



WEST SIDE CORP. SITE OPERABLE UNIT 2

STATION 24 TREATMENT SYSTEM OPERATIONS REPORT

WORK ASSIGNMENT D007622-1

**WEST SIDE CORP. SITE
JAMAICA**

**SITE NO. 241026
QUEENS COUNTY, NY**

Prepared for:
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 Broadway, Albany, New York

Joseph Martens, Commissioner

DIVISION OF ENVIRONMENTAL REMEDIATION
REMEDIAL BUREAU B

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**WEST SIDE CORP. SITE
OPERABLE UNIT NO. 2 (STATION 24)
GROUNDWATER TREATMENT SYSTEM
OPERATIONS REPORT**

Prepared for

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1.0 INTRODUCTION

This report summarizes the initial operation of the groundwater extraction and treatment system constructed for Operable Unit 2 (OU2) of the West Side Corporation site (No. 241026) (see Figure 1-1). URS operated the system under work assignment D007622-1 of its standby engineering services contract with the New York State Department of Environmental Conservation (NYSDEC). This summary report provides a description of URS' operation of the system following completion of construction by UTB Technologies, the construction contractor retained by the New York City Department of Environmental Protection (DEP), covering a period of operation from July 25, 2012 through November 19, 2012. URS was also active at the site prior to this time, most prominently with assisting the construction contractor and DEP's design engineer (Malcolm Pirnie) and construction manager (Shaw) in the performance of a 7-day shakedown run.

1.1 Site History

The West Side Corporation site was the location of a former distributor of tetrachloroethene (PCE) for the dry cleaning industry. Due to spills and/or poor housekeeping practices, PCE had been released to the ground and detected at percent levels. In 2004, NYSDEC completed a remediation of the source area beneath the former location of the tanks (defined as Operable Unit 1) using Electrical Resistance Heating, bringing the PCE contamination to non-detect levels in the source area.

1.2 System Objective

Due to a combination of a natural groundwater flow gradient to the south and the artificial gradient imposed by extraction wells formerly operated on the adjacent DEP Station 24 property, a PCE plume extends for about 3,500 feet downgradient of the site. To hydraulically contain this plume, the DEP installed two recovery wells on the Station 24 property, treating the extracted water with activated carbon and discharging the water to a storm sewer. Construction of this system was completed in 2012.

1.3 System Description

A flow diagram of the extraction and treatment system is shown on Figure 1-2. The principal elements of the system are:

- Two recovery wells consisting of 40-horsepower Flowserve turbine pumps installed in 12-inch diameter wells screened from the Gardiner's clay (~60 feet below ground surface) to the water table surface (~10 feet below ground surface).
- A sequestering agent delivery system which injects a proprietary agent directly to the wells to keep iron in solution so that it does not foul the well screens or the carbon. Sequestering agent is stored in 2,500-gallon tanks in an existing DEP garage from where metering pumps deliver the agent via buried delivery lines.
- Three sets of carbon treatment units, each containing a pair of 20,000-pound carbon vessels and valving to select which are used as lead and lag, and to allow backflushing with city water. Supporting the carbon system is a compressor to provide pressurized air for transferring slurried carbon between the carbon vessels and delivery trucks.

1.4 Operating Permits

The following major permits are required for operation of the system:

- A State Pollution Discharge Elimination System (SPDES) permit equivalent dated April 26, 2004 for discharge of the treated groundwater to an adjacent storm sewer that ultimately discharges to Jamaica Bay.
- Chemical Bulk Storage Permit No. 2-000504 for the sequestering agent storage tanks.
- New York City Department of Buildings permit for the office trailers.
- Fire Department of New York (FDNY) permit 2011129282 for operation of the compressor used for carbon transfer.
- New York City Department of Environmental Protection (NYCDEP) permit No. 551344 for a water meter to measure city water usage during backflush operation.

An FDNY permit for operation of the sequestering agent tanks was originally required due to the original formulation of the agent being acidic due to low pH. However, the agent was reformulated to a more neutral pH as discussed in Section 2 and this permit is therefore no longer required.

For the FDNY permits, an operator with a Certification of Fitness must be present when in operation. Mr. Robin Hurley of URS obtained a certification of fitness and was on site while the remainder of the acidic sequestering agent was used. Because no carbon changeouts were required during the period of operation documented in this report, Mr. Hurley's certification for the air compressor was not required.

2.0 OPERATIONS HISTORY

This report documents URS's operation of the system following turnover from the construction contractor. Prior to URS's operation, the system had undergone two shakedown runs: a 48-hour non-continuous period, and a 7-day continuous operation cycle. The system operated as designed during these periods, allowing the construction contractor to turn the system over to NYSDEC for operation.

URS operated the system from July 25, 2012 through November 19, 2012, though not continuously throughout this interval. In this section, each of these segments of operation described below is discussed. In the following section (Section 3), the results from measurements and observations made during the period of operation (e.g. volumes treated, treatment performance, iron retention, etc.) are presented.

The URS operation period documented in this report is broken down into three segments:

- Preliminary operation to use up the remainder of the acidic sequestering agent.
- Initial operation prior to system shutdown for warranty repairs of a vent line.
- Final system operation.

2.1 Preliminary Operation

The construction contractor turned the site over to URS at the end of June 2012. The requirement of the FDNY hazardous substance storage permit that an operator with a certificate of fitness be present at the site at any time the system was in operation would have required a much higher level of staffing than initially anticipated. Additionally, preliminary discussions with the construction contractor indicated that the FDNY permit was non-transferrable and that URS would have to restart the permitting process from scratch prior to operation. Therefore, during July 2012, URS explored options to obtain or transfer the existing FDNY permit as well as options that would not require 24-hour staffing of the system.

URS contacted FDNY, eventually receiving notification on July 20, 2012 that the permit did not need to be transferred prior to restarting the system, removing an obstacle to restarting the system. Simultaneously, URS worked with the manufacturer of the sequestering agent, Redux Technology to replace the original sequestering agent with a sequestering agent having a more neutral pH to avoid the need for an FDNY permit for the storage tanks. Redux was able to develop and provide the agent during July. However, several hundred gallons of the original agent remained in the storage tanks. URS elected

to operate the system for eight hours per day with the one certificate of fitness holder, Robin Hurley, present during all operations. This operation started on July 25, 2012.

The lines leading from the sequestering agent storage tanks to the metering tanks exited the storage tank about one foot from the bottom of the tank, making it impossible to remove all the agent from the tanks prior to acceptance of the revised more-neutral-pH agent. To enable complete drainage of the tanks, URS attached a hose connecting the bottom drain of tank No. 1 (listed as Tank 24-3 on Figure 1-2) to the manifold feeding the metering pumps. Due to the presence of an aluminum component in the fittings of this hose, a leak developed after the second day of operation on July 26, 2012. The leaked agent was contained within the tanks' secondary containment berm. A spill response contractor pumped the agent into tank No. 2 (listed as Tank 24-4 on Figure 1-2) on July 27, 2012 and the hose was replaced with a compatible fitting the following week.

The system was restarted on Monday July 30, 2012, with the sequestering agent being drawn from the side of tank No. 2 as originally constructed. The system operated eight hours per day, five days per week until August 9, 2012 when the agent could no longer be extracted from the side. The system remained off on Friday August 10, 2012 because the replacement hose for draining the tank from the bottom was not installed yet.

The first delivery of the revised-formula agent was received on August 14, 2012 (delivered into tank No. 1), and the system was restarted on an eight-hour-per-day basis for the remainder of the week using the new agent while system modifications were made to tank No. 2 to drain from the bottom. On Monday, August 20, 2012, the system reverted back to using the remainder of the original acidic sequestering agent in tank No. 2. This continued until mid-morning on August 23, 2012 when tank No. 2 was emptied. At this time, URS switched back to the reformulated agent in tank No. 1, operating on an eight-hour-per-day schedule for the rest of the week. The special-purpose drain hose was removed from the tanks, and both tanks No. 1 and No. 2 have been operated since by drawing agent from the side port.

2.2 Initial Operation

URS started operation of the system on a 24-hour-per-day basis on Monday August 28, 2012. Based on the rate of sequestering agent consumption to date, the delivery of the second batch was scheduled to be delivered on or before September 6, 2012. However, because the consumption calculation did not include the inaccessible quantity below the side port, the system shut down due to lack of agent addition overnight between September 3 and 4, 2012, and remained down until the September 6, 2012 delivery.

The system operated without interruption until September 26, 2012 when it was manually shut down. An odor had been reported inside the NYCDEP garage where the agent tanks are located. It was determined that the lines venting the sequestering agent tanks had become blocked with condensation preventing proper venting. NYCDEP determined that this was a construction deficiency to be remedied by the construction contractor under the system warranty, and requested URS to shut down the system until the construction contractor could realign the vents to prevent accumulation of condensate.

To facilitate the warranty work, NYCDEP requested that URS remove the agent from the tanks. URS subcontracted with All Chemical Transport (AllChem), the hauling firm used by Redux to deliver the agent, to remove the agent and temporarily store it at their yard until the repairs were complete. AllChem removed approximately 2,000 gallons of the agent on September 28, 2012, and returned agent to the site on October 10, 2012.

2.3 Final Operation

During operation leading up to the September 26, 2012 shutdown, the pressure drop across the carbon tanks had begun to increase. Increased pressure drop is typically caused by a buildup of air in the carbon beds. The carbon beds are designed to operate in a downflow configuration. Operation in an upflow configuration would cause the carbon to fluidize and mix. This is unwanted because carbon bed life is maximized if the carbon becomes gradually saturated with adsorbed contaminants in a linear manner, with the carbon near the influent becoming saturated first and the carbon near the effluent becoming saturated last – at which time breakthrough is said to occur. Such operation requires that carbon not be mixed during operation. However, any air entrained in the extracted groundwater can get trapped within the carbon, unable to rise to the top of the vessel due to the ongoing downward flow of water.

The remedy for pressure buildup due to air entrainment is to stop the system operation, and pump city (clean) water into the tanks from the bottom at flow rates low enough (<200 gallons per minute) to not fluidize the carbon bed. This slowly displaces the air entrained in the carbon. When the beds are full of clean water, they are valved shut until the system is restarted. URS performed a deaeration procedure on all six carbon vessels during the warranty-repair shutdown period and kept the carbon units full until the system was restarted.

URS restarted the system on October 10, 2012 and operated the system continuously during this Final Operation period except for three additional deaeration procedures performed on October 22, 2012, November 2, 2012, and November 15, 2012. The system shut down automatically during the evening of

November 19, 2012 due to a high temperature reading in the motor of recovery well No. 2. URS contacted the motor manufacturer who recommended restarting the motor and closely monitor its performance, and if no temperature excursions were observed, then the shutdown was probably just a transient phenomenon. URS restarted the system and operated for one day and no temperature excursions were observed. Because this coincided with the planned end of the system test operation, no further operation was performed.

3.0 MEASUREMENTS AND OBSERVATIONS

3.1 Groundwater Treatment Quantity and Rate

URS operated the recovery well pumps at the design rate of approximately 750-770 gallons per minute for each pump. During the periods when the system operated about eight hours per day, approximately 730,000 gallons were treated per day. During full time operation, approximately 2,200,000 gallons were treated per day.

The cumulative amount of water treated by the system is shown in Figure 3-1. This figure shows the three segments of operation, with the lower rate of treatment (corresponding to eight hour per day, five days per week operation) from July 25, 2012 through August 25, 2012, initial (full time) operation from August 28, 2012 to September 26, 2012 (with a brief pause prior to September 6, 2012 while waiting for sequestering agent delivery), the warranty repair shutdown from September 26, 2012 to October 10, 2012, followed by continuous operation until shutdown on November 19, 2012.

Prior to the URS start up on July 25, 2012, approximately 20,000,000 gallons had been treated by the system, split evenly between the two wells. At the completion of the URS operation period on November 19, 2012, approximately 167,400,000 gallons had been treated, 84,900,000 gallons from recovery well No. 1 and 82,500,000 gallons from recovery well No. 2.

3.2 Contaminant Removal

URS sampled the water extracted from each well and the combined effluent from the carbon treatment system on a daily basis during the first two weeks of operation (in the initial operation segment) and weekly thereafter. On September 12, 2012, URS also collected one sample at the storm sewer discharge point at Bergen Basin in Jamaica Bay as required by the SPDES permit.

The analytical results are presented on Table 3-1. URS analyzed routine process samples for volatile organic compounds (VOCs) only (and also iron and pH during the earliest samples – this was discontinued as iron was measured onsite daily as discussed in Section 3.6 below). Additionally, URS collected samples for metals analysis in August and October to satisfy requirements of the SPDES permit (metals analysis samples were not collected in September due to the unplanned shutdown for warranty repairs).

The analytical results show that the influent to well No. 1 ranged from 89 µg/L to 230 µg/L with a mean of 158 µg/L and a standard deviation of 37 µg/L and the influent to well No. 2 (excluding the

sample taken on July 31, 2012 which had an abnormally low measurement suggesting VOC loss during sampling) ranged from 28 µg/L to 47 µg/L with a mean of 32 µg/L and a standard deviation of 6 µg/L. There was no discernible trend in the influent concentrations from well No. 1 while well No. 2 appeared to increase its influent concentrations towards the end of the operation period.

These influent concentrations were lower than the originally estimated influent concentrations of about 2,400 µg/L (Malcolm Pirnie 2004). In the eight years intervening since the design basis was established, the plume near the source has attenuated somewhat due to the removal of the source at Operable Unit No. 1 in 2005.

No VOCs were detected in any of the effluent samples. Low, estimated values less than 2 µg/L for PCE and methyl-tertbutyl ether were detected in the sample collected at Bergen Basin but are not considered to be from the West Side site since this outfall contains water from many sources throughout Queens. Metals concentrations were within SPDES requirements.

3.3 Water Table Drawdown

URS measured the water level in up to 98 wells approximately twice per month during operation, for a total of six events. Because of the number of wells monitored, each measuring event required two to three days of monitoring. The elevation measurements are summarized in Table 3-2. The wells used in elevation measurements are classified as shallow (screened near the water table), deep (screened near the Gardiner's clay at about 60 feet below ground surface), and intermediate.

