Investigation of Groundwater at Deep Eddy Pool

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SR-12-04; December 2011

In the drought of 2009, the yield of one of the two water wells used to feed Deep Eddy Pool approached zero. This resulted in a closure of a portion of the pool. We conducted a short-term groundwater monitoring investigation to evaluate the condition of the wells and the source(s) of the groundwater feeding them. Monitoring indicates that the downstream well is withdrawing shallow groundwater from alluvial deposits that are recharged by water from Lady Bird Lake. The groundwater from the upstream well originates from another shallow alluvial deposit that receives little to no recharge from the lake. Preliminary water chemistry data suggests that discharge from Northern Edwards Aquifer may be a possible source for this well. Also, these data indicate that the Deep Eddy wells show no sign of impacts to water quality other than what we would normally expect from any well in an urban setting. However, since little long term water chemistry data are available, additional monitoring is recommended. In addition, a boring program should be considered to resolve source formation questions and aid in the pool operation strategy. Alternate water supplies for Deep Eddy Pool including a deeper well into the Edwards should also be considered and discussed thoroughly with stakeholders. Additional hydrological studies including pump tests would be needed to assess alternate sources. Improving water filtration and disinfection technology could also aid in the long term operation of this popular City of Austin swimming facility.

Introduction

This report documents a preliminary evaluation of the sources and water quality of two wells at Deep Eddy pool. It was prepared for the Parks and Recreation Department (PARD) by the Watershed Protection Department (WPD) of the City of Austin, Texas. The investigation was initiated when the yield of one of the two water wells, the upstream well, approached zero during the extreme drought in summer of 2009. As the main supply water for the municipal swimming pool at Deep Eddy, the decrease in well yield resulted in the closure of a portion of the pool. The City of Austin's Watershed Protection Department (WPD) conducted a short-term groundwater monitoring investigation to evaluate the condition of the wells and the source(s) of the groundwater feeding them.

From the groundwater chemistry data collected by WPD, it appears that the Deep Eddy wells are supplied by two distinctly different shallow groundwater sources. The results from the in-situ monitoring and follow-up water chemistry analysis of well samples indicate that the downstream well, closest to the lake, is withdrawing shallow groundwater from alluvial deposits that are recharged by water from Lady Bird Lake. The groundwater from the upstream well originates from another shallow alluvial deposit that receives little to no recharge from the nearby

lake. The available water chemistry data suggest that discharge from Northern Edwards Aquifer may be a possible source with recharge originating upgradient in streams and diffuse karst features in the watershed. These findings are based on variations in concentration of water chemistry parameters and their responses to the daily fluctuations in the water elevation of Lady Bird Lake. Overall, the water chemistry results indicate that the groundwater at Deep Eddy shows no sign of impacts to the water quality at the wells other than what would normally be expected from any alluvial well in an urban setting.

The scope of the groundwater investigation performed by WPD included monitoring well levels over a 5 week period using DataSondes multiprobes dataloggers. In addition, field water quality parameters were collected by using silicone tubing as rope to lower a glass sampling jar down the large diameter well to collect water samples. Grab samples were collected on November 9th, 2009 and November 10th and laboratory analyses for water chemistry were conducted at the LCRA Environmental Services facility in Austin.

Site Location and Pool Characteristics

Deep Eddy Pool is located in West-Central Austin on the north side of Lady Bird Lake. The West-Central Austin area is defined as the area bounded by Lady Bird Lake in the South, 35th Street in the North, MoPac Expressway in the East, and Lake Austin in the West. Deep Eddy pool is adjacent to Lady Bird Lake at 401 Deep Eddy Avenue. The pool is one of the oldest swimming pools in Texas (THC, 2009). The pool is a 558,000 gallon public swimming pool and has been owned by PARD since 1935. About two-thirds of the pool is a shallow wading pool with a depth ranging from 9 inches to 4 feet. The volume of the shallow end is 248,000 gallons. The remaining portion is reserved for lap swimming and the depth ranges from 4 feet to 8 feet. The volume of the deep end is about 310,000 gallons. The pool volume calculations are provided in Appendix A. The City operates the pool as a non-chlorinated flow-through system using groundwater supplied by two large diameter wells; the upstream well (COA Field Sampling DataBase (FSDB) No. 759; State Well No. 58-42-904) and downstream well (COA FSDB No. 4522; State Well No 58-42-906). Based on historical photographs of Deep Eddy Pool from Austin Historical Museum, it appears that another well was located on hillside just northeast of the pool. This well supplied water to pool from 1916 to the mid-1920's. The well was abandoned when it was mostly likely destroyed in 1935 flooding of Colorado River. The current wells were likely constructed or repaired by City of Austin after they purchased the property in 1935.

The Deep Eddy wells are about 6-ft in diameter and are about 25-ft deep. The downstream well shaft is cased with 6-ft oval-shaped steel plating. Groundwater fills the well from a 4-ft diameter opening cut into the floor of well. The upstream well appears to be of similar age, likely constructed in similar fashion; however, there is 30-inch diameter and 20-ft long concrete pipe that extends below ground to a 5-ft void at the bottom of the well. The pipe obscures the view of the casing material. As a result, how the well casing was constructed is not known. A general schematic of wells are included in Appendix A. The current water-use estimate for the pool is about 800 acre-feet of water a year. Pool staff indicated that it takes about 10-hours to fill half of the pool; therefore, the pumping rate is estimated to be about 250 gallons per minute (gpm) per well. Both wells pump continuously to maintain the level and circulate water through the pool. The pumps are only turned off for a few hours to drain the pool for cleaning every two to three days.

Site Surface Geology

Normally, a site-specific subsurface geologic investigation would include several borings and boring log data interpretation. Because, due to time and funding constraints, this has not been completed at Deep Eddy Pool, the findings in this report will rely on the existing published surface geologic maps of the area. The Deep Eddy area is covered by published geologic maps. A detailed map was completed by Peter Rodda in 1970 (the Geologic map of the Austin West Quadrangle) and a second map was created by A.R. Trippet and L. E. Garner in1986 (Geology of the Austin Area, Texas). The maps differ slightly, due to a different layering interpretation used in their creation. Geology maps usually are lithofacies maps based on separating the rock layer or stratigraphy depending

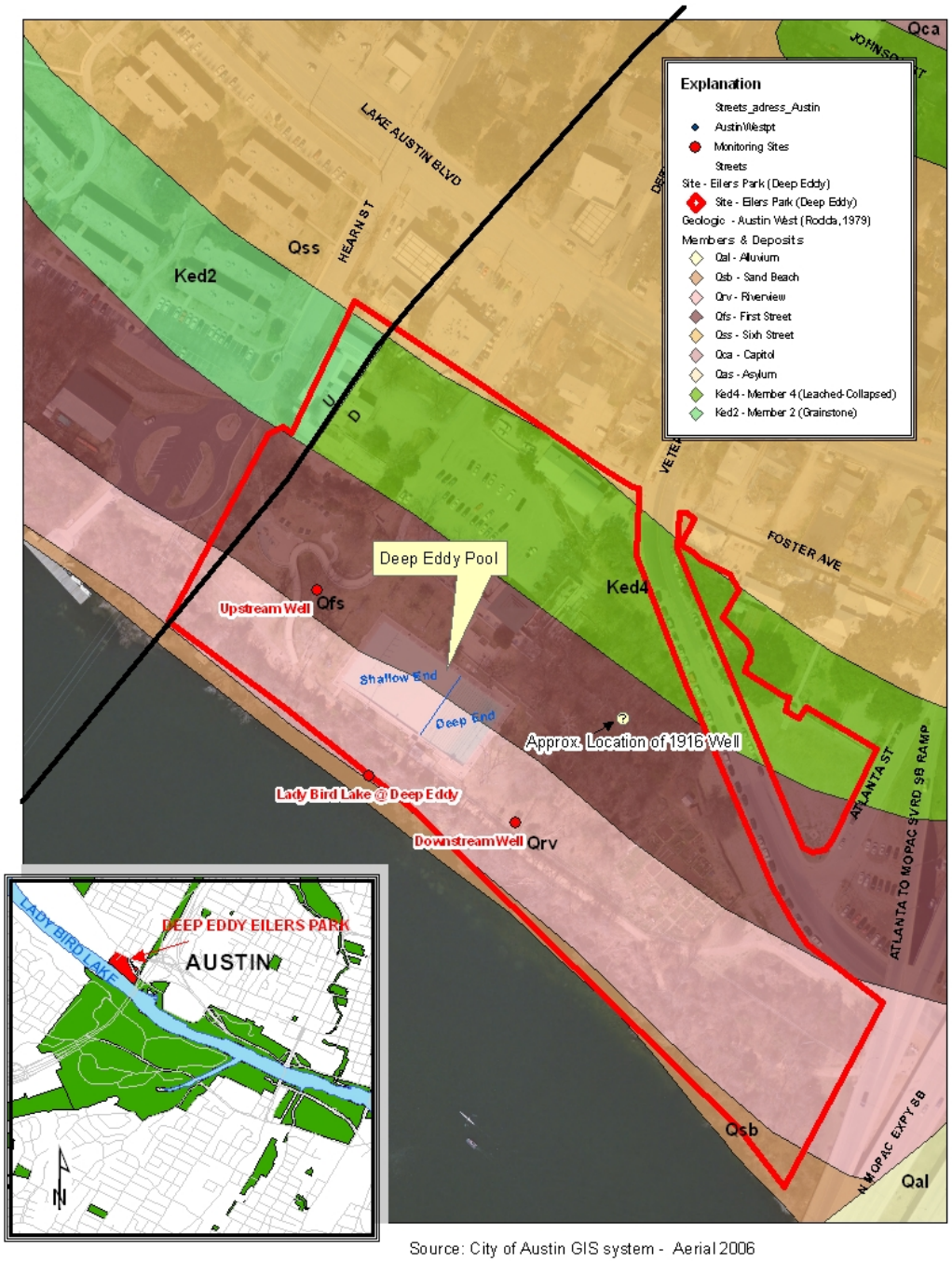
upon changes in composition and characteristics of rock units. The separation of these geologic formations and deposits varies depending on the method used and the degree to which a formation is subdivided by the geologist(s) who made the map. The advantage of Rodda's geologic map is that Quaternary-age Lower Colorado River Terrace Deposits are subdivided in more units compared to the map completed by Trippet and Garner. As each unit is characterized separately, this means Rodda's map provides more data for interpretation.

Geologic maps are also created by separating the rock units by hydrogeologic characteristics such as porosity and permeability resulting in separation into hydrostratigraphic units. A geologic map based on hydrostratigraphic units has not been completed for the West Central Austin area and the associated Northern Segment of the Edwards Aquifer. However, a geologic map based on the hydrostratigraphic units was produced by Ted Small and P. R. Rose for the Barton Springs Segment of the Edwards Aquifer (BSEA). Because hydrostratigraphic units give a better understanding of the movement and transport of groundwater, the Small/Rose map for the BSEA was used in this study. Though this map does not extend across Ladybird Lake, the hydrostratigraphic units were extrapolated into the Deep Eddy area.

Because the Rodda map gives a better understanding of the Colorado River Terrace Deposits, it was used in the study to determine the deposits in which the wells are situated. The Rodda map is shown in Figure 1.The map indicates five geologic units are present within the park, four units from the Quaternary-age Lower Colorado River Terrace Deposits and two members from the Cretaceous-age Edwards Formation. One normal fault is mapped along the western edge of the park within the Cretaceous-age rocks. The pool and well on the downthrown block or side of the fault. The orientation of strike of the fault is similar to the regional trend of the Balcones fault system of N 40° E. In the park, the fault is concealed by overlying terrace deposits. The terrace deposits overlie much of the Edwards Formation in the West-Central Austin area and extend north as far as 35th Street. Faults and most of the recharge features, such as caves and sinkholes, are concealed by this deposit and overlying impervious cover from urbanization. The upper and lower terrace deposits have been separated by Rodda into six deposits. From oldest to youngest these are: Asylum (Qas), Capitol (Qca), Sixth Street (Qss), First Street (Qfs), Riverview (Qrv), and Sand Beach (Qsb) (Rodda, 1979). The deposits are composed of mostly unconsolidated gravel, sand, silt, and clay. The Asylum and Sixth Street deposits are not present on site. All the alluvial units grade upward from coarse-grain to fine-grain (Garner and Young, 1976). The Sand Beach, Riverview and First Street terrace deposits are present on site. The lowest two, Sand Beach and Riverview, were frequently flooded before the construction of dams on the Colorado River in1930's. The lower units are continuous whereas the three oldest and highest units are dissected by local creeks and form isolated erosional outcrops that blanket the hilltops in the area. The lowest alluvial deposits, Sand Beach and Riverview, are exposed at or near the normal pool elevation of the Lake and are saturated with lake water. Since these units are recharged by Lady Bird Lake, they can supply large amounts of water to wells screened in them. Locally, these terrace deposits can form shallow aquifers that discharge water into tributaries of the Colorado River.

Two members of the Edwards Formation are mapped on the site: Members 2 and Member 4 (oldest to youngest). Member 2 is mapped in the northwest corner of the park where the aquatic administration buildings are located and is equivalent to the Grainstone hydrostratigraphic member. This member is 40-ft thick and overlies Member 1, which is the lowest member and estimated to be 200-ft thick. Member 1 includes Dolomitic and Kischeberg hydrostratigraphic members with the top of the member marked by the Kirscheberg Evaporite, which is about 20-ft thick and contains many major caves in the Austin Area such as Flint Ridge Cave. Member 4 is equivalent to the leached-collapsed hydrostratigraphic member. In the Austin area, caves and subsurface groundwater flow commonly occur in the Leached and Collapsed member. Airman's Cave and Austin Caverns are examples of two cave systems that are within to this member. Austin Caverns was once a show cave in West-Central Austin area, but is now sealed and no longer accessible.

Figure 1: Geology and Location Map



Source: City of Austin GIS system - Aerial 2006

Source Water Resources

Two potential groundwater sources are present in the Deep Eddy area: shallow and deep groundwater. The shallow groundwater is held within the terrace deposits recharged locally from infiltration of rainfall and connection with Ladybird Lake. The deeper groundwater source is the Edwards Formation recharged from further upgradient in the watershed and also delivered through alluvial terrace deposits.

The Deep Eddy wells are constructed in the terrace deposits and withdraw water from shallow groundwater. Water chemistry data indicates that the source of the groundwater varies for these alluvial deposits. The geologic map shows that the upstream well exists within the First Street (Qfs) alluvial deposit and the downstream well is constructed in the Riverview (Qrv) deposit (Figure 1). Considering that alluvial deposits along rivers can change in size and position and that these changes can be abrupt or gradual, both vertically and horizontally, geotechnical bores are needed to determine whether the surface geological interpretation is correct. Again, both of these deposits contain shallow unconfined aquifers providing groundwater in the Austin area. For example, the St. Elmo terrace deposit and similar deposits occurring along the Colorado River within its ancestral floodplain produces several small springs in the Austin area. These aquifers and springs are susceptible to decreases in water yield and water quality during droughts. The presence of groundwater within the same alluvial is a common construction problem in the downtown Austin area. Similarly, contamination of these shallow aquifers is also common in urbanized areas of Austin.

