of Boring / Well PWB-1

Sheet 1 of 6

Date(s) Drilled	11/13/01 and 11/14/01	Logged By	Q. Kinnebrew	Checked By	Q. Kinnebrew
Drilling Method	Mud Rotary	Drill Bit Size/Type	5-inch bit to drill and sample; 10-inch-bit to ream for well	Total Depth of Borehole	180.0 feet
Drill Rig Type	CME 75	Drilling Contractor	BC <sup>2</sup> Environmental Corp.	Approximate Surface Elevation	Not available
Sampling Method	Continuous soil core (2.5-inch-ID)	Depth to Groundwater	Not recorded	Top of Casing Elevation	Not available
Borehole Completion	Converted to monitoring well PWB-1; refer to well schematic/details below	Comments	Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Recovery, percent					
0								10-in.-dia. metal locking stand pipe	
							Soil not observed or sampled to 10 feet because conductor casing was set to that depth. Soil samples for possible physical testing were collected at 5-foot intervals. Sample moisture affected by mud rotary drilling method; moisture descriptions do not reflect in-place conditions. No visible staining observed unless noted to the contrary.	Concrete (0-2 ft)	
5								10-inch-dia. borehole (0-180 ft)	
10			3	0		SM	Brown (10YR 4/3), silty fine to coarse SAND, wet, micaceous, friable	Neat cement (2-153 ft)	
15				40		SW	Yellowish brown (10YR 5/4), fine to coarse SAND, trace fine gravel, wet, friable	Blank 4-inch-dia. Schedule 40 PVC casing (to 160 ft)	
						ML	Dark grayish brown (2.5Y 4/2) SILT, moist, micaceous		
						SM	Olive brown (2.5Y 4/3), silty fine SAND, trace medium to coarse sand, damp, micaceous		
20						ML	Olive brown (2.5Y 4/3), fine sandy SILT, moist, micaceous		
						SP	Light olive brown (2.5Y 5/3), fine SAND, wet, friable		
				80		ML	Dark grayish brown (2.5Y 4/2), clayey SILT, wet, micaceous		
						SM	Dark grayish brown (2.5Y 4/2), silty fine SAND, wet, micaceous → Silty CLAY layer 3 inches thick		
						ML	Olive brown (2.5Y 4/2) SILT, wet, micaceous		
25						CL	Dark grayish brown (2.5Y 4/2), silty CLAY, wet		
						ML	Olive brown (2.5Y 4/3) SILT to fine sandy SILT, wet, micaceous → Olive brown (2.5Y 4/3), silty CLAY, wet, 3 inches thick		
				100		ML	Olive brown (2.5Y 4/3) SILT, wet, micaceous		
						ML	Olive brown (2.5Y 4/3), fine sandy SILT, wet, micaceous		
30						SM	Light olive brown (2.5Y 5/3), silty fine SAND, wet, friable		

Report: BLKROK\_4W/PID: File: BROWNBRYP GPJ: 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-1

Sheet 2 of 6

Elevation, feet	Depth, feet	SAMPLES			Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Recovery, percent				
30			6	0	SM	Light olive brown (2.5Y 5/3), silty fine SAND, wet, friable (continued)	10-inch-dia. borehole (0-180 ft)	
					CL	Brown (10YR 5/3) CLAY, trace fine sand, moist		
					SP	Light olive brown (2.5Y 5/3), fine SAND	Neat cement (2-153 ft)	
35				100	ML	Olive brown (2.5Y 4/4) SILT, trace fine to coarse sand, moist		
					CL	Olive (5Y 5/3), silty CLAY to CLAY, moist ↳ Silty fine SAND layer 3 inches thick, friable		
					ML	Dark grayish brown (2.5Y 4/2) SILT, trace sand, wet, micaceous	Blank 4-inch-dia. Schedule 40 PVC casing (to 160 ft)	
					SM	Dark grayish brown (2.5Y 4/2), silty fine SAND, wet, friable		
					ML	Olive brown (2.5Y 4/3) SILT, wet, micaceous		
40				80	CL	Dark grayish brown (2.5Y 4/2), silty CLAY, wet, micaceous		
					SM	Light olive brown (2.5Y 5/3), silty fine SAND, wet, friable, micaceous	Becomes very dark gray (2.5Y 3/1)	
45				100	CL	Olive gray (5Y 4/2) CLAY, slightly plastic, wet, white calcium carbonate inclusions		
					ML	Olive gray (5Y 4/2), fine sandy to clayey SILT, wet, white calcium carbonate inclusions	PWB-1/50 (1535)*	
50				100	CL	Olive gray (5Y 4/2), silty CLAY, wet		
					SP	Olive brown (2.5Y 4/3), fine SAND, trace medium to coarse sand, wet, friable	100	
					ML	Olive brown (2.5Y 4/4) SILT, wet, micaceous		
					CL	Light olive brown (2.5Y 5/3), silty CLAY to CLAY, wet		
					ML	Dark grayish brown (2.5Y 4/2), fine to coarse sandy SILT, wet ↳ Silty fine SAND layer, trace medium to coarse sand		
						↳ Light olive brown (2.5Y 5/4), silty CLAY layer	40	
60					SW	Light olive brown (2.5Y 5/4), fine to coarse SAND, wet		
					CL	Light olive brown (2.5Y 5/4), silty CLAY, wet		
					ML	Light olive brown (2.5Y 5/3) SILT, wet, micaceous	40	
65					SM	Olive brown (2.5Y 4/4), silty fine to coarse SAND, wet ↳ Dark grayish brown (2.5Y 4/2) SILT layer 3 inches thick		

Report: BLKROK\_AW/PI/D; File: BROWNBRV.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-1

Sheet 3 of 6

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Recovery, percent					
65			4	0		SM	Olive brown (2.5Y 4/4), silty fine to coarse SAND, wet (continued)	← 10-inch-dia. borehole (0-180 ft)  ← Neat cement (2-153 ft)  ← Blank 4-inch-dia. Schedule 40 PVC casing (to 160 ft)	
					ML	Light olive brown (2.5Y 5/3) SILT, wet, micaceous			
					SM	Light olive brown (2.5Y 5/3), silty fine SAND, wet, micaceous			
						← Light olive brown (2.5Y 5/3) CLAY layer 1/2 inch thick			
70					ML	Dark grayish brown (2.5Y 4/2), fine sandy SILT, wet, micaceous			
				100		↳ Dark grayish brown (2.5Y 4/2), silty CLAY, wet, micaceous			
						↳ Dark grayish brown (2.5Y 4/2), silty CLAY, wet, micaceous			
						↳ Dark grayish brown (2.5Y 4/2), silty CLAY, wet, micaceous			
75						↳ Dark grayish brown (2.5Y 4/2), silty CLAY, wet, micaceous			
				90	SM	Dark grayish brown (2.5Y 4/2), silty fine SAND, saturated, micaceous			
					ML	Dark grayish brown (2.5Y 4/2), fine sandy SILT, saturated			
					CL	Dark grayish brown (2.5Y 4/2), CLAY to silty CLAY, slightly plastic, moist; more silty with trace sand below 79.1 ft			
						↳ Fine sandy SILT layer 2 to 3 inches thick			
80					CL	Dark grayish brown (2.5Y 4/2) CLAY, trace fine sand, moist			
				100		↙ With silt and fine sand ↙ Sand fraction grades fine to medium			
85									
				40					
90					SM/SP	Very dark grayish brown (2.5Y 3/2), silty fine SAND to fine SAND, wet, micaceous; becomes dark grayish brown (2.5Y 4/2) below 89 ft			
				40					
					SM	Olive brown (2.5Y 4/3), silty fine to coarse SAND, wet, slightly friable			
95					SW	Light yellowish brown (2.5Y 6/3), fine to coarse SAND with fine gravel, friable, subangular to subrounded clasts			
				20					
100									

Report: BLKROK\_4WIPID; File: BROWNBRV.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

# Log of Boring / Well PWB-1

Sheet 4 of 6

Elevation, feet	Depth, feet	SAMPLES			Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Recovery, percent				
					SM/ML	Olive brown (2.5Y 4/3), silty fine to coarse SAND, wet, slightly friable, micaceous; layered with fine sandy SILT and SILT		← 10-inch-dia. borehole (0-180 ft)
					CL	Light olive brown (2.5Y 5/3) CLAY, wet, micaceous		
				80	SW/SM	Light olive brown (2.5Y 5/3), fine to coarse SAND grading to silty fine to coarse SAND, wet		
					ML	Light olive brown (2.5Y 5/3), fine to coarse sandy SILT, micaceous		
	105			30	SM	Light olive brown (2.5Y 5/3), silty fine SAND, trace medium to coarse sand, wet, micaceous		← Neat cement (2-153 ft)
						↳ Olive brown (2.5Y 4/3), fine sandy SILT layer 3 inches thick		
	110			40	SW	Light yellowish brown (2.5Y 6/3), fine to coarse SAND, wet, friable		← Blank 4-inch-dia. Schedule 40 PVC casing (to 160 ft)
					SP	Light olive brown (2.5Y 5/4), medium to coarse SAND, friable (possible sluff)		
	115			60	ML	Olive brown (2.5Y 4/4), fine sandy SILT, trace medium to coarse sand, wet, micaceous		
						↳ Becomes dark grayish brown (2.5Y 4/2), fine sand		
						↳ Silty fine SAND layer 2 inches thick		
						↳ Silty CLAY layer 3 inches thick		
						↳ Fine to coarse sandy SILT layer 4 inches thick		
						↳ Clayey SILT layer 2 inches thick		
	120			80	ML	Olive brown (2.5Y 4/3) SILT to clayey SILT, trace fine sand, wet, micaceous		
						↳ Increase in sand content		
						↳ Silty CLAY layer 2 inches thick		
						↳ Silty CLAY layer 2 inches thick		
	125			80	CL	Olive brown (2.5Y 4/3), CLAY to silty CLAY, wet		
					SM	Light yellowish brown (2.5Y 6/3), silty fine SAND grading to SILT grading to CLAY, wet		
					ML/CL	Light olive brown (2.5Y 5/3), SILT to fine sandy SILT, wet, micaceous		
						↳ Clayey SILT layer 2 inches thick		
					CL	Olive brown (2.5Y 4/3), CLAY to silty CLAY, moist to wet		
	130			100	ML/CL	Olive brown (2.5Y 4/3), clayey SILT to silty CLAY, wet		
					SM	Olive gray (5Y 4/2), silty fine SAND, wet, friable, micaceous		
						↳ Olive gray (5Y 4/2), fine sandy SILT layer, wet, micaceous		
	135				SP	Light olive brown (2.5Y 5/4), fine to medium SAND, wet, friable		

Report: BLKROK\_4W/PID: File: BROWN&BRY.GPJ: 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-1

Sheet 5 of 6

Elevation, feet	Depth, feet	SAMPLES			Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Recovery, percent				
				33	SM/SP	Dark gray (2.5Y 4/1), silty fine SAND to fine SAND, moist, friable [No sample recovery 135.8-139 ft; assume sand as above]		10-inch-dia. borehole (0-180 ft)
					SP	Olive brown (2.5Y 4/3), fine SAND, wet, friable		
	140			23	SW	Light olive brown (2.5Y 5/4), fine to coarse SAND, wet, friable [No sample recovery from 140-143.7 ft; assume sand as above]		Neat cement (2-153 ft)
					SM	Olive brown (2.5Y 4/3), silty fine SAND, trace medium to coarse sand, wet, friable		
	145				CL	Olive brown (2.5Y 4/3) CLAY, moist, micaceous		
				80	ML	Olive brown (2.5Y 4/3), fine sandy to clayey SILT, wet, micaceous; thin layer of CLAY at base of unit		Blank 4-inch-dia. Schedule 40 PVC casing (to 160 ft)
					SM/ML	Olive brown (2.5Y 4/3), silty fine SAND and fine sandy SILT in alternating layers, wet, micaceous		
					CL	Olive brown (2.5Y 4/3) CLAY, wet, micaceous		
					ML	Olive brown (2.5Y 4/3) SILT, wet, micaceous		
	150				CL	Olive brown (2.5Y 4/3) CLAY, wet, micaceous		
					ML	Olive brown (2.5Y 4/3), fine sandy SILT, wet, micaceous		
					CL	Olive brown (2.5Y 4/3), silty CLAY, wet, micaceous		
				100	ML	Olive brown (2.5Y 4/3), fine sandy clayey SILT, wet, micaceous		
					CL	Olive brown (2.5Y 4/3), silty CLAY, wet, micaceous		
					ML	Olive brown (2.5Y 4/3), fine sandy SILT, trace medium to coarse sand, wet, micaceous		
	155				SP	Light olive brown (2.5Y 5/3), fine to medium SAND, wet, friable; few medium to coarse sand lenses with fine subrounded gravel		Enviroplug medium bentonite chips (153-158 ft)
					ML	Light olive brown (2.5Y 5/3), fine sandy SILT, wet, micaceous		
				100	SW	Light olive brown (2.5Y 5/3), fine to coarse SAND, wet, friable		
					CL	Light olive brown (2.5Y 5/3), silty CLAY, moist, micaceous		
					ML	Light olive brown (2.5Y 5/3) SILT, moist, micaceous, laminated		
	160				CL	Light olive brown (2.5Y 5/3), silty CLAY, moist, micaceous		Monterey #3 filter sand (158-180 ft)
					ML	Light olive brown (2.5Y 5/3), fine to coarse sandy SILT, moist		
				80	SP	Light yellowish brown (2.5Y 6/4), fine to medium SAND, wet, friable		
					ML	Light olive brown (2.5Y 5/4), fine sandy and clayey SILT, wet		
	165				ML	Light olive brown (2.5Y 5/4), fine to medium sandy SILT, wet		4-inch-dia. Schedule 40 PVC screen, Johnson wire-wrap, 0.020-inch (160-180 ft)
					ML	Light olive brown (2.5Y 5/4), fine to medium sandy SILT, wet		
				52	CL	Light olive brown (2.5Y 5/3), silty CLAY, wet, micaceous		
					ML	Olive brown (2.5Y 4/3) to light olive brown (2.5Y 5/3), fine sandy SILT to SILT, wet, micaceous; few clayey silt to silty clay laminae		
	170							

Report: BLKROK\_4W/PID; File: BROWNBRY.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-1

Sheet 6 of 6

Elevation, feet	Depth, feet	SAMPLES			Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Recovery, percent				
					ML	Olive brown (2.5Y 4/3) to light olive brown (2.5Y 5/3), fine sandy SILT to SILT, wet, micaceous; few clayey silt to silty clay laminae (continued)	<p>← 10-inch-dia. borehole (0-180 ft)</p> <p>← Monterey #3 filter sand (158-180 ft)</p> <p>← 4-inch-dia. Schedule 40 PVC screen, Johnson wire-wrap, 0.020-inch (160-180 ft)</p>	
			37		CL	Light yellowish brown (2.5Y 6/3), silty CLAY, wet, micaceous		
					SM	Light olive brown (2.5Y 5/4), silty fine SAND, trace medium to coarse sand, wet, friable		
175					ML	Light olive brown (2.5Y 5/4), fine sandy SILT, wet, micaceous		
					CL	Light olive brown (2.5Y 5/4), silty CLAY, wet, micaceous		
			50		SP	Light olive brown (2.5Y 5/3), fine to medium sand, wet, friable		
					SM/ML	Light olive brown (2.5Y 5/3), fine sandy SILT and silty fine to coarse SAND in alternating layers, wet, micaceous; few silty clay laminae		
180						Bottom of boring at 180.0 feet		
185								
190								
195								
200								
205								

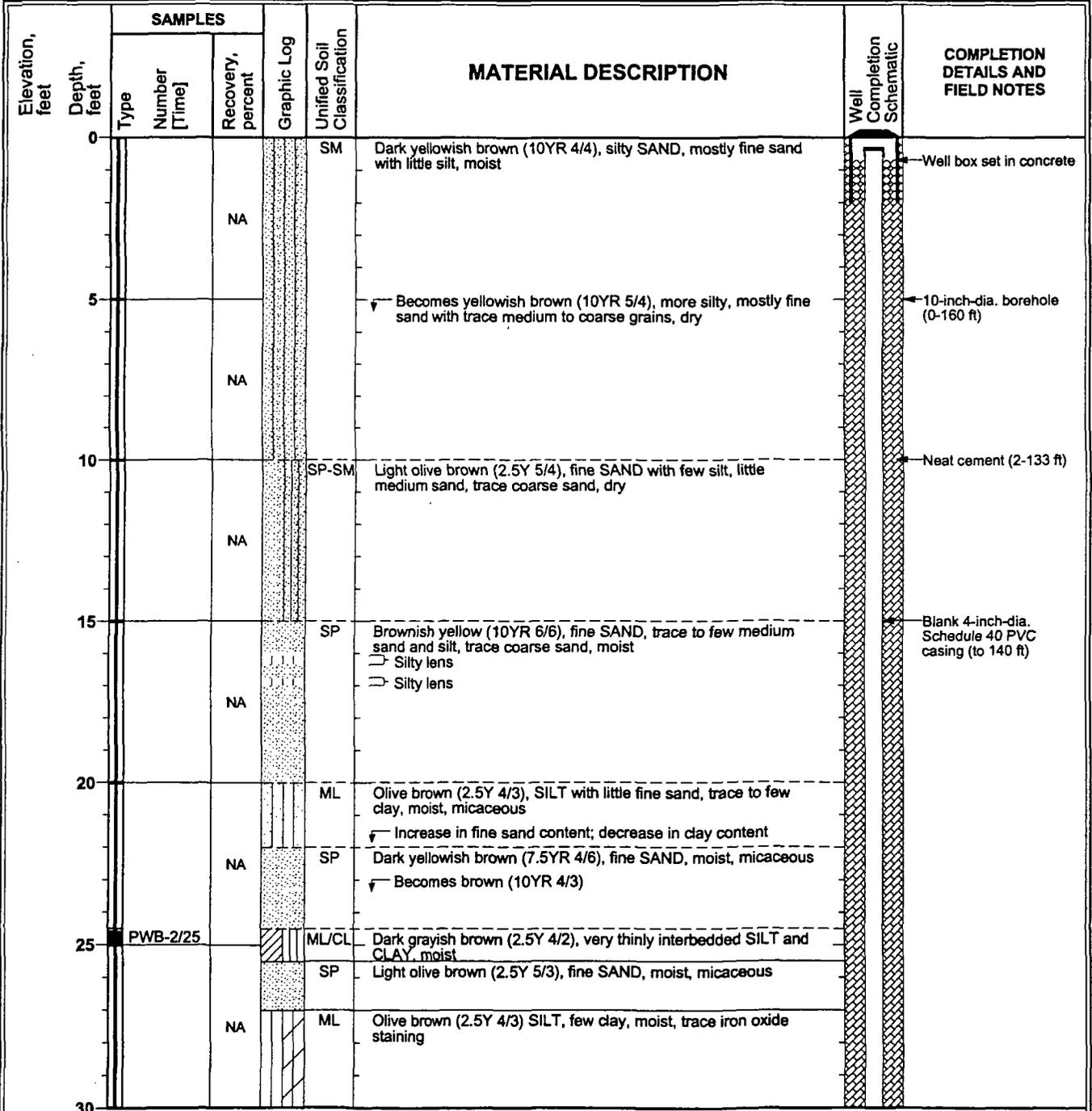
Report: BLKROK\_4W/PID; File: BROWNBRY.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

# Log of Boring / Well PWB-2

Sheet 1 of 5

Date(s) Drilled	11/30/01, 12/3/01, and 12/4/01	Logged By	W. Cablk	Checked By	W. Cablk <i>WC</i>
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-1/4-inch-OD auger to sample; 10-inch-OD auger to ream for well	Total Depth of Borehole	160.0 feet
Drill Rig Type	CME 85	Drilling Contractor	BC <sup>2</sup> Environmental Corp.	Approximate Surface Elevation	Not available
Sampling Method	Continuous soil core (2.5-inch-ID); California split spoon (2-inch-ID)	Depth to Groundwater	Not recorded	Top of Casing Elevation	Not available
Borehole Completion	Converted to monitoring well PWB-2; refer to well schematic/details below		Comments	Refer to site plan for location	



Report: BLKROK\_4WIPID; File: BROWNBRY.GPJ; 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

## Log of Boring / Well PWB-2

Sheet 2 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Recovery, percent					
30					SP	Light olive brown (2.5Y 5/3), fine SAND, moist, micaceous			
					ML	Light olive brown (2.5Y 5/3), clayey SILT, moist ← SAND lens 1 inch thick		← 10-inch-dia. borehole (0-160 ft)	
				NA	CL/ML	Brown (10YR 4/3), silty CLAY to clayey SILT, moist			
					SP	Light olive brown (2.5Y 5/3), fine SAND, moist, micaceous			
35					SM	Brown (10YR 4/3), silty fine SAND, moist, micaceous		← Neat cement (2-133 ft)	
				NA	ML	Brown (10YR 4/3), SILT with little fine sand, few to little clay, moist, micaceous			
					SP	Brown (10YR 5/3), fine SAND, little medium sand, moist			
40					CL	Light olive brown (2.5Y 5/3), silty CLAY, trace to few fine to medium sand, moist		← Blank 4-inch-dia. Schedule 40 PVC casing (to 140 ft)	
				NA	SP	Brown (10YR 5/3), fine SAND, little medium sand, moist			
					CL	Olive gray (5Y 4/2) CLAY, moist, some white (10YR 8/1) calcium carbonate inclusions ↕ Increase in calcium carbonate content			
45				NA					
					ML	Light yellowish brown (2.5Y 6/3) SILT, few fine sand, moist, calcium carbonate inclusions			
				NA	SP	Dark yellowish brown (10YR 4/4), fine to medium SAND, moist, micaceous			
					ML	Dark yellowish brown (10YR 4/4) SILT, few fine sand, moist, micaceous			
50									
55									
				NA	SP-SM	Dark yellowish brown (10YR 4/4), fine SAND with few silt, little medium sand, trace clay, moist, micaceous			
60					SP	Dark yellowish brown (10YR 4/4), fine to medium SAND, trace silt and clay, moist, micaceous			
				NA	ML/CL	Dark yellowish brown (10YR 4/6), clayey SILT to silty CLAY, moist, micaceous; medium sand layer 1 inch thick at 62 feet			
65									

Report: BLKROK\_4W/PID: File: BROWNBRY.GPJ: 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

## Log of Boring / Well PWB-2

Sheet 3 of 5

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]					
65						[No sample recovery 65-70 feet]		
				0				← 10-inch-dia. borehole (0-160 ft)
70				10	SM	Brown (10YR 4/3), silty fine SAND, wet		← Neat cement (2-133 ft)
75				0		[No sample recovery 70.5-85 ft]		
80				0				← Blank 4-inch-dia. Schedule 40 PVC casing (to 140 ft)
85				NA	CL	Light olive brown (2.5Y 5/4), silty CLAY, trace fine to coarse sand, moist to wet		
						↑ Increased silt content		
						↓ Increase in sand content; decrease in clay content		
90				NA	SP	Yellowish brown (10YR 5/4), fine to medium SAND, few to little coarse sand, moist		
						↑ Increase in medium to coarse sand, trace fine gravel		
95				67				
				67				
				67				
100								

Report: BLKROK\_AW/PID; File: BROWNBRV.GPJ; 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-2

Sheet 4 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Recovery, percent					
	67			67	SP	Yellowish brown (10YR 5/4), fine to coarse SAND, trace fine to coarse gravel, moist (continued)		10-inch-dia. borehole (0-160 ft)  Neat cement (2-133 ft)  Blank 4-inch-dia. Schedule 40 PVC casing (to 140 ft)	
	67								
	100								
	67					SILT/CLAY lens 8 inches thick			
105									
	67								
	67								
110				0					
	100								
	100				ML	Dark yellowish brown (10YR 4/4), clayey SILT with little fine sand, moist, micaceous			
115									
	100				SM	Light olive brown (2.5Y 5/4), silty fine SAND, moist, micaceous			
	67				SP-SM	Light olive brown (2.5Y 5/4), fine SAND with few silt, trace medium sand, moist, micaceous			
	100				CL	Grayish brown (2.5Y 5/2), silty CLAY with little fine sand, moist			
120									
	33				SP	Light olive brown (2.5Y 5/3), fine SAND, moist			
	100				ML	Light olive brown (2.5Y 5/3), clayey SILT, few fine sand, moist, micaceous, calcium carbonate and iron oxide-stained laminations			
125									
	100				SP	Light olive brown (2.5Y 5/3), fine to medium SAND, moist, micaceous			
	100				CL	Light olive brown (2.5Y 5/3), silty CLAY, moist, micaceous			
	100				SP	Light olive brown (2.5Y 5/3), fine to medium SAND, moist			
	100				ML	Olive brown (2.5Y 4/3), clayey SILT with little fine sand, moist, micaceous			
	100				ML	Olive gray (5Y 4/2), fine sandy SILT, moist, micaceous			
130									
	100				SP-SM	Olive gray (5Y 4/2), fine SAND with few silt, few to little medium sand, moist			
	67								
	33				SW	Gray (2.5Y 5/1), fine to coarse SAND, well-graded, moist			
135									
	100				SP	Gray (2.5Y 5/1), fine SAND, few medium and coarse sand, moist		Enviroplug medium bentonite chips (133-138 ft)	

Report: BLKROK\_4W/PID: File: BROWNBRV.GPJ; 3/12/2002



**Project: Brown & Bryant / Arvin**  
**Project Location: 600 South Derby Street**  
**Project Number: C00-218**

## Log of Boring / Well PWB-3

Sheet 1 of 5

Date(s) Drilled	Not recorded	Logged By	Q. Kinnebrew	Checked By	Q. Kinnebrew
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-1/4-inch-OD auger to sample; 10-inch-OD auger to ream for well	Total Depth of Borehole	166.5 feet
Drill Rig Type	CME 85	Drilling Contractor	BC <sup>2</sup> Environmental Corp.	Approximate Surface Elevation	Not available
Sampling Method	California (2-inch-ID) split spoon with stainless steel liners	Depth to Groundwater	Not recorded	Top of Casing Elevation	Not available
Borehole Completion	Converted to monitoring well PWB-3; refer to well schematic/details below		Comments Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]					
0						Soil not observed or sampled to 5 feet.		Well box set in concrete
5		PWB-3/5		5 8 5	SM	Dark grayish brown (2.5Y 4/2), silty fine SAND, moist, loose, no visible staining		Enviroplug medium bentonite chips (2-8 ft)
10		PWB-3/10		4 7 11	SW	Light yellowish brown (10YR 6/4), fine to coarse SAND, damp, medium dense, no visible staining		10-inch-dia. borehole (0-166 ft)
15		PWB-3/15		6 10 14	ML	Olive brown (2.5Y 4/3) SILT, moist, very stiff, micaceous, no visible staining		Neat cement (8-138 ft)
20		PWB-3/20		4 9 11	SM	Light yellowish brown (2.5Y 6/3), silty fine SAND, moist, medium dense, micaceous, no visible staining		Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)
25		PWB-3/25 [0928]*		6 11 14	ML	Olive brown (2.5Y 4/3), fine sandy SILT, moist, very stiff, micaceous, no visible staining		
30								

Report: BLKROK\_4W/PID: File: BROWNBRY.GPJ: 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-3

Sheet 2 of 5

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]					
30		PWB-3/30		8 8 14	CL	Olive brown (2.5Y 4/4), silty CLAY to CLAY, wet, stiff, micaceous, no visible staining		← 10-inch-dia. borehole (0-166 ft)  ← Neat cement (8-138 ft)  ← Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)
35		PWB-3/35		7 12 16	SP ML	Pale yellow (2.5Y 7/3), fine SAND, trace medium to coarse sand, damp, medium dense, no visible staining Olive brown (2.5Y 4/3) SILT, moist, very stiff, micaceous		
40		PWB-3/40		10 12 19	CL	Olive brown (2.5Y 4/3) CLAY, moist, very stiff ↓ Becomes olive gray (5Y 4/2), with white calcium carbonate stringers		
45		PWB-3/45		7 15 18	ML	↓ Locally very calcium carbonate-rich		
50		PWB-3/50 [0946]*		10 10 11	ML	Light olive gray (5Y 5/2), fine to coarse sandy SILT, locally with silty fine to coarse sand layers, moist, stiff, no visible staining		
55		PWB-3/55		11 12 15	ML CL	Light olive brown (2.5Y 5/4) SILT, trace fine to coarse sand, moist, very stiff, micaceous, no visible staining Light olive brown (2.5Y 5/4) CLAY, moist, very stiff, no visible staining		
60		PWB-3/60		11 15 17	SM CL	Olive brown (2.5Y 4/3), silty fine SAND, moist, medium dense, no visible staining Brown (10YR 4/3), silty CLAY, wet, very stiff, micaceous, no visible staining		
65								

Report: BLKROK\_4W/PID; File: BROWNBRY.GPJ; 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-3

Sheet 3 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
65		PWB-3/65		8 5 21		ML	Dark grayish brown (2.5Y 4/2) SILT, moist, very stiff, micaceous	10-inch-dia. borehole (0-166 ft)	
						SM	Olive brown (2.5Y 4/3), silty fine to medium SAND, saturated, medium dense, no visible staining		
70		PWB-3/70		16 20 25		ML	Olive brown (2.5Y 4/3) SILT, few fine sand lenses, moist, very stiff, micaceous, no visible staining	Neat cement (8-138 ft)	
75		PWB-3/75 (1007)*		11 17 25		SP	Dark grayish brown (2.5Y 4/2), fine SAND, saturated, medium dense, no visible staining	Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)	
						ML	Olive brown (2.5Y 4/4) SILT, wet, very stiff, micaceous, no visible staining		
80		PWB-3/80		19 20 25		SP	Dark gray (2.5Y 4/1), fine SAND, saturated, medium dense, friable, no visible staining, slight odor		
						CL	Olive brown (2.5Y 4/3) CLAY, moist, very stiff, no visible staining		
85		PWB-3/85		15 16 21			↓ Becomes dark grayish brown (2.5Y 4/2) to olive gray (5Y 4/2), trace fine to coarse sand, local calcium carbonate stringers		
						SW	Dark gray (2.5Y 4/1), fine to coarse SAND, wet, medium dense, no visible staining, slight odor		
90		PWB-3/90		17 20 26		ML	Olive gray (5Y 4/2), fine sandy SILT, moist, hard, micaceous, no visible staining		
						CL	Olive brown (2.5Y 4/3), silty CLAY, moist, hard, micaceous		
						ML	Light olive brown (2.5Y 5/3) SILT, damp, hard, micaceous, no visible staining		
95		PWB-3/95		17 18 22		SP	Light olive brown (2.5Y 5/3), fine to medium SAND, moist, medium dense, friable, no visible staining		
100									

Report: BLKROK\_4W/PID: File: BROWNBRY.GPJ: 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-3

Sheet 4 of 5

Elevation, feet	Depth, feet	SAMPLES		Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]					
		PWB-3/100 [1052]		12 to 22	SW	Light olive brown (2.5Y 5/3), fine to coarse SAND, trace fine to coarse, subangular to subrounded gravel, wet, medium dense, friable, no visible staining, slight odor		←10-inch-dia. borehole (0-166 ft)
					SP	Light gray (2.5Y 7/1), fine to medium SAND, trace coarse sand, wet, dense, no visible staining		
105		PWB-3/105		14 to 29	ML	Olive brown (2.5Y 4/3), fine sandy SILT, moist, hard, micaceous, no visible staining		←Neat cement (8-138 ft)
					CL	Olive brown (2.5Y 4/3), silty CLAY, moist, hard, micaceous, no visible staining		
110		PWB-3/110		11 to 50 1/2"	ML	Olive brown (2.5Y 4/3), fine sandy SILT, moist to wet, hard, micaceous, no visible staining		←Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)
					ML	Light olive brown (2.5Y 5/3) SILT, moist, hard, micaceous, no visible staining		
115		PWB-3/115		15 to 30	SM	Light olive brown (2.5Y 5/3), silty fine SAND with silt lenses, moist, dense, micaceous, no visible staining		
					CL	Olive brown (2.5Y 4/3) CLAY, moist, hard, no visible staining		
120		PWB-3/120		18 to 35	ML	Olive brown (2.5Y 4/3) SILT, moist, hard, micaceous, no visible staining		
					SM	Olive brown (2.5Y 4/4), silty fine SAND, trace medium to coarse sand, moist, dense, micaceous, no visible staining		
125		PWB-3/125		20 to 33	ML	↓ Becomes dark grayish brown (2.5Y 4/2) Olive brown (2.5Y 4/3) SILT, moist, hard, micaceous		
					CL	Olive brown (2.5Y 4/3), silty CLAY, damp, hard, no visible staining		
130		PWB-3/130		13 to 35	SP	Olive gray (5Y 4/2), fine SAND, damp, dense, friable, no visible staining		
					CL	Dark grayish brown (2.5Y 4/2), silty CLAY, damp, hard, no visible staining		
135								

Report: BLKROK\_4W/PID: File: BROWNBRYP.GPJ: 3/13/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-3

Sheet 5 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
		PWB-3/135	25 38 50/1*	SM	Olive brown (2.5Y 4/3), silty fine SAND, trace medium to coarse sand, moist, very dense, no visible staining			10-inch-dia. borehole (0-166 ft)	
				SW	Light yellowish brown (2.5Y 6/3), fine to coarse SAND, moist, very dense, no visible staining				
140		PWB-3/140	16 26 35	CL	Dark grayish brown (2.5Y 4/2) CLAY, moist to wet, hard, no visible staining; with lenses of olive brown (2.5Y 4/3) clay and silt, locally some fine to medium sand	← Becomes wet, dense		Enviroplug medium bentonite chips (138-143 ft)	
145		PWB-3/145	38 50/6*	SW	Light yellowish brown (2.5Y 6/3), fine to coarse SAND, moist, very dense, no visible staining			Monterey #3 filter sand (143-166 ft)	
				CL	Olive brown (2.5Y 4/3) CLAY, damp, hard, no visible staining				
150		PWB-3/150	38 50/4*	ML	Olive brown (2.5Y 4/3), fine sandy SILT, wet, hard, micaceous, no visible staining			4-inch-dia. Schedule 40 PVC screen, Johnson wire-wrap, 0.020-inch (145-165 ft)	
155		PWB-3/155	11 27 38	SP	Light yellowish brown (2.5Y 6/3), coarse SAND, saturated, dense, friable, no visible staining				
160		PWB-3/160	19 28 40	SW	Light olive brown (2.5Y 5/3), fine to coarse SAND, saturated, dense, friable, no visible staining				
				CL	Olive brown (2.5Y 4/3) CLAY, moist, hard, no visible staining				
165			16 40 45	SP/SW	[No recovery at 165 feet; assume sand]			Sample interval	
						Bottom of boring at 166.5 feet			
170									

Report: BLKROK\_4W/PID; File: BROWNBRY.GPJ; 3/13/2002

Project: **Brown & Bryant / Arvin**  
 Project Location: **600 South Derby Street**  
 Project Number: **C00-218**

**Log of Boring / Well PWB-4**  
 Sheet 1 of 5

Date(s) Drilled	11/26/01 and 11/27/01	Logged By	W. Cablk	Checked By	W. Cablk <i>W.C.</i>
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-1/4-inch-OD auger to sample; 10-inch-OD auger to ream for well	Total Depth of Borehole	166.5 feet
Drill Rig Type	CME 85	Drilling Contractor	BC <sup>2</sup> Environmental Corp.	Approximate Surface Elevation	Not available
Sampling Method	California (2-inch-ID) split spoon with stainless steel liners	Depth to Groundwater	Not recorded	Top of Casing Elevation	Not available
Borehole Completion	Converted to monitoring well PWB-4; refer to well schematic/details below	Comments	Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches	Headspace P.I.D., ppm			
0						Soil not observed or sampled to 5 feet.	Well box set in concrete	
5		PWB-4/5 [1325]		5 5 12	0	ML/SM Yellowish brown (10YR 5/4), fine sandy SILT to silty fine SAND, dry, stiff / medium dense, no visible staining	10-inch-dia. borehole (0-166 ft)	
10				NA		[No sample recovery]	Neat cement (2-138 ft)	
15		PWB-4/15 [1330]		12 15 17	438	SP Light yellowish brown (10YR 6/4), medium SAND, grading fine with depth, moist, medium dense, no visible staining	Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)	
20		PWB-4/20 [1335]		11 18 19	434	SM Yellowish brown (10YR 5/4), silty fine SAND, trace clay, moist, medium dense, micaceous, no visible staining		
25		PWB-4/25 [1337]		7 9 16	90.3	CL Pale brown (10YR 6/3), silty CLAY, moist, very stiff, no visible staining		
30						SM Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 4/4), silty fine SAND, moist, medium dense, micaceous, no visible staining		

Report: BLKROK\_4WPID; File: BROWNBRV.GPJ; 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

# Log of Boring / Well PWB-4

Sheet 2 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
30		PWB-4/30 [1341]		8 12 16	53	SP	Yellowish brown (10YR 5/4), fine SAND, trace to no silt, moist, medium dense, micaceous, no visible staining		← 10-inch-dia. borehole (0-166 ft)  ← Neat cement (2-138 ft)  ← Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)
35		PWB-4/35 [1345]		10 10 20	4.3	SM/SC	Yellowish brown (10YR 5/4), clayey, silty fine SAND, moist, medium dense, no visible staining		
40		PWB-4/40 [1348]		9 13 15	9.4	ML	Olive gray (5Y 4/2), fine sandy SILT with little clay, moist, very stiff, no visible staining; increasing clay content with depth		
45		PWB-4/45 [1353]		9 14 21	0	CL	Olive gray (5Y 4/2) CLAY, few silt, moist, very stiff, few calcium carbonate inclusions, no visible staining		
50		PWB-4/50 [1356]		8 13 14	0	SM	Dark grayish brown (2.5Y 4/2), silty fine SAND, moist, medium dense, micaceous, no visible staining } Olive gray (5Y 4/2) clay lens  ↙ Decreasing sand content		
55		PWB-4/55 [1435]		14 16 19	0	ML	Olive gray (5Y 4/2) SILT, trace to little clay, moist, very stiff, no visible staining		
60		PWB-4/60 [0738]		11 12 14	5.9		↙ Becomes micaceous; trace fine to medium sand from 60-61 feet		
65								Stop drilling for 11/26/01. Resume drilling on 11/27/01.	

