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April 25, 2012

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**Subject: RO0000289  
2012 ANNUAL GROUNDWATER MONITORING REPORT,  
OWENS-BROCKWAY GLASS CONTAINER FACILITY.  
3600 ALAMEDA AVENUE, OAKLAND, CALIFORNIA.**

Dear Mr. Khatri:

Owens-Brockway Glass Container Corporation is pleased to submit the attached 2012 Annual Groundwater Monitoring Report for the above site.

I declare under penalty of perjury that the information and recommendations contained in the attached report are true and correct to the best of my knowledge.

If you need further information feel free to call me at (567) 336-8682.

Sincerely,

Mark Tussing.  
Manager, Environmental Affairs

**2012 GROUNDWATER MONITORING  
REPORT**

**OWENS-BROCKWAY  
GLASS CONTAINER FACILITY  
OAKLAND, CALIFORNIA**



**CKG Environmental, Inc.**

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A Report Prepared for:

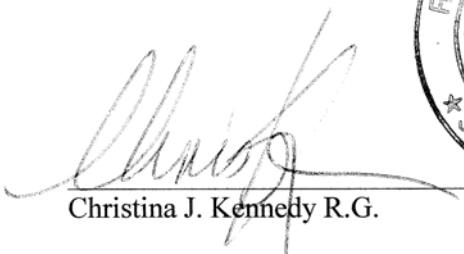
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**2012 GROUNDWATER MONITORING  
REPORT**

**OWENS-BROCKWAY GLASS CONTAINER FACILITY,  
OAKLAND, CALIFORNIA**

April 25, 2012

Prepared by:



Christina J. Kennedy R.G.



Principal

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## 1.0 EXECUTIVE SUMMARY

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The Owens-Brockway glass manufacturing facility is located at 3600 Alameda Avenue in Oakland, California. The site is located to the north of the Oakland Estuary with Fruitvale Avenue to the west, a Home Depot to the east and residences to the north. Onsite facilities include the operating glass manufacturing plant, warehouses, offices and two former underground fuel storage tank areas.

Two underground fuel storage tank (UST) areas existed at the Oakland plant. The first UST area was located on the west side of the plant and included three fuel oil USTs. Impacts by fuel oil to the subsurface were observed when the associated USTs were removed. The second UST area was located near the central part of the plant adjacent to the compressor building. Originally there were four USTs in this area. When they were removed and replaced by two new USTs, a gasoline release to the subsurface was observed.

CKG compiled all the historic data for the site and completed a Cone Penetration Test (CPT) subsurface investigation and installed one offsite monitoring well. This data was used to refine our understanding of the distribution of petroleum hydrocarbons at the site and to evaluate the UST releases with respect to potential closure. A round of groundwater monitoring also was completed to comply with regulatory requirements and to evaluate the existence and distribution of the various types of petroleum hydrocarbons potentially present on and off site. In August 2009 a subsurface investigation was completed to address data gaps identified in a Site Conceptual Model (SCM) prepared in April 2009. The subsurface investigation and groundwater monitoring, and a review of historic data, shows that the petroleum hydrocarbon plumes are stable and have attenuated substantially over time. The fuel oil release appears to extend off site.

Based on the SCM a Feasibility Study dated August 27, 2010 was completed. The recommended remediation option was targeted excavations at fuel source areas with chemical oxidant placed in the excavations before backfilling. The targeted excavation program was partially implemented in summer of 2011. The full program could not be completed due to logistical issues associated with working at an operating plant. CKG recommends that Owens-Brockway submit this report to the Alameda County Health Agency.

## 2.0 INTRODUCTION

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The following report presents the results and conclusions of the annual of groundwater monitoring in 2012. The work was performed in general accordance with CKG's proposal dated November 15, 2002 with slight modifications as discussed below.

### 2.1 SITE DESCRIPTION

The Owens-Brockway glass manufacturing facility is located at 3600 Alameda Avenue in Oakland, California, (Plate 1). The site is located to the north of the Oakland Estuary with Fruitvale Avenue to the west, a former retail center to the east and residences to the north. Onsite facilities include the operating glass manufacturing plant, warehouses, offices and two former underground fuel storage tank areas, (Plate 2).

#### **Fuel Oil USTs**

One UST site was located on the west side of the plant and included three former USTs, which were used to contain fuel oil. At the time these USTs were removed it was discovered that fuel oil had been released to the subsurface. Owens-Brockway excavated impacted soil at the time the USTs were removed. Floating product associated with the fuel oil release exists and past efforts to remove it have been unsuccessful. This lack of success is mainly due to the clay rich nature of the subsurface and the viscosity of the product. Groundwater monitoring has been ongoing sporadically for the last 16 years. A Geoprobe™ investigation completed in 1999 by Kennedy/Jenks Consultants included collecting groundwater samples from five locations off-site in the downgradient direction. Three of these samples were found to contain petroleum hydrocarbons. This petroleum hydrocarbon was identified to be Stoddard solvent, not fuel oil.

#### **Gasoline USTs**

The second UST area was located near the central part of the plant adjacent to the compressor building. Originally there were four USTs in the area. When they were removed and replaced by two new USTs a gasoline release to the subsurface was observed. Owens-Brockway excavated impacted soil at the time the USTs were removed. Groundwater monitoring has shown that the gasoline release has attenuated naturally.

## **3.0 GROUNDWATER MONITORING**

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### **3.1 GROUNDWATER GRADIENT**

Depth to groundwater measurements were made on March 1, 2012, before the monitoring wells were sampled. Depth to static ground water was measured from a marked location at the top of the PVC casing. The depth of water was then subtracted from the elevation of the top of the well casing to provide a ground water elevation for each monitoring well. Plate 2 shows groundwater elevations and the interpreted groundwater flow direction. Based on the data measured on March 1, 2012 the groundwater flow direction is generally to the south-southwest. This groundwater flow direction has been observed in past monitoring events. To prepare for the remediation work completed in the summer of 2011 CKG properly closed MW-2. Monitoring well construction details are presented in Table 1. Depth to water measurements and groundwater elevations are summarized in Table 2. Well sampling and purge logs are contained in Appendix A.

### **3.2 WELL SAMPLING**

On March 1, 2012 a round of groundwater sampling in the monitoring wells was performed. Floating product was observed in MW-6, and MW-7 so they were not sampled. Separate phase product also was observed in MW-13, which has typically been a less impacted well. CKG thought this could be the result of surface spillage so requested the technician to over purge the well and sample it anyway. Separate phase product in MW-13 quickly disappeared with purging during this monitoring event. MW-9, which is located in the middle of the loading ramp, could not be safely accessed.

The wells were sampled using the following protocol.

- The depth-to-water was measured using a conductivity-based water level indicator.
- The volume of water standing in each well was calculated by subtracting the depth-to-water measurement from the total depth of the well, and multiplying by the appropriate volume conversion factor.
- A minimum of three well volumes of water was purged from each well using a centrifugal pump. A total of 10 purge volumes was removed from MW-13. The pump was

decontaminated prior to use in each well by washing with TSP and rinsing with distilled water. Fresh tubing was used for each well

- Physical parameters of pH and temperature were monitored for stability during purging.
- Sample bottles, provided by the analytical laboratory were filled from a new clean disposable bailer at each well.
- Samples were immediately labeled and placed in an iced sample container. The samples were picked up by the analytical laboratory, under chain-of-custody control the following day.

### **3.3 CHEMICAL ANALYSIS**

Groundwater samples were submitted under chain-of-custody to McCampbell Analytical Laboratory in Pacheco, California. McCampbell is a laboratory certified with the California Department of Health Services under the California Environmental Laboratory Accreditation Program (ELAP) for the requested analyses. The analytical program was completed in general accordance with CKG's proposal dated November 15, 2002. The chemical analyses performed include the following:

- Total Petroleum Hydrocarbons quantified as diesel, (TPHd,) motor oil (TPHmo) and gasoline (TPHg) by Modified EPA Method 8015 and;
- Benzene, Toluene, Ethylbenzene, xylenes, and MTBE by EPA Method 8020

### **3.4 INVESTIGATION DERIVED WASTES (IDW)**

Investigation derived wastes (IDW) were generated during the investigation and included purge water. Purge water was placed into the on-site oil/water separator system.



## 4.0 FINDINGS

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The following describes the results of the annual groundwater monitoring at the Owens-Brockway Glass Container facility in Oakland, California. Comparisons are made between the data and appropriate regulatory standards and risk based screening levels where they are available. Groundwater sample results are presented in Table 3. Analytical laboratory reports are included in Appendix B. Sample locations and pertinent data are presented on Plate 3.

### 4.1 SUMMARY OF GROUNDWATER RESULTS

#### 4.1.1 Fuel Oil Release Area (MW-1, MW-5, MW-6, MW-7, MW-8, MW-10, MW-19)

Petroleum hydrocarbons quantified as diesel/fuel oil, were detected in all of the water samples collected as summarized in Table 3. Diesel concentrations are shown and contoured on Plate 3. Separate phase floating product was observed in MW-6 and MW-7, as shown on Table 2 and Plate 2, so they were not sampled. TPHd concentrations detected in groundwater range from 92 to 8600 µg/l. Absorbent socks are installed in MW-5, MW-6, and MW-7. Owens-Brockway regularly changes the socks. The estimated outline of the product plume is illustrated on Plate 3. Based on observations made during remediation work in the summer of 2011 and on the distribution of separate phase product observed in old wells, CKG interprets the product plume area to be larger than documented in the past, but this does not suggest a change in conditions, just an updated interpretation.

#### 4.1.2 Gasoline Release Area (MW-13, MW-15, MW- 16, MW17, MW-20)

Petroleum hydrocarbons quantified as gasoline, were detected in one water sample as summarized in Table 3. TPHg was detected in MW-17 at 3,000 µg/l which is comparable to that observed over the last few years, and likely reflects the very high concentration of diesel present in the well as opposed to the presence of gasoline in the groundwater. TPH quantified as diesel/motor oil was detected at MW-17 at 390,000 µg/l which was lower than that observed in 2010. An absorbent sock has been maintained in MW-17 since 2008.

Owens-Brockway had installed absorbent socks in MW-13, MW-15, and MW-20, as part of their general well maintenance. On March 3 the socks in MW-13, and MW-15 appeared to be stained and separate phase product was measured in MW-13. This was the first time that separate phase product had been observed in the wells. The sampling technician overpurged MW-13 and collected a sample so that the petroleum hydrocarbon product could be identified. As the technician purged the well the product cleared up. TPHd was detected in MW-13 at 100 mg/l which is far below the concentration that would be expected if separate phase product was pervasive in the subsurface. It is possible that the socks were stained as a result of surface spillage and infiltration. CKG and Owens-Brockway will perform well head repairs and maintenance to make sure the well heads are secure.

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

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On the basis of the annual monitoring the following conclusions and recommendations can be made:

### **5.1 CONCLUSIONS**

The recent groundwater monitoring, as well as a review of historic data, shows that the petroleum hydrocarbon plumes at the site are stable and have attenuated over time. The fuel oil release appears to extend off site.

### **5.2 RECOMMENDATIONS**

CKG recommends that Owens-Brockway submit this report to the Alameda County Health Agency.