To graphically depict the extent of drawdown from pumping operation, URS interpolated a groundwater table surface for the June 27-28, 2012 measurements to serve as a pre-operation baseline. Only the shallow wells describe the elevation of the actual water table surface. The interpolated surfaces of the intermediate and deep wells represent the hydraulic head at those depths. For each of the six additional monitoring dates (twice in August, twice in September, and following the late September/early October warranty shutdown: once in October and once in November), URS interpolated surfaces for each of the shallow, intermediate, and deep zones. The interpolated surfaces measured after system start up were subtracted from the June 2012 pre-operation surface to generate Figures 3-2 through 3-7 (shallow), Figures 3-8 through 13 (intermediate) and Figures 3-14 through 3-19 (deep) showing the drawdown for each depth zone. For each depth zone, these figures show an increasing amount of drawdown, with a maximum drawdown in the shallow zone of about 10 feet in well MW-08 located near recovery well No. 1 on the site (the MW-08 water table elevation was not measured in June 2012, and thus drawdown is from the interpolated groundwater surface). The reduction of the potentiometric head in the intermediate

and deep zones was not as great, with a maximum drawdown of about 8 feet in the intermediate zone and 7.5 feet in the deep zone.

The lateral extent of the drawdown is difficult to describe precisely since the drawdown decreases asymptotically with distance. In all wells measured, depth to groundwater continued to increase as the operation period continued (except for the period between September 13-14 and October 18-19 when the warranty repair shutdown allowed the water table to rebound somewhat).

The amount of drawdown observed after three months of operation is similar to the predicted amount of drawdown after one year of operation as modeled by the system designer (Malcolm Pirnie, 2009). The predicted one-year drawdown is shown on Figure 3-20. This figure shows that a five-foot drawdown was expected to extend to 175th St. to the west and 110th Ave. to the south. Inspection of Figure 3-7, which shows the actual drawdown after three months of operation (although interrupted by the warranty shutdown), shows the green color, which corresponds to approximately four feet of drawdown, extends to 175th St. to the west and 110th Ave. to the south. The November interpolation is limited by the inability to access well W-05 during that event and the fact that there are no other wells northwest of this area. As an example, the drawdown in well W-04 was predicted to be between 4.5 and 5 feet. After three months of operation, actual drawdown was 4.1 feet in W-04S. Similarly, at W-06S, the actual drawdown of 2.7 feet was slightly less than the predicted drawdown of just over 3 feet.

Further from the recovery wells, the drawdown after three months is actually slightly greater than predicted by the design engineer after one year of pumping. For example, at well W-14, the drawdown after one year of operation was predicted to be just under 1.5 feet, but was observed to be 1.8 feet in W-14S. At W-10S, the actual drawdown of 1.7 feet matched the prediction.

Another measure of the impact of the recovery well operation is the size of the recovery zone. Downgradient of the recovery wells, a groundwater divide is established. North-northeast of this divide, groundwater flows towards the recovery wells. South-southwest of this divide, groundwater continues to flow towards Jamaica Bay and is not captured by the treatment system. However, the divide is not a sharp demarcation. The divide is a zone of relatively flat groundwater elevations. Because of the lack of significant gradient along the divide, groundwater flow on either side is essentially stagnant, such that groundwater just upgradient of the divide will still take a very long time to be extracted by the recovery wells.

Figures 3-21 through 3-27 show the groundwater table contours from before pumping (Figure 3-21) and during each of the six periods of water level measurements during operation (Figures 3-22

through 3-27). A cone of depression reversing the flow direction of a part of the aquifer had been established by late September. The precise location of the groundwater divide is difficult to define as the divide is a broad saddle in the water table in the elevation range of 14-14.5 feet above mean sea level (amsl) in late September and October, with the saddle elevation dropping to the 13.5-14 feet amsl range by November. During these three measurement periods, the groundwater divide can be estimated to be present between 900 and 1,300 feet south-southwest of the extraction wells. This location of the divide is closer to the site than the 2,000 to 2,500 feet distance from the extraction wells predicted after one year of operation as modeled by the system designer (Malcolm Pirnie, 2009), as shown in Figure 3-28.

3.4 Contaminant Plume

URS sampled 51 monitoring wells for VOCs three times during the operation period, once in August, September, and November. The PCE results are shown on Figure 3-29. Contamination is consistently highest in the intermediate zone, with the highest concentrations found in wells W-10I and W-13I located rather downgradient (up to about 3,000 feet from the recovery wells) near Merrick Blvd. These were the only two wells with PCE concentrations above 1,000 µg/L. There was no consistent pattern of contaminant concentration change during the operational period. Most wells stayed at similar concentrations or increased in concentration. Exceptions to this trend include W-04I, W-04D, W-02I, W-06S, W-08S, and W-08D, which decreased.

3.5 Sequestering Agent Usage

The Redux 330 Sequestering agent is added directly to the groundwater in the well as it is extracted to keep iron from precipitating and fouling the extraction screens, the GAC, and other elements of the system. Redux 330 works in two ways. For dissolved iron, one component of the agent binds with both ferrous and ferric ions to keep them in solution and prevents them from combining with anions that could form precipitates. For iron that does form insoluble precipitates, a second component of the agent keeps these precipitates from flocculating or otherwise forming larger particles; this allows the precipitated forms of iron to pass through the GAC beds without being trapped, which would cause fouling.

Because Redux 330 consumption is one of the greatest costs of operating this system, URS worked with Redux Technology to reduce its rate of consumption, while keeping iron in solution and suspension (as measured by the iron retention rate discussed in section 3.6). A graph showing the rate of Redux 330 usage is shown in Figure 3-30.

As discussed in section 2.1, the system was first operated on an eight-hour-per-day basis using a previous, acidic formulation of Redux 330 from late July until August 14, 2012, and then a combination of both the original and reformulated agent until August 23, 2012. In an effort to use up all the acid formulated Redux 330 (and to transition to full time, round-the-clock operation), the acidic agent was added at an accelerated rate during the period August 20-23, 2012.

Once full time operation was started on August 28, 2012, Redux 330 was initially added at a rate of about 5 gallons per hour (gph) to recovery well No. 2 and about 3.8 gph to recovery well No. 1. It was added at a greater rate to recovery well No. 2 because it had a higher iron concentration (in the range of 3 to 4 milligrams per liter (mg/L)) than in recovery well No. 1 (in the range of 2 to 3 mg/L). Based on the suggestions from Gary Richards, the representative from Redux Technology, the rate of addition was gradually decreased to approximately 2.7 gph for the last month of operation. Based on conversations with Redux Technology, the usage rate may be able to be reduced an additional 10% without increasing iron retention.

During the operation period, URS received five 2,500-gallon loads of Redux 330, on August 14, September 6, September 18, October 19, and November 6, 2012.

3.6 Iron Retention

Iron present naturally in the groundwater can precipitate out during extraction and foul the activated carbon, reducing the useful life of the bed. URS measured total iron concentrations twice per day, monitoring water as it was extracted at each well, and at the influent and effluent of each carbon vessel to track the amount of iron retained on the carbon. Figure 3-31 shows the total iron concentrations at the three most pertinent locations: water sampled from each recovery well and water sampled from the effluent. This graph shows that there was little variability among the influent concentrations, with recovery well No. 2 consistently exhibiting a higher iron content than recovery well No. 1. The effluent iron concentration was also consistent for the most part (typically exhibiting concentrations close to the recovery well No. 2 influent), with the exception of the preliminary operation period. A spike in effluent iron concentrations on August 6 and August 13, 2012 correspond to Monday morning system starts after a weekend of downtime. On both these days, the iron concentrations of influents into the carbon vessels were much greater than the iron measured at the recovery wells. It is not clear why this is, but presumably is due to transient cases occurring only during Monday morning startups. On both these Mondays, the midday carbon influent samples had dropped to levels similar to the levels measured at the recovery wells.

The other anomaly during the preliminary operation period was during August 20-23, 2012. During this period, the rate of sequestering agent was increased to use up the last of the original acidic Redux 330. The increased rate of agent addition had the effect of increasing the amount of iron retained. Once the rate was reduced on August 24, 2012 (and the last of the acidic Redux 330 consumed), the iron in the effluent returned to normal.

Figure 3-32 shows the average percent of iron retention across the carbon vessels. This number is the average of the six vessels. It is noted that while the average retention remains relatively consistent once the switch to full time operation with the more-neutral Redux 330 was complete, the averages mask a greater variability of per-vessel retentions (full data are presented in Appendix D). It is difficult to derive conclusions from the preliminary operation period due to the noncontinuous operation of the system and then the later increase in agent addition rate. During the first two weeks of operation, the average iron retention values mask a consistent trend of high iron retention in the lead carbons followed by high iron release (negative retention) in the lag carbons. It is not clear what causes this phenomenon, although iron release can occur when iron that is sequestered by organic sequestering agents has previously adsorbed to the carbon, but then desorbs due to equilibrium forces when water with less sequestering agent passes through the carbon.

The other iron retention anomaly during preliminary operation is the spike in iron retention during August 20-23, 2012. This spike corresponds to the increase in agent flow rate during the period, which resulted in lower iron concentrations in the effluent. This counterintuitive action may have resulted from greater sequestering agent organic compound adsorption to the carbon (greater concentrations meant that more would adsorb at equilibrium according to a typical Langmuir isotherm). However, no commensurate spike in iron desorption was noticed when the agent addition rate was subsequently decreased.

In general, once steady state operation was achieved, iron retention remained steady and relatively low. More importantly, no iron-related pressure drop increases were observed (increases were observed for other reasons as discussed in Section 3.7). During the time period studied with this test, deposition of iron was not found to reduce the service life of the GAC by fouling.

3.7 Carbon Unit Pressure Drop

Figures 3-33, 3-34, and 3-35 show the pressure drops for each of the three pairs (lead plus lag) carbon. The three pairs are operated in parallel. These graphs show the pressures at the influent to the lead, the effluent from the lead, the influent to the lag (which is consistently just a bit lower than the

effluent from the lead, as expected) and the effluent from the lag (which remains essentially constant as it only represents the pressure needed to travel to the discharge point, including the head needed to rise to an elevation equivalent to the height of the vessels, where a siphon break is present to prevent siphoning all the water from the carbon vessels during shutdowns). These graphs also show measurements taken at dedicated differential pressure (DP) meters plumbed across each vessel. The DP1 (lead carbon) and DP2 (lag carbon) measurements closely track the differences in the discrete pressure measurements taken at the influent and effluent of each vessel.

Pressure drops were relatively consistent during the preliminary operation period and the first part of the initial operation period. In two of the pairs, different pressure drops were greater across the lag carbons and in the third, it the differential pressure was greater in the lead. However, following a two-day shutdown from September 3-6, 2012 for resupplying the Redux 330, differential pressures slowly increased in each of the carbon vessels, even more so with the lead carbons. This was determined to be due to a build up of air in the vessels. As discussed in Section 2.3, the carbon vessels operate in a downflow pattern to prevent fluidization. Air that is entrained within the water during pumping can get trapped within the carbon – the downward flow of water hindering its ability to migrate to the top of the vessel and exit the air vents located there. To bring pressure drops back to normal, URS deaerated the carbon vessels four times, on October 1 (during the warranty shutdown), October 22, November 2, and November 14, 2012. Deaeration was accomplished by introducing city water (at a low rate to prevent fluidization) into each vessel until it was determined to be full (indicated when water flowed out of the GAC fill vent line which enters the vessel near the top – this line is normally valved shut).

Each deaeration event effectively reduced the pressure drops back to normal. However, in each case, pressure drops slowly began to increase immediately after deaeration. One of two conclusions can be drawn from this observation. One, it may be necessary to perform deaeration once every 10 to 14 days of operation. Alternatively, it may be the case that the Crispin M Series Midget Air Release Valves located at the top of each carbon vessel are clogged and thus do not allow entrained air to escape. Because these vents are located at the top of the carbon vessels, they are not readily accessible for removal for cleaning, repairing, or replacement. Should the system be restarted in the future, the appropriate equipment (such as a man lift) should be mobilized to the site to inspect and if necessary repair or replace these vents to minimize the need for future deaeration.

4.0 MAINTENANCE ACTIVITIES

A maintenance schedule was outlined in the Final Draft of the Operations and Maintenance Manual, which included daily, weekly, monthly and annual maintenance procedures that were recommended by the various equipment manufacturers. The URS systems operator performed these activities during the three-times-a-day process monitoring rounds.

In addition to these recommended maintenance activities, the URS operator performed the following maintenance procedures.

- 6/26/12 Removed vent baffles on recovery well hot boxes, installed insect screening on all 8 air vents. Remounted baffles on 10/11/12.
- 7/10/12 Assembled spill control kits for both recovery wells and chemical storage area. Checked and maintained monthly or as needed.
- 7/12/12 Modified drains on chemical storage tanks to allow access to heel in tanks. Used this system several times to extend run time on system and during warranty repairs to drain storage tanks.
- 7/13/12 Cleaned air compressor air filter, installed desiccant filter system, cycled compressor. Tested compressor monthly during operating period.
- 8/9/12 Updated and tested wireless dial up alarm interface in anticipation of 24 hour operations.
- 8/13/12 Provided a permanent mounting system for sequestering agent calibration cylinders installed in extraction well hot boxes. These cylinders were used daily to monitor chemical usage.
- 10/9/12, 10/11/12 Activated heaters in GAC valve enclosures and extraction well hot boxes, began monitoring functions daily.
- 10/15/12 Tried to program tempered water heater, found to be not functioning. Notified DEP of this warranty repair issue.
- 11/13/12 Discovered and repaired leak in tempered water blending system in chemical storage area. An O-ring seal behind the cold water adjustment screw was found to be leaking within the wall cabinet. The adjustment screw was tightened, which reseated the O-ring and stopped the

leak. It is believed that this leak was caused by system operation vibrations causing the set screw to become loose.

- 11/15/12 Repaired leak in recovery well 2, which was discovered on 10/25/12. A water coolant line feeding the lower bearings of the well extraction pump was not draining properly. It was found that positive air pressure within the lower pump housing was preventing the coolant line from draining. By creating a vent for the air pressure, proper water flow was re-established.