Report: BLKROK\_AW/PID: File: BROWNBRY.GPJ: 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-4

Sheet 3 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
65		PWB-4/65 [0743]	5 7 8	3.9	ML	Olive gray (5Y 4/2) SILT, trace to little clay, moist, stiff, micaceous, no visible staining (continued)		← 10-inch-dia. borehole (0-166 ft)  ← Neat cement (2-138 ft)  ← Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)	
70		PWB-4/70 [0746]	13 15 22	5.4	ML	Olive brown (2.5Y 4/3), fine sandy SILT, trace to little clay, trace medium sand, wet, very stiff, micaceous, no visible staining			
75		PWB-4/75 [0750]	7 7 12	4.5	SM	Dark grayish brown (2.5Y 4/2), silty fine SAND, saturated, medium dense, micaceous, no visible staining			
80		PWB-4/80 [0754]	7 14 19	3.6	CL/ML	Dark grayish brown (2.5Y 4/2), silty CLAY to clayey SILT, trace to few fine to coarse sand, saturated, very stiff, no visible staining			
85		PWB-4/85 [0800]	5 9 15	6.8	CL	Dark grayish brown (2.5Y 4/2) CLAY with little fine to medium sand, moist, very stiff, some calcium carbonate, no visible staining			
90		PWB-4/90 [0804]	6 16 22	5.9	CL/ML	Dark grayish brown (10YR 4/2), fine sandy silty CLAY to fine sandy clayey SILT, trace medium to coarse sand, moist, very stiff, micaceous, no visible staining			
95		PWB-4/95 [0809]	10 11 15	6.3	SP	Yellowish brown (10YR 5/4), fine to medium SAND, trace to few coarse sand, moist, medium dense, no visible staining			
100						↙ Increase in coarse sand, dense to very dense			

Report: BLKROK\_4W/PID: File: BROWNBRY.GPJ; 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-4

Sheet 4 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
		PWB-4/100 [0814]	16 27	50/4"		SP	Yellowish brown (10YR 5/4), fine to medium SAND, few coarse sand, moist, very dense, no visible staining (continued)	<p>←10-inch-dia. borehole (0-166 ft)</p> <p>←Neat cement (2-138 ft)</p> <p>←Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)</p>	
105		PWB-4/105 [0822]	13 19 21	2.7		ML	Dark grayish brown (2.5Y 4/2), fine sandy SILT, trace clay and medium to coarse sand, moist, very stiff, micaceous, no visible staining		
110		PWB-4/110 [0830]	20 27 36	10.0		SP	Yellowish brown (10YR 5/4), fine SAND, little to some medium and coarse sand, moist, dense, no visible staining		
115		PWB-4/115 [0841]	4 17 21	14.2		ML	Dark gray (10YR 4/2), fine sandy SILT with little clay, locally sandier lenses, moist, very stiff, micaceous, no visible staining		
120		PWB-4/120 [0851]	12 18 24	9.0		SP-SM SP-SC	Brown (10YR 4/3), fine SAND with few silt/clay, moist, medium dense, micaceous, no visible staining Brown (10YR 4/3) clay lens		
125		PWB-4/125 [0857]	17 23 25	22.1		ML/CL	Brown (10YR 5/3), SILT to silty CLAY, trace medium sand, moist, hard, micaceous, no visible staining		
130		PWB-4/130 [0904]	22 50/4"	0		SP	Brown (10YR 4/3), medium SAND, little fine sand, few coarse sand, moist, very dense, no visible staining		
135									

Report: BLKROK\_4W/PID; File: BROWNBRY.GPJ; 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-4

Sheet 5 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
		PWB-4/135 [0911]	25 36 50/5*	3.5		SP	Brown (10YR 4/3), medium SAND, little fine sand, few coarse sand, moist, very dense, no visible staining (continued)	10-inch-dia. borehole (0-166 ft)	
140		PWB-4/140 [0917]	13 16 26	9.4		SM	Light olive brown (2.5Y 5/3), silty fine SAND, trace to few medium to coarse sand, moist to wet, medium dense, micaceous, no visible staining	Enviroplug medium bentonite chips (138-143 ft)	
145		PWB-4/145 [0928]	16 22 25	10.2		ML	Grayish brown (2.5Y 5/2) SILT, few clay and fine sand, wet (water seeping out of sampler), hard, no visible staining	Monterey #3 filter sand (143-166 ft)	
150		PWB-4/150 [0935]	NA	0				4-inch-dia. Schedule 40 PVC screen, Johnson wire-wrap, 0.020-inch (145-165 ft)	
155		PWB-4/155 [0952]	10 12 15	5.5		SP	Light olive brown (2.5Y 5/4), fine SAND, occasional thin (1 inch thick) lens of medium to coarse sand, wet, medium dense, no visible staining		
160		PWB-4/160 [0956]	10 16 19	2.1			Sand grades fine, trace silt and clay, saturated Fine sand with silt and clay, iron oxide-stained		
165		PWB-4/165 [1030]	12 25 36	14.4			Becomes dense		
								Sample interval	
							Bottom of boring at 166.5 feet		
170									

Report: BLKROK\_4W/PID; File: BROWNBRY.SP; 3/12/2002

**Project: Brown & Bryant / Arvin**  
**Project Location: 600 South Derby Street**  
**Project Number: C00-218**

**Log of Boring / Well PWB-5**

Sheet 1 of 5

Date(s) Drilled	11/28/01	Logged By	W. Cablk	Checked By	W. Cablk <i>W.C.</i>
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	8-1/4-inch-OD auger to sample; 10-inch-OD auger to ream for well	Total Depth of Borehole	166.5 feet
Drill Rig Type	CME 85	Drilling Contractor	BC <sup>2</sup> Environmental Corp.	Approximate Surface Elevation	Not available
Sampling Method	California (2-inch-ID) split spoon with stainless steel liners	Depth to Groundwater	Not recorded	Top of Casing Elevation	Not available
Borehole Completion	Converted to monitoring well PWB-5; refer to well schematic/details below		Comments	Refer to site plan for location	

Elevation, feet	Depth, feet	SAMPLES				Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches	Headspace PID, ppm				
0							Soil not observed or sampled to 5 feet.		Well box set in concrete
5		PWB-5/5 [0904]		5 5 7	101	SM	Dark yellowish brown (10YR 4/4), silty fine SAND, moist, loose, no visible staining		10-inch-dia. borehole (0-166 ft)
10		PWB-5/10 [0906]		5 7 12	25	SP	Olive brown (2.5Y 4/4), fine SAND, trace to few clay and medium sand, moist, medium dense, no visible staining		Neat cement (2-138 ft)
15		PWB-5/15 [0909]		8 16 17	23		← Becomes grayish brown (2.5Y 5/2); sand grades fine to medium, no clay		Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)
20		PWB-5/20 [0911]		10 13 15	25	ML	Olive brown (2.5Y 4/3) SILT, few to little fine sand and clay, moist, very stiff, micaceous, no visible staining		
25		PWB-5/25 [0916]		8 10 15	1625	CL	Dark yellowish brown (10YR 3/4), silty CLAY, few fine to medium sand, moist, very stiff, no visible staining		
30									

Report: BLKROK\_4W/PID; File: BROWNBRV.GPJ; 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-5

Sheet 2 of 5

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches	Headspace PID, ppm					
30		PWB-5/30 [0918]	7 11 14	33		CL	Dark yellowish brown (10YR 3/4), silty CLAY, few fine to medium sand, moist, very stiff (continued)	10-inch-dia. borehole (0-166 ft)		
						SP	Grayish brown (2.5Y 5/2), fine SAND, moist, medium dense, micaceous, no visible staining			
35		PWB-5/35 [0922]	10 10 17	96		SM	Grayish brown (2.5Y 5/2), silty fine SAND, trace clay and medium to coarse sand, moist, medium dense, micaceous, no visible staining	Neat cement (2-138 ft)		
40		PWB-5/40 [0925]	9 12 15	70		CL	Olive gray (5Y 4/2) CLAY, moist, very stiff, white calcium carbonate inclusions, no visible staining	Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)		
45		PWB-5/45 [0928]	13 15 17	63		ML	Light olive brown (2.5Y 5/6), clayey SILT, few fine to medium sand, moist, very stiff, micaceous, no visible staining			
50		PWB-5/50 [0933]	12 15 20	87		SP	Light olive brown (2.5Y 5/4), fine SAND, trace silt, moist, medium dense, micaceous, no visible staining			
55		PWB-5/55 [0937]	12 12 19	36		CL	Light olive brown (2.5Y 5/3), CLAY with little silt, trace fine to medium sand, moist, very stiff, micaceous, no visible staining			
60		PWB-5/60 [0943]	8 16 18	29			With calcium carbonate stringers			
65										

Report: BLKROK\_4W/PID; File: BROWNBRV.GPJ; 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-5

Sheet 3 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
65		PWB-5/65 [0946]	13 19 21	7	ML/SM	Dark grayish brown (2.5Y 4/2), fine sandy SILT to silty fine SAND, moist, very stiff / medium dense, micaceous, no visible staining		10-inch-dia. borehole (0-166 ft)  Neat cement (2-138 ft)  Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)	
70		PWB-5/70 [0950]	10 16 22	17	CL	Brown (10YR 4/3) CLAY, trace to few silt and fine sand, moist, very stiff, micaceous, no visible staining			
75		PWB-5/75 [0955]	10 16 21	6	ML	Brown (10YR 4/3), fine sandy clayey SILT, trace medium sand, moist, very stiff, micaceous, no visible staining			
80		PWB-5/80 [0957]	8 17 25	7	SP	Light olive brown (2.5Y 5/3), fine SAND, few medium sand, trace coarse sand, moist, medium dense, no visible staining			
85		PWB-5/85 [1001]	12 18 24	7		Becomes dark yellowish brown (10YR 4/4), trace to few medium to coarse sand and silt, no visible staining  Sand grades fine to medium with trace to few coarse grains, trace fine gravel, no visible staining			
90		PWB-5/90 [1004]	14 17 25	3					
95		PWB-5/95 [1011]	12 15 19	14	CL	Brown (10YR 5/3) CLAY, trace to few silt, moist, very stiff, micaceous, no visible staining  Sand lens Sand lens			
100									

Report: BLKROK\_4W/PID; File: BROWNBRYPY.GPJ; 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-5

Sheet 4 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
		PWB-5/100 [1030]	23 36	50/2"	5	SP	Light olive brown (2.5Y 5/4), fine SAND, moist, very dense, no visible staining		10-inch-dia. borehole (0-166 ft)
105		PWB-5/105 [1035]	18 25 33		6	CL	Brown (10YR 5/3) CLAY, trace silt and fine sand, moist, hard, no visible staining		Neat cement (2-138 ft)
110		PWB-5/110 [1040]	18 22 23		1	ML	Olive brown (2.5Y 4/3), SILT with little fine sand, few to little clay, moist, very stiff, iron oxide staining ↳ Sand lens 3 inches thick		Blank 4-inch-dia. Schedule 40 PVC casing (to 145 ft)
115		PWB-5/115 [1051]	12 16 34		2	SM	Dark grayish brown (10YR 4/2), silty fine SAND, few clay, moist, dense, micaceous, no visible staining		
120		PWB-5/120 [1056]	14 25	50/3"	4	CL	Grayish brown (10YR 5/2), CLAY with little silt, few fine sand, moist, hard, micaceous, calcium carbonate inclusions, no visible staining		
125		PWB-5/125 [1102]	19 25	50/4"	5	SP	Gray (10YR 5/1), fine to medium SAND, trace coarse sand, moist, very dense, micaceous, no visible staining		
130		PWB-5/130 [1116]	17 25	50/3"	4		↳ Becomes pale yellow (2.5Y 7/4), few coarse sand		
135									

Report: BLKROK\_4W/PID; File: BROWNBRV.GPJ; 3/12/2002

Project: Brown & Bryant / Arvin  
 Project Location: 600 South Derby Street  
 Project Number: C00-218

### Log of Boring / Well PWB-5

Sheet 5 of 5

Elevation, feet	Depth, feet	SAMPLES			Graphic Log	Unified Soil Classification	MATERIAL DESCRIPTION	Well Completion Schematic	COMPLETION DETAILS AND FIELD NOTES
		Type	Number [Time]	Blows per 6 inches					
		PWB-5/135 [1128]	18 30 37	4		CL	Light olive brown (2.5Y 5/3), CLAY with little silt, few fine to medium sand, trace coarse sand, moist, hard, micaceous, no visible staining	10-inch-dia. borehole (0-166 ft)	
140		PWB-5/140 [1135]	20 25 41	1			Few fine sand, no medium or coarse sand	Enviroplug medium bentonite chips (138-143 ft)	
145		PWB-5/145 [1143]	11 17 50/3"	5		SP	Light yellowish brown (2.5Y 6/3), fine to medium SAND, trace to few coarse sand, wet, very dense, micaceous, no visible staining	Monterey #3 filter sand (143-165 ft)	
150			17 24 50/4"	-			[No sample recovery]	4-inch-dia. Schedule 40 PVC screen, Johnson wire-wrap, 0.020-inch (145-165 ft)	
155		PWB-5/155 [1150]	11 19 27	5			Becomes light olive brown (2.5Y 5/3), fine sand, little medium to coarse sand, trace to few silt and clay, dense, no visible staining		
160		PWB-5/160 [1200]	12 28 33	20			Coarse sand lens 2 inches thick Silty lens 1 inch thick underlying coarse sand lens, no visible staining		
165		PWB-5/165 [1203]	16 30 35	-			Few medium sand, trace coarse sand, no silt or clay	Sample interval	
							Bottom of boring at 166.5 feet		
170									

Report: BLKROK\_4W/PID; File: BROWNBRY.GPJ; 3/12/2002

Panacea, Inc.

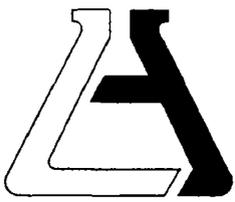
# Appendix C

*Chain of Custody and Laboratory Reports*



Project No. C00-266

October 2002



**ASSOCIATED LABORATORIES**

806 North Batavia - Orange, California 92868 - 714/771-6900

FAX 714/538-1209

CLIENT Panacea, Inc. (8771)  
ATTN: Hsin Chou  
14700 Firestone Blvd.  
Suite 118  
La Mirada, CA 90638

LAB REQUEST 83680

REPORTED 12/10/2001

RECEIVED 11/21/2001

PROJECT Brown & Bryant

SUBMITTER Client

COMMENTS

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods as indicated on the report. This cover letter is an integral part of the final report.

Order No.

308931

308932

Client Sample Identification

Bin 1

Bin 2

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

ASSOCIATED LABORATORIES by,

Edward S. Behare, Ph.D.  
Vice President

*NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 30 days from date reported.*

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TESTING & CONSULTING  
Chemical  
Microbiological  
Environmental

Order #: 308931

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin 1

Date Sampled: 11/20/2001

Time Sampled: 16:58

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
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**245.5 Mercury in Solids by Manual Cold Vapor**

Mercury	ND	1	0.12	mg/Kg	11/26/01 MDJ
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**010B ICP CAM Metals Only (16 Metals)**

Antimony	ND	10	30.0	mg/Kg	11/29/01 NK
Arsenic	18.4	2	1.0	mg/Kg	11/26/01 MS
Barium	212	10	10.0	mg/Kg	11/29/01 NK
Beryllium	ND	10	5.0	mg/Kg	11/29/01 NK
Cadmium	ND	10	5.0	mg/Kg	11/29/01 NK
Chromium	19.6	10	10.0	mg/Kg	11/29/01 NK
Cobalt	12.8	10	5.0	mg/Kg	11/29/01 NK
Copper	ND	10	10.0	mg/Kg	11/29/01 NK
Lead	6.17	2	1.0	mg/Kg	11/26/01 MS
Molybdenum	ND	10	10.0	mg/Kg	11/29/01 NK
Nickel	ND	10	15.0	mg/Kg	11/29/01 NK
Selenium	ND	2	1.0	mg/Kg	11/26/01 MS
Silver	ND	10	5.0	mg/Kg	11/29/01 NK
Thallium	3.95	2	2.0	mg/Kg	11/26/01 MS
Vanadium	46.7	10	5.0	mg/Kg	11/29/01 NK
Zinc	104	10	50.0	mg/Kg	11/29/01 NK

**081A - Organochlorine Pesticides by GC**

Aldrin	ND	1	0.002	mg/Kg	12/04/01 SD
Alpha BHC	ND	1	0.002	mg/Kg	12/04/01 SD
Beta BHC	ND	1	0.003	mg/Kg	12/04/01 SD
Chlordane	ND	1	0.008	mg/Kg	12/04/01 SD
DDD	ND	1	0.004	mg/Kg	12/04/01 SD
DDE	ND	1	0.003	mg/Kg	12/04/01 SD
DDT	ND	1	0.003	mg/Kg	12/04/01 SD
Delta BHC	ND	1	0.005	mg/Kg	12/04/01 SD
Dieldrin	ND	1	0.003	mg/Kg	12/04/01 SD
Endosulfan I	ND	1	0.004	mg/Kg	12/04/01 SD
Endosulfan II	ND	1	0.003	mg/Kg	12/04/01 SD

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 308931

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin 1

Date Sampled: 11/20/2001

Time Sampled: 16:58

Sampled By:

**Analyte****Result****DF****DLR****Units****Date/Analyst****8081A - Organochlorine Pesticides by GC**

Analyte	Result	DF	DLR	Units	Date/Analyst
Endosulfan sulfate	ND	1	0.003	mg/Kg	12/04/01 SD
Endrin	ND	1	0.004	mg/Kg	12/04/01 SD
Endrin aldehyde	ND	1	0.004	mg/Kg	12/04/01 SD
Heptachlor	ND	1	0.002	mg/Kg	12/04/01 SD
Heptachlor epoxide	ND	1	0.003	mg/Kg	12/04/01 SD
Lindane	ND	1	0.003	mg/Kg	12/04/01 SD
Methoxychlor	ND	1	0.025	mg/Kg	12/04/01 SD
Toxaphene	ND	1	0.24	mg/Kg	12/04/01 SD

**8151A Phenoxy Acid Herbicides**

Analyte	Result	DF	DLR	Units	Date/Analyst
2,4,5-T	ND	1	0.13	mg/Kg	12/08/01 SD
2,4,5-TP (Silvex)	ND	1	0.11	mg/Kg	12/08/01 SD
2,4-D	ND	1	0.80	mg/Kg	12/08/01 SD
2,4-DB	ND	1	0.61	mg/Kg	12/08/01 SD
Dalapon	ND	1	3.89	mg/Kg	12/08/01 SD
Dicamba	ND	1	0.18	mg/Kg	12/08/01 SD
Dichloroprop	ND	1	0.44	mg/Kg	12/08/01 SD
Dinoseb	ND	1	0.05	mg/Kg	12/08/01 SD
MCPA	ND	1	167	mg/Kg	12/08/01 SD
MCPP	ND	1	129	mg/Kg	12/08/01 SD

**8260B Volatile Organic Compounds**

Analyte	Result	DF	DLR	Units	Date/Analyst
1,1,1,2-Tetrachloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1,1-Trichloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1,2,2-Tetrachloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1,2-Trichloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1,2-Trichlorotrifluoroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1-Dichloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1-Dichloroethene	ND	1	5	ug/Kg	11/27/01 DP
1,1-Dichloropropene	ND	1	5	ug/Kg	11/27/01 DP
1,2,3-Trichlorobenzene	ND	1	5	ug/Kg	11/27/01 DP
1,2,3-Trichloropropane	ND	1	5	ug/Kg	11/27/01 DP
1,2,4-Trichlorobenzene	ND	1	5	ug/Kg	11/27/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 308931

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin 1

Date Sampled: 11/20/2001

Time Sampled: 16:58

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
1,2,4-Trimethylbenzene	ND	1	5	ug/Kg	11/27/01 DP
1,2-Dibromo-3-chloropropane	ND	1	5	ug/Kg	11/27/01 DP
1,2-Dibromoethane	ND	1	5	ug/Kg	11/27/01 DP
1,2-Dichlorobenzene	ND	1	5	ug/Kg	11/27/01 DP
1,2-Dichloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,2-Dichloropropane	ND	1	5	ug/Kg	11/27/01 DP
1,3,5-Trimethylbenzene	ND	1	5	ug/Kg	11/27/01 DP
1,3-Dichlorobenzene	ND	1	5	ug/Kg	11/27/01 DP
1,3-Dichloropropane	ND	1	5	ug/Kg	11/27/01 DP
1,4-Dichlorobenzene	ND	1	5	ug/Kg	11/27/01 DP
1,4-Dioxane	ND	1	200	ug/Kg	11/27/01 DP
1-Chlorohexane	ND	1	5	ug/Kg	11/27/01 DP
2,2-Dichloropropane	ND	1	5	ug/Kg	11/27/01 DP
2-Butanone (MEK)	ND	1	100	ug/Kg	11/27/01 DP
2-Chloroethyl vinyl ether	ND	1	5	ug/Kg	11/27/01 DP
2-Chlorotoluene	ND	1	5	ug/Kg	11/27/01 DP
2-Hexanone	ND	1	5	ug/Kg	11/27/01 DP
4-Chlorotoluene	ND	1	5	ug/Kg	11/27/01 DP
4-Methyl -2- Pentanone	ND	1	5	ug/Kg	11/27/01 DP
Acetone	ND	1	5	ug/Kg	11/27/01 DP
Acetonitrile	ND	1	5	ug/Kg	11/27/01 DP
Acrolein	ND	1	200	ug/Kg	11/27/01 DP
Acrylonitrile	ND	1	5	ug/Kg	11/27/01 DP
Allyl chloride	ND	1	5	ug/Kg	11/27/01 DP
Benzene	ND	1	5	ug/Kg	11/27/01 DP
Benzyl chloride	ND	1	5	ug/Kg	11/27/01 DP
Bromobenzene	ND	1	5	ug/Kg	11/27/01 DP
Bromochloromethane	ND	1	5	ug/Kg	11/27/01 DP
Bromodichloromethane	ND	1	5	ug/Kg	11/27/01 DP
Bromoform	ND	1	5	ug/Kg	11/27/01 DP
Bromomethane	ND	1	5	ug/Kg	11/27/01 DP
Carbon Disulfide	ND	1	5	ug/Kg	11/27/01 DP
Carbon tetrachloride	ND	1	5	ug/Kg	11/27/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 308931

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin 1

Date Sampled: 11/20/2001

Time Sampled: 16:58

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
Chlorobenzene	ND	1	5	ug/Kg	11/27/01 DP
Chloroethane	ND	1	5	ug/Kg	11/27/01 DP
Chloroform	ND	1	5	ug/Kg	11/27/01 DP
Chloromethane	ND	1	5	ug/Kg	11/27/01 DP
Dibromochloromethane	ND	1	5	ug/Kg	11/27/01 DP
Dibromomethane	ND	1	5	ug/Kg	11/27/01 DP
Dichlorodifluoromethane	ND	1	5	ug/Kg	11/27/01 DP
Ethyl benzene	ND	1	5	ug/Kg	11/27/01 DP
Ethyl methacrylate	ND	1	5	ug/Kg	11/27/01 DP
Hexachlorobutadiene	ND	1	5	ug/Kg	11/27/01 DP
Iodomethane	ND	1	5	ug/Kg	11/27/01 DP
Isopropylbenzene (Cumene)	ND	1	5	ug/Kg	11/27/01 DP
Methacrylonitrile	ND	1	5	ug/Kg	11/27/01 DP
Methyl methacrylate	ND	1	5	ug/Kg	11/27/01 DP
Methyl-tert-butylether (MTBE)	ND	1	5	ug/Kg	11/27/01 DP
Methylene chloride	ND	1	5	ug/Kg	11/27/01 DP
Naphthalene	ND	1	5	ug/Kg	11/27/01 DP
Pentachloroethane	ND	1	5	ug/Kg	11/27/01 DP
Propionitrile	ND	1	5	ug/Kg	11/27/01 DP
Styrene	ND	1	5	ug/Kg	11/27/01 DP
Tetrachloroethene	ND	1	5	ug/Kg	11/27/01 DP
Toluene	ND	1	5	ug/Kg	11/27/01 DP
Trichloroethene	ND	1	5	ug/Kg	11/27/01 DP
Trichlorofluoromethane	ND	1	5	ug/Kg	11/27/01 DP
Vinyl acetate	ND	1	50	ug/Kg	11/27/01 DP
Vinyl chloride	ND	1	5	ug/Kg	11/27/01 DP
Xylenes, total	ND	1	5	ug/Kg	11/27/01 DP
cis-1,2-Dichloroethene	ND	1	5	ug/Kg	11/27/01 DP
cis-1,3-Dichloropropene	ND	1	5	ug/Kg	11/27/01 DP
cis-1,4-Dichloro-2-butene	ND	1	5	ug/Kg	11/27/01 DP
m and p-Xylene	ND	1	5	ug/Kg	11/27/01 DP
n-Butylbenzene	ND	1	5	ug/Kg	11/27/01 DP
n-Propylbenzene	ND	1	5	ug/Kg	11/27/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 308931

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin 1

Date Sampled: 11/20/2001

Time Sampled: 16:58

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
o-Xylene	ND	1	5	ug/Kg	11/27/01 DP
p-Isopropyltoluene	ND	1	5	ug/Kg	11/27/01 DP
sec-Butylbenzene	ND	1	5	ug/Kg	11/27/01 DP
tert-Butylbenzene	ND	1	5	ug/Kg	11/27/01 DP
trans-1,2-Dichloroethene	ND	1	5	ug/Kg	11/27/01 DP
trans-1,3-Dichloropropene	ND	1	5	ug/Kg	11/27/01 DP
trans-1,4-Dichloro-2-butene	ND	1	5	ug/Kg	11/27/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report



Order #: 308932

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin 2

Date Sampled: 11/20/2001

Time Sampled: 17:00

Sampled By:

**Analyte****Result****DF****DLR****Units****Date/Analyst****245.5 Mercury in Solids by Manual Cold Vapor**

Analyte	Result	DF	DLR	Units	Date/Analyst
Mercury	ND	1	0.12	mg/Kg	11/26/01 MDJ

**010B ICP CAM Metals Only (16 Metals)**

Analyte	Result	DF	DLR	Units	Date/Analyst
Antimony	ND	10	30.0	mg/Kg	11/29/01 NK
Arsenic	12.4	2	1.0	mg/Kg	11/26/01 MS
Barium	178	10	10.0	mg/Kg	11/29/01 NK
Beryllium	ND	10	5.0	mg/Kg	11/29/01 NK
Cadmium	ND	10	5.0	mg/Kg	11/29/01 NK
Chromium	16.6	10	10.0	mg/Kg	11/29/01 NK
Cobalt	13.6	10	5.0	mg/Kg	11/29/01 NK
Copper	ND	10	10.0	mg/Kg	11/29/01 NK
Lead	4.48	2	1.0	mg/Kg	11/26/01 MS
Molybdenum	ND	10	10.0	mg/Kg	11/29/01 NK
Nickel	ND	10	15.0	mg/Kg	11/29/01 NK
Selenium	ND	2	1.0	mg/Kg	11/26/01 MS
Silver	ND	10	5.0	mg/Kg	11/29/01 NK
Thallium	4.86	2	2.0	mg/Kg	11/26/01 MS
Vanadium	40.6	10	5.0	mg/Kg	11/29/01 NK
Zinc	70.6	10	50.0	mg/Kg	11/29/01 NK

**081A - Organochlorine Pesticides by GC**

Analyte	Result	DF	DLR	Units	Date/Analyst
Aldrin	ND	1	0.002	mg/Kg	12/04/01 SD
Alpha BHC	ND	1	0.002	mg/Kg	12/04/01 SD
Beta BHC	ND	1	0.003	mg/Kg	12/04/01 SD
Chlordane	ND	1	0.008	mg/Kg	12/04/01 SD
DDD	ND	1	0.004	mg/Kg	12/04/01 SD
DDE	ND	1	0.003	mg/Kg	12/04/01 SD
DDT	ND	1	0.003	mg/Kg	12/04/01 SD
Delta BHC	ND	1	0.005	mg/Kg	12/04/01 SD
Dieldrin	ND	1	0.003	mg/Kg	12/04/01 SD
Endosulfan I	ND	1	0.004	mg/Kg	12/04/01 SD
Endosulfan II	ND	1	0.003	mg/Kg	12/04/01 SD