## 6.0 REFERENCES

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California Regional Water Quality Control Board – San Francisco Bay region, Order No 99-045, 1999

CKG Environmental, Inc. Groundwater Monitoring Reports,  
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2008 Report, January 8, 2009.  
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CKG Environmental, Inc. 2005, Work Plan to Prepare a Site Conceptual Model, Owens-Brockway Glass Container Facility, Oakland, California. April 6, 2005.

CKG Environmental, Inc. Summary of Remediation History and Groundwater Impact by Petroleum Hydrocarbons, Owens-Brockway Glass Container Facility, 3600 Alameda Avenue, Oakland, California. April 4, 2003.

CKG Environmental, Inc. Work Plan to Install One Monitoring Well and Assess the Distribution of Petroleum Hydrocarbons, Owens-Brockway Glass Container Facility, Oakland, California, April 22, 2003.

CKG Environmental, Inc. Data Compilation and Closure Report Underground Fuel Storage Tank Locations, Owens-Brockway Glass Container Facility, Oakland, California, November 4, 2003.

Exeltech, Soil and Groundwater Contamination Investigation for Owens-Illinois Glass Container Division, 3600 Alameda Avenue, Oakland, California, December 1986.

Exeltech, Soil and Groundwater Contamination Investigation for Owens-Illinois Glass Container Division, 3600 Alameda Avenue, Oakland, California, February 1987.

Kennedy/Jenks, Consultants. Groundwater investigation Report, Owens-Brockway Glass Containers, February 16, 1999.

Kennedy/Jenks, Consultants. Annual Groundwater Monitoring Report, Owens-Brockway Glass Containers, January 21, 2003.

## **LIMITATIONS**

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CKG Environmental, Inc. prepared this report in accordance with generally accepted standards of care, which exist in Northern California at this time. It should be recognized that definition and evaluation of geologic and environmental conditions is a difficult and an inexact science.

Conclusions and recommendations presented in this report are based on the results of the scope of work presented in our proposal dated November 15, 2002. This scope of work includes groundwater sampling at total of 10 wells, and quantitative analysis of groundwater samples conducted by McCampbell Analytical. Only work described herein was performed. As such CKG cannot render opinions on issues not resulting directly from the work performed.

Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present. More extensive studies, including additional subsurface investigations, may be performed to reduce uncertainties. If the client wishes to reduce the uncertainties of this investigation, CKG should be notified for additional consultation. No warranty, expressed or implied, is made.

This report may be used only by the client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both onsite and offsite) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify CKG of such intended use. Based on the intended use of the report, CKG may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release CKG from any liability resulting from the use of this report by any unauthorized party.

## **TABLES**

**Table 1 Summary of Well Construction Details**

Well Number	Date Installed	Top of Casing Elevation <sup>(a)</sup>	Top of Screen <sup>(b)</sup>	Screen Length	Well Depth <sup>(c)</sup>	Casing Diameter (inches)	Comments
MW-1	9/12/1986	16.02	8	21	29	2	
MW-2	12-Sep-86	17.11	10	20	30	2	Destroyed
MW-3	12-Sep-86	15.46	10	20	39	2	Destroyed
MW-4	12-Sep-86	16.02	8.5	20	28.5	2	
MW-5	12-Sep-86	16.19	8.5	20	28.5	2	
MW-6	12-Sep-86	17.48	12.5	16	28.5	2	
MW-7	12-Sep-86	16.11	12.5	11	23.5	2	
MW-8	12-Sep-86	16.57	15	13.5	28.5	2	
MW-9	12-Sep-86	7.33 <sup>(d)</sup>	5	10	20	2	
MW-10	12-Sep-86	15.96	10	15	25	2	
MW-11	12-Sep-86	13.99	10	20	30	2	
MW-12	12-Sep-86	13.83	11	15	26	2	
MW-13	12-Sep-86	13.98	9.5	15	24.5	2	
MW-14	12-Sep-86	14.78	10	15	25	2	Destroyed
MW-15	12-Sep-86	15.16	9.5	20	29.5	2	
MW-16	12-Sep-86	13.48	10	14.5	24.5	2	
MW-17	12-Sep-86	14.17	9.5	15	24.5	2	
MW-18	12-Sep-86	14.89	9	15	24	2	Destroyed
MW-19	01-May-03	NA	10	15	25	2	
MW-20	01-Dec-00	12.74	6.9	15	21.9	2	
R-1	1987	NM <sup>(e)</sup>	NA <sup>(f)</sup>	NA	24	36	Destroyed
R-2	1989	NM	NA	NA	NA	12	Destroyed

(a) Top of casing elevation (TOCE) except where noted; measured in feet above US Coast and Geodetic Datum (mean sea level). Elevations measured by Exceltech in 1986, and by PLS Surveys for MW-20 in 2000.

(b) Depth to top of screened interval (feet below top of casing)

(c) Depth to bottom of screened interval (feet below top of casing)

(d) Well casing was not measured for this well; well is located beneath forklift ramp and this measurement is the ground surface elevation in MSL.

(e) NM = Not measured

(f) NA = Not available

**Table 2 Groundwater Depths and Elevation March 1, 2012**

Well Number	Date Installed	Top of Casing Elevation <sup>(a)</sup>	Depth to Water	Product thickness (ft)*	Groundwater Elevation
MW-1	9/12/1986	16.02	8.31		7.71
MW-2	12-Sep-86	17.11	NM		
MW-4	12-Sep-86	16.02	NM		
MW-5	12-Sep-86	16.19	12.89		3.30
MW-6	12-Sep-86	17.48	13.89	0.01	3.60
MW-7	12-Sep-86	16.11	12.31	0.01	3.81
MW-8	12-Sep-86	16.57	9.23		7.34
MW-9	12-Sep-86	7.33 <sup>(d)</sup>	NM		
MW-10	12-Sep-86	15.96	9.67		6.29
MW-11	12-Sep-86	13.99	NM		
MW-12	12-Sep-86	13.83	NM		
MW-13	12-Sep-86	13.98	10.33	0.01	3.66
MW-15	12-Sep-86	15.16	11.94		3.22
MW-16	12-Sep-86	13.48	6.24		7.24
MW-17	12-Sep-86	14.17	8.56		5.61
MW-19	01-May-03	NA	11.74		
MW-20	01-Dec-00	12.74	8.03		4.71

(a) Top of casing elevation (TOCE) except where noted; measured in feet above US Coast and Geodetic Datum (mean sea level). Elevations measured by Exceltech in 1986, and by PLS Surveys for MW-20 in 2000.

(d) Well casing was not measured for this well; well is located beneath forklift ramp and this measurement is the ground surface elevation in MSL.

(e) NM = Not measured

(f) NA = Not available

\* In the case where separate phase product is measured, groundwater elevation is corrected assuming a fuel oil with product density of 0.893



**Table 3 Summary of Groundwater Analytical Results  
Owens-Brockway Glass Container Facility, Oakland, CA**

	Date	B	T	E	X	TPHd	TPHg	TOG/TPHmo	
MW-1	9/23/1986	<10	<10	NA	<10	<.01	<.01	25,000	
	4/9/1987	<10	<10	NA	<10	<.01	NA	NA	
	9/16/1987	not accessible							
	12/1/1987	not accessible							
	3/7/1988	not accessible							
	6/8/1988	not accessible							
	9/14/1988	not accessible							
	9/16/1997	<0.5	<0.5	<0.5	<0.5	<0.5	190 <sup>(a)</sup>	<50	NA
	11/2/1998	<0.5	<0.5	<0.5	<0.5	<0.5	160 <sup>(a)</sup>	<50	NA
	12/11/2001	not accessible							
	12/6/2002	<0.5	<0.5	<0.5	<0.5	<0.5	69 <sup>(a)</sup>	<50	NA
	3/15/2004	not accessible							
	6/30/2005	not accessible							
	10/19/2006	<0.5	<0.5	<0.5	<0.5	<0.5	5400	120	3300
	10/17/2007	not accessible							
	10/21/2008	<0.5	<0.5	<0.5	<0.5	<0.5	2000	69	1300
	10/16/2009	<0.5	<0.5	<0.5	<0.5	<0.5	310	<50	310
10/29/2010	<0.5	<0.5	<0.5	<0.5	<0.5	100	<50	<250	
3/1/2012	<0.5	<0.5	<0.5	<0.5	<0.5	92	<50	<250	
MW-2	4/9/1987	floating product							
	9/16/1987	floating product							
	12/1/1987	floating product							
	3/7/1988	floating product							
	6/8/1988	floating product							
	9/14/1988	floating product							
	9/16/1997	floating product							
	11/2/1998	floating product							
	12/11/2001	floating product							
	12/6/2002	floating product							
	3/15/2004	floating product							
	6/30/2005	<0.5	<0.5	<0.5	<0.5	<0.5	1,600,000	2900	1,200,000
	9/11/2006	<2.5	4.4	19	60	830,000	13000 <sup>(b)</sup>	530,000	
	10/17/2007	floating product (1.25 feet)							
10/21/2008	floating product								
10/16/2009	floating product								
10/29/2010	floating product (1.25 feet)								
3/1/2012	Destroyed May 2011								
MW-3	9/23/1986	<10	<10	NA	<10	NA	<10	18	
	4/9/1987	BDL	BDL	NA	BDL	NA	370	NA	
	9/16/1987	floating product							
	12/1/1987	floating product							
	3/7/1988	NA	NA	NA	NA	190,000	NA	NA	
	6/8/1988	NA	NA	NA	NA	16,000	NA	NA	
	9/14/1988	floating product							
		Destroyed							

**NOTES:**

- TPH-g - Total Petroleum Hydrocarbons as Gasoline in ug/l      B - Benzene in ug/l      X - Xylenes in ug/l  
 TPH-d - Total Petroleum Hydrocarbons as Diesel in ug/l      T - Toluene in ug/l      E - Ethylbenzene in ug/l  
 TOG - Total Oil and Grease in ug/l      TPHmo - Total Petroleum Hydrocarbons as Motor Oil ug/l (after 2004)  
 BDL - Below detection limit      NA - Not analyzed  
 (a) - Quantified as diesel but chromatogram did not match diesel pattern  
 (b) - Quantified as gasoline but chromatogram did not match gasoline pattern