5.0 ESTIMATED OPERATION COSTS

URS has estimated an order of magnitude cost for operating the system based on the observations from this three month operation period. URS makes the following assumptions in estimating the operating costs:

- Electricity usage is primarily for operation of two 40 hp (60 KW) pumps on a full time basis. Actual electricity rates are \$0.85/KW-hr.
- A single 40 hr/wk operator is required (no backup or contingency operator retained; no supervisory or reporting time included)
- Two SPDES sampling events would be conducted per month.
- Sequestering agent is used at a rate of 5.2 gallons per hour. This is the lowest rate used during this operational period. However, lower rates may be obtainable. Consumption of sequestering agent is the largest single cost of system operation. The vendor of the sequestering agent has indicated that with further refinement of the composition of the agent and of the dosing rates, this cost could be reduced by approximately \$200,000/yr
- Although carbon did not require replacement during this operationg period, this cost estimate assumes that carbon in all six vessels would be replaced once per year.
- Approximately \$5,000 in DEP water usage costs would be incurred for backflushing and deaerating.
- A 20% contingency is included for unscheduled maintenance items and other unforeseen costs.

Based on these assumptions, URS estimates that the system would cost about \$2,000,000 per year to operate, as summarized in Table 5-1. These costs may reasonably be able to be reduced by approximately 10% through further refinement of the composition and dose of the sequestering agent.

6.0 SUMMARY

URS operated the groundwater extraction and treatment system between July and November 2012, including full design capacity operation during September and, following a warranty repair shutdown (for the sequestering agent tank vents) for most of October and November. The system developed a groundwater table drawdown of a magnitude similar to that predicted by modeling during design. However, the extent of the downgradient capture zone was smaller than predicted during design.

Groundwater monitoring showed the highest PCE concentrations to be present in the intermediate depth zone, laterally beyond the extent of capture by the wells. Because the highest portions of the plume are not addressed by the system, a focused feasibility study should be performed to compare the effectiveness of this remedy with alternative technologies such as in situ treatment.

7.0 REFERENCES

Brooklyn Queens Aquifer Study Station 24 Modifications Draft Preliminary Design Report
Malcolm Pirnie, July 2004.

Final Offsite Plume Delineation and Investigation Report Malcolm Pirnie, March 2009.

TABLES

**TABLE 3-1
INFLUENT AND EFFLUENT CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID			BERGEN BASIN	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample ID			BERGEN BASIN SPDES S	001-EFF-731	001-EFF-801	001-EFF-802	001-EFF-806
Matrix			Process Water	Process Water	Process Water	Process Water	Process Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			09/12/12	07/31/12	08/01/12	08/02/12	08/06/12
Parameter	Units	Criteria*					
Volatiles Organic Compounds							
1,2-Dichloroethene (cis)	UG/L	460					
Chloroform	UG/L	100					
Methyl tert-butyl ether	UG/L	50	1.8 J				
Tetrachloroethene	UG/L	5	0.94 J				
Trichloroethene	UG/L	25					
Metals							
Aluminum	MG/L		0.099 J	NA	NA	NA	NA
Barium	MG/L		0.038	NA	NA	NA	NA
Boron	MG/L	116	1.8	NA	NA	NA	NA
Cadmium	MG/L	0.0027	0.0011	NA	NA	NA	NA
Chromium	MG/L			NA	NA	NA	NA
Copper	MG/L		0.0049 J	NA	NA	NA	NA
Iron	MG/L		0.77	1.8	2.1	2.2	1.8
Manganese	MG/L		0.36	NA	NA	NA	NA
Nickel	MG/L			NA	NA	NA	NA
Zinc	MG/L	0.066	0.0081 JB	NA	NA	NA	NA
Miscellaneous Parameters							
pH	SU		7.35	6.98	6.98	6.76	6.98
Total Unspecified Organics	1/cm	-	NA	0.141	0.163	0.169	0.149

*Criteria- SPDES permit April 2004Site 2-41026

Flags assigned during chemistry validation are shown.

 Concentration Exceeds Criteria

J - The reported concentration is an estimated value.

B - The reported concentration is above the method detection limit but below the quantitation limit.

NA - Not Analyzable

Only Detected Results Reported.

Advanced Selection: AMK-TEMP:

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[MATRIX] = "PW" AND ([LOCID] LIKE "WELL" OR [LOCID] LIKE "BER" OR [LOCID] = "EFFLUENT"

**TABLE 3-1
INFLUENT AND EFFLUENT CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID			EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample ID			001-EFF-807	001-EFF-808	001-EFF-809	001-EFF-815	DMR-831
Matrix			Process Water				
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/07/12	08/08/12	08/09/12	08/15/12	08/31/12
Parameter	Units	Criteria*					
Volatiles Organic Compounds							
1,2-Dichloroethene (cis)	UG/L	460					
Chloroform	UG/L	100					
Methyl tert-butyl ether	UG/L	50					
Tetrachloroethene	UG/L	5					
Trichloroethene	UG/L	25					
Metals							
Aluminum	MG/L		NA	NA	NA	NA	0.23
Barium	MG/L		NA	NA	NA	NA	0.091
Boron	MG/L	116	NA	NA	NA	NA	0.13 B
Cadmium	MG/L	0.0027	NA	NA	NA	NA	
Chromium	MG/L		NA	NA	NA	NA	
Copper	MG/L		NA	NA	NA	NA	0.017
Iron	MG/L		2.1	2.2	2.1 U	3.8 U	3.9
Manganese	MG/L		NA	NA	NA	NA	0.63
Nickel	MG/L		NA	NA	NA	NA	0.0083 J
Zinc	MG/L	0.066	NA	NA	NA	NA	0.0028 J
Miscellaneous Parameters							
pH	SU		6.93	6.50	6.94 HF	7.12	7.15
Total Unspecified Organics	1/cm	-	0.168	0.186	0.165 U	0.330 U	NA

*Criteria- SPDES permit April 2004Site 2-41026

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NA - Not Analyzable

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[MATRIX] = "PW" AND ([LOCID] LIKE "WELL" OR [LOCID] LIKE "BER" OR [LOCID] = "EFFLUENT"

**TABLE 3-1
INFLUENT AND EFFLUENT CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID			EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	WELL 1 INF
Sample ID			001-EFF-919-VOC	DMR-1016	001-EFF-1017-VOC	001-EFF-119-VOC	001-EW1-731
Matrix			Process Water	Process Water	Process Water	Process Water	Process Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			09/19/12	10/16/12	10/17/12	11/09/12	07/31/12
Parameter	Units	Criteria*					
Volatiles Organic Compounds							
1,2-Dichloroethene (cis)	UG/L	460					10
Chloroform	UG/L	100					
Methyl tert-butyl ether	UG/L	50					
Tetrachloroethene	UG/L	5					130
Trichloroethene	UG/L	25					7.8
Metals							
Aluminum	MG/L		NA	0.076 J	NA	NA	NA
Barium	MG/L		NA	0.082	NA	NA	NA
Boron	MG/L	116	NA	0.10 B	NA	NA	NA
Cadmium	MG/L	0.0027	NA		NA	NA	NA
Chromium	MG/L		NA	0.0011 J	NA	NA	NA
Copper	MG/L		NA	0.010	NA	NA	NA
Iron	MG/L		NA	3.10	NA	NA	NA
Manganese	MG/L		NA	0.87	NA	NA	NA
Nickel	MG/L		NA	0.013	NA	NA	NA
Zinc	MG/L	0.066	NA	0.0017 J	NA	NA	NA
Miscellaneous Parameters							
pH	SU		NA	7.34	NA	NA	NA
Total Unspecified Organics	1/cm	-	NA	NA	NA	NA	NA

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[MATRIX] = "PW" AND ([LOCID] LIKE "WELL" OR [LOCID] LIKE "BER" OR [LOCID] = "EFFLUENT"

TABLE 3-1
INFLUENT AND EFFLUENT CONCENTRATIONS
WEST SIDE CORPORATION

Location ID			WELL 1 INF				
Sample ID			001-EW1-801	001-EW1-802	001-EW1-806	001-EW1-807	001-EW1-808
Matrix			Process Water				
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/01/12	08/02/12	08/06/12	08/07/12	08/08/12
Parameter	Units	Criteria*					
Volatiles Organic Compounds							
1,2-Dichloroethene (cis)	UG/L	460	12 J	12 J	14 J	10 J	11 J
Chloroform	UG/L	100					
Methyl tert-butyl ether	UG/L	50					
Tetrachloroethene	UG/L	5	230	160	200	180	170
Trichloroethene	UG/L	25	8.2 J	6.9 J	7.6 J	6.5 J	6.6 J
Metals							
Aluminum	MG/L		NA	NA	NA	NA	NA
Barium	MG/L		NA	NA	NA	NA	NA
Boron	MG/L	116	NA	NA	NA	NA	NA
Cadmium	MG/L	0.0027	NA	NA	NA	NA	NA
Chromium	MG/L		NA	NA	NA	NA	NA
Copper	MG/L		NA	NA	NA	NA	NA
Iron	MG/L		NA	NA	NA	NA	NA
Manganese	MG/L		NA	NA	NA	NA	NA
Nickel	MG/L		NA	NA	NA	NA	NA
Zinc	MG/L	0.066	NA	NA	NA	NA	NA
Miscellaneous Parameters							
pH	SU		NA	NA	NA	NA	NA
Total Unspecified Organics	1/cm	-	NA	NA	NA	NA	NA

*Criteria- SPDES permit April 2004Site 2-41026

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[MATRIX] = 'PW' AND ([LOCID] LIKE 'WELL*' OR [LOCID] LIKE 'BER*' OR [LOCID] = 'EFFLUENT

**TABLE 3-1
INFLUENT AND EFFLUENT CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID			WELL 1 INF	WELL 1 INF	WELL 1 INF	WELL 1 INF	WELL 1 INF
Sample ID			001-EW1-809	001-EW1-815	001-EW1-919-VOC	001-EW1-1017-VOC	001-EW1-119-VOC
Matrix			Process Water	Process Water	Process Water	Process Water	Process Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/09/12	08/15/12	09/19/12	10/17/12	11/09/12
Parameter	Units	Criteria*					
Volatiles Organic Compounds							
1,2-Dichloroethene (cis)	UG/L	460	10 J	12 U	6.9 J	69	30
Chloroform	UG/L	100				1.0 J	
Methyl tert-butyl ether	UG/L	50				0.40 J	
Tetrachloroethene	UG/L	5	140	150	89	150	140
Trichloroethene	UG/L	25	6.1 J	5.8 J	5.3 J	24	13
Metals							
Aluminum	MG/L		NA	NA	NA	NA	NA
Barium	MG/L		NA	NA	NA	NA	NA
Boron	MG/L	116	NA	NA	NA	NA	NA
Cadmium	MG/L	0.0027	NA	NA	NA	NA	NA
Chromium	MG/L		NA	NA	NA	NA	NA
Copper	MG/L		NA	NA	NA	NA	NA
Iron	MG/L		NA	NA	NA	NA	NA
Manganese	MG/L		NA	NA	NA	NA	NA
Nickel	MG/L		NA	NA	NA	NA	NA
Zinc	MG/L	0.066	NA	NA	NA	NA	NA
Miscellaneous Parameters							
pH	SU		NA	NA	NA	NA	NA
Total Unspecified Organics	1/cm	-	NA	NA	NA	NA	NA

*Criteria- SPDES permit April 2004Site 2-41026

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**TABLE 3-1
INFLUENT AND EFFLUENT CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID			WELL 2 INF				
Sample ID			001-EW2-731	001-EW2-801	001-EW2-802	001-EW2-806	001-EW2-807
Matrix			Process Water				
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/12	08/01/12	08/02/12	08/06/12	08/07/12
Parameter	Units	Criteria*					
Volatiles Organic Compounds							
1,2-Dichloroethene (cis)	UG/L	460					
Chloroform	UG/L	100					
Methyl tert-butyl ether	UG/L	50					
Tetrachloroethene	UG/L	5	1.2 J	31	28	29	28
Trichloroethene	UG/L	25		2.4 J	2.4 J	2.4 J	2.2 J
Metals							
Aluminum	MG/L		NA	NA	NA	NA	NA
Barium	MG/L		NA	NA	NA	NA	NA
Boron	MG/L	116	NA	NA	NA	NA	NA
Cadmium	MG/L	0.0027	NA	NA	NA	NA	NA
Chromium	MG/L		NA	NA	NA	NA	NA
Copper	MG/L		NA	NA	NA	NA	NA
Iron	MG/L		NA	NA	NA	NA	NA
Manganese	MG/L		NA	NA	NA	NA	NA
Nickel	MG/L		NA	NA	NA	NA	NA
Zinc	MG/L	0.066	NA	NA	NA	NA	NA
Miscellaneous Parameters							
pH	SU		NA	NA	NA	NA	NA
Total Unspecified Organics	1/cm	-	NA	NA	NA	NA	NA

*Criteria- SPDES permit April 2004Site 2-41026

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[MATRIX] = "PW" AND ([LOCID] LIKE "WELL" OR [LOCID] LIKE "BER" OR [LOCID] = "EFFLUENT"

TABLE 3-1
INFLUENT AND EFFLUENT CONCENTRATIONS
WEST SIDE CORPORATION

Location ID			WELL 2 INF	WELL 2 INF	WELL 2 INF	WELL 2 INF	WELL 2 INF
Sample ID			001-EW2-808	001-EW2-809	001-EW2-815	001-EW2-919-VOC	001-EW2-1017-VOC
Matrix			Process Water	Process Water	Process Water	Process Water	Process Water
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/08/12	08/09/12	08/15/12	09/19/12	10/17/12
Parameter	Units	Criteria*					
Volatiles Organic Compounds							
1,2-Dichloroethene (cis)	UG/L	460				1.7 J	2.0 J
Chloroform	UG/L	100		0.59 J	0.70 J	1.2 J	1.2 J
Methyl tert-butyl ether	UG/L	50		0.45 J			
Tetrachloroethene	UG/L	5	26	30	29	35	36
Trichloroethene	UG/L	25	1.9 J	2.1 J	2.0 J	2.2 J	3.2 J
Metals							
Aluminum	MG/L		NA	NA	NA	NA	NA
Barium	MG/L		NA	NA	NA	NA	NA
Boron	MG/L	116	NA	NA	NA	NA	NA
Cadmium	MG/L	0.0027	NA	NA	NA	NA	NA
Chromium	MG/L		NA	NA	NA	NA	NA
Copper	MG/L		NA	NA	NA	NA	NA
Iron	MG/L		NA	NA	NA	NA	NA
Manganese	MG/L		NA	NA	NA	NA	NA
Nickel	MG/L		NA	NA	NA	NA	NA
Zinc	MG/L	0.066	NA	NA	NA	NA	NA
Miscellaneous Parameters							
pH	SU		NA	NA	NA	NA	NA
Total Unspecified Organics	1/cm	-	NA	NA	NA	NA	NA

*Criteria- SPDES permit April 2004Site 2-41026

Flags assigned during chemistry validation are shown.

