VALLEY COUNTY WATER DISTRICT

2010 ANNUAL
TECHNICAL PERFORMANCE REPORT

FOR

LANTE PLANT

LOCATED AT

5120 LANTE STREET
BALDWIN PARK, CALIFORNIA

MARCH 2011

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SECTION I

BACKGROUND

The California Department of Public Health (CDPH) issued Permit Amendment No. 1910009PA-003 to Valley County Water District (VCWD) in November 2005 for operation of VCWD's Lante Treatment Facility (Treatment Facility). VCWD began serving treated water from the Treatment Facility for potable use on December 15, 2005. The Treatment Facility is located at 5120 Lante Street in the City of Baldwin Park, California, as shown on Plate 1.

At that time, the Treatment Facility included four air stripping towers, each with one off-gas adsorption unit, to treat volatile organic compounds (VOCs); an ion exchange treatment system to treat perchlorate and reduce nitrate; and a low energy ultraviolet light/oxidation (LEUV) treatment system to treat N-nitrosodimethylamine (NDMA). The addition of hydrogen peroxide to the LEUV treatment system treats 1,4-dioxane. The water sources permitted for the Treatment Facility are the Lante Well (SA1-3) and Wells SA1-1 and SA1-2.

On July 18, 2007, VCWD received Permit Amendment No. 1910009PA-004 from CDPH, allowing VCWD to operate a liquid-phase granular activated carbon (LGAC) treatment system at its Treatment Facility for the treatment of 1,2,3-trichloropropane (1,2,3-TCP). VCWD began serving treated water from its Treatment Facility to Suburban Water Systems (SWS) for potable use on July 18, 2007. A copy of Permit Amendment No. 1910009PA-004 is included as Appendix A.

On April 10, 2009, CDPH issued a letter approving VCWD's request to remove the requirement in Permit Provision No. 38 to divert treated water from potable use for the first 90 minutes following each plant re-start (see Appendix B).

Permit Provision No. 42 of Permit Amendment No. 1910009PA-004 states "The District shall prepare (an) annual report to the Department, which shall include compliance with the permit provisions, the treatment plant's status, condition, and performance and any problems or difficulties. This report shall be due by March 30th of the following year." The previous technical report encompassed the period from February 1, 2009 through December 31, 2009. This technical report encompasses the period from January 1, 2010 through December 31, 2010.

SECTION II
TREATMENT FACILITY PERFORMANCE

This technical performance report summarizes the overall operational performance of the Treatment Facility and each of its components.

II.1 Source Water

II.1.1 Description of Operation

As indicated in the 2009 technical report, the Baldwin Park Operable Unit (BPOU) Cooperating Respondents (CRs) obtained approval from the U.S. Environmental Protection Agency (EPA) to remove Well SA1-1 from service, and increase the extraction from the Lante Well to compensate for the loss of production from Well SA1-1, as part of the BPOU cleanup effort. However, Well SA1-1 was returned to service on January 10, 2010 when Well SA1-2 experienced a failure. Well SA1-2 remained out of service for the remainder of calendar year 2010. The Treatment Facility was out of service in November 2010, and as a result, Well SA1-1 and Lante Well were not in operation.

II.1.2 Quantity Treated

Between January 1, 2010 and December 31, 2010, the monthly groundwater production ranged from 283 acre-feet (AF) to 507 AF from the Lante Well and 32 AF to 247 AF from Well SA1-1 (see Table 1). Well SA1-2 was operated only in January 2010 with an average production of 72 AF. The monthly total amount of water treated by the Treatment Facility ranged from 373 AF to 751 AF. The Treatment Facility treated a total of 6,888 AF of groundwater between January 1, 2010 and December 31, 2010. The production data are shown on Figure 1.

II.1.3 Operational Problems

On January 10, 2010, Well SA1-2 experienced a failure, causing the well to shut down. A video log of the inside of the well revealed damage to the well pump assembly. Repair of the well was completed in September 2010. As of December 31, 2010, Well SA1-2 remained out of service pending receipt of a discharge permit from the County of Los Angeles, Department of Public Works before re-development of the well can proceed.

On October 4, 2010, Well SA1-1 and the Lante Well lost power, causing the wells to shut down. The variable frequency drives (VFDs) of the well pumps were re-set and the wells were re-started about one-half hour later.

II.1.4 Raw Water Quality Results Summary

Between January 1, 2010 and December 31, 2010, raw water samples were collected on a monthly basis in accordance with the CDPH amended water supply permit. Typically, samples are collected during the middle of each month (see Tables 2 through 13). In January 2010, Well SA1-2 was out of service unexpectedly prior to the scheduled sampling date. Well SA1-2 remained out of service for the remainder of 2010, and therefore, samples were not collected from Well SA1-2 in 2010. In October 2010, Well SA1-1 was taken out of service unexpectedly prior to the scheduled sampling date. Well SA1-1 remained out of service for the remainder of October 2010, and therefore, a sample was not collected from Well SA1-1 in October 2010. Both the Lante Well and Well SA1-1 were not sampled in November 2010 when the Treatment Facility was out of service.

The raw water samples were analyzed for VOCs, 1,2,3-TCP, perchlorate, sulfate, nitrate, NDMA, 1,4-dioxane, coliform bacteria, and heterotrophic plate count (HPC).

Raw water quality samples collected were also analyzed monthly for tentatively-identified compounds (TICs) associated with VOCs. The concentrations of trichloroethylene (TCE), tetrachloroethylene (PCE), carbon tetrachloride (CTC), 1,2-dichloroethane (1,2-DCA), 1,1-dichloroethylene (1,1-DCE), cis-1,2-dichloroethylene (cis-1,2-DCE), 1,2,3-TCP, perchlorate, nitrate, sulfate, NDMA, and 1,4-dioxane detected in Well SA1-1 and Lante Well for the period January 1, 2010 through December 31, 2010 are shown on Tables 2 through 13 and plotted on Figures 2A through 13A. Long-term raw water quality trends since the start of operation at the Treatment Facility are shown on Figures 2B through 13B.

II.1.4.1 Trichloroethylene

The TCE raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 2A and Table 2. At Well SA1-1, TCE concentrations averaged 1.1 micrograms per liter (μg/l), with a maximum concentration of 1.6 μg/l and minimum concentration of 0.66 μg/l; and at the Lante Well, TCE concentrations averaged 100 μg/l, with a maximum concentration of 160 μg/l and minimum concentration of 48 μg/l. The concentration of TCE exceeded its Maximum Contaminant Level (MCL) of 5 μg/l in the Lante Well.

II.1.4.2 Tetrachloroethylene

The PCE raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 3A and Table 3. At Well SA1-1, PCE concentrations averaged 2.3 μg/l, with a maximum concentration of 2.9 μg/l and minimum concentration of 1.4 μg/l; and at the Lante Well, PCE concentrations averaged 300 μg/l, with a maximum concentration of 440 μg/l and minimum concentration of 170 μg/l. The concentration of PCE exceeded its MCL of 5 μg/l in the Lante Well.

II.1.4.3 Carbon Tetrachloride

The CTC raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 4A and Table 4. At Well SA1-1, CTC was not detected; and at the Lante Well, CTC concentrations averaged 1.1 μg/l, with a maximum concentration of 1.5 μg/l and minimum concentration of non-detect. The concentration of CTC exceeded its MCL of 0.5 μg/l in the Lante Well.

II.1.4.4 1,2-Dichloroethane

The 1,2-DCA raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 5A and Table 5. At Well SA1-1, 1,2-DCA was not detected; and at the Lante Well, 1,2-DCA concentrations averaged 0.59 μg/l, with a maximum concentration of 0.71 μg/l and minimum concentration of non-detect. The concentration of 1,2-DCA exceeded its MCL of 0.5 μg/l in the Lante Well.

II.1.4.5 1,1-Dichloroethylene

The 1,1-DCE raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 6A and Table 6. At Well SA1-1, 1,1-DCE concentrations averaged 1.8 μg/l, with a maximum concentration of 4.0 μg/l and minimum concentration of 0.67 μg/l; and at the Lante Well, 1,1-DCE concentrations averaged 23 μg/l, with a maximum concentration of 29 μg/l and minimum concentration of 7.6 μg/l. The concentration of 1,1-DCE exceeded its MCL of 6 μg/l in the Lante Well .

II.1.4.6 Cis-1,2-Dichloroethylene

The cis-1,2-DCE raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 7A and Table 7. At Well SA1-1, cis-1,2-DCE was not detected; and at the Lante Well, cis-1,2-DCE concentrations averaged 12 μg/l, with a maximum concentration of 17 μg/l and minimum concentration of 5.4 μg/l. The concentration of cis-1,2-DCE exceeded its MCL of 6 μg/l in the Lante Well.

II.1.4.7 1,2,3-Trichloropropane

The 1,2,3-TCP raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 8A and Table 8. At Well SA1-1, 1,2,3-TCP was not detected; and at the Lante Well, 1,2,3-TCP concentrations averaged 34 nanograms per liter (ng/l), with a maximum concentration of 60 ng/l and minimum concentration of 25 ng/l. The concentration of 1,2,3-TCP exceeded its Notification Level (NL) of 5 ng/l in the Lante Well.

II.1.4.8 Perchlorate

The perchlorate raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 9A and Table 9. At Well SA1-1, perchlorate concentrations averaged 10 μg/l, with a maximum concentration of 13 μg/l and minimum concentration of 7.6 μg/l; and at the Lante Well, perchlorate concentrations averaged 13 μg/l, with a maximum concentration of 20 μg/l and minimum concentration of 8.5 μg/l. The concentration of perchlorate exceeded its MCL of 6 μg/l in the Lante Well and Well SA1-1.

II.1.4.9 Nitrate

The nitrate raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 10A and Table 10. At Well SA1-1, nitrate concentrations averaged 80 milligrams per liter (mg/l), with a maximum concentration of 84 mg/l and minimum concentration of 77 mg/l; and at the Lante Well, nitrate concentrations averaged 37 mg/l, with a maximum concentration of 40 mg/l and minimum concentration of 35 mg/l. The concentration of nitrate exceeded its MCL of 45 mg/l in Well SA1-1.

II.1.4.10 Sulfate

The sulfate raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 11A and Table 11. At Well SA1-1, sulfate concentrations averaged 54 mg/l, with a maximum concentration of 56 mg/l and minimum concentration of 53 mg/l; and at the Lante Well, sulfate concentrations averaged 47 mg/l, with a maximum concentration of 48 mg/l and minimum concentration of 45 mg/l. The concentration of sulfate detected in the Lante Well and Well SA1-1 did not exceed its secondary MCL (SMCL) of 500 mg/l.

II.1.4.11 N-Nitrosodimethylamine

The NDMA raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 12A and Table 12. At Well SA1-1, NDMA was not detected; and at the Lante Well, NDMA concentrations averaged 25 ng/l, with a maximum concentration of 37 ng/l and minimum concentration of 14 ng/l. The concentration of NDMA exceeded its NL of 10 ng/l in the Lante Well.

II.1.4.12 1,4-Dioxane

The 1,4-dioxane raw water concentration data for the Lante Well and Well SA1-1 are depicted on Figure 13A and Table 13. At Well SA1-1, 1,4-dioxane concentrations averaged 2.7 μg/l, with a maximum concentration of 6.0 μg/l and minimum concentration of 1.2 μg/l; and at the Lante Well, 1,4-dioxane concentrations averaged 4.8 μg/l, with a maximum concentration of 6.2 μg/l and minimum concentration of non-detect. The concentration of 1,4-dioxane exceeded its NL of 3 μg/l in the Lante Well and Well SA1-1.

II.1.4.13 Coliform Bacteria

Coliform bacteria were not detected in the samples collected from the Lante Well and Well SA1-1 during the period between January 1, 2010 and December 31, 2010.

II.1.4.14 Heterotrophic Plate Count

The maximum HPC reported for all the samples collected from the Lante Well and Well SA1-1 during the period between January 1, 2010 and December 31, 2010 was less than 500 colony forming units per milliliter (CFU/ml).

II.1.4.15 Semi-Volatile Organic Compounds (including TICs)

Semi-volatile organic compounds (SVOCs), including TICs, were not detected in the annual sampling of the wells on February 23, 2010 (see Table 14). Well SA1-2 was not included in the annual sampling because it was out of service unexpectedly prior to the scheduled sampling date and it remained out of service for the remainder of 2010.

II.1.4.16 Other Volatile Organic Compounds (including TICs)

Other VOCs detected in the raw water samples include chloroform, 1,1-dichloroethane (1,1-DCA), and 1,1,1-trichloroethane (1,1,1-TCA). Chloroform, which is a trihalomethane, was detected at a maximum concentration of 1.9 μg/l (Lante Well); the MCL for total trihalomethanes is 80 μg/l. The contaminants 1,1-DCA and 1,1,1-TCA were detected at concentrations below their MCLs of 5 μg/l and 200 μg/l, respectively.

Raw water samples collected for VOC analyses also included monthly analyses for TICs. An unknown TIC (possibly ether) was detected on June 16, 2010 in a sample collected from Well SA1-1 at a concentration of 1.4 μg/l. However, a sample of the fully-treated water collected on the same day (June 16, 2010) did not indicate any detection of the TIC. Because this unknown TIC was detected only once, the result appears questionable.

II.1.4.17 Historical Water Quality Trends

The concentrations of VOCs detected in the raw water samples appear to have an increasing trend from January 2005 through mid-2006, and a decreasing trend from mid-2006 through December 2010 (see Figures 2B through 7B).

The contaminant 1,2,3-TCP was detected in the raw water samples beginning around the early part of 2006. The concentrations of 1,2,3-TCP in the raw water samples appear to generally follow the similar trend discussed above for VOCs, except the concentrations in the Lante Well appear to have an increasing trend in 2010 when its flow rate was increased (see Figure 8B).

The concentrations of perchlorate detected in the raw water samples collected from the Lante Well appear to follow the similar trend discussed above for VOCs, except the concentrations in the Lante Well appear to have an increasing trend in 2010 when its flow rate was increased. The concentrations of perchlorate detected in the raw water samples collected from Well SA1-1 were lower compared to the Lante Well, and appear to remain constant (see Figure 9B).

The concentrations of nitrate detected in the raw water samples show a gradual increase at Well SA1-1 and Lante Well (see Figure 10B).

The sulfate concentrations in the wells appear to be generally constant (see Figure 11B).

The concentrations of NDMA detected in the raw water samples collected from the Lante Well appear to generally follow the trend discussed above for VOCs. The concentrations of NDMA detected in the raw water samples collected from Well SA1-1 were lower compared to the Lante Well, and appear to remain constant (see Figure 12B).

The historical concentrations of 1,4-dioxane detected in the raw water samples collected from the Lante Well and Well SA1-1 appear to have a general increasing trend. However, in 2009 and 2010, the concentrations of 1,4-dioxane in the Lante Well appear to have a decreasing trend (see Figure 13B).

II.1.5 Evaluation of Sensitivity of Source Water Monitoring

The design concentrations of the Treatment Facility are based on historic source water quality results at production and monitoring wells. Table 15 shows the design concentrations of the Treatment Facility, as well as the minimum, average and maximum contaminant concentrations for samples collected between January 1, 2010 and December 31, 2010 at the Lante Well and Well SA1-1. The maximum concentrations detected in the raw water samples for all the contaminants were all below their respective design concentrations, with the exception of 1,2,3-TCP which was detected at a maximum concentration of 58 ng/l in the combined inflow to the LGAC treatment system (see Tables 15 and 16). The contaminant 1,2,3-TCP was not detected in the fully-treated water (SP-9), except on February 9, 2010 when it was detected at 5.2 ng/l, which is above its NL of 5 ng/l (see Table 8; and Sections II.3.2 and II.3.5 below for additional discussion).