Below the alluvial deposits, the Northern Edwards Aquifer is the next available groundwater source. Members 2 (Grainstone member) and Member 4 (Leached-collapsed member) are also exposed at the surface on the Deep Eddy site. The Northern Edwards is an approximately 400-ft thick segment of the Edwards Aquifer that thins to north in Jollyville Plateau in northwest Austin to about 100-ft thick.

The area immediately around the site and the Colorado river watershed upstream from Austin has a lower overall impervious cover than the Northern Edwards aquifer recharge area immediately upgradient of the site. High conductivity is often associated with impacts from urbanization (City of Austin, 1993). As a result, the groundwater within Northern Edwards in this area has a higher conductivity than that observed in the lake. Thus, major ions and conductivity are potential indicators of Northern Edwards aquifer water. High conductivity readings in groundwater are sometimes attributed to poor groundwater circulation resulting from larger areas between faults in (Senger and others, 1990). The reduced circulation or transmissivity increases the groundwater dissolution reactions with the host rock resulting in high concentrations of some of the major ions that occur in groundwater. According to the Texas Water Development Board Water Information Integration & Dissemination (WIID) database, there are at least nine wells in the Edwards Aquifer in the West-Central Austin area. Samples from most of these wells have only been taken in the 1940's or 1950's. The lack of recent water samples and completed boring logs increases uncertainty regarding water quality and quantity in this segment For this reason, a detailed hydrogeologic investigation should be completed to evaluate the Northern Edwards as a consistent water supply source for Deep Eddy .

The Trinity Aquifer is another potential local water supply source. The Trinity aquifer is within the Glen Rose Limestone Formation which underlies the Edwards Formation over 400-ft below surface. Due to the cost of drilling deeper wells it is probably unreasonable to anticipate the Trinity as a water supply source for Deep Eddy. The Texas Water Development Board database indicates no wells have been constructed in the Trinity Aquifer in the entire Tarrytown area of Austin including Deep Eddy pool.

Lady Bird Lake (aka: Town Lake) is the closest surface water supply. The Lake is used by the Lower Colorado River Authority to supply water and generate electricity. The lake level fluctuates daily by about 1-ft because of power generation activities at Tom Miller Dam. Also, LCRA supplies rice farmers with irrigation water and releases water downstream from October to March. The water quality of Lady Bird Lake has been intensively studied by City of Austin since 1991. In general, the water quality data indicate the lake is impacted by

urbanization of the watersheds that flow into the lake and during releases, from Colorado River water. Water Quality improves when water from upstream in Lake Travis is released into Lady Bird Lake through Lake Austin. During periods of nonrelease and after rainfall events, the quality of lake water declines when urban runoff dominates flow into the lake. Trends for all water quality parameters are not consistent for every condition of release and runoff. Therefore, the overall forecast for changes in water quality for Lake Bird Lake as a source for Deep Eddy through the downstream alluvial well is unclear (COA, 2004).

Results from Continuous Monitoring Parameters

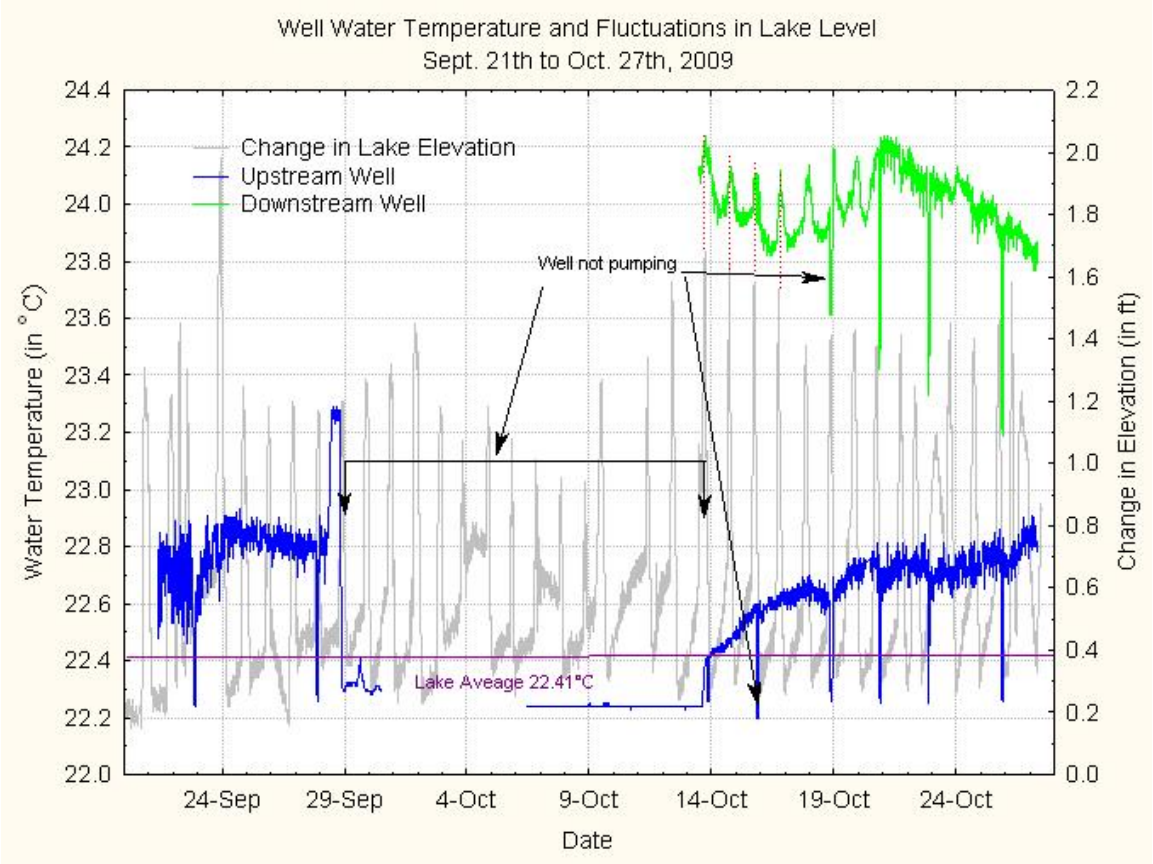
In-situ continuous monitoring of field parameters using DataSondes was completed at the upstream well for a five week period from September 21st to October 27th, 2009. The information collected was used to determine the possible source of the groundwater for the wells and to understand how the well water chemistry is affected by operating the wells and by the daily lake fluctuations. The downstream well was monitored from October 1st to October 27th, 2009. Five parameters were monitored every 15-minutes: water temperature, dissolved oxygen, conductivity, water level (or depth), and pH. In addition, rainfall and lake levels information data was downloaded from LCRA for the Longhorn Dam. During the sample period, a few problems occurred that interfered with data collection. The instrument deployed in the upstream well was accidentally removed from the well on September 29 for about 1 hour and 45 minutes. Also, the instrument stopped logging from September 30 at 12:00 PM to October 6th at 11:00 AM. When staff pulled the downstream DataSonde from the well on October 27th, it was fouled with silt. As a result some measurements are slightly skewed. A review of data logging indicates that the instrument became fouled on October 25th at 10:00 PM.

Water Temperature

Since temperature was recorded for both wells using the DataSonde, and water temperature can be an indicator of the source of groundwater, these data were evaluated for Deep Eddy. The temperature of water typically changes slowly as it migrates through the subsurface and water has a high specific heat capacity (absorbs a large amount of heat energy from the environment and stores it); therefore, water temperature can be used to trace seasonal fluctuations of recharging surface water and upwelling of deep confined groundwater. In the winter time, water temperature of spring water will be warmer than ambient surface water temperature. In shallow aquifers recharged by lake water, water temperatures will fluctuate seasonally with the changes in ambient surface water temperature.

The water temperature data for upstream and downstream wells from in-situ monitoring are shown in Figure 2. The sharp drops in temperature seen in both wells are a result of having the well pumps turned-off for routine cleaning of the pool. The upstream well pump was turned off for a 2-week period from September 29th to October 13th to see whether the water chemistry changed significantly and how quickly the water table recovered from the effects of groundwater withdraws. The average water temperature for the upstream well is 22.6°C ±0.25°C. The average water temperature for the downstream well is 24.0°C ±0.13°C, which is similar to the average value for Lady Bird Lake of 23.5°C ± 1.71°C for the months of September and October. The upstream well averaged over this monitoring period is 2.6°C colder than the downstream well. When groundwater is not being withdrawn from the upstream well, the water temperature decreases to about of 22.2°C. The same is not true of the downstream well. Its water temperature remains warmer than the upstream well's water temperature and it oscillates with the daily changes in lake elevation.

Figure 2



The water temperature in the downstream well oscillated with the daily fluctuation of lake levels even when the pump was on, and peaks in water temperature corresponded to peaks in lake elevation. This trend is clearly seen from the October 13th to October 21st period with downward drop in water temperature corresponding to upward spikes in daily lake elevation. The fluctuations in water temperature with change in lake elevation occur during both periods of pumping and no pumping. This same corresponding variation is not as strong during periods of groundwater withdraws in the last-half of the record from October 21st through October 27th. The reduction in response is attributed to rainfall runoff and the fouling of the instrument from silt accumulating on some of the probes during its deployment. This same water temperature response is not seen in the upstream well. This lack of response to pulsing of lake levels and the 2.6°C lower average water temperature suggests that the upstream well is not situated in the same alluvial deposit as the downstream well and if the geologic map is correct that the water from the lake does not recharge the First Street Alluvial Deposit.

Specific Conductance

Specific Conductance (or conductivity) was also recorded for Deep Eddy wells and can be an indicator of the source of groundwater. Conductivity can differ greatly in groundwater according to the composition of the water recharging the aquifer and residence time for the groundwater to move through the aquifer. For example, the conductivity values at Old Mill Spring in the Barton Springs Segment of the Edwards Aquifer are very different compared to Main or Parthenia Barton Springs. This difference is attributed to leakage of saline water into the groundwater flow path route for Old Mill spring. As a result of this saline leakage, the conductivity values at Old Mill are greater than those observed at Barton Springs. As with water temperature, if the alluvial deposits are recharged by Lady Bird Lake, then the conductivity readings should be similar to the lake given an assumed short residence time.

The average conductivity reading for the downstream well is 630± 69-□S/cm, which is similar to the average conductivity of 596-□S/cm for Lady Bird Lake at Red Bud Isle since 1996 for the months of September and October. The average conductivity for in-situ data for the upstream well is 826-□S/cm, well above historical average for the lake (Figure 2). According to the WPD Field Sample Database (FSDB), since 1991, conductivity levels in the lake were only once in the in 800-□S/cm range. In August to December 1991, the City detected a saline slug of water in Lady Bird Lake at the Mopac (Loop1) bridge. This saline water was released from the Natural Dam Salt Lake in west Texas during 1987-89 and temporarily caused an increase in conductivity for the Highland Lake reservoirs as the saline inflow traveled downstream through the reservoir system (Raines and Rast, 1999). When groundwater is not being withdrawn from the upstream well, the average conductivity for the in-situ readings decrease to 690-□S/cm.

Conductivity values in both wells tend to drop during periods with no pumping as seen in the downward spikes in Figure 3. The behavior is consistent for both wells except for the last week of monitoring in the downstream well when conductivity spiked while the pumps are off (Figure 4). The cause of the increase is unknown, but may be due to silt fouling the probe during the instrument's deployment. Overall, the higher levels of conductivity observed in the upstream well compared to the downstream well indicate that the groundwater in the upstream well is derived from a different source. The similarities in average conductivity and the observed readings between the lake and the downstream well suggest that water from the lake is recharging the downstream well. In the upstream well, the higher conductivity reading indicates an alternate source for the groundwater at the well. Possible sources are shallow groundwater with longer residence time within the alluvium or water discharging from the Northern Edwards Aquifer through the alluvium. Historical data show that conductivity readings for Edwards wells in the West Austin Central Area range from 700-□S/cm to 1000-□S/cm (TWDB, 2009). The 826-□S/cm average conductivity observed during groundwater withdraws is within this range. However, during times of no groundwater withdraws the average conductivity decreases to levels that are higher then that of the lake. This suggests that at least two sources of groundwater unrelated to the lake are recharging the upstream well. This finding appears to be supported by the absence of oscillation of conductivity levels with daily changing lake levels.

Depth

As mentioned above, water depth in the well was a useful parameter to determine whether water levels in wells correlated to changes in the water level of Lady Bird Lake. As stated above, the water temperature and conductivity downstream varied with changes in lake elevation as seen in the daily oscillation in their concentrations. Weekly water level measurements indicated that during pumping, the cone of depression formed by the wells dropped the water level in both well to about a 1-ft below the elevation of the bottom of lake. Lake elevation data was obtained from the Lower Colorado River Authority for Lake Levels near Longhorn Dam (LCRA, 2009).

Dissolved Oxygen

The average dissolved oxygen concentrations for upstream and downstream wells are 1.79 mg/l± 0.21mg/l and 1.20 mg/l l± 0.08 mg/l, respectively. The 1.20 mg/l average is calculated after removing all the values collected from 10/25/2009 at 22:00 to 10/27/2009 7:45, when the DataSonde become fouled with silt. Again, as seen with water temperature and conductivity, the dissolved oxygen levels oscillate with fluctuations in the lake's. Oxygen is one of the major dissolved gasses in groundwater. At the water table dissolved oxygen is already depleted to less than half the value of that which is in the air (Appelo and Postma, 2006). As a result, groundwater usually has low concentrations of DO. As depth increases the dissolved oxygen levels decrease as well. water level elevations (Figure 5) indicating that the downstream well water is being recharged by Lady Bird Lake. The same response is not seen upstream suggesting that the groundwater in that well is not similar to that in the downstream well.