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 308932

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin 2

Date Sampled: 11/20/2001

Time Sampled: 17:00

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8081A - Organochlorine Pesticides by GC</b>					
Endosulfan sulfate	ND	1	0.003	mg/Kg	12/04/01 SD
Endrin	ND	1	0.004	mg/Kg	12/04/01 SD
Endrin aldehyde	ND	1	0.004	mg/Kg	12/04/01 SD
Heptachlor	ND	1	0.002	mg/Kg	12/04/01 SD
Heptachlor epoxide	ND	1	0.003	mg/Kg	12/04/01 SD
Lindane	ND	1	0.003	mg/Kg	12/04/01 SD
Methoxychlor	ND	1	0.025	mg/Kg	12/04/01 SD
Toxaphene	ND	1	0.24	mg/Kg	12/04/01 SD
<b>8151A Phenoxy Acid Herbicides</b>					
2,4,5-T	ND	1	0.13	mg/Kg	12/08/01 SD
2,4,5-TP (Silvex)	ND	1	0.11	mg/Kg	12/08/01 SD
2,4-D	ND	1	0.80	mg/Kg	12/08/01 SD
2,4-DB	ND	1	0.61	mg/Kg	12/08/01 SD
Dalapon	ND	1	3.89	mg/Kg	12/08/01 SD
Dicamba	ND	1	0.18	mg/Kg	12/08/01 SD
Dichloroprop	ND	1	0.44	mg/Kg	12/08/01 SD
Dinoseb	ND	1	0.05	mg/Kg	12/08/01 SD
MCPA	ND	1	167	mg/Kg	12/08/01 SD
MCPP	ND	1	129	mg/Kg	12/08/01 SD
<b>8260B Volatile Organic Compounds</b>					
1,1,1,2-Tetrachloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1,1-Trichloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1,2,2-Tetrachloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1,2-Trichloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1,2-Trichlorotrifluoroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1-Dichloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,1-Dichloroethene	ND	1	5	ug/Kg	11/27/01 DP
1,1-Dichloropropene	ND	1	5	ug/Kg	11/27/01 DP
1,2,3-Trichlorobenzene	ND	1	5	ug/Kg	11/27/01 DP
1,2,3-Trichloropropane	ND	1	5	ug/Kg	11/27/01 DP
1,2,4-Trichlorobenzene	ND	1	5	ug/Kg	11/27/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 308932

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin 2

Date Sampled: 11/20/2001

Time Sampled: 17:00

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
1,2,4-Trimethylbenzene	ND	1	5	ug/Kg	11/27/01 DP
1,2-Dibromo-3-chloropropane	ND	1	5	ug/Kg	11/27/01 DP
1,2-Dibromoethane	ND	1	5	ug/Kg	11/27/01 DP
1,2-Dichlorobenzene	ND	1	5	ug/Kg	11/27/01 DP
1,2-Dichloroethane	ND	1	5	ug/Kg	11/27/01 DP
1,2-Dichloropropane	ND	1	5	ug/Kg	11/27/01 DP
1,3,5-Trimethylbenzene	ND	1	5	ug/Kg	11/27/01 DP
1,3-Dichlorobenzene	ND	1	5	ug/Kg	11/27/01 DP
1,3-Dichloropropane	ND	1	5	ug/Kg	11/27/01 DP
1,4-Dichlorobenzene	ND	1	5	ug/Kg	11/27/01 DP
1,4-Dioxane	ND	1	200	ug/Kg	11/27/01 DP
1-Chlorohexane	ND	1	5	ug/Kg	11/27/01 DP
2,2-Dichloropropane	ND	1	5	ug/Kg	11/27/01 DP
2-Butanone (MEK)	ND	1	100	ug/Kg	11/27/01 DP
2-Chloroethyl vinyl ether	ND	1	5	ug/Kg	11/27/01 DP
2-Chlorotoluene	ND	1	5	ug/Kg	11/27/01 DP
2-Hexanone	ND	1	5	ug/Kg	11/27/01 DP
4-Chlorotoluene	ND	1	5	ug/Kg	11/27/01 DP
4-Methyl -2- Pentanone	ND	1	5	ug/Kg	11/27/01 DP
Acetone	ND	1	5	ug/Kg	11/27/01 DP
Acetonitrile	ND	1	5	ug/Kg	11/27/01 DP
Acrolein	ND	1	200	ug/Kg	11/27/01 DP
Acrylonitrile	ND	1	5	ug/Kg	11/27/01 DP
Allyl chloride	ND	1	5	ug/Kg	11/27/01 DP
Benzene	ND	1	5	ug/Kg	11/27/01 DP
Benzyl chloride	ND	1	5	ug/Kg	11/27/01 DP
Bromobenzene	ND	1	5	ug/Kg	11/27/01 DP
Bromochloromethane	ND	1	5	ug/Kg	11/27/01 DP
Bromodichloromethane	ND	1	5	ug/Kg	11/27/01 DP
Bromoform	ND	1	5	ug/Kg	11/27/01 DP
Bromomethane	ND	1	5	ug/Kg	11/27/01 DP
Carbon Disulfide	ND	1	5	ug/Kg	11/27/01 DP
Carbon tetrachloride	ND	1	5	ug/Kg	11/27/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 308932

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin 2

Date Sampled: 11/20/2001

Time Sampled: 17:00

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
Chlorobenzene	ND	1	5	ug/Kg	11/27/01 DP
Chloroethane	ND	1	5	ug/Kg	11/27/01 DP
Chloroform	ND	1	5	ug/Kg	11/27/01 DP
Chloromethane	ND	1	5	ug/Kg	11/27/01 DP
Dibromochloromethane	ND	1	5	ug/Kg	11/27/01 DP
Dibromomethane	ND	1	5	ug/Kg	11/27/01 DP
Dichlorodifluoromethane	ND	1	5	ug/Kg	11/27/01 DP
Ethyl benzene	ND	1	5	ug/Kg	11/27/01 DP
Ethyl methacrylate	ND	1	5	ug/Kg	11/27/01 DP
Hexachlorobutadiene	ND	1	5	ug/Kg	11/27/01 DP
Iodomethane	ND	1	5	ug/Kg	11/27/01 DP
Isopropylbenzene (Cumene)	ND	1	5	ug/Kg	11/27/01 DP
Methacrylonitrile	ND	1	5	ug/Kg	11/27/01 DP
Methyl methacrylate	ND	1	5	ug/Kg	11/27/01 DP
Methyl-tert-butylether (MTBE)	ND	1	5	ug/Kg	11/27/01 DP
Methylene chloride	ND	1	5	ug/Kg	11/27/01 DP
Naphthalene	ND	1	5	ug/Kg	11/27/01 DP
Pentachloroethane	ND	1	5	ug/Kg	11/27/01 DP
Propionitrile	ND	1	5	ug/Kg	11/27/01 DP
Styrene	ND	1	5	ug/Kg	11/27/01 DP
Tetrachloroethene	ND	1	5	ug/Kg	11/27/01 DP
Toluene	ND	1	5	ug/Kg	11/27/01 DP
Trichloroethene	ND	1	5	ug/Kg	11/27/01 DP
Trichlorofluoromethane	ND	1	5	ug/Kg	11/27/01 DP
Vinyl acetate	ND	1	50	ug/Kg	11/27/01 DP
Vinyl chloride	ND	1	5	ug/Kg	11/27/01 DP
Xylenes, total	ND	1	5	ug/Kg	11/27/01 DP
cis-1,2-Dichloroethene	ND	1	5	ug/Kg	11/27/01 DP
cis-1,3-Dichloropropene	ND	1	5	ug/Kg	11/27/01 DP
cis-1,4-Dichloro-2-butene	ND	1	5	ug/Kg	11/27/01 DP
m and p-Xylene	ND	1	5	ug/Kg	11/27/01 DP
n-Butylbenzene	ND	1	5	ug/Kg	11/27/01 DP
n-Propylbenzene	ND	1	5	ug/Kg	11/27/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 308932

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin 2

Date Sampled: 11/20/2001

Time Sampled: 17:00

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
o-Xylene	ND	1	5	ug/Kg	11/27/01 DP
p-Isopropyltoluene	ND	1	5	ug/Kg	11/27/01 DP
sec-Butylbenzene	ND	1	5	ug/Kg	11/27/01 DP
tert-Butylbenzene	ND	1	5	ug/Kg	11/27/01 DP
trans-1,2-Dichloroethene	ND	1	5	ug/Kg	11/27/01 DP
trans-1,3-Dichloropropene	ND	1	5	ug/Kg	11/27/01 DP
trans-1,4-Dichloro-2-butene	ND	1	5	ug/Kg	11/27/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report





# ASSOCIATED LABORATORIES

806 N. Batavia • Orange, CA 92868  
(714) 771-6900 • Fax: (714) 538-1209

83680

## CHAIN OF CUSTODY RECORD

Date 11-20-01 Page 1 of 1

CLIENT Panacea, Inc.  
ADDRESS 14700 Firestone Blvd, Ste. 118  
La Mirada, CA 90638

PROJECT MANAGER Hsin Chou

PHONE NUMBER 714-228-1286

SAMPLERS: (Signature) Quin Kinchew

Samples Intact Yes  No   
County Seals Intact Yes  No   
Sample Ambient  Cooled  Frozen   
Same Day  24 Hr.   
Regular  48 Hr.

PROJECT NAME Brown & Bryant

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE			NO OF CNTNRS	SUSP. CONTAM.	TESTS REQUIRED
				WATER	AIR	SOLID			
	<u>Bin 1</u>	<u>11-20-01</u>	<u>1658</u>			<u>x</u>	<u>1</u>	<u>None</u>	<u>*</u>
	<u>Bin 2</u>	<u>11-20-01</u>	<u>1700</u>			<u>x</u>	<u>1</u>	<u>None</u>	<u>*</u>
									<u>* Title 22 Metals (6010),</u>
									<u>VOCs (8260),</u>
									<u>Herbicides (8151), and</u>
									<u>Pesticides (8081).</u>

Relinquished by: (Signature) Quin Kinchew

Received by: (Signature) Ken Hulsey

Date/Time 11-21-01/1521

Relinquished by: (Signature)

Received by Laboratory for analysis: (Signature) I 11-21 3:40

Date/Time

Special Instructions:

I hereby authorize the performance of the above indicated work.

Quin Kinchew  
DISTRIBUTION: White with report. Yellow to AL, Pink to Courier

## Cooler Receipt Form

Client: Danacea Inc. Project: Brown + Bryan  
Cooler Received: 11-21-01 Cooler Opened: 11-21-01 By: Kan Hussey  
Signed: \_\_\_\_\_

Was cooler scanned for presence of radioactivity, and noted if found? Yes /  No

Were custody seals present on outside of cooler? Yes /  No

a: If Yes, were they intact? Yes / No

b: Were signature and date correct? Yes / No

Were custody papers completely filled out?  Yes / No

Did you sign and date the custody papers in the appropriate place?  Yes / No

Was a shippers packing slip attached to the cooler? Yes /  No

What kind of packing material was used? Ice

Was sufficient ice used?  Yes / No Temperature: 0.1°C Date: 11-21-01

Were all bottles sealed in plastic bags?  Yes / No

Did all bottles arrive intact?  Yes / No

Were all bottles labeled correctly? (ID, Analysis, Dates, Times)  Yes / No

Were the correct containers included for the tests required?  Yes / No

Were all VOA vials checked for headspace?  NA / Yes / No

Was sufficient volume of sample sent in all containers?  Yes / No

Were correct preservatives used?  Yes / No

Approved by: \_\_\_\_\_ Date: 11-21-01

If not approved: Name of person contacted \_\_\_\_\_ Date: \_\_\_\_\_

**ASSOCIATED LABORATORIES**  
QA REPORT FORM

QC Sample: LR 83680-308931  
 Matrix: SOLID  
 Prep. Date: 11/26/01  
 Analysis Date: 11/26/01  
 ID#'s in Batch: LR 83742, 83680

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

Reporting Units = mg/Kg

Test	Method	Sample Result	Spike Added	Matrix Spike	Matrix Spike Dup	%Rec MS	%Rec MSD	RPD
MERCURY	245.5 / 7471A	ND	0.77	0.89	0.86	116	112	3.4

*RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Duplicate*  
*%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate*

<i>%REC LIMITS = 75 - 125</i>
<i>RPD LIMITS = 20</i>

**PREPARATION BLANK / LAB CONTROL SAMPLE RESULTS**

PREP BLK	LCS				
Value	Result	True	%Rec	L.Limit	H.Limit
ND	0.84	0.77	109	80%	120%

*Value = Preparation Blank Value; ND = Not-Detected*  
*LCS Result = Lab Control Sample Result*  
*True = True Value of LCS*  
*L.Limit / H.Limit = LCS Control Limits*

**ASSOCIATED LABORATORIES**  
**QA REPORT FORM (MS/MSD)**

QC Sample: LR 83532-308263

QC# 112601S1,2

Matrix: SOLID

Prep. Date: 11/26/01

Analysis Date: 11/26/01

Lab ID#'s in Batch: LR 83532, 83742, 83680, 83655, 83726, 83758, 83657

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

REPORTING UNITS = mg/Kg

TEST	Method	Sample Result	ND	Spike Added	Matrix Spike	Matrix Spike Dup	%Rec MS	%Rec MSD	RPD
Arsenic	6010B	1.35		9.52	9.29	8.96	83.4	79.9	3.6
Selenium	* 6010B	0.74		9.52	7.03	6.37	66.1	59.1	9.9
Thallium	6010B	1.40		9.52	9.86	9.65	88.9	86.7	2.2
Lead	* 6010B	25.48		19.04	55.50	52.78	157.7	143.4	5.0
Silver	6010B	6.79		95.19	114.00	104.00	112.6	102.1	9.2
Barium	6010B	65.30		95.19	161.00	141.00	100.5	79.5	13.2
Beryllium	6010B	0.50	U	95.19	99.40	95.50	104.4	100.3	4.0
Cadmium	6010B	0.50	U	95.19	104.00	93.80	109.3	98.5	10.3
Cobalt	6010B	7.93		95.19	101.00	94.10	97.8	90.5	7.1
Chromium	6010B	51.10		95.19	132.00	139.00	85.0	92.3	5.2
Copper	6010B	29.80		95.19	128.00	129.00	103.2	104.2	0.8
Molybdenum	6010B	1.94		95.19	94.40	86.10	97.1	88.4	9.2
Nickel	6010B	91.90		95.19	164.00	182.00	75.7	94.7	10.4
Antimony	* 6010B	0.50	U	95.19	70.70	65.50	74.3	68.8	7.6
Vanadium	6010B	14.00		95.19	111.00	102.00	101.9	92.4	8.5
Zinc	* 6010B	214.00		95.19	326.00	338.00	117.7	130.3	3.6

\* = Outside QC limits, possibly due to matrix interference.

NC = Not Calculated

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Duplicate

%REC-MS&MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

% REC LIMITS = 75 -125
RPD LIMITS = 20

**ASSOCIATED LABORATORIES**  
**LCS/MB REPORT FORM**

LCS Source(s) : QC21-LOT#QC2/91/1;QC7-LOT7A92/1

Element	Method	Result	TRUE	%Rec	L.Limit	H.Limit	Method Blank	
							MB	ND
Arsenic	6010B	198.3	200	99.2	80%	120%	0.50	U
Selenium	6010B	205.8	200	102.9	80%	120%	0.50	U
Thallium	6010B	208.2	200	104.1	80%	120%	1.00	U
Lead	6010B	208.2	200	104.1	80%	120%	0.50	U
Antimony	6010B	202.0	200	101.0	80%	120%	3.00	U
Barium	6010B	194.0	200	97.0	80%	120%	1.00	U
Beryllium	6010B	188.0	200	94.0	80%	120%	0.50	U
Cadmium	6010B	209.0	200	104.5	80%	120%	0.50	U
Chromium	6010B	199.0	200	99.5	80%	120%	1.00	U
Cobalt	6010B	197.0	200	98.5	80%	120%	0.50	U
Copper	6010B	189.0	200	94.5	80%	120%	1.00	U
Molybdenum	6010B	187.0	200	93.5	80%	120%	1.00	U
Nickel	6010B	198.0	200	99.0	80%	120%	1.50	U
Silver	6010B	110.0	100	110.0	80%	120%	0.50	U
Vanadium	6010B	196.0	200	98.0	80%	120%	0.50	U
Zinc	6010B	198.0	200	99.0	80%	120%	5.00	U
Aluminum	6010B	215.0	200	107.5	80%	120%	20.00	U
Iron	6010B	199.0	200	99.5	80%	120%	5.00	U
Manganese	6010B	206.0	200	103.0	80%	120%	1.00	U
Boron	6010B	203.0	200	101.5	80%	120%	5.00	U

Notes : RESULT = Sample Result; TRUE = True Value; %Rec = 100\*Result/True

L.LIMIT / H.LIMIT = Low / High Control Limits

MB = Method Blank; ND = " U " for Non- Detected

**ASSOCIATED LABORATORIES**  
QA REPORT FORM

Method : EPA 8151  
 QC Sample: LR 83445-307972  
 Matrix: SOLID  
 Date Analyzed : 12/08/01  
 Batch Date: 11/23/01 (herb 112301s)  
 Applies to: LR 83445, 83680

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

REPORTING UNITS = mg/Kg

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spk. Dup	%Rec MS	%Rec MSD	RPD	QC Limits	
								RPD	%REC
2,4-D	ND	0.2	0.235	0.250	117.3	124.8	6.2	35	45-145
2,4,5-TP (Silvex)	ND	0.2	0.170	0.178	84.8	89.1	5.0	35	50-140

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Dup

%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

**LAB CONTROLLED SPIKE RECOVERY / METHOD BLANK**

Test	Spike Added	LCS Result	LCS % Rec	Limits % Rec
2,4-D	0.2	0.274	136.8	55-140
2,4,5-TP (Silvex)	0.2	0.194	97.2	60-140

Method Blank = All ND

**ASSOCIATED LABORATORIES**  
QA REPORT FORM

Method : EPA 8081  
 QC Sample: 83680-308932  
 Matrix: SOLID  
 Date Analyzed : 12/04/01  
 Batch Date: 11/26/01 (pest 112601 s)  
 Applies to: LR 83680, LR 83759, and LR 83281

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

REPORTING UNITS = mg/Kg

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spk. Dup	%Rec MS	%Rec MSD	RPD	QC Limits	
								RPD	%REC
gamma-BHC (Lindane)	ND	0.100	0.0965	0.0899	96.5	89.9	7.1	35	50-130
Heptachlor	ND	0.100	0.1024	0.0951	102.4	95.1	7.4	35	50-130
Aldrin	ND	0.100	0.0908	0.0852	90.8	85.2	6.4	35	50-130
Dieldrin	ND	0.100	0.1149	0.1135	114.9	113.5	1.3	35	50-130
Endrin	ND	0.100	0.1105	0.1097	110.5	109.7	0.8	35	50-130
DDT	ND	0.100	0.1222	0.1234	122.2	123.4	1.0	35	50-130

*\* Outside Control Limits - Due to Matrix Interference*

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Dup

%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

**LAB CONTROLLED SPIKE RECOVERY / METHOD BLANK**

Test	Spike Added	LCS Result	LCS % Rec	Limits % Rec
gamma-BHC (Lindane)	0.10	0.106	105.7	50-130
Heptachlor	0.10	0.115	115.1	50-130
Aldrin	0.10	0.101	100.6	50-130
Dieldrin	0.10	0.118	118.0	50-130
Endrin	0.10	0.113	113.2	50-130
DDT	0.10	0.122	122.3	50-130

Method Blank = All ND

**ASSOCIATED LABORATORIES**  
QA REPORT FORM - METHOD 8260

Sample ID : LCS # 3

Analysis Date: 11/26/01

Sample Matrix : SOLID

Applies to: LR 83466, 83680

Reporting Units = ug/Kg

**LCS RECOVERY / METHOD BLANK**

Test	Sample Result	Spike Added	LCS Spike	%Rec LCS	QC Limits %REC
1,1-Dichloroethene	ND	50	51.98	104	59-172
Benzene	ND	50	31.63	63	62-137
Trichloroethene	ND	50	46.93	94	62-137
Toluene	ND	50	51.19	102	66-142
Chlorobenzene	ND	50	53.38	107	59-139
MTBE	ND	50	48.20	96	60-133

Sample ID : 83425-970 soil samples

Analysis Date: 11/27/01

**Matrix Spike / Matrix Spike Duplicate**

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spk. Dup	%Rec MS	%Rec MSD	RPD	QC Limits	
								RPD	%REC
1,1-Dichloroethene	ND	50	52.53	49.86	105	100	5	22	59-172
MTBE *	ND	50	27.65	32.07	55	64	15	24	62-137
Benzene	ND	50	46.80	51.91	94	104	10	24	62-137
Trichloroethene	ND	50	53.95	51.11	108	102	5	21	66-142
Toluene	ND	50	54.42	55.01	109	110	1	21	59-139
Chlorobenzene	ND	50	50.08	51.29	100	103	2	21	60-133

\* Outside QC Limits

Sample ID : LCS # 4

**LCS RECOVERY / METHOD BLANK**

Test	Sample Result	Spike Added	LCS Spike	%Rec LCS	QC Limits %REC
1,1-Dichloroethene	ND	50	49.77	100	59-172
Benzene	ND	50	32.15	64	62-137
Trichloroethene	ND	50	48.49	97	62-137
Toluene	ND	50	51.60	103	66-142
Chlorobenzene	ND	50	55.19	110	59-139
MTBE	ND	50	52.01	104	60-133

Method Blank = All ND

# ASSOCIATED LABORATORIES

## SURROGATE RECOVERY

**Lab Request / Order: 83445, 83680, 83759, 83281**

**Matrix: SOLID**

Lab Request / Order	EPA 8081 / 608		EPA 8151
	TCMX - % Rec.	DCB - % Rec.	DCPP - % Rec.
QC Limits	50-125	55-135	45-145
<i>BLANK</i>	97	109	112
<i>LCS</i>	87	109	109
<i>83445-307972</i>			85
<i>83445-307972MS</i>			127
<i>83445-307972MSD</i>			97
<i>83445-307973</i>			110
<i>83445-307974</i>			77
<i>83445-307975</i>			70
<i>83680-308931</i>	76	116	140
<i>83680-308932</i>	61	97	136
<i>83680-308932MS</i>	83	124	
<i>83680-308932MSD</i>	78	128	
<i>83759-309270</i>	211 *	73	
<i>83759-309271</i>	0 *	95	
<i>83281-307357</i>	65	114	

**\* Outside QC Limits**

*TCMX = Tetrachloro-m-xylene*

*DCB = Decachlorobiphenyl*

# ASSOCIATED LABORATORIES

## 8151 SURROGATE RECOVERY

**Lab Request / Order: 83445, 83680**

Analysis Date: 12/08/01

Matrix: SOLID

	EPA 8151
Lab Request / Order	DCPP - % Rec.
QC Limits	45-145
<i>Blank</i>	112
<i>LCS</i>	109
<i>83445-307972</i>	85
<i>83445-307972 MS</i>	127
<i>83445-307972 MSD</i>	97
<i>83445-307973</i>	110
<i>83445-307974</i>	77
<i>83445-307975</i>	70
<i>83680-308931</i>	140
<i>83680-308932</i>	136

# ASSOCIATED LABORATORIES

EPA 8260 - SURROGATE RECOVERY

*Lab Request/Order: 83680*

Matrix: solid

Sample No.(Order)	(DCA)	(DBF)	(TOL)	(BFB)
308931	71	68 *	110	114
308932	68 *	63 *	109	121

**\*Outside QC limits**

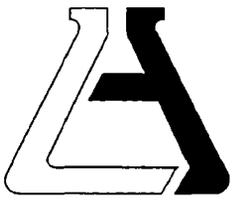
*(DBF) = Dibromofluoromethane*

*(DCA) = 1,2-Dichloroethane-d4*

*(TOL) = Toluene-d8*

*(BFB) = p-Bromofluorobenzene*

<i>QC Limits:</i> 70-135
--------------------------



**ASSOCIATED LABORATORIES**

806 North Batavia - Orange, California 92868 - 714/771-6900

FAX 714/538-1209

CLIENT Panacea, Inc. (8771)  
ATTN: Mohammad Estiri  
14700 Firestone Blvd.  
Suite 118  
La Mirada, CA 90638

LAB REQUEST 84932  
REPORTED 01/03/2002  
RECEIVED 12/12/2001

PROJECT Brown & Bryant/Arvin

SUBMITTER Client

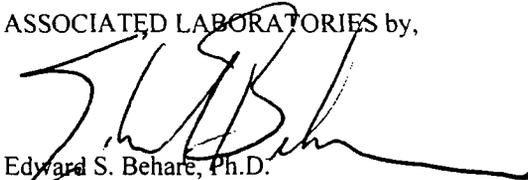
COMMENTS

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods as indicated on the report. This cover letter is an integral part of the final report.

<u>Order No.</u>	<u>Client Sample Identification</u>
313605	Bin-5
313606	Bin-6
313607	MBin-1

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

ASSOCIATED LABORATORIES by,

  
Edward S. Behare, Ph.D.  
Vice President

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 30 days from date reported.

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TESTING & CONSULTING  
Chemical  
Microbiological  
Environmental

Order #: 313605

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-5

Date Sampled: 12/07/2001

Time Sampled: 11:00

Sampled By:

**Analyte****Result****DF****DLR****Units****Date/Analyst****245.5 Mercury in Solids by Manual Cold Vapor**

Mercury	ND	1	0.12	mg/Kg	12/14/01	MDJ
---------	----	---	------	-------	----------	-----

**010B ICP CAM Metals Only (16 Metals)**

Antimony	ND	1	3.00	mg/Kg	12/17/01	NK
Arsenic	10.1	1	0.50	mg/Kg	12/17/01	NK
Barium	181	1	1.00	mg/Kg	12/17/01	NK
Beryllium	ND	1	0.50	mg/Kg	12/17/01	NK
Cadmium	ND	1	0.50	mg/Kg	12/17/01	NK
Chromium	25.7	1	1.00	mg/Kg	12/17/01	NK
Cobalt	9.81	1	0.50	mg/Kg	12/17/01	NK
Copper	7.94	1	1.00	mg/Kg	12/17/01	NK
Lead	2.51	1	0.50	mg/Kg	12/17/01	NK
Molybdenum	1.69	1	1.00	mg/Kg	12/17/01	NK
Nickel	7.22	1	1.50	mg/Kg	12/17/01	NK
Selenium	1.62	1	0.50	mg/Kg	12/17/01	NK
Silver	ND	1	0.50	mg/Kg	12/17/01	NK
Thallium	ND	1	1.00	mg/Kg	12/17/01	NK
Vanadium	40.0	1	0.50	mg/Kg	12/17/01	NK
Zinc	55.1	1	5.00	mg/Kg	12/17/01	NK

**081A - Organochlorine Pesticides by GC**

Aldrin	ND	1	0.002	mg/Kg	01/01/02	SD
Alpha BHC	ND	1	0.002	mg/Kg	01/01/02	SD
Beta BHC	ND	1	0.003	mg/Kg	01/01/02	SD
Chlordane	ND	1	0.008	mg/Kg	01/01/02	SD
DDD	ND	1	0.004	mg/Kg	01/01/02	SD
DDE	ND	1	0.003	mg/Kg	01/01/02	SD
DDT	ND	1	0.003	mg/Kg	01/01/02	SD
Delta BHC	ND	1	0.005	mg/Kg	01/01/02	SD
Dieldrin	ND	1	0.003	mg/Kg	01/01/02	SD
Endosulfan I	ND	1	0.004	mg/Kg	01/01/02	SD
Endosulfan II	ND	1	0.003	mg/Kg	01/01/02	SD

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313605

Matrix: SOLID

Client: Panacea, Inc.

Client Sample ID: Bin-5

Date Sampled: 12/07/2001

Time Sampled: 11:00

Sampled By:

**Analyte****Result****DF****DLR****Units****Date/Analyst****8081A - Organochlorine Pesticides by GC**

Analyte	Result	DF	DLR	Units	Date/Analyst
Endosulfan sulfate	ND	1	0.003	mg/Kg	01/01/02 SD
Endrin	ND	1	0.004	mg/Kg	01/01/02 SD
Endrin aldehyde	ND	1	0.004	mg/Kg	01/01/02 SD
Heptachlor	ND	1	0.002	mg/Kg	01/01/02 SD
Heptachlor epoxide	ND	1	0.003	mg/Kg	01/01/02 SD
Lindane	ND	1	0.003	mg/Kg	01/01/02 SD
Methoxychlor	ND	1	0.025	mg/Kg	01/01/02 SD
Toxaphene	ND	1	0.24	mg/Kg	01/01/02 SD

**8141 Organophosphate Pesticides**

Analyte	Result	DF	DLR	Units	Date/Analyst
Azinophos Methyl (Guthion)	ND	1	1.0	mg/Kg	12/27/01 DO
Bolstar	ND	1	0.1	mg/Kg	12/27/01 DO
Chlorpyrifos(Dursban)	ND	1	0.2	mg/Kg	12/27/01 DO
Coumaphos	ND	1	1.0	mg/Kg	12/27/01 DO
Demeton(Systox)-O	ND	1	0.17	mg/Kg	12/27/01 DO
Demeton(Systox)-S	ND	1	0.17	mg/Kg	12/27/01 DO
Diazinon	ND	1	0.4	mg/Kg	12/27/01 DO
Dichlorvos	ND	1	0.07	mg/Kg	12/27/01 DO
Disulfoton (Disyston)	ND	1	0.13	mg/Kg	12/27/01 DO
Disulfoton Sulfone	ND	1	0.13	mg/Kg	12/27/01 DO
Ethoprop	ND	1	0.17	mg/Kg	12/27/01 DO
Fensulfothion	ND	1	1.0	mg/Kg	12/27/01 DO
Fenthion	ND	1	0.07	mg/Kg	12/27/01 DO
Malathion	ND	1	0.02	mg/Kg	12/27/01 DO
Merphos	ND	1	0.17	mg/Kg	12/27/01 DO
Mevinphos (Phosdrin)	ND	1	0.2	mg/Kg	12/27/01 DO
Naled (Dibrom)	ND	1	0.07	mg/Kg	12/27/01 DO
Parathion Ethyl	ND	1	0.02	mg/Kg	12/27/01 DO
Parathion Methyl	ND	1	0.02	mg/Kg	12/27/01 DO
Phorate (Thimet)	ND	1	0.1	mg/Kg	12/27/01 DO
Ronnel	ND	1	0.2	mg/Kg	12/27/01 DO
Stirophos (Tetrachlorvinphos)	ND	1	3.35	mg/Kg	12/27/01 DO

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313605

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-5

Date Sampled: 12/07/2001

Time Sampled: 11:00

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
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**8141 Organophosphate Pesticides**

Tokuthion (Protothiofos)	ND	1	0.33	mg/Kg	12/27/01 DO
Trichloronate	ND	1	0.1	mg/Kg	12/27/01 DO

**8151A Phenoxy Acid Herbicides**

2,4,5-T	ND	1	0.13	mg/Kg	01/04/02 SD
2,4,5-TP (Silvex)	ND	1	0.11	mg/Kg	01/04/02 SD
2,4-D	ND	1	0.80	mg/Kg	01/04/02 SD
2,4-DB	ND	1	0.61	mg/Kg	01/04/02 SD
Dalapon	ND	1	3.89	mg/Kg	01/04/02 SD
Dicamba	ND	1	0.18	mg/Kg	01/04/02 SD
Dichloroprop	ND	1	0.44	mg/Kg	01/04/02 SD
Dinoseb	ND	1	0.05	mg/Kg	01/04/02 SD
MCPA	ND	1	167	mg/Kg	01/04/02 SD
MCPP	ND	1	129	mg/Kg	01/04/02 SD

**8260B Volatile Organic Compounds**

1,1,1,2-Tetrachloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,1-Trichloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,2,2-Tetrachloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,2-Trichloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,2-Trichlorotrifluoroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1-Dichloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1-Dichloroethene	ND	1	5	ug/Kg	12/16/01 DP
1,1-Dichloropropene	ND	1	5	ug/Kg	12/16/01 DP
1,2,3-Trichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2,3-Trichloropropane	5.6	1	5	ug/Kg	12/16/01 DP
1,2,4-Trichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2,4-Trimethylbenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2-Dibromo-3-chloropropane	6.8	1	5	ug/Kg	12/16/01 DP
1,2-Dibromoethane	ND	1	5	ug/Kg	12/16/01 DP
1,2-Dichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2-Dichloroethane	ND	1	5	ug/Kg	12/16/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313605

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-5

Date Sampled: 12/07/2001

Time Sampled: 11:00

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
1,2-Dichloropropane	5.2	1	5	ug/Kg	12/16/01 DP
1,3,5-Trimethylbenzene	ND	1	5	ug/Kg	12/16/01 DP
1,3-Dichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,3-Dichloropropane	ND	1	5	ug/Kg	12/16/01 DP
1,4-Dichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,4-Dioxane	ND	1	200	ug/Kg	12/16/01 DP
1-Chlorohexane	ND	1	5	ug/Kg	12/16/01 DP
2,2-Dichloropropane	ND	1	5	ug/Kg	12/16/01 DP
2-Butanone (MEK)	ND	1	100	ug/Kg	12/16/01 DP
2-Chloroethyl vinyl ether	ND	1	5	ug/Kg	12/16/01 DP
2-Chlorotoluene	ND	1	5	ug/Kg	12/16/01 DP
2-Hexanone	ND	1	5	ug/Kg	12/16/01 DP
4-Chlorotoluene	ND	1	5	ug/Kg	12/16/01 DP
4-Methyl -2- Pentanone	ND	1	5	ug/Kg	12/16/01 DP
Acetone	ND	1	5	ug/Kg	12/16/01 DP
Acetonitrile	ND	1	5	ug/Kg	12/16/01 DP
Acrolein	ND	1	200	ug/Kg	12/16/01 DP
Acrylonitrile	ND	1	5	ug/Kg	12/16/01 DP
Allyl chloride	ND	1	5	ug/Kg	12/16/01 DP
Benzene	ND	1	5	ug/Kg	12/16/01 DP
Benzyl chloride	ND	1	5	ug/Kg	12/16/01 DP
Bromobenzene	ND	1	5	ug/Kg	12/16/01 DP
Bromochloromethane	ND	1	5	ug/Kg	12/16/01 DP
Bromodichloromethane	ND	1	5	ug/Kg	12/16/01 DP
Bromoform	ND	1	5	ug/Kg	12/16/01 DP
Bromomethane	ND	1	5	ug/Kg	12/16/01 DP
Carbon Disulfide	ND	1	5	ug/Kg	12/16/01 DP
Carbon tetrachloride	ND	1	5	ug/Kg	12/16/01 DP
Chlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
Chloroethane	ND	1	5	ug/Kg	12/16/01 DP
Chloroform	ND	1	5	ug/Kg	12/16/01 DP
Chloromethane	ND	1	5	ug/Kg	12/16/01 DP
Dibromochloromethane	ND	1	5	ug/Kg	12/16/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313605