The concentration of nitrate detected in Well SA1-1 exceeded its MCL. There is no design concentration for nitrate, although the ion exchange treatment system is capable of partially removing nitrate in the raw water.

In an effort to ensure the ion exchange treatment system continues to operate/treat perchlorate appropriately in the presence of higher than anticipated nitrate in the raw water, the inflow rate to the ion exchange treatment system was reduced based on a review of ionic loading information provided by the manufacturer of the ion exchange equipment/resin. By operating the ion exchange treatment system at a reduced inflow rate, perchlorate was always treated to non-detectable concentrations (see Table 9), and nitrate concentrations in the fully-treated water never exceeded 17 mg/l as NO_3 (see Table 10), which is below its MCL of 45 mg/l as NO_3. The reduced inflow rate to the Treatment Facility has also resulted in VCWD operating only three of the four air strippers at any time.

II.2 Air Stripper Treatment System

II.2.1 Summary of Design Parameters

The air stripper treatment system consists of four parallel treatment trains. Each treatment train is comprised of an air stripping tower with inlet water flow control, a blower with discharge airflow control, a gas-fired inline air duct heater, and a vapor phase off-gas adsorption unit. The off-gas adsorption system is operated under the oversight of the EPA.

Each of the four treatment trains is capable of treating a flow range of 975 to 1,950 gallons per minute (gpm). The air stripper treatment system is capable of treating water flow rates within the range of 975 to 7,800 gpm. Groundwater is pumped to the top of each air stripping tower and flows over the packing material. VOCs are transferred from the water to the air flowing in a countercurrent direction. The VOCs carried in the air are removed in the off-gas adsorption units and the clean air is released to the atmosphere under permit from the EPA. Each air blower is equipped with a 125 horsepower (hp) motor and provides a flow of about 14,000 cubic feet of air per minute (cfm). The air stripping towers are designed to reduce the VOC contaminants of concern in the raw water to non-detectable levels. The air stripper treatment system is capable of providing partial treatment of 1,2,3-TCP in the raw water.

After passing through the air stripper treatment system, the partially-treated water is injected with hydrochloric acid to lower the pH and prevent calcium carbonate precipitation before it flows into the 83,000-gallon air stripper wet well. From the wet well, water is boosted by booster pumps to the LGAC treatment system.

II.2.2 Summary of Treated Water Quality Results

Treated water samples were collected on a weekly basis at the treated water outflow (SP-9), as shown on Plate 2. The treated water samples were analyzed for complete Title 22 VOCs. Treated water quality data indicate no VOCs were detected in the treated water outflow (SP-9) between January 1, 2010 and December 31, 2010 (see Tables 2 through 7 and Figures 2A through 7A).

Water samples were collected at least monthly at the combined outflow from the air stripper treatment system (SP-3) between January 2010 and December 2010 (see Plate 2). These water samples from SP-3 were analyzed for complete Title 22 VOCs. Water quality data indicate TCE was often detected in the combined outflow of the air stripper treatment system (SP-3), with a maximum concentration of 0.74 μg/l (see Table 2). Water quality data also indicate PCE was often detected in the combined outflow of the air stripper treatment system (SP-3), with a maximum concentration of 1.3 μg/l (see Table 3). The detection of TCE and PCE in the combined outflow of the air stripper treatment system (SP-3) resulted in their total concentrations exceeding 1.5 μg/l on several occasions. Permit Condition No. 13 states VCWD shall operate the air strippers at a high enough air-to-water ratio such that the typical concentration of total VOCs, other than 1,2,3-TCP, in the water leaving the air strippers is no more than 1.5 μg/l, in order to ensure reasonably long LGAC bed life for 1,2,3-TCP removal. VCWD is working on this issue.

Both the LGAC treatment system and the LEUV treatment system located downstream of the air stripper treatment system are capable of removing TCE and PCE. TCE and PCE were not detected in the fully-treated water at SP-9. (Because there is no VOC data from the combined outflow of the LGAC treatment system, it is not known if TCE and PCE detected in the combined outflow of the air stripper treatment system were removed by the LGAC treatment system or the LEUV treatment system.)

The removal efficiency of the air stripper treatment system, based on the combined inflow concentrations at SP-2 (see Plate 2) and combined outflow concentrations at SP-3, was calculated as between 99 percent to 100 percent for TCE and PCE between the period January 1, 2010 and December 31, 2010 (see Tables 2 and 3).

II.2.3 Removal Efficiency for 1,2,3-TCP

Although designed primarily for the treatment of VOCs, the air stripper treatment system is capable of providing partial treatment of 1,2,3-TCP. Table 16 shows the calculated 1,2,3-TCP removal efficiencies of the air strippers based on the concentrations of 1,2,3-TCP in the inflow and outflow of each air stripper. Figures 14 and 15 show the air strippers' removal efficiencies for 1,2,3-TCP.

As shown on Table 16, the average 1,2,3-TCP removal efficiencies for the air strippers ranged from about 45 percent to about 49 percent.

II.2.4 Evaluation of Sensitivity of Monitoring Program

From January 1, 2010 through December 31, 2010, all VOCs detected in the raw water samples were below their respective design concentrations (see Table 15). None of the VOCs detected in the raw water was detected in the fully-treated water outflow at SP-9.

II.2.5 Operational Problems

On August 25, 2010, the float switch on Air Stripper No. 2 failed, causing a shutdown of the Treatment Facility. The faulty float switch was replaced with the float switch from Air Stripper No. 3 which was not in operation at that time. The Treatment Facility was re-started about nine hours later.

II.3 LGAC Treatment System

II.3.1 Summary of Design Parameters

The LGAC treatment system consists of five pairs of LGAC vessels, with all 10 LGAC vessels configured for parallel flow operation. Flow control valves are provided for each set of LGAC vessels, with individual vessel flow control for the water inflow, water outflow, backwash water inflow, and backwash water outflow. Equal flow is maintained through each set of LGAC vessels. Each vessel is designed to treat up to 780 gpm, for a total treatment capacity of up to 7,800 gpm.

The LGAC treatment system was designed to treat primarily 1,2,3-TCP in the water to non-detectable levels. (The air stripper treatment system was designed to treat all other VOCs.) The LGAC treatment system is capable of treating VOCs if present in the outflow from the air stripper treatment system, which is the inflow to the LGAC treatment system.

The carbon in LGAC vessels has been known to adsorb nitrate from the process water, and elevated levels of nitrate have been observed from the LGAC discharge following re-start of LGAC vessel operation after shutdown of the water flow. In 2009, VCWD installed a continuous nitrate analyzer with an alarm function to monitor the nitrate concentration in the treated water outflow as well as the outflow from the ion exchange treatment system, in accordance with Permit Provisions No. 38 and No. 45.

Treated water from the LGAC treatment system is piped under pressure to the ion exchange treatment system.

II.3.2 Summary of Treated Water Quality Results

Treated water samples were collected on a weekly basis at the treated water outflow (SP-9), as shown on Plate 2. The results of the weekly samples collected on February 9, 2010 indicated 1,2,3-TCP was detected in the Treatment Facility outflow (SP-9) at 5.2 ng/l, which is above its NL of 5 ng/l (see Section II.3.5 below for additional discussion). VCWD notified CDPH of the detection on February 11, 2010 through the telephone, followed by an electronic mail (see Appendix C). Other than this single detection, 1,2,3-TCP was not detected in the treated water outflow between January 1, 2010 and December 31, 2010 (see Table 8 and Figure 8A). As a follow-up action, VCWD will instruct the analytical laboratory to report the 1,2,3-TCP results, for the 75 percent sample ports of the LGAC vessels, using the lowest achievable reporting limit that will provide estimated results below the detection limit for purposes of reporting (DLR). This will allow VCWD to initiate change-out of the carbon upon detection of 1,2,3-TCP below the DLR at the 75 percent sample port.

The removal efficiency of the LGAC treatment system was calculated as about 48 percent on February 9, 2010 and 100 percent for the rest of the year (2010), for the

1,2,3-TCP that remained in the partially-treated water from the air stripper treatment system.

II.3.3 Evaluation of Sensitivity of Monitoring Program

The LGAC treatment system was designed to treat 1,2,3-TCP in the combined/partially-treated water inflow from the air stripper treatment system to non-detectable levels. However, as indicated above, 1,2,3-TCP was only partially treated to 5.2 ng/l in the Treatment Facility outflow (SP-9) on February 9, 2010 (see Section II.3.5 below for additional discussion). During other times of the year (2010), 1,2,3-TCP in the combined/partially-treated water inflow to the LGAC treatment system was treated to non-detectable levels by the LGAC treatment system, after prior blending in the raw water from the wells and partial treatment by the air stripper treatment system (see Tables 8 and 16).

II.3.4 Operational Problems

There was no operational problem associated with the LGAC treatment system between January 1, 2010 and December 31, 2010.

II.3.5 LGAC Vessel Monitoring

As of January 1, 2010, VCWD had begun weekly sampling at the 75 percent sample ports of the LGAC vessels. On February 4, 2010, VCWD began changing out the carbon in LGAC Vessels No. 5 and No. 6. On February 9, 2010, VCWD was notified by the analytical laboratory that 1,2,3-TCP was detected in the samples collected on February 2, 2010 from the 75 percent sample ports of LGAC Vessels No. 2, No. 3, No. 6, No. 7, No. 8, and No. 9. After receipt of notification from the analytical laboratory on

February 9, 2010, VCWD removed the Treatment Facility from service and continued change-out of the carbon in the rest of the LGAC vessels.

All LGAC vessels were loaded with virgin coconut-based carbon in February 2010. After the LGAC vessels resumed operation with fresh carbon, water quality samples were collected on a monthly basis at the 25 percent sample ports. The contaminant 1,2,3-TCP was detected at the 25 percent sample ports of LGAC Vessels No. 1, No. 5, No. 6, and No. 7 on June 16, 2010. The contaminant 1,2,3-TCP was detected at the 50 percent sample ports of LGAC Vessels No. 1, No. 5, and No. 6 on August 11, 2010. The carbon in all the LGAC vessels was changed out in September 2010 and October 2010, prior to detection of 1,2,3-TCP at their respective 75 percent sample ports.

All LGAC vessels were loaded with virgin coconut-based carbon in September 2010 and October 2010. After the LGAC vessels resumed operation with fresh carbon, water quality samples were collected on a monthly basis at the 25 percent sample ports. As of December 31, 2010, 1,2,3-TCP had not been detected at the 25 percent sample port of any LGAC vessel.

II.3.6 LGAC Vessel Carbon Change-Out

The **first** carbon change-out in 2010 occurred in February 2010 as follows:

First Carbon Change-Out in 2010

Vessel No.	Beginning Date of Service	Ending Date of Service	Volume of Water Treated (gallons)	Bed Volumes Treated (1)
1	4/17/2009	2/9/2010	227,286,200	45,624
2	4/11/2009	2/9/2010	235,467,600	47,267
3	4/24/2009	2/9/2010	217,409,400	43,642
4	4/17/2009	2/9/2010	225,729,600	45,312
5	4/24/2009	2/4/2010	214,835,400	43,125
6	4/11/2009	2/4/2010	(2)	(2)
7	4/3/2009	2/9/2010	238,500,400	47,875
8	4/3/2009	2/9/2010	237,964,100	47,768
9	3/29/2009	2/9/2010	244,151,800	49,010
10	3/29/2009	2/9/2010	244,967,200	49,174
Average			231,812,411	46,533

(1) Each LGAC vessel contains about 20,000 pounds of carbon with a density of about 30.1 pounds per cubic foot. Therefore, each vessel contains approximately 666 cubic feet of carbon. Bed volume = total volume of water treated divided by volume of carbon.

(2) The meter recording the flow through the vessel was out of order in February 2010. Therefore, the volume of water treated and the bed volume treated could not be calculated.

The average volume of water treated by the carbon that was removed in February 2010 was calculated as about 230 million gallons (about 710 AF) or about 47,000 bed volumes. Based on the 2009 technical report, the average volume of water treated by the carbon removed in March 2009 and April of 2009 was calculated as about 32,000 bed volumes.

The **second** carbon change-out in 2010 occurred in September 2010 and October 2010 as follows:

Second Carbon Change-Out in 2010				
Vessel No.	Beginning Date of Service	Ending Date of Service	Volume of Water Treated (gallons)	Bed Volumes Treated (1)
1	2/11/2010	10/5/2010	178,933,800	35,918
2	2/18/2010	10/5/2010	174,684,700	35,065
3	2/25/2010	10/1/2010	164,286,300	32,978
4	2/24/2010	10/1/2010	164,875,800	33,096
5	2/11/2010	9/23/2010	164,785,800	33,078
6	2/11/2010	9/23/2010	170,631,300	34,252
7	2/11/2010	9/28/2010	173,357,800	34,799
8	2/18/2010	9/28/2010	169,054,000	33,935
9	2/16/2010	9/24/2010	161,564,000	32,432
10	2/16/2010	10/7/2010	174,866,100	35,102
Average			169,703,960	34,066

(1) Each LGAC vessel contains about 20,000 pounds of carbon with a density of about 30.1 pounds per cubic foot. Therefore, each vessel contains approximately 666 cubic feet of carbon. Bed volume = total volume of water treated divided by volume of carbon.

The average volume of water treated by the carbon that was removed in September 2010 and October 2010 was calculated as about 170 million gallons (about 520 AF) or about 34,000 bed volumes.

II.3.7 LGAC Vessel Backwashing

The carbon in the LGAC vessels did not require backwashing during the period of operation between January 1, 2010 and December 31, 2010.

II.3.8 LGAC Vessel Inspection

The interior of the LGAC vessels was visually inspected during both the carbon change-outs in 2010. Nothing unusual was noted in the visual inspection reports (see Appendix D).

II.4 Ion Exchange Treatment System

II.4.1 Summary of Design Parameters

The ion exchange treatment system consists of two treatment modules operated in parallel configuration. Under normal operation, the flow through the Treatment Facility is divided equally among the two ion exchange treatment modules, namely Module A and Module B. Each ion exchange treatment module is designed to treat up to 3,900 gpm of flow. Each of the two ion exchange treatment modules consists of 30 resin-filled vessels (ion exchange columns) arranged in a carousel on a rotating frame. The ion exchange treatment modules include brine and rinse water systems and a process control system. The ion exchange columns are rotated through a sequence of operations including adsorption, displacement, regeneration, and rinse. These operations occur simultaneously as the carousel rotates. Perchlorate, nitrate, sulfate, carbonate and bicarbonate are transferred from the water to the resin during the adsorption process. These anions are later removed from the resin during the regeneration process. Six 13,000-gallon tanks store the salt solution (26 percent sodium chloride), which is required during the regeneration process. A brine waste stream is created as a result of the regeneration process, which is discharged under permit to the sewer system. The ion exchange treatment modules are designed to treat perchlorate at a maximum concentration of 350 μg/l to non-detectable levels. The ion exchange treatment system is capable of providing partial treatment of nitrate in the raw water.