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[MATRIX] = 'PW' AND ([LOCID] LIKE 'WELL*' OR [LOCID] LIKE 'BER*' OR [LOCID] = 'EFFLUENT

TABLE 3-1
INFLUENT AND EFFLUENT CONCENTRATIONS
WEST SIDE CORPORATION

Location ID			WELL 2 INF
Sample ID			001-EW2-119-VOC
Matrix			Process Water
Depth Interval (ft)			-
Date Sampled			11/09/12
Parameter	Units	Criteria*	
Volatiles Organic Compounds			
1,2-Dichloroethene (cis)	UG/L	460	3.1 J
Chloroform	UG/L	100	
Methyl tert-butyl ether	UG/L	50	
Tetrachloroethene	UG/L	5	47
Trichloroethene	UG/L	25	2.7 J
Metals			
Aluminum	MG/L		NA
Barium	MG/L		NA
Boron	MG/L	116	NA
Cadmium	MG/L	0.0027	NA
Chromium	MG/L		NA
Copper	MG/L		NA
Iron	MG/L		NA
Manganese	MG/L		NA
Nickel	MG/L		NA
Zinc	MG/L	0.066	NA
Miscellaneous Parameters			
pH	SU		NA
Total Unspecified Organics	1/cm	-	NA

*Criteria- SPDES permit April 2004Site 2-41026

Flags assigned during chemistry validation are shown.

 Concentration Exceeds Criteria

J - The reported concentration is an estimated value.

B - The reported concentration is above the method detection limit but below the quantitation limit.

NA - Not Aollicable

Only Detected Results Reported.

Advanced Selection: AMK-TEMP:

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[MATRIX] = 'PW' AND ([LOCID] LIKE 'WELL' OR [LOCID] LIKE 'BER' OR [LOCID] = 'EFFLUENT

**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MW-07	194840.9166	1045551.464	28.34141		28.34141	S						
MNW							8/21/2012 0000			NP		Covered w/gravel
MNW							9/13/2012 0820	11.68	16.66	NP		
MNW							9/26/2012 0747	12.41	15.93	NP		
MNW							10/18/2012 0826	12.07	16.27	NP		
MNW							11/7/2012 0804	15.01	13.33	NP		
MW-08	194402.9988	1045804.544	27.20141		27.20141	S						
MNW							8/21/2012 0000	11.18	16.02	NP		
MNW							9/13/2012 0822	10.88	16.32	NP		
MNW							9/26/2012 0740	17.42	9.78	NP		
MNW							10/18/2012 0819	17.17	10.03	NP		
MNW							11/7/2012 0757	17.67	9.53	NP		
MW-101I	194949.3885	1045984.88	29.82715		29.82715	I						
MNW							8/7/2012 0838	9.47	20.36	NP		
MNW							8/22/2012 0000	9.54	20.29	NP		Well box filled w/H2O
MNW							9/14/2012 0946	12.07	17.76	NP		
MNW							9/27/2012 0810	12.46	17.37	NP		
MNW							10/19/2012 0820	12.32	17.51	NP		
MNW							11/12/2012 0000			NP		vehicle over well
MW-101S	194956.6511	1045987.278	30.01215		30.01215	S						
MNW							8/7/2012 0823	9.67	20.34	NP		
MNW							8/22/2012 0000			NP		Couldn't find
MNW							9/14/2012 0949	12.21	17.80	NP		
MNW							9/27/2012 0808	12.41	17.60	NP		
MNW							10/19/2012 0821	11.58	18.43	NP		has surface runoff
MNW							11/12/2012 0753	13.15	16.86	NP		
MW-102I	195000.2414	1046006.106	30.07515		30.07515	I						
MNW							8/7/2012 0810	9.58	20.50	NP		
MNW							8/22/2012 0000	9.62	20.46	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							9/14/2012 0952	11.95	18.13	NP		
MNW							9/27/2012 0812	12.45	17.63	NP		
MNW							10/19/2012 0823	12.24	17.84	NP		
MNW							11/12/2012 0756	12.89	17.19	NP		
MW-102S	195002.879	1045997.123	30.18615		30.18615	S						
MNW							8/7/2012 0815	9.40	20.79	NP		H2O from shop runs into we
MNW							8/22/2012 0000	9.74	20.45	NP		Well box filled w/H2O
MNW							9/14/2012 0954	12.11	18.08	NP		
MNW							9/27/2012 0818	12.35	17.84	NP		
MNW							10/19/2012 0832	12.35	17.84	NP		
MNW							11/12/2012 0757	13.04	17.15	NP		
MW-103I	194881.3895	1046019.661	28.29815		28.29815	I						
MNW							8/7/2012 0800	8.71	19.59	NP		
MNW							8/22/2012 0000			NP		Couldn't find
MNW							9/14/2012 1019	11.48	16.82	NP		
MNW							9/27/2012 0835	11.55	16.75	NP		
MNW							10/19/2012 0801	11.72	16.58	NP		
MNW							11/12/2012 0000			NP		vehicle over well
MW-103S	194941.0313	1046041.591	29.47215		29.47215	S						
MNW							8/7/2012 0728	9.12	20.35	NP		
MNW							8/22/2012 0000	9.05	20.42	NP		
MNW							9/14/2012 1000	11.61	17.86	NP		
MNW							9/27/2012 0806	11.85	17.62	NP		
MNW							10/19/2012 0809	11.88	17.59	NP		
MNW							11/12/2012 0000			NP		vehicle over well
MW-104I	194900.7322	1045973.05	29.45915		29.45915	I						
MNW							8/7/2012 0829	9.37	20.09	NP		
MNW							8/22/2012 0000	9.44	20.02	NP		
MNW							9/14/2012 0937	12.17	17.29	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							9/27/2012 0758	12.27	17.19	NP		
MNW							10/19/2012 0807	12.43	17.03	NP		
MNW							11/12/2012 0747	13.06	16.40	NP		
MW-104S	194904.1491	1045965.846	29.46915		29.46915	S						
MNW							8/7/2012 0834	9.47	20.00	NP		
MNW							8/22/2012 0000			NP		Couldn't open
MNW							9/14/2012 0940	12.17	17.30	NP		
MNW							9/27/2012 0800	12.27	17.20	NP		
MNW							10/19/2012 0000	NM	-	NP	-	under 2' of water
MNW							11/12/2012 0749	13.08	16.39	NP		
MW-105D	194837.8636	1046052.36	27.83565		27.83565	D						
MNW							8/7/2012 0000			NP		Couldn't open
MNW							8/22/2012 0000	7.98	19.86	NP		
MNW							9/14/2012 1005	10.56	17.28	NP		
MNW							9/27/2012 0842	10.57	17.27	NP		
MNW							10/19/2012 0758	10.94	16.90	NP		
MNW							11/12/2012 0000			NP		vehicle over well
MW-106D	194932.4578	1046083.058	29.53715		29.53715	D						
MNW							8/7/2012 0745	9.21	20.33	NP		
MNW							8/22/2012 0000	9.23	20.31	NP		
MNW							9/14/2012 1012	11.67	17.87	NP		
MNW							9/27/2012 0802	11.87	17.67	NP		
MNW							10/19/2012 0815	11.98	17.56	NP		
MNW							11/12/2012 0809	12.57	16.97	NP		
MW-107D	194845.621	1045924.466	27.99065		27.99065	D						
MNW							8/7/2012 0900	8.10	19.89	NP		
MNW							8/22/2012 0000	8.11	19.88	NP		
MNW							9/13/2012 1208	11.01	16.98	NP		
MNW							9/27/2012 0850	10.97	17.02	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							10/19/2012 0744	11.33	16.66	NP		
MNW							11/12/2012 0000			NP		vehicle over well
MW-107S	194845.621	1045924.466	28.24215		28.24215	S						
MNW							8/7/2012 0903	8.33	19.91	NP		
MNW							8/22/2012 0000	8.56	19.68	NP		
MNW							9/13/2012 1211	11.40	16.84	NP		
MNW							9/27/2012 0852	11.41	16.83	NP		
MNW							10/19/2012 0743	11.69	16.55	NP		
MNW							11/12/2012 0000			NP		vehicle over well
MW-108D	194861.2502	1045938.454	28.02615		28.02615	D						
MNW							8/7/2012 0849	7.92	20.11	NP		
MNW							8/22/2012 0000	8.04	19.99	NP		
MNW							9/13/2012 1150	10.81	17.22	NP		
MNW							9/27/2012 0858	11.05	16.98	NP		
MNW							10/19/2012 0754	11.25	16.78	NP		
MNW							11/12/2012 0746	11.79	16.24	NP		
MW-108S	194861.2502	1045938.454	27.87115		27.87115	S						
MNW							8/7/2012 0850	8.10	19.77	NP		
MNW							8/22/2012 0000	8.18	19.69	NP		
MNW							9/13/2012 1153	10.97	16.90	NP		
MNW							9/27/2012 0900	10.84	17.03	NP		
MNW							10/19/2012 0755	11.26	16.61	NP		
MNW							11/12/2012 0745	11.98	15.89	NP		
MW-1D	195351.594	1046004.801	32.67215		32.67215	D						
MNW							8/7/2012 0956	11.31	21.36	NP		
MNW							8/21/2012 0000	11.18	21.49	NP		
MNW							9/13/2012 1043	12.71	19.96	NP		
MNW							9/27/2012 0729	13.31	19.36	NP		
MNW							10/19/2012 0705	13.09	19.58	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

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TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							11/12/2012 0719	13.74	18.93	NP		
MW-1S	195342.771	1045997.811	32.67015		32.67015	S						
MNW							8/7/2012 0958	11.30	21.37	NP		
MNW							8/21/2012 0000	11.14	21.53	NP		
MNW							9/13/2012 1046	12.72	19.95	NP		
MNW							9/27/2012 0703	13.26	19.41	NP		
MNW							10/19/2012 0704	13.08	19.59	NP		
MNW							11/12/2012 0720	13.72	18.95	NP		
MW-22S	194731.3865	1045787.498	27.90515		27.90515	S						
MNW							6/27/2012 1222	7.02	20.89	NP		
MNW							8/7/2012 0919	8.57	19.34	NP		
MNW							8/21/2012 0000	8.61	19.30	NP		
MNW							9/13/2012 1055	12.25	15.66	NP		
MNW							9/27/2012 0747	11.72	16.19	NP		
MNW							10/19/2012 0728	12.64	15.27	NP		
MNW							11/12/2012 0818	13.25	14.66	NP		
MW-24-10D	195488.8415	1046958.136	38.46153		38.46153	D						
MNW							8/8/2012 1536	16.46	22.00	NP		
MNW							8/22/2012 0000	16.31	22.15	NP		
MNW							9/14/2012 0710	16.89	21.57	NP		
MNW							9/26/2012 0816	17.18	21.28	NP		
MNW							10/19/2012 0640	17.07	21.39	NP		
MNW							11/7/2012 0834	17.45	21.01	NP		
MW-24-10I	195486.248	1046959.381	38.55303		38.55303	I						
MNW							8/8/2012 0000			NP		Vehicle over well.
MNW							8/22/2012 0000	16.38	22.17	NP		
MNW							9/14/2012 0715	16.99	21.56	NP		
MNW							9/26/2012 0817	17.26	21.29	NP		
MNW							10/19/2012 0642	17.18	21.37	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

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**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							11/7/2012 0835	17.56	20.99	NP		
MW-24-2D	194478.5141	1045411.844	27.87641		27.87641	D						
MNW							6/27/2012 1045	8.20	19.68	NP		
MNW							8/6/2012 1509	10.17	17.71	NP		
MNW							8/21/2012 0000	9.82	18.06	NP		
MNW							9/13/2012 0750	13.74	14.14	NP		
MNW							9/26/2012 0754	14.38	13.50	NP		
MNW							10/18/2012 0730	14.09	13.79	NP		
MNW							11/7/2012 0808	14.95	12.93	NP		
MW-24-2I	194478.5141	1045411.844	27.94841		27.94841	I						
MNW							6/27/2012 1045	8.27	19.68	NP		
MNW							8/6/2012 1505	10.22	17.73	NP		
MNW							8/21/2012 0000	9.81	18.14	NP		
MNW							9/13/2012 0752	13.79	14.16	NP		
MNW							9/26/2012 0755	14.49	13.46	NP		
MNW							10/18/2012 0731	14.15	13.80	NP		
MNW							11/7/2012 0809	14.96	12.99	NP		
MW-24-2S	194478.5141	1045411.844	27.86341		27.86341	S						
MNW							6/27/2012 1045	8.21	19.65	NP		
MNW							8/6/2012 1507	10.17	17.69	NP		
MNW							8/21/2012 0000	9.74	18.12	NP		
MNW							9/13/2012 0753	13.72	14.14	NP		
MNW							9/26/2012 0756	14.41	13.45	NP		
MNW							10/18/2012 0732	14.07	13.79	NP		
MNW							11/7/2012 0810	15.03	12.83	NP		
MW-24-3RD	194533.5267	1046186.478	30.69765		30.69765	D						
MNW							8/8/2012 0810	11.54	19.16	NP		
MNW							8/22/2012 0000	11.51	19.19	NP		
MNW							9/14/2012 1043	14.81	15.89	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