Figure 3

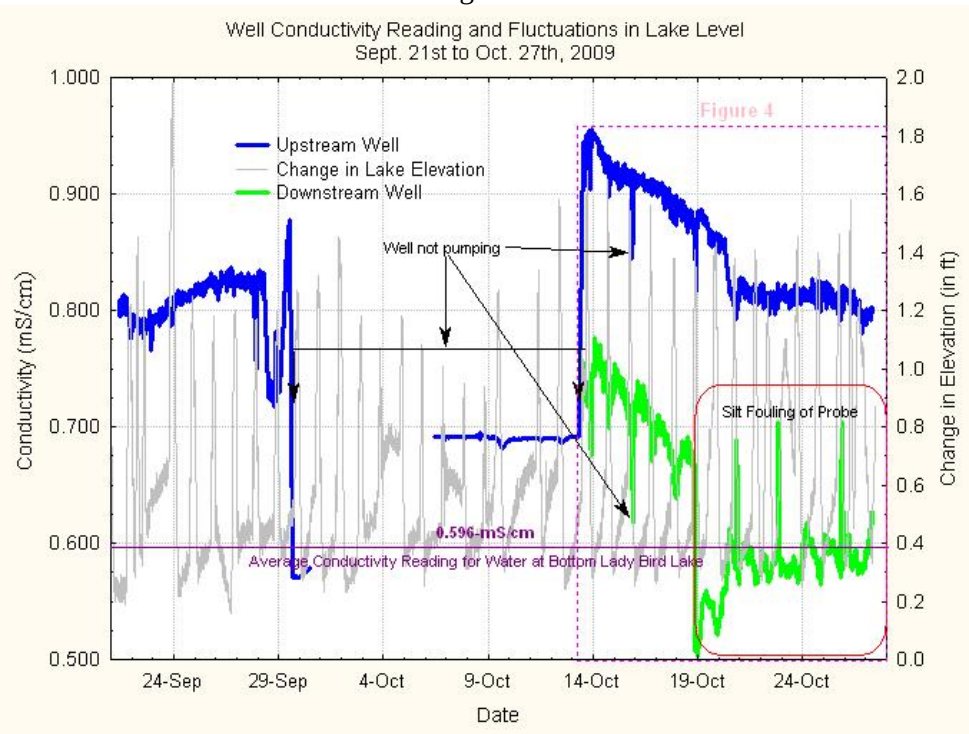
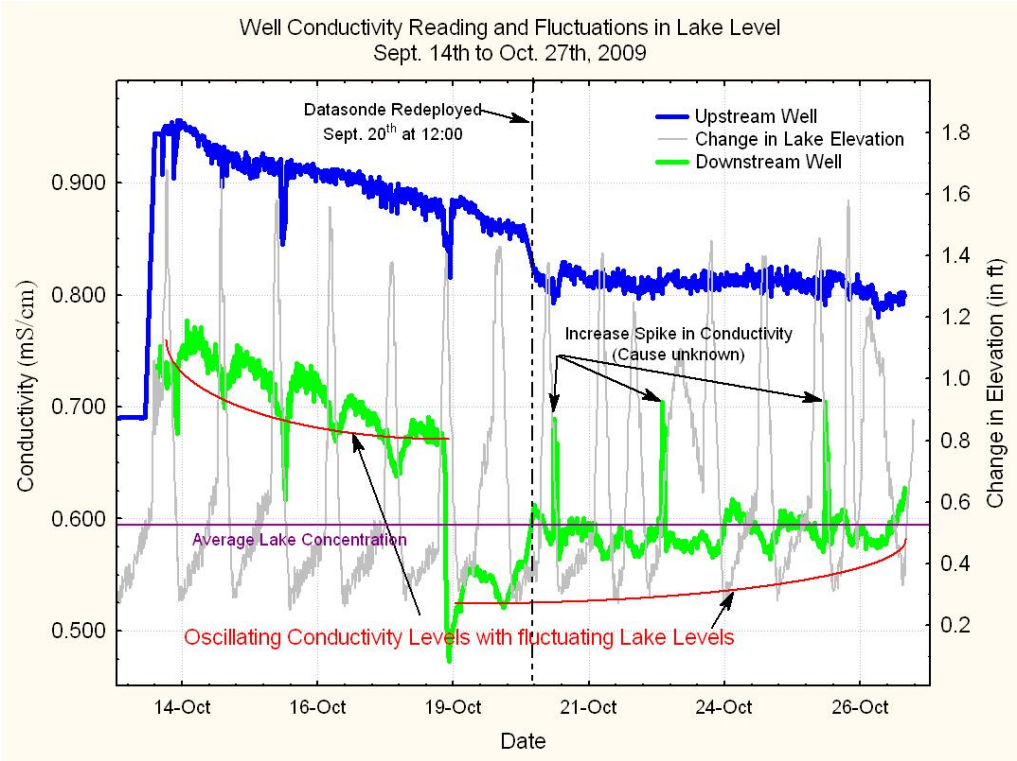


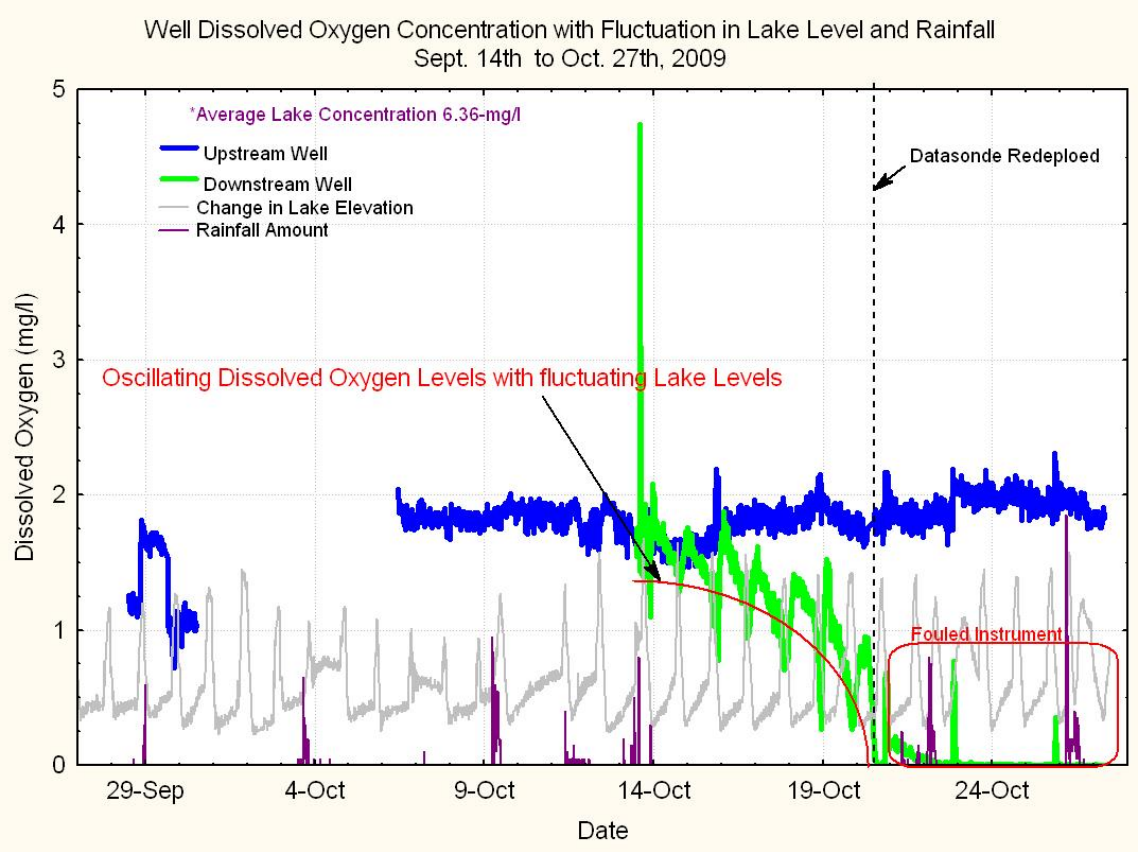
Figure 4



pH

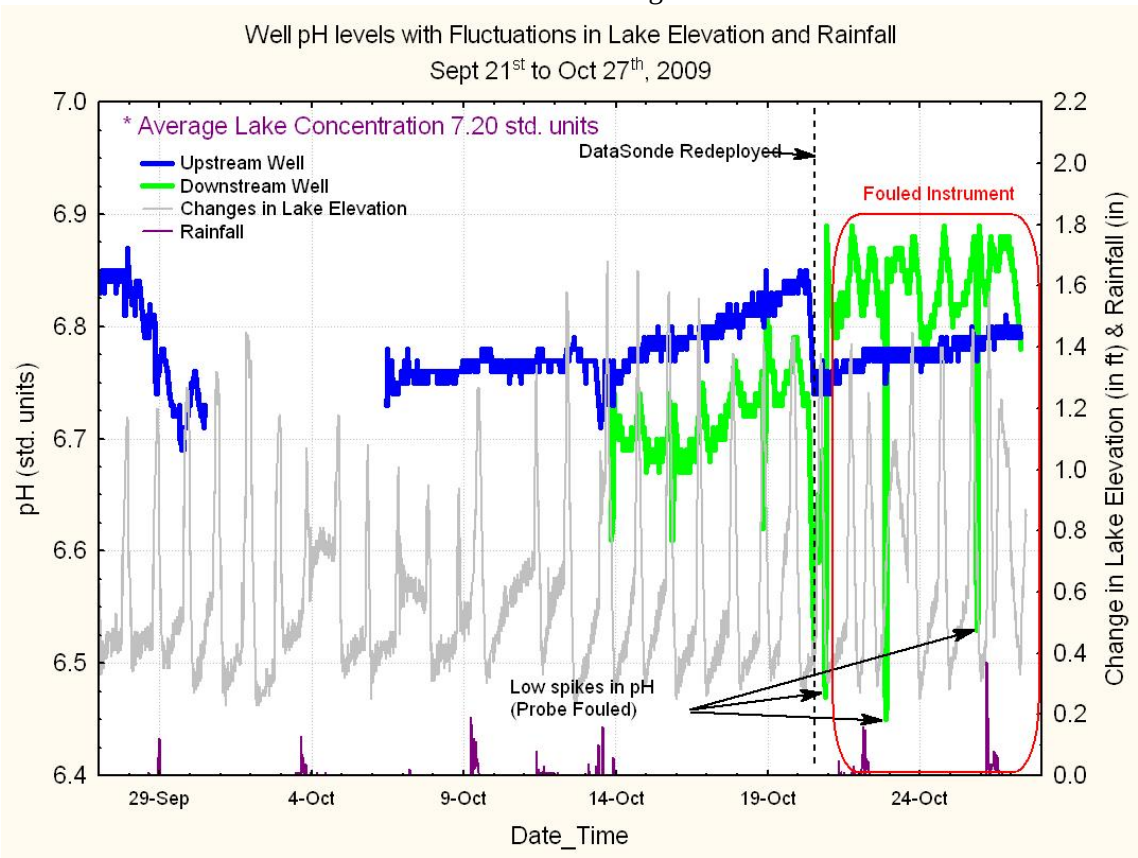
The pH readings for both wells are shown in Figure 6. The pH reading for the downstream well before Oct. 21st indicated the same cyclic pattern as with the other parameters, changing with daily fluctuations in lake elevation. Oscillation in readings is not seen upstream well also suggests that the groundwater source in that well is not similar to that in the downstream well.

Figure 5



pH is one of the important and widely used a water quality field parameters, because pH levels are influenced by many factors such as increase amounts of carbon dioxide, nitrogen oxides, and sulfur dioxide. pH is a excellent indicator of pollution like acid mine drainage. The pH of groundwater is related to the rock in which the water resides and usually is between 6.5 and 8.5. Changes in the pH of groundwater occur rather slowly, so sharp changes in pH are uncommon and are usually an indication of some type of equipment/sampling error. Drifts and instability in pH field measurements are attributed to three main sources: surface water from the stream flowing into the rock, instrument malfunction, and temperature imbalance between the water and the probe's electrodes (White, 1988). For example, the DataSonde is a multiprobe instrument and it is possible that the temperature probe could be fouled with sediment which would cause drift or inaccuracies in the readings.

Figure 6



Water Chemistry Monitoring of the Deep Eddy Wells

Very little water chemistry data has been collected at the two Deep Eddy wells. Since 1935, only four samples have been collected from the wells prior to this investigation. All historical data is provided in Appendix B. A summary of previous sample events is listed in Table 1.

Table 1

Date	Agency		Site	
	COA	TWDB	Upstream Well	Downstream Well
2/19/1941		X	X	X
8/3/1954		X		
5/16/1996	X			
3/16/2009		X	X	
09-21-2009 to 10-27-2009*	X		X	
10-12-2009 to 10-27-2009*				X
11/9/2009	X		X	X
10/10/2009	X		X	

Due to lack of historical baseline data, groundwater samples were collected at both wells were sampled on November 9th, 2009. The upstream well was sampled again on November 10th, 2009 with the well pump turned off to determine whether the water chemistry changed due to groundwater withdraws. The samples were analyzed using WPD's parameter suite that included: total petroleum hydrocarbons, volatiles, semi-volatiles, bromacil, chlorinated herbicides, oil & grease, organophosphate pesticides, total suspended solids, volatile suspended solids, alkalinity, orthophosphorus, nitrate plus nitrite nitrogen, ammonia nitrogen, total organic carbon, arsenic, copper, iron, lead, nickel, zinc, calcium, magnesium, sodium, potassium, strontium, chloride, fluoride, sulfate, total hardness, total coliform and *Escherichia coli*. (E. Coli). The bacteria result is listed below in Table 2 and remaining results are list in Appendix C. Since this is an extremely small data set, care should be used when evaluating water chemistry data from these sampling events. Such sampling events are snapshots of current groundwater quality for the ambient conditions present at the time of sampling. Sampling errors or lab contamination can occur during the collection or analysis of the samples yielding erroneous results. Based on the water chemistry samples taken on November 9th and 10th, 2009, the water quality of Deep Eddy wells is what one would expect for groundwater in an urban area (City of Ausitn, 1993). In general, their water chemistry results are similar to levels reported at Barton and Old Mill springs. Low levels of organic compounds were detected, but concentrations are similar to levels reported from wells in the Barton Springs Segment of the Edwards Aquifer by United States Geological Survey (USGS, 2006). The significant larger concentrations between Deep Eddy wells of NO_3+NO_2-N, total hardness, calcium (Ca^{2+}), and strontium (Sr^{2+}) supports the findings that groundwater at upstream well is from a different source or mixture of sources than that at the downstream well.

Nutrients

Nutrient concentrations in samples from Deep Eddy wells are at normal levels for urban springs in the Austin area. The 0.06-mg/l ammonia nitrogen concentration measured at the downstream well is elevated toward the upper end of the normal range <0.02 mg/l to 0.06 mg/l for rural groundwater, but it is not an abnormally-high value for urban groundwater. Nitrate plus nitrite nitrogen (NO_3+NO_2-N) and orthophosphate (OP) are all generally low and within the expected range for springs and wells in the Austin area. OP concentrations are at or below the detection limit of 0.02 mg/l. The NO_3+NO_2-N concentration reported is 1.81 mg/l at the upstream well and 0.3 mg/l at the downstream well. The 0.3 mg/l NO_3+NO_2-N concentration at the downstream well is comparable to levels observed in Lake Bird Lake. The 1.81 mg/l at the upstream well is slightly higher than average concentration typically observed at Barton Springs, which has an average concentration of 1.34 mg/l ±0.23 (City of Austin, 2009).

Ions

Major ions and metal concentrations are also within normal ranges of values observed in the Austin area. Two ions showed concentration between the wells. Calcium (Ca^{2+}) and strontium (Sr^{2+}) concentrations are higher in the upstream well compared to the downstream well. Hardness shows a similar difference in its concentration between the wells. Since a major component of hardness is Ca^{2+}, this finding is not surprising. The calcium concentrations are 120 mg/l and 70 mg/l at the upstream and downstream wells, respectively. Strontium is a divalent cation that readily substitutes for Ca^{2+} in carbonates, sulphates, feldspars and other rock-forming minerals. Like Ca^{2+}, it precipitates in water-rock reactions, and is a minor component of most groundwaters. The Sr^{2+} levels are 792-□g/l and 556-□g/l at the upstream and downstream wells, respectively. At the upstream well, no significant change in Sr^{2+} levels was observed between the samples collected during groundwater withdraw (Nov.9th sample) and no withdraw periods (Nov. 10th).