II.4.2 Summary of Treated Water Quality Results

Treated water samples were collected on a weekly basis at the treated water outflow (SP-9), as shown on Plate 2. Perchlorate was not detected in the treated water outflow between January 1, 2010 and December 31, 2010 (see Table 9 and Figure 9A).

The removal efficiency of the ion exchange treatment system was calculated as 100 percent for perchlorate detected in the raw water between January 1, 2010 and December 31, 2010.

Nitrate in the raw water was partially removed by the ion exchange treatment system (see Table 10 and Figure 10A). Between January 1, 2010 and December 31, 2010, the average nitrate concentration in the fully-treated water was 11 mg/l, with a maximum concentration of 17 mg/l and a minimum concentration of 5.6 mg/l. The average removal efficiency of the ion exchange treatment system was calculated as about 78 percent for nitrate detected in the raw water between January 2010 and December 2010 (see Table 10).

Sulfate in the raw water was also removed by the ion exchange treatment system (see Table 11 and Figure 11A). Between January 1, 2010 and December 31, 2010, sulfate was not detected in the fully-treated water, except once on February 17, 2010 at 2.3 mg/l.

II.4.3 Evaluation of Sensitivity of Monitoring Program

The ion exchange treatment system was designed to treat perchlorate to non-detectable levels. From January 1, 2010 through December 31, 2010, perchlorate was never detected in the raw water samples collected from the wells above its design concentration of 350 μg/l (see Tables 9 and 15). The perchlorate detected in the raw water was treated to non-detectable levels in the fully-treated water.

The ion exchange treatment system is capable of providing partial treatment of nitrate in the raw water. From January 1, 2010 through December 31, 2010, nitrate was detected above its MCL of 45 mg/l only in the raw water samples collected from Wells SA1-1. The raw water supplied to the Treatment Facility was partially treated for nitrate to a maximum concentration of 17 mg/l in the fully-treated water (see Tables 10 and 15).

II.4.4 Operational Problems

On January 13, 2010, a broken seal in the brine pump of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The broken seal was replaced and the Treatment Facility resumed operation about three hours later. On January 14, 2010, the brine pump for Module A of the ion exchange treatment system failed, causing a shutdown of the Treatment Facility. The brine pump was replaced and the Treatment Facility resumed operation about eight hours later. On January 18, 2010, the suction line of the 26 percent brine supply to both modules of the ion exchange treatment system experienced a failure, causing a shutdown of the Treatment Facility. The suction line was replaced and the Treatment Facility resumed operation about eight hours later. On January 21, 2010, a high-flow condition associated with the rinse ports of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about 15 minutes later. On January 26, 2010, a low-flow condition associated with Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one-half hour later. On January 30, 2010, a low-flow condition associated with the backwash flow in Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one hour later. On

January 31, 2010, a low-flow condition associated with the rinse ports of Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about three hours later. However, about three hours after the re-start, the low-flow condition again caused a shutdown of the Treatment Facility. The VFD for the combination pump was determined to be faulty. The Treatment Facility was re-started about five hours later, at a reduced flow with only Module A of the ion exchange treatment system operating. The faulty VFD for the combination pump was replaced on February 1, 2010 and the Treatment Facility subsequently resumed operation with both modules of the ion exchange treatment system.

On February 1, 2010, a low-flow condition associated with backwash flow of Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about two hours later. On February 2, 2010, a high-flow condition associated with the rinse ports of Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one-half hour later. On February 6, 2010, a low-flow condition associated with the backwash flow and a high-flow condition associated with the rinse ports of Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one hour later. On February 13, 2010, a fault in the solenoid associated with a valve on the 26 percent brine tank “C” caused a shutdown of the Treatment Facility. VCWD switched the brine supply to a different tank and re-started the Treatment Facility about one hour later. The faulty solenoid was replaced on February 16, 2010. On February 15, 2010, a faulty bleed valve on the 26 percent brine pump of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The faulty bleed valve was repaired and the Treatment Facility was re-started about two and one-half hours later. On February 16, 2010, a broken seal on the 26 percent brine pump of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The broken seal was replaced and the Treatment Facility was re-started about eight and one-half hours later. On February 28, 2010, a low-salt condition associated with the 26 percent brine tank “C” caused a shutdown of the Treatment Facility. VCWD switched the brine supply to a different tank and re-started the Treatment Facility about 15 minutes later. The problem was determined to be due to a faulty solenoid which was replaced later that day.

On March 9, 2010, a fault at the auxiliary panel associated with the 24-volt power supply of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one-half hour later. On March 10, 2010, a low-inlet-pressure condition associated with the booster pump of Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one-half hour later.

On April 12, 2010, a low-level condition associated with the 7 percent brine tank of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one-half hour later. In addressing the problem, VCWD later replaced the 26 percent brine pump and motor. Also, on April 12, 2010, a low-flow condition associated with the 7 percent brine flow to Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The flow meter was cleaned and air in the pump was bled before the Treatment Facility was re-started about 15 minutes later. On April 18, 2010, a high-pressure alarm condition associated with the 26 percent brine pump of Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about eight hours later. Also, on April 18, 2010, an alarm condition associated with the 26 percent brine pump of Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The pressure switch on the 26 percent brine pump was replaced and the Treatment Facility was re-started on April 19, 2010.

On June 11, 2010, a low-flow condition associated with the backwash flow of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one-half hour later. On June 21, 2010, a malfunctioning probe on salt tank “E” caused a low-level condition on both 7 percent brine tanks, leading to a shutdown of the Treatment Facility. VCWD switch the salt supply to a different tank and the Treatment Facility was re-started about four and one-half hours later. The malfunctioning probe or level transmitter was replaced on a later date.

On July 12, 2010, a low-flow condition associated with the backwash flow of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about 15 minutes later. On July 19, 2010, a low-flow condition associated with the backwash flow of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one hour later. On July 20, 2010, a low-flow condition associated with the backwash flow of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about two hours later. On July 27, 2010, three of the five flexible plastic sample ports burst on Module A of the ion exchange treatment system, causing a shutdown of the Treatment Facility. These sample ports were no longer being used and were plugged. The Treatment Facility was re-started about one and one-half hours later.

On August 16, 2010, a faulty uninterruptible power supply (UPS) battery associated with Module A of the ion exchange treatment system caused a shutdown of the Treatment

Facility. The entire UPS unit was replaced and the Treatment Facility was re-started on August 18, 2010.

On September 13, 2010, a low-flow condition associated with the backwash flow of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one-half hour later. On September 17, 2010, Module A of the ion exchange treatment system experienced a misalignment of the turntable, causing a shutdown of the Treatment Facility. The Treatment Facility was re-started about two and one-half hours later, with only Module B of the ion exchange treatment system operating. The bottom encoder of the turntable of Module A of the ion exchange treatment system was replaced and the turntable re-aligned on September 23, 2010, allowing Module A to resume operation. On September 29, 2010, a low-flow condition associated with the rinse port and backwash flow of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started on September 30, 2010.

On October 5, 2010, the 7 percent brine system associated with Module B of the ion exchange treatment system experienced a failure, causing a shutdown of the Treatment Facility. The air in the system was bled and the Treatment Facility was re-started about one-half hour later. Also, on October 5, 2010, a low-flow condition associated with the backwash flow of Modules A and B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one-half hour later. Also, on October 5, 2010, a low-flow condition associated with the backwash flow of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. A broken air relief line was replaced and the Treatment Facility was re-started on October 7, 2010. On October 10, 2010, a low-flow condition associated with the backwash flow of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one and one-half hours later. On October 13, 2010, a low-flow condition associated with the backwash flow of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one and one-half hours later. On October 14, 2010, a low-flow condition associated with the backwash flow of Module A of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about two hours later. Also, on October 14, 2010, Module A of the ion exchange treatment system was shut down to replace the air relief on the regeneration line, and remained out of service until October 21, 2010. The Treatment Facility resumed operation with only Module B of the ion exchange treatment system operating. On October 17, 2010, a low-flow condition associated with the rinse port of Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one hour later. Also, on October 17, 2010, a low-flow condition associated with the backwash flow of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one-half hour later. On October 18, 2010, a low-flow condition associated with the backwash flow of Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility. The ion exchange treatment system was re-set and the Treatment Facility was re-started about one and one-half hours later. On October 21, 2010, a low-flow condition associated with the backwash flow of Module B of the ion exchange treatment system caused a shutdown of the Treatment Facility on two separate occasions. The ion exchange treatment system was re-set each time and the Treatment Facility was re-started each time about one hour later. Also, on October 21, 2010, high pressure in the ion exchange vessels of Module B caused a shutdown of the Treatment Facility. VCWD left Module B out of service and re-started the Treatment Facility after about one-half hour through bringing Module A back on line. VCWD had to shut down the Treatment Facility after about two hours due to high pressure in the ion exchange vessels of Module A. The Treatment Facility remained out of service through December 1, 2010 while the clogged distributors in the ion exchange vessels were cleaned. The Treatment Facility resumed operation on December 2, 2010 with only Module A of the ion exchange treatment system in operation, while cleaning of the clogged distributors in Module B continued. Module B of the ion exchange treatment system resumed operation on December 28, 2010.

On December 18, 2010, the 26 percent brine pump of Module A of the ion exchange treatment system experienced a failure, causing a shutdown of the Treatment Facility. VCWD replaced the faulty brine pump on Module A with the brine pump from Module B which was not in operation at that time. The Treatment Facility was re-started about four hours later. On December 20, 2010, a faulty positional device for the 26 percent brine tank valve caused a shutdown of the Treatment Facility. The faulty positional device was replaced and the Treatment Facility was re-started on December 21, 2010.

II.5 LEUV Treatment System

II.5.1 Summary of Design Parameters

The LEUV treatment system consists of four reactors running in parallel and a System Control Center (SCC). Each reactor contains a total of nine rotational units (RUs) and each RU contains four sections with 16 UV lamps per section. Under normal operation, 7 of the 9 RUs are in operation; therefore, each reactor has a total of 448 (7 x 4 x 16) low pressure UV lamps in operation. Flows of less than 2,000 gpm are divided equally between two reactors. Flows in excess of 2,000 gpm are divided equally between four reactors. Destruction of 1,4-dioxane requires the addition of hydrogen peroxide, which forms hydroxyl radicals in the water. Under the influence of UV light, the hydroxyl radicals oxidize 1,4-dioxane. NDMA is destroyed by direct photolysis when exposed to UV light and is also enhanced by the addition of hydrogen peroxide. The LEUV treatment system was designed to treat NDMA from 3,000 ng/l to below 2 ng/l and 1,4-

dioxane from 25 μg/l to below 2 μg/l. Approximately 4 mg/l of hydrogen peroxide is injected to the inflow of the LEUV treatment system, however, a range of 4 mg/l to 6 mg/l may be used depending on the amount of 1,4-dioxane to be removed.

II.5.2 Summary of Treated Water Quality Results

Treated water samples were collected on a weekly basis at the treated water outflow (SP-9), as shown on Plate 2. Treated water quality data indicate NDMA was not detected in the treated water outflow between January 1, 2010 and December 31, 2010 (see Table 12 and Figure 12A).

The contaminant 1,4-dioxane was not detected in the treated water outflow between January 1, 2010 and December 31, 2010 (see Table 13 and Figure 13A).

The removal efficiency of the LEUV treatment system was calculated as 100 percent for both NDMA and 1,4-dioxane detected in the raw water between January 1, 2010 and December 31, 2010.

II.5.3 Evaluation of Sensitivity of Monitoring Program

The LEUV treatment system was designed to treat NDMA and 1,4-dioxane to non-detectable levels. From January 1, 2010 through December 31, 2010, NDMA and 1,4-dioxane were never detected in the raw water samples collected from the wells above their design concentrations of 3,000 ng/l and 25 μg/l, respectively (see Tables 12 through 15). The NDMA and 1,4-dioxane detected in the raw water were treated to non-detectable levels in the fully-treated water.

II.5.4 Operational Problems

On February 12, 2010, a leak on the flow control valve of the hydrogen peroxide pump of the LEUV treatment system caused a shutdown of the Treatment Facility. The leak was repaired and the Treatment Facility was re-started about three and one-half hours later.

On June 14, 2010, a problem at the hydrogen peroxide pump of the LEUV treatment system caused a shutdown of the Treatment Facility. The air in the pump was bled and the Treatment Facility was re-started about one hour later.

On July 8, 2010, the Treatment Facility experienced a shutdown due to insufficient RUs on Reactor 1 of the LEUV treatment system. VCWD changed the order of the available RUs and the Treatment Facility was re-started about one and one-half hours later.

II.5.5 Maintenance

The LEUV treatment system is maintained under a service contract with the equipment manufacturer. Field servicing of the LEUV treatment system is performed monthly under the service contract and includes normal equipment maintenance, verification of equipment functionality, notation of lamp operating hours, and lamps/parts replacement, when needed (see Appendix E).

II.6 Additional Water Quality Monitoring Results

II.6.1 Upgradient Surveillance Wells

In accordance with Provision No. 26 in Permit Amendment No. 1910009PA-004, VCWD is required to collect samples at upgradient surveillance wells annually to provide early detection of any new constituents or significant changes of any previously identified compounds that may affect the wells that provide source water to the Treatment Facility. The upgradient surveillance wells that require annual sampling under the CDPH amended water supply permit are EPA multi-port monitoring wells MW5-03, MW5-11 and MW5-18 (see Plate 1). The upgradient surveillance wells that require sampling every 2 years under the CDPH amended water supply permit are EPA multi-port monitoring wells MW5-13 and MW5-17 (see Plate 1), which were sampled in 2009. During calendar year 2010, EPA multi-port monitoring wells MW5-03, MW5-1, and MW5-18 were sampled.

The upgradient surveillance wells are required to be sampled for Title 22 VOCs (plus TICs) and SOCs; SVOCs (plus TICs); 1,4-dioxane; 1,2,3-TCP; perchlorate; chlorate; and nitrosamines, including NDMA. Discussion with CDPH in early 2008 resulted in the following reduction in the sampling requirements specified in Provision No. 26 in Permit Amendment No. 1910009PA-004:

- SOCs and chlorate – two of the ports are required to be sampled per multi-port monitoring well, with the two selected ports in the same lithologic zone(s) as VCWD’s extraction wells.
- Nitrosamines – one port is required to be sampled per multi-port monitoring well, with the selected port being the one with the highest historical NDMA concentration in that well.

Data collected from these surveillance wells for the period between January 1, 2010 and December 31, 2010 are shown on Table 17. Port 10 of EPA multi-port monitoring well MW5-03 has been dry since 2007 and therefore, a sample could not be collected from this port in 2010.

The following contaminant was detected above the design concentration of the Treatment Facility:

- The contaminant 1,2,3-TCP was detected at 130 ng/l and 43 ng/l in Ports 01 and 03, respectively, of multi-port monitoring well MW5-11. Ports 01 and 03 of multi-port monitoring well MW5-03 are perforated between 690 feet below ground surface (bgs) and 700 feet bgs, and 310 bgs and 320 bgs, respectively. The perforated zones of the Lante Well and Wells SA1-1 and SA1-2 are located between 250 feet bgs and 655 feet bgs, which are above Port 01 but within Port 03 of multi-port monitoring well MW5-11. The LGAC treatment system is capable of treating 1,2,3-TCP to non-detectable levels.