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-5

Date Sampled: 12/07/2001

Time Sampled: 11:00

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
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**8260B Volatile Organic Compounds**

Dibromomethane	ND	1	5	ug/Kg	12/16/01	DP
Dichlorodifluoromethane	ND	1	5	ug/Kg	12/16/01	DP
Ethyl benzene	ND	1	5	ug/Kg	12/16/01	DP
Ethyl methacrylate	ND	1	5	ug/Kg	12/16/01	DP
Hexachlorobutadiene	ND	1	5	ug/Kg	12/16/01	DP
Iodomethane	ND	1	5	ug/Kg	12/16/01	DP
Isopropylbenzene (Cumene)	ND	1	5	ug/Kg	12/16/01	DP
Methacrylonitrile	ND	1	5	ug/Kg	12/16/01	DP
Methyl methacrylate	ND	1	5	ug/Kg	12/16/01	DP
Methyl-tert-butylether (MTBE)	ND	1	5	ug/Kg	12/16/01	DP
Methylene chloride	ND	1	5	ug/Kg	12/16/01	DP
Naphthalene	ND	1	5	ug/Kg	12/16/01	DP
Pentachloroethane	ND	1	5	ug/Kg	12/16/01	DP
Propionitrile	ND	1	5	ug/Kg	12/16/01	DP
Styrene	ND	1	5	ug/Kg	12/16/01	DP
Tetrachloroethene	ND	1	5	ug/Kg	12/16/01	DP
Toluene	ND	1	5	ug/Kg	12/16/01	DP
Trichloroethene	ND	1	5	ug/Kg	12/16/01	DP
Trichlorofluoromethane	ND	1	5	ug/Kg	12/16/01	DP
Vinyl acetate	ND	1	50	ug/Kg	12/16/01	DP
Vinyl chloride	ND	1	5	ug/Kg	12/16/01	DP
Xylenes, total	ND	1	5	ug/Kg	12/16/01	DP
cis-1,2-Dichloroethene	ND	1	5	ug/Kg	12/16/01	DP
cis-1,3-Dichloropropene	ND	1	5	ug/Kg	12/16/01	DP
cis-1,4-Dichloro-2-butene	ND	1	5	ug/Kg	12/16/01	DP
m and p-Xylene	ND	1	5	ug/Kg	12/16/01	DP
n-Butylbenzene	ND	1	5	ug/Kg	12/16/01	DP
n-Propylbenzene	ND	1	5	ug/Kg	12/16/01	DP
o-Xylene	ND	1	5	ug/Kg	12/16/01	DP
p-Isopropyltoluene	ND	1	5	ug/Kg	12/16/01	DP
sec-Butylbenzene	ND	1	5	ug/Kg	12/16/01	DP
tert-Butylbenzene	ND	1	5	ug/Kg	12/16/01	DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313605

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-5

Date Sampled: 12/07/2001

Time Sampled: 11:00

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
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**8260B Volatile Organic Compounds**

trans-1,2-Dichloroethene	ND	1	5	ug/Kg	12/16/01 DP
trans-1,3-Dichloropropene	ND	1	5	ug/Kg	12/16/01 DP
trans-1,4-Dichloro-2-butene	ND	1	5	ug/Kg	12/16/01 DP

**8270C Acid/Base/Neutral Extractables**

1,2,4-Trichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
1,2-Dichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
1,3-Dichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
1,4-Dichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
2,4,5-Trichlorophenol	ND	1	1665	ug/Kg	12/23/01 DP
2,4,6-Trichlorophenol	ND	1	1665	ug/Kg	12/23/01 DP
2,4-Dichlorophenol	ND	1	333	ug/Kg	12/23/01 DP
2,4-Dimethylphenol	ND	1	333	ug/Kg	12/23/01 DP
2,4-Dinitrophenol	ND	1	1665	ug/Kg	12/23/01 DP
2,4-Dinitrotoluene	ND	1	333	ug/Kg	12/23/01 DP
2,6-Dinitrotoluene	ND	1	333	ug/Kg	12/23/01 DP
2-Chloronaphthalene	ND	1	333	ug/Kg	12/23/01 DP
2-Chlorophenol	ND	1	333	ug/Kg	12/23/01 DP
2-Methylnaphthalene	ND	1	333	ug/Kg	12/23/01 DP
2-Methylphenol	ND	1	333	ug/Kg	12/23/01 DP
2-Nitroaniline	ND	1	1665	ug/Kg	12/23/01 DP
2-Nitrophenol	ND	1	333	ug/Kg	12/23/01 DP
3,3-Dichlorobenzidine	ND	1	333	ug/Kg	12/23/01 DP
3-Nitroaniline	ND	1	1665	ug/Kg	12/23/01 DP
4,6-Dinitro-2-methylphenol	ND	1	1665	ug/Kg	12/23/01 DP
4-Bromophenyl-phenylether	ND	1	333	ug/Kg	12/23/01 DP
4-Chloro-3-methylphenol	ND	1	333	ug/Kg	12/23/01 DP
4-Chloroaniline	ND	1	333	ug/Kg	12/23/01 DP
4-Chlorophenyl-phenylether	ND	1	333	ug/Kg	12/23/01 DP
4-Methylphenol	ND	1	333	ug/Kg	12/23/01 DP
4-Nitroaniline	ND	1	1665	ug/Kg	12/23/01 DP
4-Nitrophenol	ND	1	1665	ug/Kg	12/23/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313605

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-5

Date Sampled: 12/07/2001

Time Sampled: 11:00

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8270C Acid/Base/Neutral Extractables</b>					
Acenaphthene	ND	1	333	ug/Kg	12/23/01 DP
Acenaphthylene	ND	1	333	ug/Kg	12/23/01 DP
Anthracene	ND	1	333	ug/Kg	12/23/01 DP
Benzidine	ND	1	333	ug/Kg	12/23/01 DP
Benzo(a)anthracene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(a)pyrene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(b)fluoranthene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(g,h,i)perylene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(k)fluoranthene	ND	1	333	ug/Kg	12/23/01 DP
Benzoic Acid	ND	1	333	ug/Kg	12/23/01 DP
Benzyl alcohol	ND	1	333	ug/Kg	12/23/01 DP
Butylbenzylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Chrysene	ND	1	333	ug/Kg	12/23/01 DP
Di-n-butylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Di-n-octylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Dibenz(a,h)anthracene	ND	1	333	ug/Kg	12/23/01 DP
Dibenzofuran	ND	1	333	ug/Kg	12/23/01 DP
Diethylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Dimethylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Fluoranthene	ND	1	333	ug/Kg	12/23/01 DP
Fluorene	ND	1	333	ug/Kg	12/23/01 DP
Hexachlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
Hexachlorobutadiene	ND	1	333	ug/Kg	12/23/01 DP
Hexachlorocyclopentadiene	ND	1	333	ug/Kg	12/23/01 DP
Hexachloroethane	ND	1	333	ug/Kg	12/23/01 DP
Indeno(1,2,3-c,d)pyrene	ND	1	333	ug/Kg	12/23/01 DP
Isophorone	ND	1	333	ug/Kg	12/23/01 DP
N-Nitroso-di-n-propylamine	ND	1	333	ug/Kg	12/23/01 DP
N-Nitrosodiphenylamine	ND	1	333	ug/Kg	12/23/01 DP
Naphthalene	ND	1	333	ug/Kg	12/23/01 DP
Nitrobenzene	ND	1	333	ug/Kg	12/23/01 DP
Pentachlorophenol	ND	1	1665	ug/Kg	12/23/01 DP
Phenanthrene	ND	1	333	ug/Kg	12/23/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313605  
Matrix: SOLID  
Date Sampled: 12/07/2001  
Time Sampled: 11:00  
Sampled By:

Client: Panacea, Inc.  
Client Sample ID: Bin-5

Analyte	Result	DF	DLR	Units	Date/Analyst
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**8270C Acid/Base/Neutral Extractables**

Phenol	ND	1	333	ug/Kg	12/23/01 DP
Pyrene	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Chloroethoxy)methane	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Chloroethyl)ether	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Chloroisopropyl) ether	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Ethylhexyl)phthalate	ND	1	333	ug/Kg	12/23/01 DP

DLR = Detection limit for reporting purposes. ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report



Order #: 313606

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-6

Date Sampled: 12/07/2001

Time Sampled: 11:10

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>245.5 Mercury in Solids by Manual Cold Vapor</b>					
Mercury	ND	1	0.12	mg/Kg	12/14/01 MDJ
<b>010B ICP CAM Metals Only (16 Metals)</b>					
Antimony	ND	1	3.00	mg/Kg	12/17/01 NK
Arsenic	7.92	1	0.50	mg/Kg	12/17/01 NK
Barium	162	1	1.00	mg/Kg	12/17/01 NK
Beryllium	ND	1	0.50	mg/Kg	12/17/01 NK
Cadmium	ND	1	0.50	mg/Kg	12/17/01 NK
Chromium	14.3	1	1.00	mg/Kg	12/17/01 NK
Cobalt	7.32	1	0.50	mg/Kg	12/17/01 NK
Copper	6.57	1	1.00	mg/Kg	12/17/01 NK
Lead	0.84	1	0.50	mg/Kg	12/17/01 NK
Molybdenum	0.66	1	1.00	mg/Kg	12/17/01 NK
Nickel	7.30	1	1.50	mg/Kg	12/17/01 NK
Selenium	1.06	1	0.50	mg/Kg	12/17/01 NK
Silver	ND	1	0.50	mg/Kg	12/17/01 NK
Thallium	ND	1	1.00	mg/Kg	12/17/01 NK
Vanadium	40.1	1	0.50	mg/Kg	12/17/01 NK
Zinc	40.6	1	5.00	mg/Kg	12/17/01 NK
<b>081A - Organochlorine Pesticides by GC</b>					
Aldrin	ND	1	0.002	mg/Kg	01/01/02 SD
Alpha BHC	ND	1	0.002	mg/Kg	01/01/02 SD
Beta BHC	ND	1	0.003	mg/Kg	01/01/02 SD
Chlordane	ND	1	0.008	mg/Kg	01/01/02 SD
DDD	ND	1	0.004	mg/Kg	01/01/02 SD
DDE	ND	1	0.003	mg/Kg	01/01/02 SD
DDT	ND	1	0.003	mg/Kg	01/01/02 SD
Delta BHC	ND	1	0.005	mg/Kg	01/01/02 SD
Dieldrin	ND	1	0.003	mg/Kg	01/01/02 SD
Endosulfan I	ND	1	0.004	mg/Kg	01/01/02 SD
Endosulfan II	ND	1	0.003	mg/Kg	01/01/02 SD

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313606

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-6

Date Sampled: 12/07/2001

Time Sampled: 11:10

Sampled By:

**Analyte****Result****DF****DLR****Units****Date/Analyst****8081A - Organochlorine Pesticides by GC**

Analyte	Result	DF	DLR	Units	Date/Analyst
Endosulfan sulfate	ND	1	0.003	mg/Kg	01/01/02 SD
Endrin	ND	1	0.004	mg/Kg	01/01/02 SD
Endrin aldehyde	ND	1	0.004	mg/Kg	01/01/02 SD
Heptachlor	ND	1	0.002	mg/Kg	01/01/02 SD
Heptachlor epoxide	ND	1	0.003	mg/Kg	01/01/02 SD
Lindane	ND	1	0.003	mg/Kg	01/01/02 SD
Methoxychlor	ND	1	0.025	mg/Kg	01/01/02 SD
Toxaphene	ND	1	0.24	mg/Kg	01/01/02 SD

**8141 Organophosphate Pesticides**

Analyte	Result	DF	DLR	Units	Date/Analyst
Azinophos Methyl (Guthion)	ND	1	1.0	mg/Kg	12/27/01 DO
Bolstar	ND	1	0.1	mg/Kg	12/27/01 DO
Chlorpyrifos(Dursban)	ND	1	0.2	mg/Kg	12/27/01 DO
Coumaphos	ND	1	1.0	mg/Kg	12/27/01 DO
Demeton(Systox)-O	ND	1	0.17	mg/Kg	12/27/01 DO
Demeton(Systox)-S	ND	1	0.17	mg/Kg	12/27/01 DO
Diazinon	ND	1	0.4	mg/Kg	12/27/01 DO
Dichlorvos	ND	1	0.07	mg/Kg	12/27/01 DO
Disulfoton (Disyston)	ND	1	0.13	mg/Kg	12/27/01 DO
Disulfoton Sulfone	ND	1	0.13	mg/Kg	12/27/01 DO
Ethoprop	ND	1	0.17	mg/Kg	12/27/01 DO
Fensulfothion	ND	1	1.0	mg/Kg	12/27/01 DO
Fenthion	ND	1	0.07	mg/Kg	12/27/01 DO
Malathion	ND	1	0.02	mg/Kg	12/27/01 DO
Merphos	ND	1	0.17	mg/Kg	12/27/01 DO
Mevinphos (Phosdrin)	ND	1	0.2	mg/Kg	12/27/01 DO
Naled (Dibrom)	ND	1	0.07	mg/Kg	12/27/01 DO
Parathion Ethyl	ND	1	0.02	mg/Kg	12/27/01 DO
Parathion Methyl	ND	1	0.02	mg/Kg	12/27/01 DO
Phorate (Thimet)	ND	1	0.1	mg/Kg	12/27/01 DO
Ronnel	ND	1	0.2	mg/Kg	12/27/01 DO
Stirophos (Tetrachlorvinphos)	ND	1	3.35	mg/Kg	12/27/01 DO

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313606

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-6

Date Sampled: 12/07/2001

Time Sampled: 11:10

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8141 Organophosphate Pesticides</b>					
Tokuthion (Protothiofos)	ND	1	0.33	mg/Kg	12/27/01 DO
Trichloronate	ND	1	0.1	mg/Kg	12/27/01 DO
<b>151A Phenoxy Acid Herbicides</b>					
2,4,5-T	ND	1	0.13	mg/Kg	01/04/02 SD
2,4,5-TP (Silvex)	ND	1	0.11	mg/Kg	01/04/02 SD
2,4-D	ND	1	0.80	mg/Kg	01/04/02 SD
2,4-DB	ND	1	0.61	mg/Kg	01/04/02 SD
Dalapon	ND	1	3.89	mg/Kg	01/04/02 SD
Dicamba	ND	1	0.18	mg/Kg	01/04/02 SD
Dichloroprop	ND	1	0.44	mg/Kg	01/04/02 SD
Dinoseb	ND	1	0.05	mg/Kg	01/04/02 SD
MCPA	ND	1	167	mg/Kg	01/04/02 SD
MCPP	ND	1	129	mg/Kg	01/04/02 SD
<b>260B Volatile Organic Compounds</b>					
1,1,1,2-Tetrachloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,1-Trichloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,2,2-Tetrachloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,2-Trichloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,2-Trichlorotrifluoroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1-Dichloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1-Dichloroethene	ND	1	5	ug/Kg	12/16/01 DP
1,1-Dichloropropene	ND	1	5	ug/Kg	12/16/01 DP
1,2,3-Trichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2,3-Trichloropropane	5.6	1	5	ug/Kg	12/16/01 DP
1,2,4-Trichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2,4-Trimethylbenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2-Dibromo-3-chloropropane	6.3	1	5	ug/Kg	12/16/01 DP
1,2-Dibromoethane	ND	1	5	ug/Kg	12/16/01 DP
1,2-Dichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2-Dichloroethane	ND	1	5	ug/Kg	12/16/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313606

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-6

Date Sampled: 12/07/2001

Time Sampled: 11:10

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
1,2-Dichloropropane	15	1	5	ug/Kg	12/16/01 DP
1,3,5-Trimethylbenzene	ND	1	5	ug/Kg	12/16/01 DP
1,3-Dichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,3-Dichloropropane	ND	1	5	ug/Kg	12/16/01 DP
1,4-Dichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,4-Dioxane	ND	1	200	ug/Kg	12/16/01 DP
1-Chlorohexane	ND	1	5	ug/Kg	12/16/01 DP
2,2-Dichloropropane	ND	1	5	ug/Kg	12/16/01 DP
2-Butanone (MEK)	ND	1	100	ug/Kg	12/16/01 DP
2-Chloroethyl vinyl ether	ND	1	5	ug/Kg	12/16/01 DP
2-Chlorotoluene	ND	1	5	ug/Kg	12/16/01 DP
2-Hexanone	ND	1	5	ug/Kg	12/16/01 DP
4-Chlorotoluene	ND	1	5	ug/Kg	12/16/01 DP
4-Methyl -2- Pentanone	ND	1	5	ug/Kg	12/16/01 DP
Acetone	ND	1	5	ug/Kg	12/16/01 DP
Acetonitrile	ND	1	5	ug/Kg	12/16/01 DP
Acrolein	ND	1	200	ug/Kg	12/16/01 DP
Acrylonitrile	ND	1	5	ug/Kg	12/16/01 DP
Allyl chloride	ND	1	5	ug/Kg	12/16/01 DP
Benzene	ND	1	5	ug/Kg	12/16/01 DP
Benzyl chloride	ND	1	5	ug/Kg	12/16/01 DP
Bromobenzene	ND	1	5	ug/Kg	12/16/01 DP
Bromochloromethane	ND	1	5	ug/Kg	12/16/01 DP
Bromodichloromethane	ND	1	5	ug/Kg	12/16/01 DP
Bromoform	ND	1	5	ug/Kg	12/16/01 DP
Bromomethane	ND	1	5	ug/Kg	12/16/01 DP
Carbon Disulfide	ND	1	5	ug/Kg	12/16/01 DP
Carbon tetrachloride	ND	1	5	ug/Kg	12/16/01 DP
Chlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
Chloroethane	ND	1	5	ug/Kg	12/16/01 DP
Chloroform	ND	1	5	ug/Kg	12/16/01 DP
Chloromethane	ND	1	5	ug/Kg	12/16/01 DP
Dibromochloromethane	ND	1	5	ug/Kg	12/16/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313606

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-6

Date Sampled: 12/07/2001

Time Sampled: 11:10

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
Dibromomethane	ND	1	5	ug/Kg	12/16/01 DP
Dichlorodifluoromethane	ND	1	5	ug/Kg	12/16/01 DP
Ethyl benzene	ND	1	5	ug/Kg	12/16/01 DP
Ethyl methacrylate	ND	1	5	ug/Kg	12/16/01 DP
Hexachlorobutadiene	ND	1	5	ug/Kg	12/16/01 DP
Iodomethane	ND	1	5	ug/Kg	12/16/01 DP
Isopropylbenzene (Cumene)	ND	1	5	ug/Kg	12/16/01 DP
Methacrylonitrile	ND	1	5	ug/Kg	12/16/01 DP
Methyl methacrylate	ND	1	5	ug/Kg	12/16/01 DP
Methyl-tert-butylether (MTBE)	ND	1	5	ug/Kg	12/16/01 DP
Methylene chloride	ND	1	5	ug/Kg	12/16/01 DP
Naphthalene	ND	1	5	ug/Kg	12/16/01 DP
Pentachloroethane	ND	1	5	ug/Kg	12/16/01 DP
Propionitrile	ND	1	5	ug/Kg	12/16/01 DP
Styrene	ND	1	5	ug/Kg	12/16/01 DP
Tetrachloroethene	ND	1	5	ug/Kg	12/16/01 DP
Toluene	ND	1	5	ug/Kg	12/16/01 DP
Trichloroethene	ND	1	5	ug/Kg	12/16/01 DP
Trichlorofluoromethane	ND	1	5	ug/Kg	12/16/01 DP
Vinyl acetate	ND	1	50	ug/Kg	12/16/01 DP
Vinyl chloride	ND	1	5	ug/Kg	12/16/01 DP
Xylenes, total	ND	1	5	ug/Kg	12/16/01 DP
cis-1,2-Dichloroethene	ND	1	5	ug/Kg	12/16/01 DP
cis-1,3-Dichloropropene	ND	1	5	ug/Kg	12/16/01 DP
cis-1,4-Dichloro-2-butene	ND	1	5	ug/Kg	12/16/01 DP
m and p-Xylene	ND	1	5	ug/Kg	12/16/01 DP
n-Butylbenzene	ND	1	5	ug/Kg	12/16/01 DP
n-Propylbenzene	ND	1	5	ug/Kg	12/16/01 DP
o-Xylene	ND	1	5	ug/Kg	12/16/01 DP
p-Isopropyltoluene	ND	1	5	ug/Kg	12/16/01 DP
sec-Butylbenzene	ND	1	5	ug/Kg	12/16/01 DP
tert-Butylbenzene	ND	1	5	ug/Kg	12/16/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313606

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-6

Date Sampled: 12/07/2001

Time Sampled: 11:10

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
trans-1,2-Dichloroethene	ND	1	5	ug/Kg	12/16/01 DP
trans-1,3-Dichloropropene	ND	1	5	ug/Kg	12/16/01 DP
trans-1,4-Dichloro-2-butene	ND	1	5	ug/Kg	12/16/01 DP
<b>8270C Acid/Base/Neutral Extractables</b>					
1,2,4-Trichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
1,2-Dichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
1,3-Dichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
1,4-Dichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
2,4,5-Trichlorophenol	ND	1	1665	ug/Kg	12/23/01 DP
2,4,6-Trichlorophenol	ND	1	1665	ug/Kg	12/23/01 DP
2,4-Dichlorophenol	ND	1	333	ug/Kg	12/23/01 DP
2,4-Dimethylphenol	ND	1	333	ug/Kg	12/23/01 DP
2,4-Dinitrophenol	ND	1	1665	ug/Kg	12/23/01 DP
2,4-Dinitrotoluene	ND	1	333	ug/Kg	12/23/01 DP
2,6-Dinitrotoluene	ND	1	333	ug/Kg	12/23/01 DP
2-Chloronaphthalene	ND	1	333	ug/Kg	12/23/01 DP
2-Chlorophenol	ND	1	333	ug/Kg	12/23/01 DP
2-Methylnaphthalene	ND	1	333	ug/Kg	12/23/01 DP
2-Methylphenol	ND	1	333	ug/Kg	12/23/01 DP
2-Nitroaniline	ND	1	1665	ug/Kg	12/23/01 DP
2-Nitrophenol	ND	1	333	ug/Kg	12/23/01 DP
3,3-Dichlorobenzidine	ND	1	333	ug/Kg	12/23/01 DP
3-Nitroaniline	ND	1	1665	ug/Kg	12/23/01 DP
4,6-Dinitro-2-methylphenol	ND	1	1665	ug/Kg	12/23/01 DP
4-Bromophenyl-phenylether	ND	1	333	ug/Kg	12/23/01 DP
4-Chloro-3-methylphenol	ND	1	333	ug/Kg	12/23/01 DP
4-Chloroaniline	ND	1	333	ug/Kg	12/23/01 DP
4-Chlorophenyl-phenylether	ND	1	333	ug/Kg	12/23/01 DP
4-Methylphenol	ND	1	333	ug/Kg	12/23/01 DP
4-Nitroaniline	ND	1	1665	ug/Kg	12/23/01 DP
4-Nitrophenol	ND	1	1665	ug/Kg	12/23/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313606

Matrix: SOLID

Date Sampled: 12/07/2001

Time Sampled: 11:10

Sampled By:

Client: Panacea, Inc.

Client Sample ID: Bin-6

Analyte	Result	DF	DLR	Units	Date/Analyst
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**8270C Acid/Base/Neutral Extractables**

Acenaphthene	ND	1	333	ug/Kg	12/23/01 DP
Acenaphthylene	ND	1	333	ug/Kg	12/23/01 DP
Anthracene	ND	1	333	ug/Kg	12/23/01 DP
Benzidine	ND	1	333	ug/Kg	12/23/01 DP
Benzo(a)anthracene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(a)pyrene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(b)fluoranthene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(g,h,i)perylene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(k)fluoranthene	ND	1	333	ug/Kg	12/23/01 DP
Benzoic Acid	ND	1	333	ug/Kg	12/23/01 DP
Benzyl alcohol	ND	1	333	ug/Kg	12/23/01 DP
Butylbenzylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Chrysene	ND	1	333	ug/Kg	12/23/01 DP
Di-n-butylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Di-n-octylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Dibenz(a,h)anthracene	ND	1	333	ug/Kg	12/23/01 DP
Dibenzofuran	ND	1	333	ug/Kg	12/23/01 DP
Diethylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Dimethylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Fluoranthene	ND	1	333	ug/Kg	12/23/01 DP
Fluorene	ND	1	333	ug/Kg	12/23/01 DP
Hexachlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
Hexachlorobutadiene	ND	1	333	ug/Kg	12/23/01 DP
Hexachlorocyclopentadiene	ND	1	333	ug/Kg	12/23/01 DP
Hexachloroethane	ND	1	333	ug/Kg	12/23/01 DP
Indeno(1,2,3-c,d)pyrene	ND	1	333	ug/Kg	12/23/01 DP
Isophorone	ND	1	333	ug/Kg	12/23/01 DP
N-Nitroso-di-n-propylamine	ND	1	333	ug/Kg	12/23/01 DP
N-Nitrosodiphenylamine	ND	1	333	ug/Kg	12/23/01 DP
Naphthalene	ND	1	333	ug/Kg	12/23/01 DP
Nitrobenzene	ND	1	333	ug/Kg	12/23/01 DP
Pentachlorophenol	ND	1	1665	ug/Kg	12/23/01 DP
Phenanthrene	ND	1	333	ug/Kg	12/23/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313606

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: Bin-6

Date Sampled: 12/07/2001

Time Sampled: 11:10

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8270C Acid/Base/Neutral Extractables</b>					
Phenol	ND	1	333	ug/Kg	12/23/01 DP
Pyrene	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Chloroethoxy)methane	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Chloroethyl)ether	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Chloroisopropyl) ether	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Ethylhexyl)phthalate	ND	1	333	ug/Kg	12/23/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor



Order #: 313607

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: MBIn-1

Date Sampled: 12/07/2001

Time Sampled: 11:25

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>245.5 Mercury in Solids by Manual Cold Vapor</b>					
Mercury	ND	1	0.12	mg/Kg	12/14/01 MDJ
<b>010B ICP CAM Metals Only (16 Metals)</b>					
Antimony	ND	1	3.00	mg/Kg	12/17/01 NK
Arsenic	2.35	1	0.50	mg/Kg	12/17/01 NK
Barium	116	1	1.00	mg/Kg	12/17/01 NK
Beryllium	ND	1	0.50	mg/Kg	12/17/01 NK
Cadmium	ND	1	0.50	mg/Kg	12/17/01 NK
Chromium	13.6	1	1.00	mg/Kg	12/17/01 NK
Cobalt	3.85	1	0.50	mg/Kg	12/17/01 NK
Copper	5.25	1	1.00	mg/Kg	12/17/01 NK
Lead	ND	1	0.50	mg/Kg	12/17/01 NK
Molybdenum	1.25	1	1.00	mg/Kg	12/17/01 NK
Nickel	7.59	1	1.50	mg/Kg	12/17/01 NK
Selenium	1.33	1	0.50	mg/Kg	12/17/01 NK
Silver	ND	1	0.50	mg/Kg	12/17/01 NK
Thallium	ND	1	1.00	mg/Kg	12/17/01 NK
Vanadium	33.0	1	0.50	mg/Kg	12/17/01 NK
Zinc	29.5	1	5.00	mg/Kg	12/17/01 NK
<b>081A - Organochlorine Pesticides by GC</b>					
Aldrin	ND	1	0.002	mg/Kg	01/01/02 SD
Alpha BHC	ND	1	0.002	mg/Kg	01/01/02 SD
Beta BHC	ND	1	0.003	mg/Kg	01/01/02 SD
Chlordane	ND	1	0.008	mg/Kg	01/01/02 SD
DDD	ND	1	0.004	mg/Kg	01/01/02 SD
DDE	ND	1	0.003	mg/Kg	01/01/02 SD
DDT	ND	1	0.003	mg/Kg	01/01/02 SD
Delta BHC	ND	1	0.005	mg/Kg	01/01/02 SD
Dieldrin	ND	1	0.003	mg/Kg	01/01/02 SD
Endosulfan I	ND	1	0.004	mg/Kg	01/01/02 SD
Endosulfan II	ND	1	0.003	mg/Kg	01/01/02 SD

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313607

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: MBin-1

Date Sampled: 12/07/2001

Time Sampled: 11:25

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8081A - Organochlorine Pesticides by GC</b>					
Endosulfan sulfate	ND	1	0.003	mg/Kg	01/01/02 SD
Endrin	ND	1	0.004	mg/Kg	01/01/02 SD
Endrin aldehyde	ND	1	0.004	mg/Kg	01/01/02 SD
Heptachlor	ND	1	0.002	mg/Kg	01/01/02 SD
Heptachlor epoxide	ND	1	0.003	mg/Kg	01/01/02 SD
Lindane	ND	1	0.003	mg/Kg	01/01/02 SD
Methoxychlor	ND	1	0.025	mg/Kg	01/01/02 SD
Toxaphene	ND	1	0.24	mg/Kg	01/01/02 SD
<b>8141 Organophosphate Pesticides</b>					
Azinophos Methyl (Guthion)	ND	1	1.0	mg/Kg	12/27/01 DO
Bolstar	ND	1	0.1	mg/Kg	12/27/01 DO
Chlorpyrifos(Dursban)	ND	1	0.2	mg/Kg	12/27/01 DO
Coumaphos	ND	1	1.0	mg/Kg	12/27/01 DO
Demeton(Systox)-O	ND	1	0.17	mg/Kg	12/27/01 DO
Demeton(Systox)-S	ND	1	0.17	mg/Kg	12/27/01 DO
Diazinon	ND	1	0.4	mg/Kg	12/27/01 DO
Dichlorvos	ND	1	0.07	mg/Kg	12/27/01 DO
Disulfoton (Disyston)	ND	1	0.13	mg/Kg	12/27/01 DO
Disulfoton Sulfone	ND	1	0.13	mg/Kg	12/27/01 DO
Ethoprop	ND	1	0.17	mg/Kg	12/27/01 DO
Fensulfothion	ND	1	1.0	mg/Kg	12/27/01 DO
Fenthion	ND	1	0.07	mg/Kg	12/27/01 DO
Malathion	ND	1	0.02	mg/Kg	12/27/01 DO
Merphos	ND	1	0.17	mg/Kg	12/27/01 DO
Mevinphos (Phosdrin)	ND	1	0.2	mg/Kg	12/27/01 DO
Naled (Dibrom)	ND	1	0.07	mg/Kg	12/27/01 DO
Parathion Ethyl	ND	1	0.02	mg/Kg	12/27/01 DO
Parathion Methyl	ND	1	0.02	mg/Kg	12/27/01 DO
Phorate (Thimet)	ND	1	0.1	mg/Kg	12/27/01 DO
Ronnel	ND	1	0.2	mg/Kg	12/27/01 DO
Stirophos (Tetrachlorvinphos)	ND	1	3.35	mg/Kg	12/27/01 DO

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313607

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: MBin-1

Date Sampled: 12/07/2001

Time Sampled: 11:25

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8141 Organophosphate Pesticides</b>					
Tokuthion (Protothiofos)	ND	1	0.33	mg/Kg	12/27/01 DO
Trichloronate	ND	1	0.1	mg/Kg	12/27/01 DO
<b>151A Phenoxy Acid Herbicides</b>					
2,4,5-T	ND	1	0.13	mg/Kg	01/04/02 SD
2,4,5-TP (Silvex)	ND	1	0.11	mg/Kg	01/04/02 SD
2,4-D	ND	1	0.80	mg/Kg	01/04/02 SD
2,4-DB	ND	1	0.61	mg/Kg	01/04/02 SD
Dalapon	ND	1	3.89	mg/Kg	01/04/02 SD
Dicamba	ND	1	0.18	mg/Kg	01/04/02 SD
Dichloroprop	ND	1	0.44	mg/Kg	01/04/02 SD
Dinoseb	ND	1	0.05	mg/Kg	01/04/02 SD
MCPA	ND	1	167	mg/Kg	01/04/02 SD
MCPP	ND	1	129	mg/Kg	01/04/02 SD
<b>260B Volatile Organic Compounds</b>					
1,1,1,2-Tetrachloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,1-Trichloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,2,2-Tetrachloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,2-Trichloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1,2-Trichlorotrifluoroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1-Dichloroethane	ND	1	5	ug/Kg	12/16/01 DP
1,1-Dichloroethene	ND	1	5	ug/Kg	12/16/01 DP
1,1-Dichloropropene	ND	1	5	ug/Kg	12/16/01 DP
1,2,3-Trichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2,3-Trichloropropane	ND	1	5	ug/Kg	12/16/01 DP
1,2,4-Trichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2,4-Trimethylbenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2-Dibromo-3-chloropropane	ND	1	5	ug/Kg	12/16/01 DP
1,2-Dibromoethane	ND	1	5	ug/Kg	12/16/01 DP
1,2-Dichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,2-Dichloroethane	ND	1	5	ug/Kg	12/16/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313607