**Table 3 Summary of Groundwater Analytical Results  
Owens-Brockway Glass Container Facility, Oakland, CA**

	Date	B	T	E	X	TPHd	TPHg	TOG/TPHmo
MW-4	9/23/1986	<5	<5	NA	<5	NA	20	7,200
	4/9/1987	BDL	BDL	NA	BDL	NA	BDL	NA
	9/16/1987	BDL	BDL	NA	BDL	660	1.3	NA
	12/1/1987	BDL	BDL	NA	8.9	100	BDL	NA
	3/7/1988	BDL	BDL	NA	BDL	BDL	BDL	NA
	6/8/1988	BDL	BDL	NA	BDL	BDL	BDL	NA
	9/14/1988	BDL	BDL	NA	BDL	100	BDL	NA
	Destroyed							
MW-5	10/3/1986	<5	<5	NA	6.6	NA	1400	24,000
	4/9/1987	<5	<5	NA	<5	NA	54	NA
	9/16/1987	NA	NA	NA	NA	960	NA	NA
	12/1/1987	NA	NA	NA	NA	2000	NA	NA
	3/9/1988	NA	NA	NA	NA	<50	NA	NA
	6/8/1988	NA	NA	NA	NA	12,000	NA	NA
	9/14/1988	NA	NA	NA	NA	6,300	NA	NA
	9/16/1997	<0.5	<0.5	<0.5	<0.5	11,600	<50	NA
	11/2/1998	floating product						
	12/6/2000	<0.5	<0.5	<0.5	<0.5	11,700 <sup>(a)</sup>	1000	NA
	12/12/2001	<0.5	<0.5	<0.5	<0.5	10,000 <sup>(a)</sup>	360 <sup>(b)</sup>	NA
	12/6/2002	<0.5	<0.5	<0.5	<0.5	5,200 <sup>(a)</sup>	150 <sup>(b)</sup>	NA
	3/15/2004	<0.5	<0.5	<0.5	<0.5	46,000 <sup>(a)</sup>	180 <sup>(b)</sup>	NA
	6/30/2005	<0.5	<0.5	<0.5	<0.5	34,000	100	26,000
	9/11/2006	<0.5	<0.5	<0.5	<0.5	45,000	300 <sup>(a)</sup>	33,000
	10/17/2007	<0.5	<0.5	<0.5	<0.5	34,000	120	31,000
	10/21/2008	<0.5	<0.5	<0.5	<0.5	13,000	150	11,000
10/16/2009	<0.5	<0.5	<0.5	<0.5	160,000	180	140,000	
10/29/2010	Floating product (0.04 ft)							
3/1/2012	<0.5	<0.5	<0.5	<0.5	8,600	190	8,900	
MW-6	4/9/1987	floating product						
	9/16/1987	NA	NA	NA	NA	400,000	NA	NA
	12/1/1987	NA	NA	NA	NA	30,000	NA	NA
	3/7/1988	NA	NA	NA	NA	9,800	NA	NA
	6/8/1988	NA	NA	NA	NA	63,000	NA	NA
	9/14/1988	NA	NA	NA	NA	140,000	NA	NA
	9/16/1997	floating product						
	11/2/1998	floating product						
	12/11/2001	floating product						
	12/6/2002	floating product						
	3/15/2004	floating product						
	6/30/2005	<0.5	<0.5	<0.5	<0.5	270,000	300	200,000
	9/11/2006	<0.5	<0.5	<0.5	<0.5	100,000	700 <sup>(a)</sup>	77,000
	10/17/2007	<1	<1	<1	11.00	290,000	3400	190,000
	10/21/2008	<1	<1	<1	<1	38,000	330	28,000
	10/16/2009	<0.5	<0.5	<0.5	<0.5	98,000	490	89,000
10/29/2010	floating product (0.05 ft)							
3/1/2012	floating product (0.01 ft)							

**NOTES:**

- TPH-g - Total Petroleum Hydrocarbons as Gasoline in ug/l      B - Benzene in ug/l      X - Xylenes in ug/l  
 TPH-d - Total Petroleum Hydrocarbons as Diesel in ug/l      T - Toluene in ug/l      E - Ethylbenzene in ug/l  
 TOG - Total Oil and Grease in ug/l      TPHmo - Total Petroleum Hydrocarbons as Motor Oil ug/l (after 2004)  
 BDL - Below detection limit      NA - Not analyzed  
 (a) - Quantified as diesel but chromatogram did not match diesel pattern  
 (b) - Quantified as gasoline but chromatogram did not match gasoline pattern

**Table 3 Summary of Groundwater Analytical Results  
Owens-Brockway Glass Container Facility, Oakland, CA**

	Date	B	T	E	X	TPHd	TPHg	TOG/TPHmo
MW-7	10/3/1986	<5	<5	NA	<5	NA	260	8,000
	4/9/1987	floating product						
	9/16/1987	NA	NA	NA	NA	790,000	NA	NA
	12/1/1987	NA	NA	NA	NA	5,300	NA	NA
	3/9/1988	NA	NA	NA	NA	<50	NA	NA
	6/9/1988	NA	NA	NA	NA	12,000	NA	NA
	9/14/1988	NA	NA	NA	NA	67,000	NA	NA
	9/16/1997	<0.5	<0.5	<0.5	<0.5	37,000 <sup>(a)</sup>	850	NA
	11/2/1998	floating product						
	12/6/2000	<5	<.05	<.05	1.90	3,580 <sup>(a)</sup>	540	NA
	12/12/2001	<1	<1	<1	<1	12,600 <sup>(a)</sup>	1200 <sup>(b)</sup>	NA
	12/6/2002	<0.5	<0.5	<0.5	<0.5	27,600 <sup>(a)</sup>	480 <sup>(b)</sup>	NA
	3/15/2004	<0.5	<0.5	0.57	1.10	170,000 <sup>(a)</sup>	890 <sup>(b)</sup>	NA
	6/30/2005	<.05	<.05	3.1	<.05	290,000	3000	150,000
	9/11/2006	<5	<5	<5	<5	310,000	6600 <sup>(a)</sup>	150,000
	10/17/2007	<1	<1	<1	2.70	330,000	1900	190,000
	10/21/2008	<1	<1	<1	<1	82,000	1100	43,000
10/16/2009	<5	<5	<5	<5	60,000	2200	35,000	
10/29/2010	floating product (0.03 ft)							
3/1/2012	floating product (0.01 ft)							
MW-8	10/23/1986	<0.2	<0.2	NA	<1	NA	1300	14,000
	4/9/1987	<0.5	<0.2	NA	<1	NA	73	NA
	9/16/1987	floating product						
	12/1/1987	NA	NA	NA	NA	630	NA	NA
	3/9/1988	NA	NA	NA	NA	2,600	NA	NA
	6/9/1988	NA	NA	NA	NA	1,700	NA	NA
	9/14/1988	NA	NA	NA	NA	150	NA	NA
	8/12/1997	floating product						
	9/16/1997	<0.5	<0.5	<0.5	<0.5	290 <sup>(a)</sup>	<50	NA
	11/2/1998	<0.5	<0.5	<0.5	<0.5	1,300 <sup>(a)</sup>	<50	NA
	12/6/2000	<0.5	<0.5	<0.5	<0.5	160 <sup>(a)</sup>	<50	NA
	12/12/2001	<0.5	<0.5	<0.5	<0.5	<50	<50	NA
	12/5/2002	<0.5	<0.5	<0.5	<0.5	170 <sup>(a)</sup>	55 <sup>(b)</sup>	NA
	3/15/2004	<0.5	<0.5	<0.5	<0.5	3,000 <sup>(a)</sup>	320 <sup>(b)</sup>	NA
	6/30/2005	<0.5	<0.5	<0.5	<0.5	4,600	1100	1,400
	9/11/2006	<0.5	<0.5	<0.5	2.1	1800	1200	760
	10/17/2007	<0.5	<0.5	<0.5	<0.5	1,300	390	2,100
	10/21/2008	<0.5	<0.5	<0.5	<0.5	380	74	470
	10/16/2009	<0.5	<0.5	<0.5	<0.5	340	280	<250
10/29/2010	<0.5	<0.5	<0.5	<0.5	84	150	<250	
3/1/2012	<0.5	<0.5	<0.5	<0.5	410	560	600	

**NOTES:**

- TPH-g - Total Petroleum Hydrocarbons as Gasoline in ug/l      B - Benzene in ug/l      X - Xylenes in ug/l  
 TPH-d - Total Petroleum Hydrocarbons as Diesel in ug/l      T - Toluene in ug/l      E - Ethylbenzene in ug/l  
 TOG - Total Oil and Grease in ug/l      TPHmo - Total Petroleum Hydrocarbons as Motor Oil ug/l (after 2004)  
 BDL - Below detection limit      NA - Not analyzed  
 (a) - Quantified as diesel but chromatogram did not match diesel pattern  
 (b) - Quantified as gasoline but chromatogram did not match gasoline pattern

**Table 3 Summary of Groundwater Analytical Results  
Owens-Brockway Glass Container Facility, Oakland, CA**

	Date	B	T	E	X	TPHd	TPHg	TOG/TPHmo
MW-9	4/9/1987	floating product						
	9/16/1987	NA	NA	NA	NA	1,300	NA	NA
	12/1/1987	NA	NA	NA	NA	18,000	NA	NA
	3/9/1988	NA	NA	NA	NA	47,000	NA	NA
	6/8/1988	floating product						
	9/14/1988	floating product						
	9/16/1997	<13	<13	<13	18.00	28,000 <sup>(a)</sup>	6000	NA
	11/2/1998	floating product						
	12/6/2000	<5	<.5	<.5	<.5	102,000 <sup>(a)</sup>	790	NA
	12/12/2001	innaccessible						
	12/5/2002	innaccessible						
	3/15/2004	innaccessible						
	6/30/2005	innaccessible						
	9/11/2006	innaccessible						
	10/17/2007	innaccessible						
	10/21/2008	innaccessible						
	10/16/2009	innaccessible						
10/29/2010	innaccessible							
3/1/2012	innaccessible							
MW-10	10/23/1986	<0.2	<0.2	NA	<0.2	NA	380	7,200
	4/9/1987	<0.2	<0.2	NA	<0.2	NA	300	NA
	9/16/1987	NA	NA	NA	NA	3,800	NA	NA
	12/1/1987	NA	NA	NA	NA	590	NA	NA
	3/8/1988	NA	NA	NA	NA	<50	NA	NA
	6/8/1988	NA	NA	NA	NA	3,800	NA	NA
	9/14/1988	NA	NA	NA	NA	570	NA	NA
	9/16/1997	<0.5	<0.5	<0.5	<0.5	1,300 <sup>(a)</sup>	<50	NA
	11/2/1998	<0.5	<0.5	<0.5	<0.5	1400 <sup>(a)</sup>	<50	NA
	12/6/2000	<0.5	<0.5	<0.5	0.70	730 <sup>(a)</sup>	150	NA
	12/11/2001	<0.5	<0.5	<0.5	<0.5	630 <sup>(a)</sup>	210 <sup>(b)</sup>	NA
	12/5/2002	<0.5	<0.5	<0.5	<0.5	840 <sup>(a)</sup>	210 <sup>(b)</sup>	NA
	3/15/2004	<0.5	<0.5	<0.5	0.8	2,500 <sup>(a)</sup>	160 <sup>(b)</sup>	NA
	6/30/2005	<0.5	<0.5	<0.5	<0.5	2900	140	2300
	9/11/2006	<0.5	<0.5	<0.5	0.81	3400	270	2600
	10/17/2007	<0.5	<0.5	<0.5	<0.5	1700	140	1500
	10/21/2008	<0.5	<0.5	<0.5	<0.5	2300	240	1500
10/16/2009	<0.5	<0.5	<0.5	<0.5	4700	110	4600	
10/29/2010	<0.5	<0.5	<0.5	<0.5	640	190	530	
3/1/2012	<0.5	<0.5	<0.5	<0.5	2000	140	2400	
MW-11	9/23/1986	<0.4	<0.4	NA	1.4	NA	<8	1,200
	4/9/1987	BDL	BDL	NA	BDL	NA	BDL	NA
	9/16/1987	BDL	BDL	NA	BDL	NA	BDL	NA
	12/1/1987	0.8	BDL	NA	10	NA	BDL	NA
	3/7/1988	BDL	BDL	NA	BDL	BDL	BDL	NA
	6/8/1988	BDL	BDL	NA	BDL	BDL	BDL	NA
	9/14/1988	BDL	BDL	NA	BDL	100,000	BDL	NA
		Destroyed						