Other contaminants detected in the upgradient surveillance wells are summarized below:

- The contaminant 2-pentanamine, a VOC TIC, was detected in Port 09 of multi-port monitoring well MW5-03. This contaminant was not detected in 2009. This contaminant does not have a MCL or NL. VCWD will monitor the presence of this contaminant in future sampling.

- Bis(2-ethylhexyl)phthalate, an SVOC, was detected above the MCL in Port 06 (perforated between 590 feet bgs and 600 bgs) of multi-port monitoring well MW5-03. Bis(2-ethylhexyl)phthalate is a manufactured chemical that is commonly added to plastics to make them flexible, and is also a common laboratory contaminant. Port 06 of multi-port monitoring well MW5-03 is within the location of the perforated zones of the Lante Well and Wells SA1-1 and SA1-2. Bis(2-ethylhexyl)phthalate was not detected in the other Ports 07 through 09 of multi-port monitoring well MW5-03 which are also within the location of the perforated zones of the Lante Well and Wells SA1-1 and SA1-2. In addition, the Best Available Technology (BAT) for bis(2-ethylhexyl)phthalate is granular activated carbon, which is one of the treatment technologies employed at the Treatment Facility. Bis(2-ethylhexyl)phthalate was also detected in multi-port monitoring well MW5-03 in 2009. VCWD will continue to monitor bis(2-ethylhexyl)phthalate to check for increasing trends.

- N-Butyl-benzenesulfonamide, an SVOC TIC, was detected in Ports 02 through 05 of multi-port monitoring well MW5-03 (perforated between 670 feet bgs and 1,025 feet bgs). Ports 02 through 05 of multi-port monitoring well MW5-03 are located below the perforated zones of the Lante Well and Wells SA1-1 and SA1-2. N-Butyl-benzenesulfonamide was also detected in 2009 below the perforated zones of the Lante Well and Wells SA1-1 and SA1-2 in a different multi-port monitoring well MW5-11. Therefore, N-butylbenzenesulfonamide detected in Ports 02 through 05 of multi-port monitoring well MW5-03 may <u>not</u> be indicative of a detection that may occur in the Lante Well and Wells SA1-1 and SA1-2.

- Dodecamethyl-cyclohexasiloxane, an SVOC TIC, was detected in Port 08 of multi-port monitoring well MW5-03 (perforated between 400 feet bgs and 410 feet bgs), and Port 01 of multi-port monitoring well MW5-18 (perforated between 780 feet bgs and 790 feet bgs). Dodecamethyl-cyclohexasiloxane is commonly associated with the column bleed of a laboratory's gas chromatography procedure. Therefore, it may be a possible laboratory contaminant. Dodecamethyl-cyclohexasiloxane was not detected in the 2009 sampling. VCWD will monitor the presence of dodecamethyl-cyclohexasiloxane in future sampling.

- The contaminant 1,1,1,5,7,7,7-heptamethyl-3,3-bis(trimethylsiloxy)tetrasiloxane, an SVOC TIC, was detected in Port 01 of multi-port monitoring well MW5-18 (perforated between 780 feet bgs and 790 feet bgs). The perforated zones of the Lante Well and Wells SA1-1 and SA1-2 are located between 250 feet bgs and 655 feet bgs, which are above Port 01 of multi-port monitoring well MW5-18. Therefore, this contaminant detected in Port 01 of multi-port monitoring well MW5-18 may <u>not</u> be indicative of a detection that may occur in the Lante Well and Wells SA1-1 and SA1-2. This contaminant was not detected in the 2009 sampling, and does not have a MCL or NL. VCWD will monitor the presence of this contaminant in future sampling.

- Various unknown SVOC TICs were detected in the multi-port monitoring wells. These unknown SVOC TICs do not have MCLs or NLs.

- N-Nitrosomorpholine, a nitrosamine, was detected in Port 09 of multi-port monitoring well MW5-03 and Port 03 of multi-port monitoring well MW5-11 at a maximum concentration of 19 ng/l. N-Nitrosomorpholine does not have a MCL or NL. According to the manufacturer, the LEUV is capable of treating N-nitrosomorpholine.

- Bentazon, an SOC, was detected in Port 09 of multi-port monitoring well MW5-03 (perforated between 300 feet bgs and 310 feet bgs) at 3.7 μg/l. Bentazon was not detected at or above its DLR in the samples collected in 2009. The MCL for bentazon is 18 μg/l. No other SOCs were detected in the multi-port monitoring wells.

The analysis for 2,3,7,8-tetrachlorodibenzodioxin (2,3,7,8-TCDD), an SOC, was not included in the analysis of the samples collected from the multi-port monitoring wells. The contaminant 2,3,7,8-TCDD was not detected in any of the samples collected in 2009.

II.6.2 Chlorine Residual Monitoring

Sodium hypochlorite is used for disinfection of the fully-treated water following the addition of sodium hydroxide after the LEUV treatment system. During the period between January 1, 2010 and December 31, 2010, the average recorded chlorine residual in the treated water prior to entering the distribution system was about 0.90 mg/l, with a minimum recorded residual of 0.33 mg/l and a maximum recorded residual of 1.72 mg/l (see Table 18).

II.6.3 pH Monitoring

Hydrochloric acid is injected into the partially-treated water after the air stripper treatment system and prior to the ion exchange treatment system to lower the pH to prevent calcium carbonate build-up in the ion exchange resin. Sodium hydroxide is injected into the fully-treated water after the LEUV treatment system to reduce the corrosivity of the treated water by increasing the pH. The pH of the fully-treated water is shown on Table 19, with an average pH of 7.4, a minimum pH of 6.9, and a maximum pH of 7.8.

II.6.4 Total Coliform Bacteria and HPC

Total coliform bacteria were detected sporadically in the samples collected from the air stripper outflow, air stripper wet well, LGAC vessels, combined outflow of the LGAC vessels, and outflow of the ion exchange treatment system. There was no apparent consistency in the detections indicating any bacteria problem, e.g., total coliform bacteria detected in a particular location were not detected in a subsequent sample collected from the same location. The chlorinated, fully-treated water from the Treatment Facility had no detectable coliform bacteria.

HPC was detected above 500 CFU/ml sporadically in the samples collected from the air stripper outflow, LGAC vessels, combined outflow of the LGAC vessels, and outflow of the ion exchange treatment system. There was no apparent consistency in the detections indicating any HPC problem, e.g., high HPC detected in a particular location was not detected consistently in subsequent sample collections from the same location.

The chlorinated, fully-treated water from the Treatment Facility had no HPC detections at or above 500 CFU/ml.

II.6.5 Oxidation By-Products

The combined outflow from the LEUV treatment system is required to be sampled quarterly for oxidation by-products. Acetaldehyde was detected in the sample collected from the outflow of the LEUV treatment system on January 19, 2010 at 2.0 μg/l (see Table 20). Acetaldehyde does not have an MCL or NL.

Formaldehyde was detected in the sample collected from the outflow of the LEUV treatment system on January 19, 2010, April 20, 2010, and October 20, 2010 at 13 μg/l, 14 μg/l, and 14 μg/l, respectively (see Table 20). The NL for formaldehyde is 100 μg/l.

M-Glyoxal was detected in the sample collected from the outflow of the LEUV treatment system on January 19, 2010 at 2.3 μg/l (see Table 20). M-Glyoxal does not have an MCL or NL.

II.6.6 NDMA Monitoring in Distribution System

Monitoring for NDMA at a location of maximum residence time in the distribution system was conducted quarterly. NDMA was not detected in the quarterly samples collected (see Table 21).

II.6.7 Fully-Treated Water Samples

The contaminant 2-butanone (also known as methyl ethyl ketone) was detected in the fully-treated water sample collected on July 14, 2010 at a concentration of 13 μg/l. However, a sample collected on the same day at the LEUV outflow (upstream of the fully-treated water sample) indicated 2-butanone was not detected. The contaminant 2-butanone does not have a MCL or NL. Because 2-butanone was detected only once, the result appears questionable.

Bromodichloromethane was detected in the fully-treated water sample collected on May 11, 2010, August 11, 2010, and September 21, 2010 at concentrations of 0.59 μg/l, 0.60 μg/l, and 0.62 μg/l, respectively. However, samples collected on the same days at the LEUV outflow (upstream of the fully-treated water sample) indicated bromodichloromethane was not detected. Bromodichloromethane is a trihalomethane and the MCL for total trihalomethanes is 80 μg/l.

Chloroform was detected in the fully-treated water sample in March 2010 through May 2010, and July 2010 through October 2010 at a maximum concentration of 2.7 μg/l. Chloroform is a trihalomethane and the MCL for total trihalomethanes is 80 μg/l.

As indicated above, 1,2,3-TCP was detected in the fully-treated water sample collected on February 9, 2010 at a concentration of 5.2 ng/l, which is above its NL of 5 ng/l. VCWD notified CDPH of the detection through the telephone, followed by an electronic mail. Prior to the detection, VCWD had already begun change-out of the carbon in the LGAC vessels on February 4, 2010. VCWD shut down the Treatment Facility on February 9, 2010 after being notified by the analytical laboratory that 1,2,3-TCP was detected in the 75 percent port of several LGAC vessels, and continued change-out of the carbon in all the LGAC vessels.

Fully-treated water samples collected from January 2010 through December 2010 for VOC analyses included analysis for TICs. No VOC TICs were detected in the fully-treated water samples.

Annual fully-treated water sampling for SVOCs, including TICs, was conducted on February 23, 2010 (see Table 14). Sampling results indicate SVOCs were not detected but unknown SVOC TICs were detected. VCWD re-sampled the fully-treated water on March 25, 2010. The results of the re-sampling also indicate detections of unknown SVOC TICs. These unknown SVOC TICs do not have MCLs or NLs.

II.7 Planned Activities

As part of the BPOU cleanup plan to eliminate the discharge of perchlorate waste brine to the Los Angeles County Sanitation Districts (LACSD) industrial waste line, it was agreed a single-pass ion exchange treatment system using disposal resin be designed and constructed at the Treatment Facility site for the treatment of perchlorate. Construction of the single-pass ion exchange treatment system is complete. As of December 31, 2010, both further work on the by-pass piping and CDPH permitting work related to the single-pass ion exchange treatment system were placed on hold, pending resolution of the nitrate treatment issue.

SECTION III

SUMMARY

Long-term raw water quality trend data (January 2005 to December 2010) for the Lante Well and Well SA1-1 indicate the following (Well SA1-2 was out of service unexpectedly prior to the scheduled sampling date in January 2010, and remained out of service for the remainder of 2010; therefore, samples were not collected from Well SA1-2 in 2010):

- The concentrations of VOCs detected in the raw water samples appear to have an increasing trend from January 2005 through mid-2006, and a decreasing trend from mid-2006 through December 2010.
- The contaminant 1,2,3-TCP was detected in the raw water samples beginning around the early part of 2006. The concentrations of 1,2,3-TCP in the raw water samples appear to generally follow the similar trend discussed above for VOCs, except the concentrations in the Lante Well appear to have an increasing trend in 2010 when its flow rate was increased.
- The concentrations of perchlorate detected in the raw water samples collected from the Lante Well appear to follow the similar trend discussed above for VOCs, except the concentrations in the Lante Well appear to have an increasing trend in 2010 when its flow rate was increased. The concentrations of perchlorate detected in the raw water samples collected from Well SA1-1 were lower compared to the Lante Well, and appear to remain constant.
- The concentrations of nitrate detected in the raw water samples show a gradual increase at Well SA1-1 and Lante Well.
- The sulfate concentrations in the wells appear to be generally constant.
- The concentrations of NDMA detected in the raw water samples collected from the Lante Well appear to generally follow the trend discussed above for VOCs. The concentrations of NDMA detected in the raw water samples collected from Well SA1-1 were lower compared to the Lante Well, and appear to remain constant.

- The historical concentrations of 1,4-dioxane detected in the raw water samples collected from the Lante Well and Well SA1-1 appear to have a general increasing trend. However, in 2009 and 2010, the concentrations of 1,4-dioxane in the Lante Well appear to have a decreasing trend.

Between January 1, 2010 and December 31, 2010, 6,888 AF of water were treated at the Treatment Facility. Water quality data collected from the Treatment Facility indicate the following:

- VOCs
    - The contaminant 2-butanone was detected in the fully-treated water sample collected on July 14, 2010 at a concentration of 13 μg/l. However, a sample collected on the same day at the LEUV outflow (upstream of the fully-treated water sample) indicated 2-butanone was not detected. The contaminant 2-butanone does not have a MCL or NL. Because 2-butanone was detected only once, the result appears questionable.
    - Bromodichloromethane was detected in the fully-treated water sample collected on May 11, 2010, August 11, 2010, and September 21, 2010 at concentrations of 0.59 μg/l, 0.60 μg/l, and 0.62 μg/l, respectively. However, samples collected on the same days at the LEUV outflow (upstream of the fully-treated water sample) indicated bromodichloromethane was not detected. Bromodichloromethane is a trihalomethane and the MCL for total trihalomethanes is 80 μg/l.
    - Chloroform was detected in the fully-treated water sample (SP-9) in March 2010 through May 2010, and July 2010 through October 2010 at a maximum concentration of 2.7 μg/l. Chloroform is a trihalomethane and the MCL for total trihalomethanes is 80 μg/l.
    - Other VOCs were treated to non-detectable levels in the fully-treated water at all times.

- 1,2,3-TCP – treated to non-detectable levels in the fully-treated water at all times, except on February 9, 2010 when 1,2,3-TCP was detected at a concentration of 5.2 ng/l, which is above its NL of 5 ng/l. VCWD notified CDPH of the detection through the telephone, followed by an electronic mail. Prior to the detection, VCWD had already begun change-out of the carbon in the LGAC vessels on February 4, 2010. VCWD shut down the Treatment Facility on February 9, 2010 after being notified by the analytical laboratory that 1,2,3-TCP was detected in the 75 percent port of several LGAC vessels, and continued change-out of the carbon in all the LGAC vessels..
- Perchlorate – treated to non-detectable levels in the fully-treated water at all times.
- Nitrate – reduced to 17 mg/l or less in the fully-treated water at all times.
- Sulfate – treated to 2.3 mg/l or less in the fully-treated water at all times.
- NDMA – treated to non-detectable levels in the fully-treated water at all times.
- 1,4-Dioxane - treated to non-detectable levels in the fully-treated water at all times.

Monthly sampling results for VOC TICs for the source water wells and fully-treated water indicate the following:

- An unknown TIC (possibly ether) was detected on June 16, 2010 in a sample collected from Well SA1-1 at a concentration of 1.4 μg/l. However, a sample of the fully-treated water collected on the same day (June 16, 2010) did not indicate any detection of TIC. Because this unknown TIC was detected only once, the result appears questionable.
- VOC TICs were not detected in the fully-treated water.

Annual sampling results for SVOCs plus TICs for the source water wells and fully-treated water indicate the following:

- SVOCs
    - SVOCs were not detected in the source water wells or fully-treated water.
- SVOC TICs
    - Unknown SVOC TICs were detected in the fully-treated water sample, including a re-sample. These unknown SVOC TICs do not have MCLs or NLs.
    - SVOC TICs were not detected in the source water wells.