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: MBin-1

Date Sampled: 12/07/2001

Time Sampled: 11:25

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
1,2-Dichloropropane	ND	1	5	ug/Kg	12/16/01 DP
1,3,5-Trimethylbenzene	ND	1	5	ug/Kg	12/16/01 DP
1,3-Dichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,3-Dichloropropane	ND	1	5	ug/Kg	12/16/01 DP
1,4-Dichlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
1,4-Dioxane	ND	1	200	ug/Kg	12/16/01 DP
1-Chlorohexane	ND	1	5	ug/Kg	12/16/01 DP
2,2-Dichloropropane	ND	1	5	ug/Kg	12/16/01 DP
2-Butanone (MEK)	ND	1	100	ug/Kg	12/16/01 DP
2-Chloroethyl vinyl ether	ND	1	5	ug/Kg	12/16/01 DP
2-Chlorotoluene	ND	1	5	ug/Kg	12/16/01 DP
2-Hexanone	ND	1	5	ug/Kg	12/16/01 DP
4-Chlorotoluene	ND	1	5	ug/Kg	12/16/01 DP
4-Methyl -2- Pentanone	ND	1	5	ug/Kg	12/16/01 DP
Acetone	ND	1	5	ug/Kg	12/16/01 DP
Acetonitrile	ND	1	5	ug/Kg	12/16/01 DP
Acrolein	ND	1	200	ug/Kg	12/16/01 DP
Acrylonitrile	ND	1	5	ug/Kg	12/16/01 DP
Allyl chloride	ND	1	5	ug/Kg	12/16/01 DP
Benzene	ND	1	5	ug/Kg	12/16/01 DP
Benzyl chloride	ND	1	5	ug/Kg	12/16/01 DP
Bromobenzene	ND	1	5	ug/Kg	12/16/01 DP
Bromochloromethane	ND	1	5	ug/Kg	12/16/01 DP
Bromodichloromethane	ND	1	5	ug/Kg	12/16/01 DP
Bromoform	ND	1	5	ug/Kg	12/16/01 DP
Bromomethane	ND	1	5	ug/Kg	12/16/01 DP
Carbon Disulfide	ND	1	5	ug/Kg	12/16/01 DP
Carbon tetrachloride	ND	1	5	ug/Kg	12/16/01 DP
Chlorobenzene	ND	1	5	ug/Kg	12/16/01 DP
Chloroethane	ND	1	5	ug/Kg	12/16/01 DP
Chloroform	ND	1	5	ug/Kg	12/16/01 DP
Chloromethane	ND	1	5	ug/Kg	12/16/01 DP
Dibromochloromethane	ND	1	5	ug/Kg	12/16/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313607

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: MBin-1

Date Sampled: 12/07/2001

Time Sampled: 11:25

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
Dibromomethane	ND	1	5	ug/Kg	12/16/01 DP
Dichlorodifluoromethane	ND	1	5	ug/Kg	12/16/01 DP
Ethyl benzene	ND	1	5	ug/Kg	12/16/01 DP
Ethyl methacrylate	ND	1	5	ug/Kg	12/16/01 DP
Hexachlorobutadiene	ND	1	5	ug/Kg	12/16/01 DP
Iodomethane	ND	1	5	ug/Kg	12/16/01 DP
Isopropylbenzene (Cumene)	ND	1	5	ug/Kg	12/16/01 DP
Methacrylonitrile	ND	1	5	ug/Kg	12/16/01 DP
Methyl methacrylate	ND	1	5	ug/Kg	12/16/01 DP
Methyl-tert-butylether (MTBE)	ND	1	5	ug/Kg	12/16/01 DP
Methylene chloride	ND	1	5	ug/Kg	12/16/01 DP
Naphthalene	ND	1	5	ug/Kg	12/16/01 DP
Pentachloroethane	ND	1	5	ug/Kg	12/16/01 DP
Propionitrile	ND	1	5	ug/Kg	12/16/01 DP
Styrene	ND	1	5	ug/Kg	12/16/01 DP
Tetrachloroethene	ND	1	5	ug/Kg	12/16/01 DP
Toluene	ND	1	5	ug/Kg	12/16/01 DP
Trichloroethene	ND	1	5	ug/Kg	12/16/01 DP
Trichlorofluoromethane	ND	1	5	ug/Kg	12/16/01 DP
Vinyl acetate	ND	1	50	ug/Kg	12/16/01 DP
Vinyl chloride	ND	1	5	ug/Kg	12/16/01 DP
Xylenes, total	ND	1	5	ug/Kg	12/16/01 DP
cis-1,2-Dichloroethene	ND	1	5	ug/Kg	12/16/01 DP
cis-1,3-Dichloropropene	ND	1	5	ug/Kg	12/16/01 DP
cis-1,4-Dichloro-2-butene	ND	1	5	ug/Kg	12/16/01 DP
m and p-Xylene	ND	1	5	ug/Kg	12/16/01 DP
n-Butylbenzene	ND	1	5	ug/Kg	12/16/01 DP
n-Propylbenzene	ND	1	5	ug/Kg	12/16/01 DP
o-Xylene	ND	1	5	ug/Kg	12/16/01 DP
p-Isopropyltoluene	ND	1	5	ug/Kg	12/16/01 DP
sec-Butylbenzene	ND	1	5	ug/Kg	12/16/01 DP
tert-Butylbenzene	ND	1	5	ug/Kg	12/16/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313607

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: MBin-1

Date Sampled: 12/07/2001

Time Sampled: 11:25

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
trans-1,2-Dichloroethene	ND	1	5	ug/Kg	12/16/01 DP
trans-1,3-Dichloropropene	ND	1	5	ug/Kg	12/16/01 DP
trans-1,4-Dichloro-2-butene	ND	1	5	ug/Kg	12/16/01 DP
<b>8270C Acid/Base/Neutral Extractables</b>					
1,2,4-Trichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
1,2-Dichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
1,3-Dichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
1,4-Dichlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
2,4,5-Trichlorophenol	ND	1	1665	ug/Kg	12/23/01 DP
2,4,6-Trichlorophenol	ND	1	1665	ug/Kg	12/23/01 DP
2,4-Dichlorophenol	ND	1	333	ug/Kg	12/23/01 DP
2,4-Dimethylphenol	ND	1	333	ug/Kg	12/23/01 DP
2,4-Dinitrophenol	ND	1	1665	ug/Kg	12/23/01 DP
2,4-Dinitrotoluene	ND	1	333	ug/Kg	12/23/01 DP
2,6-Dinitrotoluene	ND	1	333	ug/Kg	12/23/01 DP
2-Chloronaphthalene	ND	1	333	ug/Kg	12/23/01 DP
2-Chlorophenol	ND	1	333	ug/Kg	12/23/01 DP
2-Methylnaphthalene	ND	1	333	ug/Kg	12/23/01 DP
2-Methylphenol	ND	1	333	ug/Kg	12/23/01 DP
2-Nitroaniline	ND	1	1665	ug/Kg	12/23/01 DP
2-Nitrophenol	ND	1	333	ug/Kg	12/23/01 DP
3,3-Dichlorobenzidine	ND	1	333	ug/Kg	12/23/01 DP
3-Nitroaniline	ND	1	1665	ug/Kg	12/23/01 DP
4,6-Dinitro-2-methylphenol	ND	1	1665	ug/Kg	12/23/01 DP
4-Bromophenyl-phenylether	ND	1	333	ug/Kg	12/23/01 DP
4-Chloro-3-methylphenol	ND	1	333	ug/Kg	12/23/01 DP
4-Chloroaniline	ND	1	333	ug/Kg	12/23/01 DP
4-Chlorophenyl-phenylether	ND	1	333	ug/Kg	12/23/01 DP
4-Methylphenol	ND	1	333	ug/Kg	12/23/01 DP
4-Nitroaniline	ND	1	1665	ug/Kg	12/23/01 DP
4-Nitrophenol	ND	1	1665	ug/Kg	12/23/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313607

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: MBin-1

Date Sampled: 12/07/2001

Time Sampled: 11:25

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8270C Acid/Base/Neutral Extractables</b>					
Acenaphthene	ND	1	333	ug/Kg	12/23/01 DP
Acenaphthylene	ND	1	333	ug/Kg	12/23/01 DP
Anthracene	ND	1	333	ug/Kg	12/23/01 DP
Benzidine	ND	1	333	ug/Kg	12/23/01 DP
Benzo(a)anthracene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(a)pyrene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(b)fluoranthene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(g,h,i)perylene	ND	1	333	ug/Kg	12/23/01 DP
Benzo(k)fluoranthene	ND	1	333	ug/Kg	12/23/01 DP
Benzoic Acid	ND	1	333	ug/Kg	12/23/01 DP
Benzyl alcohol	ND	1	333	ug/Kg	12/23/01 DP
Butylbenzylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Chrysene	ND	1	333	ug/Kg	12/23/01 DP
Di-n-butylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Di-n-octylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Dibenz(a,h)anthracene	ND	1	333	ug/Kg	12/23/01 DP
Dibenzofuran	ND	1	333	ug/Kg	12/23/01 DP
Diethylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Dimethylphthalate	ND	1	333	ug/Kg	12/23/01 DP
Fluoranthene	ND	1	333	ug/Kg	12/23/01 DP
Fluorene	ND	1	333	ug/Kg	12/23/01 DP
Hexachlorobenzene	ND	1	333	ug/Kg	12/23/01 DP
Hexachlorobutadiene	ND	1	333	ug/Kg	12/23/01 DP
Hexachlorocyclopentadiene	ND	1	333	ug/Kg	12/23/01 DP
Hexachloroethane	ND	1	333	ug/Kg	12/23/01 DP
Indeno(1,2,3-c,d)pyrene	ND	1	333	ug/Kg	12/23/01 DP
Isophorone	ND	1	333	ug/Kg	12/23/01 DP
N-Nitroso-di-n-propylamine	ND	1	333	ug/Kg	12/23/01 DP
N-Nitrosodiphenylamine	ND	1	333	ug/Kg	12/23/01 DP
Naphthalene	ND	1	333	ug/Kg	12/23/01 DP
Nitrobenzene	ND	1	333	ug/Kg	12/23/01 DP
Pentachlorophenol	ND	1	1665	ug/Kg	12/23/01 DP
Phenanthrene	ND	1	333	ug/Kg	12/23/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313607

Client: Panacea, Inc.

Matrix: SOLID

Client Sample ID: MBin-1

Date Sampled: 12/07/2001

Time Sampled: 11:25

Sampled By:

Analyte

Result

DF

DLR

Units

Date/Analyst

8270C Acid/Base/Neutral Extractables

Analyte	Result	DF	DLR	Units	Date/Analyst
Phenol	ND	1	333	ug/Kg	12/23/01 DP
Pyrene	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Chloroethoxy)methane	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Chloroethyl)ether	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Chloroisopropyl) ether	ND	1	333	ug/Kg	12/23/01 DP
bis(2-Ethylhexyl)phthalate	ND	1	333	ug/Kg	12/23/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report





# ASSOCIATED LABORATORIES

806 N. Batavia • Orange, CA 92868  
(714) 771-6900 • Fax: (714) 538-1209

84932

## CHAIN OF CUSTODY RECORD

Date 12/07/01 Page 1 of 1

CLIENT Panacea  
 ADDRESS 14700 Firestone Blvd, Suite 118  
La Mirada, CA 90638  
 PROJECT NAME Brown + Bryant/Arvin

PROJECT MANAGER Mohammed Estiri  
 PHONE NUMBER 714-228-1286  
 SAMPLERS: (Signature) [Signature]

Samples Intact Yes  No   
 County Seals Intact Yes  No   
 Sample Ambient  Cooled  Frozen   
 Same Day  24 Hr.   
 Regular  48 Hr.

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE			NO OF CNTNRS	SUSP. CONTAM.	TESTS <sup>★</sup> REQUIRED
				WATER	AIR	SOLID			
Bin-5	Soil Cutting Bin #5	12/07/01	1100			X	2	EPA 8260-VOCs, EPA 8270-SVOCs EPA 8081-Chlorinated Pesticides EPA 8151-Chlorinated Herbicides EPA 8141-Organophosphate Pesticides EPA 6010-CAM Metals	
Bin-6	Soil Cutting Bin #6	12/07/01	1110			X	2		
MBin-1	Drilling Mud Bin #1	12/07/01	1125			X	2		
								★ Please analyze all three (3) samples for all the requested analysis ★	

Relinquished by: (Signature) [Signature]  
 Relinquished by: (Signature) [Signature]  
 Special Instructions:

Received by: (Signature) [Signature]  
 Received by Laboratory for analysis: (Signature) [Signature]

Date/Time 12/10/01  
 Date/Time 12/12

I hereby authorize the performance of the above indicated work.  
[Signature]  
 DISTRIBUTION: White with report. Yellow to AL, Pink to Courier

### Cooler Receipt Form

Client: Parace Project: Brown & Bryant  
Cooler Received: 12/12 Cooler Opened: 12/12 By: Bryant  
Signed: Bryant

- Was cooler scanned for presence of radioactivity, and noted if found? Yes /  No
- Were custody seals present on outside of cooler? Yes /  No  
a: If Yes, were they intact? Yes / No  
b: Were signature and date correct? Yes / No
- Were custody papers completely filled out?  Yes / No
- Did you sign and date the custody papers in the appropriate place?  Yes / No
- Was a shippers packing slip attached to the cooler? Yes /  No
- What kind of packing material was used? ice
- Was sufficient ice used?  Yes / No Temperature: 3-4° C Date: 12/12
- Were all bottles sealed in plastic bags? Yes /  No
- Did all bottles arrive intact?  Yes / No
- Were all bottles labeled correctly? (ID, Analysis, Dates, Times)  Yes / No
- Were the correct containers included for the tests required?  Yes / No
- Were all VOA vials checked for headspace?  NA / Yes / No
- Was sufficient volume of sample sent in all containers?  Yes / No
- Were correct preservatives used?  Yes / No
- Approved by: Bryant Date: 12/12  
If not approved: Name of person contacted \_\_\_\_\_ Date: \_\_\_\_\_

**ASSOCIATED LABORATORIES**  
QA REPORT FORM

QC Sample: LR 84948-313683

Matrix: SOLID

Prep. Date: 12/14/01

Analysis Date: 12/14/01

ID#'s in Batch: LR 84932, 84948, 84947, 84560, 84954

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

Reporting Units = mg/Kg

Test	Method	Sample Result	Spike Added	Matrix Spike	Matrix Spike Dup	%Rec MS	%Rec MSD	RPD
MERCURY	245.5 / 7471A	ND	0.73	0.76	0.79	104	108	3.9

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Duplicate  
%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

%REC LIMITS = 75 - 125  
RPD LIMITS = 20

**PREPARATION BLANK / LAB CONTROL SAMPLE RESULTS**

PREP BLK	LCS				
Value	Result	True	%Rec	L.Limit	H.Limit
ND	0.82	0.80	103	80%	120%

Value = Preparation Blank Value; ND = Not-Detected  
LCS Result = Lab Control Sample Result  
True = True Value of LCS  
L.Limit / H.Limit = LCS Control Limits

**ASSOCIATED LABORATORIES**  
**QA REPORT FORM (MS/MSD)**

QC Sample: LR 84948-313667 QC# 121401S2  
 Matrix: SOLID  
 Prep. Date: 12/14/01  
 Analysis Date: 12/17/01  
 Lab ID#'s in Batch: LR 84948, 84947, 84932, 84696

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

REPORTING UNITS = mg/Kg

TEST	Method	Sample Result	ND	Spike Added	Matrix Spike	Matrix Spike Dup	%Rec MS	%Rec MSD	RPD
Arsenic	* 6010B	0.50	U	9.59	0.00	1.81	0.0	18.9	NC
Selenium	* 6010B	1.53		9.59	7.70	9.58	64.3	83.9	21.8
Thallium	* 6010B	1.00	U	9.59	0.00	0.00	0.0	0.0	NC
Lead	* 6010B	47.30		19.20	55.0	67.4	40.1	104.7	20.3
Antimony	* 6010B	3.00	U	95.90	49.6	50.1	51.7	52.2	1.0
Barium	6010B	280.00		95.90	361.0	370.0	84.5	93.8	2.5
Beryllium	6010B	0.69		95.90	92.6	97.4	95.8	100.8	5.1
Cadmium	6010B	0.50	U	95.90	101.0	99.7	105.3	104.0	1.3
Chromium	6010B	13.70		95.90	109.0	109.0	99.4	99.4	0.0
Cobalt	6010B	17.00		95.90	107.0	106.0	93.8	92.8	0.9
Copper	6010B	33.20		95.90	128.0	128.0	98.9	98.9	0.0
Molybdenum	6010B	1.00	U	95.90	87.2	87.2	90.9	90.9	0.0
Nickel	6010B	10.70		95.90	102.0	101.0	95.2	94.2	1.0
Silver	6010B	0.50	U	95.90	93.7	92.9	97.7	96.9	0.9
Vanadium	6010B	72.10		95.90	164.0	163.0	95.8	94.8	0.6
Zinc	6010B	140.00		95.90	218.0	226.0	81.3	89.7	3.6

\* = Outside QC limits, possibly due to matrix interference.

NC = Not Calculated

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Duplicate

%REC-MS&MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

% REC LIMITS = 75 -125
RPD LIMITS = 20

**ASSOCIATED LABORATORIES**  
**LCS/MB REPORT FORM**

LCS Source(s) : QC21-LOT#QC2/91/1;QC7-LOT7A92/1

Element	Method	Result	TRUE	%Rec	L.Limit	H.Limit	Method Blank	
							MB	ND
Silver	6010B	100	100	100.0	80%	120%	0.50	U
Aluminum	6010B	218	200	109.0	80%	120%	20.00	U
Arsenic	6010B	185	200	92.5	80%	120%	0.50	U
Boron	6010B	204	200	102.0	80%	120%	5.00	U
Barium	6010B	211	200	105.5	80%	120%	1.00	U
Beryllium	6010B	208	200	104.0	80%	120%	0.50	U
Cadmium	6010B	232	200	116.0	80%	120%	0.50	U
Cobalt	6010B	212	200	106.0	80%	120%	0.50	U
Chromium	6010B	217	200	108.5	80%	120%	1.00	U
Copper	6010B	207	200	103.5	80%	120%	1.00	U
Iron	6010B	211	200	105.5	80%	120%	5.00	U
Manganese	6010B	225	200	112.5	80%	120%	1.00	U
Molybdenum	6010B	207	200	103.5	80%	120%	1.00	U
Nickel	6010B	214	200	107.0	80%	120%	1.50	U
Lead	6010B	212	200	106.0	80%	120%	0.50	U
Antimony	6010B	212	200	106.0	80%	120%	3.00	U
Selenium	6010B	189	200	94.5	80%	120%	0.50	U
Thallium	6010B	198	200	99.0	80%	120%	1.00	U
Vanadium	6010B	213	200	106.5	80%	120%	0.50	U
Zinc	6010B	217	200	108.5	80%	120%	5.00	U

Notes : RESULT = Sample Result; TRUE = True Value; %Rec = 100\*Result/True

L.LIMIT / H.LIMIT = Low / High Control Limits

MB = Method Blank; ND = " U " for Non- Detected

**ASSOCIATED LABORATORIES**  
QA REPORT FORM

Method : EPA 8081  
 QC Sample: 84932-313606  
 Matrix: SOLID  
 Date Analyzed : 01/01/02  
 Batch Date: 12/21/01 (pest 122101 s)  
 Applies to: LR 84932

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

REPORTING UNITS = mg/Kg

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spk. Dup	%Rec MS	%Rec MSD	RPD	QC Limits	
								RPD	%REC
gamma-BHC (Lindane)	ND	0.100	0.098	0.104	97.8	103.9	6.1	35	50-130
Heptachlor	ND	0.100	0.110	0.116	109.6	116.1	5.8	35	50-130
Aldrin	ND	0.100	0.094	0.099	94.5	99.2	4.9	35	50-130
Dieldrin	ND	0.100	0.102	0.106	101.9	106.3	4.3	35	50-130
Endrin	ND	0.100	0.105	0.110	105.0	109.7	4.4	35	50-130
DDT	ND	0.100	0.109	0.113	108.6	113.5	4.4	35	50-130

**\* Method Interference**

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Dup

%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

**LAB CONTROLLED SPIKE RECOVERY / METHOD BLANK**

Test	Spike Added	LCS Result	LCS % Rec	Limits % Rec
gamma-BHC (Lindane)	0.10	0.090	90.1	50-130
Heptachlor	0.10	0.100	100.0	50-130
Aldrin	0.10	0.088	88.5	50-130
Dieldrin	0.10	0.102	102.0	50-130
Endrin	0.10	0.106	105.6	50-130
DDT	0.10	0.110	110.0	50-130

Method Blank = All ND

# ASSOCIATED LABORATORIES

## QA REPORT FORM

Method : EPA 8141  
 QC Sample: 84932-313606  
 Matrix: Solid  
 Analysis Date 12/27/01  
 Batch Date: 122001 (122001s)  
 Applies to: LR 84932

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT

REPORTING UNITS = mg/Kg

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spk. Dup	%Rec MS	%Rec MSD	RPD	QC Limits	
								RPD	%REC
Mevinphos, cis	ND	0.400	0.253	0.256	63.3	63.9	0.9	35	45-140
Ethoprop	ND	0.400	0.213	0.257	53.2	64.3	19.0	35	45-140
Diazinon	ND	0.400	0.244	0.307	61.1	76.7	22.8	35	45-140
Ronnel	ND	0.400	0.245	0.306	61.4	76.5	22.0	35	45-140
Chlorpyrifos	ND	0.400	0.246	0.325	61.6	81.3	27.5	35	45-140
Methyl Parathion	ND	0.400	0.250	0.324	62.5	80.9	25.6	35	45-140
Fenthion	ND	0.400	0.248	0.320	62.1	80.1	25.3	35	45-140
Bolstar	ND	0.400	0.250	0.327	62.5	81.8	26.7	35	45-140

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Dup

%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

### LAB CONTROLLED SPIKE (LCS) / LAB CONTROLLED SPIKE DUPLICATE (LCSD) RECOVERY

Test	Spike Added	LCS Result	% Rec LCS	QC Limits
Mevinphos, cis	0.400	0.318	79.5	55-140
Ethoprop	0.400	0.341	85.2	55-140
Diazinon	0.400	0.344	85.9	55-140
Ronnel	0.400	0.350	87.5	55-140
Chlorpyrifos	0.400	0.348	87.0	55-140
Methyl Parathion	0.400	0.338	84.5	55-140
Fenthion	0.400	0.327	81.7	55-140
Bolstar	0.400	0.326	81.5	55-140

METHOD BLANK - ALL ND

**ASSOCIATED LABORATORIES**  
QA REPORT FORM

Method : EPA 8151  
 QC Sample: LR 84932-313606  
 Matrix: SOLID  
 Date Analyzed : 01/04/02  
 Batch Date: 12/18/01 (herb 121801 s)  
 Applies to: LR 84932

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

REPORTING UNITS = mg/Kg

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spk. Dup	%Rec MS	%Rec MSD	RPD	QC Limits	
								RPD	%REC
2,4-D	ND	0.2	0.191	0.208	95.3	104.1	8.9	35	45-145
2,4,5-TP (Silvex)	ND	0.2	0.147	0.157	73.3	78.3	6.7	35	50-140

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Dup

%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

**LAB CONTROLLED SPIKE RECOVERY / METHOD BLANK**

Test	Spike Added	LCS Result	LCS % Rec	Limits % Rec
2,4-D	0.2	0.199	99.7	55-140
2,4,5-TP (Silvex)	0.2	0.157	78.3	60-140

Method Blank = All ND

**ASSOCIATED LABORATORIES**  
LCS REPORT FORM

QC Sample: LCS / LCSD - soil samples

Method : 8260

Analysis Date: 12/16/01

Applies to: LR 84932

REPORTING UNITS = ug/Kg

**Lab Controlled Spike / Lab Controlled Spike Duplicate**

Test	Sample Result	Spike Added	LCS Spike	LCS Spk. Dup	%Rec LCS	%Rec LCS D	% RPD	QC Limits	
								RPD	%REC
1,1-Dichloroethene	ND	50.0	47.72	48.81	95	98	2	22	59-172
MTBE	ND	50.0	51.40	51.61	103	103	0	24	62-137
Benzene	ND	50.0	50.42	54.14	101	108	7	24	62-137
Trichloroethene	ND	50.0	59.38	60.10	119	120	1	21	66-142
Toluene	ND	50.0	53.63	50.98	107	102	5	21	59-139
Chlorobenzene	ND	50.0	50.36	49.87	101	100	1	21	60-133

**Method Blank = All ND**

*ND = Not Detected*

*RPD = Relative Percent Difference of LCS and LCS Dup.*

*%REC-MS & MSD = Percent Recovery of LCS & LCS Dup.*

# ASSOCIATED LABORATORIES

## QA REPORT FORM

Method : EPA 8270  
 QC Sample: 84932-605 MS  
 Matrix: Soil  
 Date Analyzed : 12/23/01  
 Date Extracted : 12/19/01  
 Applies to: LR 84932

REPORTING UNITS = ug/Kg

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spike Dup.	%Rec MS	%Rec MSD	RPD	QC Limits	
								RPD	%REC
Phenol	ND	50	41	43	82	86	5	35	26-125
2-Chlorophenol	ND	50	34	33	68	66	3	50	25-125
1,4-Dichlorobenzene	ND	50	41	39	82	78	5	27	28-104
n-Nitroso-di-propylamine	0.2	50	38	36	76	72	5	38	41-126
1,2,4-Trichlorobenzene	ND	50	43	40	86	80	7	23	38-107
4-Chloro-3-methylphenol	ND	50	49	48	98	96	2	33	26-103
Acenaphthene	ND	50	40	40	80	80	0	19	31-137
4-Nitrophenol	0.1	50	44	49	88	98	11	50	11-114
2,4-Dinitrotoluene *	ND	50	45	45	90	90	0	47	28-89
Pentachlorophenol	ND	50	40	38	80	76	5	47	17-109
Pyrene	ND	50	38	39	76	78	3	36	35-142

### LCS RECOVERY / METHOD BLANK

Test	Spike Added	LCS Result	LCS % Rec	QC Limits %REC
Phenol	50	41	82	26-125
2-Chlorophenol	50	32	64	25-125
1,4-Dichlorobenzene	50	37	74	28-104
n-Nitroso-di-n-propylamine	50	49	98	41-126
1,2,4-Trichlorobenzene	50	38	76	38-107
4-Chloro-3-methylphenol	50	43	86	26-103
Acenaphthene	50	33	66	31-137
4-Nitrophenol	50	42	84	11-114
2,4-Dinitrotoluene	50	40	80	28-89
Pentachlorophenol	50	35	70	17-109
Pyrene	50	69	138	35-142

Outside QC Limits  
 Method Blank = All ND

**ASSOCIATED LABORATORIES**

**SURROGATE RECOVERY**

**Lab Request / Order: 84932**

Analysis Date: 01/01/02

Matrix: SOIL

Lab Request / Order	EPA 8081 / 608	
	TCMX - % Rec.	DCB - % Rec.
QC Limits	50-125	55-130
<i>Blank</i>	75	106
<i>LCS</i>	74	101
<i>84932-605</i>	74	102
<i>84932-606</i>	70	108
<i>84932-606 MS</i>	83	100
<i>84932-606 MSD</i>	89	104
<i>84932-607</i>	70	109

*TCMX = Tetrachloro-m-xylene*

*DCB = Decachlorobiphenyl*

**ASSOCIATED LABORATORIES**

**SURROGATE RECOVERY**

***Lab Request / Order: 84932***

Analysis Date: 12/27/01

Matrix: SOLID

	<b>EPA 8141</b>	
<b>Lab Request / Order</b>	<b>TBP - % Rec.</b>	<b>TPP - % Rec.</b>
<b>QC Limits</b>	<b>50-140</b>	<b>50-145</b>
<i>Blank</i>	89	99
<i>LCS</i>	93	85
<i>84932-605</i>	75	83
<i>84932-606</i>	77	87
<i>84932-606 MS</i>	65	62
<i>84932-606 MSD</i>	80	87
<i>84932-607</i>	79	75

# ASSOCIATED LABORATORIES

## 8151 SURROGATE RECOVERY

**Lab Request / Order: 84932**

Analysis Date: 01/04/02

Matrix: SOLID

	<b>EPA 8151</b>
<b>Lab Request / Order</b>	<b>DCPP - % Rec.</b>
<b>QC Limits</b>	<b>50-125</b>
<i>Blank</i>	90
<i>LCS</i>	102
<i>84932-605</i>	103
<i>84932-606</i>	85
<i>84932-606 MS</i>	102
<i>84932-606 MSD</i>	100
<i>84932-607</i>	101

**ASSOCIATED LABORATORIES**  
EPA 8260/624 - SURROGATE RECOVERY

**Lab Request / Order: 84932**

Analysis Date: 12/16/01

Matrix: SOLID

Sample No.(Order)	(DCA)	(DBF)	(TOL)	(BFB)
MB #5 (12/16/01)	125	92	103	119
LCS Soil (12/16/01)	102	104	100	112
LCSD Soil (12/16/01)	111	108	102	114
84932-605	126	97	101	116
84932-606	118	93	105	115
84932-607	124	0*	104	118

**\*Outside QC limits**

(DBF) = Dibromofluoromethane

(DCA) = 1,2-Dichloroethane-d4

(TOL) = Toluene-d8

(BFB) = p-Bromofluorobenzene

QC Limits: 70-135
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ASSOCIATED LABORATORIES  
EPA 8270 - SURROGATE RECOVERY

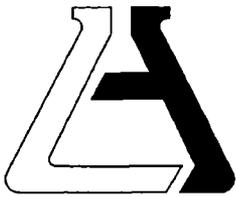
Lab Request / Order: 84932

Analysis Date: 12/23/01

Matrix: SOLID

Sample No.(Order)	2,4,6-Tribromophenol	2-Fluorobiphenyl	2-Fluorophenol	Nitrobenzene-d5	Phenol-d5	Terphenyl-d14
QC Limits	17-122	30-115	25-121	13-120	24-113	18-137
MB 84932	50	54	51	59	63	61
LCS 84932	35	36	32	38	40	37
84932-605	57	66	59	70	71	67
84932-605 MS	75	80	63	84	75	82
84932-605 MSD	77	78	64	80	79	84
84932-606	63	77	68	81	80	76
84932-607	0*	70	0*	77	12*	76

\*Outside QC limits



**ASSOCIATED LABORATORIES**

806 North Batavia - Orange, California 92868 - 714/771-6900

FAX 714/538-1209

CLIENT Panacea, Inc. (8771)  
ATTN: Mohammad Estiri  
14700 Firestone Blvd.  
Suite 118  
La Mirada, CA 90638

LAB REQUEST 84970

REPORTED 12/27/2001

RECEIVED 12/13/2001

PROJECT C00-266  
B & B Superfund Site

SUBMITTER Client

COMMENTS "J" denotes value between MDL and DLR.

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods as indicated on the report. This cover letter is an integral part of the final report.

Order No.

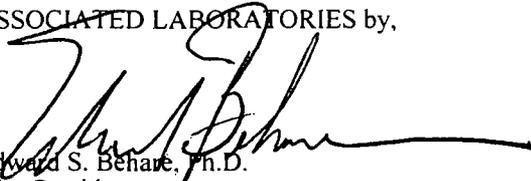
313767

Client Sample Identification

266-12-12-01-/Bin 1247

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

ASSOCIATED LABORATORIES by,

  
Edward S. Behare, Ph.D.  
Vice President

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 30 days from date reported.

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TESTING & CONSULTING  
Chemical  
Microbiological  
Environmental

Order #: 313767

Client: Panacea, Inc.

Matrix: WATER

Client Sample ID: 266-12-12-01-/Bin 1247

Date Sampled: 12/12/2001

Time Sampled:

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>610 Polynuclear Aromatic Hydrocarbons by HPLC</b>					
Acenaphthene	ND	1	18.0	ug/L	12/19/01 JG
Acenaphthylene	ND	1	23.0	ug/L	12/19/01 JG
Anthracene	ND	1	6.6	ug/L	12/19/01 JG
Benzo(a)anthracene	ND	1	0.13	ug/L	12/19/01 JG
Benzo(a)pyrene	ND	1	0.23	ug/L	12/19/01 JG
Benzo(b)fluoranthene	ND	1	0.18	ug/L	12/19/01 JG
Benzo(ghi)perylene	ND	1	0.76	ug/L	12/19/01 JG
Benzo(k)fluoranthene	ND	1	0.17	ug/L	12/19/01 JG
Chrysene	ND	1	1.5	ug/L	12/19/01 JG
Dibenzo(a,h)anthracene	ND	1	0.3	ug/L	12/19/01 JG
Fluoranthene	ND	1	2.1	ug/L	12/19/01 JG
Fluorene	ND	1	2.1	ug/L	12/19/01 JG
Indeno(1,2,3-cd)pyrene	ND	1	0.43	ug/L	12/19/01 JG
Naphthalene	ND	1	18.0	ug/L	12/19/01 JG
Phenanthrene	ND	1	6.4	ug/L	12/19/01 JG
Pyrene	ND	1	2.7	ug/L	12/19/01 JG

**081A - Organochlorine Pesticides by GC**

Aldrin	ND	1	0.03	ug/L	12/25/01 JG
Alpha BHC	ND	1	0.03	ug/L	12/25/01 JG
Beta BHC	ND	1	0.05	ug/L	12/25/01 JG
Chlordane	ND	1	0.12	ug/L	12/25/01 JG
DDD	ND	1	0.06	ug/L	12/25/01 JG
DDE	ND	1	0.04	ug/L	12/25/01 JG
DDT	ND	1	0.05	ug/L	12/25/01 JG
Delta BHC	ND	1	0.07	ug/L	12/25/01 JG
Dieldrin	ND	1	0.05	ug/L	12/25/01 JG
Endosulfan I	ND	1	0.06	ug/L	12/25/01 JG
Endosulfan II	ND	1	0.05	ug/L	12/25/01 JG
Endosulfan sulfate	ND	1	0.05	ug/L	12/25/01 JG
Endrin	ND	1	0.06	ug/L	12/25/01 JG
Endrin aldehyde	ND	1	0.06	ug/L	12/25/01 JG

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313767

Client: Panacea, Inc.