**NOTES:**

TPH-g - Total Petroleum Hydrocarbons as Gasoline in ug/l

B - Benzene in ug/l

X - Xylenes in ug/l

TPH-d - Total Petroleum Hydrocarbons as Diesel in ug/l

T - Toluene in ug/l

E - Ethylbenzene in ug/l

TOG - Total Oil and Grease in ug/l

TPHmo - Total Petroleum Hydrocarbons as Motor Oil ug/l (after 2004)

BDL - Below detection limit

NA - Not analyzed

(a) - Quantified as diesel but chromatogram did not match diesel pattern

(b) - Quantified as gasoline but chromatogram did not match gasoline pattern

**Table 3 Summary of Groundwater Analytical Results  
Owens-Brockway Glass Container Facility, Oakland, CA**

	Date	B	T	E	X	TPHd	TPHg	TOG/TPHmo
MW-12	9/23/1986	0.49	1	NA	1.3	NA	100	2,500
	4/9/1987	BDL	BDL	NA	BDL	NA	BDL	NA
	9/16/1987	BDL	BDL	NA	BDL	NA	BDL	NA
	12/1/1987	BDL	BDL	NA	13	NA	BDL	NA
	3/7/1988	BDL	BDL	NA	BDL	BDL	BDL	NA
	6/8/1988	BDL	BDL	NA	BDL	BDL	BDL	NA
	9/14/1988	BDL	BDL	NA	BDL	120	BDL	NA
	6/30/2005	Destroyed						
MW-13	12/24/1986	<0.2	<0.9	NA	<0.9	NA	<10	57,000
	4/9/1987	<5	<5	NA	<5	NA	<10	NA
	9/16/1987	<5	<5	NA	<5	NA	<10	NA
	12/1/1987	1.6	<5	NA	12	NA	<10	NA
	3/8/1988	<5	<5	NA	<5	<50	7.7	NA
	6/8/1988	<5	<5	NA	<5	<50	<10	NA
	9/14/1988	<5	<5	NA	<5	130	<10	NA
	9/16/1997	<5	<5	<5	<5	120 <sup>(a)</sup>	<50	NA
	11/2/1998	<5	<5	<5	<5	120 <sup>(a)</sup>	<50	NA
	12/6/2000	<0.5	<0.5	<0.5	<0.5	200 <sup>(a)</sup>	<50	NA
	12/11/2001	<0.5	<0.5	<0.5	<0.5	91 <sup>(a)</sup>	<50	NA
	12/5/2002	<0.5	<0.5	<0.5	<0.5	190 <sup>(a)</sup>	<50	NA
	3/15/2004	<0.5	<0.5	<0.5	<0.5	<50	<50	NA
	6/30/2005	<1.0	<1.0	<1.0	<1.0	56	<50	<250
	9/11/2006	<0.5	<0.5	<0.5	<0.5	<50	<50	<250
	10/17/2007	<0.5	<0.5	<0.5	<0.5	<50	<50	<250
	10/21/2008	<0.5	<0.5	<0.5	<0.5	<50	<50	<250
10/16/2009	<0.5	<0.5	<0.5	<0.5	<50	<50	<250	
10/29/2010	<0.5	<0.5	<0.5	<0.5	<50	<50	<250	
3/1/2012	<0.5	<0.5	<0.5	<0.5	<50	<50	<250	
MW-14	9/23/1986	<0.4	<0.2	NA	<0.2	NA	<8	3,200
	4/9/1987	BDL	BDL	NA	BDL	NA	BDL	NA
	9/16/1987	BDL	BDL	NA	BDL	56	1.7	NA
	12/1/1987	1.2	4	NA	10	66	BDL	NA
	3/7/1988	BDL	BDL	NA	BDL	BDL	20	NA
	6/8/1988	inaccessible						
	9/14/1988	inaccessible						
		Destroyed						

**NOTES:**

- TPH-g - Total Petroleum Hydrocarbons as Gasoline in ug/l      B - Benzene in ug/l      X - Xylenes in ug/l  
 TPH-d - Total Petroleum Hydrocarbons as Diesel in ug/l      T - Toluene in ug/l      E - Ethylbenzene in ug/l  
 TOG - Total Oil and Grease in ug/l      TPHmo - Total Petroleum Hydrocarbons as Motor Oil ug/l (after 2004)  
 BDL - Below detection limit      NA - Not analyzed  
 (a) - Quantified as diesel but chromatogram did not match diesel pattern  
 (b) - Quantified as gasoline but chromatogram did not match gasoline pattern

**Table 3 Summary of Groundwater Analytical Results  
Owens-Brockway Glass Container Facility, Oakland, CA**

	Date	B	T	E	X	TPHd	TPHg	TOG/TPHmo
MW-15	12/24/1986	<0.2	<0.9	NA	9.20	NA	120	1,600
	4/9/1987	<5	<5	NA	<5	NA	<0.5	NA
	9/16/1987	<5	<5	NA	<5	<100	8.4	NA
	12/1/1987	3.30	0.84	NA	14	NA	<0.5	NA
	3/8/1988	0.80	<5	NA	<5	<100	90	NA
	6/9/1988	<5	<5	NA	<5	<100	53	NA
	9/14/1988	NA	NA	NA	NA	100	NA	NA
	9/16/1997	<0.5	<0.5	<0.5	<0.5	127 <sup>(a)</sup>	<50	NA
	11/2/1998	<0.5	<0.5	<0.5	<0.5	340 <sup>(a)</sup>	<50	NA
	12/6/2000	<0.5	<0.5	<0.5	<0.5	400 <sup>(a)</sup>	<50	NA
	12/11/2001	<0.5	<0.5	<0.5	<0.5	290 <sup>(a)</sup>	<50	NA
	12/5/2002	<0.5	<0.5	<0.5	<0.5	440 <sup>(a)</sup>	<50	NA
	3/15/2004	<0.5	<0.5	<0.5	<0.5	<50	<50	NA
	6/30/2005	<0.5	<0.5	<0.5	<0.5	240	<50	360
	9/11/2006	<0.5	<0.5	<0.5	<0.5	56	<50	<250
	10/17/2007	<0.5	<0.5	<0.5	<0.5	<50	<50	<250
	10/21/2008	<0.5	<0.5	<0.5	<0.5	<50	<50	<250
	10/16/2009	<0.5	<0.5	<0.5	<0.5	55	<50	<250
10/29/2010	<0.5	<0.5	<0.5	<0.5	<50	<50	<250	
3/1/2012	<0.5	<0.5	<0.5	<0.5	100	<50	<250	
MW-16	12/24/1986	<0.2	<0.9	NA	<.9	NA	<10	1,200
	4/9/1987	<5	<5	NA	<5	NA	<.5	NA
	9/16/1987	<5	<5	NA	<5	64	<.5	NA
	12/1/1987	1.00	0.37	NA	9.1	150	120	NA
	3/7/1988	0.50	<5	NA	<5	<100	10	NA
	6/8/1988	<5	<5	NA	<5	<100	<0.5	NA
	9/14/1988	<5	<5	NA	<5	190	<0.5	NA
	9/16/1997	floating product						
	12/6/2000	<0.5	<0.5	<0.5	<0.5	97 <sup>(a)</sup>	<50	NA
	12/11/2001	<0.5	<0.5	<0.5	<0.5	<50	<50	NA
	12/5/2002	<0.5	<0.5	<0.5	<0.5	51 <sup>(a)</sup>	<50	NA
	3/15/2004	<0.5	<0.5	<0.5	<0.5	63	<50	NA
	6/30/2005	<0.5	<0.5	<0.5	<0.5	66	<50	<250
	9/11/2006	<0.5	<0.5	<0.5	<0.5	140	<50	550
	10/17/2007	<0.5	<0.5	<0.5	<0.5	92	<50	290
	10/21/2008	<0.5	<0.5	<0.5	<0.5	76	<50	<250
	10/16/2009	<0.5	<0.5	<0.5	<0.5	780	<50	910
	10/29/2010	<0.5	<0.5	<0.5	<0.5	390	<50	1500
3/1/2012	<0.5	<0.5	<0.5	<0.5	270	<50	1600	

**NOTES:**

- TPH-g - Total Petroleum Hydrocarbons as Gasoline in ug/l      B - Benzene in ug/l      X - Xylenes in ug/l  
 TPH-d - Total Petroleum Hydrocarbons as Diesel in ug/l      T - Toluene in ug/l      E - Ethylbenzene in ug/l  
 TOG - Total Oil and Grease in ug/l      TPHmo - Total Petroleum Hydrocarbons as Motor Oil ug/l (after 2004)  
 BDL - Below detection limit      NA - Not analyzed  
 (a) - Quantified as diesel but chromatogram did not match diesel pattern  
 (b) - Quantified as gasoline but chromatogram did not match gasoline pattern

**Table 3 Summary of Groundwater Analytical Results  
Owens-Brockway Glass Container Facility, Oakland, CA**

	Date	B	T	E	X	TPHd	TPHg	TOG/TPHmo	
MW-17	12/24/1986	5	1.20	NA	14.00	NA	240	2,400	
	4/9/1987	<5	<5	NA	<5	NA	<0.5	NA	
	9/16/1987	<5	<5	NA	0.55	680	44	NA	
	12/1/1987	7.80	2.40	NA	28	1,300	540	NA	
	3/8/1988	83.00	<5	NA	46	3,800	4300	NA	
	6/8/1988	innaccessible							
	9/14/1988	<0.5	<0.5	<0.5	<0.5	64,000	54000	NA	
	9/16/1997	<0.5	<0.5	<0.5	<0.5	119,600 <sup>(a)</sup>	1900	NA	
	11/2/1998	<0.5	<0.5	<0.5	0.60	16,000 <sup>(a)</sup>	<50	NA	
	12/6/2000	<0.5	<0.5	<0.5	<0.5	47,800 <sup>(a)</sup>	340	NA	
	12/11/2001	<10	<10	<10	<10	101,000 <sup>(a)</sup>	5300 <sup>(b)</sup>	NA	
	12/5/2002	<0.5	<0.5	<0.5	<0.5	71,000 <sup>(a)</sup>	700 <sup>(b)</sup>	NA	
	3/15/2004	2.1	0.71	<0.5	1.5	660,000 <sup>(a)</sup>	1400 <sup>(b)</sup>	NA	
	6/30/2005	<0.5	2.4	<0.5	1.1	1,600,000	1700	NA	
	9/11/2006	<2.5	36	9.50	79	2,300,000	26,000	810,000	
	re-test	10/19/2006	5.90	<1.0	<1.0	3.7	1,100,000	1,600	480,000
		10/17/2007	<2.5	<2.5	<2.5	<2.5	710,000	4,400	270,000
	10/21/2008	<2.5	<2.5	<2.5	<2.5	330,000	3,300	130,000	
	10/16/2009	<1.0	2.9	<1.0	<1.0	900,000	2,400	350,000	
	10/29/2010	<5.0	5.0	0.92	12	610,000	5,000	360,000	
	3/1/2012	<5.0	<5.0	<5.0	<5.0	390,000	3,000	160,000	
MW-18	9/23/1986	<0.3	<0.3	NA	0.99	NA	<20	1,600	
	4/9/1987	BDL	BDL	NA	BDL	NA	BDL	NA	
	9/16/1987	BDL	BDL	NA	BDL	480	BDL	NA	
	12/1/1987	BDL	BDL	NA	6.6	180	BDL	NA	
	3/7/1988	BDL	BDL	NA	BDL	BDL	BDL	NA	
	6/8/1988	BDL	BDL	NA	BDL	BDL	BDL	NA	
	9/14/1988	BDL	BDL	NA	BDL	190	BDL	NA	
		Destroyed							
MW-19	6/23/2004	<0.5	<0.5	<0.5	<0.5	1,100	480	NA	
	3/15/2004	<0.5	<0.5	<0.5	<0.5	1,100 <sup>(a)</sup>	330 <sup>(b)</sup>	NA	
	6/30/2005	<0.5	<0.5	1.5	4.5	1700	840	350	
	9/18/2006	<0.5	<0.5	<0.5	0.83	890	280	280	
	10/17/2007	<0.5	<0.5	<0.5	0.61	1200	880	<250	
	10/21/2008	<0.5	<0.5	<0.5	<0.5	300	340	<250	
	10/16/2009	<0.5	<0.5	<0.5	<0.5	440	390	<250	
	10/29/2010	<0.5	<0.5	<0.5	0.95	460	670	<250	
	3/1/2012	<0.5	<0.5	<0.5	<0.5	440	310	<250	