Quarterly sampling results for oxidation by-products in the outflow of the LEUV treatment system indicate the following:

- Acetaldehyde was detected in the sample collected from the outflow of the LEUV treatment system on January 19, 2010 at 2.0 μg/l. Acetaldehyde does not have an MCL or NL.
- Formaldehyde was detected in the sample collected from the outflow of the LEUV treatment system on January 19, 2010, April 20, 2010, and October 20, 2010 at 13 μg/l, 14 μg/l, and 14 μg/l, respectively. The NL for formaldehyde is 100 μg/l.
- M-Glyoxal was detected in the sample collected from the outflow of the LEUV treatment system on January 19, 2010 at 2.3 μg/l. M-Glyoxal does not have an MCL or NL.

NDMA was not detected in the quarterly sampling at a location of maximum residence time in the distribution system.

The average volume of water treated by the coconut-based carbon that was removed from the LGAC treatment system in February 2010 was calculated as about 230 million gallons (about 710 AF) or about 47,000 bed volumes. Based on the 2009 technical report, the average volume of water treated by the carbon removed in March 2009 and April of 2009 was calculated as about 32,000 bed volumes. The average volume of water treated by the coconut-based carbon that was removed from the LGAC treatment system in September 2010 and October 2010 was calculated as about 170 million gallons (about 520 AF) or about 34,000 bed volumes.

The Treatment Facility experienced numerous shutdowns due to equipment problems.

Upgradient surveillance well monitoring data indicate the following:

- The concentrations of VOCs, perchlorate, NDMA, and 1,4-dioxane detected in the multi-port monitoring wells were lower than the design concentrations of the Treatment Facility. The following contaminant was detected above the design concentration of the Treatment Facility :
    - The contaminant 1,2,3-TCP was detected at 130 ng/l and 43 ng/l in Ports 01 and 03, respectively, of multi-port monitoring well MW5-11. Ports 01 and 03 of multi-port monitoring well MW5-03 are perforated between 690 feet below ground surface (bgs) and 700 feet bgs, and 310 bgs and 320 bgs, respectively. The perforated zones of the Lante Well and Wells SA1-1 and SA1-2 are located between 250 feet bgs and 655 feet bgs, which are above Port 01 but within Port 03 of multi-port monitoring well MW5-11. The LGAC treatment system is capable of treating 1,2,3-TCP to non-detectable levels.

- Other contaminants:
    - The contaminant 2-pentanamine, a VOC TIC, was detected in Port 09 of multi-port monitoring well MW5-03. This contaminant was not detected in

2009. This contaminant does not have a MCL or NL. VCWD will monitor the presence of this contaminant in future sampling.

- Bis(2-ethylhexyl)phthalate, an SVOC, was detected above the MCL in Port 06 (perforated between 590 feet bgs and 600 bgs) of multi-port monitoring well MW5-03. Bis(2-ethylhexyl)phthalate is a manufactured chemical that is commonly added to plastics to make them flexible, and is also a common laboratory contaminant. Port 06 of multi-port monitoring well MW5-03 is within the location of the perforated zones of the Lante Well and Wells SA1-1 and SA1-2. Bis(2-ethylhexyl)phthalate was not detected in the other Ports 07 through 09 of multi-port monitoring well MW5-03 which are also within the location of the perforated zones of the Lante Well and Wells SA1-1 and SA1-2. In addition, the BAT for bis(2-ethylhexyl)phthalate is granular activated carbon, which is one of the treatment technologies employed at the Treatment Facility. Bis(2-ethylhexyl)phthalate was also detected in multi-port monitoring well MW5-03 in 2009. VCWD will continue to monitor bis(2-ethylhexyl)phthalate to check for increasing trends.
- N-Butyl-benzenesulfonamide, an SVOC TIC, was detected in Ports 02 through 05 of multi-port monitoring well MW5-03 (perforated between 670 feet bgs and 1,025 feet bgs). Ports 02 through 05 of multi-port monitoring well MW5-03 are located below the perforated zones of the Lante Well and Wells SA1-1 and SA1-2. N-Butyl-benzenesulfonamide was also detected in 2009 below the perforated zones of the Lante Well and Wells SA1-1 and SA1-2 in a different multi-port monitoring well MW5-11. Therefore, N-butylbenzenesulfonamide detected in Ports 02 through 05 of multi-port monitoring well MW5-03 may <u>not</u> be indicative of a detection that may occur in the Lante Well and Wells SA1-1 and SA1-2.
- Dodecamethyl-cyclohexasiloxane, an SVOC TIC, was detected in Port 08 of multi-port monitoring well MW5-03 (perforated between 400 feet bgs and 410 feet bgs), and Port 01 of multi-port monitoring well MW5-18

(perforated between 780 feet bgs and 790 feet bgs). Dodecamethyl-cyclohexasiloxane is commonly associated with the column bleed of a laboratory's gas chromatography procedure. Therefore, it may be a possible laboratory contaminant. Dodecamethyl-cyclohexasiloxane was not detected in the 2009 sampling. VCWD will monitor the presence of dodecamethyl-cyclohexasiloxane in future sampling.

- The contaminant 1,1,1,5,7,7,7-heptamethyl-3,3-bis(trimethylsiloxy)tetrasiloxane, an SVOC TIC, was detected in Port 01 of multi-port monitoring well MW5-18 (perforated between 780 feet bgs and 790 feet bgs). The perforated zones of the Lante Well and Wells SA1-1 and SA1-2 are located between 250 feet bgs and 655 feet bgs, which are above Port 01 of multi-port monitoring well MW5-18. Therefore, this contaminant detected in Port 01 of multi-port monitoring well MW5-18 may <u>not</u> be indicative of a detection that may occur in the Lante Well and Wells SA1-1 and SA1-2. This contaminant was not detected in the 2009 sampling, and does not have a MCL or NL. VCWD will monitor the presence of this contaminant in future sampling.
- Various unknown SVOC TICs were detected in the multi-port monitoring wells. These unknown SVOC TICs do not have MCLs or NLs.
- N-Nitrosomorpholine, a nitrosamine, was detected in Port 09 of multi-port monitoring well MW5-03 and Port 03 of multi-port monitoring well MW5-11 at a maximum concentration of 19 ng/l. N-Nitrosomorpholine does not have a MCL or NL. According to the manufacturer, the LEUV is capable of treating N-nitrosomorpholine.
- Bentazon, an SOC, was detected in Port 09 of multi-port monitoring well MW5-03 (perforated between 300 feet bgs and 310 feet bgs) at 3.7 μg/l. Bentazon was not detected at or above its DLR in the samples collected in 2009. The MCL for bentazon is 18 μg/l. No other SOCs were detected in the multi-port monitoring wells.

TABLES

TABLE 1
Monthly Water Production
January 2010 through December 2010

Month	Well Production, (acre-feet)			Total Amount of Water Processed, (acre-feet)
	Well SA1-1	Well SA1-2	Lante Well (SA1-3)	
January	185.1	72.47	457.9	715.4
February	154.6	--	348.0	502.6
March	246.9	--	503.9	750.9
April	223.9	--	456.0	680.0
May	236.3	--	487.3	723.6
June	215.9	--	446.8	662.7
July	241.7	--	507.4	749.1
August	220.9	--	478.2	699.1
September	164.8	--	428.7	593.6
October	89.7	--	283.4	373.1
November	Plant out of service			
December	32.1	--	406.2	438.3

SUM	2,012	72	4,804	6,888
AVERAGE	183	72	437	626
MINIMUM	32	72	283	373
MAXIMUM	247	72	507	751

Note:
-- Well out of service

TABLE 2
Trichloroethylene (TCE) Concentrations
January 2010 through December 2010

DATE	Raw Water Well SA1-1	Raw Water Well SA1-2	Raw Water Lante	Combined AS Influent	Combined AS Effluent	Treated Water Effluent	MCL (5 ug/l)	Removal Efficiency, %	
								AS 1/	Plant 1/
1/6/2010	--	--	--	--	--	ND	5	--	100.00
1/12/2010	0.87	--	--	--	--	--	--	--	--
1/13/2010	--	--	--	--	--	ND	5	--	100.00
1/19/2010	--	--	100	58	ND	ND	5	100.00	100.00
1/26/2010	--	--	--	--	--	ND	5	--	100.00
2/2/2010	--	--	--	--	--	ND	5	--	100.00
2/9/2010	--	--	--	--	--	ND	5	--	100.00
2/17/2010	--	--	--	--	--	ND	5	--	100.00
2/23/2010	1.1	--	110	70	0.70	ND	5	99.00	100.00
3/2/2010	--	--	--	--	--	ND	5	--	100.00
3/11/2010	0.92	--	94	61	0.60	ND	5	99.02	100.00
3/16/2010	--	--	--	--	--	ND	5	--	100.00
3/23/2010	--	--	--	--	--	ND	5	--	100.00
3/30/2010	--	--	--	--	--	ND	5	--	100.00
4/8/2010	--	--	--	--	--	ND	5	--	100.00
4/14/2010	--	--	--	--	--	ND	5	--	100.00
4/20/2010	0.97	--	100	63	0.60	ND	5	99.05	100.00
4/27/2010	--	--	--	--	--	ND	5	--	100.00
5/5/2010	--	--	--	--	--	ND	5	--	100.00
5/11/2010	--	--	--	--	--	ND	5	--	100.00
5/18/2010	1.4	--	160	91	0.74	ND	5	99.19	100.00
5/25/2010	--	--	--	--	--	ND	5	--	100.00
6/2/2010	--	--	--	--	--	ND	5	--	100.00
6/7/2010	--	--	--	--	--	ND	5	--	100.00
6/16/2010	1.2	--	110	73	0.61	ND	5	99.16	100.00
6/23/2010	--	--	--	--	--	ND	5	--	100.00
6/29/2010	--	--	--	--	--	ND	5	--	100.00
7/6/2010	--	--	--	--	--	ND	5	--	100.00
7/14/2010	1.6	--	120	89	ND	ND	5	100.00	100.00
7/22/2010	--	--	--	--	--	ND	5	--	100.00
7/28/2010	--	--	--	--	--	ND	5	--	100.00
8/4/2010	--	--	--	--	--	ND	5	--	100.00
8/11/2010	1.5	--	98	67	0.53	ND	5	99.21	100.00
8/19/2010	--	--	--	--	--	ND	5	--	100.00
8/26/2010	--	--	--	--	--	ND	5	--	100.00
9/1/2010	--	--	--	--	--	ND	5	--	100.00
9/9/2010	--	--	--	--	--	ND	5	--	100.00
9/15/2010	1.0	--	76	53	ND	ND	5	100.00	100.00
9/21/2010	--	--	--	--	--	ND	5	--	100.00
9/29/2010	--	--	--	--	--	ND	5	--	100.00
10/7/2010	--	--	--	--	--	ND	5	--	100.00
10/12/2010	--	--	--	--	--	ND	5	--	100.00
10/20/2010	--	--	81	82	ND	ND	5	100.00	100.00
12/3/2010	--	--	--	--	--	ND	5	--	100.00
12/8/2010	--	--	--	--	--	ND	5	--	100.00
12/15/2010	--	--	48	--	ND	ND	5	100.00	100.00
12/20/2010	--	--	--	--	--	ND	5	--	100.00
12/29/2010	0.66	--	--	--	--	ND	5	--	100.00
AVERAGE	1.1	--	100	71	0.63	ND		99.51	100.00
MINIMUM	0.66	--	48	53	ND	ND		99.00	100.00
MAXIMUM	1.6	--	160	91	0.74	ND		100.00	100.00

Notes:
Units in micrograms per liter (ug/l)
AS = air stripper
MCL = maximum contaminant level
1/ Calculated using 0 ug/l for non-detectable results
ND: Indicates result of less than the detection level of 0.5 ug/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 3
Tetrachloroethylene (PCE) Concentrations
January 2010 through December 2010

DATE	Raw Water Well SA1-1	Raw Water Well SA1-2	Raw Water Lante	Combined AS Influent	Combined AS Effluent	Treated Water Effluent	MCL (5 ug/l)	Removal Efficiency, %	
								AS 1/	Plant 1/
1/6/2010	--	--	--	--	--	ND	5	--	100.00
1/12/2010	2.4	--	--	--	--	--	--	--	--
1/13/2010	--	--	--	--	--	ND	5	--	100.00
1/19/2010	--	--	300	170	0.70	ND	5	99.59	100.00
1/26/2010	--	--	--	--	--	ND	5	--	100.00
2/2/2010	--	--	--	--	--	ND	5	--	100.00
2/9/2010	--	--	--	--	--	ND	5	--	100.00
2/17/2010	--	--	--	--	--	ND	5	--	100.00
2/23/2010	2.9	--	320	200	1.2	ND	5	99.40	100.00
3/2/2010	--	--	--	--	--	ND	5	--	100.00
3/11/2010	1.9	--	280	150	0.94	ND	5	99.37	100.00
3/16/2010	--	--	--	--	--	ND	5	--	100.00
3/23/2010	--	--	--	--	--	ND	5	--	100.00
3/30/2010	--	--	--	--	--	ND	5	--	100.00
4/8/2010	--	--	--	--	--	ND	5	--	100.00
4/14/2010	--	--	--	--	--	ND	5	--	100.00
4/20/2010	2.6	--	330	190	1.3	ND	5	99.32	100.00
4/27/2010	--	--	--	--	--	ND	5	--	100.00
5/5/2010	--	--	--	--	--	ND	5	--	100.00
5/11/2010	--	--	--	--	--	ND	5	--	100.00
5/18/2010	2.5	--	440	240	1.3	ND	5	99.46	100.00
5/25/2010	--	--	--	--	--	ND	5	--	100.00
6/2/2010	--	--	--	--	--	ND	5	--	100.00
6/7/2010	--	--	--	--	--	ND	5	--	100.00
6/16/2010	2.5	--	350	240	1.2	ND	5	99.50	100.00
6/23/2010	--	--	--	--	--	ND	5	--	100.00
6/29/2010	--	--	--	--	--	ND	5	--	100.00
7/6/2010	--	--	--	--	--	ND	5	--	100.00
7/14/2010	2.8	--	400	290	0.94	ND	5	99.68	100.00
7/22/2010	--	--	--	--	--	ND	5	--	100.00
7/28/2010	--	--	--	--	--	ND	5	--	100.00
8/4/2010	--	--	--	--	--	ND	5	--	100.00
8/11/2010	2.5	--	290	200	1.1	ND	5	99.45	100.00
8/19/2010	--	--	--	--	--	ND	5	--	100.00
8/26/2010	--	--	--	--	--	ND	5	--	100.00
9/1/2010	--	--	--	--	--	ND	5	--	100.00
9/9/2010	--	--	--	--	--	ND	5	--	100.00
9/15/2010	1.8	--	220	180	ND	ND	5	100.00	100.00
9/21/2010	--	--	--	--	--	ND	5	--	100.00
9/29/2010	--	--	--	--	--	ND	5	--	100.00
10/7/2010	--	--	--	--	--	ND	5	--	100.00
10/12/2010	--	--	--	--	--	ND	5	--	100.00
10/20/2010	--	--	240	240	0.55	ND	5	99.77	100.00
12/3/2010	--	--	--	--	--	ND	5	--	100.00
12/8/2010	--	--	--	--	--	ND	5	--	100.00
12/15/2010	--	--	170	--	ND	ND	5	100.00	100.00
12/20/2010	--	--	--	--	--	ND	5	--	100.00
12/29/2010	1.4	--	--	--	--	ND	5	--	100.00
AVERAGE	2.3	--	300	210	1.0	ND		99.59	100.00
MINIMUM	1.4	--	170	150	ND	ND		99.32	100.00
MAXIMUM	2.9	--	440	290	1.3	ND		100.00	100.00