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TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							9/26/2012 0836	15.32	15.38	NP		
MNW							10/18/2012 1359	14.93	15.77	NP		
MNW							11/7/2012 0823	15.74	14.96	NP		
MW-24-3RI	194531.9885	1046185.101	30.55565		30.55565	I						
MNW							8/8/2012 0812	11.67	18.89	NP		
MNW							8/22/2012 0000	11.66	18.90	NP		
MNW							9/14/2012 1046	14.92	15.64	NP		
MNW							9/26/2012 0834	15.43	15.13	NP		
MNW							10/18/2012 1400	15.1	15.46	NP		
MNW							11/7/2012 0822	15.86	14.70	NP		
MW-24-4D	193351.4742	1044675.707	29.11912		29.11912	D						
MNW							6/28/2012 1120	12.99	16.13	NP		
MNW							8/8/2012 1032	13.82	15.30	NP		
MNW							8/21/2012 0000	13.70	15.42	NP		
MNW							9/13/2012 1520	14.72	14.40	NP		
MNW							9/28/2012 0733	15.18	13.94	NP		
MNW							10/18/2012 1055	15.16	13.96	NP		
MNW							11/9/2012 0820	15.82	13.30	NP		
MW-24-4I	193351.4742	1044675.707	29.14212		29.14212	I						
MNW							6/28/2012 1120	12.94	16.20	NP		
MNW							8/8/2012 1033	13.82	15.32	NP		
MNW							8/21/2012 0000	13.71	15.43	NP		
MNW							9/13/2012 1521	14.71	14.43	NP		
MNW							9/28/2012 0735	15.21	13.93	NP		
MNW							10/18/2012 1056	15.16	13.98	NP		
MNW							11/9/2012 0822	15.84	13.30	NP		
MW-24-4S	193351.4742	1044675.707	29.11412		29.11412	S						
MNW							6/28/2012 1120	12.98	16.13	NP		cover does not close all the
MNW							8/8/2012 1031	13.79	15.32	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

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**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							8/21/2012 0000	13.68	15.43	NP		
MNW							9/13/2012 1523	14.68	14.43	NP		
MNW							9/28/2012 0737	15.18	13.93	NP		
MNW							10/19/2012 0924	15.2	13.91	NP		
MNW							11/9/2012 0824	15.81	13.30	NP		
MW-24-5D	193553.3736	1045496.016	27.29326		27.29326	D						
MNW							6/27/2012 1518	9.98	17.31	NP		
MNW							8/7/2012 1546	10.91	16.38	NP		
MNW							8/21/2012 0000	10.81	16.48	NP		
MNW							9/14/2012 1145	12.67	14.62	NP		
MNW							9/27/2012 0922	12.97	14.32	NP		
MNW							10/18/2012 0945	12.96	14.33	NP		
MNW							11/7/2012 1140	13.75	13.54	NP		
MW-24-5I	193553.3736	1045496.016	27.23326		27.23326	I						
MNW							6/27/2012 1518	9.92	17.31	NP		
MNW							8/7/2012 1547	10.86	16.37	NP		
MNW							8/21/2012 0000	10.74	16.49	NP		
MNW							9/14/2012 1147	12.61	14.62	NP		
MNW							9/27/2012 0923	12.94	14.29	NP		
MNW							10/18/2012 0946	12.88	14.35	NP		
MNW							11/7/2012 1142	13.66	13.57	NP		
MW-24-5S	193553.3736	1045496.016	27.22326		27.22326	S						
MNW							6/27/2012 1518	9.93	17.29	NP		
MNW							8/7/2012 1545	10.85	16.37	NP		
MNW							8/21/2012 0000	10.73	16.49	NP		
MNW							9/14/2012 1148	12.62	14.60	NP		
MNW							9/27/2012 0924	12.93	14.29	NP		
MNW							10/18/2012 0947	12.86	14.36	NP		
MNW							11/7/2012 1144	13.65	13.57	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

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TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MW-24-6D	193095.5185	1046270.151	25.53743		25.53743	D						
MNW							6/27/2012 1625	8.40	17.14	NP		
MNW							8/7/2012 1725	9.16	16.38	NP		
MNW							8/22/2012 0000	9.13	16.41	NP		
MNW							9/14/2012 0815	9.81	15.73	NP		
MNW							9/26/2012 1015	10.09	15.45	NP		
MNW							10/18/2012 1130	10.1	15.44	NP		
MNW							11/7/2012 0910	10.43	15.11	NP		
MW-24-6I	193095.5185	1046270.151	25.51143		25.51143	I						
MNW							6/27/2012 1625	8.40	17.11	NP		
MNW							8/7/2012 1726	9.15	16.36	NP		
MNW							8/22/2012 0000	9.09	16.42	NP		
MNW							9/14/2012 0816	9.79	15.72	NP		
MNW							9/26/2012 1016	10.07	15.44	NP		
MNW							10/18/2012 1131	9.99	15.52	NP		
MNW							11/7/2012 0912	10.38	15.13	NP		
MW-24-6S	193095.5185	1046270.151	25.45343		25.45343	S						
MNW							6/27/2012 1625	8.36	17.09	NP		
MNW							8/7/2012 1725	9.11	16.34	NP		
MNW							8/22/2012 0000	9.06	16.39	NP		
MNW							9/14/2012 0817	9.75	15.70	NP		
MNW							9/26/2012 1017	10.03	15.42	NP		
MNW							10/18/2012 1132	9.95	15.50	NP		
MNW							11/7/2012 0914	10.36	15.09	NP		
MW-24-7D	194259.7714	1046880.061	31.53865		31.53865	D						
MNW							8/8/2012 1525	12.24	19.30	NP		
MNW							8/22/2012 0000	12.08	19.46	NP		
MNW							9/14/2012 0802	13.25	18.29	NP		
MNW							9/26/2012 0845	13.62	17.92	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							10/18/2012 0853	13.39	18.15	NP		
MNW							11/7/2012 0856	13.96	17.58	NP		
MW-24-7I	194261.3171	1046879.111	31.53079		31.53079	I						
MNW							8/8/2012 1525	12.24	19.29	NP		
MNW							8/22/2012 0000	12.12	19.41	NP		
MNW							9/14/2012 0804	13.26	18.27	NP		
MNW							9/26/2012 0843	13.64	17.89	NP		
MNW							10/18/2012 0854	13.41	18.12	NP		
MNW							11/7/2012 0857	13.98	17.55	NP		
MW-24-8D	195270.4942	1045214.718	39.89891		39.89891	D						
MNW							8/8/2012 1503	18.99	20.91	NP		
MNW							8/22/2012 0000	18.97	20.93	NP		
MNW							9/14/2012 0732	20.41	19.49	NP		
MNW							9/26/2012 0823	20.97	18.93	NP		
MNW							10/18/2012 0845	20.76	19.14	NP		
MNW							11/7/2012 0845	21.60	18.30	NP		
MW-24-8I	195269.4547	1045212.809	39.95891		39.95891	I						
MNW							8/8/2012 1502	19.03	20.93	NP		
MNW							8/22/2012 0000	19.02	20.94	NP		
MNW							9/14/2012 0738	20.48	19.48	NP		
MNW							9/26/2012 0825	21.03	18.93	NP		
MNW							10/18/2012 0844	20.81	19.15	NP		
MNW							11/7/2012 0846	21.66	18.30	NP		
MW-24-9D	194088.14	1044270.203	38.81212		38.81212	D						
MNW							8/8/2012 1515	22.12	16.69	NP		
MNW							8/23/2012 0000	22.21	16.60	NP		
MNW							9/14/2012 1227	23.12	15.69	NP		
MNW							9/26/2012 0858	23.62	15.19	NP		
MNW							10/18/2012 1049	23.67	15.14	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							11/9/2012 1245	24.33	14.48	NP		
MW-24-9I	194090.2769	1044268.962	38.76012		38.76012	I						
MNW							8/8/2012 1515	22.12	16.64	NP		
MNW							8/23/2012 0000	22.15	16.61	NP		
MNW							9/14/2012 1230	23.09	15.67	NP		
MNW							9/26/2012 0856	23.59	15.17	NP		
MNW							10/18/2012 1048	23.16	15.60	NP		
MNW							11/9/2012 1247	24.29	14.47	NP		
MW-3D	194575.9631	1046097.33	26.19865		26.19865	D						
MNW							6/27/2012 1245	5.62	20.58	NP		
MNW							8/7/2012 0923	7.15	19.05	NP		
MNW							8/21/2012 0000	7.16	19.04	NP		
MNW							9/13/2012 1106	10.79	15.41	NP		
MNW							9/27/2012 0753	10.26	15.94	NP		
MNW							10/19/2012 0732	11.1	15.10	NP		
MNW							11/12/2012 0828	11.61	14.59	NP		
MW-4D	194994.1648	1046028.985	30.22065		30.22065	D						
MNW							8/7/2012 0806	9.73	20.49	NP		
MNW							8/22/2012 0000	9.77	20.45	NP		
MNW							9/13/2012 1140	12.02	18.20	NP		
MNW							9/27/2012 0824	12.37	17.85	NP		
MNW							10/19/2012 0826	12.37	17.85	NP		
MNW							11/12/2012 0800	13.02	17.20	NP		
MW-4S	195006.4879	1046032.421	30.13865		30.13865	S						
MNW							8/7/2012 0804	9.72	20.42	NP		
MNW							8/22/2012 0000	9.72	20.42	NP		
MNW							9/13/2012 1133	11.95	18.19	NP		
MNW							9/27/2012 0820	12.34	17.80	NP		
MNW							10/19/2012 0828	12.34	17.80	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							11/12/2012 0802	13.01	17.13	NP		
MW-55D	194679.5328	1045795.774	27.49965		27.49965	D						
MNW							6/27/2012 1230	7.11	20.39	NP		g found. Only 1/4" o.d. tubin
MNW							8/7/2012 0921	8.82	18.68	NP		
MNW							8/22/2012 0000	8.91	18.59	NP		
MNW							9/13/2012 1100	12.88	14.62	NP		
MNW							9/27/2012 0748	11.91	15.59	NP		
MNW							10/19/2012 0722	13.27	14.23	NP		
MNW							11/12/2012 0822	13.76	13.74	NP		
MW-66S	195046.1503	1045878.251	29.21565		29.21565	S						
MNW							6/27/2012 1200	7.65	21.57	NP		
MNW							8/7/2012 0944	8.78	20.44	NP		
MNW							8/22/2012 0000	8.82	20.40	NP		
MNW							9/13/2012 1030	11.09	18.13	NP		
MNW							9/27/2012 0000	NM	-	NP	-	Vehicle over well.
MNW							10/19/2012 0714	11.43	17.79	NP		
MNW							11/12/2012 0730	12.12	17.10	NP		
MW-6D	195054.3053	1045881.782	29.48965		29.48965	D						
MNW							6/27/2012 1210	7.88	21.61	NP		
MNW							8/7/2012 0950	9.03	20.46	NP		
MNW							8/22/2012 0000	9.05	20.44	NP		
MNW							9/13/2012 1038	11.25	18.24	NP		
MNW							9/27/2012 0739	11.65	17.84	NP		
MNW							10/19/2012 0000	NM	-	NP	-	Could not locate
MNW							11/12/2012 0731	12.31	17.18	NP		
MW-77D	194847.1462	1045936.725	28.02715		28.02715	D						
MNW							8/7/2012 0905	8.20	19.83	NP		
MNW							8/22/2012 0000	8.35	19.68	NP		
MNW							9/13/2012 1200	11.09	16.94	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							9/27/2012 0854	11.09	16.94	NP		
MNW							10/19/2012 0747	11.43	16.60	NP		
MNW							11/12/2012 0740	12.02	16.01	NP		
MW-7S	194854.1688	1045934.157	27.97415		27.97415	S						
MNW							6/28/2012 0800	6.88	21.09	NP		
MNW							8/7/2012 0853	8.06	19.91	NP		
MNW							8/22/2012 0000	8.21	19.76	NP		
MNW							9/13/2012 1202	10.99	16.98	NP		
MNW							9/27/2012 0858	11.04	16.93	NP		
MNW							10/19/2012 0749	10.34	17.63	NP		
MNW							11/12/2012 0744	11.97	16.00	NP		
W-01D	194180.9127	1045725.613	26.80843		26.80843	D						
MNW							6/27/2012 1320	7.87	18.94	NP		
MNW							8/7/2012 1355	10.75	16.06	NP		
MNW							8/22/2012 0000	10.58	16.23	NP		
MNW							9/14/2012 1634	14.95	11.86	NP		
MNW							9/26/2012 1052	14.85	11.96	NP		
MNW							10/18/2012 0907	15.18	11.63	NP		
MNW							11/7/2012 0932	15.83	10.98	NP		
W-01I	194180.9127	1045725.613	26.66743		26.66743	I						
MNW							6/27/2012 1320	7.69	18.98	NP		
MNW							8/7/2012 1354	10.57	16.10	NP		
MNW							8/21/2012 0000	10.38	16.29	NP		
MNW							9/14/2012 0836	14.75	11.92	NP		
MNW							9/26/2012 1053	14.72	11.95	NP		
MNW							10/18/2012 0908	14.98	11.69	NP		
MNW							11/7/2012 0934	15.62	11.05	NP		
W-01S	194180.9127	1045725.613	26.63443		26.63443	S						
MNW							6/27/2012 1320	7.71	18.92	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

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**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							8/7/2012 1353	10.59	16.04	NP		
MNW							8/23/2012 0000	10.85	15.78	NP		
MNW							9/14/2012 0000			NP		Vehicle over well.
MNW							9/26/2012 1111	14.72	11.91	NP		
MNW							10/18/2012 0916	15.17	11.46	NP		
MNW							11/7/2012 0945	15.65	10.98	NP		
W-02D	193778.9794	1045935.695	26.15093		26.15093	D						
MNW							6/27/2012 1355	8.07	18.08	NP		
MNW							8/7/2012 1318	9.10	17.05	NP		
MNW							8/22/2012 0000	8.89	17.26	NP		
MNW							9/14/2012 1105	11.23	14.92	NP		
MNW							9/26/2012 1201	11.71	14.44	NP		
MNW							10/18/2012 0921	11.43	14.72	NP		
MNW							11/7/2012 1012	12.12	14.03	NP		
W-02I	193778.9794	1045935.695	26.13893		26.13893	I						
MNW							6/27/2012 1355	8.02	18.12	NP		
MNW							8/7/2012 1318	9.06	17.08	NP		
MNW							8/22/2012 0000	8.92	17.22	NP		
MNW							9/14/2012 1107	11.24	14.90	NP		
MNW							9/26/2012 1202	11.72	14.42	NP		
MNW							10/18/2012 0922	11.38	14.76	NP		
MNW							11/7/2012 1014	12.17	13.97	NP		
W-02S	193778.9794	1045935.695	26.05593		26.05593	S						
MNW							6/27/2012 1355	7.98	18.08	NP		
MNW							8/7/2012 1317	9.00	17.06	NP		
MNW							8/22/2012 0000	8.86	17.20	NP		
MNW							9/14/2012 1109	11.13	14.93	NP		
MNW							9/26/2012 1204	11.62	14.44	NP		
MNW							10/18/2012 0923	11.42	14.64	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