Matrix: WATER

Client Sample ID: 266-12-01-/Bin 1247

Date Sampled: 12/12/2001

Time Sampled:

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8081A - Organochlorine Pesticides by GC</b>					
Heptachlor	ND	1	0.03	ug/L	12/25/01 JG
Heptachlor epoxide	ND	1	0.04	ug/L	12/25/01 JG
Lindane	ND	1	0.17	ug/L	12/25/01 JG
Methoxychlor	ND	1	0.38	ug/L	12/25/01 JG
Toxaphene	ND	1	3.54	ug/L	12/25/01 JG
<b>8141 Organophosphate Pesticides</b>					
Azinophos Methyl (Guthion)	ND	1	15.0	ug/L	12/27/01 JG
Bolstar	ND	1	1.5	ug/L	12/27/01 JG
Chlorpyrifos (Dursban)	ND	1	3.0	ug/L	12/27/01 JG
Coumaphos	ND	1	15	ug/L	12/27/01 JG
Demeton (Systox)-O	ND	1	2.5	ug/L	12/27/01 JG
Demeton (Systox)-S	ND	1	2.5	ug/L	12/27/01 JG
Diazinon	ND	1	6.0	ug/L	12/27/01 JG
Dichlorvos	ND	1	1.0	ug/L	12/27/01 JG
Disulfoton (Disyston)	ND	1	2.0	ug/L	12/27/01 JG
Disulfoton Sulfone	ND	1	2.0	ug/L	12/27/01 JG
Ethoprop	ND	1	2.5	ug/L	12/27/01 JG
Fensulfothion	ND	1	15.0	ug/L	12/27/01 JG
Fenthion	ND	1	1.0	ug/L	12/27/01 JG
Malathion	ND	1	0.3	ug/L	12/27/01 JG
Merphos	ND	1	2.5	ug/L	12/27/01 JG
Mevinphos (Phosdrin)	ND	1	3.0	ug/L	12/27/01 JG
Naled (Dibrom)	ND	1	1.0	ug/L	12/27/01 JG
Parathion Ethyl	ND	1	0.3	ug/L	12/27/01 JG
Parathion Methyl	ND	1	0.3	ug/L	12/27/01 JG
Phorate (Thimet)	ND	1	1.5	ug/L	12/27/01 JG
Ronnel	ND	1	3.0	ug/L	12/27/01 JG
Stirophos (Tetrachlorvinphos)	ND	1	50.0	ug/L	12/27/01 JG
Tokuthion (Protothiofos)	ND	1	5.0	ug/L	12/27/01 JG
Trichloronate	ND	1	1.5	ug/L	12/27/01 JG

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313767

Client: Panacea, Inc.

Matrix: WATER

Client Sample ID: 266-12-12-01-/Bin 1247

Date Sampled: 12/12/2001

Time Sampled:

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>3151A Phenoxy Acid Herbicides</b>					
2,4,5-T	ND	1	2.0	ug/L	12/21/01 JG
2,4,5-TP (Silvex)	ND	1	1.7	ug/L	12/21/01 JG
2,4-D	ND	1	12	ug/L	12/21/01 JG
2,4-DB	ND	1	9.1	ug/L	12/21/01 JG
Dalapon	ND	1	50.8	ug/L	12/21/01 JG
Dicamba	ND	1	2.7	ug/L	12/21/01 JG
Dichloroprop	ND	1	6.5	ug/L	12/21/01 JG
Dinoseb	77.4	1	0.7	ug/L	12/21/01 JG
MCPA	ND	1	2490	ug/L	12/21/01 JG
MCP	ND	1	1920	ug/L	12/21/01 JG

**260B Volatile Organic Compounds**

1,1,1,2-Tetrachloroethane	ND	1	5	ug/L	12/17/01 DP
1,1,1-Trichloroethane	ND	1	5	ug/L	12/17/01 DP
1,1,2,2-Tetrachloroethane	ND	1	5	ug/L	12/17/01 DP
1,1,2-Trichloroethane	ND	1	5	ug/L	12/17/01 DP
1,1,2-Trichlorotrifluoroethane	ND	1	5	ug/L	12/17/01 DP
1,1-Dichloroethane	ND	1	5	ug/L	12/17/01 DP
1,1-Dichloroethene	ND	1	5	ug/L	12/17/01 DP
1,1-Dichloropropene	ND	1	5	ug/L	12/17/01 DP
1,2,3-Trichlorobenzene	ND	1	5	ug/L	12/17/01 DP
1,2,3-Trichloropropane	3.8 J	1	5	ug/L	12/17/01 DP
1,2,4-Trichlorobenzene	ND	1	5	ug/L	12/17/01 DP
1,2,4-Trimethylbenzene	ND	1	5	ug/L	12/17/01 DP
1,2-Dibromo-3-chloropropane	2.3 J	1	5	ug/L	12/17/01 DP
1,2-Dibromoethane	1.4 J	1	5	ug/L	12/17/01 DP
1,2-Dichlorobenzene	ND	1	5	ug/L	12/17/01 DP
1,2-Dichloroethane	ND	1	5	ug/L	12/17/01 DP
1,2-Dichloropropane	12	1	5	ug/L	12/17/01 DP
1,3,5-Trimethylbenzene	ND	1	5	ug/L	12/17/01 DP
1,3-Dichlorobenzene	ND	1	5	ug/L	12/17/01 DP
1,3-Dichloropropane	ND	1	5	ug/L	12/17/01 DP
1,4-Dichlorobenzene	ND	1	5	ug/L	12/17/01 DP
1,4-Dioxane	ND	1	57	ug/L	12/17/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313767

Client: Panacea, Inc.

Matrix: WATER

Client Sample ID: 266-12-12-01-/Bin 1247

Date Sampled: 12/12/2001

Time Sampled:

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
1-Chlorohexane	ND	1	5	ug/L	12/17/01 DP
2,2-Dichloropropane	ND	1	5	ug/L	12/17/01 DP
2-Butanone (MEK)	ND	1	100	ug/L	12/17/01 DP
2-Chloroethyl vinyl ether	ND	1	5	ug/L	12/17/01 DP
2-Chlorotoluene	ND	1	5	ug/L	12/17/01 DP
2-Hexanone	ND	1	20	ug/L	12/17/01 DP
4-Chlorotoluene	ND	1	5	ug/L	12/17/01 DP
4-Methyl -2- Pentanone	ND	1	10	ug/L	12/17/01 DP
Acetone	ND	1	100	ug/L	12/17/01 DP
Acetonitrile	ND	1	50	ug/L	12/17/01 DP
Acrolein	ND	1	200	ug/L	12/17/01 DP
Acrylonitrile	ND	1	10	ug/L	12/17/01 DP
Allyl chloride	ND	1	5	ug/L	12/17/01 DP
Benzene	ND	1	1	ug/L	12/17/01 DP
Benzyl chloride	ND	1	5	ug/L	12/17/01 DP
Bromobenzene	ND	1	5	ug/L	12/17/01 DP
Bromochloromethane	ND	1	5	ug/L	12/17/01 DP
Bromodichloromethane	ND	1	5	ug/L	12/17/01 DP
Bromoform	ND	1	5	ug/L	12/17/01 DP
Bromomethane	ND	1	5	ug/L	12/17/01 DP
Carbon Disulfide	ND	1	5	ug/L	12/17/01 DP
Carbon tetrachloride	ND	1	5	ug/L	12/17/01 DP
Chlorobenzene	ND	1	5	ug/L	12/17/01 DP
Chloroethane	ND	1	5	ug/L	12/17/01 DP
Chloroform	ND	1	5	ug/L	12/17/01 DP
Chloromethane	ND	1	5	ug/L	12/17/01 DP
Dibromochloromethane	ND	1	5	ug/L	12/17/01 DP
Dibromomethane	ND	1	5	ug/L	12/17/01 DP
Dichlorodifluoromethane	ND	1	5	ug/L	12/17/01 DP
Ethyl benzene	ND	1	5	ug/L	12/17/01 DP
Ethyl methacrylate	ND	1	50	ug/L	12/17/01 DP
Hexachlorobutadiene	ND	1	5	ug/L	12/17/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313767

Client: Panacea, Inc.

Matrix: WATER

Client Sample ID: 266-12-12-01-/Bin 1247

Date Sampled: 12/12/2001

Time Sampled:

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8260B Volatile Organic Compounds</b>					
Iodomethane	ND	1	5	ug/L	12/17/01 DP
Isopropylbenzene (Cumene)	ND	1	5	ug/L	12/17/01 DP
Methacrylonitrile	ND	1	35	ug/L	12/17/01 DP
Methyl methacrylate	ND	1	5	ug/L	12/17/01 DP
Methyl-tert-butylether (MTBE)	ND	1	1	ug/L	12/17/01 DP
Methylene chloride	ND	1	5	ug/L	12/17/01 DP
Naphthalene	ND	1	5	ug/L	12/17/01 DP
Pentachloroethane	ND	1	5	ug/L	12/17/01 DP
Propionitrile	ND	1	100	ug/L	12/17/01 DP
Styrene	ND	1	5	ug/L	12/17/01 DP
Tetrachloroethene	ND	1	5	ug/L	12/17/01 DP
Toluene	ND	1	5	ug/L	12/17/01 DP
Trichloroethene	ND	1	5	ug/L	12/17/01 DP
Trichlorofluoromethane	ND	1	5	ug/L	12/17/01 DP
Vinyl acetate	ND	1	50	ug/L	12/17/01 DP
Vinyl chloride	ND	1	5	ug/L	12/17/01 DP
Xylenes, total	ND	1	5	ug/L	12/17/01 DP
cis-1,2-Dichloroethene	ND	1	5	ug/L	12/17/01 DP
cis-1,3-Dichloropropene	ND	1	5	ug/L	12/17/01 DP
cis-1,4-Dichloro-2-butene	ND	1	20	ug/L	12/17/01 DP
m and p-Xylene	ND	1	5	ug/L	12/17/01 DP
n-Butylbenzene	ND	1	5	ug/L	12/17/01 DP
n-Propylbenzene	ND	1	5	ug/L	12/17/01 DP
o-Xylene	ND	1	5	ug/L	12/17/01 DP
p-Isopropyltoluene	ND	1	5	ug/L	12/17/01 DP
sec-Butylbenzene	ND	1	5	ug/L	12/17/01 DP
tert-Butylbenzene	ND	1	5	ug/L	12/17/01 DP
trans-1,2-Dichloroethene	ND	1	5	ug/L	12/17/01 DP
trans-1,3-Dichloropropene	ND	1	5	ug/L	12/17/01 DP
trans-1,4-Dichloro-2-butene	ND	1	20	ug/L	12/17/01 DP

**8270C Acid/Base/Neutral Extractables**

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report

Order #: 313767

Client: Panacea, Inc.

Matrix: WATER

Client Sample ID: 266-12-12-01-/Bin 1247

Date Sampled: 12/12/2001

Time Sampled:

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8270C Acid/Base/Neutral Extractables</b>					
1,2,4-Trichlorobenzene	ND	1	10	ug/L	12/23/01 DP
1,2-Dichlorobenzene	ND	1	10	ug/L	12/23/01 DP
1,3-Dichlorobenzene	ND	1	10	ug/L	12/23/01 DP
1,4-Dichlorobenzene	ND	1	10	ug/L	12/23/01 DP
2,4,5-Trichlorophenol	ND	1	50	ug/L	12/23/01 DP
2,4,6-Trichlorophenol	ND	1	50	ug/L	12/23/01 DP
2,4-Dichlorophenol	ND	1	10	ug/L	12/23/01 DP
2,4-Dimethylphenol	ND	1	10	ug/L	12/23/01 DP
2,4-Dinitrophenol	ND	1	50	ug/L	12/23/01 DP
2,4-Dinitrotoluene	ND	1	10	ug/L	12/23/01 DP
2,6-Dinitrotoluene	ND	1	10	ug/L	12/23/01 DP
2-Chloronaphthalene	ND	1	10	ug/L	12/23/01 DP
2-Chlorophenol	ND	1	10	ug/L	12/23/01 DP
2-Methylnaphthalene	ND	1	10	ug/L	12/23/01 DP
2-Methylphenol	ND	1	10	ug/L	12/23/01 DP
2-Nitroaniline	ND	1	50	ug/L	12/23/01 DP
2-Nitrophenol	ND	1	10	ug/L	12/23/01 DP
3,3-Dichlorobenzidine	ND	1	10	ug/L	12/23/01 DP
3-Nitroaniline	ND	1	50	ug/L	12/23/01 DP
4,6-Dinitro-2-methylphenol	ND	1	50	ug/L	12/23/01 DP
4-Bromophenyl-phenylether	ND	1	10	ug/L	12/23/01 DP
4-Chloro-3-methylphenol	ND	1	10	ug/L	12/23/01 DP
4-Chloroaniline	ND	1	10	ug/L	12/23/01 DP
4-Chlorophenyl-phenylether	ND	1	10	ug/L	12/23/01 DP
4-Methylphenol	ND	1	10	ug/L	12/23/01 DP
4-Nitroaniline	ND	1	50	ug/L	12/23/01 DP
4-Nitrophenol	ND	1	50	ug/L	12/23/01 DP
Acenaphthene	ND	1	10	ug/L	12/23/01 DP
Acenaphthylene	ND	1	10	ug/L	12/23/01 DP
Anthracene	ND	1	10	ug/L	12/23/01 DP
Benzidine	ND	1	50	ug/L	12/23/01 DP
Benzo(a)anthracene	ND	1	10	ug/L	12/23/01 DP
Benzo(a)pyrene	ND	1	10	ug/L	12/23/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313767

Client: Panacea, Inc.

Matrix: WATER

Client Sample ID: 266-12-12-01-/Bin 1247

Date Sampled: 12/12/2001

Time Sampled:

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>8270C Acid/Base/Neutral Extractables</b>					
Benzo(b)fluoranthene	ND	1	10	ug/L	12/23/01 DP
Benzo(g,h,i)perylene	ND	1	10	ug/L	12/23/01 DP
Benzo(k)fluoranthene	ND	1	10	ug/L	12/23/01 DP
Benzoic Acid	ND	1	10	ug/L	12/23/01 DP
Benzyl alcohol	ND	1	10	ug/L	12/23/01 DP
Butylbenzylphthalate	ND	1	10	ug/L	12/23/01 DP
Chrysene	ND	1	10	ug/L	12/23/01 DP
Di-n-butylphthalate	ND	1	10	ug/L	12/23/01 DP
Di-n-octylphthalate	ND	1	10	ug/L	12/23/01 DP
Dibenz(a,h)anthracene	ND	1	10	ug/L	12/23/01 DP
Dibenzofuran	ND	1	10	ug/L	12/23/01 DP
Diethylphthalate	ND	1	10	ug/L	12/23/01 DP
Dimethylphthalate	ND	1	10	ug/L	12/23/01 DP
Fluoranthene	ND	1	10	ug/L	12/23/01 DP
Fluorene	ND	1	10	ug/L	12/23/01 DP
Hexachlorobenzene	ND	1	10	ug/L	12/23/01 DP
Hexachlorobutadiene	ND	1	10	ug/L	12/23/01 DP
Hexachlorocyclopentadiene	ND	1	10	ug/L	12/23/01 DP
Hexachloroethane	ND	1	10	ug/L	12/23/01 DP
Indeno(1,2,3-c,d)pyrene	ND	1	10	ug/L	12/23/01 DP
Isophorone	ND	1	10	ug/L	12/23/01 DP
N-Nitroso-di-n-propylamine	ND	1	10	ug/L	12/23/01 DP
N-Nitrosodiphenylamine	ND	1	10	ug/L	12/23/01 DP
Naphthalene	ND	1	10	ug/L	12/23/01 DP
Nitrobenzene	ND	1	10	ug/L	12/23/01 DP
Pentachlorophenol	ND	1	50	ug/L	12/23/01 DP
Phenanthrene	ND	1	10	ug/L	12/23/01 DP
Phenol	ND	1	10	ug/L	12/23/01 DP
Pyrene	ND	1	10	ug/L	12/23/01 DP
bis(2-Chloroethoxy)methane	ND	1	10	ug/L	12/23/01 DP
bis(2-Chloroethyl)ether	ND	1	10	ug/L	12/23/01 DP
bis(2-Chloroisopropyl) ether	ND	1	10	ug/L	12/23/01 DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

ASSOCIATED LABORATORIES Analytical Results Report



Order #: 313767

Client: Panacea, Inc.

Matrix: WATER

Client Sample ID: 266-12-12-01-/Bin 1247

Date Sampled: 12/12/2001

Time Sampled:

Sampled By:

Analyte

Result

DF

DLR

Units

Date/Analyst

8270C Acid/Base/Neutral Extractables

bis(2-Ethylhexyl)phthalate

ND

1

10

ug/L

12/23/01

DP

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor

**ASSOCIATED LABORATORIES** Analytical Results Report





# ASSOCIATED LABORATORIES

806 N. Batavia • Orange, CA 92868  
(714) 771-6900 • FAX: (714) 538-1209

84970

## CHAIN OF CUSTODY RECORD

Date 12-12-01 Page 1 of 2

CLIENT Panacea, Inc.  
 ADDRESS 14700 Firestone Blvd.  
La Mirada CA 90638  
 PROJECT NAME  
B. B superfund site COO-266

PROJECT MANAGER  
Mohammad Est. r.  
 PHONE NUMBER (714) 228-1286  
 SAMPLERS: (Signature)

Samples Intact Yes  No   
 County Seals Intact Yes  No   
 Sample Ambient  Cooled  Frozen   
 Same Day  24 Hr.   
 Regular  48 Hr.

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE			NO OF CNTNRS	SUSP CONTAM.	TESTS REQUIRED
				WATER	AIR	SOLID			
<del>266-12-12-01-8144</del>	<del>Bin 1247</del>	<del>12-12-01</del>		<input checked="" type="checkbox"/>					<del>8144</del>
266-12-12-01-8141	Bin 1247	12-12-01	1:16	<input checked="" type="checkbox"/>			1		8141
266-12-12-01-8141	QC / Bin 1247	12-12-01	1:23	<input checked="" type="checkbox"/>			1		8141
266-12-12-01-8260	Bin 1247	" "	1:06	<input checked="" type="checkbox"/>			2		8260
266-12-12-01-8260	QC / Bin 1247	" "	1:05	<input checked="" type="checkbox"/>			2		8260
266-12-12-01-8081	Bin 1247	" "	1:09	<input checked="" type="checkbox"/>			1		8081
266-12-12-01-8081	QC / Bin 1247	" "	1:09	<input checked="" type="checkbox"/>			1		8081
266-12-12-01-8270	Bin 1247	" "	1:25	<input checked="" type="checkbox"/>			1		8270
266-12-12-01-8270	QC / Bin 1247	" "	1:20	<input checked="" type="checkbox"/>			1		8270
266-12-12-01-610	Bin 1247	" "	1:32	<input checked="" type="checkbox"/>			1		610
266-12-12-01-610	QC / Bin 1247	" "	1:26	<input checked="" type="checkbox"/>			1		610

Relinquished by: (Signature)  
[Signature]  
 Relinquished by: (Signature)

Received by: (Signature)  
[Signature]  
 Received by Laboratory for analysis:  
 (Signature)

Date/Time  
12/14/01  
 Date/Time

I hereby authorize the performance of the above indicated work.

[Signature]  
 DISTRIBUTION: White with report. Yellow to AL, Pink to Courier

Special Instructions:  
12-14 8:20



# ASSOCIATED LABORATORIES

806 N. Batavia • Orange, CA 92868  
(714) 771-6900 • FAX: (714) 538-1209

84970

## CHAIN OF CUSTODY RECORD

Date 12-12-01 Page 2 of 2

CLIENT <u>Panalla, Inc</u>	PROJECT MANAGER <u>Mohammad Est. r.</u>	Samples Intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> County Seals Intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Sample Ambient <input type="checkbox"/> Cooled <input checked="" type="checkbox"/> Frozen <input type="checkbox"/> Same Day <input checked="" type="checkbox"/> 24 Hr. <input type="checkbox"/> Regular <input checked="" type="checkbox"/> 48 Hr. <input type="checkbox"/>
ADDRESS <u>14700 Firestone Blvd</u> <u>LA Miriada, CA 90638</u>	PHONE NUMBER <u>(714) 228-1286</u>	
PROJECT NAME <u>B&amp;B Superfund C00-266</u>	SAMPLERS: (Signature)	

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE			NO OF CNTNRS.	SUSP. CONTAM	TESTS REQUIRED
				WATER	AIR	SOLID			
266-12-1201-8151	Bin 1247	12-12-01	1:34	✓			1		8151
266-12-1201-8151QC	Bin 1247	12-12-01	1:38	✓			1		8151

Relinquished by: (Signature) <u>[Signature]</u>	Received by: (Signature) <u>[Signature]</u>	Date/Time <u>12/13/01 14:15</u>	I hereby authorize the performance of the above indicated work.  <u>[Signature]</u>
Relinquished by: (Signature)	Received by Laboratory for analysis: (Signature)	Date/Time	

Special Instructions:

DISTRIBUTION: White with report. Yellow to AL, Pink to Courier

# ASSOCIATED LABORATORIES

## QA REPORT FORM

Method : EPA 608 / 8081  
 QC Sample: LR 84970-313768  
 Matrix: WATER  
 Date Analyzed : 12/25/01  
 Batch Date: 12/17/01 (pest 121701 w)  
 Applies to: LR 84970, 85073

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT

REPORTING UNITS = ug/L

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spk. Dup	%Rec MS	%Rec MSD	RPD	QC Limits	
								RPD	%REC
gamma-BHC (Lindane)	ND	2.500	2.336	2.911	93.4	116.4	21.9	35	55-130
Heptachlor	ND	2.500	2.338	3.135	93.5	125.4	29.1	35	55-130
Aldrin	ND	2.500	2.110	2.663	84.4	106.5	23.2	35	55-130
Dieldrin	ND	2.500	2.352	3.060	94.1	122.4	26.2	35	55-130
Endrin	ND	2.500	2.209	2.985	88.4	119.4	29.9	35	55-130
DDT	ND	2.500	2.035	2.953	81.4	118.1	36.8	35	55-130

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Dup

%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

### LAB CONTROLLED SPIKE RECOVERY / METHOD BLANK

Test	Spike Added	LCS Result	LCS % Rec	Limits % Rec
gamma-BHC (Lindane)	2.500	2.709	108.4	55-130
Heptachlor	2.500	2.776	111.0	55-130
Aldrin	2.500	2.413	96.5	55-130
Dieldrin	2.500	2.811	112.4	55-130
Endrin	2.500	2.675	107.0	55-130
DDT	2.500	2.729	109.2	55-130

Method Blank = All ND

# ASSOCIATED LABORATORIES

## QA REPORT FORM

Method : EPA 8141  
 QC Sample: 84970-313767  
 Matrix: Water  
 Analysis Date 12/27/01  
 Batch Date: 12/19/01 (op 121901 w)  
 Applies to: LR 84970

### MATRIX SPIKE (MS) / MATRIX SPIKE DUPLICATE (MSD) RECOVERY

REPORTING UNITS = ug/L

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spk. Dup.	% Rec MS	% Rec MSD	RPD	QC Limits	
								RPD	%REC
Mevinphos, cis	ND	20.0	19.53	18.96	97.6	94.8	2.9	35	45-140
Ethoprop	ND	20.0	19.39	18.15	96.9	90.8	6.6	35	45-140
Diazinon	ND	20.0	19.42	18.14	97.1	90.7	6.8	35	45-140
Ronnel	ND	20.0	19.15	18.23	95.8	91.1	5.0	35	45-140
Chlorpyrifos	ND	20.0	20.15	18.41	100.7	92.1	9.0	35	45-140
Trichloronat	ND	20.0	18.38	17.31	91.9	86.5	6.0	35	45-140
Fenthion	ND	20.0	18.95	17.96	94.8	89.8	5.4	35	45-140
Bolstar	ND	20.0	18.94	18.32	94.7	91.6	3.3	35	45-140

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Dup

%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

### LAB CONTROLLED SPIKE RECOVERY

Test	Spike Added	LCS Result	% Rec LCS	QC Limits
				% Rec
Mevinphos, cis	20.0	18.96	94.8	55-140
Ethoprop	20.0	19.89	99.5	55-140
Diazinon	20.0	19.67	98.3	55-140
Ronnel	20.0	19.12	95.6	55-140
Chlorpyrifos	20.0	19.04	95.2	55-140
Trichloronat	20.0	18.18	90.9	55-140
Fenthion	20.0	17.07	85.3	55-140
Bolstar	20.0	16.62	83.1	55-140

METHOD BLANK - ALL ND

**ASSOCIATED LABORATORIES**  
QA REPORT FORM

Method : EPA 8151  
 QC Sample: LR 84970-313768  
 Matrix: WATER  
 Date Analyzed : 12/21/01  
 Batch Date: 12/17/01 (herb 121701 w)  
 Applies to: LR 84970, 84998, 84999

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

REPORTING UNITS = ug/L

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spk. Dup	%Rec MS	%Rec MSD	RPD	QC Limits	
								RPD	%REC
2,4-D	ND	5.0	5.48	5.26	109.6	105.2	4.1	35	60-135
2,4,5-TP (Silvex)	ND	5.0	4.82	4.90	96.4	98.0	1.7	36	60-135

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Dup

%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

**LAB CONTROLLED SPIKE RECOVERY / METHOD BLANK**

Test	Spike Added	LCS Result	LCS % Rec	Limits % Rec
2,4-D	5.0	4.36	87.1	60-135
2,4,5-TP (Silvex)	5.0	4.72	94.4	60-135

Method Blank = All ND

**ASSOCIATED LABORATORIES**  
**QA REPORT FORM - METHOD 8260 - 624 - 524**

Sample ID : LCS # 1  
 Date Analyzed : 12/17/01  
 Applies to: LR 84970  
 Reporting Units = ug/L

**LCS RECOVERY / METHOD BLANK**

Test	Sample Result	Spike Added	LCS Spike	%Rec LCS	QC Limits %REC
1,1-Dichloroethene	ND	50	47.96	96	59-172
MTBE	ND	50	52.31	105	62-137
Benzene	ND	50	49.89	100	62-137
Trichloroethene	ND	50	59.48	119	66-142
Toluene	ND	50	52.85	106	59-139
Chlorobenzene	ND	50	49.86	100	60-133

Sample ID : 84920-576 Water Samples  
 Date Analyzed : 12/18/01

**Matrix Spike / Matrix Spike Duplicate**

Test	Sample Result	Spike Added	Matrix Spike	Matrix Spk. Dup	%Rec MS	%Rec MSD	RPD	QC Limits	
								RPD	%REC
1,1-Dichloroethene	ND	50	49.21	48.80	98	98	1	22	59-172
MTBE	1.3	50	55.00	54.08	107	106	2	24	62-137
Benzene	ND	50	51.62	53.19	103	106	3	24	62-137
Trichloroethene	ND	50	55.77	58.61	112	117	5	21	66-142
Toluene	ND	50	53.95	52.38	108	105	3	21	59-139
Chlorobenzene	ND	50	49.81	51.40	100	103	3	21	60-133

Outside QC Limits  
 Method Blank = All ND

**ASSOCIATED LABORATORIES**  
QA REPORT FORM

Method : EPA 8270 / 625

QC Sample: 84970-768

Matrix: WATER

Date Analyzed : 12/23/01

Date Extracted : 12/19/01

Applies to: LR 84970

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

REPORTING UNITS = ug/L

Test	Sample Result	Spike Added	Matrix Spike	%Rec MS	QC Limits	
					RPD	%REC
Phenol	ND	50	19	38	42	12-125
2-Chlorophenol	ND	50	30	60	40	27-125
1,4-Dichlorobenzene	ND	50	33	66	28	36-97
n-Nitroso-di-propylamine	0.2	50	33	66	38	41-116
1,2,4-Trichlorobenzene	ND	50	34	68	28	39-98
2-Chloro-3-methylphenol	ND	50	43	86	42	23-97
Acenaphthene	ND	50	35	70	31	46-118
4-Nitrophenol	0.6	50	17	33	50	10-80
2,4-Dinitrotoluene	ND	50	39	78	38	24-96
1,2,3-Trinitrochlorophenol	ND	50	39	78	50	9-103
Pyrene	ND	50	32	64	31	26-127

ND = Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Dup

%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

**LCS RECOVERY / METHOD BLANK**

Test	Sample Result	Spike Added	LCS Spike	LCS Spike Dup	%Rec LCS	%Rec LCS-D	RPD	QC LIMITS	
								RPD	%REC
Phenol	ND	50	11	12	22	24	9	42	12-125
2-Chlorophenol	ND	50	22	23	44	46	4	40	27-125
1,4-Dichlorobenzene	ND	50	28	29	56	58	4	28	36-97
n-Nitroso-di-n-propylamine	0.2	50	26	26	52	52	0	38	41-116
1,2,4-Trichlorobenzene	ND	50	28	29	56	58	4	28	39-98
2-Chloro-3-methylphenol	ND	50	32	32	64	64	0	42	23-97
Acenaphthene	ND	50	26	28	52	56	7	31	46-118
4-Nitrophenol	0.1	50	12	14	24	28	15	50	10-80
2,4-Dinitrotoluene	ND	50	34	35	68	70	3	38	24-96
1,2,3-Trinitrochlorophenol	ND	50	33	33	66	66	0	50	9-103
Pyrene	ND	50	30	30	60	60	0	31	26-127

Method Blank = All ND

# ASSOCIATED LABORATORIES

## QA REPORT FORM

Method : EPA 8310 / 610  
QC Sample: LCS, LCSD  
Matrix: WATER  
Date Analyzed : 12/19/01  
Batch Date: 12/18/01 (8310 121801w)  
Applies to: LR 84970

### LCS RECOVERY / METHOD BLANK

REPORTING UNITS = ug/L

Test	Spike Added	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	RPD	Limits % Rec
Phenanthrene	10.0	9.63	8.76	96.3	87.6	9.4	50-155
Pyrene	10.0	9.63	8.80	96.3	88.0	9.0	50-199
Chrysene	10.0	6.06	5.53	60.6	55.3	9.1	50-128
Benzo(b)fluoranthene	10.0	9.71	8.34	97.1	83.4	15.1	50-159
Benzo(k)fluoranthene	10.0	9.76	8.38	97.6	83.8	15.2	50-159
Benzo(a)pyrene	10.0	9.19	8.17	91.9	81.7	11.8	50-159

ND = Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Dup

%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

Method Blank = All ND

**ASSOCIATED LABORATORIES**

**SURROGATE RECOVERY**

**Lab Request / Order: 84970, 85073**

Analysis Date: 12/25/01

Matrix: water

EPA 8081 / 608		
Lab Request / Order	TCMX - % Rec.	DCB - % Rec.
QC Limits	50-125	55-125
Blank	83	106
LCS	96	86
84970-313767	91	92
84970-313768	80	90
84970-313768 MS	104	107
84970-313768 MSD	76	81
85073-314220	93	107
85073-314221	66	101

**ASSOCIATED LABORATORIES**

**SURROGATE RECOVERY**

**Lab Request / Order: 84970**

Analysis Date: 12/27/01

Matrix: WATER

<b>EPA 8141</b>		
<b>Lab Request / Order</b>	<b>TBP - % Rec.</b>	<b>TPP - % Rec.</b>
QC Limits	50-135	55-140
<i>Blank</i>	104	105
<i>LCS</i>	106	96
<i>84970-313767</i>	100	104
<i>84970-313767 MS</i>	101	100
<i>84970-313767 MSD</i>	95	92

ASSOCIATED LABORATORIES  
8151 SURROGATE RECOVERY

**Lab Request / Order: 84970**

Analysis Date: 12/21/01

Matrix: WATER

	EPA 8151
Lab Request / Order	DCPP - % Rec.
QC Limits	50-125
<i>Blank</i>	80
<i>LCS</i>	74
<i>84970-313768</i>	81
<i>84970-313768 MS</i>	88
<i>84970-313768 MSD</i>	87

# ASSOCIATED LABORATORIES

EPA 8260 - SURROGATE RECOVERY

**Lab Request/Order: 84970**

Analysis Date: 12/17/01

Matrix: WATER

Sample No.(Order)	(DCA)	(DBF)	(TOL)	(BFB)
84970-313767	133	95	103	121
84970-313768	128	95	101	118

*(DBF) = Dibromofluoromethane*

*(DCA) = 1,2-Dichloroethane-d4*

*(TOL) = Toluene-d8*

*(BFB) = p-Bromofluorobenzene*

<i>QC Limits: 70-135</i>
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ASSOCIATED LABORATORIES  
EPA 8270 - SURROGATE RECOVERY

**Lab Request / Order: 84970**

Analysis Date: 12/23/01

Matrix: WATER

Sample No.(Order)	2,4,6-Tribromophenol	2-Fluorobiphenyl	2-Fluorophenol	Nitrobenzene-d5	Phenol-d5	Terphenyl-d14
QC Limits	10-123	43-116	21-110	34-114	10-110	33-141
MB 122301	34	37*	25	39	19	41
LCS 122201	57	50	22	57	18	62
LCSD 122301	57	52	23	58	19	63
84970-767	77	81	49	84	35	79
84970-768 MS	69	68	37	<2 66	31	69

\*Outside QC limits

# ASSOCIATED LABORATORIES

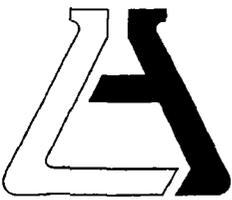
8310 / 610 SURROGATE RECOVERY

**Lab Request / Order: 84970**

Analysis Date: 12/19/01

Matrix: WATER

EPA 8310 / 610	
Lab Request / Order	P-Terphenyl - % Rec.
QC Limits	50-125
<i>Blank</i>	104
<i>LCS</i>	102
<i>LCSD</i>	92
<i>84970-313767</i>	104



**ASSOCIATED LABORATORIES**

806 North Batavia - Orange, California 92868 - 714/771-6900

FAX 714/538-1209

CLIENT Panacea, Inc. (8771)  
ATTN: Mohammad Estiri  
14700 Firestone Blvd.  
Suite 118  
La Mirada, CA 90638

LAB REQUEST 85810

REPORTED 01/08/2002

RECEIVED 12/28/2001

PROJECT Brown & Bryant - Arvin

SUBMITTER Client

COMMENTS

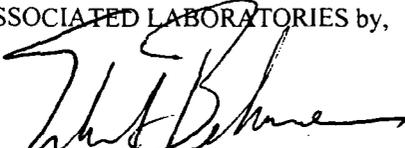
This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods as indicated on the report. This cover letter is an integral part of the final report.