Notes:
Units in micrograms per liter (ug/l)
AS = air stripper
MCL = maximum contaminant level
1/ Calculated using 0 ug/l for non-detectable results
ND: Indicates result of less than the detection level of 0.5 ug/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 4
Carbon Tetrachloride (CTC) Concentrations
January 2010 through December 2010

	Raw Water	Raw Water	Raw Water	Combined AS	Combined AS	Treated Water		Removal Efficiency, %	
DATE	Well SA1-1	Well SA1-2	Lante	Influent	Effluent	Effluent	MCL (0.5 ug/l)	AS 1/	Plant 1/
1/6/2010	--	--	--	--	--	ND	0.5	--	100.00
1/12/2010	ND	--	--	--	--	--	--	--	--
1/13/2010	--	--	--	--	--	ND	0.5	--	100.00
1/19/2010	--	--	1.0	0.63	ND	ND	0.5	100.00	100.00
1/26/2010	--	--	--	--	--	ND	0.5	--	100.00
2/2/2010	--	--	--	--	--	ND	0.5	--	100.00
2/9/2010	--	--	--	--	--	ND	0.5	--	100.00
2/17/2010	--	--	--	--	--	ND	0.5	--	100.00
2/23/2010	ND	--	1.2	0.81	ND	ND	0.5	100.00	100.00
3/2/2010	--	--	--	--	--	ND	0.5	--	100.00
3/11/2010	ND	--	0.87	0.64	ND	ND	0.5	100.00	100.00
3/16/2010	--	--	--	--	--	ND	0.5	--	100.00
3/23/2010	--	--	--	--	--	ND	0.5	--	100.00
3/30/2010	--	--	--	--	--	ND	0.5	--	100.00
4/8/2010	--	--	--	--	--	ND	0.5	--	100.00
4/14/2010	--	--	--	--	--	ND	0.5	--	100.00
4/20/2010	ND	--	1.1	0.67	ND	ND	0.5	100.00	100.00
4/27/2010	--	--	--	--	--	ND	0.5	--	100.00
5/5/2010	--	--	--	--	--	ND	0.5	--	100.00
5/11/2010	--	--	--	--	--	ND	0.5	--	100.00
5/18/2010	ND	--	1.4	0.81	ND	ND	0.5	100.00	100.00
5/25/2010	--	--	--	--	--	ND	0.5	--	100.00
6/2/2010	--	--	--	--	--	ND	0.5	--	100.00
6/7/2010	--	--	--	--	--	ND	0.5	--	100.00
6/16/2010	ND	--	1.2	0.91	ND	ND	0.5	100.00	100.00
6/23/2010	--	--	--	--	--	ND	0.5	--	100.00
6/29/2010	--	--	--	--	--	ND	0.5	--	100.00
7/6/2010	--	--	--	--	--	ND	0.5	--	100.00
7/14/2010	ND	--	1.2	0.91	ND	ND	0.5	100.00	100.00
7/22/2010	--	--	--	--	--	ND	0.5	--	100.00
7/28/2010	--	--	--	--	--	ND	0.5	--	100.00
8/4/2010	--	--	--	--	--	ND	0.5	--	100.00
8/11/2010	ND	--	1.5	1.1	ND	ND	0.5	100.00	100.00
8/19/2010	--	--	--	--	--	ND	0.5	--	100.00
8/26/2010	--	--	--	--	--	ND	0.5	--	100.00
9/1/2010	--	--	--	--	--	ND	0.5	--	100.00
9/9/2010	--	--	--	--	--	ND	0.5	--	100.00
9/15/2010	ND	--	0.94	0.88	ND	ND	0.5	100.00	100.00
9/21/2010	--	--	--	--	--	ND	0.5	--	100.00
9/29/2010	--	--	--	--	--	ND	0.5	--	100.00
10/7/2010	--	--	--	--	--	ND	0.5	--	100.00
10/12/2010	--	--	--	--	--	ND	0.5	--	100.00
10/20/2010	--	--	0.82	0.92	ND	ND	0.5	100.00	100.00
12/3/2010	--	--	--	--	--	ND	0.5	--	100.00
12/8/2010	--	--	--	--	--	ND	0.5	--	100.00
12/15/2010	--	--	ND	--	ND	ND	0.5	100.00	100.00
12/20/2010	--	--	--	--	--	ND	0.5	--	100.00
12/29/2010	ND	--	--	--	--	ND	0.5	--	100.00
AVERAGE	ND	--	1.1	0.83	ND	ND		100.00	100.00
MINIMUM	ND	--	ND	0.63	ND	ND		100.00	100.00
MAXIMUM	ND	--	1.5	1.1	ND	ND		100.00	100.00

Notes:
Units in micrograms per liter (ug/l)
AS = air stripper
MCL = maximum contaminant level
1/ Calculated using 0 ug/l for non-detectable results
ND: Indicates result of less than the detection level of 0.5 ug/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 5
1,2-Dichloroethane (1,2-DCA) Concentrations
January 2010 through December 2010

DATE	Raw Water Well SA1-1	Raw Water Well SA1-2	Raw Water Lante	Combined AS Influent	Combined AS Effluent	Treated Water Effluent	MCL (0.5 ug/l)	Removal Efficiency, %	
								AS 1/	Plant 1/
1/6/2010	--	--	--	--	--	ND	0.5	--	100.00
1/12/2010	ND	--	--	--	--	--	--	--	--
1/13/2010	--	--	--	--	--	ND	0.5	--	100.00
1/19/2010	--	--	0.58	ND	ND	ND	0.5	100.00	100.00
1/26/2010	--	--	--	--	--	ND	0.5	--	100.00
2/2/2010	--	--	--	--	--	ND	0.5	--	100.00
2/9/2010	--	--	--	--	--	ND	0.5	--	100.00
2/17/2010	--	--	--	--	--	ND	0.5	--	100.00
2/23/2010	ND	--	0.71	0.53	ND	ND	0.5	100.00	100.00
3/2/2010	--	--	--	--	--	ND	0.5	--	100.00
3/11/2010	ND	--	0.50	ND	ND	ND	0.5	100.00	100.00
3/16/2010	--	--	--	--	--	ND	0.5	--	100.00
3/23/2010	--	--	--	--	--	ND	0.5	--	100.00
3/30/2010	--	--	--	--	--	ND	0.5	--	100.00
4/8/2010	--	--	--	--	--	ND	0.5	--	100.00
4/14/2010	--	--	--	--	--	ND	0.5	--	100.00
4/20/2010	ND	--	0.52	ND	ND	ND	0.5	100.00	100.00
4/27/2010	--	--	--	--	--	ND	0.5	--	100.00
5/5/2010	--	--	--	--	--	ND	0.5	--	100.00
5/11/2010	--	--	--	--	--	ND	0.5	--	100.00
5/18/2010	ND	--	0.71	0.51	ND	ND	0.5	100.00	100.00
5/25/2010	--	--	--	--	--	ND	0.5	--	100.00
6/2/2010	--	--	--	--	--	ND	0.5	--	100.00
6/7/2010	--	--	--	--	--	ND	0.5	--	100.00
6/16/2010	ND	--	0.52	ND	ND	ND	0.5	100.00	100.00
6/23/2010	--	--	--	--	--	ND	0.5	--	100.00
6/29/2010	--	--	--	--	--	ND	0.5	--	100.00
7/6/2010	--	--	--	--	--	ND	0.5	--	100.00
7/14/2010	ND	--	0.59	ND	ND	ND	0.5	100.00	100.00
7/22/2010	--	--	--	--	--	ND	0.5	--	100.00
7/28/2010	--	--	--	--	--	ND	0.5	--	100.00
8/4/2010	--	--	--	--	--	ND	0.5	--	100.00
8/11/2010	ND	--	0.55	ND	ND	ND	0.5	100.00	100.00
8/19/2010	--	--	--	--	--	ND	0.5	--	100.00
8/26/2010	--	--	--	--	--	ND	0.5	--	100.00
9/1/2010	--	--	--	--	--	ND	0.5	--	100.00
9/9/2010	--	--	--	--	--	ND	0.5	--	100.00
9/15/2010	ND	--	ND	ND	ND	ND	0.5	100.00	100.00
9/21/2010	--	--	--	--	--	ND	0.5	--	100.00
9/29/2010	--	--	--	--	--	ND	0.5	--	100.00
10/7/2010	--	--	--	--	--	ND	0.5	--	100.00
10/12/2010	--	--	--	--	--	ND	0.5	--	100.00
10/20/2010	--	--	ND	ND	ND	ND	0.5	100.00	100.00
12/3/2010	--	--	--	--	--	ND	0.5	--	100.00
12/8/2010	--	--	--	--	--	ND	0.5	--	100.00
12/15/2010	--	--	ND	--	ND	ND	0.5	100.00	100.00
12/20/2010	--	--	--	--	--	ND	0.5	--	100.00
12/29/2010	ND	--	--	--	--	ND	0.5	--	100.00
AVERAGE	ND	--	0.59	0.52	ND	ND		100.00	100.00
MINIMUM	ND	--	ND	ND	ND	ND		100.00	100.00
MAXIMUM	ND	--	0.71	0.53	ND	ND		100.00	100.00

Notes:
Units in micrograms per liter (ug/l)
AS = air stripper
MCL = maximum contaminant level
1/ Calculated using 0 ug/l for non-detectable results
ND: Indicates result of less than the detection level of 0.5 ug/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 6
1,1-Dichloroethylene (1,1-DCE) Concentrations
January 2010 through December 2010

	Raw Water	Raw Water	Raw Water	Combined AS	Combined AS	Treated Water		Removal Efficiency, %	
DATE	Well SA1-1	Well SA1-2	Lante	Influent	Effluent	Effluent	MCL (6 ug/l)	AS 1/	Plant 1/
1/6/2010	--	--	--	--	--	ND	6	--	100.00
1/12/2010	0.68	--	--	--	--	--	--	--	--
1/13/2010	--	--	--	--	--	ND	6	--	100.00
1/19/2010	--	--	27	17	ND	ND	6	100.00	100.00
1/26/2010	--	--	--	--	--	ND	6	--	100.00
2/2/2010	--	--	--	--	--	ND	6	--	100.00
2/9/2010	--	--	--	--	--	ND	6	--	100.00
2/17/2010	--	--	--	--	--	ND	6	--	100.00
2/23/2010	0.67	--	29	20	ND	ND	6	100.00	100.00
3/2/2010	--	--	--	--	--	ND	6	--	100.00
3/11/2010	0.73	--	27	19	ND	ND	6	100.00	100.00
3/16/2010	--	--	--	--	--	ND	6	--	100.00
3/23/2010	--	--	--	--	--	ND	6	--	100.00
3/30/2010	--	--	--	--	--	ND	6	--	100.00
4/8/2010	--	--	--	--	--	ND	6	--	100.00
4/14/2010	--	--	--	--	--	ND	6	--	100.00
4/20/2010	1.0	--	25	17	ND	ND	6	100.00	100.00
4/27/2010	--	--	--	--	--	ND	6	--	100.00
5/5/2010	--	--	--	--	--	ND	6	--	100.00
5/11/2010	--	--	--	--	--	ND	6	--	100.00
5/18/2010	2.2	--	28	17	ND	ND	6	100.00	100.00
5/25/2010	--	--	--	--	--	ND	6	--	100.00
6/2/2010	--	--	--	--	--	ND	6	--	100.00
6/7/2010	--	--	--	--	--	ND	6	--	100.00
6/16/2010	3.0	--	23	17	ND	ND	6	100.00	100.00
6/23/2010	--	--	--	--	--	ND	6	--	100.00
6/29/2010	--	--	--	--	--	ND	6	--	100.00
7/6/2010	--	--	--	--	--	ND	6	--	100.00
7/14/2010	4.0	--	22	19	ND	ND	6	100.00	100.00
7/22/2010	--	--	--	--	--	ND	6	--	100.00
7/28/2010	--	--	--	--	--	ND	6	--	100.00
8/4/2010	--	--	--	--	--	ND	6	--	100.00
8/11/2010	3.1	--	20	14	ND	ND	6	100.00	100.00
8/19/2010	--	--	--	--	--	ND	6	--	100.00
8/26/2010	--	--	--	--	--	ND	6	--	100.00
9/1/2010	--	--	--	--	--	ND	6	--	100.00
9/9/2010	--	--	--	--	--	ND	6	--	100.00
9/15/2010	2.0	--	23	17	ND	ND	6	100.00	100.00
9/21/2010	--	--	--	--	--	ND	6	--	100.00
9/29/2010	--	--	--	--	--	ND	6	--	100.00
10/7/2010	--	--	--	--	--	ND	6	--	100.00
10/12/2010	--	--	--	--	--	ND	6	--	100.00
10/20/2010	--	--	24	27	ND	ND	6	100.00	100.00
12/3/2010	--	--	--	--	--	ND	6	--	100.00
12/8/2010	--	--	--	--	--	ND	6	--	100.00
12/15/2010	--	--	7.6	--	ND	ND	6	100.00	100.00
12/20/2010	--	--	--	--	--	ND	6	--	100.00
12/29/2010	1.1	--	--	--	--	ND	6	--	100.00
AVERAGE	1.8	--	23	18	ND	ND		100.00	100.00
MINIMUM	0.67	--	7.6	14	ND	ND		100.00	100.00
MAXIMUM	4.0	--	29	27	ND	ND		100.00	100.00

Notes:
Units in micrograms per liter (ug/l)
AS = air stripper
MCL = maximum contaminant level
1/ Calculated using 0 ug/l for non-detectable results
ND: Indicates result of less than the detection level of 0.5 ug/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 7
Cis-1,2-Dichloroethylene (cis-1,2-DCE) Concentrations
January 2010 through December 2010