**NOTES:**

TPH-g - Total Petroleum Hydrocarbons as Gasoline in ug/l

B - Benzene in ug/l

X - Xylenes in ug/l

TPH-d - Total Petroleum Hydrocarbons as Diesel in ug/l

T - Toluene in ug/l

E - Ethylbenzene in ug/l

TOG - Total Oil and Grease in ug/l

TPHmo - Total Petroleum Hydrocarbons as Motor Oil ug/l (after 2004)

BDL - Below detection limit

NA - Not analyzed

(a) - Quantified as diesel but chromatogram did not match diesel pattern

(b) - Quantified as gasoline but chromatogram did not match gasoline pattern

**Table 3 Summary of Groundwater Analytical Results  
Owens-Brockway Glass Container Facility, Oakland, CA**

	Date	B	T	E	X	TPHd	TPHg	TOG/TPHmo
MW-20	12/11/2000	<0.5	<0.5	<0.5	<0.5	110 <sup>(a)</sup>	<50	NA
	4/6/2001	<0.5	<0.5	<0.5	<0.5	57 <sup>(a)</sup>	<50	NA
	7/6/2001	<0.5	<0.5	<0.5	<0.5	120 <sup>(a)</sup>	<50	NA
	9/19/2001	<0.5	<0.5	<0.5	<0.5	160 <sup>(a)</sup>	<50	NA
	12/11/2001	<0.5	<0.5	<0.5	<0.5	82 <sup>(a)</sup>	86 <sup>(b)</sup>	NA
	2/6/2002	<0.5	<0.5	<0.5	<0.5	85 <sup>(a)</sup>	<50	NA
	3/15/2004	<0.5	<0.5	<0.5	<0.5	<0.5	<50	NA
	6/30/2005	<0.5	<0.5	<0.5	<0.5	<500	<50	NA
	9/11/2006	<0.5	<0.5	<0.5	<0.5	<50	<50	<250
	10/17/2007	<0.5	<0.5	<0.5	<0.5	<50	<50	<250
	10/21/2008	<0.5	<0.5	<0.5	<0.5	<50	<50	<250
	10/16/2009	<0.5	<0.5	<0.5	<0.5	<50	<50	<250
	10/29/2010	<0.5	<0.5	<0.5	<0.5	<50	<50	<250
	3/1/2012	<0.5	<0.5	<0.5	<0.5	<50	<50	<250

**NOTES:**

TPH-g - Total Petroleum Hydrocarbons as Gasoline in ug/l

B - Benzene in ug/l

X - Xylenes i

TPH-d - Total Petroleum Hydrocarbons as Diesel in ug/l

T - Toluene in ug/l

E - Ethylbenzene in ug/l

TOG - Total Oil and Grease in ug/l

TPHmo - Total Petroleum Hydrocarbons as Motor Oil ug/l (after 2004)

BDL - Below detection limit

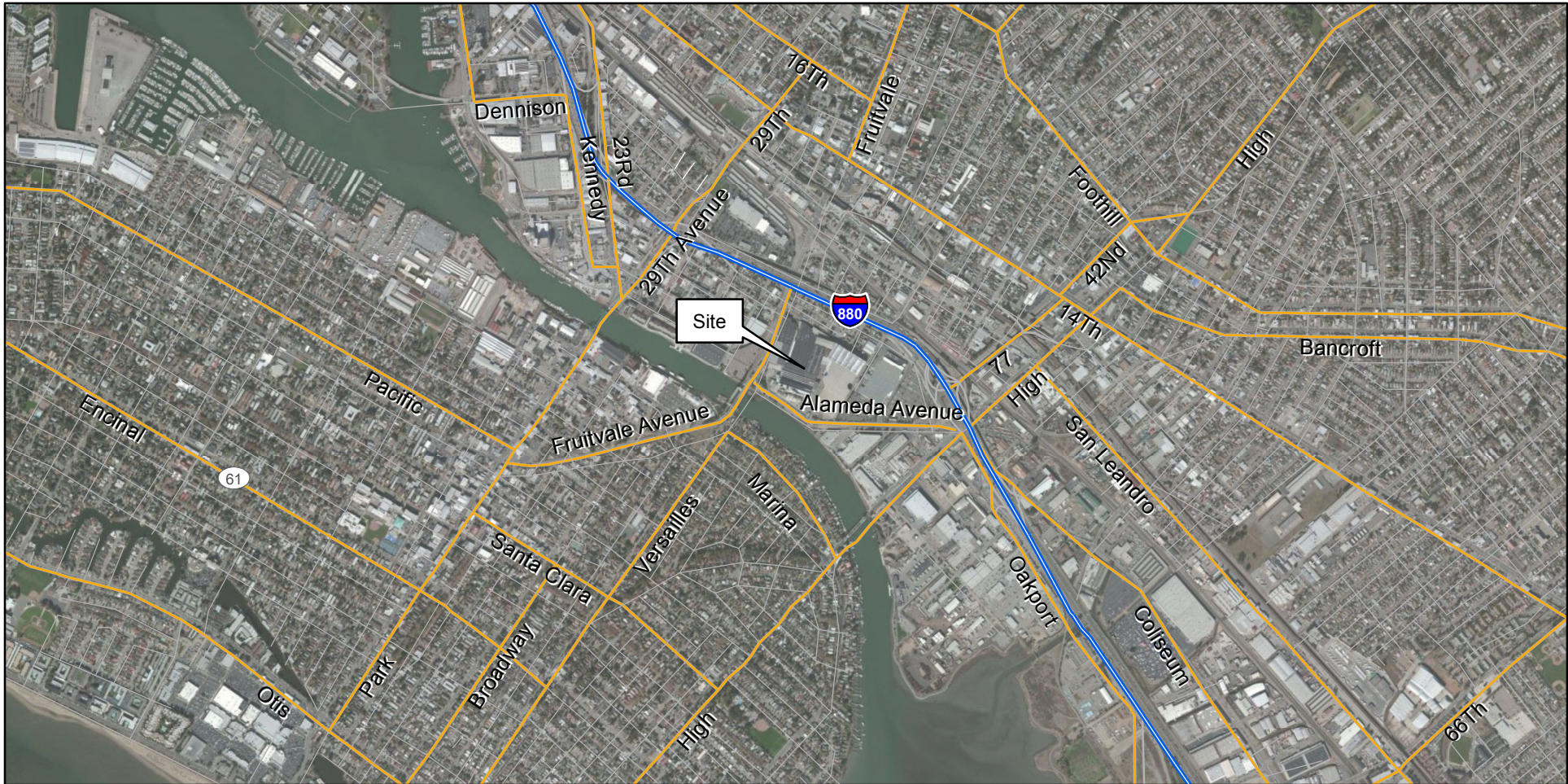
NA - Not analyzed

(a) - Quantified as diesel but chromatogram did not match diesel pattern

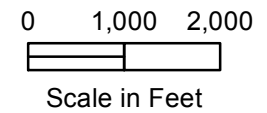
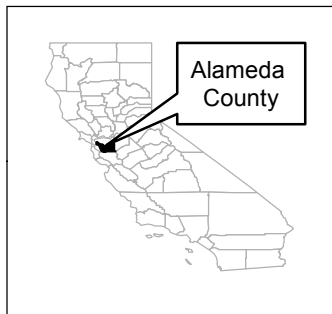
(b) - Quantified as gasoline but chromatogram did not match gasoline pattern



## **PLATES**



Drawn by A. Lewellyn. March 2012. Base layers are unmodified Alameda County Digital Data Sets.

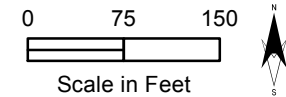




Drawn by A. Llewellyn, March 2012. Base layers are unmodified Pictometry Digital Data Sets.

**EXPLANATION**

- Monitoring Well
- Destroyed Well
- Line of Equal Groundwater Elevation
- 4.71 Groundwater Elevation
- NA Not Available
- NM Not Measured



Groundwater Elevation Contour Map **PLATE**  
 March 1, 2012  
 Owens-Brockway Glass Container Facility  
 3600 Alameda Avenue, Oakland California **2**



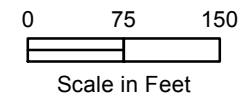


MW-3 was last reported to have floating product before being destroyed in 1988.

Drawn by A. Llewellyn, March 2012. Base layers are unmodified Pictometry Digital Data Sets.

### EXPLANATION

- Monitoring Well
- Destroyed Well
- Line of Equal Fuel Oil Concentration
- - - Approximate Line of Equal Fuel Oil Concentration
- 270 TPHd Cocentration in µg/L
- FP Floating Product
- NA Not Available



CKG Environmental, Inc.