In mid 1970, the USGS measured Sr^{2+} in lake water from Lady Bird Lake. The average Sr^{2+}concentration was 493-□g/l, relatively close to the 556-□g/l measured at the downstream well. However, additional sampling for Sr^{2+} at the lake and wells is needed to confirm this relationship. In addition, Sr^{87}/Sr^{86} isotope sampling could verify the groundwater at the downstream well is recharged by the lake and also confirm whether the groundwater upstream is recharged by leakage from the Northern Edwards Aquifer. Recent research with Sr^{87}/Sr^{86} isotopes has

shown a relationship between Sr^{87}/Sr^{86} isotopes ratios and groundwater source. Water from the Edwards Aquifer has a lower concentration compared to water from Colorado River (Garcia-Fresca, B., 2004).

Bacteria

Total coliform and *Escherichia coli* measurements from both well, the pool and lake are listed in Table 3.

Table 3

	li	l Coliform
p Eddy Downstream Well		2
p Eddy Pool		
p Eddy Upstream Well		
n Lake @ Deep Eddy	9	19.6

The results show very low levels of bacteria in the wells and pool. The downstream well's levels are slightly higher than those of the upstream well. The elevated level is attributed to the fact that water downstream is recharged by the lake. It appears that the clay, silt, sand, and gravel of the Riverview deposit filter a large percentage (but not all) of the bacteria out of the lake water recharging the well.

A suite of 8 chlorinated herbicides and 9 organophosphate pesticides were analyzed. No pesticides or herbicides were detected.

A suite of 57 volatile organic compounds (VOC) and 94 semivolatile compounds (SVOC) was analyzed at both wells. Three VOCs; chloromethane, chloroform, and trichloroethylene (TCE) were reported as an "estimate" because, in environmental laboratory terminology, it is above the analysis method detection limit (MDL) and below the practicable quantitation limit (PQL). This means that there are extremely low concentrations present in the sample, but there is a higher degree of uncertainty in regards to the level reported. Bis(2-ethylhexyl)phthalate was detected at 12.8 □g/l in the downstream well. This was the only SVOC detected at a quantifiable level. Since the detected VOCs and SVOCs are also common lab contaminants, additional sampling is necessary to confirm the results.

Total petroleum hydrocarbons were analyzed using Texas Commission for Environmental Quality method 1005-TPH. The two values reported are for carbon ranges C6-C12 and >C28-C35 at 0.6 mg/l and 0.7mg/l, respectively. The C6-C12 carbon range is associated with hydrocarbons such as gasoline, naphthas, stoddard solvent and kerosene/jet fuel. The >C28 to C35 hydrocarbons are typical lubricating oils like motor oil and grease. The TCEQ 1005 analysis method yielded similar reporting values at Barton, Eliza, and Old Mills springs from 2002 to 2009. This level is not unusual for wells and springs in urban settings (City of Austin, 2009).

Discussion

Understanding the site geology and the response of the underlying aquifer to groundwater withdraws is important in understanding the hydrology of the Deep Eddy wells. The type of rock, the layering of rock units (stratigraphy), the faulting and folding of underlying rocks all can influence the movement and storage of groundwater. Wells completed in unconfined shallow alluvial aquifers like at Deep Eddy have a cone of depression that expands very slowly. As a well is pumped, the cone of depression will expand in a radial fashion until a point of equilibrium is reached between the amount of water released from storage from the alluvial material within the aquifer and rate of pumping. From a hydrogeologic standpoint, the storage equals the specific yield of aquifer material. If recharge is equal to wells pumping rate, the elevation of water table will not change. On the other hand, dewatering of the aquifer results in a decrease in the transmissivity of the water, this, in turn, causes an increase in drawdown both

in the well and the aquifer (US EPA, 1991). As a result, the wells are vulnerable to over-pumping and droughts. In addition, shallow aquifers and wells are more susceptible to contamination due to close proximity anthropogenic sources such as urbanization.

The biggest problem with understanding Deep Eddy's site hydrology is that not much research has been conducted on the shallow groundwater systems or the Northern Edwards Aquifer in the West Central Austin area. The in-situ monitoring and water chemistry sampling of the Deep Eddy wells provides some insight into the shallow aquifer system, but additional investigations of the water quality and hydrology of the groundwater in this area are still necessary.

The in-situ water chemistry monitoring clearly indicates that the lower alluvial deposits, the Riverview and Sand Beach deposits, are recharged by Lady Bird Lake as shown in the oscillation of water temperature, conductivity, pH, and dissolved oxygen. In addition, the average values of these constituents were found to be different between the upstream and downstream wells.

The limited water chemistry data also indicates that the source of groundwater is different for the two wells, and the groundwater at Deep Eddy shows no sign of impacts to the water quality at the wells other than what we would normally expect for urban groundwater. The future of groundwater quality at Deep Eddy is unknown; impacts to its water quality from the pressures of urbanization will continue. Redevelopment of the Brackridge may result in higher impervious cover that might affect water quality and water quantity of shallow groundwater in alluvial aquifer. Routine monitoring of the wells should be considered. The World Health Organization recommends weekly bacteria sample of natural bathing areas (WHO, 2006).

Conclusions

The following conclusions were developed from data analysis and review of geologic mapping for the Deep Eddy area:

- Data from in-situ and follow-up comprehensive water chemistry monitoring indicates that the downstream well, the well closest to the lake, is withdrawing shallow groundwater from alluvial deposits that are recharged by water from Lady Bird Lake.

- The groundwater from the upstream well originates from another shallow alluvial deposit that receives little to no recharge from the nearby lake. Preliminary water chemistry data suggests that discharge from Northern Edwards Aquifer may be a possible source.

- The difference in sources is evidenced by variations and response of water temperature, specific conductance, dissolved oxygen, and pH at well with the daily fluctuations in the water elevation of Lady Bird Lake.

- Overall, the comprehensive water chemistry results indicate that the groundwater at Deep Eddy shows no sign of impacts to the water quality at the wells other than what we would normally expect from any well in an urban setting.

- Water chemistry, especially calcium and strontium ion concentrations at the well are significantly different, supporting the finding that the source of water recharging the wells is also different.

Recommendations

The following recommendations can be made on the basis of the short term investigation by WPD. Additional recommendations may be appropriate concerning upgrades to the wells and pump systems:

- It is recommended that, confirmation sampling be completed and, if necessary, routine monitoring of both wells for health related constituents such are bacteria and to verify the low-level VOC and SVOC detections. Although not a high priority, Sr^{87}/Sr^{86} isotope sampling could verify that groundwater at the downstream well is recharged by the lake. From discussion with Texas Water Development Board (TWDB) staff, they will complete additional sampling. If TWDB is not able to collect the additional samples, then Watershed Protection will resample the wells.

- Due to the lack of subsurface geologic information for the alluvial deposits and underlying Edwards Formation, the completion of 3 to 6 geotechnical bores within the park would provide additional information to aid an investigation as to whether a deeper groundwater supply source is present. Conversion of the one or two bore holes to monitoring well would provide much need data on the water quality of the deeper Edwards Aquifer. At least one deep geotechnical boring completed is needed, if a deep Edwards Aquifer water source is used. This boring should completed at least 10-ft into the Glen Rose Limestone. The remaining bores should be completed at least 25-ft into the Edwards. Two bores should be located adjacent to the upstream and downstream wells. The deep boring should complete in between the wells on hillside and upslope.

- A decision matrix should be developed by the City and interested stake holders to discuss all possible options for selecting alternate water supplies for Deep Eddy Pool. Patrons of the pool have definite qualities they expect from the facilities that may influence what source is selected. Groundwater and surface water are at risk from impacts to their quality and quantity due to the effects of urbanization. During times of drought, this water supply may not be available or may be of poor quality. Construction of a well or wells into the deeper Edwards may provide a more stable water supply. However, the water quality and quantity of this aquifer in the West Central Austin area is poorly understood. Little to no water quality information exists for the Northern Edwards Aquifer in this area. It is possible that existing urbanization has already reduced the recharge to these aquifers and impacted their water quality. Additional hydrological studies including pump tests would be needed to assess potential sources. An important factor to consider is the type of filtration system for the pool. In addition, converting the pool to a closed system with nonchlorination filtration would offer one option that would better reflect water conservation goals. The water supply for the pool could be derived from a single or combination of water sources that included City drinking water, shallow groundwater, deep groundwater, and lake water. Several nonchlorination filtration systems exist and include but are not limited to Biguanide with Hydrogen Peroxide, ozone, and UV Systems. An innovative new pool filtration system could respond better to changing water supplies during future droughts. Developing a matrix of alternatives and pros/cons of each may supply a forum for public review and aid in the objective selection of the best option for future supplies.

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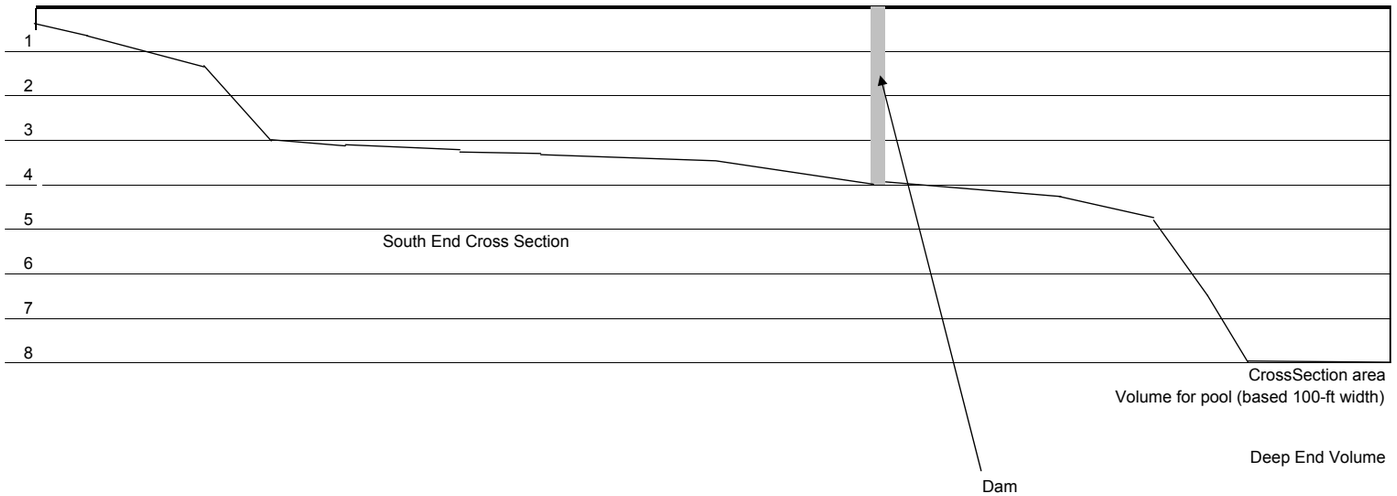
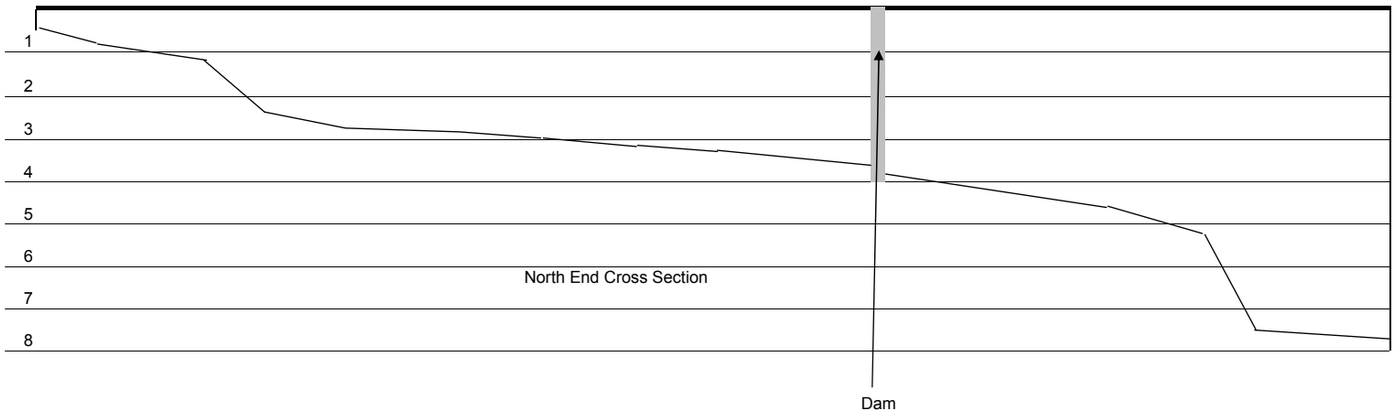
Appendix A Pool Calculations and Well Schematic



	198	ft
	195	ft
	177	ft
	172	ft
	169	ft
	167	ft
	136	ft
	84	ft
	50	ft
	36	ft
	33	ft
	31	ft
	29	ft
	27	ft
	25	ft
	22	ft
CrossSection area	776	ft2
Volume for pool (based 100-ft width)	77,550	ft3
	580,114	gal
Deep End Volume	319,044	gal