Order No.  
317195

Client Sample Identification  
Bin-1247

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

ASSOCIATED LABORATORIES by,

  
Edward S. Behare, Ph.D.  
Vice President

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 30 days from date reported.

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TESTING & CONSULTING  
Chemical  
Microbiological  
Environmental

Order #: 317195

Client: Panacea, Inc.

Matrix: WATER

Client Sample ID: Bin-1247

Date Sampled: 12/28/2001

Time Sampled: 09:30

Sampled By:

Analyte	Result	DF	DLR	Units	Date/Analyst
<b>245.1 Mercury in Water by Manual Cold Vapor</b>					
Mercury	ND	1	0.0004	mg/L	12/31/01 MDJ

<b>010B ICP CAM Metals Only (16 Metals)</b>					
Antimony	ND	1	0.030	mg/L	01/07/02 KN
Arsenic	0.022	1	0.005	mg/L	01/07/02 KN
Barium	0.032	1	0.010	mg/L	01/07/02 KN
Beryllium	ND	1	0.005	mg/L	01/07/02 KN
Cadmium	ND	1	0.005	mg/L	01/07/02 KN
Chromium	ND	1	0.010	mg/L	01/07/02 KN
Cobalt	ND	1	0.005	mg/L	01/07/02 KN
Copper	ND	1	0.010	mg/L	01/07/02 KN
Lead	ND	1	0.005	mg/L	01/07/02 KN
Molybdenum	0.059	1	0.010	mg/L	01/07/02 KN
Nickel	ND	1	0.015	mg/L	01/07/02 KN
Selenium	0.013	1	0.005	mg/L	01/07/02 KN
Silver	0.005	1	0.005	mg/L	01/07/02 KN
Thallium	0.007	1	0.005	mg/L	01/07/02 KN
Vanadium	0.025	1	0.005	mg/L	01/07/02 KN
Zinc	0.043	1	0.010	mg/L	01/07/02 KN

DLR = Detection limit for reporting purposes, ND = Not Detected below indicated detection limit, DF = Dilution Factor





# ASSOCIATED LABORATORIES

806 N. Batavia • Orange, CA 92868  
(714) 771-6900 • FAX: (714) 538-1209

85810

## CHAIN OF CUSTODY RECORD

Date 12-28-01 Page 1 of 1

CLIENT Panacea, Inc.  
ADDRESS 14700 Firestone Blvd Suit 118  
La Mirada, CA 9

PROJECT MANAGER  
Mohammed

PHONE NUMBER  
(714) 228 1286

SAMPLERS: (Signature)  
Omar Arquete

Samples Intact Yes  No   
County Seals Intact Yes  No   
Sample Ambient  Cooled  Frozen   
Same Day  24 Hr.   
Regular  48 Hr.

PROJECT NAME  
Brown & Bryant - Arvin

SAMPLE NUMBER	LOCATION DESCRIPTION	DATE	TIME	SAMPLE TYPE			NO OF CNTNRS	SUSP. CONTAM.	TESTS REQUIRED
				WATER	AIR	SOLID			
<u>Bin-1247</u>		<u>12-28-01</u>	<u>9:30</u>	<input checked="" type="checkbox"/>			<u>2</u>		<u>EPA 6010 - METALS (COM)</u> <u>Title 22 Metals</u>
									<u>Flush per DR</u> <u>12-28-01 Arv.</u>

Relinquished by: (Signature)  
Omar Arquete

Received by: (Signature)  
Albert V. ...

Date/Time  
12-28-01  
15:36

I hereby authorize the performance of the above indicated work.  
Omar Arquete

Relinquished by: (Signature)

Received by Laboratory for analysis: (Signature)

Date/Time

Special Instructions:

DISTRIBUTION: White with report. Yellow to AL, Pink to Courier

### Cooler Receipt Form

Client: Paraceu Project: Brown + Bryant  
Cooler Received: 12-28-01 Cooler Opened: 12-28-01 By: Albert Vargas  
Signed: Albert Vargas

Was cooler scanned for presence of radioactivity, and noted if found?  Yes /  No

Were custody seals present on outside of cooler? Yes /  No

a: If Yes, were they intact? Yes /  No

b: Were signature and date correct? Yes /  No

Were custody papers completely filled out?  Yes /  No

Did you sign and date the custody papers in the appropriate place?  Yes /  No

Was a shippers packing slip attached to the cooler? Yes /  No

What kind of packing material was used? None

Was sufficient ice used?  Yes /  No Temperature: 5.1° Date: 12-28-01

Were all bottles sealed in plastic bags?  Yes /  No

Did all bottles arrive intact?  Yes /  No

Were all bottles labeled correctly? (ID, Analysis, Dates, Times)  Yes /  No

Were the correct containers included for the tests required?  Yes /  No

Were all VOA vials checked for headspace?  NA /  Yes /  No

Was sufficient volume of sample sent in all containers?  Yes /  No

Were correct preservatives used?  Yes /  No

Approved by: Albert Vargas Date: 12-28-01

If not approved: Name of person contacted \_\_\_\_\_ Date: \_\_\_\_\_

# SAMPLE RECEIVING pH Log

Client: Panacea, Inc Date/Time 12/28 3:40

Sample ID	pH	Reader's Initial	Standardization Date
1. Bin 1247-1/metals	4.0	DV	12/28
2. -2/metals	4.0	↓	↓
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

# ASSOCIATED LABORATORIES

## QA REPORT FORM (MS/MSD)

QC Sample: LR 85810-317195

QC# 123101W1

Matrix: WATER

Prep. Date: 12/31/01

Analysis Date: 01/07/02

Lab ID#'s in Batch: LR 85810, 85753, 85751, 85742, 85749, 85750, 85741, 85736, 85759, 85758,  
LR 85760

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT

REPORTING UNITS = mg/L

TEST	Method	Sample Result	ND	Spike Added	Matrix Spike	Matrix Spike Dup	%Rec MS	%Rec MSD	RPD
Arsenic	200.7 / 6010	0.022		0.1	0.111	0.111	89.0	89.0	0.0
Selenium	200.7 / 6010	0.013		0.1	0.113	0.110	100.0	97.0	2.7
Thallium	200.7 / 6010	0.007		0.1	0.111	0.112	104.0	105.0	0.9
Lead	200.7 / 6010	0.005	U	0.2	0.203	0.202	101.5	101.0	0.5
Antimony	200.7 / 6010	0.030	U	1.0	1.080	1.050	108.0	105.0	2.8
Barium	200.7 / 6010	0.032		1.0	1.170	1.150	113.8	111.8	1.7
Beryllium	200.7 / 6010	0.005	U	1.0	1.130	1.100	113.0	110.0	2.7
Cadmium	200.7 / 6010	0.005	U	1.0	1.130	1.070	113.0	107.0	5.5
Chromium	200.7 / 6010	0.010	U	1.0	1.110	1.090	111.0	109.0	1.8
Cobalt	200.7 / 6010	0.005	U	1.0	1.090	1.070	109.0	107.0	1.9
Copper	200.7 / 6010	0.010	U	1.0	1.100	1.070	110.0	107.0	2.8
Molybdenum	200.7 / 6010	0.059		1.0	1.190	1.150	113.1	109.1	3.4
Nickel	200.7 / 6010	0.015	U	1.0	1.100	1.070	110.0	107.0	2.8
Silver	200.7 / 6010	0.005	U	0.4	0.420	0.420	105.0	105.0	0.0
Vanadium	200.7 / 6010	0.025		1.0	1.150	1.130	112.5	110.5	1.8
Zinc	200.7 / 6010	0.043		1.0	1.150	1.130	110.7	108.7	1.8
Aluminum	200.7 / 6010	0.058		1.0	1.080	1.060	102.2	100.2	1.9
Iron	200.7 / 6010	0.400		1.0	1.590	1.540	119.0	114.0	3.2
Manganese	200.7 / 6010	0.024		1.0	1.150	1.120	112.6	109.6	2.6
Boron	200.7 / 6010	0.178		1.0	1.120	1.100	94.2	92.2	1.8

NC = Not Calculated

ND = "U" - Not Detected

RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Duplicate

%REC-MS&MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate

% REC LIMITS = 75 -125
RPD LIMITS = 20

**ASSOCIATED LABORATORIES**  
**LCS/MB REPORT FORM**

LCS Source(s) : QC21-LOT#QC2/91/1;QC7-LOT7A92/1

Element	Method	Result	TRUE	%Rec	L.Limit	H.Limit	Method Blank	
							MB	ND
Silver	200.7 / 6010	1.03	1	103.0	80%	120%	0.005	U
Aluminum	200.7 / 6010	2.10	2	105.0	80%	120%	0.030	U
Arsenic	200.7 / 6010	2.15	2	107.5	80%	120%	0.005	U
Boron	200.7 / 6010	1.88	2	94.0	80%	120%	0.010	U
Barium	200.7 / 6010	2.13	2	106.5	80%	120%	0.010	U
Beryllium	200.7 / 6010	2.26	2	113.0	80%	120%	0.005	U
Cadmium	200.7 / 6010	2.34	2	117.0	80%	120%	0.005	U
Cobalt	200.7 / 6010	2.23	2	111.5	80%	120%	0.005	U
Chromium	200.7 / 6010	2.24	2	112.0	80%	120%	0.010	U
Copper	200.7 / 6010	2.13	2	106.5	80%	120%	0.010	U
Iron	200.7 / 6010	2.19	2	109.5	80%	120%	0.020	U
Manganese	200.7 / 6010	2.24	2	112.0	80%	120%	0.010	U
Molybdenum	200.7 / 6010	2.12	2	106.0	80%	120%	0.010	U
Nickel	200.7 / 6010	2.23	2	111.5	80%	120%	0.015	U
Lead	200.7 / 6010	2.22	2	111.0	80%	120%	0.005	U
Antimony	200.7 / 6010	2.17	2	108.5	80%	120%	0.030	U
Selenium	200.7 / 6010	2.14	2	107.0	80%	120%	0.005	U
Thallium	200.7 / 6010	2.13	2	106.5	80%	120%	0.005	U
Vanadium	200.7 / 6010	2.20	2	110.0	80%	120%	0.005	U
Zinc	200.7 / 6010	2.23	2	111.5	80%	120%	0.010	U

Notes : RESULT = Sample Result; TRUE = True Value; %Rec = 100\*Result/True

L.LIMIT / H.LIMIT = Low / High Control Limits

MB = Method Blank; ND = " U " for Non- Detected

**ASSOCIATED LABORATORIES**  
QA REPORT FORM

QC Sample: LR 85653-316619

Matrix: WATER

Prep. Date: 12/31/01

Analysis Date: 12/31/01

ID#'s in Batch: LR 85653, 85309, 85539, 85810

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULT**

Reporting Units = mg/L

Test	Method	Sample Result	Spike Added	Matrix Spike	Matrix Spike Dup	%Rec MS	%Rec MSD	RPD
MERCURY	245.1 / 7470A	ND	0.002	0.0017	0.0017	85	85	0.0

*RPD = Relative Percent Difference of Matrix Spike and Matrix Spike Duplicate*  
*%REC-MS & MSD = Percent Recovery of Matrix Spike & Matrix Spike Duplicate*

*%REC LIMITS = 75 - 125*  
*RPD LIMITS = 20*

**PREPARATION BLANK / LAB CONTROL SAMPLE RESULTS**

PREP BLK	LCS				
Value	Result	True	%Rec	L.Limit	H.Limit
ND	0.0050	0.005	100	80%	120%

*Value = Preparation Blank Value; ND = Not-Detected*  
*LCS Result = Lab Control Sample Result*  
*True = True Value of LCS*  
*L.Limit / H.Limit = LCS Control Limits*

Panacea, Inc.

# Appendix D

*Soil Characteristic Laboratory Reports*



Project No. C00-266

October 2002

MOISTURE AND DENSITY TEST RESULTS

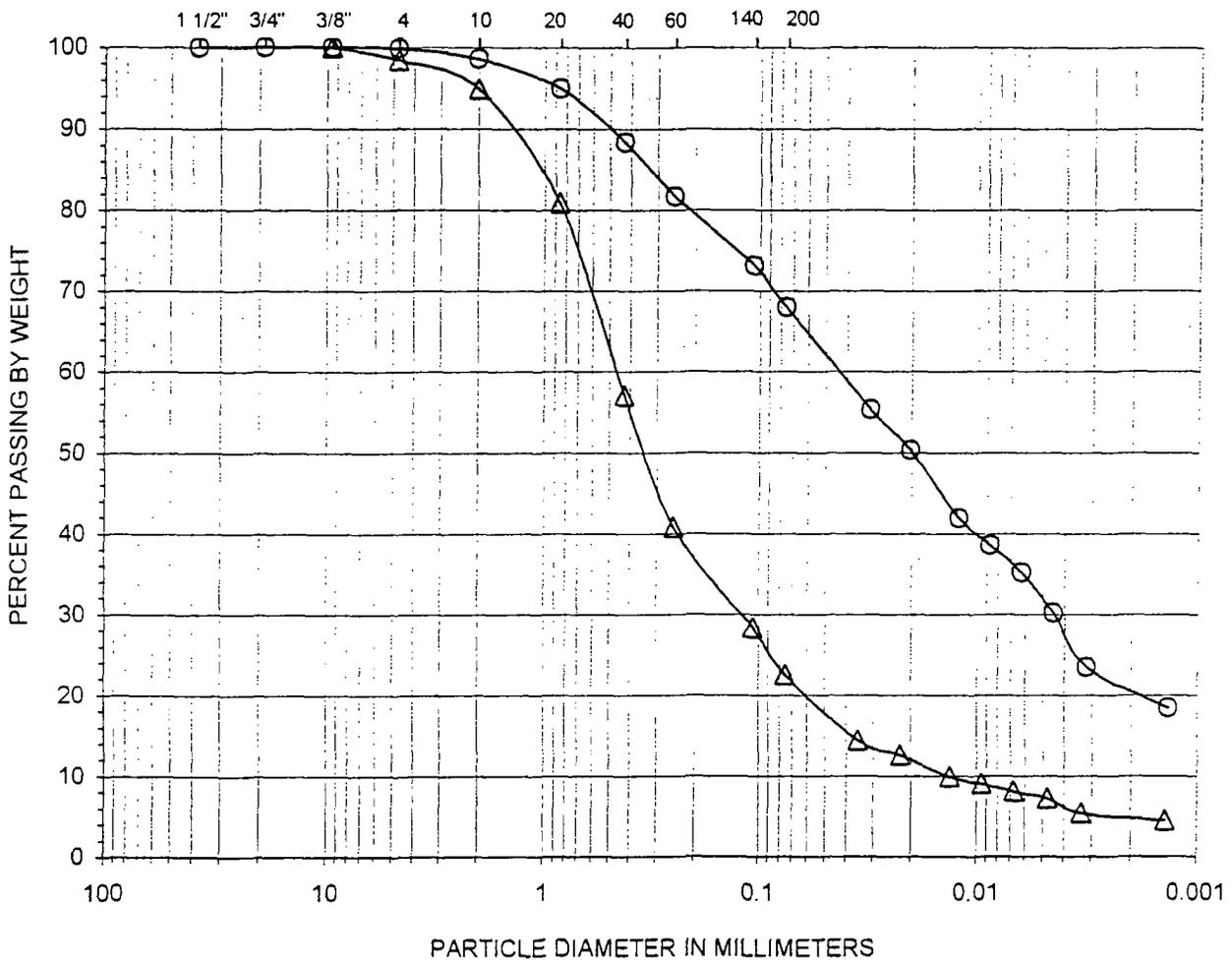
Client: Panacea  
 Project Name: Brown and Bryant  
 Project Location: C00-266

Laboratory Job No.: 21-1253  
 Date: 01/16/02

Sample Identification	Sample Depth	Soil Description	USCS (VISUAL)	Moisture Content (%)	Dry Density (pcf)
PWB-1-70	-	Drk Gray Silty Sand	SM	16.84	97.95
PWA-2-45	-	Olive Brn Sandy Clay	CL	17.27	112.33
PWA-2-65	-	Olive Brn Silty Sand	SM	21.90	101.87
PWA-4-65	-	Gray Brown Silty Sand	SM	10.21	109.34
PWA-4-30	-	Gray Brown Silty Sand	SM	17.08	113.47
PWB-3-70	-	Olive Silty Sand	SM	28.32	97.32
PWB-3-85	-	Drk Olive Silty Sand	SM	14.12	119.02
PWB-3-150	-	Olive Sandy Silt	ML	22.55	103.94
PWB-4-45	-	Olive Sandy Clay	CL	18.28	97.75
PWB-4-65	-	Olive Sandy Silt	ML	32.64	90.32
PWB-4-150	-	Brown Silty Sand	SM	15.22	113.04
PWB-5-40	-	Olive Lean Clay	CL	21.47	106.80
PWB-5-95	-	Olive Brn Silt with fine sand	ML	16.22	95.69
PWB-5-135	-	Olive Brn Sandy Silt	ML	21.57	108.20



GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	
SIEVE OPENING		SIEVE NUMBER			HYDROMETER



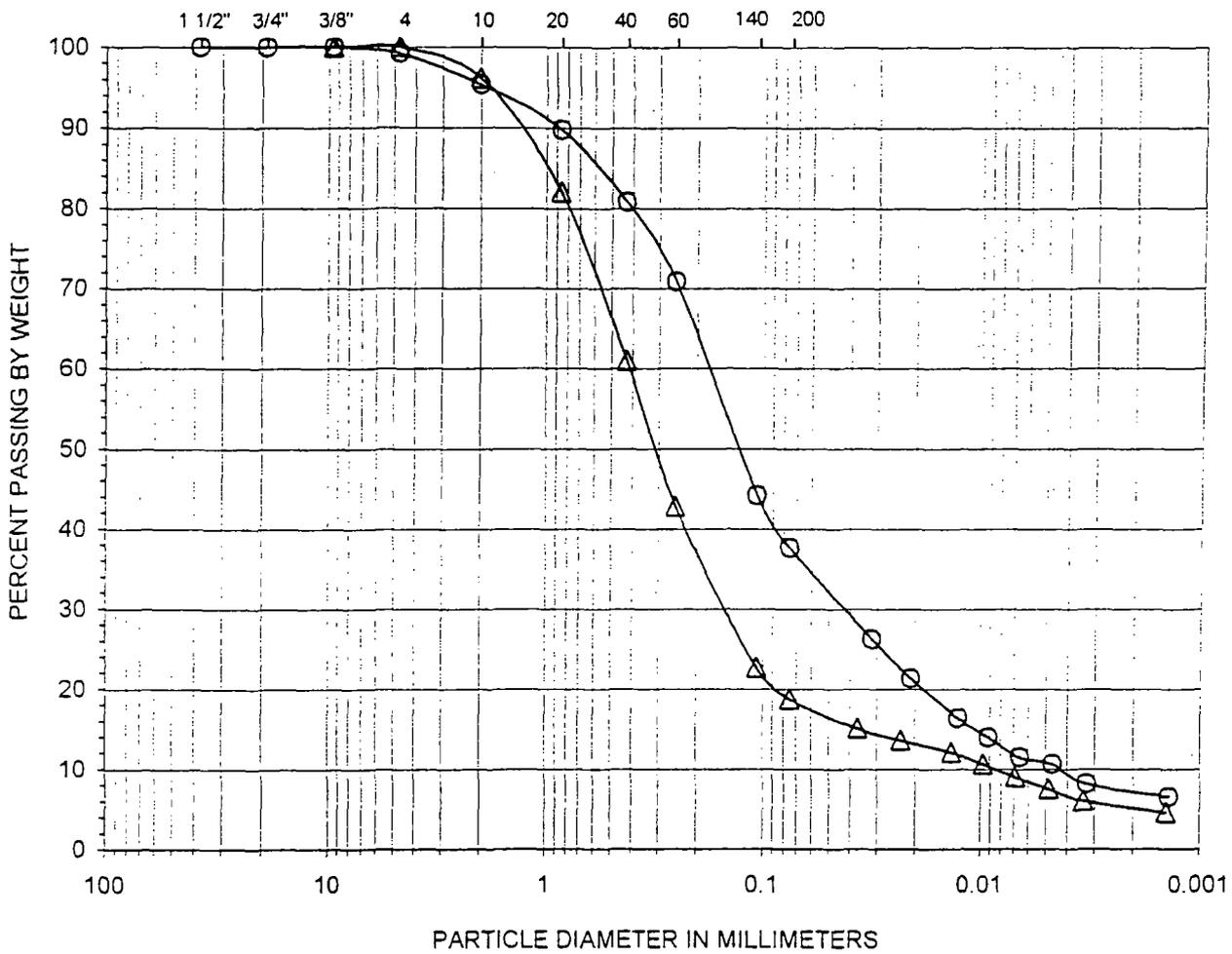
Symbol	Sample Identification	Sample Depth	Percent Passing No. 200 Sieve	Soil Type
○	PWA-2-45	-	67.9	CL
△	PWA-2-65	-	22.5	SM

**GRAIN SIZE DISTRIBUTION CURVE**

ASTM D 422

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Date: 01/08/02  
 AP No.: 21-1253

GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	
SIEVE OPENING		SIEVE NUMBER			HYDROMETER



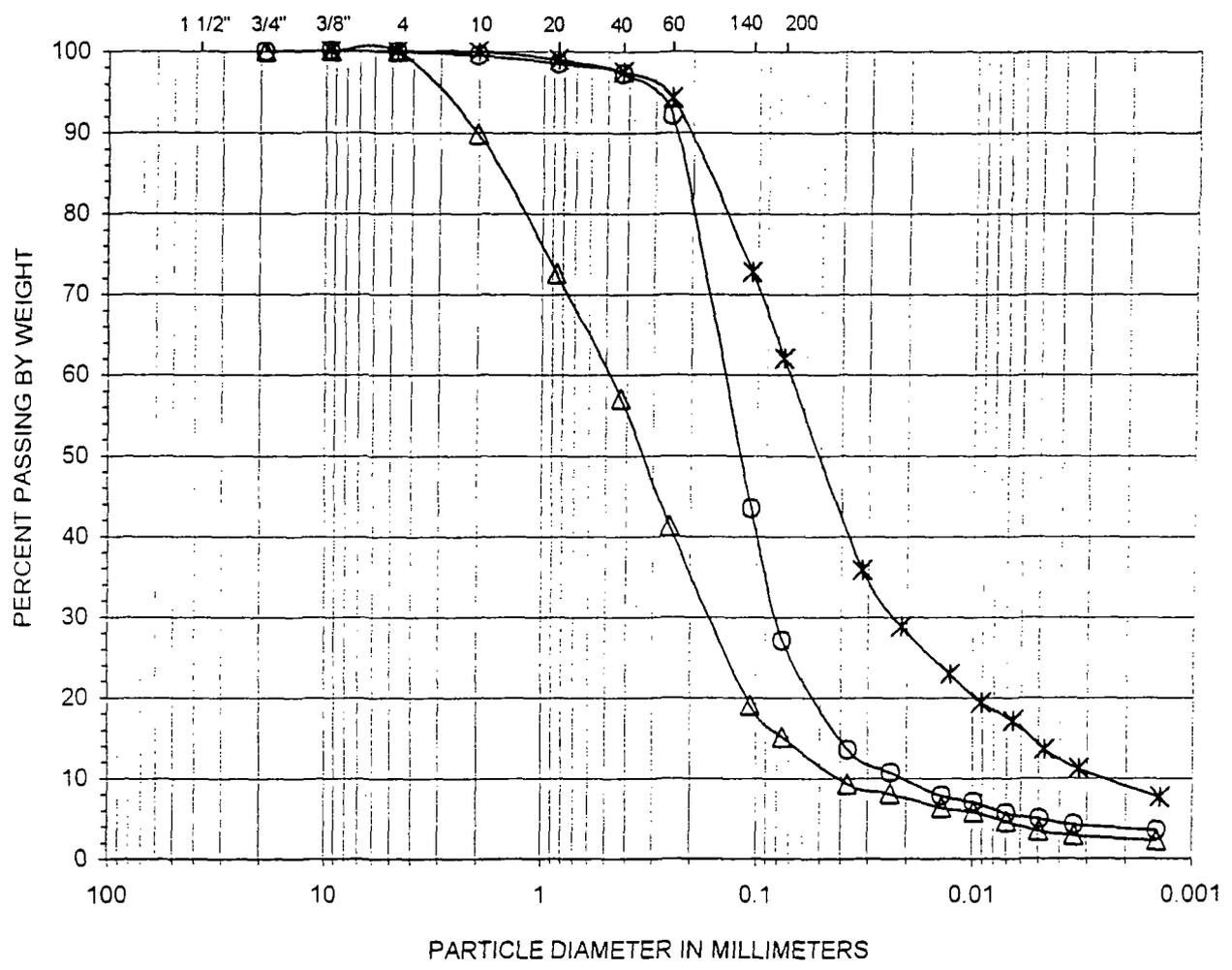
Symbol	Sample Identification	Sample Depth	Percent Passing No. 200 Sieve	Soil Type
○	PWA-4-65	-	37.6	SM
△	PWA-4-80	-	18.8	SM

**GRAIN SIZE DISTRIBUTION CURVE**

ASTM D 422

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Date: 01/08/02  
 AP No.: 21-1253

GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	
SIEVE OPENING		SIEVE NUMBER			HYDROMETER



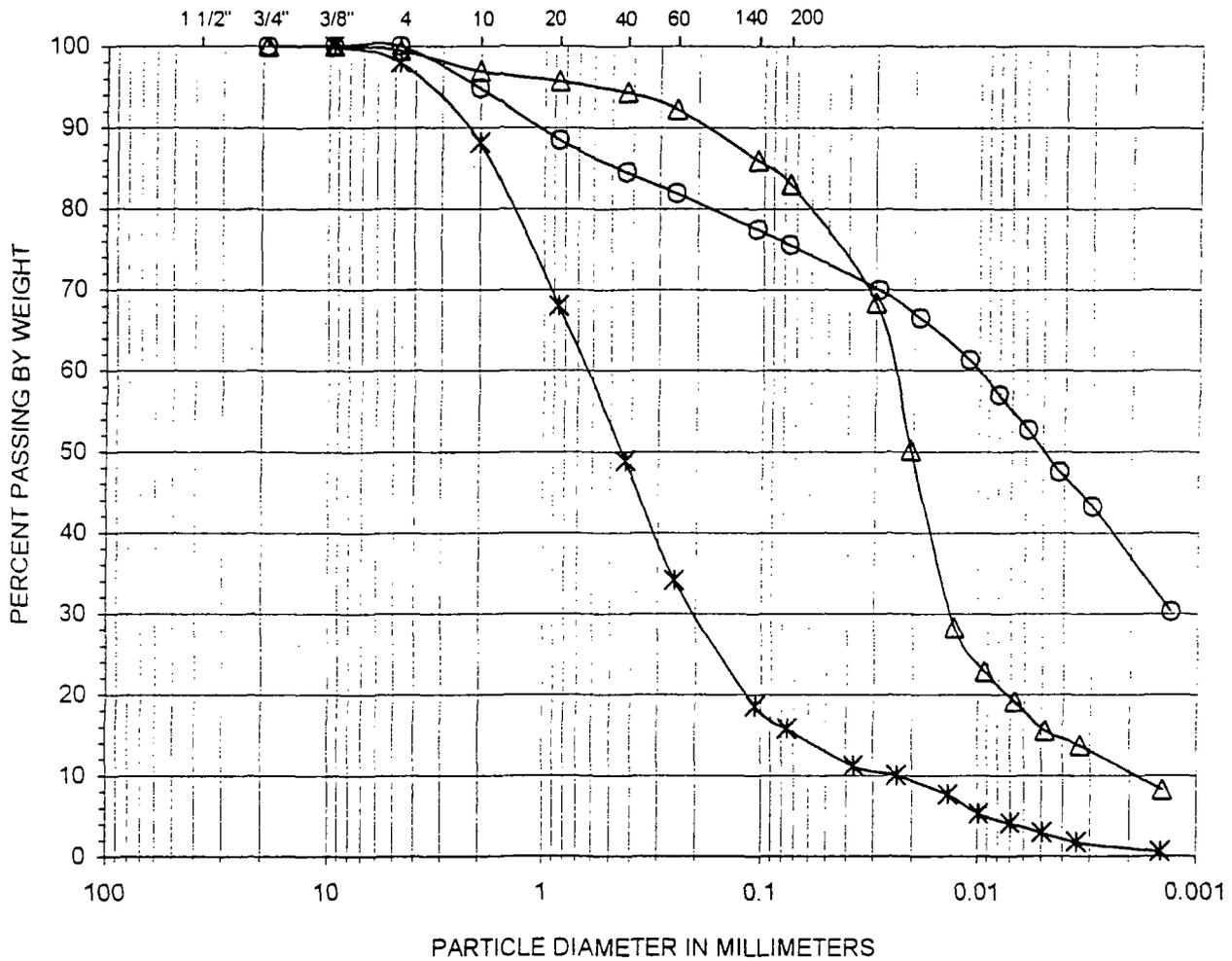
Symbol	Sample Identification	Sample Depth	Percent Passing No. 200 Sieve	Soil Type
○	PWB-3-70	-	27.0	SM
△	PWB-3-85	-	15.1	SM
X	PWB-3-150	-	62.0	ML

**GRAIN SIZE DISTRIBUTION CURVE**

ASTM D 422

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Date: 01/10/02  
 AP No.: 21-1253

GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	
SIEVE OPENING		SIEVE NUMBER			HYDROMETER





# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWB-1-70 Depth: N/A feet  
 Soil Description: Drk Gray Brn Silty Sand  
 Test Condition: Stainless Steel Tube  
 Confining Pressure = 5 PSI

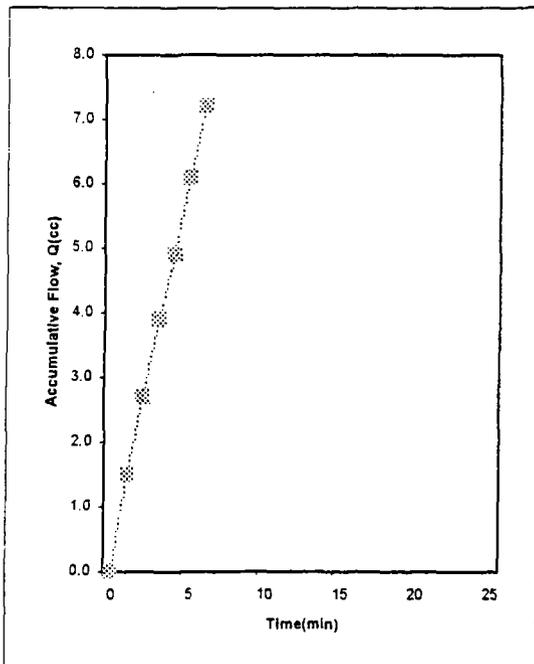
Tested by KK Date 01/10/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 3.00 in  
 Weight Before 262.34 g  
 Wet Density 114.45 pcf  
 Dry Density 97.95 pcf

	Before	After
Container No.		
Wt. Wet Soil+Container(gms)	199.06	307.45
Wt. Dry Soil+Container(gms)	175.28	263.55
Wt. Container (gms)	34.05	50.34
Moisture. (%)	16.84	20.59

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	22.0	1	0.0	3.0	27.7	0
1	20.5	1	1.5	3.0	27.7	2.50E-02
2	19.3	1	2.7	3.0	27.7	2.00E-02
3	18.1	1	3.9	3.0	27.7	2.00E-02
4	17.1	1	4.9	3.0	27.7	1.67E-02
5	15.9	1	6.1	3.0	27.7	2.00E-02
6	14.8	1	7.2	3.0	27.7	1.83E-02

Hydraulic Conductivity (cm/sec): 3.53E-05

# AP Engineering and Testing, Inc.

GEO TECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWA-2-45 Depth: N/A feet  
 Soil Description: Olive Brn Sandy Clay  
 Test Condition: Stainless Steel Tube  
Confining Pressure = 5 PSI