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TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							11/7/2012 1016	12.09	13.97	NP		
W-03D	193865.3444	1045611.465	24.39393		24.39393	D						
MNW							8/7/2012 1441	7.21	17.18	NP		
MNW							8/22/2012 0000	7.01	17.38	NP		
MNW							9/14/2012 1540	9.12	15.27	NP		
MNW							9/26/2012 1435	10.68	13.71	NP		
MNW							10/18/2012 0941	10.26	14.13	NP		
MNW							11/12/2012 0846	11.09	13.30	NP		
W-03I	193677.0802	1045715.474	24.42593		24.42593	I						
MNW							8/7/2012 1441	7.74	16.69	NP		
MNW							8/22/2012 0000	7.61	16.82	NP		
MNW							9/14/2012 1543	10.55	13.88	NP		
MNW							9/26/2012 1436	10.82	13.61	NP		
MNW							10/18/2012 0940	10.77	13.66	NP		
MNW							11/12/2012 0845	11.38	13.05	NP		
W-03S	193893.0394	1045594.367	24.23043		24.23043	S						
MNW							6/27/2012 1420	6.04	18.19	NP		
MNW							8/7/2012 1439	7.58	16.65	NP		
MNW							8/22/2012 0000	7.43	16.80	NP		
MNW							9/14/2012 1115	10.47	13.76	NP		
MNW							9/26/2012 1425	10.75	13.48	NP		
MNW							10/18/2012 0938	10.72	13.51	NP		
MNW							11/12/2012 0843	11.32	12.91	NP		
W-04D	193685.5841	1045711.114	24.42593		24.42593	D						
MNW							6/27/2012 1445	6.70	17.73	NP		
MNW							8/7/2012 1419	7.75	16.68	NP		
MNW							8/22/2012 0000	7.61	16.82	NP		
MNW							9/14/2012 0000			NP		Vehicle over well.
MNW							9/26/2012 1336	10.31	14.12	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

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**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							10/18/2012 0931	10.09	14.34	NP		
MNW							11/7/2012 1108	10.86	13.57	NP		
W-04I	193685.5841	1045711.114	24.38493		24.38493	I						
MNW							6/27/2012 1445	6.65	17.73	NP		4" r 2" OD. Well in grass near
MNW							8/7/2012 1418	7.40	16.98	NP		
MNW							8/22/2012 0000	7.56	16.82	NP		
MNW							9/14/2012 0000			NP		Vehicle over well.
MNW							9/26/2012 1337	10.26	14.12	NP		
MNW							10/18/2012 0932	10.04	14.34	NP		
MNW							11/7/2012 1110	10.81	13.57	NP		
W-04S	193677.3513	1045724.12	24.36793		24.36793	S						
MNW							6/27/2012 1445	6.92	17.45	NP		
MNW							8/7/2012 1416	7.38	16.99	NP		
MNW							8/22/2012 0000	7.82	16.55	NP		
MNW							9/14/2012 1610	10.02	14.35	NP		
MNW							9/26/2012 1339	10.46	13.91	NP		
MNW							10/18/2012 0934	10.23	14.14	NP		
MNW							11/7/2012 1112	11.01	13.36	NP		
W-05	193824.9841	1045337.951	27.59126		27.59126	S						
MNW							6/27/2012 1500	9.95	17.64	NP		
MNW							8/7/2012 1608	10.98	16.61	NP		
MNW							8/23/2012 0000			NP		Vehicle over well.
MNW							9/14/2012 1139	13.28	14.31	NP		
MNW							9/27/2012 1002	13.32	14.27	NP		
MNW							10/19/2012 0947	13.66	13.93	NP		
MNW							11/7/2012 0000			NP		Vehicle over well.
W-06D	193153.8406	1045712.267	26.14526		26.14526	D						
MNW							6/28/2012 1550	9.33	16.82	NP		
MNW							8/7/2012 1451	10.18	15.97	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

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**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							8/23/2012 0000	9.22	16.93	NP		
MNW							9/14/2012 1551	11.21	14.94	NP		
MNW							9/27/2012 1107	11.61	14.54	NP		
MNW							10/18/2012 1008	11.46	14.69	NP		
MNW							11/9/2012 1140	12.05	14.10	NP		
W-06I	193158.3752	1045709.692	26.18126		26.18126	I						
MNW							8/8/2012 1419	10.20	15.98	NP		
MNW							8/23/2012 0000	10.15	16.03	NP		
MNW							9/14/2012 1552	11.23	14.95	NP		
MNW							9/27/2012 1108	11.64	14.54	NP		
MNW							10/18/2012 1009	11.48	14.70	NP		
MNW							11/9/2012 1142	12.04	14.14	NP		
W-06S	193156.9198	1045710.497	25.86526		25.86526	S						
MNW							6/28/2012 1550	9.06	16.81	NP		
MNW							8/7/2012 1452	9.91	15.96	NP		
MNW							8/23/2012 0000	9.88	15.99	NP		
MNW							9/14/2012 1553	10.91	14.96	NP		
MNW							9/27/2012 1109	11.29	14.58	NP		
MNW							10/18/2012 1010	11.17	14.70	NP		
MNW							11/9/2012 1144	11.74	14.13	NP		
W-07D	193246.9504	1045358.948	26.17526		26.17526	D						
MNW							8/8/2012 0828	10.38	15.80	NP		
MNW							8/23/2012 0000	10.35	15.83	NP		
MNW							9/14/2012 1218	11.57	14.61	NP		
MNW							9/27/2012 1301	11.95	14.23	NP		
MNW							10/18/2012 1035	12.1	14.08	NP		
MNW							11/9/2012 0755	12.49	13.69	NP		
W-07I	193246.9504	1045358.948	26.31126		26.31126	I						
MNW							8/8/2012 0828	10.52	15.79	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

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**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							8/23/2012 0000	10.47	15.84	NP		
MNW							9/14/2012 1219	11.64	14.67	NP		
MNW							9/27/2012 1302	12.07	14.24	NP		
MNW							10/18/2012 1036	12	14.31	NP		
MNW							11/9/2012 0757	12.62	13.69	NP		
W-07S	193246.9504	1045358.948	26.26326		26.26326	S						
MNW							8/8/2012 0827	10.46	15.80	NP		
MNW							8/23/2012 0000	10.44	15.82	NP		
MNW							9/14/2012 1220	11.61	14.65	NP		
MNW							9/27/2012 1304	12.02	14.24	NP		
MNW							10/18/2012 1037	11.94	14.32	NP		
MNW							11/9/2012 0759	12.58	13.68	NP		
W-08D	193240.9929	1045646.163	26.86926		26.86926	D						
MNW							6/28/2012 1530	9.96	16.91	NP		
MNW							8/7/2012 1628	10.87	16.00	NP		
MNW							8/23/2012 0000	10.86	16.01	NP		
MNW							9/14/2012 1201	12.02	14.85	NP		
MNW							9/27/2012 1022	12.41	14.46	NP		
MNW							10/18/2012 1022	12.3	14.57	NP		
MNW							11/9/2012 1117	12.91	13.96	NP		
W-08I	193240.9929	1045646.163	26.84726		26.84726	I						
MNW							6/28/2012 1530	9.95	16.90	NP		
MNW							8/7/2012 1628	10.80	16.05	NP		
MNW							8/23/2012 0000	10.86	15.99	NP		
MNW							9/14/2012 1202	11.91	14.94	NP		
MNW							9/27/2012 1023	12.33	14.52	NP		
MNW							10/18/2012 1023	12.21	14.64	NP		
MNW							11/9/2012 1119	12.82	14.03	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
W-08S	193240.9929	1045646.163	26.78726		26.78726	S						
MNW							6/28/2012 1530	9.91	16.88	NP		
MNW							8/7/2012 1628	10.76	16.03	NP		
MNW							8/23/2012 0000	10.75	16.04	NP		
MNW							9/14/2012 1203	11.88	14.91	NP		
MNW							9/27/2012 1024	12.28	14.51	NP		
MNW							10/19/2012 1024	12.21	14.58	NP		
MNW							11/9/2012 1121	12.77	14.02	NP		
W-09D	193988.8851	1045833.721	27.65643		27.65643	D						
MNW							6/27/2012 1340	9.16	18.50	NP		
MNW							8/7/2012 1518	10.61	17.05	NP		
MNW							8/23/2012 0000	10.41	17.25	NP		
MNW							9/14/2012 1050	13.66	14.00	NP		
MNW							9/26/2012 1124	14.09	13.57	NP		
MNW							10/18/2012 0904	13.82	13.84	NP		
MNW							11/7/2012 0953	14.62	13.04	NP		
W-09I	193988.8851	1045833.721	27.96043		27.96043	I						
MNW							6/27/2012 1340	9.41	18.55	NP		
MNW							8/7/2012 1518	10.99	16.97	NP		
MNW							8/23/2012 0000	10.75	17.21	NP		
MNW							9/14/2012 1052	14.16	13.80	NP		
MNW							9/26/2012 1125	14.58	13.38	NP		
MNW							10/18/2012 0902	14.35	13.61	NP		
MNW							11/7/2012 0955	15.12	12.84	NP		
W-09S	193988.8851	1045833.721	27.84643		27.84643	S						
MNW							6/27/2012 1340	9.32	18.53	NP		
MNW							8/7/2012 1517	10.84	17.01	NP		
MNW							8/23/2012 0000	10.61	17.24	NP		
MNW							9/14/2012 1053	14.05	13.80	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							9/26/2012 1126	14.47	13.38	NP		
MNW							10/18/2012 0903	14.23	13.62	NP		
MNW							11/7/2012 0957	15.01	12.84	NP		
W-10D	192129.4147	1045543.863	25.00834		25.00834	D						
MNW							6/28/2012 1220	9.82	15.19	NP		
MNW							8/8/2012 0947	10.65	14.36	NP		
MNW							8/23/2012 0000	10.62	14.39	NP		
MNW							9/13/2012 1625	11.04	13.97	NP		
MNW							9/28/2012 0910	11.23	13.78	NP		
MNW							10/18/2012 1141	11.28	13.73	NP		
MNW							11/9/2012 0915	11.48	13.53	NP		
W-10I	192127.0314	1045540.704	25.01748		25.01748	I						
MNW							6/28/2012 1220	9.83	15.19	NP		
MNW							8/8/2012 0948	10.72	14.30	NP		
MNW							8/23/2012 0000	10.61	14.41	NP		
MNW							9/13/2012 1626	11.09	13.93	NP		
MNW							9/28/2012 0913	11.25	13.77	NP		
MNW							10/18/2012 1142	11.26	13.76	NP		
MNW							11/9/2012 0917	11.51	13.51	NP		
W-10IT	192128.0244	1045541.942	25.07648		25.07648	I						
MNW							6/28/2012 1220	9.94	15.14	NP		
MNW							8/8/2012 0948	10.80	14.28	NP		
MNW							9/13/2012 1627	11.12	13.96	NP		
MNW							9/28/2012 0914	11.29	13.79	NP		
MNW							10/18/2012 1143	11.37	13.71	NP		
MNW							11/9/2012 0919	11.55	13.53	NP		
W-10S	192126.5877	1045538.763	24.99348		24.99348	S						
MNW							6/28/2012 1220	9.80	15.19	NP		
MNW							8/8/2012 0948	10.64	14.35	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							8/23/2012 0000	10.59	14.40	NP		
MNW							9/13/2012 1628	11.06	13.93	NP		
MNW							9/28/2012 0915	11.41	13.58	NP		
MNW							10/19/2012 1001	11.28	13.71	NP		
MNW							11/9/2012 0921	11.48	13.51	NP		
W-11D	192753.5078	1045050.068	26.98862		26.98862	D						
MNW							6/28/2012 1140	11.22	15.77	NP		
MNW							8/8/2012 0907	12.21	14.78	NP		
MNW							8/23/2012 0000	12.13	14.86	NP		
MNW							9/13/2012 1418	12.81	14.18	NP		
MNW							9/27/2012 1347	13.17	13.82	NP		
MNW							10/18/2012 1110	NM	-	NP	-	obstruction in well
MNW							11/9/2012 0845	13.72	13.27	NP		
W-11I	192754.5393	1045048.401	27.40762		27.40762	I						
MNW							6/28/2012 1140	11.72	15.69	NP		
MNW							8/8/2012 0908	12.61	14.80	NP		
MNW							8/23/2012 0000	12.55	14.86	NP		
MNW							9/13/2012 1419	13.19	14.22	NP		
MNW							9/27/2012 1349	13.57	13.84	NP		
MNW							10/18/2012 1109	13.61	13.80	NP		
MNW							11/9/2012 0847	14.02	13.39	NP		
W-11IT	192751.9976	1045050.537	27.34662		27.34662	I						
MNW							6/28/2012 1140	11.49	15.86	NP		
MNW							8/8/2012 0908	12.53	14.82	NP		
MNW							9/13/2012 1420	13.18	14.17	NP		
MNW							9/27/2012 1345	13.52	13.83	NP		
MNW							10/18/2012 1108	13.54	13.81	NP		
MNW							11/9/2012 0849	13.98	13.37	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
W-11S	192755.9254	1045048.378	27.38412		27.38412	S						
MNW							6/28/2012 1140	11.61	15.77	NP		
MNW							8/8/2012 0911			NP		Dry
MNW							8/23/2012 0000			NP		Dry
MNW							9/13/2012 1421			NP		Dry
MNW							9/27/2012 1351	13.55	13.83	NP		Dry
MNW							10/18/2012 1107	13.57	13.81	NP		
MNW							11/9/2012 0851	14.02	13.36	NP		
W-12D	192649.5813	1044173.209	34.03348		34.03348	D						
MNW							6/28/2012 1510	19.41	14.62	NP		
MNW							8/8/2012 1115	20.23	13.80	NP		
MNW							8/23/2012 0000	20.15	13.88	NP		
MNW							9/13/2012 1540	20.65	13.38	NP		
MNW							9/27/2012 1601	21.01	13.02	NP		
MNW							10/18/2012 1159	21.06	12.97	NP		
MNW							11/12/2012 0945	21.39	12.64	NP		
W-12I	192647.1588	1044175.017	33.99048		33.99048	I						
MNW							6/28/2012 1510	19.37	14.62	NP		
MNW							8/8/2012 1115	20.22	13.77	NP		
MNW							8/23/2012 0000	20.18	13.81	NP		
MNW							9/13/2012 1542	20.64	13.35	NP		
MNW							9/27/2012 1559	20.98	13.01	NP		
MNW							10/18/2012 1158	21.08	12.91	NP		
MNW							11/12/2012 0947	21.36	12.63	NP		
W-12IT	192644.1789	1044176.913	33.79834		33.79834	I						
MNW							6/28/2012 1510	19.20	14.60	NP		
MNW							8/8/2012 1115	20.03	13.77	NP		
MNW							9/13/2012 1543	20.48	13.32	NP		
MNW							9/27/2012 1556	20.81	12.99	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							10/18/2012 1157	20.9	12.90	NP		
MNW							11/12/2012 0949	21.17	12.63	NP		
W-12S	192652.6207	1044171.789	34.09619		34.09619	S						
MNW							6/28/2012 1510	19.51	14.59	NP		
MNW							8/8/2012 1116	20.35	13.75	NP		
MNW							8/23/2012 0000	20.31	13.79	NP		
MNW							9/13/2012 1545	20.74	13.36	NP		
MNW							9/27/2012 1603	21.09	13.01	NP		
MNW							10/18/2012 1156	21.19	12.91	NP		
MNW							11/12/2012 0951	21.47	12.63	NP		
W-13D	191623.4436	1044790.126	20.68876		20.68876	D						
MNW							6/28/2012 1430	6.65	14.04	NP		
MNW							8/8/2012 1221	7.50	13.19	NP		
MNW							8/23/2012 0000	7.37	13.32	NP		
MNW							9/13/2012 1600	7.78	12.91	NP		
MNW							9/27/2012 1404	7.95	12.74	NP		
MNW							10/18/2012 1240	8.08	12.61	NP		
MNW							11/9/2012 0945	8.19	12.50	NP		
W-13I	191625.8853	1044788.527	20.97576		20.97576	I						
MNW							6/28/2012 1430	6.93	14.05	NP		
MNW							8/8/2012 1222	7.84	13.14	NP		
MNW							8/23/2012 0000	7.68	13.30	NP		
MNW							9/13/2012 1602	8.04	12.94	NP		
MNW							9/27/2012 1406	8.26	12.72	NP		
MNW							10/18/2012 1241	8.31	12.67	NP		
MNW							11/9/2012 0947	8.42	12.56	NP		
W-13IT	191628.4548	1044787.361	20.80776		20.80776	I						
MNW							6/28/2012 1430	6.79	14.02	NP		
MNW							8/8/2012 1222	7.66	13.15	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							9/13/2012 1603	7.91	12.90	NP		
MNW							9/27/2012 1408	8.10	12.71	NP		
MNW							10/18/2012 1242	8.12	12.69	NP		
MNW							11/9/2012 0949	8.31	12.50	NP		
W-13S	191630.6416	1044786.066	20.87776		20.87776	S						
MNW							6/28/2012 1430	6.82	14.06	NP		
MNW							8/8/2012 1223	7.71	13.17	NP		
MNW							8/23/2012 0000	7.58	13.30	NP		
MNW							9/13/2012 1605	7.97	12.91	NP		
MNW							9/27/2012 1410	8.07	12.81	NP		
MNW							10/18/2012 1243	8.24	12.64	NP		
MNW							11/9/2012 0951	8.32	12.56	NP		
W-14D	192135.8556	1044503.982	28.06005		28.06005	D						
MNW							6/28/2012 1400	13.50	14.56	NP		
MNW							8/8/2012 1148	14.40	13.66	NP		
MNW							8/23/2012 0000	14.32	13.74	NP		
MNW							9/13/2012 1350	14.73	13.33	NP		
MNW							9/27/2012 1500	15.05	13.01	NP		
MNW							10/18/2012 1213	15.11	12.95	NP		
MNW							11/9/2012 1312	15.31	12.75	NP		
W-14I	192132.9349	1044505.037	28.05505		28.05505	I						
MNW							6/28/2012 1400	13.53	14.53	NP		
MNW							8/8/2012 1148	14.41	13.65	NP		
MNW							8/23/2012 0000	14.35	13.71	NP		
MNW							9/13/2012 1357	14.72	13.34	NP		
MNW							9/27/2012 1502	15.06	13.00	NP		
MNW							10/19/2012 0912	15.14	12.92	NP		
MNW							11/9/2012 1314	15.29	12.77	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

**TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION**

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
W-14IT	192131.2772	1044505.742	28.12505		28.12505	I						
MNW							6/28/2012 1400	13.52	14.61	NP		
MNW							8/8/2012 1148	14.48	13.65	NP		
MNW							9/13/2012 1352	14.82	13.31	NP		
MNW							9/27/2012 1504	15.09	13.04	NP		
MNW							10/18/2012 1215	15.19	12.94	NP		
MNW							11/9/2012 1316	15.36	12.77	NP		
W-14S	192129.0278	1044506.881	28.00391		28.00391	S						
MNW							6/28/2012 1400	13.49	14.51	NP		
MNW							8/8/2012 1149	14.41	13.59	NP		
MNW							8/23/2012 0000	14.33	13.67	NP		
MNW							9/13/2012 1353	14.75	13.25	NP		
MNW							9/27/2012 1506	14.98	13.02	NP		
MNW							10/18/2012 1216	15.08	12.92	NP		
MNW							11/9/2012 1318	15.28	12.72	NP		
W-15D	191534.0637	1043907.308	20.29934		20.29934	D						
MNW							6/28/2012 0940	6.28	14.02	NP		
MNW							8/8/2012 1258	7.14	13.16	NP		
MNW							8/23/2012 0000	7.11	13.19	NP		
MNW							9/13/2012 1330	7.33	12.97	NP		
MNW							9/28/2012 1045	7.48	12.82	NP		
MNW							10/18/2012 1252	7.65	12.65	NP		
MNW							11/12/2012 1015	7.68	12.62	NP		
W-15I	191536.3626	1043906.575	20.54448		20.54448	I						
MNW							6/28/2012 0940	6.52	14.02	NP		
MNW							8/8/2012 1258	7.40	13.14	NP		
MNW							8/23/2012 0000	7.31	13.23	NP		
MNW							9/13/2012 1331	7.52	13.02	NP		
MNW							9/28/2012 1046	7.72	12.82	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-2
GROUNDWATER ELEVATION MEASUREMENTS
WEST SIDE CORPORATION

Location ID / Type	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser)Elev.(ft)	Geol. Zone	Date / Time	Depth to Water (ft)	Water Elev. (ft)	Product Thick. (ft)	Corrected Water Elev. (ft)	Remark
MNW							10/18/2012 1253	7.91	12.63	NP		
MNW							11/12/2012 1017	7.96	12.58	NP		
W-15IT	191540.2611	1043903.903	20.47948		20.47948	I						
MNW							6/28/2012 0940	6.47	14.01	NP		
MNW							8/8/2012 1258	7.33	13.15	NP		
MNW							9/13/2012 1332	7.56	12.92	NP		
MNW							9/28/2012 1041	7.67	12.81	NP		
MNW							10/18/2012 1254	7.83	12.65	NP		
MNW							11/12/2012 1019	7.88	12.60	NP		
W-15S	191544.0202	1043901.494	20.42948		20.42948	S						
MNW							6/28/2012 0940	6.35	14.08	NP		
MNW							8/8/2012 1259	7.26	13.17	NP		
MNW							8/23/2012 0000	7.22	13.21	NP		
MNW							9/13/2012 1333	7.52	12.91	NP		
MNW							9/28/2012 1040	7.42	13.01	NP		
MNW							10/18/2012 1255	7.82	12.61	NP		
MNW							11/12/2012 1021	7.84	12.59	NP		

NM - No Measurement

Type:

MNW

Monitoring Well

The value noted in the column labeled Specific Gravity is an assumed value for free product, if found.

TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		MW-24-4D	MW-24-4D	MW-24-4D	MW-24-4D	MW-24-4I
Sample ID		MW-24-4D	DUP-092812	MW-24-4D	MW-24-4D	DUP082312-2
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	09/28/12	09/28/12	11/09/12	08/23/12
Parameter	Units		Field Duplicate (1-1)			Field Duplicate (2-2)
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L	11	14	15	12	
1,1-Dichloroethene	UG/L	4.1 J	5.4	6.5	5.1	
1,2-Dichloroethene (cis)	UG/L					
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L	0.88 J	1.2	1.4	1.1	
Tetrachloroethene	UG/L	1.9	3.6	3.3	4.3	2.7
Trichloroethene	UG/L					
Vinyl Chloride	UG/L					

Flags assigned during chemistry validation are shown.

J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis.

Only Detected Results Reported.

Advanced Selection: amk-tem
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Printed: 3/22/2013 11:04:39 AM

[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		MW-24-4I	MW-24-4I	MW-24-4I	MW-24-4S	MW-24-4S
Sample ID		MW-24-4I	MW-24-4I	MW-24-4I	MW-24-4S	MW-24-4S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	09/28/12	11/09/12	08/23/12	09/28/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L					
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L		0.36 J	0.39 J		
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	2.4	3.2	3.5		
Trichloroethene	UG/L					
Vinyl Chloride	UG/L					

Flags assigned during chemistry validation are shown.

J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis.

Only Detected Results Reported.

Advanced Selection: amk-tem
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[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		MW-24-4S	MW-24-5D	MW-24-5D	MW-24-5D	MW-24-5I
Sample ID		MW-24-4S	MW-24-5D	MW-24-5D	MW-24-5D	MW-24-5I
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		11/09/12	08/22/12	09/27/12	11/07/12	08/22/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L		3.4	3.0	3.6	1.1 J
1,1-Dichloroethene	UG/L		3.4	2.5	3.0	
1,2-Dichloroethene (cis)	UG/L			2.3	5.7	5.3
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L			0.21 J	0.26 J	
Tetrachloroethene	UG/L		15	17	21	89
Trichloroethene	UG/L		3.3	4.6	5.1	6.3
Vinyl Chloride	UG/L					

Flags assigned during chemistry validation are shown.

J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis.

Only Detected Results Reported.

Advanced Selection: amk-tem
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Printed: 3/22/2013 11:04:48 AM

[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		MW-24-5I	MW-24-5I	MW-24-5I	MW-24-5S	MW-24-5S
Sample ID		DUP-092712	MW-24-5I	MW-24-5I	MW-24-5S	MW-24-5S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		09/27/12	09/27/12	11/07/12	08/22/12	09/27/12
Parameter	Units	Field Duplicate (1-1)				
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L	0.80 J	0.80 J			
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	5.3	5.6	94		
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	360 D	330 D	410	2.0	0.71 J
Trichloroethene	UG/L	8.3	8.2	32		
Vinyl Chloride	UG/L					

Flags assigned during chemistry validation are shown.

J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis.

Only Detected Results Reported.

Advanced Selection: amk-tem
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Printed: 3/22/2013 11:04:48 AM
[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		MW-24-5S	MW-24-6D	MW-24-6D	MW-24-6D	MW-24-6I
Sample ID		MW-24-5S	MW-24-6D	MW-24-6D	MW-24-6D	MW-24-6I
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		11/07/12	08/23/12	09/26/12	11/07/12	08/23/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L					
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L			0.16 J	0.18 J	
Tetrachloroethene	UG/L	1.7				0.61 J
Trichloroethene	UG/L					
Vinyl Chloride	UG/L					

Flags assigned during chemistry validation are shown.

J - The reported concentration is an estimated value.

D - Result reported from a secondary dilution analysis.

Only Detected Results Reported.

Advanced Selection: amk-tem
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[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		MW-24-6I	MW-24-6I	MW-24-6S	MW-24-6S	MW-24-6S
Sample ID		MW-24-6I	MW-24-6I	MW-24-6S	MW-24-6S	MW-24-6S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		09/26/12	11/07/12	08/23/12	09/26/12	11/07/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L					
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L					
Trichloroethene	UG/L					
Vinyl Chloride	UG/L					

Flags assigned during chemistry validation are shown.