Fuel Oil/Diesel Contour Map  
 March 1, 2012  
 Owens-Brockway Glass Container Facility  
 3600 Alameda Avenue, Oakland California

## **APPENDIX A**

## WELL GAUGING DATA

Project # 120301-SL1 Date 3/1/12 Client CKG

Site 3600 Alameda Ave, Oakland

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-1	1018	2					8.31	29.01	↓	
MW-5	0930	2		sock in well			12.89	22.75		
MW-6	0926	2		13.88 sock in well	0.01		13.89	—		
MW-7	0923	2		12.30 sock in well	0.01		12.31	—		
MW-8	0752	2					9.23	22.42		
MW-10	0738	2					9.67	19.00		
MW-13	0821	2		10.32 sock in well	0.01		10.33	19.85		
MW-15	0807	2		sock in well			11.94	28.90		
MW-16	0841	2		sock in well			8.24	19.70		
MW-17	0828	2		sock in well			8.56	15.45		
MW-19	0900	2					11.74	25.10		
MW-20	0845	2		sock in well			8.03	21.91		↓

# WELLHEAD INSPECTION CHECKLIST

Date 3/1/12 Client CKG

Site Address 3600 Alameda Ave, Oakland

Job Number 120301-561 Technician SL

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Debris Removed From Wellbox	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)
MW-1							Metal plate for lid	
MW-5							loose rim, broken box, no lock	
MW-6	X							
MW-7	X							
MW-8	X							
MW-10							broken lid, No lock, filled in w/ rocks	
MW-13							chip in lid, No lock	
MW-15							No lock	
MW-16							1/2 bolts missing, cracked apron	
MW-17	X							
MW-19	X							
MW-20							1/2 bolts broken in tab, 1/2 tabs broken	

NOTES: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## WELL MONITORING DATA SHEET

Project #: 120301-GL1	Client: CKG
Sampler: GL	Date: 3/1/12
Well I.D.: MW-1	Well Diameter: ② 3 4 6 8
Total Well Depth (TD): 29.01	Depth to Water (DTW): 8.31
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 12.45	

Purge Method: Bailer      Waterra      Sampling Method: Bailer  
~~Disposable Bailer~~      Peristaltic      ~~Disposable Bailer~~  
 Positive Air Displacement      Extraction Pump      Extraction Port  
 Electric Submersible      Other \_\_\_\_\_      Dedicated Tubing

Other: \_\_\_\_\_

$3.3 \text{ (Gals.)} \times 3 = 9.9 \text{ Gals.}$ I Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1056	15.1	8.10	900	71000	3.3	Brown
1105	15.8	7.59	1002	71000	6.6	
1111	15.6	7.64	1006	71000	9.9	DTW=17.86

Did well dewater? Yes  No  Gallons actually evacuated: 9.9

Sampling Date: 3/1/12      Sampling Time: 1130      Depth to Water: 9.09

Sample I.D.: MW-1      Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: see loc

EB I.D. (if applicable): @ Time      Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV



## WELL MONITORING DATA SHEET

Project #: <u>120301-961</u>	Client: <u>CKG</u>
Sampler: <u>SL</u>	Date: <u>3/2/12</u>
Well I.D.: <u>MW-5</u>	Well Diameter: <u>2</u> 3 4 6 8 _____
Total Well Depth (TD): <u>22.75</u>	Depth to Water (DTW): <u>12.89</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>14.86</u>	

Purge Method: Bailer <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Positive Air Displacement <input type="checkbox"/> Electric Submersible	Waterra <input type="checkbox"/> Peristaltic <input type="checkbox"/> Extraction Pump Other _____	Sampling Method: Bailer <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Extraction Port <input type="checkbox"/> Dedicated Tubing Other: _____
--	--	---

$\underline{1.6} \text{ (Gals.)} \times \underline{3} = \underline{4.8} \text{ Gals.}$ I Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1159	16.4	8.00	1182	>1000	1.6	Sheen, Odor
1204	16.7	7.75	1232	>1000	3.2	
1211	16.8	7.57	1230	>1000	4.8	
* sock stained → replaced w/ new						

Did well dewater? Yes  No  Gallons actually evacuated: 4.8

Sampling Date: 3/2/12 Sampling Time: 1220 Depth to Water: 14.22

Sample I.D.: MW-5 Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: see loc

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

# WELL MONITORING DATA SHEET

Project #: <b>120301-9V1</b>	Client: <b>CKG</b>
Sampler: <b>SL</b>	Date: <b>3/2/12</b>
Well I.D.: <b>MW-6</b>	Well Diameter: <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 6 <input type="radio"/> 8 <input type="radio"/> _____
Total Well Depth (TD): _____	Depth to Water (DTW): <b>13.89</b>
Depth to Free Product: <b>13.88</b>	Thickness of Free Product (feet): <b>0.01</b>
Referenced to: <input checked="" type="radio"/> PVC <input type="radio"/> Grade	D.O. Meter (if req'd): <input type="radio"/> YSI <input type="radio"/> HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Disposable Bailer <input type="checkbox"/> Positive Air Displacement <input type="checkbox"/> Electric Submersible	<input type="checkbox"/> Waterra <input type="checkbox"/> Peristaltic <input type="checkbox"/> Extraction Pump Other: _____	Sampling Method: <input type="checkbox"/> Bailer <input type="checkbox"/> Disposable Bailer <input type="checkbox"/> Extraction Port <input type="checkbox"/> Dedicated Tubing Other: _____
---	--	---

_____ (Gals.) X _____ = _____ Gals. I Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163	
Well Diameter	Multiplier	Well Diameter	Multiplier															
1"	0.04	4"	0.65															
2"	0.16	6"	1.47															
3"	0.37	Other	radius <sup>2</sup> * 0.163															

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
						<b>SPH encountered → No Sample</b>
						<b>* replaced sock w/ new</b>

Did well dewater?    Yes    No	Gallons actually evacuated: _____	
Sampling Date: _____	Sampling Time: _____	Depth to Water: _____
Sample I.D.: _____	Laboratory:    Kiff    CalScience    Other _____	
Analyzed for:    TPH-G    BTEX    MTBE    TPH-D    Oxygenates (5)    Other: _____		
EB I.D. (if applicable): _____ @ _____ Time	Duplicate I.D. (if applicable): _____	
Analyzed for:    TPH-G    BTEX    MTBE    TPH-D    Oxygenates (5)    Other: _____		
D.O. (if req'd):    Pre-purge: _____ mg/L	Post-purge: _____ mg/L	
O.R.P. (if req'd):    Pre-purge: _____ mV	Post-purge: _____ mV	

## WELL MONITORING DATA SHEET

Project #: 120301-9L1	Client: CKG
Sampler: 9L	Date: 3/2/12
Well I.D.: MW-7	Well Diameter: <u>2</u> 3 4 6 8
Total Well Depth (TD): <u>      </u>	Depth to Water (DTW): 12.31
Depth to Free Product: 12.90	Thickness of Free Product (feet): 0.01
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: <input type="checkbox"/> Bailer <input type="checkbox"/> Disposable Bailer <input type="checkbox"/> Positive Air Displacement <input type="checkbox"/> Electric Submersible	Waterra <input type="checkbox"/> Peristaltic <input type="checkbox"/> Extraction Pump Other _____	Sampling Method: <input type="checkbox"/> Bailer <input type="checkbox"/> Disposable Bailer <input type="checkbox"/> Extraction Port <input type="checkbox"/> Dedicated Tubing Other: _____
--	--	---

_____ (Gals.) X _____ = _____ Gals. I Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 25%;">Well Diameter</th> <th style="width: 25%;">Multiplier</th> <th style="width: 25%;">Well Diameter</th> <th style="width: 25%;">Multiplier</th> </tr> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
No sample → SPH encountered						
* replaced sock w/ new						

Did well dewater?	Yes	No	Gallons actually evacuated:	
Sampling Date:	Sampling Time:	Depth to Water:		
Sample I.D.:	Laboratory: <input type="checkbox"/> Kiff <input type="checkbox"/> CalScience <input type="checkbox"/> Other _____			
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:				
EB I.D. (if applicable):	@ Time	Duplicate I.D. (if applicable):		
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:				
D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

# WELL MONITORING DATA SHEET

Project #: <u>120301-961</u>	Client: <u>CKG</u>
Sampler: <u>GL</u>	Date: <u>3/1/12</u>
Well I.D.: <u>MW-8</u>	Well Diameter: <u>2</u> 3 4 6 8 _____
Total Well Depth (TD): <u>22.42</u>	Depth to Water (DTW): <u>9.23</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>11.87</u>	

Purge Method: Bailer	Watterra	Sampling Method: Bailer
<del>Disposable Bailer</del>	Peristaltic	<del>Disposable Bailer</del>
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other _____	Dedicated Tubing
		Other: _____

$\frac{2.1 \text{ (Gals.)} \times 3}{\text{Specified Volumes}} = \frac{6.3 \text{ Gals.}}{\text{Calculated Volume}}$	<table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1400	16.3	7.54	2038	>1000	2.1	Grey
1404	16.5	7.40	1516	>1000	4.2	
1409	16.4	7.34	1492	>1000	6.3	

Did well dewater? Yes  No  Gallons actually evacuated: 6.3

Sampling Date: 3/1/12 Sampling Time: 1420 Depth to Water: 9.61

Sample I.D.: MW-8 Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See Col

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

# WELL MONITORING DATA SHEET

Project #: <u>120301-441</u>	Client: <u>CKG</u>
Sampler: <u>SL</u>	Date: <u>3/1/12</u>
Well I.D.: <u>MW-10</u>	Well Diameter: <u>2</u> 3 4 6 8 _____
Total Well Depth (TD): <u>19.00</u>	Depth to Water (DTW): <u>9.67</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>(PVC)</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>11.54</u>	

Purge Method: Bailer <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Positive Air Displacement <input type="checkbox"/> Electric Submersible	Waterra <input type="checkbox"/> Peristaltic <input type="checkbox"/> Extraction Pump Other _____	Sampling Method: Bailer <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Extraction Port <input type="checkbox"/> Dedicated Tubing Other: _____
--	--	---

$\underline{1.5} \text{ (Gals.)} \times \underline{3} = \underline{4.5} \text{ Gals.}$ 1 Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
<u>1145</u>	<u>15.4</u>	<u>7.60</u>	<u>692</u>	<u>&gt;1000</u>	<u>1.5</u>	<u>Sheen, Odor</u>
<u>1150</u>	<u>16.1</u>	<u>7.38</u>	<u>821</u>	<u>&gt;1000</u>	<u>3.0</u>	
<u>1153</u>	<u>16.1</u>	<u>7.31</u>	<u>859</u>	<u>&gt;1000</u>	<u>4.5</u>	<u>DTW=13.80</u>

Did well dewater? Yes  No  Gallons actually evacuated: 4.5

Sampling Date: 3/1/12 Sampling Time: 1205 Depth to Water: 11.50

Sample I.D.: MW-10 Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See LOC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

# WELL MONITORING DATA SHEET

Project #: <u>120301-SL1</u>	Client: <u>CKG</u>
Sampler: <u>SL</u>	Date: <u>3/2/12</u>
Well I.D.: <u>MW-13</u>	Well Diameter: <u>2</u> 3 4 6 8 _____
Total Well Depth (TD): <u>19.85</u>	Depth to Water (DTW): <u>10.33</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>12.23</u>	

Purge Method: Bailer <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Positive Air Displacement <input type="checkbox"/> Electric Submersible	Waterra <input type="checkbox"/> Peristaltic <input type="checkbox"/> Extraction Pump <input type="checkbox"/> Other _____	Sampling Method: Bailer <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Extraction Port <input type="checkbox"/> Dedicated Tubing Other: _____
--	---	---

$1.5$ (Gals.) X $10$ = $15.0$ Gals. I Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0908	17.5	8.42	793	>1000	1.5	Brown
0913	17.4	7.91	784	>1000	3.0	
0918	17.3	7.82	786	>1000	4.5	DTW = 11.83
0956	18.1	8.14	763	>1000	6.0	DTW = 11.42
1000	17.6	8.01	763	>1000	7.5	DTW = 11.60
1005	17.7	7.86	769	>1000	9.0	DTW = 11.87
1011	17.6	7.82	762	>1000	10.5	DTW = 11.85
1018	17.5	7.96	777	>1000	12.0	slight odor
1021	17.4	7.82	775	>1000	13.5	DTW = 11.80
1027	17.4	7.85	769	>1000	15.0	DTW = 11.80