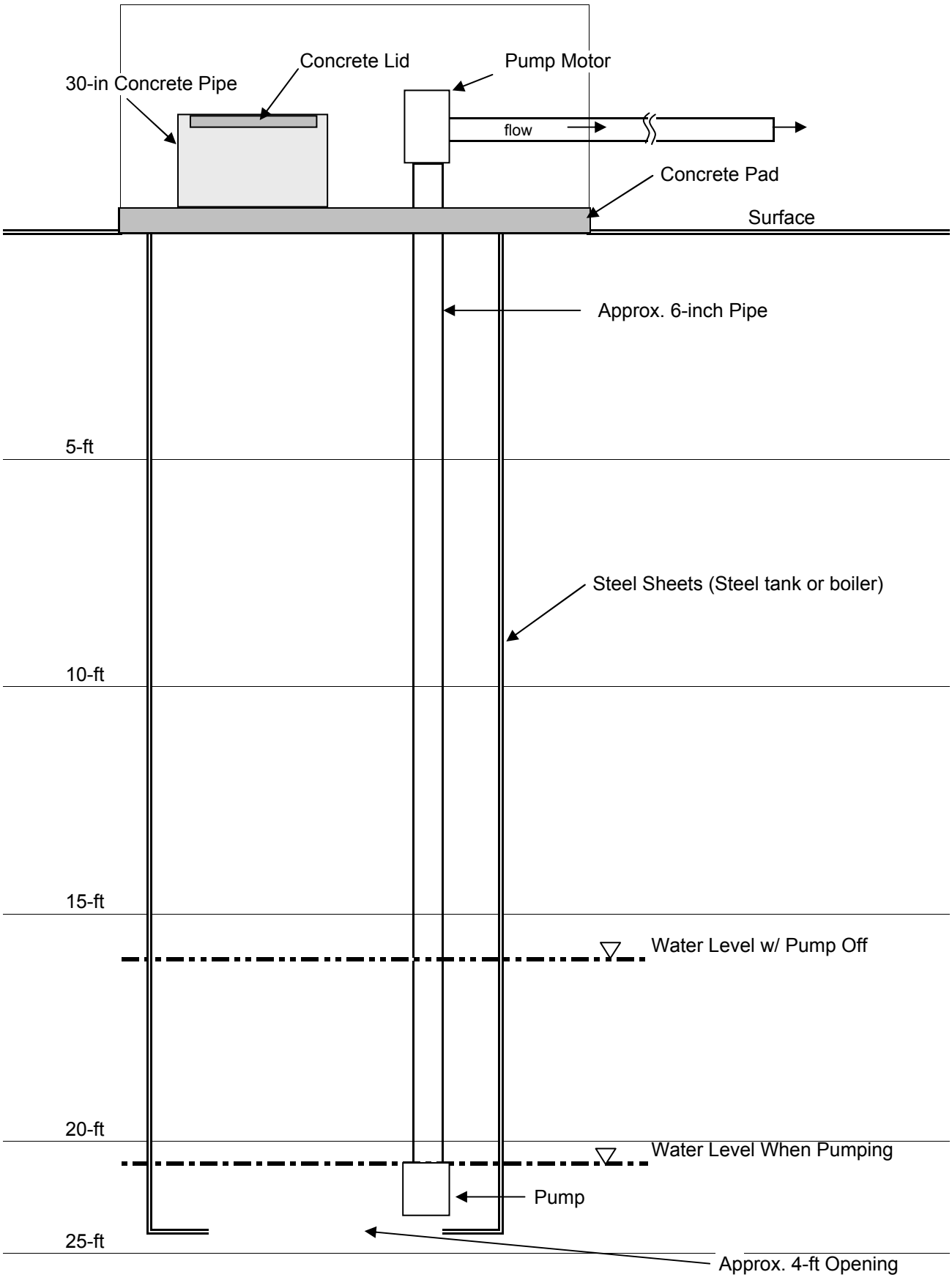


	198	ft
	195	ft
	174	ft
	170	ft
	166	ft
	151	ft
	98	ft
	75	ft
	50	ft
	36	ft
	28	ft
	26	ft
	24	ft
	22	ft
	21	ft
	0	ft
	717	ft2
	71,700	ft3
	536,353	gal
Deep End Volume	301,838	gal

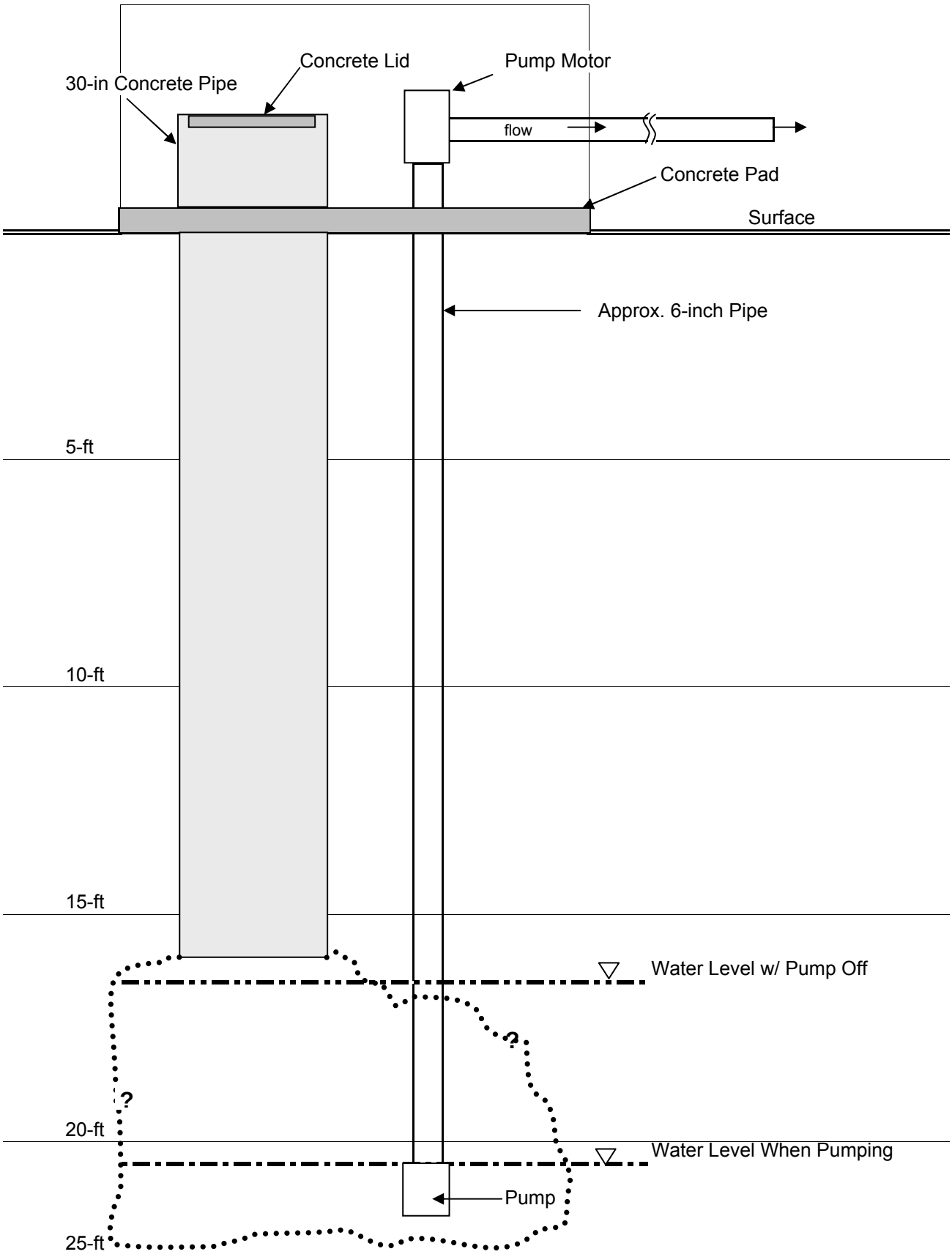
Total Pool Volume	74,625	ft3
	558,233	gal
Deep End Volume	310,441	gal
Shallow End Volume	247,792	gal
Collectively Both Well's Est. Pumping Rate	517	gpm
Est. Pumping Rate per Well	259	gpm

**** Based on report 10-hr Pool fill time for The Deep End***

Deep Eddy Downstream Well General Schematic



Deep Eddy Upstream Well General Schematic



Appendix B Historical Data

Texas Water Development Board Water Chemistry Data - WIID Website

http://wiid.twdb.state.tx.us/ims/wwm_drl/viewer.htm?DISCL=1

Upstream Well

No.	STATE WELL NUMBER	MONTH	DAY	YEAR	SAMPLE NUMBER	SAMPLE TIME	TEMPERATURE CELSIUS	TOP OF SAMPLED INTERVAL	BOTTOM OF SAMPLED INTERVAL	SAMPLED INTERVAL AQUIFER CODE	COLLECTION REMARKS	RELIABILITY REMARK	COLLECTING AGENCY	LAB CODE	BALANCED / UNBALANCED	SILICA MG/L	CALCIUM MG/L	MAGNESIUM MG/L	SODIUM MG/L	POTASSIUM MG/L	STRONTIUM MG/L
1	5842904	8	3	1954	1							4	3	2	U						
2	5842904	3	16	2009	1	1045	22				FAW	10	1	23	B	14.4	102	23.7	31.5	2.84	0.73

No.	STATE WELL NUMBER	MONTH	DAY	YEAR	SAMPLE NUMBER	SAMPLE TIME	CARBONATE MG/L	BICARBONATE MG/L	SULFATE MG/L	CHLORIDE MG/L	FLUORIDE MG/L	NITRATE ION MG/L	PH	TDS MG/L	PHENOLPHTHALEIN ALKALINITY	TOTAL ALKALINITY	TOTAL HARDNESS	PERECNT SODIUM	SAR	RSC	SPECIFIC CONDUCTANCE
1	5842904	8	3	1954	1		0	161	39				8.2		0	131.93					420
2	5842904	3	16	2009	1	1045	0	360	44.6	46.5	0.34	6.68	6.96	450	< 0	295	353	16	0.73	0	796

1.52 Nitrate-nitrogen

No.	STATE WELL NUMBER	PUBLISHABLE/ NON-PUBLISHABLE	DEPTH FROM LAND SURFACE	MONTH	DAY	YEAR	MEASUREMENT NUMBER	MEASURING AGENCY	METHOD OF MEASUREMENT	REMARK
1	5842904	P	-16.6	2	19	1941	1			

No.	STATE WELL NUMBER	REMARKS 1	REMARKS 2
1	5842904	Supplies swimming pool. Well H-67	in 1957 Travis County report.

No.	STATE WELL NUMBER	MONTH	DAY	YEAR	SAMPLE NUMBER	STORET CODE*	VALUE	PLUS MINUS
1	5842904	3	16	2009	1	TEMPERATURE, WATER (CELSIUS)	21.6	
2	5842904	3	16	2009	1	NITRITE PLUS NITRATE, DISSOLVED (MG/L AS N)	1.51	
3	5842904	3	16	2009	1	ARSENIC, DISSOLVED (UG/L AS AS)	< 2.04	
4	5842904	3	16	2009	1	BARIUM, DISSOLVED (UG/L AS BA)	112	
5	5842904	3	16	2009	1	BERYLLIUM, DISSOLVED (UG/L AS BE)	< 1.02	
6	5842904	3	16	2009	1	BORON, DISSOLVED (UG/L AS B)	105	
7	5842904	3	16	2009	1	CADMIUM, DISSOLVED (UG/L AS CD)	< 1.02	
8	5842904	3	16	2009	1	CHROMIUM, DISSOLVED (UG/L AS CR)	4.72	
9	5842904	3	16	2009	1	COBALT, DISSOLVED (UG/L AS CO)	< 1.02	
10	5842904	3	16	2009	1	COPPER, DISSOLVED (UG/L AS CU)	5.18	
11	5842904	3	16	2009	1	IRON, DISSOLVED (UG/L AS FE)	< 51	
12	5842904	3	16	2009	1	LEAD, DISSOLVED (UG/L AS PB)	1.53	
13	5842904	3	16	2009	1	MANGANESE, DISSOLVED (UG/L AS MN)	37.1	
14	5842904	3	16	2009	1	THALLIUM, DISSOLVED (UG/L AS TL)	< 1.02	
15	5842904	3	16	2009	1	MOLYBDENUM, DISSOLVED, UG/L	1.70	
16	5842904	3	16	2009	1	SILVER, DISSOLVED (UG/L AS AG)	1.89	
17	5842904	3	16	2009	1	STRONTIUM, DISSOLVED (UG/L AS SR)	727	
18	5842904	3	16	2009	1	VANADIUM, DISSOLVED (UG/L AS V)	3.05	
19	5842904	3	16	2009	1	ZINC, DISSOLVED (UG/L AS ZN)	7.18	
20	5842904	3	16	2009	1	ANTIMONY, DISSOLVED (UG/L AS SB)	< 1.02	
21	5842904	3	16	2009	1	ALUMINUM, DISSOLVED (UG/L AS AL)	< 4.08	
22	5842904	3	16	2009	1	LITHIUM, DISSOLVED (UG/L AS LI)	16.2	
23	5842904	3	16	2009	1	SELENIUM, DISSOLVED (UG/L AS SE)	< 4.08	
24	5842904	3	16	2009	1	ALPHA, DISSOLVED (PC/L)	15	8
25	5842904	3	16	2009	1	URANIUM, NATURAL, DISSOLVED, UG/L	< 1.02	
26	5842904	3	16	2009	1	ALKALINITY, FIELD, DISSOLVED AS CACO3	330	
27	5842904	3	16	2009	1	ANION/CATION RATIO BALANCE	1.85	
28	5842904	3	16	2009	1	BROMIDE, DISSOLVED, (MG/L AS BR)	0.24	
29	5842904	3	16	2009	1	MERCURY, DISSOLVED (UG/L AS HG)	< 0.200	

Texas Water Development Board Water Chemistry Data - WIID Website

http://wiid.twdb.state.tx.us/ims/wwm_drl/viewer.htm?DISCL=1

Downstream Well

No.	STATE WELL NUMBER	PUBLISHABLE/ NON-PUBLISHABLE	DEPTH FROM LAND SURFACE	MONTH	DAY	YEAR	MEASUREMENT NUMBER	MEASURING AGENCY	METHOD OF MEASUREMENT	REMARK
1	5842906	P	-14.1	2	19	1941	1			

No.	STATE WELL NUMBER	REMARKS 1	REMARKS 2
1	5842906	Dug well. Supplies swimming pool.	Well H-66 in 1957 Travis County
2	5842906	report.	