	Raw Water	Raw Water	Raw Water	Combined AS	Combined AS	Treated Water		Removal Efficiency, %	
DATE	Well SA1-1	Well SA1-2	Lante	Influent	Effluent	Effluent	MCL (6 ug/l)	AS 1/	Plant 1/
1/6/2010	--	--	--	--	--	ND	6	--	100.00
1/12/2010	ND	--	--	--	--	--	--	--	--
1/13/2010	--	--	--	--	--	ND	6	--	100.00
1/19/2010	--	--	11	6.9	ND	ND	6	100.00	100.00
1/26/2010	--	--	--	--	--	ND	6	--	100.00
2/2/2010	--	--	--	--	--	ND	6	--	100.00
2/9/2010	--	--	--	--	--	ND	6	--	100.00
2/17/2010	--	--	--	--	--	ND	6	--	100.00
2/23/2010	ND	--	12	7.9	ND	ND	6	100.00	100.00
3/2/2010	--	--	--	--	--	ND	6	--	100.00
3/11/2010	ND	--	9.4	7.0	ND	ND	6	100.00	100.00
3/16/2010	--	--	--	--	--	ND	6	--	100.00
3/23/2010	--	--	--	--	--	ND	6	--	100.00
3/30/2010	--	--	--	--	--	ND	6	--	100.00
4/8/2010	--	--	--	--	--	ND	6	--	100.00
4/14/2010	--	--	--	--	--	ND	6	--	100.00
4/20/2010	ND	--	11	7.1	ND	ND	6	100.00	100.00
4/27/2010	--	--	--	--	--	ND	6	--	100.00
5/5/2010	--	--	--	--	--	ND	6	--	100.00
5/11/2010	--	--	--	--	--	ND	6	--	100.00
5/18/2010	ND	--	17	11	ND	ND	6	100.00	100.00
5/25/2010	--	--	--	--	--	ND	6	--	100.00
6/2/2010	--	--	--	--	--	ND	6	--	100.00
6/7/2010	--	--	--	--	--	ND	6	--	100.00
6/16/2010	ND	--	13	9.5	ND	ND	6	100.00	100.00
6/23/2010	--	--	--	--	--	ND	6	--	100.00
6/29/2010	--	--	--	--	--	ND	6	--	100.00
7/6/2010	--	--	--	--	--	ND	6	--	100.00
7/14/2010	ND	--	16	12	ND	ND	6	100.00	100.00
7/22/2010	--	--	--	--	--	ND	6	--	100.00
7/28/2010	--	--	--	--	--	ND	6	--	100.00
8/4/2010	--	--	--	--	--	ND	6	--	100.00
8/11/2010	ND	--	12	8.0	ND	ND	6	100.00	100.00
8/19/2010	--	--	--	--	--	ND	6	--	100.00
8/26/2010	--	--	--	--	--	ND	6	--	100.00
9/1/2010	--	--	--	--	--	ND	6	--	100.00
9/9/2010	--	--	--	--	--	ND	6	--	100.00
9/15/2010	ND	--	10	6.7	ND	ND	6	100.00	100.00
9/21/2010	--	--	--	--	--	ND	6	--	100.00
9/29/2010	--	--	--	--	--	ND	6	--	100.00
10/7/2010	--	--	--	--	--	ND	6	--	100.00
10/12/2010	--	--	--	--	--	ND	6	--	100.00
10/20/2010	--	--	11	12	ND	ND	6	100.00	100.00
12/3/2010	--	--	--	--	--	ND	6	--	100.00
12/8/2010	--	--	--	--	--	ND	6	--	100.00
12/15/2010	--	--	5.4	--	ND	ND	6	100.00	100.00
12/20/2010	--	--	--	--	--	ND	6	--	100.00
12/29/2010	ND	--	--	--	--	ND	6	--	100.00
AVERAGE	ND	--	12	8.8	ND	ND		100.00	100.00
MINIMUM	ND	--	5.4	6.7	ND	ND		100.00	100.00
MAXIMUM	ND	--	17	12	ND	ND		100.00	100.00

Notes:
Units in micrograms per liter (ug/l)
AS = air stripper
MCL = maximum contaminant level
1/ Calculated using 0 ug/l for non-detectable results
ND: Indicates result of less than the detection level of 0.5 ug/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 8
1,2,3-Trichloropropane (1,2,3-TCP) Concentrations
January 2010 through December 2010

DATE	Raw Water Well SA1-1	Raw Water Well SA1-2	Raw Water Lante	Treated Water Effluent	NL (5 ng/l)	Removal Efficiency, % 1/
1/6/2010	--	--	--	ND	5	100.00
1/12/2010	ND	--	--	--	--	--
1/13/2010	--	--	--	ND	5	100.00
1/19/2010	--	--	26	ND	5	100.00
1/26/2010	--	--	--	ND	5	100.00
2/2/2010	--	--	--	ND	5	100.00
2/9/2010 *	--	--	--	**5.2**	5	48.00
2/17/2010	--	--	--	ND	5	100.00
2/23/2010	ND	--	25	ND	5	100.00
3/2/2010	--	--	--	ND	5	100.00
3/11/2010	ND	--	28	ND	5	100.00
3/16/2010	--	--	--	ND	5	100.00
3/23/2010	--	--	--	ND	5	100.00
3/30/2010	--	--	--	ND	5	100.00
4/8/2010	--	--	--	ND	5	100.00
4/14/2010	--	--	--	ND	5	100.00
4/20/2010	ND	--	29	ND	5	100.00
4/27/2010	--	--	--	ND	5	100.00
5/5/2010	--	--	--	ND	5	100.00
5/11/2010	--	--	--	ND	5	100.00
5/18/2010	ND	--	35	ND	5	100.00
5/25/2010	--	--	--	ND	5	100.00
6/2/2010	--	--	--	ND	5	100.00
6/7/2010	--	--	--	ND	5	100.00
6/16/2010	ND	--	38	ND	5	100.00
6/23/2010	--	--	--	ND	5	100.00
6/29/2010	--	--	--	ND	5	100.00
7/6/2010	--	--	--	ND	5	100.00
7/14/2010	ND	--	28	ND	5	100.00
7/22/2010	--	--	--	ND	5	100.00
7/28/2010	--	--	--	ND	5	100.00
8/4/2010	--	--	--	ND	5	100.00
8/11/2010	ND	--	39	ND	5	100.00
8/19/2010	--	--	--	ND	5	100.00
8/26/2010	--	--	--	ND	5	100.00
9/1/2010	--	--	--	ND	5	100.00
9/9/2010	--	--	--	ND	5	100.00
9/15/2010	ND	--	32	ND	5	100.00
9/21/2010	--	--	--	ND	5	100.00
9/29/2010	--	--	--	ND	5	100.00
10/7/2010	--	--	--	ND	5	100.00
10/12/2010	--	--	--	ND	5	100.00
10/20/2010	--	--	29	ND	5	100.00
12/3/2010	--	--	--	ND	5	100.00
12/8/2010	--	--	--	ND	5	100.00
12/15/2010	--	--	60	ND	5	100.00
12/20/2010	--	--	--	ND	5	100.00
12/29/2010	ND	--	--	ND	5	100.00
AVERAGE	ND	--	34	ND		98.89
MINIMUM	ND	--	25	ND		48.00
MAXIMUM	ND	--	60	5.2		100.00

Notes:
Units in nanograms per liter (ng/l)
NL = notification level
1/ Calculated using 0 ng/l for non-detectable results
* Removal efficiency calculated based on average inflow concentration of 10 ng/l (average of January-March, Table 16)
ND: Indicates result of less than the detection level of 5 ng/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 9
Perchlorate Concentrations
January 2010 through December 2010

DATE	Raw Water Well SA1-1	Raw Water Well SA1-2	Raw Water Lante	Treated Water Effluent	MCL (6 ug/l)	Removal Efficiency, % 1/
1/6/2010	--	--	--	ND	6	100.00
1/12/2010	11	--	--	--	--	--
1/13/2010	--	--	--	ND	6	100.00
1/19/2010	--	--	11	ND	6	100.00
1/26/2010	--	--	--	ND	6	100.00
2/2/2010	--	--	--	ND	6	100.00
2/9/2010	--	--	--	ND	6	100.00
2/17/2010	--	--	--	ND	6	100.00
2/23/2010	10	--	8.7	ND	6	100.00
3/2/2010	--	--	--	ND	6	100.00
3/11/2010	8.3	--	8.5	ND	6	100.00
3/16/2010	--	--	--	ND	6	100.00
3/23/2010	--	--	--	ND	6	100.00
3/30/2010	--	--	--	ND	6	100.00
4/8/2010	--	--	--	ND	6	100.00
4/14/2010	--	--	--	ND	6	100.00
4/20/2010	10	--	11	ND	6	100.00
4/27/2010	--	--	--	ND	6	100.00
5/5/2010	--	--	--	ND	6	100.00
5/11/2010	--	--	--	ND	6	100.00
5/18/2010	9.4	--	13	ND	6	100.00
5/25/2010	--	--	--	ND	6	100.00
6/2/2010	--	--	--	ND	6	100.00
6/7/2010	--	--	--	ND	6	100.00
6/16/2010	7.6	--	14	ND	6	100.00
6/23/2010	--	--	--	ND	6	100.00
6/29/2010	--	--	--	ND	6	100.00
7/6/2010	--	--	--	ND	6	100.00
7/14/2010	9.4	--	15	ND	6	100.00
7/22/2010	--	--	--	ND	6	100.00
7/28/2010	--	--	--	ND	6	100.00
8/4/2010	--	--	--	ND	6	100.00
8/11/2010	9.4	--	15	ND	6	100.00
8/19/2010	--	--	--	ND	6	100.00
8/26/2010	--	--	--	ND	6	100.00
9/1/2010	--	--	--	ND	6	100.00
9/9/2010	--	--	--	ND	6	100.00
9/15/2010	13	--	14	ND	6	100.00
9/21/2010	--	--	--	ND	6	100.00
9/29/2010	--	--	--	ND	6	100.00
10/7/2010	--	--	--	ND	6	100.00
10/12/2010	--	--	--	ND	6	100.00
10/20/2010	--	--	16	ND	6	100.00
12/3/2010	--	--	--	ND	6	100.00
12/8/2010	--	--	--	ND	6	100.00
12/15/2010	--	--	20	ND	6	100.00
12/20/2010	--	--	--	ND	6	100.00
12/29/2010	8.6	--	--	ND	6	100.00
AVERAGE	10	--	13	ND		100.00
MINIMUM	7.6	--	8.5	ND		100.00
MAXIMUM	13	--	20	ND		100.00

Notes:
Units in micrograms per liter (ug/l)
MCL = maximum contaminant level
1/ Calculated using 0 ug/l for non-detectable results
ND: Indicates result of less than the detection level of 2.0 ug/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 10
Nitrate Concentrations
January 2010 through December 2010

DATE	Raw Water Well SA1-1	Raw Water Well SA1-2	Raw Water Lante	Ion Exchange Influent	Treated Water Effluent	MCL (45 mg/l)	Removal Efficiency, %
1/6/2010	--	--	--	41	9.8	45	76.10
1/12/2010	84	--	--	--	--	--	--
1/13/2010	--	--	--	54	15	45	72.22
1/19/2010	--	--	35	49	15	45	69.39
1/26/2010	--	--	--	52	11	45	78.85
2/2/2010	--	--	--	53	11	45	79.25
2/9/2010	--	--	--	52	10	45	80.77
2/17/2010	--	--	--	30	7.9	45	73.67
2/23/2010	83	--	36	52	11	45	78.85
3/2/2010	--	--	--	52	9.3	45	82.12
3/11/2010	83	--	35	50	9.9	45	80.20
3/16/2010	--	--	--	50	11	45	78.00
3/23/2010	--	--	--	50	9.4	45	81.20
3/30/2010	--	--	--	51	8.3	45	83.73
4/8/2010	--	--	--	53	11	45	79.25
4/14/2010	--	--	--	50	10	45	80.00
4/20/2010	81	--	36	50	12	45	76.00
4/27/2010	--	--	--	50	7.5	45	85.00
5/5/2010	--	--	--	52	11	45	78.85
5/11/2010	--	--	--	50	11	45	78.00
5/18/2010	78	--	36	51	10	45	80.39
5/25/2010	--	--	--	51	13	45	74.51
6/2/2010	--	--	--	50	11	45	78.00
6/7/2010	--	--	--	50	12	45	76.00
6/16/2010	79	--	37	51	8.9	45	82.55
6/23/2010	--	--	--	51	8.9	45	82.55
6/29/2010	--	--	--	50	11	45	78.00
7/6/2010	--	--	--	50	11	45	78.00
7/14/2010	77	--	36	50	7.9	45	84.20
7/22/2010	--	--	--	50	12	45	76.00
7/28/2010	--	--	--	51	8.6	45	83.14
8/4/2010	--	--	--	51	12	45	76.47
8/11/2010	78	--	39	51	11	45	78.43
8/19/2010	--	--	--	44	10	45	77.27
8/26/2010	--	--	--	50	8.5	45	83.00
9/1/2010	--	--	--	50	7.7	45	84.60
9/9/2010	--	--	--	51	10	45	80.39
9/15/2010	80	--	40	52	12	45	76.92
9/21/2010	--	--	--	39	11	45	71.79
9/29/2010	--	--	--	52	11	46	78.85
10/7/2010	--	--	--	51	11	45	78.43
10/12/2010	--	--	--	54	17	45	68.52
10/20/2010	--	--	39	40	17	45	57.50
12/3/2010	--	--	--	30	5.6	45	81.33
12/8/2010	--	--	--	39	10	45	74.36
12/15/2010	--	--	40	36	11	45	69.44
12/20/2010	--	--	--	38	6.3	45	83.42
12/29/2010	81	--	--	54	10	45	81.48
AVERAGE	80	--	37	48	11		78.02
MINIMUM	77	--	35	30	5.6		57.50
MAXIMUM	84	--	40	54	17		85.00

Notes:
Units in milligrams per liter (mg/l)
MCL = maximum contaminant level
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 11
Sulfate Concentrations
January 2010 through December 2010

DATE	Raw Water Well SA1-1	Raw Water Well SA1-2	Raw Water Lante	Ion Exchange Influent	Treated Water Effluent	SMCL (500 mg/l)	Removal Efficiency, % 1/
1/6/2010	--	--	--	48	ND	500	100.00
1/12/2010	56	--	--	--	--	--	--
1/13/2010	--	--	--	50	ND	500	100.00
1/19/2010	--	--	47	51	ND	500	100.00
1/26/2010	--	--	--	51	ND	500	100.00
2/2/2010	--	--	--	49	ND	500	100.00
2/9/2010	--	--	--	46	ND	500	100.00
2/17/2010	--	--	--	46	2.3	500	95.00
2/23/2010	53	--	45	50	ND	500	100.00
3/2/2010	--	--	--	51	ND	500	100.00
3/11/2010	55	--	47	49	ND	500	100.00
3/16/2010	--	--	--	50	ND	500	100.00
3/23/2010	--	--	--	51	ND	500	100.00
3/30/2010	--	--	--	49	ND	500	100.00
4/8/2010	--	--	--	49	ND	500	100.00
4/14/2010	--	--	--	49	ND	500	100.00
4/20/2010	54	--	46	49	ND	500	100.00
4/27/2010	--	--	--	49	ND	500	100.00
5/5/2010	--	--	--	49	ND	500	100.00
5/11/2010	--	--	--	49	ND	500	100.00
5/18/2010	53	--	46	47	ND	500	100.00
5/25/2010	--	--	--	48	ND	500	100.00
6/2/2010	--	--	--	48	ND	500	100.00
6/7/2010	--	--	--	50	ND	500	100.00
6/16/2010	55	--	47	50	ND	500	100.00
6/23/2010	--	--	--	50	ND	500	100.00
6/29/2010	--	--	--	50	ND	500	100.00
7/6/2010	--	--	--	50	ND	500	100.00
7/14/2010	54	--	46	49	ND	500	100.00
7/22/2010	--	--	--	49	ND	500	100.00
7/28/2010	--	--	--	49	ND	500	100.00
8/4/2010	--	--	--	50	ND	500	100.00
8/11/2010	54	--	47	50	ND	500	100.00
8/19/2010	--	--	--	51	ND	500	100.00
8/26/2010	--	--	--	51	ND	500	100.00
9/1/2010	--	--	--	51	ND	500	100.00
9/9/2010	--	--	--	52	ND	500	100.00
9/15/2010	56	--	48	51	ND	500	100.00
9/21/2010	--	--	--	49	ND	500	100.00
9/29/2010	--	--	--	49	ND	500	100.00
10/7/2010	--	--	--	48	ND	500	100.00
10/12/2010	--	--	--	49	ND	500	100.00
10/20/2010	--	--	47	47	ND	500	100.00
12/3/2010	--	--	--	45	ND	500	100.00
12/8/2010	--	--	--	46	ND	500	100.00
12/15/2010	--	--	47	47	ND	500	100.00
12/20/2010	--	--	--	46	ND	500	100.00
12/29/2010	54	--	--	51	ND	500	100.00
AVERAGE	54	--	47	49	ND		99.89
MINIMUM	53	--	45	45	ND		95.00
MAXIMUM	56	--	48	52	2.3		100.00