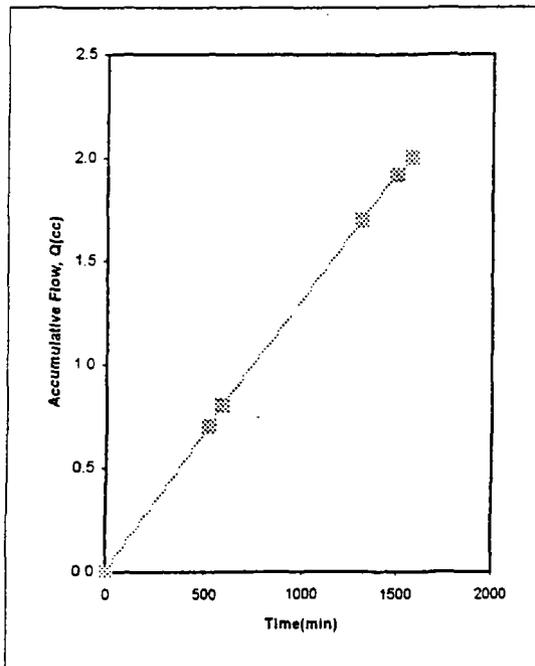
Tested by KK Date 01/10/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.00 in  
 Weight Before 201.30 g  
 Wet Density 131.73 pcf  
 Dry Density 112.33 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>345.49</u>	<u>240.42</u>
Wt. Dry Soil+Container(gms)	<u>300.64</u>	<u>205.75</u>
Wt. Container (gms)	<u>40.96</u>	<u>34.05</u>
Moisture, (%)	<u>17.27</u>	<u>20.19</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	42.0	1	0.0	3.0	41.5	0
521	41.3	1	0.7	3.0	41.5	2.24E-05
589	41.2	1	0.8	3.0	41.5	2.45E-05
1310	40.3	1	1.7	3.0	41.5	2.08E-05
1498	40.1	1	1.9	3.0	41.5	1.95E-05
1573	40.0	1	2.0	3.0	41.5	1.78E-05

Hydraulic Conductivity (cm/sec): 2.39E-08

# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWA-2-65 Depth: N/A feet  
 Soil Description: Olive Brown Silty Sand  
 Test Condition: Stainless Steel Tube  
Confining Pressure = 5 PSI

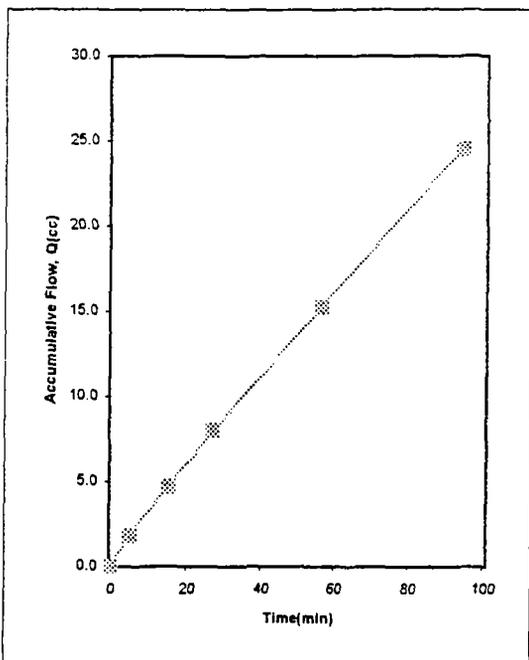
Tested by KK Date 01/04/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.00 in  
 Weight Before 189.76 g  
 Wet Density 124.18 pcf  
 Dry Density 101.87 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>484.96</u>	<u>241.17</u>
Wt. Dry Soil+Container(gms)	<u>433.79</u>	<u>206.02</u>
Wt. Container (gms)	<u>200.14</u>	<u>50.02</u>
Moisture, (%)	<u>21.90</u>	<u>22.53</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	40.7	1	0.0	3.0	41.5	0
5	38.9	1	1.8	3.0	41.5	6.00E-03
15	36.0	1	4.7	3.0	41.5	4.83E-03
27	32.7	1	8.0	3.0	41.5	4.58E-03
56	25.5	1	15.2	3.0	41.5	4.14E-03
94	16.2	1	24.5	3.0	41.5	4.08E-03

Hydraulic Conductivity (cm/sec): 5.47E-06

# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWA-4-65 Depth: N/A feet  
 Soil Description: Gray Brown Silty Sand  
 Test Condition: Stainless Steel Tube  
 Confining Pressure = 5 PSI

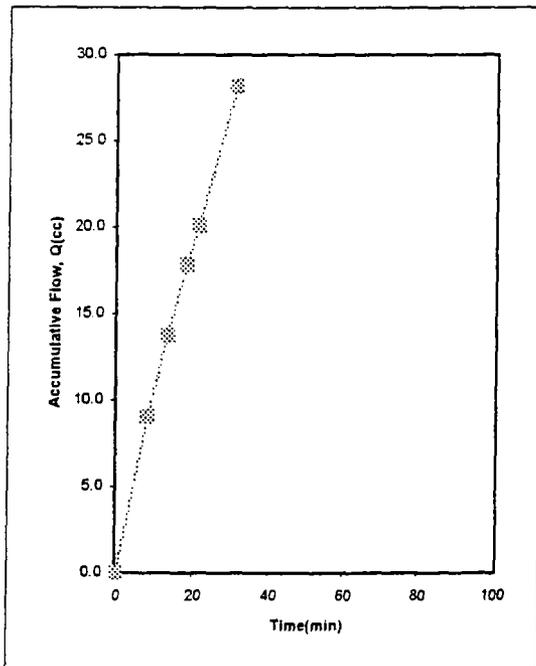
Tested by KK Date 01/04/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.00 in  
 Weight Before 184.16 g  
 Wet Density 120.51 pcf  
 Dry Density 109.34 pcf

	Before	After
Container No.		
Wt. Wet Soil+Container(gms)	466.91	382.51
Wt. Dry Soil+Container(gms)	442.12	345.97
Wt. Container (gms)	199.4	191.61
Moisture, (%)	10.21	23.67

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	45.5	1	0.0	3.0	41.5	0
8	36.5	1	9.0	3.0	41.5	1.88E-02
13	31.8	1	13.7	3.0	41.5	1.57E-02
18	27.7	1	17.8	3.0	41.5	1.37E-02
21	25.4	1	20.1	3.0	41.5	1.28E-02
31	17.3	1	28.2	3.0	41.5	1.35E-02

Hydraulic Conductivity (cm/sec): 1.68E-05

# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWA-4-80 Depth: N/A feet  
 Soil Description: Gray Brown Silty Sand  
 Test Condition: Stainless Steel Tube  
 Confining Pressure = 5 PSI

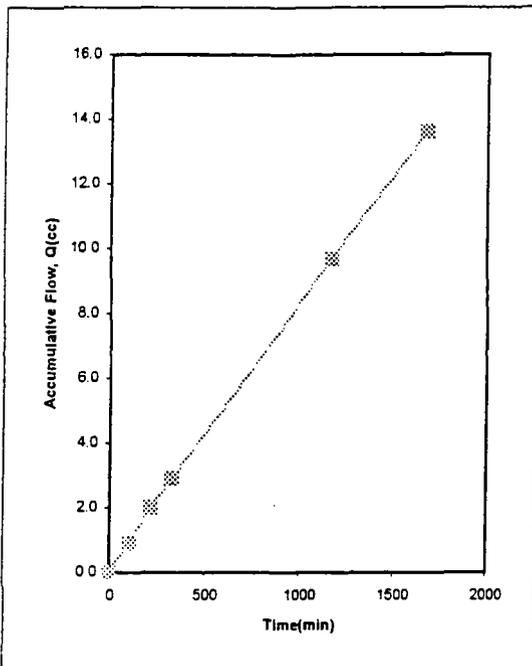
Tested by KK Date 01/04/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.00 in  
 Weight Before 203.02 g  
 Wet Density 132.85 pcf  
 Dry Density 113.47 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>101.39</u>	<u>229.63</u>
Wt. Dry Soil+Container(gms)	<u>91.61</u>	<u>195.79</u>
Wt. Container (gms)	<u>34.34</u>	<u>25.86</u>
Moisture, (%)	<u>17.08</u>	<u>19.91</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	13.9	1	0.0	1.0	13.8	0
108	13.0	1	0.9	1.0	13.8	1.39E-04
222	11.9	1	2.0	1.0	13.8	1.61E-04
329	11.0	1	2.9	1.0	13.8	1.40E-04
1173	4.2	1	9.7	1.0	13.8	1.34E-04
1680	0.3	1	13.6	1.0	13.8	1.28E-04

Hydraulic Conductivity (cm/sec): 5.05E-07

# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWB-3-70 Depth: N/A feet  
 Soil Description: Olive Silty Sand  
 Test Condition: Stainless Steel Tube  
Confining Pressure = 5 PSI

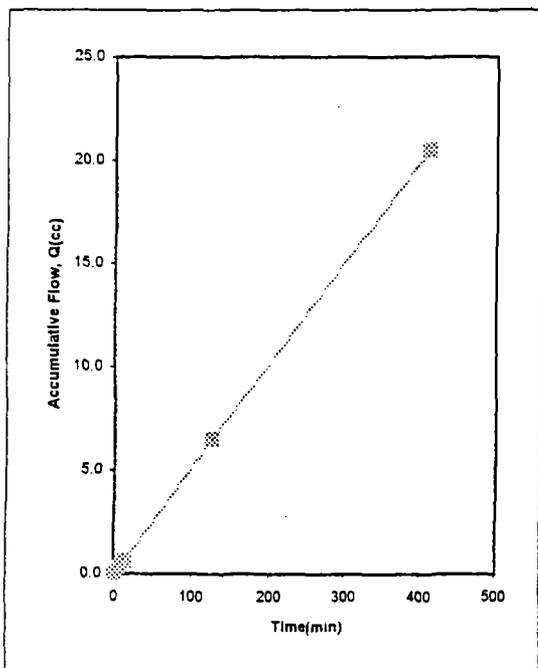
Tested by KK Date 01/10/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.00 in  
 Weight Before 190.83 g  
 Wet Density 124.88 pcf  
 Dry Density 97.32 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>125.65</u>	<u>242.06</u>
Wt. Dry Soil+Container(gms)	<u>105.47</u>	<u>202.3</u>
Wt. Container (gms)	<u>34.21</u>	<u>50.18</u>
Moisture. (%)	<u>28.32</u>	<u>26.14</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	42.5	1	0.0	3.0	41.5	0
8	42.2	1	0.3	3.0	41.5	6.25E-04
15	41.9	1	0.6	3.0	41.5	7.14E-04
126	36.0	1	6.5	3.0	41.5	8.86E-04
412	22.0	1	20.5	3.0	41.5	8.16E-04

Hydraulic Conductivity (cm/sec): 1.03E-06

# AP Engineering and Testing, Inc.

GEO TECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWB-3-85 Depth: N/A feet  
 Soil Description: Drk Olive Silty Sand  
 Test Condition: Stainless Steel Tube  
Confining Pressure = 5 PSI

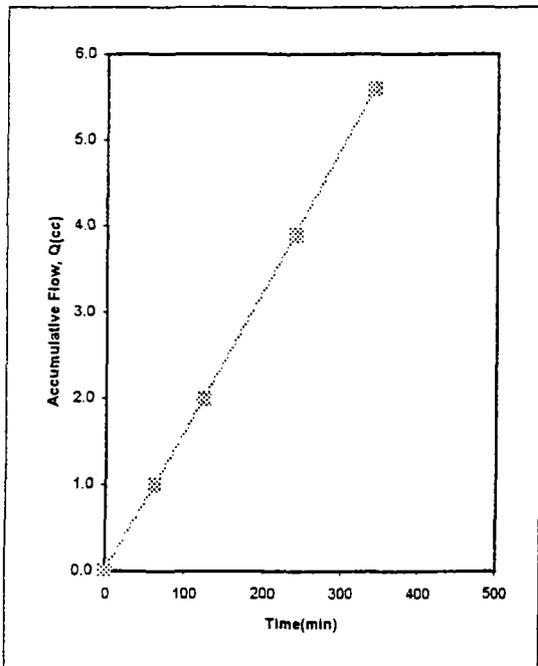
Tested by KK Date 01/08/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.00 in  
 Weight Before 207.55 g  
 Wet Density 135.82 pcf  
 Dry Density 119.02 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>110.82</u>	<u>239.55</u>
Wt. Dry Soil+Container(gms)	<u>101.37</u>	<u>209.11</u>
Wt. Container (gms)	<u>34.43</u>	<u>30.67</u>
Moisture. (%)	<u>14.12</u>	<u>17.06</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	34.0	1	0.0	1.0	13.8	0
62	33.0	1	1.0	1.0	13.8	2.69E-04
124	32.0	1	2.0	1.0	13.8	2.69E-04
239	30.1	1	3.9	1.0	13.8	2.75E-04
341	28.4	1	5.6	1.0	13.8	2.78E-04

Hydraulic Conductivity (cm/sec): 1.05E-06

# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWB-3-150 Depth: N/A feet  
 Soil Description: Olive Sandy Silt  
 Test Condition: Stainless Steel Tube  
Confining Pressure = 5 PSI

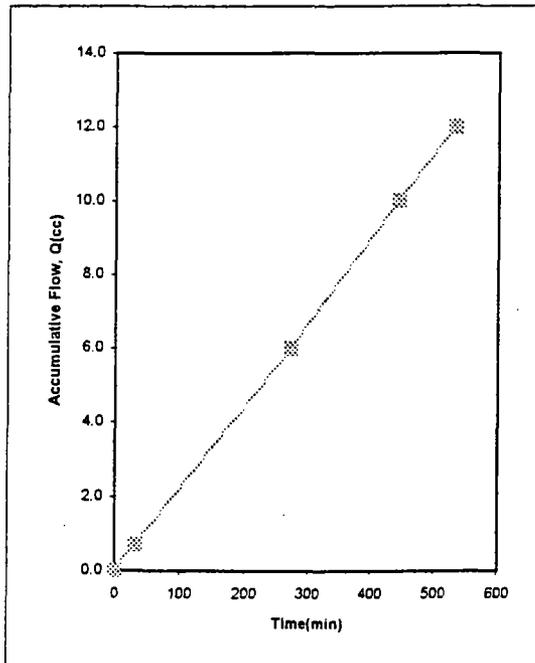
Tested by KK Date 01/08/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.53 in  
 Weight Before 246.23 g  
 Wet Density 127.37 pcf  
 Dry Density 103.94 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>115.3</u>	<u>279.92</u>
Wt. Dry Soil+Container(gms)	<u>103.29</u>	<u>234.17</u>
Wt. Container (gms)	<u>50.03</u>	<u>33.81</u>
Moisture, (%)	<u>22.55</u>	<u>22.83</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	36.0	1	0.0	3.0	32.8	0
32	35.3	1	0.7	3.0	32.8	3.65E-04
272	30.0	1	6.0	3.0	32.8	3.68E-04
444	26.0	1	10.0	3.0	32.8	3.88E-04
534	24.0	1	12.0	3.0	32.8	3.70E-04

Hydraulic Conductivity (cm/sec): 6.15E-07

# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWB-4-45 Depth: N/A feet  
 Soil Description: Olive Sandy Clay  
 Test Condition: Stainless Steel Tube  
Confining Pressure = 5 PSI

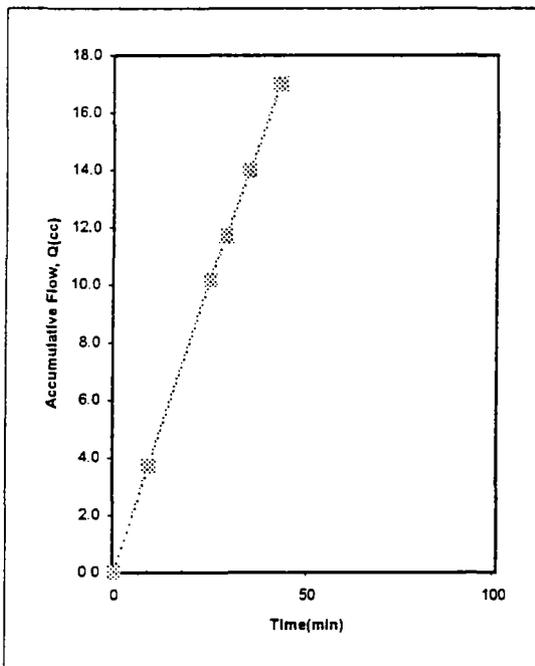
Tested by KK Date 01/07/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 1.94 in  
 Weight Before 171.38 g  
 Wet Density 115.62 pcf  
 Dry Density 97.75 pcf

	Before	After
Container No.		
Wt. Wet Soil+Container(gms)	<u>177.68</u>	<u>226.74</u>
Wt. Dry Soil+Container(gms)	<u>157.94</u>	<u>185.68</u>
Wt. Container (gms)	<u>49.95</u>	<u>48.08</u>
Moisture, (%)	<u>18.28</u>	<u>29.84</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	18.7	1	0.0	3.0	42.8	0
9	15.0	1	3.7	3.0	42.8	6.85E-03
25	8.5	1	10.2	3.0	42.8	6.77E-03
29	7.0	1	11.7	3.0	42.8	6.25E-03
35	4.7	1	14.0	3.0	42.8	6.39E-03
43	1.7	1	17.0	3.0	42.8	6.25E-03

Hydraulic Conductivity (cm/sec): 7.86E-06

# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWB-4-65 Depth: N/A feet  
 Soil Description: Olive Sandy Silt  
 Test Condition: Stainless Steel Tube  
Confining Pressure = 5 PSI

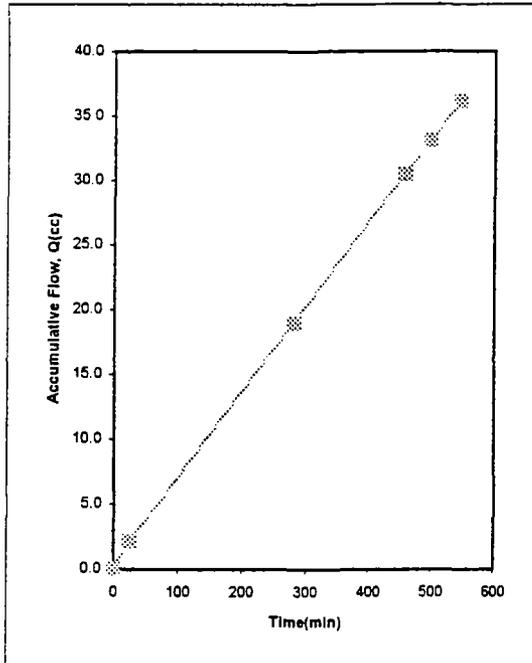
Tested by KK Date 01/07/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.44 in  
 Weight Before 223.37 g  
 Wet Density 119.81 pcf  
 Dry Density 90.32 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>66.01</u>	<u>274.82</u>
Wt. Dry Soil+Container(gms)	<u>58.11</u>	<u>221.59</u>
Wt. Container (gms)	<u>33.91</u>	<u>51.21</u>
Moisture, (%)	<u>32.64</u>	<u>31.24</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	40.1	1	0.0	3.0	34	0
26	38.0	1	2.1	3.0	34	1.35E-03
281	21.1	1	19.0	3.0	34	1.10E-03
457	9.6	1	30.5	3.0	34	1.09E-03
499	7.0	1	33.2	3.0	34	1.05E-03
547	3.9	1	36.2	3.0	34	1.05E-03

Hydraulic Conductivity (cm/sec): 1.67E-06

# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWB-4-150 Depth: N/A feet  
 Soil Description: Brown Silty Sand  
 Test Condition: Stainless Steel Tube  
Confining Pressure = 5 PSI

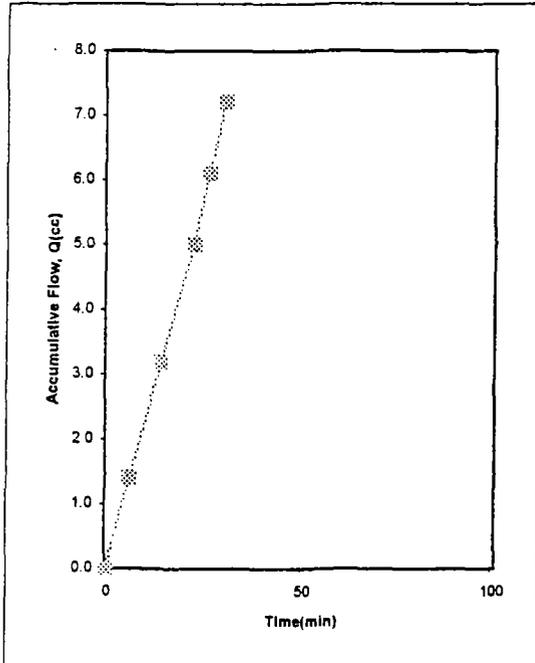
Tested by KK Date 01/07/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.30 in  
 Weight Before 228.90 g  
 Wet Density 130.25 pcf  
 Dry Density 113.04 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>150.79</u>	<u>280.93</u>
Wt. Dry Soil+Container(gms)	<u>137.49</u>	<u>244.77</u>
Wt. Container (gms)	<u>50.11</u>	<u>50.02</u>
Moisture, (%)	<u>15.22</u>	<u>18.57</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	42.2	1	0.0	3.0	36.1	0
6	40.8	1	1.4	3.0	36.1	3.89E-03
14	39.0	1	3.2	3.0	36.1	3.75E-03
22	37.2	1	5.0	3.0	36.1	3.75E-03
26	36.1	1	6.1	3.0	36.1	4.58E-03
30	35.0	1	7.2	3.0	36.1	4.58E-03

Hydraulic Conductivity (cm/sec): 6.76E-06

# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWB-5-40 Depth: N/A feet  
 Soil Description: Olive Lean Clay  
 Test Condition: Stainless Steel Tube  
Confining Pressure = 5 PSI

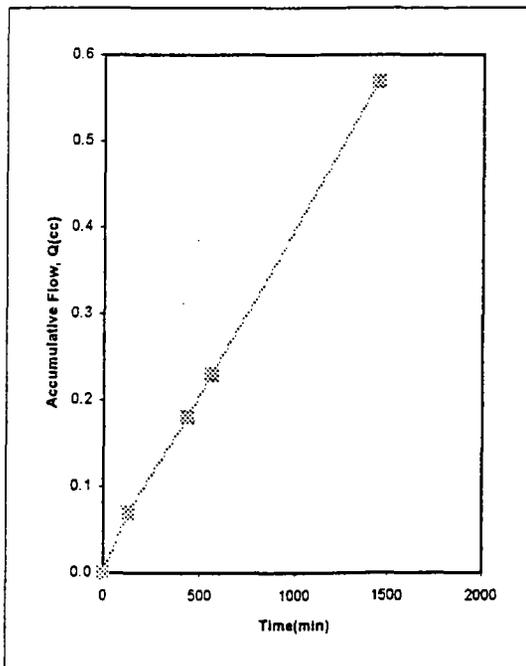
Tested by KK Date 01/08/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 1.97 in  
 Weight Before 195.27 g  
 Wet Density 129.73 pcf  
 Dry Density 106.80 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>113.07</u>	<u>366.03</u>
Wt. Dry Soil+Container(gms)	<u>101.74</u>	<u>325.29</u>
Wt. Container (gms)	<u>48.97</u>	<u>166.61</u>
Moisture, (%)	<u>21.47</u>	<u>25.67</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	16.1	1	0.0	3.0	42.2	0
133	16.0	1	0.1	3.0	42.2	8.77E-06
436	15.9	1	0.2	3.0	42.2	6.05E-06
563	15.8	1	0.2	3.0	42.2	6.56E-06
1448	15.5	1	0.6	3.0	42.2	6.40E-06

Hydraulic Conductivity (cm/sec): 8.19E-09

# AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWB-5-95 Depth: N/A feet  
 Soil Description: Olive Brn Silt with fine sand  
 Test Condition: Stainless Steel Tube  
 Confining Pressure = 5 PSI

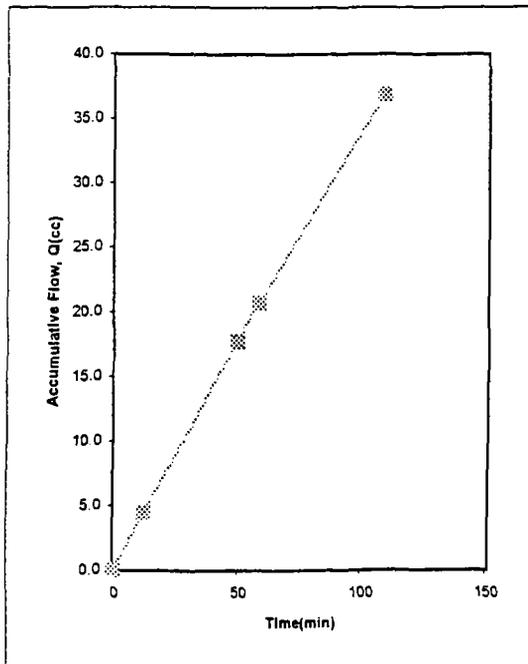
Tested by KK Date 01/08/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.00 in  
 Weight Before 169.96 g  
 Wet Density 111.22 pcf  
 Dry Density 95.69 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>92.02</u>	<u>348.21</u>
Wt. Dry Soil+Container(gms)	<u>83.9</u>	<u>310.97</u>
Wt. Container (gms)	<u>33.85</u>	<u>162.03</u>
Moisture, (%)	<u>16.22</u>	<u>25.00</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	42.8	1	0.0	3.0	41.5	0
12	38.3	1	4.5	3.0	41.5	6.25E-03
49	25.1	1	17.7	3.0	41.5	5.95E-03
58	22.1	1	20.7	3.0	41.5	5.56E-03
109	6.0	1	36.8	3.0	41.5	5.26E-03

Hydraulic Conductivity (cm/sec): 6.93E-06

# AP Engineering and Testing, Inc.

GEO TECHNICAL TESTING LABORATORY

## FLEXIBLE WALL HYDRAULIC CONDUCTIVITY TEST ASTM D5084

Project Name: Brown and Bryant  
 Project No.: C00-266  
 Boring No.: -  
 Sample No.: PWB-5-135 Depth: N/A feet  
 Soil Description: Olive Brn Sandy Silt  
 Test Condition: Stainless Steel Tube  
Confining Pressure = 5 PSI

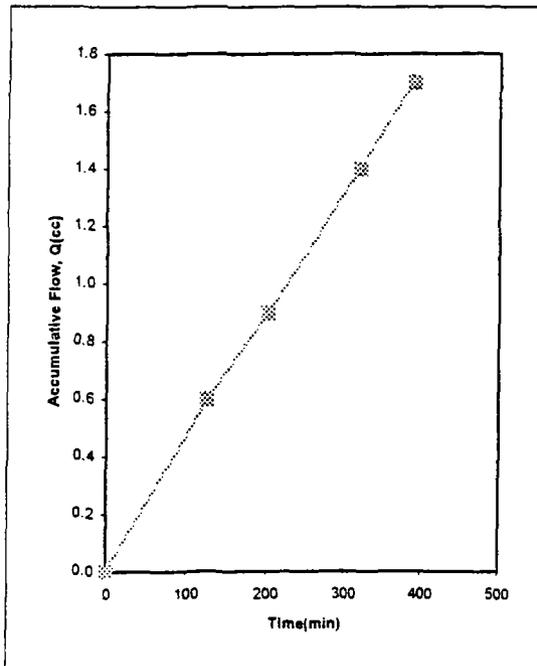
Tested by KK Date 01/08/02  
 Calculated by SY Date 01/15/02  
 Checked by AP Date 01/16/02

### INITIAL CONDITION OF SPECIMEN

Diameter (d) 1.93 in  
 Sample Area (A) 2.91 in<sup>2</sup>  
 Length (L) 2.00 in  
 Weight Before 201.01 g  
 Wet Density 131.54 pcf  
 Dry Density 108.20 pcf

	<u>Before</u>	<u>After</u>
Container No.		
Wt. Wet Soil+Container(gms)	<u>130.43</u>	<u>364.89</u>
Wt. Dry Soil+Container(gms)	<u>116.15</u>	<u>330.56</u>
Wt. Container (gms)	<u>49.94</u>	<u>165.35</u>
Moisture, (%)	<u>21.57</u>	<u>20.78</u>

### TEST RESULTS



Time (min)	Flow Rdg (cm)	Burette Factor	Q (cc)	Head, h (psi)	h/L	Q/t (cc/s)
0	39.8	1	0.0	1.0	13.8	0
127	39.2	1	0.6	1.0	13.8	7.87E-05
202	38.9	1	0.9	1.0	13.8	6.67E-05
321	38.4	1	1.4	1.0	13.8	7.00E-05
389	38.1	1	1.7	1.0	13.8	7.35E-05

Hydraulic Conductivity (cm/sec): 2.76E-07

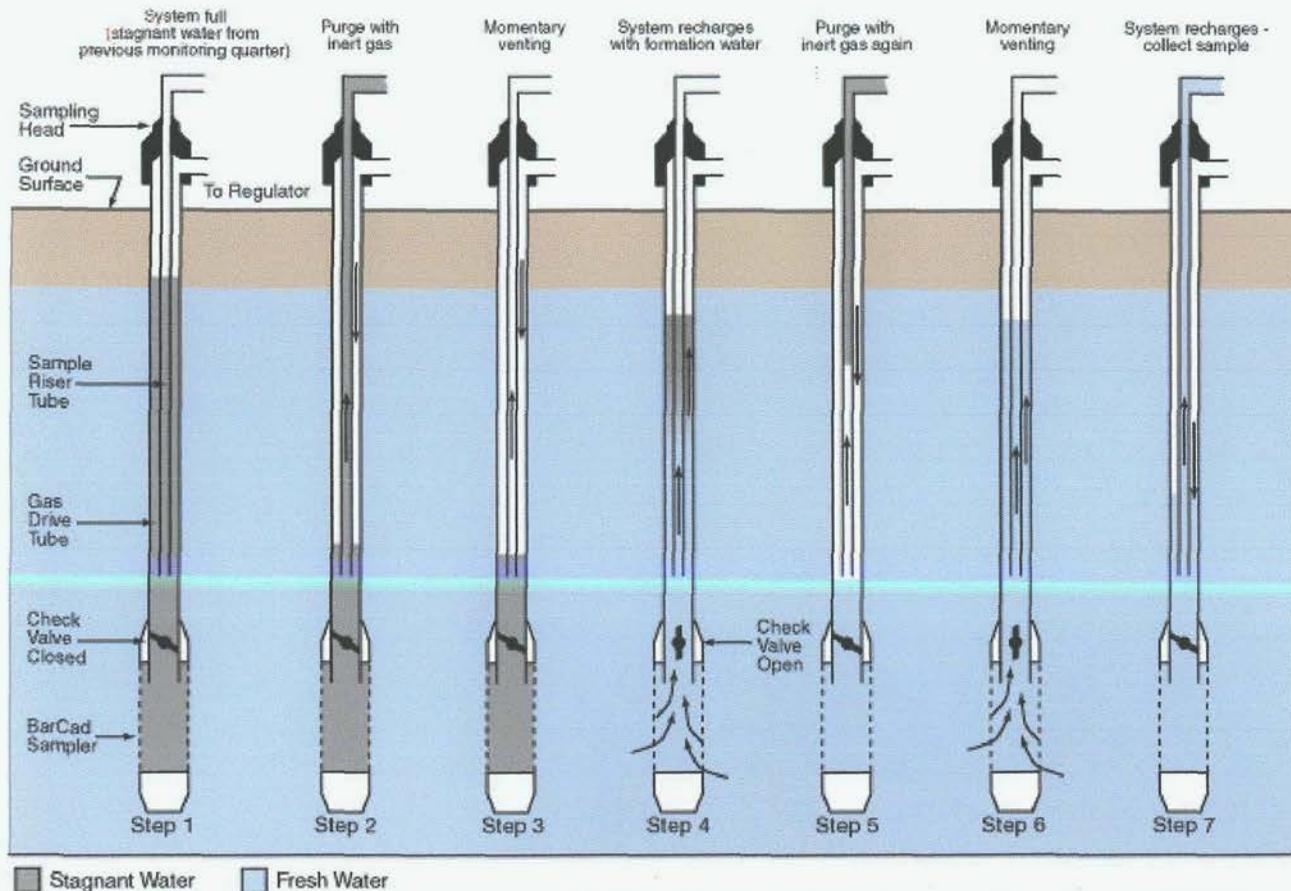
Panacea, Inc.

# Appendix E

*Diagrammatic Representation of BarCad Operation*



## Diagrammatic Representation of BarCad Operation



BESST INC., 16 Diane Lane, Suite 100, Larkspur, CA 94939 1.800.553.1755 / 1.415.389.1657 / 1.415.389.1688 (fax) / SimulProbe@aol.com / www.BESSTINC.com

**Operation -** The only equipment necessary to collect water from a BarCad® is a monitoring well adapter, cylinder of compressed gas, regulator, and sample vials.

**Step 1:** To operate the sampler, the sampling head is connected to the drive tube and then to the regulator. The internal riser tube exits the drive tube through the sampling head and is vented to the atmosphere or a collection vial

**Step 2:** When gas pressure is applied, water in the annulus is forced downward. Because the check valve in the sampler closes and prevents water or gas from entering formation through the sampler, the water flows upward and discharges from the riser tube.

**Step 3:** This procedure evacuates practically all stagnant water in both tubes on the first flush.

**Step 4:** Once the water discharge from the riser ceases, the gas pressure is reduced and the drive tube vented to the atmosphere. The pressure difference between the water level in the formation and that in the now-empty tubes opens the check valve and allows water from the formation to enter the sampler. Water in the sampler is thus displaced upward into the tubing.

**Step 5:** Gas pressure is reapplied and the resulting discharge wasted.

**Step 6:** In practice, this procedure is repeated several times until only fresh formation water remains in the system.

**Step 7:** Repeated contact with formation water during flushing also allows for equilibration between tubing and chemical constituents in the formation water. After flushing is completed, a controllable, continuous stream of representative formation water can easily be collected for chemical analysis.

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