City of Austin -Watershed Protection Department Water Chemistry Data

Upstream Well

REF NO	VISIT DATE	SAMPLE TIME	SAMPLE SITE NO	SITE TYPE	SITE NAME	SAMPLE TYPE	SAMPLE ID	LAB	PARAMETER	Q	RESULT	UNIT	FILTER	METHOD	QC FLAG
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	ALKALINITY (AS CACO3)		150	MG/L	Total	SM 2320 B	S
17483	15-May-96	1015	759	Well	Deep Eddy Well	field measurement	DEW960515	Field	PH		7.08	Standard units	N/A	HORIBA WATER QUALITY METER	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	FECAL COLIFORM BACTERIA	<	1	Colonies/100mL	N/A	SM 9222 D	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	ORGANIC CARBON	<	1	MG/L	Total	SM 5310 B	U
17483	15-May-96	1015	759	Well	Deep Eddy Well	field measurement	DEW960515	Field	TURBIDITY		0	NTU	N/A	HORIBA WATER QUALITY METER	U
17483	15-May-96	1015	759	Well	Deep Eddy Well	field measurement	DEW960515	Field	WATER TEMPERATURE		21.7	Deg. Celsius	N/A	HORIBA WATER QUALITY METER	U
20478	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	NDRC	CALCIUM		90.9	MG/L	Total	EPA 200.7	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	CHLORIDE		52.9	MG/L	Total	EPA 300	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	FLUORIDE		0.36	MG/L	Total	SM 4500-F	U
20478	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	NDRC	MAGNESIUM		21.1	MG/L	Total	EPA 200.7	U
20478	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	NDRC	POTASSIUM		2.88	MG/L	Total	EPA 200.7	U
20478	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	NDRC	SODIUM		37.4	MG/L	Total	EPA 200.7	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	SULFATE		48	MG/L	Total	EPA 300	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	ARSENIC	<	5	UG/L	Total	EPA 206.2	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	COPPER	<	2	UG/L	Total	EPA 220.2	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	IRON		0.053	MG/L	Total	EPA 236.1	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	LEAD		1	UG/L	Total	EPA 239.2	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	NICKEL	<	0.01	MG/L	Total	EPA 249.1	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	AMMONIA AS N	<	0.02	MG/L	Total	SM 4500-NH3 F	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	NITRATE/NITRITE AS N		1.54	MG/L	Total	EPA 353.2	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	ORTHOPHOSPHORUS AS P		0.03	MG/L	Total	SM 4500-P E	R
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	PHOSPHORUS AS P	<	0.02	MG/L	Total	SM 4500-P BE	R
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	TOTAL KJELDAHL NITROGEN AS N		0.15	MG/L	Total	EPA 351.4	U
17483	15-May-96	1015	759	Well	Deep Eddy Well	field measurement	DEW960515	Field	DISSOLVED OXYGEN		3.6	MG/L	Dissolved	HORIBA WATER QUALITY METER	U
17483	15-May-96	1015	759	Well	Deep Eddy Well	field measurement	DEW960515	Field	CONDUCTIVITY		726	uS/cm	N/A	HORIBA WATER QUALITY METER	U
17819	15-May-96	1015	759	Well	Deep Eddy Well	Grab	DEW960515	WWW	TOTAL SUSPENDED SOLIDS	<	0.5	MG/L	Suspended	SM 2540 D	U

Deep Eddy Pool - Deep End

REF NO	VISIT DATE	SAMPLE TIME	SAMPLE SITE NO	SITE TYPE	SITE NAME	SAMPLE TYPE	SAMPLE ID	LAB	PARAMETER	Q	RESULT	UNIT	FILTER	METHOD	QC FLAG
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	ARSENIC	<	10	UG/L	Total	EPA 6020	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	CADMIUM	<	1	UG/L	Total	EPA 6020	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	COPPER	<	10	UG/L	Total	EPA 6020	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	LEAD	<	3	UG/L	Total	EPA 6020	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	MERCURY	<	0.2	UG/L	Total	EPA 7470A	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	ZINC	<	10	UG/L	Total	EPA 6020	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	ACENAPHTHENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	ACENAPHTHYLENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	ANTHRACENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	BENZO(A)ANTHRACENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	BENZO(A)PYRENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	BENZO(B)FLUORANTHENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	BENZO(GHI)PERYLENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	BENZO(K)FLUORANTHENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	CHRYSENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	DIBENZ(AH)ANTHRACENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	FLUORANTHENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	FLUORENE (9H-FLUORENE)	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	INDENO(1_2_3-CD)PYRENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	NAPHTHALENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	PAH (POLYCYCLIC AROMATIC HYDROCARBONS)		0.0012	MG/L	N/A	Sediment Quality Guideline PAHs (13	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	PAH (POLYCYCLIC AROMATIC HYDROCARBONS)	<	0.0032	MG/L	N/A	Total PAH by COA Method (16 parame	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	PHENANTHRENE	<	0.2	UG/L	Total	EPA 8270C	U
218136	27-Jan-03	1320		Well	Deep Eddy Pool	Grab	Deep End, Pool	DHL	PYRENE	<	0.2	UG/L	Total	EPA 8270C	U

Final Analysis Report

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT: COA WPDR
Lab Order: 0911234
Project: Emergency Investigations
Lab ID: 0911234-001

Client Sample ID: 759-Deep Eddy Well U/S
Collection Date: 11/9/2009 10:40:00 AM
Matrix: GROUNDWATER
Tag No:

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
ORGANOPHOSPHORUS PESTICIDES			**SW8141A**		**(SW3520C)**		Analyst: **BC**
Ethyl Parathion	< 0.11		0.11	0.50	µg/L	1	11/12/2009 6:32:11 PM
Methyl parathion	< 0.13		0.13	0.50	µg/L	1	11/12/2009 6:32:11 PM
Azinphosmethyl	< 0.11		0.11	0.50	µg/L	1	11/12/2009 6:32:11 PM
Chloropyrifos	< 0.09		0.09	0.50	µg/L	1	11/12/2009 6:32:11 PM
Demeton, Total	< 0.17		0.17	0.50	µg/L	1	11/12/2009 6:32:11 PM
Demeton-O	< 0.15		0.15	0.50	µg/L	1	11/12/2009 6:32:11 PM
Demeton-S	< 0.13		0.13	0.50	µg/L	1	11/12/2009 6:32:11 PM
Diazinon	< 0.10		0.10	0.50	µg/L	1	11/12/2009 6:32:11 PM
Malathion	< 0.09		0.09	0.50	µg/L	1	11/12/2009 6:32:11 PM
Surr: Phorate	89.8		0	70-130	%REC	1	11/12/2009 6:32:11 PM
Surr: Triphenyl Phosphate	106		0	70-130	%REC	1	11/12/2009 6:32:11 PM
CHLORINATED HERBICIDES			**SW8151A**		**(SW8151A)**		Analyst: **CO**
2,4,5-T	< 0.17		0.17	0.50	µg/L	1	11/18/2009 1:05:30 PM
2,4,5-TP (Silvex)	< 0.19		0.19	0.50	µg/L	1	11/18/2009 1:05:30 PM
2,4-D	< 0.12		0.12	0.50	µg/L	1	11/18/2009 1:05:30 PM
Dalapon	< 0.17		0.17	0.50	µg/L	1	11/18/2009 1:05:30 PM
Dicamba	< 0.16		0.16	0.50	µg/L	1	11/18/2009 1:05:30 PM
Dinoseb	< 0.21		0.21	0.50	µg/L	1	11/18/2009 1:05:30 PM
Pentachlorophenol	< 0.15		0.15	0.50	µg/L	1	11/18/2009 1:05:30 PM
Picloram	< 0.11		0.11	0.50	µg/L	1	11/18/2009 1:05:30 PM
Surr: 2,4-DB	125		0.07	70-130	%REC	1	11/18/2009 1:05:30 PM
TNRCC METHOD 1005-TPH			**TX1005**		**(TX1005)**		Analyst: **SM**
>C12-C28	< 0.5	A	0.5	4.5	mg/L	1	11/19/2009 5:35:37 PM
>C28-C35	0.7	JA	0.1	4.5	mg/L	1	11/19/2009 5:35:37 PM
C6-C12	0.6	JA	0.5	4.5	mg/L	1	11/19/2009 5:35:37 PM
C6-C35	< 0.6		0.6	4.5	mg/L	1	11/19/2009 5:35:37 PM
Surr: a,a,a-Trifluorotoluene	99.7		0	70-130	%REC	1	11/19/2009 5:35:37 PM
Surr: o-Terphenyl	80.6		0	70-130	%REC	1	11/19/2009 5:35:37 PM
ICP METALS, TOTAL RECOVERABLE			**E200.7**				Analyst: **MV**
Calcium	120		0.0260	0.200	mg/L	1	11/16/2009 12:42:22 PM
Iron	0.0205	J	0.00290	0.0500	mg/L	1	11/16/2009 12:42:22 PM
Magnesium	25.1		0.0117	0.200	mg/L	1	11/16/2009 12:42:22 PM
Potassium	3.54		0.0537	0.200	mg/L	1	11/16/2009 12:42:22 PM
Sodium	37.1		0.0200	0.600	mg/L	1	11/16/2009 12:42:22 PM
ICPMS METALS, TOTAL RECOVERABLE			**E200.8**				Analyst: **SW**
Arsenic	1.07	J	0.643	2.00	µg/L	1	11/12/2009 11:26:30 AM

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	759-Deep Eddy Well U/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 10:40:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-001	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
ICPMS METALS, TOTAL RECOVERABLE			**E200.8**				Analyst: **SW**
Copper	0.668	J	0.086	2.00	µg/L	1	11/12/2009 11:26:30 AM
Lead	< 0.087		0.087	1.00	µg/L	1	11/12/2009 11:26:30 AM
Nickel	3.69		0.122	2.00	µg/L	1	11/12/2009 11:26:30 AM
Strontium	792		0.430	10.0	µg/L	10	11/12/2009 12:29:53 PM
Zinc	< 1.29		1.29	5.00	µg/L	1	11/12/2009 11:26:30 AM
HARDNESS, TOTAL			**SM2340 B**				Analyst: **MV**
Hardness, Calcium/Magnesium (As CaCO3)	404		0.065	1.32	mg/L	1	11/16/2009
ORGANIC COMPOUNDS			**E525.2**		**(E525.2)**		Analyst: **SG**
Bromacil	< 0.0409	A	0.0409	0.208	µg/L	1	11/12/2009 6:09:00 PM
Surr: 1,3-Dimethyl-2-nitrobenzene	95.0		0	70-130	%REC	1	11/12/2009 6:09:00 PM
Surr: Perylene-d12	78.6		0	70-130	%REC	1	11/12/2009 6:09:00 PM
Surr: Pyrene-d10	100		0	70-130	%REC	1	11/12/2009 6:09:00 PM
Surr: Triphenyl Phosphate	104		0	70-130	%REC	1	11/12/2009 6:09:00 PM
SEMIVOLATILE ORGANICS			**SW8270C**		**(SW3520C)**		Analyst: **CO**
1&2-Chloronaphthalene	< 1.27	A	1.27	10.0	µg/L	1	11/13/2009 4:53:00 AM
1,2,4,5-Tetrachlorobenzene	< 0.617		0.617	10.0	µg/L	1	11/13/2009 4:53:00 AM
1,2,4-Trichlorobenzene	< 0.585		0.585	5.00	µg/L	1	11/13/2009 4:53:00 AM
1,2-Dichlorobenzene	< 0.711		0.711	5.00	µg/L	1	11/13/2009 4:53:00 AM
1,2-Diphenylhydrazine	< 0.553		0.553	5.00	µg/L	1	11/13/2009 4:53:00 AM
1,3-Dichlorobenzene	< 0.764		0.764	5.00	µg/L	1	11/13/2009 4:53:00 AM
1,4-Dichlorobenzene	< 0.871		0.871	5.00	µg/L	1	11/13/2009 4:53:00 AM
1-Naphthylamine	< 0.932	A	0.932	10.0	µg/L	1	11/13/2009 4:53:00 AM
2,3,4,6-Tetrachlorophenol	< 1.19		1.19	10.0	µg/L	1	11/13/2009 4:53:00 AM
2,4,5-Trichlorophenol	< 0.861		0.861	6.00	µg/L	1	11/13/2009 4:53:00 AM
2,4,6-Trichlorophenol	< 0.614		0.614	5.00	µg/L	1	11/13/2009 4:53:00 AM
2,4-Dichlorophenol	< 0.768		0.768	5.00	µg/L	1	11/13/2009 4:53:00 AM
2,4-Dimethylphenol	< 0.785		0.785	5.00	µg/L	1	11/13/2009 4:53:00 AM
2,4-Dinitrophenol	< 1.12		1.12	50.0	µg/L	1	11/13/2009 4:53:00 AM
2,4-Dinitrotoluene	< 0.627		0.627	10.0	µg/L	1	11/13/2009 4:53:00 AM
2,6-Dichlorophenol	< 0.492		0.492	5.00	µg/L	1	11/13/2009 4:53:00 AM
2,6-Dinitrotoluene	< 0.712		0.712	5.00	µg/L	1	11/13/2009 4:53:00 AM
2-Chlorophenol	< 0.606		0.606	5.00	µg/L	1	11/13/2009 4:53:00 AM
2-Methylnaphthalene	< 0.542		0.542	5.00	µg/L	1	11/13/2009 4:53:00 AM
2-Methylphenol	< 0.633		0.633	5.00	µg/L	1	11/13/2009 4:53:00 AM
2-Naphthylamine	< 0.562		0.562	5.00	µg/L	1	11/13/2009 4:53:00 AM
2-Nitroaniline	< 0.929		0.929	5.00	µg/L	1	11/13/2009 4:53:00 AM
2-Nitrophenol	< 0.534		0.534	5.00	µg/L	1	11/13/2009 4:53:00 AM
2-Picoline	< 0.766		0.766	5.00	µg/L	1	11/13/2009 4:53:00 AM

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	759-Deep Eddy Well U/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 10:40:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-001	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS			**SW8270C**		**(SW3520C)**		Analyst: **CO**
3,3'-Dichlorobenzidine	< 0.886		0.886	5.00	µg/L	1	11/13/2009 4:53:00 AM
3-Methylcholanthrene	< 0.647		0.647	5.00	µg/L	1	11/13/2009 4:53:00 AM
3-Nitroaniline	< 0.640		0.640	5.00	µg/L	1	11/13/2009 4:53:00 AM
4,6-Dinitro-2-methylphenol	< 0.863		0.863	50.0	µg/L	1	11/13/2009 4:53:00 AM
4-Aminobiphenyl	< 0.632		0.632	5.00	µg/L	1	11/13/2009 4:53:00 AM
4-Bromophenyl phenyl ether	< 0.651		0.651	5.00	µg/L	1	11/13/2009 4:53:00 AM
4-Chloro-3-methylphenol	< 0.596		0.596	5.00	µg/L	1	11/13/2009 4:53:00 AM
4-Chloroaniline	< 1.07		1.07	5.00	µg/L	1	11/13/2009 4:53:00 AM
4-Chlorophenyl phenyl ether	< 0.573		0.573	5.00	µg/L	1	11/13/2009 4:53:00 AM
4-Nitroaniline	< 1.52		1.52	15.0	µg/L	1	11/13/2009 4:53:00 AM
4-Nitrophenol	< 1.14		1.14	10.0	µg/L	1	11/13/2009 4:53:00 AM
7,12-Dimethylbenz(a)anthracene	< 0.648		0.648	5.00	µg/L	1	11/13/2009 4:53:00 AM
Acenaphthene	< 0.648		0.648	5.00	µg/L	1	11/13/2009 4:53:00 AM
Acenaphthylene	< 0.725		0.725	5.00	µg/L	1	11/13/2009 4:53:00 AM
Acetophenone	< 0.599		0.599	5.00	µg/L	1	11/13/2009 4:53:00 AM
Aniline	< 1.38		1.38	5.00	µg/L	1	11/13/2009 4:53:00 AM
Anthracene	< 0.926		0.926	5.00	µg/L	1	11/13/2009 4:53:00 AM
Atrazine	< 1.32	N	1.32	5.00	µg/L	1	11/13/2009 4:53:00 AM
Benzidine	< 2.71		2.71	5.00	µg/L	1	11/13/2009 4:53:00 AM
Benzo(a)anthracene	< 0.700		0.700	5.00	µg/L	1	11/13/2009 4:53:00 AM
Benzo(a)pyrene	< 0.801		0.801	5.00	µg/L	1	11/13/2009 4:53:00 AM
Benzo(b)fluoranthene	< 0.886		0.886	5.00	µg/L	1	11/13/2009 4:53:00 AM
Benzo(g,h,i)perylene	< 0.959		0.959	15.0	µg/L	1	11/13/2009 4:53:00 AM
Benzo(k)fluoranthene	< 0.988		0.988	5.00	µg/L	1	11/13/2009 4:53:00 AM
Benzoic acid	< 1.73		1.73	50.0	µg/L	1	11/13/2009 4:53:00 AM
Benzyl alcohol	< 0.594		0.594	10.0	µg/L	1	11/13/2009 4:53:00 AM
Bis(2-chloroethoxy)methane	< 0.775		0.775	5.00	µg/L	1	11/13/2009 4:53:00 AM
Bis(2-chloroethyl)ether	< 0.807		0.807	5.00	µg/L	1	11/13/2009 4:53:00 AM
Bis(2-chloroisopropyl)ether	< 0.652		0.652	5.00	µg/L	1	11/13/2009 4:53:00 AM
Bis(2-ethylhexyl)phthalate	< 0.619		0.619	5.00	µg/L	1	11/13/2009 4:53:00 AM
Butyl benzyl phthalate	< 0.670		0.670	5.00	µg/L	1	11/13/2009 4:53:00 AM
Carbaryl	< 0.567		0.567	5.00	µg/L	1	11/13/2009 4:53:00 AM
Carbazole	< 0.621		0.621	5.00	µg/L	1	11/13/2009 4:53:00 AM
Chrysene	< 0.884		0.884	5.00	µg/L	1	11/13/2009 4:53:00 AM
Cresols, Total	< 1.50	A	1.50	10.0	µg/L	1	11/13/2009 4:53:00 AM
Di-n-butyl phthalate	< 0.594		0.594	5.00	µg/L	1	11/13/2009 4:53:00 AM
Di-n-octyl phthalate	< 0.870		0.870	5.00	µg/L	1	11/13/2009 4:53:00 AM
Dibenz(a,j)acridine	< 0.769		0.769	10.0	µg/L	1	11/13/2009 4:53:00 AM
Dibenz(a,h)anthracene	< 0.567		0.567	10.0	µg/L	1	11/13/2009 4:53:00 AM
Dibenzofuran	< 0.673		0.673	5.00	µg/L	1	11/13/2009 4:53:00 AM