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[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-01D	W-01D	W-01D	W-011	W-011
Sample ID		W1-D	W-01D	W-01D	W1-I	W-011
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/22/12	09/26/12	11/07/12	08/22/12	09/26/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L	2.6	4.2	4.0		
1,1-Dichloroethene	UG/L	2.1 J	4.1	3.4 J		
1,2-Dichloroethene (cis)	UG/L	230 D	490	520 D	5.5	53
1,2-Dichloroethene (trans)	UG/L	1.1				
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	170 D	420	56	92	370 D
Trichloroethene	UG/L	120 D	350	58	6.1	81
Vinyl Chloride	UG/L					

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TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		W-011	W-01S	W-01S	W-01S	W-02D
Sample ID		W-011	W1-S	W-01S	W-01S	W2-D
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		11/07/12	08/22/12	09/26/12	11/07/12	08/22/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	280		14	3.8	16
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L				0.34 J	
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	220	41	76	32	
Trichloroethene	UG/L	84	1.7	6.5	3.0	
Vinyl Chloride	UG/L					

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TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		W-02D	W-02D	W-02I	W-02I	W-02I
Sample ID		W-02D	W-02D	W2-I	W-02I	W-02I
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		09/26/12	11/07/12	08/22/12	09/26/12	11/07/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	13	27	45	150	130
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L			100	25	24
Trichloroethene	UG/L			15	9.6	9.9
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-02S	W-02S	W-02S	W-02S	W-03D
Sample ID		W2-S	W-02S	DUP-110712	W-02S	W-3D
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/22/12	09/26/12	11/07/12	11/07/12	08/22/12
Parameter	Units			Field Duplicate (1-1)		
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L		2.9	3.3	3.8	5.9
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	16	12	9.3	12	0.53 J
Trichloroethene	UG/L	1.1	1.7	1.8	1.9	
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-03D	W-03D	W-03D	W-03I	W-03I
Sample ID		W-03D	DUP-111212	W-03D	W-3I	W-03I
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		09/26/12	11/12/12	11/12/12	08/22/12	09/26/12
Parameter	Units		Field Duplicate (1-1)			
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	6.1	6.4	6.3	14	190
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L				110 D	150
Trichloroethene	UG/L				14	56
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-03I	W-03S	W-03S	W-03S	W-03S
Sample ID		W-03I	DUP082212-1	W-3S	W-03S	W-03S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		11/12/12	08/22/12	08/22/12	09/26/12	11/12/12
Parameter	Units		Field Duplicate (2-2)			
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L	1.0				
1,1-Dichloroethene	UG/L	0.94 J				
1,2-Dichloroethene (cis)	UG/L	310				1.3
1,2-Dichloroethene (trans)	UG/L	0.86 J				
Chloroform	UG/L		3.1	3.1		0.15 J
Methyl tert-butyl ether	UG/L	0.17 J			0.16 J	
Tetrachloroethene	UG/L	130	5.8	6.0	6.9	36
Trichloroethene	UG/L	55			0.71 J	3.2
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-04D	W-04D	W-04D	W-04D	W-04I
Sample ID		W-4D	DUP-092612	W-04D	W-04D	W-4I
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/22/12	09/26/12	09/26/12	11/07/12	08/22/12
Parameter	Units		Field Duplicate (1-1)			
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L	3.2 J		2.7	3.4	2.9 J
1,1-Dichloroethene	UG/L	2.1 J		0.95 J	1.4	
1,2-Dichloroethene (cis)	UG/L	230	6.3	92	72	7.0
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L				0.19 J	
Tetrachloroethene	UG/L	36		5.7	4.5	270
Trichloroethene	UG/L	13		4.2	4.6	14
Vinyl Chloride	UG/L				1.0	

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TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		W-04I	W-04I	W-04S	W-04S	W-05
Sample ID		W-04I	W-04I	W-04S	W-04S	W-05S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		09/26/12	11/07/12	09/26/12	11/07/12	09/27/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L	2.5	2.5			
1,1-Dichloroethene	UG/L	1.7	0.94 J			
1,2-Dichloroethene (cis)	UG/L	240	140	12	47	
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					0.74 J
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	37	50	63	670 D	
Trichloroethene	UG/L	14	22	9.1	51	
Vinyl Chloride	UG/L			1.2		

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-06D	W-06D	W-06D	W-06I	W-06I
Sample ID		W-6D	W-06D	W-06D	W-6I	W-06I
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	09/27/12	11/09/12	08/23/12	09/27/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L	0.71 J				
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	19	18	31	4.7	9.4
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	280 D	370	400	220 D	140
Trichloroethene	UG/L	21	31	37	8.1	7.8
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-06I	W-06S	W-06S	W-06S	W-06S
Sample ID		W-06I	W-6S	DUP-2-092712	W-06S	W-06S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		11/09/12	08/23/12	09/27/12	09/27/12	11/09/12
Parameter	Units			Field Duplicate (1-1)		
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	10	4.7			
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L	0.36 J				
Tetrachloroethene	UG/L	190	71	15	15	7.2
Trichloroethene	UG/L	12	4.0			
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-07D	W-07D	W-07D	W-07D	W-07D
Sample ID		DUP082312-1	W-7D	DUP-3-092712	W-07D	W-07D
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	08/23/12	09/27/12	09/27/12	11/09/12
Parameter	Units	Field Duplicate (2-2)		Field Duplicate (1-1)		
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L	1.8	1.8	1.4	1.3	1.6
1,1-Dichloroethene	UG/L	0.35 J	0.46 J	0.36 J	0.39 J	
1,2-Dichloroethene (cis)	UG/L	2.5	2.6	29	27	32
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	4.8	4.9	4.8	4.1	8.3
Trichloroethene	UG/L	2.5	2.4	1.7	1.4	2.4
Vinyl Chloride	UG/L					

Flags assigned during chemistry validation are shown.

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-071	W-071	W-071	W-071	W-07S
Sample ID		W-71	W-071	DUP-110912	W-071	W-7S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	09/27/12	11/09/12	11/09/12	08/23/12
Parameter	Units			Field Duplicate (1-1)		
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L				1.1 J	
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	2.7	8.8	46	39	2.7
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	120 D	160	340	340 D	34
Trichloroethene	UG/L	5.8	8.7	19	15	3.4
Vinyl Chloride	UG/L					

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TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		W-07S	W-07S	W-08D	W-08D	W-08D
Sample ID		W-07S	W-07S	W-8D	W-08D	W-08D
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		09/27/12	11/09/12	08/23/12	09/27/12	11/09/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L			0.85 J	0.89 J	
1,1-Dichloroethene	UG/L				1.0 J	
1,2-Dichloroethene (cis)	UG/L			110	340 D	310
1,2-Dichloroethene (trans)	UG/L				1.9	
Chloroform	UG/L	0.88 J	1.6			
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	17	32	120	120	68
Trichloroethene	UG/L	0.92 J	2.0	57	76	34
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-08I	W-08I	W-08I	W-08S	W-08S
Sample ID		W-8I	W-08I	W-08I	W-8S	W-08S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	09/27/12	11/09/12	08/23/12	09/27/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	16	160	300	140	340
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	190	340 D	60	260	120
Trichloroethene	UG/L	19	88	23	64	76
Vinyl Chloride	UG/L					

Flags assigned during chemistry validation are shown.

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D - Result reported from a secondary dilution analysis.

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-08S	W-09D	W-09D	W-09D	W-09I
Sample ID		W-08S	W-9D	W-09D	W-09D	W-9I
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		11/09/12	08/22/12	09/26/12	11/07/12	08/22/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L		3.3	4.5	4.3	
1,1-Dichloroethene	UG/L		1.9	2.4	2.1	
1,2-Dichloroethene (cis)	UG/L	160	62	58	69	17
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L	1.8 J		0.16 J	0.17 J	
Tetrachloroethene	UG/L	3.9	6.7	9.8	12	260 D
Trichloroethene	UG/L	2.5	7.7	11	13	16
Vinyl Chloride	UG/L	3.8	0.93 J			

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[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-09I	W-09I	W-09S	W-09S	W-09S
Sample ID		W-09I	W-09I	W-9S	W-09S	W-09S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		09/26/12	11/07/12	08/22/12	09/26/12	11/07/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L		1.4 J			
1,2-Dichloroethene (cis)	UG/L	71	560 D	9.8	1.7	6.2
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	330	510 D	9.6	11	51
Trichloroethene	UG/L	70	180	4.7	1.4	8.8
Vinyl Chloride	UG/L			1.0		

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-10D	W-10D	W-10D	W-10I	W-10I
Sample ID		W-10D	W-10D	W-10D	W-10I	W-10I
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	09/28/12	11/09/12	08/23/12	09/28/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L		1.2			
1,2-Dichloroethene (cis)	UG/L	2.4	170 D	350	140	150
1,2-Dichloroethene (trans)	UG/L		0.9 J			
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L		0.30 J			
Tetrachloroethene	UG/L	25	160 D	3.6 J	3,000 D	3,400
Trichloroethene	UG/L	2.8	81	2.8 J	200	260
Vinyl Chloride	UG/L					

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[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		W-10I	W-10S	W-10S	W-10S	W-11D
Sample ID		W-10I	W-10S	W-10S	W-10S	W-11D
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		11/09/12	08/23/12	09/28/12	11/09/12	08/23/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					1.3
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	200				7.4
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	3,900	1.8	0.65 J	0.46 J	87 D
Trichloroethene	UG/L	530				6.0
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-11D	W-11D	W-111	W-111	W-111
Sample ID		W-11D	W-11D	W-111	W-111	W-111
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		09/28/12	11/09/12	08/23/12	09/28/12	11/09/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L	1.5	1.8			
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	17	16			
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L	0.58 J	0.42 J			0.16 J
Tetrachloroethene	UG/L	44	14	40	48	65
Trichloroethene	UG/L	4.0	3.8	1.1	1.3	1.9
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-12D	W-12D	W-12D	W-12D	W-12I
Sample ID		DUP082312-4	W-12D	W-012D	W-12D	W-12I
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	08/23/12	09/27/12	11/12/12	08/23/12
Parameter	Units	Field Duplicate (2-2)				
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L		0.76 J	1.1	0.45 J	
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L					
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L		2.1	4.3	3.8	
Tetrachloroethene	UG/L	5.9			0.15 J	6.6
Trichloroethene	UG/L					
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-12I	W-12I	W-12S	W-12S	W-12S
Sample ID		W-012I	W-12I	W-12S	W-012S	W-12S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		09/27/12	11/12/12	08/23/12	09/27/12	11/12/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L					
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L			0.51 J		0.75 J
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	6.4	5.8			
Trichloroethene	UG/L		0.25 J			
Vinyl Chloride	UG/L					

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[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-13D	W-13D	W-13D	W-13D	W-131
Sample ID		W-13D	W-013D	DUP2-110912	W-13D	DUP082313-3
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	09/27/12	11/09/12	11/09/12	08/23/12
Parameter	Units			Field Duplicate (1-1)		Field Duplicate (2-2)
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L	0.79 J		0.89 J		
1,2-Dichloroethene (cis)	UG/L	280 D	410	200	260	170
1,2-Dichloroethene (trans)	UG/L					9.6
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L	0.88 J	1.9	2.0	2.0 J	
Tetrachloroethene	UG/L	60 D	21	3.6	7.5	1,400 D
Trichloroethene	UG/L	25	12	2.2	4.0 J	200
Vinyl Chloride	UG/L					

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[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-13I	W-13I	W-13I	W-13S	W-13S
Sample ID		W-13I	W-013I	W-13I	W-13S	W-013S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	09/27/12	11/09/12	08/23/12	09/27/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	190	270	780		
1,2-Dichloroethene (trans)	UG/L	12				
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L					
Tetrachloroethene	UG/L	1,700 D	1,700	680		
Trichloroethene	UG/L	220	420	300		
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-13S	W-14D	W-14D	W-14D	W-14D
Sample ID		W-13S	W-14D	W-014D	DUP3-110912	W-14D
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		11/09/12	08/23/12	09/27/12	11/09/12	11/09/12
Parameter	Units				Field Duplicate (1-1)	
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L		14	9.4	9.0	6.1
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L		3.3	5.6	6.7	5.9
Tetrachloroethene	UG/L		5.5	6.7	5.2	2.9
Trichloroethene	UG/L		1.3	1.4	1.4	0.87 J
Vinyl Chloride	UG/L					

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**TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION**

Location ID		W-14I	W-14I	W-14I	W-14S	W-14S
Sample ID		W-14I	W-014I	W-14I	W-14S	W-014S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		08/23/12	09/27/12	11/09/12	08/23/12	09/27/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L	4.6	7.3	4.7		
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L				1.3	13
Methyl tert-butyl ether	UG/L		0.40 J	0.33 J		
Tetrachloroethene	UG/L	22	21	49		
Trichloroethene	UG/L	1.7	1.8	2.0		
Vinyl Chloride	UG/L					

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TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		W-14S	W-15D	W-15D	W-15D	W-15I
Sample ID		W-14S	W-15D	W-15D	W-15D	W-15I
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		11/09/12	08/23/12	09/28/12	11/12/12	08/23/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L				0.44 J	
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L	30				
Methyl tert-butyl ether	UG/L				0.22 J	
Tetrachloroethene	UG/L		17	21	19	0.38 J
Trichloroethene	UG/L		2.9	3.0	3.2	
Vinyl Chloride	UG/L					

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[MATRIX] = 'WG' AND ([LOCID] <> 'EFFLUENT' AND [LOCID] not like 'ew' AND [LOCID] NOT LIKE 'ber' AND [LOCID] <> 'FIELDQC') AND [LOGDATE] > #7/01/20

TABLE 3-3
GROUNDWATER CONCENTRATIONS
WEST SIDE CORPORATION

Location ID		W-15I	W-15I	W-15S	W-15S	W-15S
Sample ID		W-15I	W-15I	W-15S	W-15S	W-15S
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		09/28/12	11/12/12	08/23/12	09/28/12	11/12/12
Parameter	Units					
Volatiles Organic Compounds						
1,1-Dichloroethane	UG/L					
1,1-Dichloroethene	UG/L					
1,2-Dichloroethene (cis)	UG/L					
1,2-Dichloroethene (trans)	UG/L					
Chloroform	UG/L					
Methyl tert-butyl ether	UG/L	0.22 J	0.42 J			
Tetrachloroethene	UG/L	0.52 J	1.9			
Trichloroethene	UG/L		0.36 J			
Vinyl Chloride	UG/L					

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Table 5-1
Estimated Annual Operating Costs

Item	Assumptions	Unit Cost	Unit	Quantity/yr	Annual cost
Electricity	two 40 hp = 60 KW. 24/7/365 operation	\$0.85 /KW-hr		525,600	\$446,760
Staff	40 hr/wk operator	\$60 /hr		2,080	\$124,800
SPDES monitoring	VOCs, metals, TSS, pH. 2 samples/mo.	\$264 /mo		12	\$3,168
Sequestering Agent	5.2 gal/hr	\$21.52 /gal		45,552	\$980,279
Carbon Replacement	Once per year, all six vessels	\$0.93 /lb		120,000	\$111,600
DEP Water usage	Allowance	\$5,000 /each		1	\$5,000
Contingency	20%			20%	\$334,321
Total					\$2,005,928

Average influent concentrations:

Well No. 1: 185 ug/L

Well No. 2: 31 ug/L

Removal rate:
$$\frac{((185+31)/2 \mu\text{g/L})(3.785 \text{ L/gal})(1 \text{ lb}/453,592,370 \mu\text{g})(1,500 \text{ gal/min})}{1} = 1.35 \times 10^{-3} \text{ lb/min}$$

$$= 710 \text{ lb/yr}$$

Cost per pound of contaminant removed = \$2,800/lb