Did well dewater? Yes  No  Gallons actually evacuated: 15.0

Sampling Date: 3/2/12 Sampling Time: 1030 Depth to Water: 11.80

Sample I.D.: MW-13 Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: see lcl

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

**Blaine Tech Services, Inc. 1680 Rogers Ave., San Jose, CA 95112 (408) 573-0555**

\* cock stained → replaced w/ new

# WELL MONITORING DATA SHEET

Project #: 120301-SL1	Client: CFG
Sampler: GL	Date: 3/2/12
Well I.D.: MW-15	Well Diameter: (2) 3 4 6 8
Total Well Depth (TD): 28.90	Depth to Water (DTW): 11.94
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 15.33	

Purge Method: Bailer      Waterra      Sampling Method: Bailer  
~~Disposable Bailer~~      Peristaltic      ~~Disposable Bailer~~  
 Positive Air Displacement      Extraction Pump      Extraction Port  
 Electric Submersible      Other \_\_\_\_\_      Dedicated Tubing

Other: \_\_\_\_\_

$2.7 \text{ (Gals.)} \times 3 = 8.1 \text{ Gals.}$ 1 Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0737	17.6	7.70	1340	>1000	2.7	Brown
	Well Dewatered @ 3gpd					DTW=28.22
1040	17.3	7.80	1496	287		
* sock stained → replaced w/ new						

Did well dewater? (Yes) No      Gallons actually evacuated: 3

Sampling Date: 3/2/12      Sampling Time: 1040      Depth to Water: 13.14

Sample I.D.: MW-15      Laboratory: Kiff CalScience Other: McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See COC

EB I.D. (if applicable): @ Time      Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

# WELL MONITORING DATA SHEET

Project #: <u>120301-GL1</u>	Client: <u>CKG</u>
Sampler: <u>GL</u>	Date: <u>3/1/12</u>
Well I.D.: <u>MW-19</u>	Well Diameter: <u>2</u> 3 4 6 8 _____
Total Well Depth (TD): <u>25.10</u>	Depth to Water (DTW): <u>11.74</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>14.41</u>	

Purge Method: Bailer      Waterra      Sampling Method: Bailer  
~~Disposable Bailer~~      Peristaltic      ~~Disposable Bailer~~  
 Positive Air Displacement      Extraction Pump      Extraction Port  
 Electric Submersible      Other \_\_\_\_\_      Dedicated Tubing

Other: \_\_\_\_\_

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

<u>2.1</u> (Gals.) X	<u>3</u>	<u>=</u>	<u>6.3</u> Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
<u>1315</u>	<u>17.2</u>	<u>7.42</u>	<u>1243</u>	<u>107</u>	<u>2.1</u>	<u>cloudy</u>
<u>1321</u>	<u>17.3</u>	<u>7.31</u>	<u>1191</u>	<u>136</u>	<u>4.2</u>	
<u>1328</u>	<u>17.5</u>	<u>7.35</u>	<u>1180</u>	<u>150</u>	<u>6.3</u>	<u>DTW=16.60</u>

Did well dewater? Yes No      Gallons actually evacuated: 6.3

Sampling Date: 3/1/12      Sampling Time: 1515      Depth to Water: 13.38

Sample I.D.: MW-19      Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See COC

EB I.D. (if applicable): @ Time      Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV



# WELL MONITORING DATA SHEET

Project #: <u>120301-91</u>	Client: <u>CKG</u>
Sampler: <u>SL</u>	Date: <u>3/1/12</u>
Well I.D.: <u>MW-20</u>	Well Diameter: <u>2</u> 3 4 6 8 _____
Total Well Depth (TD): <u>21.91</u>	Depth to Water (DTW): <u>8.03</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>10.81</u>	

Purge Method: Bailer <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Positive Air Displacement <input type="checkbox"/> Electric Submersible	Waterra <input type="checkbox"/> Peristaltic <input type="checkbox"/> Extraction Pump Other _____	Sampling Method: Bailer <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Extraction Port <input type="checkbox"/> Dedicated Tubing Other: _____
--	--	---

$\frac{2.2 \text{ (Gals.)} \times 3}{3} = 6.6 \text{ Gals.}$ I Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1440	17.7	7.87	951	>1000	2.2	Brown
1446	18.4	7.74	876	>1000	4.4	
1451	18.6	7.68	875	>1000	6.6	
* sock in good condition						

Did well dewater? Yes  No  Gallons actually evacuated: 6.6

Sampling Date: 3/1/12 Sampling Time: 1500 Depth to Water: 10.80

Sample I.D.: MW-20 Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: see LOC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

# WELL MONITORING DATA SHEET

Project #: 120301-GL1	Client: CKG
Sampler: SL	Date: 3/2/12
Well I.D.: MW-16	Well Diameter: ② 3 4 6 8
Total Well Depth (TD): 19.70	Depth to Water (DTW): 8.24
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 10.53	

Purge Method: Bailer <input checked="" type="checkbox"/> Disposable Bailer Positive Air Displacement Electric Submersible	Waterra Peristaltic Extraction Pump Other _____	Sampling Method: Bailer <input checked="" type="checkbox"/> Disposable Bailer Extraction Port Dedicated Tubing Other: _____
--	--	---

1.8 (Gals.) X 3 = 5.4 Gals.
1 Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0754	17.3	8.06	510	>1000	1.8	Brown
0758	17.9	7.66	518	>1000	3.6	
0802	17.9	7.59	526	>1000	5.4	
* sock stained → replaced w/ new						

Did well dewater? Yes  No      Gallons actually evacuated: 5.4

Sampling Date: 3/2/12      Sampling Time: 0810      Depth to Water: 10.32

Sample I.D.: MW-16      Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See Col

EB I.D. (if applicable): @ Time      Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

# WELL MONITORING DATA SHEET

Project #: <u>120301-GL</u>	Client: <u>CKG</u>
Sampler: <u>GL</u>	Date: <u>3/2/12</u>
Well I.D.: <u>MW-17</u>	Well Diameter: <u>3</u> 4 6 8
Total Well Depth (TD): <u>19.45</u>	Depth to Water (DTW): <u>8.56</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>9.94</u>	

Purge Method: <input type="checkbox"/> Bailer <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Positive Air Displacement <input type="checkbox"/> Electric Submersible	Waterra <input type="checkbox"/> Peristaltic <input type="checkbox"/> Extraction Pump Other _____	Sampling Method: <input type="checkbox"/> Bailer <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Extraction Port <input type="checkbox"/> Dedicated Tubing Other: _____
---	--	--

$\frac{1.1}{\text{I Case Volume}} \times 3 = 3.3 \text{ Gals.}$ (Gals.) X Specified Volumes = Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0833	16.1	7.42	1123	>1000	1.1	Sheen, Odor
0836	16.0	7.28	1106	>1000	2.2	
0840	16.0	7.22	1113	>1000	3.3	DTW = 11.90
* sock stained → replaced w/ new						

Did well dewater? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Gallons actually evacuated: <u>3.3</u>
Sampling Date: <u>3/2/12</u> Sampling Time: <u>0900</u>	Depth to Water: <u>9.90</u>
Sample I.D.: <u>MW-17</u>	Laboratory: Kiff CalScience Other <u>McCampbell</u>
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: <u>See 60C</u>	
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:	
D.O. (if req'd): Pre-purge: _____ mg/L	Post-purge: _____ mg/L
O.R.P. (if req'd): Pre-purge: _____ mV	Post-purge: _____ mV



## **APPENDIX B**



## Analytical Report

CKG Environmental  P.O. Box 246  St. Helena, CA 94574	Client Project ID: Owens Brockway Glass Plant	Date Sampled: 03/01/12-03/02/12
		Date Received: 03/02/12
	Client Contact: Christina Kennedy	Date Reported: 03/09/12
	Client P.O.:	Date Completed: 03/09/12

**WorkOrder: 1203090**

March 09, 2012

Dear Christina:

Enclosed within are:

- 1) The results of the **10** analyzed samples from your project: **Owens Brockway Glass Plant**,
- 2) QC data for the above samples, and
- 3) A copy of the chain of custody.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing McC Campbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius  
 Laboratory Manager  
 McC Campbell Analytical, Inc.

*The analytical results relate only to the items tested.*

# BLAINE

TECH SERVICES, INC.

1680 ROGERS AVENUE  
 SAN JOSE, CALIFORNIA 95112-1105  
 FAX (408) 573-7771  
 PHONE (408) 573-0555

CONDUCT ANALYSIS TO DETECT

LAB McC Campbell DHS #  
 ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND  
 EPA  RWQCB REGION \_\_\_\_\_  
 LIA  
 OTHER

1203090

CHAIN OF CUSTODY  
 BTS # 120301-5V1  
 CLIENT CKG Environmental  
 SITE Owens Brockway Glass Plant  
3600 Alameda Avenue  
Oakland, CA

C = COMPOSITE ALL CONTAINERS

TPHg / BTEX (8015/8021)  
 TPH-d, TPH<sup>2</sup>-mo w/silica gel clean up

SPECIAL INSTRUCTIONS  
 Invoice and Report to : CKG Environmental  
 808 Zinfandel Lane, St Helena, CA 94574  
 Attn: Christina Kennedy  
**Dissolved product in samples MW-2 and MW-6**  
**Please provide EDF and PDF of results**

SAMPLE I.D.	DATE	TIME	MATRIX S=SOIL W=H <sub>2</sub> O	CONTAINERS TOTAL														
+ MW-1	3/1/12	1130	W	3	Various	X	X											
+2 MW-5	3/2/12	1220	W	3		X	X											
+1 MW-8	3/1/12	1420	W	3		X	X											
+1 MW-10	↓	1205	W	3		X	X											
+2 MW-13	3/2/12	1030	W	3		X	X											
+1 MW-15	↓	1040	W	3		X	X											
+1 MW-16	↓	0810	W	3		X	X											
+2 MW-17	↓	0900	W	3		X	X											
+ MW-19	3/1/12	1515	W	3		X	X											
+ MW-20	↓	1900	W	3		X	X											

ICE 1<sup>st</sup> 20-  
 GOOD CONDITION ✓  
 HEAD SPACE ABSENT ✓  
 DECHLORINATED IN LAB ✓  
 PRESERVATION ✓  
 APPROPRIATE CONTAINERS ✓  
 PRESERVED IN LAB ✓  
 VCAS / O & G / METALS / OTHER

SAMPLING COMPLETED 3/2/12 1330 DATE 3/2/12 1330 TIME 1330 SAMPLING PERFORMED BY SLW RESULTS NEEDED NO LATER THAN \_\_\_\_\_ Per Client

RELEASED BY <u>SLW</u>	DATE <u>3/2/12</u>	TIME <u>1415</u>	RECEIVED BY <u>Gene (S.C.)</u>	DATE <u>3/2/12</u>	TIME <u>1415</u>
RELEASED BY <u>(Sample Custodian)</u>	DATE <u>3/2/12</u>	TIME <u>1510</u>	RECEIVED BY <u>Dark</u>	DATE <u>3/2/12</u>	TIME <u>1510</u>
RELEASED BY <u>Dark</u>	DATE <u>3/2/12</u>	TIME <u>1645</u>	RECEIVED BY <u>the wall</u>	DATE	TIME