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT: COA WPDR
Lab Order: 0911234
Project: Emergency Investigations
Lab ID: 0911234-001

Client Sample ID: 759-Deep Eddy Well U/S
Collection Date: 11/9/2009 10:40:00 AM
Matrix: GROUNDWATER
Tag No:

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS			**SW8270C**		**(SW3520C)**		Analyst: **CO**
Diethyl phthalate	< 0.546		0.546	5.00	µg/L	1	11/13/2009 4:53:00 AM
Dimethyl phthalate	< 0.439		0.439	5.00	µg/L	1	11/13/2009 4:53:00 AM
Ethyl methanesulfonate	< 0.628		0.628	5.00	µg/L	1	11/13/2009 4:53:00 AM
Fluoranthene	< 0.719		0.719	5.00	µg/L	1	11/13/2009 4:53:00 AM
Fluorene	< 0.660		0.660	5.00	µg/L	1	11/13/2009 4:53:00 AM
Hexachlorobenzene	< 0.547		0.547	5.00	µg/L	1	11/13/2009 4:53:00 AM
Hexachlorobutadiene	< 0.640		0.640	5.00	µg/L	1	11/13/2009 4:53:00 AM
Hexachlorocyclopentadiene	< 0.628		0.628	10.0	µg/L	1	11/13/2009 4:53:00 AM
Hexachloroethane	< 0.610		0.610	5.00	µg/L	1	11/13/2009 4:53:00 AM
Indeno(1,2,3-cd)pyrene	< 0.760		0.760	10.0	µg/L	1	11/13/2009 4:53:00 AM
Isophorone	< 0.501		0.501	5.00	µg/L	1	11/13/2009 4:53:00 AM
m,p-cresol	< 0.924	A	0.924	10.0	µg/L	1	11/13/2009 4:53:00 AM
Methyl methanesulfonate	< 0.512		0.512	5.00	µg/L	1	11/13/2009 4:53:00 AM
N-Nitroso-di-n-butylamine	< 0.899		0.899	5.00	µg/L	1	11/13/2009 4:53:00 AM
N-Nitrosodi-n-propylamine	< 0.653		0.653	5.00	µg/L	1	11/13/2009 4:53:00 AM
N-Nitrosodiethylamine	< 0.665		0.665	20.0	µg/L	1	11/13/2009 4:53:00 AM
N-Nitrosodimethylamine	< 0.865		0.865	5.00	µg/L	1	11/13/2009 4:53:00 AM
N-Nitrosodiphenylamine	< 0.632		0.632	5.00	µg/L	1	11/13/2009 4:53:00 AM
N-Nitrosopiperidine	< 0.589		0.589	5.00	µg/L	1	11/13/2009 4:53:00 AM
Naphthalene	< 0.654		0.654	5.00	µg/L	1	11/13/2009 4:53:00 AM
Nitrobenzene	< 0.635		0.635	5.00	µg/L	1	11/13/2009 4:53:00 AM
p-Dimethylaminoazobenzene	< 0.546	A	0.546	10.0	µg/L	1	11/13/2009 4:53:00 AM
Pentachlorobenzene	< 0.413		0.413	5.00	µg/L	1	11/13/2009 4:53:00 AM
Pentachloronitrobenzene	< 0.840		0.840	5.00	µg/L	1	11/13/2009 4:53:00 AM
Pentachlorophenol	< 0.731		0.731	6.00	µg/L	1	11/13/2009 4:53:00 AM
Phenacetin	< 0.458		0.458	5.00	µg/L	1	11/13/2009 4:53:00 AM
Phenanthrene	< 0.636		0.636	5.00	µg/L	1	11/13/2009 4:53:00 AM
Phenol	< 0.709		0.709	8.00	µg/L	1	11/13/2009 4:53:00 AM
Pronamide	< 0.644		0.644	5.00	µg/L	1	11/13/2009 4:53:00 AM
Pyrene	< 0.686		0.686	10.0	µg/L	1	11/13/2009 4:53:00 AM
Pyridine	< 0.871		0.871	5.00	µg/L	1	11/13/2009 4:53:00 AM
Surr: 2,4,6-Tribromophenol	60.0		0	30-124	%REC	1	11/13/2009 4:53:00 AM
Surr: 2-Fluorobiphenyl	46.1		0	42-143	%REC	1	11/13/2009 4:53:00 AM
Surr: 2-Fluorophenol	36.9		0	17-121	%REC	1	11/13/2009 4:53:00 AM
Surr: 4-Terphenyl-d14	55.0		0	23-150	%REC	1	11/13/2009 4:53:00 AM
Surr: Nitrobenzene-d5	52.4		0	28-116	%REC	1	11/13/2009 4:53:00 AM
Surr: Phenol-d5	46.4		0	27-112	%REC	1	11/13/2009 4:53:00 AM
VOLATILES BY GC/MS			**SW8260B**				Analyst: **SG**
1,1,1-Trichloroethane	< 0.13		0.13	0.50	µg/L	1	11/11/2009 4:13:00 PM

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	759-Deep Eddy Well U/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 10:40:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-001	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILES BY GC/MS			**SW8260B**				Analyst: **SG**
1,1,2,2-Tetrachloroethane	< 0.06		0.06	1.00	µg/L	1	11/11/2009 4:13:00 PM
1,1,2-Trichloroethane	< 0.10		0.10	0.50	µg/L	1	11/11/2009 4:13:00 PM
1,1-Dichloroethane	< 0.16		0.16	0.50	µg/L	1	11/11/2009 4:13:00 PM
1,1-Dichloroethene	< 0.12		0.12	0.50	µg/L	1	11/11/2009 4:13:00 PM
1,2,3-Trichlorobenzene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 4:13:00 PM
1,2,3-Trichloropropane	< 0.11		0.11	1.00	µg/L	1	11/11/2009 4:13:00 PM
1,2,4-Trichlorobenzene	< 0.08		0.08	0.50	µg/L	1	11/11/2009 4:13:00 PM
1,2-Dibromo-3-chloropropane	< 0.15		0.15	1.00	µg/L	1	11/11/2009 4:13:00 PM
1,2-Dibromoethane	< 0.09		0.09	1.00	µg/L	1	11/11/2009 4:13:00 PM
1,2-Dichlorobenzene	< 0.08		0.08	0.50	µg/L	1	11/11/2009 4:13:00 PM
1,2-Dichloroethane	< 0.15		0.15	0.50	µg/L	1	11/11/2009 4:13:00 PM
1,2-Dichloroethene, Total	< 0.21	A	0.21	0.50	µg/L	1	11/11/2009 4:13:00 PM
1,2-Dichloropropane	< 0.15		0.15	0.50	µg/L	1	11/11/2009 4:13:00 PM
1,3-Dichlorobenzene	< 0.07		0.07	0.50	µg/L	1	11/11/2009 4:13:00 PM
1,4-Dichlorobenzene	< 0.06		0.06	0.50	µg/L	1	11/11/2009 4:13:00 PM
2-Butanone	< 0.36		0.36	5.00	µg/L	1	11/11/2009 4:13:00 PM
2-Chloroethyl vinyl ether	< 0.12		0.12	0.50	µg/L	1	11/11/2009 4:13:00 PM
2-Hexanone	< 0.08		0.08	5.00	µg/L	1	11/11/2009 4:13:00 PM
4-Methyl-2-pentanone	< 0.13		0.13	5.00	µg/L	1	11/11/2009 4:13:00 PM
Acetone	< 0.43		0.43	5.00	µg/L	1	11/11/2009 4:13:00 PM
Acrolein	< 2.83		2.83	10.0	µg/L	1	11/11/2009 4:13:00 PM
Acrylonitrile	< 0.24		0.24	5.00	µg/L	1	11/11/2009 4:13:00 PM
Benzene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 4:13:00 PM
Bromodichloromethane	< 0.13		0.13	0.50	µg/L	1	11/11/2009 4:13:00 PM
Bromoform	< 0.08		0.08	0.50	µg/L	1	11/11/2009 4:13:00 PM
Bromomethane	< 0.41		0.41	1.50	µg/L	1	11/11/2009 4:13:00 PM
Carbon Disulfide	< 0.15		0.15	0.50	µg/L	1	11/11/2009 4:13:00 PM
Carbon Tetrachloride	< 0.14		0.14	0.50	µg/L	1	11/11/2009 4:13:00 PM
Chlorobenzene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 4:13:00 PM
Chloroethane	< 0.17		0.17	1.00	µg/L	1	11/11/2009 4:13:00 PM
Chloroform	0.15	J	0.12	0.50	µg/L	1	11/11/2009 4:13:00 PM
Chloromethane	0.29	J	0.13	0.50	µg/L	1	11/11/2009 4:13:00 PM
cis-1,2-Dichloroethene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 4:13:00 PM
cis-1,3-Dichloropropene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 4:13:00 PM
Dibromochloromethane	< 0.10		0.10	0.50	µg/L	1	11/11/2009 4:13:00 PM
Dibromomethane	< 0.11		0.11	0.50	µg/L	1	11/11/2009 4:13:00 PM
Dichlorodifluoromethane	< 0.17		0.17	1.00	µg/L	1	11/11/2009 4:13:00 PM
Ethyl Methacrylate	< 0.06		0.06	1.00	µg/L	1	11/11/2009 4:13:00 PM
Ethylbenzene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 4:13:00 PM
Iodomethane	< 0.12		0.12	0.50	µg/L	1	11/11/2009 4:13:00 PM

Qualifiers:

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H Holding Time Exceeded
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT: COA WPDR
Client Sample ID: 759-Deep Eddy Well U/S
Lab Order: 0911234
Collection Date: 11/9/2009 10:40:00 AM
Project: Emergency Investigations
Matrix: GROUNDWATER
Lab ID: 0911234-001
Tag No:

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILES BY GC/MS			**SW8260B**				Analyst: **SG**
m,p-Xylene	< 0.23		0.23	1.00	µg/L	1	11/11/2009 4:13:00 PM
Methyl tert-butyl ether	< 0.16		0.16	0.50	µg/L	1	11/11/2009 4:13:00 PM
Methylene chloride	< 0.10		0.10	0.50	µg/L	1	11/11/2009 4:13:00 PM
Naphthalene	< 0.06		0.06	0.50	µg/L	1	11/11/2009 4:13:00 PM
o-Xylene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 4:13:00 PM
Styrene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 4:13:00 PM
Tetrachloroethene	0.16	J	0.12	0.50	µg/L	1	11/11/2009 4:13:00 PM
Toluene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 4:13:00 PM
trans-1,2-Dichloroethene	< 0.12		0.12	0.50	µg/L	1	11/11/2009 4:13:00 PM
trans-1,3-Dichloropropene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 4:13:00 PM
trans-1,4-Dichloro-2-butene	< 0.11		0.11	0.50	µg/L	1	11/11/2009 4:13:00 PM
Trichloroethene	< 0.13		0.13	0.50	µg/L	1	11/11/2009 4:13:00 PM
Trichlorofluoromethane	< 0.17		0.17	0.50	µg/L	1	11/11/2009 4:13:00 PM
Vinyl Acetate	< 0.11		0.11	0.50	µg/L	1	11/11/2009 4:13:00 PM
Vinyl chloride	< 0.24		0.24	1.00	µg/L	1	11/11/2009 4:13:00 PM
Xylenes, Total	< 0.21		0.21	0.50	µg/L	1	11/11/2009 4:13:00 PM
Surr: 1,2-Dichloroethane-d4	94.8		0	70-130	%REC	1	11/11/2009 4:13:00 PM
Surr: 4-Bromofluorobenzene	105		0	70-130	%REC	1	11/11/2009 4:13:00 PM
Surr: Toluene-d8	106		0	70-130	%REC	1	11/11/2009 4:13:00 PM
OIL AND GREASE, HEM			**E1664**				Analyst: **MH**
Oil & Grease, Total Recoverable	0.51	J	0.40	2.53	mg/L	1	11/13/2009
ANIONS BY ION CHROMATOGRAPHY			**E300.0**				Analyst: **WR**
Chloride	45.1		0.017	1.00	mg/L	1	11/9/2009 6:21:00 PM
Fluoride	0.304		0.002	0.010	mg/L	1	11/9/2009 6:21:00 PM
Phosphorus, Orthophosphate (As P)	0.028		0.002	0.010	mg/L	1	11/9/2009 6:21:00 PM
Sulfate	46.2		0.015	1.00	mg/L	1	11/9/2009 6:21:00 PM
ALKALINITY			**SM2320 B**				Analyst: **JB**
Alkalinity, Total (As CaCO3)	314		0.1	2	mg/L CaCO3	1	11/11/2009
CHLOROPHYLL AND PHEOPHYTIN			**E445.0**				Analyst: **ZP**
Chlorophyll A	< 0.04		0.04	0.5	µg/L	1	11/11/2009
Pheophytin A	< 0.04		0.04	0.5	µg/L	1	11/11/2009
NITRATE AND NITRITE			**SM4500-NO3-H**				Analyst: **KK**
Nitrogen, Nitrate & Nitrite	1.81		0.004	0.020	mg/L	1	11/16/2009
AMMONIA AS N			**E350.1**				Analyst: **ML**
Nitrogen, Ammonia (As N)	< 0.005		0.005	0.020	mg/L	1	11/16/2009
ORGANIC CARBON, TOTAL			**SM5310D**				Analyst: **CM**