Notes:
Units in milligrams per liter (mg/l)
SMCL = secondary maximum contaminant level
1/ Calculated using 0 mg/l for non-detectable results
ND: Indicates result of less than the detection level of 0.5 mg/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 12
N-Nitrosodimethylamine (NDMA) Concentrations
January 2010 through December 2010

DATE	Raw Water Well SA1-1	Raw Water Well SA1-2	Raw Water Lante	Treated Water Effluent	NL (10 ng/l)	Removal Efficiency, % 1/
1/6/2010	--	--	--	ND	10	100.00
1/12/2010	ND	--	--	--	--	--
1/13/2010	--	--	--	ND	10	100.00
1/19/2010	--	--	23	ND	10	100.00
1/26/2010	--	--	--	ND	10	100.00
2/2/2010	--	--	--	ND	10	100.00
2/9/2010	--	--	--	ND	10	100.00
2/17/2010	--	--	--	ND	10	100.00
2/23/2010	ND	--	26	ND	10	100.00
3/2/2010	--	--	--	ND	10	100.00
3/11/2010	ND	--	24	ND	10	100.00
3/16/2010	--	--	--	ND	10	100.00
3/23/2010	--	--	--	ND	10	100.00
3/30/2010	--	--	--	ND	10	100.00
4/8/2010	--	--	--	ND	10	100.00
4/14/2010	--	--	--	ND	10	100.00
4/20/2010	ND	--	26	ND	10	100.00
4/27/2010	--	--	--	ND	10	100.00
5/5/2010	--	--	--	ND	10	100.00
5/11/2010	--	--	--	ND	10	100.00
5/18/2010	ND	--	37	ND	10	100.00
5/25/2010	--	--	--	ND	10	100.00
6/2/2010	--	--	--	ND	10	100.00
6/7/2010	--	--	--	ND	10	100.00
6/16/2010	ND	--	34	ND	10	100.00
6/23/2010	--	--	--	ND	10	100.00
6/29/2010	--	--	--	ND	10	100.00
7/6/2010	--	--	--	ND	10	100.00
7/14/2010	ND	--	27	ND	10	100.00
7/22/2010	--	--	--	ND	10	100.00
7/28/2010	--	--	--	ND	10	100.00
8/4/2010	--	--	--	ND	10	100.00
8/11/2010	ND	--	27	ND	10	100.00
8/19/2010	--	--	--	ND	10	100.00
8/26/2010	--	--	--	ND	10	100.00
9/1/2010	--	--	--	ND	10	100.00
9/9/2010	--	--	--	ND	10	100.00
9/15/2010	ND	--	18	ND	10	100.00
9/21/2010	--	--	--	ND	10	100.00
9/29/2010	--	--	--	ND	10	100.00
10/7/2010	--	--	--	ND	10	100.00
10/12/2010	--	--	--	ND	10	100.00
10/20/2010	--	--	19	ND	10	100.00
12/3/2010	--	--	--	ND	10	100.00
12/8/2010	--	--	--	ND	10	100.00
12/15/2010	--	--	14	ND	10	100.00
12/20/2010	--	--	--	ND	10	100.00
12/29/2010	ND	--	--	ND	10	100.00
AVERAGE	ND	--	25	ND		100.00
MINIMUM	ND	--	14	ND		100.00
MAXIMUM	ND	--	37	ND		100.00

Notes:
Units in nanograms per liter (ng/l)
NL = notification level
1/ Calculated using 0 ng/l for non-detectable results
ND: Indicates result of less than the detection level of 2.0 ng/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 13
1,4-Dioxane Concentrations
January 2010 through December 2010

DATE	Raw Water Well SA1-1	Raw Water Well SA1-2	Raw Water Lante	Treated Water Effluent	NL (3 ug/l)	Removal Efficiency, % 1/
1/6/2010	--	--	--	ND	3	100.00
1/12/2010	1.2	--	--	--	--	--
1/13/2010	--	--	--	ND	3	100.00
1/19/2010	--	--	5.2	ND	3	100.00
1/26/2010	--	--	--	ND	3	100.00
2/2/2010	--	--	--	ND	3	100.00
2/9/2010	--	--	--	ND	3	100.00
2/17/2010	--	--	--	ND	3	100.00
2/23/2010	1.4	--	6.2	ND	3	100.00
3/2/2010	--	--	--	ND	3	100.00
3/11/2010	1.4	--	5.5	ND	3	100.00
3/16/2010	--	--	--	ND	3	100.00
3/23/2010	--	--	--	ND	3	100.00
3/30/2010	--	--	--	ND	3	100.00
4/8/2010	--	--	--	ND	3	100.00
4/14/2010	--	--	--	ND	3	100.00
4/20/2010	6.0	--	ND	ND	3	100.00
4/27/2010	--	--	--	ND	3	100.00
5/5/2010	--	--	--	ND	3	100.00
5/11/2010	--	--	--	ND	3	100.00
5/18/2010	3.1	--	5.1	ND	3	100.00
5/25/2010	--	--	--	ND	3	100.00
6/2/2010	--	--	--	ND	3	100.00
6/7/2010	--	--	--	ND	3	100.00
6/16/2010	3.8	--	5.1	ND	3	100.00
6/23/2010	--	--	--	ND	3	100.00
6/29/2010	--	--	--	ND	3	100.00
7/6/2010	--	--	--	ND	3	100.00
7/14/2010	3.6	--	5.1	ND	3	100.00
7/22/2010	--	--	--	ND	3	100.00
7/28/2010	--	--	--	ND	3	100.00
8/4/2010	--	--	--	ND	3	100.00
8/11/2010	3.0	--	4.7	ND	3	100.00
8/19/2010	--	--	--	ND	3	100.00
8/26/2010	--	--	--	ND	3	100.00
9/1/2010	--	--	--	ND	3	100.00
9/9/2010	--	--	--	ND	3	100.00
9/15/2010	2.2	--	4.4	ND	3	100.00
9/21/2010	--	--	--	ND	3	100.00
9/29/2010	--	--	--	ND	3	100.00
10/7/2010	--	--	--	ND	3	100.00
10/12/2010	--	--	--	ND	3	100.00
10/20/2010	--	--	3.1	ND	3	100.00
12/3/2010	--	--	--	ND	3	100.00
12/8/2010	--	--	--	ND	3	100.00
12/15/2010	--	--	4.0	ND	3	100.00
12/20/2010	--	--	--	ND	3	100.00
12/29/2010	1.3	--	--	ND	3	100.00
AVERAGE	2.7	--	4.8	ND		100.00
MINIMUM	1.2	--	ND	ND		100.00
MAXIMUM	6.0	--	6.2	ND		100.00

Notes:
Units in micrograms per liter (ug/l)
NL = notification level
1/ Calculated using 0 ug/l for non-detectable results
ND: Indicates result of less than the detection level of 0.5 ug/l
Well SA1-1 was not sampled when it was out of service in October 2010.
Well SA1-2 was not sampled when it was out of service from January 2010 through December 2010.
No samples were collected in November 2010 when the plant was out of service.

TABLE 14
ANNUAL RAW WATER AND TREATED WATER SAMPLING RESULTS

Contaminants	Unit	MCL	Raw Water			Treated Water	
			Well SA1-1 2/23/2010	Well SA1-2 2/23/2010*	Lante Well (SA1-3) 2/23/2010	SP-9 2/23/2010	SP-9 3/25/2010
Semi-Volatile Organic Compounds (SVOCs)							
All SVOCs	µg/l	--	ND	--	ND	ND	--
Tentatively-Identified Compounds (TICs)							
unknown #1 (possibly ketone)	µg/l	--	ND	--	ND	140	--
Unknown #10 (possibly carboxylic acid)	µg/l	--	ND	--	ND	3.6	--
UNKNOWN #11 (POSSIBLY ALCOHOL)	µg/l	--	ND	--	ND	21	--
unknown #12 (possibly Amine)	µg/l	--	ND	--	ND	3.5	--
unknown #2 (possibly Alkane)	µg/l	--	ND	--	ND	25	--
Unknown #3 (possible Alcohol)	µg/l	--	ND	--	ND	4.5	--
unknown #4 (possibly Alkane)	µg/l	--	ND	--	ND	5.7	--
Unknown #5 (possible Amine)	µg/l	--	ND	--	ND	16	--
unknown #6 (possibly ether)	µg/l	--	ND	--	ND	3.2	--
Unknown #7 (possible Ketone)	µg/l	--	ND	--	ND	24	--
UNKNOWN #8 (POSSIBLY KETONE)	µg/l	--	ND	--	ND	3.2	--
UNKNOWN #9 (POSSIBLY CARBOXYLIC ACID)	µg/l	--	ND	--	ND	5.9	--
unknown #1 (possibly ketone)	µg/l	--	--	--	--	--	86
Unknown #10 (possible indole)	µg/l	--	--	--	--	--	12
Unknown #11 (possible acetate)	µg/l	--	--	--	--	--	2.4
Unknown #12 (possible ketone)	µg/l	--	--	--	--	--	2.7
Unknown #13 (possible ketone)	µg/l	--	--	--	--	--	3.5
Unknown #14 (possible alcohol)	µg/l	--	--	--	--	--	2.6
unknown #15 (possibly Amine)	µg/l	--	--	--	--	--	2.3
Unknown #16	µg/l	--	--	--	--	--	3.6
unknown #2 (possibly Alkane)	µg/l	--	--	--	--	--	15
unknown #3 (possibly Alkane)	µg/l	--	--	--	--	--	2.7
Unknown #4 (possible aldehyde)	µg/l	--	--	--	--	--	16
Unknown #5 (possible ketone)	µg/l	--	--	--	--	--	5.2
Unknown #6 (possible ketone)	µg/l	--	--	--	--	--	11
Unknown #7	µg/l	--	--	--	--	--	5.1
Unknown #8 (possible carboxylic acid)	µg/l	--	--	--	--	--	6.6
UNKNOWN #9 (POSSIBLY CARBOXYLIC ACID)	µg/l	--	--	--	--	--	4.9

MCL = Maximum Contaminant Level
µg/l = micrograms per liter
ND= Not Detected
* Well SA1-2 was not in operation and therefore was not sampled.

TABLE 15
Sensitivity of Source Monitoring
January 2010 through December 2010

Contaminant	Units	Design Concentration	Well SA1-1 Operation Data		
			Minimum	Average	Maximum
Trichloroethylene (TCE)	ug/l	1000	0.66	1.1	1.6
Tetrachloroethylene (PCE)	ug/l	1000	1.4	2.3	2.9
Carbon Tetrachloride (CTC)	ug/l	10	ND	ND	ND
1,2-Dichloroethane (1,2-DCA)	ug/l	10	ND	ND	ND
1,1-Dichloroethylene (1,1-DCE)	ug/l	50	0.7	1.8	4.0
Cis-1,2-Dichloroethylene (Cis-1,2-DCE)	ug/l	50	ND	ND	ND
1,2,3-Trichloropropane (1,2,3-TCP)	ng/l	30 (1)	ND	ND	ND
Perchlorate	ug/l	350	7.6	10	13
Nitrate	mg/l	45 (2)	**77**	**80**	**84**
N-Nitrosodimethylamine (NDMA)	ng/l	3000	ND	ND	ND
1,4-Dioxane	ug/l	25	1.2	2.7	6.0

Contaminant	Units	Design Concentration	Well SA1-2 Operation Data		
			Minimum	Average	Maximum
TCE	ug/l	1000	--	--	--
PCE	ug/l	1000	--	--	--
CTC	ug/l	10	--	--	--
1,2-DCA	ug/l	10	--	--	--
1,1-DCE	ug/l	50	--	--	--
Cis-1,2-DCE	ug/l	50	--	--	--
1,2,3-TCP	ng/l	30 (1)	--	--	--
Perchlorate	ug/l	350	--	--	--
Nitrate	mg/l	45 (2)	--	--	--
NDMA	ng/l	3000	--	--	--
1,4-Dioxane	ug/l	25	--	--	--

Contaminant	Units	Design Concentration	Lante Well Operation Data		
			Minimum	Average	Maximum
TCE	ug/l	1000	48	100	160
PCE	ug/l	1000	170	300	440
CTC	ug/l	10	ND	1.1	1.5
1,2-DCA	ug/l	10	ND	0.59	0.71
1,1-DCE	ug/l	50	8	23	29
Cis-1,2-DCE	ug/l	50	5.4	12	17
1,2,3-TCP	ng/l	30 (1)	25	**34**	**60**
Perchlorate	ug/l	350	8.5	13	20
Nitrate	mg/l	45 (2)	35	37	40
NDMA	ng/l	3000	14	25	37
1,4-Dioxane	ug/l	25	ND	4.8	6.2

ug/l = micrograms per liter
mg/l = milligrams per liter
ng/l = nanograms per liter
ND= Not Detected

(1) The design concentration for 1,2,3-TCP is based on the concentration in the combined/partially-treated inflow to the LGAC treatment system and not in the wells. The maximum concentration of 1,2,3-TCP in the outflow from the air strippers was 58 ng/l (see Table 16). The LGAC treatment system is capable of treating 1,2,3-TCP to non-detectable levels.

(2) Maximum contaminant level for nitrate; no design concentration for nitrate; the ion exchange treatment system is capable of partial removal of nitrate

TABLE 16
1,2,3-Trichloropropane (1,2,3- TCP) Removal Efficiencies for Air Stripper Outflows
January 2010 through December 2010

	Combined AS	Treated Water Concentrations				Removal Efficiency (%)			
	Influent	**Effluent - AS 1**	**Effluent - AS 2**	**Effluent - AS 3**	**Effluent - AS 4**	**AS 1**	**AS 2**	**AS 3**	**AS 4**
DATE									
1/19/2010	17	8.7	8.9	--	9	48.8	47.6	--	47.1
2/23/2010	20	11	12	--	10	45.0	40.0	--	50.0
3/11/2010	18	10	9.9	--	11	44.4	45.0	--	38.9
4/20/2010	20	12	13	--	13	40.0	35.0	--	35.0
5/18/2010	26	15	13	--	15	42.3	50.0	--	42.3
6/16/2010	29	15	14	--	14	48.3	51.7	--	51.7
7/14/2010	20	13	14	--	13	35.0	30.0	--	35.0
8/11/2010	28	14	15	--	15	50.0	46.4	--	46.4
9/15/2010	23	13	11	--	14	43.5	52.2	--	39.1
10/20/2010	31	10	10	--	--	67.7	67.7	--	--
12/15/2010	58	19	18	--	21	67.2	69.0	--	63.8
AVERAGE	26	13	13	--	14	48.4	48.6	--	44.9
MINIMUM	17	8.7	8.9	--	9.0	35.0	30.0	--	35.0
MAXIMUM	58	19	18	--	21	67.7	69.0	--	63.8

Notes:
Units in nanograms per liter (ng/l)
AS = air stripper
-- Air stripper not in operation at time of sampling
Plant was out of service in November 2010