SHIPPED VIA \_\_\_\_\_ DATE SENT \_\_\_\_\_ TIME SENT \_\_\_\_\_ COOLER # \_\_\_\_\_

# McC Campbell Analytical, Inc.



1534 Willow Pass Rd  
Pittsburg, CA 94565-1701  
(925) 252-9262

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 1203090

ClientCode: CKGS

WaterTrax   
  WriteOn   
  EDF   
  Excel   
  Fax   
  Email   
  HardCopy   
  ThirdParty   
  J-flag

**Report to:**

Christina Kennedy  
CKG Environmental  
P.O. Box 246  
St. Helena, CA 94574  
(707) 967-8080    FAX: (707) 967-8080

Email: ckennedy@geologist.com  
cc:  
PO:  
ProjectNo: Owens Brockway Glass Plant

**Bill to:**

Accounts Payable  
CKG Environmental  
808 Zinfindel Lane  
St. Helena, CA 94574

**Requested TAT:**

**5 days**

*Date Received:*    **03/02/2012**

*Date Printed:*    **03/05/2012**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1203090-001	MW-1	Water	3/1/2012 11:30	<input type="checkbox"/>	A	A	B										
1203090-002	MW-5	Water	3/2/2012 12:20	<input type="checkbox"/>	A		B										
1203090-003	MW-8	Water	3/1/2012 14:20	<input type="checkbox"/>	A		B										
1203090-004	MW-10	Water	3/1/2012 12:05	<input type="checkbox"/>	A		B										
1203090-005	MW-13	Water	3/2/2012 10:30	<input type="checkbox"/>	A		B										
1203090-006	MW-15	Water	3/2/2012 10:40	<input type="checkbox"/>	A		B										
1203090-007	MW-16	Water	3/2/2012 8:10	<input type="checkbox"/>	A		B										
1203090-008	MW-17	Water	3/2/2012 9:00	<input type="checkbox"/>	A		B										
1203090-009	MW-19	Water	3/1/2012 15:15	<input type="checkbox"/>	A		B										
1203090-010	MW-20	Water	3/1/2012 15:00	<input type="checkbox"/>	A		B										

**Test Legend:**

1	G-MBTX_W	2	PREFD REPORT	3	TPH(DMO)WSG_W	4		5	
6		7		8		9		10	
11		12							

**Prepared by: Melissa Valles**

**Comments:**

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).  
Hazardous samples will be returned to client or disposed of at client expense.





### Sample Receipt Checklist

Client Name: **CKG Environmental** Date and Time Received: **3/2/2012 5:57:08 PM**  
 Project Name: **Owens Brockway Glass Plant** Checklist completed and reviewed by: **Melissa Valles**  
 WorkOrder N°: **1203090** Matrix: Water Carrier: Derik Cartan (MAI Courier)

#### Chain of Custody (COC) Information

Chain of custody present? Yes  No   
 Chain of custody signed when relinquished and received? Yes  No   
 Chain of custody agrees with sample labels? Yes  No   
 Sample IDs noted by Client on COC? Yes  No   
 Date and Time of collection noted by Client on COC? Yes  No   
 Sampler's name noted on COC? Yes  No

#### Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes  No  NA   
 Shipping container/cooler in good condition? Yes  No   
 Samples in proper containers/bottles? Yes  No   
 Sample containers intact? Yes  No   
 Sufficient sample volume for indicated test? Yes  No

#### Sample Preservation and Hold Time (HT) Information

All samples received within holding time? Yes  No   
 Container/Temp Blank temperature Cooler Temp: 2°C NA   
 Water - VOA vials have zero headspace / no bubbles? Yes  No  No VOA vials submitted   
 Sample labels checked for correct preservation? Yes  No   
 Metal - pH acceptable upon receipt (pH<2)? Yes  No  NA   
 Samples Received on Ice? Yes  No

(Ice Type: WET ICE )

\* NOTE: If the "No" box is checked, see comments below.

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 Comments:



CKG Environmental  P.O. Box 246  St. Helena, CA 94574	Client Project ID: Owens Brockway Glass Plant	Date Sampled: 03/01/12-03/02/12
	Client Contact: Christina Kennedy	Date Received: 03/02/12
	Client P.O.:	Date Extracted: 03/05/12-03/08/12
		Date Analyzed: 03/05/12-03/08/12

**Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE\***

Extraction method: SW5030B

Analytical methods: SW8021B/8015Bm

Work Order: 1203090

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
001A	MW-1	W	ND	---	ND	ND	ND	ND	1	101	
002A	MW-5	W	190	---	ND	ND	ND	ND	1	97	d7,b6,b1
003A	MW-8	W	560	---	ND	ND	ND	ND	1	110	d7,d9,b1
004A	MW-10	W	140	---	ND	ND	ND	ND	1	98	d7,b1
005A	MW-13	W	ND	---	ND	ND	ND	ND	1	105	b1
006A	MW-15	W	ND	---	ND	ND	ND	ND	1	104	b1
007A	MW-16	W	ND	---	ND	ND	ND	ND	1	102	b1
008A	MW-17	W	3000	---	ND<5.0	ND<5.0	ND<5.0	ND<5.0	10	103	d7,b6,b1
009A	MW-19	W	310	---	ND	ND	ND	ND	1	100	d7
010A	MW-20	W	ND	---	ND	ND	ND	ND	1	111	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	0.5	µg/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	0.005	mg/Kg

\* water and vapor samples are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

# cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference. %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:

- b1) aqueous sample that contains greater than ~1 vol. % sediment
- b6) lighter than water immiscible sheen/product is present
- d7) strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram
- d9) no recognizable pattern



**McC Campbell Analytical, Inc.**

*"When Quality Counts"*

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KKG Environmental  P.O. Box 246  St. Helena, CA 94574	Client Project ID: Owens Brockway Glass Plant	Date Sampled: 03/01/12-03/02/12
	Client Contact: Christina Kennedy	Date Received: 03/02/12
	Client P.O.:	Date Extracted: 03/02/12
		Date Analyzed: 03/05/12-03/07/12

**Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up\***

Extraction method: SW3510C/3630C

Analytical methods: SW8015B

Work Order: 1203090

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	TPH-Motor Oil (C18-C36)	DF	% SS	Comments
1203090-001B	MW-1	W	92	ND	1	93	e2
1203090-002B	MW-5	W	8600	8900	10	99	e3,b6,b1
1203090-003B	MW-8	W	410	600	1	100	e7,e11,e2,b1
1203090-004B	MW-10	W	2000	2400	1	92	e7,e2,b1
1203090-005B	MW-13	W	ND	ND	1	89	b1
1203090-006B	MW-15	W	100	ND	1	90	e2,b1
1203090-007B	MW-16	W	270	1600	1	103	e7,e2,b1
1203090-008B	MW-17	W	390,000	160,000	100	73	e1,b6,b1
1203090-009B	MW-19	W	440	ND	1	92	e4,e2
1203090-010B	MW-20	W	ND	ND	1	91	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	250	µg/L
	S	NA	NA	mg/Kg

\* water samples are reported in µg/L, wipe samples in µg/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in µg/L.

#) cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract; &) low or no surrogate due to matrix interference.

%SS = Percent Recovery of Surrogate Standard. DF = Dilution Factor

The following descriptions of the TPH chromatogram are cursory in nature and McC Campbell Analytical is not responsible for their interpretation:

- b1) aqueous sample that contains greater than ~1 vol. % sediment
- b6) lighter than water immiscible sheen/product is present
- e1) unmodified or weakly modified diesel is significant
- e2) diesel range compounds are significant; no recognizable pattern
- e3) aged diesel is significant
- e4) gasoline range compounds are significant.
- e7) oil range compounds are significant
- e11) stoddard solvent/mineral spirit (?)



**QC SUMMARY REPORT FOR SW8021B/8015Bm**

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 65405

WorkOrder: 1203090

EPA Method: SW8021B/8015Bm		Extraction: SW5030B					Spiked Sample ID: 1203046-024A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS	
TPH(btex) £	ND	60	76.9	78.2	1.60	77.8	70 - 130	20	70 - 130	
MTBE	ND	10	110	111	0.834	108	70 - 130	20	70 - 130	
Benzene	ND	10	95.8	96.5	0.702	94	70 - 130	20	70 - 130	
Toluene	ND	10	98.1	99.4	1.28	97.5	70 - 130	20	70 - 130	
Ethylbenzene	ND	10	104	105	1.38	102	70 - 130	20	70 - 130	
Xylenes	ND	30	104	104	0	103	70 - 130	20	70 - 130	
%SS:	107	10	88	86	1.77	88	70 - 130	20	70 - 130	

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
 NONE

BATCH 65405 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1203090-001A	03/01/12 11:30 AM	03/05/12	03/05/12 9:53 PM	1203090-002A	03/02/12 12:20 PM	03/06/12	03/06/12 6:41 PM
1203090-003A	03/01/12 2:20 PM	03/06/12	03/06/12 5:45 AM	1203090-004A	03/01/12 12:05 PM	03/06/12	03/06/12 7:13 AM
1203090-005A	03/02/12 10:30 AM	03/05/12	03/05/12 10:23 PM	1203090-006A	03/02/12 10:40 AM	03/05/12	03/05/12 10:52 PM
1203090-007A	03/02/12 8:10 AM	03/05/12	03/05/12 11:22 PM	1203090-008A	03/02/12 9:00 AM	03/06/12	03/06/12 6:44 AM
1203090-009A	03/01/12 3:15 PM	03/08/12	03/08/12 8:31 PM	1203090-010A	03/01/12 3:00 PM	03/06/12	03/06/12 2:49 AM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.  
 % Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).  
 MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.  
 £ TPH(btex) = sum of BTEX areas from the FID.  
 # cluttered chromatogram; sample peak coelutes with surrogate peak.  
 N/A = not enough sample to perform matrix spike and matrix spike duplicate.  
 NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content, or inconsistency in sample containers.



**QC SUMMARY REPORT FOR SW8015B**

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 65439

WorkOrder: 1203090

EPA Method: SW8015B		Extraction: SW3510C/3630C					Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS	
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	106	N/A	N/A	70 - 130	
%SS:	N/A	625	N/A	N/A	N/A	100	N/A	N/A	70 - 130	

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
 NONE

BATCH 65439 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1203090-001B	03/01/12 11:30 AM	03/02/12	03/05/12 2:44 PM	1203090-002B	03/02/12 12:20 PM	03/02/12	03/07/12 2:13 PM
1203090-003B	03/01/12 2:20 PM	03/02/12	03/05/12 1:31 PM	1203090-004B	03/01/12 12:05 PM	03/02/12	03/05/12 1:57 PM
1203090-005B	03/02/12 10:30 AM	03/02/12	03/05/12 3:16 PM	1203090-006B	03/02/12 10:40 AM	03/02/12	03/05/12 1:57 PM
1203090-007B	03/02/12 8:10 AM	03/02/12	03/05/12 2:44 PM	1203090-008B	03/02/12 9:00 AM	03/02/12	03/06/12 6:04 AM
1203090-009B	03/01/12 3:15 PM	03/02/12	03/05/12 5:55 PM	1203090-010B	03/01/12 3:00 PM	03/02/12	03/05/12 7:10 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.  
 % Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).  
 MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.  
 N/A = not enough sample to perform matrix spike and matrix spike duplicate.  
 NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.