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PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	759-Deep Eddy Well U/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 10:40:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-001	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
ORGANIC CARBON, TOTAL			**SM5310D**				Analyst: **CM**
Organic Carbon, Total	0.946		0.025	0.500	mg/L	1	11/12/2009
TOTAL SUSPENDED SOLIDS			**SM2540D**				Analyst: **JB**
Suspended Solids (Residue, Non-Filterable)	1.0		0.5	1.0	mg/L	1	11/10/2009
VOLATILE SUSPENDED SOLIDS			**E160.4**				Analyst: **JB**
Volatile Suspended Solids	0.500	J	0.500	1.00	mg/L	1	11/10/2009

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LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	4522-Deep Eddy Well D/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 9:30:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-002	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
ORGANOPHOSPHORUS PESTICIDES			**SW8141A**		**(SW3520C)**		Analyst: **BC**
Ethyl Parathion	< 0.11		0.11	0.50	µg/L	1	11/12/2009 6:51:01 PM
Methyl parathion	< 0.13		0.13	0.50	µg/L	1	11/12/2009 6:51:01 PM
Azinphosmethyl	< 0.11		0.11	0.50	µg/L	1	11/12/2009 6:51:01 PM
Chloropyrifos	< 0.09		0.09	0.50	µg/L	1	11/12/2009 6:51:01 PM
Demeton, Total	< 0.17		0.17	0.50	µg/L	1	11/12/2009 6:51:01 PM
Demeton-O	< 0.15		0.15	0.50	µg/L	1	11/12/2009 6:51:01 PM
Demeton-S	< 0.13		0.13	0.50	µg/L	1	11/12/2009 6:51:01 PM
Diazinon	< 0.10		0.10	0.50	µg/L	1	11/12/2009 6:51:01 PM
Malathion	< 0.09		0.09	0.50	µg/L	1	11/12/2009 6:51:01 PM
Surr: Phorate	93.8		0	70-130	%REC	1	11/12/2009 6:51:01 PM
Surr: Triphenyl Phosphate	110		0	70-130	%REC	1	11/12/2009 6:51:01 PM
CHLORINATED HERBICIDES			**SW8151A**		**(SW8151A)**		Analyst: **CO**
2,4,5-T	< 0.17		0.17	0.51	µg/L	1	11/18/2009 1:48:40 PM
2,4,5-TP (Silvex)	< 0.19		0.19	0.51	µg/L	1	11/18/2009 1:48:40 PM
2,4-D	< 0.13		0.13	0.51	µg/L	1	11/18/2009 1:48:40 PM
Dalapon	< 0.17		0.17	0.51	µg/L	1	11/18/2009 1:48:40 PM
Dicamba	< 0.16		0.16	0.51	µg/L	1	11/18/2009 1:48:40 PM
Dinoseb	< 0.21		0.21	0.51	µg/L	1	11/18/2009 1:48:40 PM
Pentachlorophenol	< 0.15		0.15	0.51	µg/L	1	11/18/2009 1:48:40 PM
Picloram	< 0.11		0.11	0.51	µg/L	1	11/18/2009 1:48:40 PM
Surr: 2,4-DB	93.4		0.07	70-130	%REC	1	11/18/2009 1:48:40 PM
TNRCC METHOD 1005-TPH			**TX1005**		**(TX1005)**		Analyst: **SM**
>C12-C28	< 0.5	A	0.5	4.5	mg/L	1	11/19/2009 6:15:51 PM
>C28-C35	0.7	JA	0.1	4.5	mg/L	1	11/19/2009 6:15:51 PM
C6-C12	0.6	JA	0.5	4.5	mg/L	1	11/19/2009 6:15:51 PM
C6-C35	< 0.6		0.6	4.5	mg/L	1	11/19/2009 6:15:51 PM
Surr: a,a,a-Trifluorotoluene	98.0		0	70-130	%REC	1	11/19/2009 6:15:51 PM
Surr: o-Terphenyl	79.5		0	70-130	%REC	1	11/19/2009 6:15:51 PM
ICP METALS, TOTAL RECOVERABLE			**E200.7**				Analyst: **MV**
Calcium	70.7		0.0260	0.200	mg/L	1	11/16/2009 12:50:34 PM
Iron	0.134		0.00290	0.0500	mg/L	1	11/16/2009 12:50:34 PM
Magnesium	23.6		0.0117	0.200	mg/L	1	11/16/2009 12:50:34 PM
Potassium	3.98		0.0537	0.200	mg/L	1	11/16/2009 12:50:34 PM
Sodium	29.0		0.0200	0.600	mg/L	1	11/16/2009 12:50:34 PM
ICPMS METALS, TOTAL RECOVERABLE			**E200.8**				Analyst: **SW**
Arsenic	2.29		0.643	2.00	µg/L	1	11/12/2009 11:32:09 AM
Copper	0.414	J	0.086	2.00	µg/L	1	11/12/2009 11:32:09 AM
Lead	< 0.087		0.087	1.00	µg/L	1	11/12/2009 11:32:09 AM

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X Value Exceeds Maximum Contaminant Level (MCL)

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LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	4522-Deep Eddy Well D/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 9:30:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-002	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
ICPMS METALS, TOTAL RECOVERABLE			**E200.8**				Analyst: **SW**
Nickel	2.69		0.122	2.00	µg/L	1	11/12/2009 11:32:09 AM
Strontium	556		0.430	10.0	µg/L	10	11/12/2009 12:35:32 PM
Zinc	< 1.29		1.29	5.00	µg/L	1	11/12/2009 11:32:09 AM
HARDNESS, TOTAL			**SM2340 B**				Analyst: **MV**
Hardness, Calcium/Magnesium (As CaCO3)	274		0.065	1.32	mg/L	1	11/16/2009
ORGANIC COMPOUNDS			**E525.2**		**(E525.2)**		Analyst: **SG**
Bromacil	< 0.0411	A	0.0411	0.209	µg/L	1	11/12/2009 6:37:00 PM
Surr: 1,3-Dimethyl-2-nitrobenzene	94.4		0	70-130	%REC	1	11/12/2009 6:37:00 PM
Surr: Perylene-d12	77.6		0	70-130	%REC	1	11/12/2009 6:37:00 PM
Surr: Pyrene-d10	101		0	70-130	%REC	1	11/12/2009 6:37:00 PM
Surr: Triphenyl Phosphate	103		0	70-130	%REC	1	11/12/2009 6:37:00 PM
SEMIVOLATILE ORGANICS			**SW8270C**		**(SW3520C)**		Analyst: **CO**
1&2-Chloronaphthalene	< 1.27	A	1.27	10.0	µg/L	1	11/13/2009 5:28:00 AM
1,2,4,5-Tetrachlorobenzene	< 0.617		0.617	10.0	µg/L	1	11/13/2009 5:28:00 AM
1,2,4-Trichlorobenzene	< 0.585		0.585	5.00	µg/L	1	11/13/2009 5:28:00 AM
1,2-Dichlorobenzene	< 0.711		0.711	5.00	µg/L	1	11/13/2009 5:28:00 AM
1,2-Diphenylhydrazine	< 0.553		0.553	5.00	µg/L	1	11/13/2009 5:28:00 AM
1,3-Dichlorobenzene	< 0.764		0.764	5.00	µg/L	1	11/13/2009 5:28:00 AM
1,4-Dichlorobenzene	< 0.871		0.871	5.00	µg/L	1	11/13/2009 5:28:00 AM
1-Naphthylamine	< 0.932	A	0.932	10.0	µg/L	1	11/13/2009 5:28:00 AM
2,3,4,6-Tetrachlorophenol	< 1.19		1.19	10.0	µg/L	1	11/13/2009 5:28:00 AM
2,4,5-Trichlorophenol	< 0.861		0.861	6.00	µg/L	1	11/13/2009 5:28:00 AM
2,4,6-Trichlorophenol	< 0.614		0.614	5.00	µg/L	1	11/13/2009 5:28:00 AM
2,4-Dichlorophenol	< 0.768		0.768	5.00	µg/L	1	11/13/2009 5:28:00 AM
2,4-Dimethylphenol	< 0.785		0.785	5.00	µg/L	1	11/13/2009 5:28:00 AM
2,4-Dinitrophenol	< 1.12		1.12	50.0	µg/L	1	11/13/2009 5:28:00 AM
2,4-Dinitrotoluene	< 0.627		0.627	10.0	µg/L	1	11/13/2009 5:28:00 AM
2,6-Dichlorophenol	< 0.492		0.492	5.00	µg/L	1	11/13/2009 5:28:00 AM
2,6-Dinitrotoluene	< 0.712		0.712	5.00	µg/L	1	11/13/2009 5:28:00 AM
2-Chlorophenol	< 0.606		0.606	5.00	µg/L	1	11/13/2009 5:28:00 AM
2-Methylnaphthalene	< 0.542		0.542	5.00	µg/L	1	11/13/2009 5:28:00 AM
2-Methylphenol	< 0.633		0.633	5.00	µg/L	1	11/13/2009 5:28:00 AM
2-Naphthylamine	< 0.562		0.562	5.00	µg/L	1	11/13/2009 5:28:00 AM
2-Nitroaniline	< 0.929		0.929	5.00	µg/L	1	11/13/2009 5:28:00 AM
2-Nitrophenol	< 0.534		0.534	5.00	µg/L	1	11/13/2009 5:28:00 AM
2-Picoline	< 0.766		0.766	5.00	µg/L	1	11/13/2009 5:28:00 AM
3,3´-Dichlorobenzidine	< 0.886		0.886	5.00	µg/L	1	11/13/2009 5:28:00 AM
3-Methylcholanthrene	< 0.647		0.647	5.00	µg/L	1	11/13/2009 5:28:00 AM

Qualifiers:

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LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	4522-Deep Eddy Well D/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 9:30:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-002	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS			**SW8270C**		**(SW3520C)**		Analyst: **CO**
3-Nitroaniline	< 0.640		0.640	5.00	µg/L	1	11/13/2009 5:28:00 AM
4,6-Dinitro-2-methylphenol	< 0.863		0.863	50.0	µg/L	1	11/13/2009 5:28:00 AM
4-Aminobiphenyl	< 0.632		0.632	5.00	µg/L	1	11/13/2009 5:28:00 AM
4-Bromophenyl phenyl ether	< 0.651		0.651	5.00	µg/L	1	11/13/2009 5:28:00 AM
4-Chloro-3-methylphenol	< 0.596		0.596	5.00	µg/L	1	11/13/2009 5:28:00 AM
4-Chloroaniline	< 1.07		1.07	5.00	µg/L	1	11/13/2009 5:28:00 AM
4-Chlorophenyl phenyl ether	< 0.573		0.573	5.00	µg/L	1	11/13/2009 5:28:00 AM
4-Nitroaniline	< 1.52		1.52	15.0	µg/L	1	11/13/2009 5:28:00 AM
4-Nitrophenol	< 1.14		1.14	10.0	µg/L	1	11/13/2009 5:28:00 AM
7,12-Dimethylbenz(a)anthracene	< 0.648		0.648	5.00	µg/L	1	11/13/2009 5:28:00 AM
Acenaphthene	< 0.648		0.648	5.00	µg/L	1	11/13/2009 5:28:00 AM
Acenaphthylene	< 0.725		0.725	5.00	µg/L	1	11/13/2009 5:28:00 AM
Acetophenone	< 0.599		0.599	5.00	µg/L	1	11/13/2009 5:28:00 AM
Aniline	< 1.38		1.38	5.00	µg/L	1	11/13/2009 5:28:00 AM
Anthracene	< 0.926		0.926	5.00	µg/L	1	11/13/2009 5:28:00 AM
Atrazine	< 1.32	N	1.32	5.00	µg/L	1	11/13/2009 5:28:00 AM
Benzidine	< 2.71		2.71	5.00	µg/L	1	11/13/2009 5:28:00 AM
Benzo(a)anthracene	< 0.700		0.700	5.00	µg/L	1	11/13/2009 5:28:00 AM
Benzo(a)pyrene	< 0.801		0.801	5.00	µg/L	1	11/13/2009 5:28:00 AM
Benzo(b)fluoranthene	< 0.886		0.886	5.00	µg/L	1	11/13/2009 5:28:00 AM
Benzo(g,h,i)perylene	< 0.959		0.959	15.0	µg/L	1	11/13/2009 5:28:00 AM
Benzo(k)fluoranthene	< 0.988		0.988	5.00	µg/L	1	11/13/2009 5:28:00 AM
Benzoic acid	< 1.73		1.73	50.0	µg/L	1	11/13/2009 5:28:00 AM
Benzyl alcohol	< 0.594		0.594	10.0	µg/L	1	11/13/2009 5:28:00 AM
Bis(2-chloroethoxy)methane	< 0.775		0.775	5.00	µg/L	1	11/13/2009 5:28:00 AM
Bis(2-chloroethyl)ether	< 0.807		0.807	5.00	µg/L	1	11/13/2009 5:28:00 AM
Bis(2-chloroisopropyl)ether	< 0.652		0.652	5.00	µg/L	1	11/13/2009 5:28:00 AM
Bis(2-ethylhexyl)phthalate	12.8		0.619	5.00	µg/L	1	11/13/2009 5:28:00 AM
Butyl benzyl phthalate	< 0.670		0.670	5.00	µg/L	1	11/13/2009 5:28:00 AM
Carbaryl	< 0.567		0.567	5.00	µg/L	1	11/13/2009 5:28:00 AM
Carbazole	< 0.621		0.621	5.00	µg/L	1	11/13/2009 5:28:00 AM
Chrysene	< 0.884		0.884	5.00	µg/L	1	11/13/2009 5:28:00 AM
Cresols, Total	< 1.50	A	1.50	10.0	µg/L	1	11/13/2009 5:28:00 AM
Di-n-butyl phthalate	< 0.594		0.594	5.00	µg/L	1	11/13/2009 5:28:00 AM
Di-n-octyl phthalate	< 0.870		0.870	5.00	µg/L	1	11/13/2009 5:28:00 AM
Dibenz(a,j)acridine	< 0.769		0.769	10.0	µg/L	1	11/13/2009 5:28:00 AM
Dibenz(a,h)anthracene	< 0.567		0.567	10.0	µg/L	1	11/13/2009 5:28:00 AM
Dibenzofuran	< 0.673		0.673	5.00	µg/L	1	11/13/2009 5:28:00 AM
Diethyl phthalate	< 0.546		0.546	5.00	µg/L	1	11/13/2009 5:28:00 AM
Dimethyl phthalate	< 0.439		0.439	5.00	µg/L	1	11/13/2009 5:28:00 AM

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	4522-Deep Eddy Well D/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 9:30:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-002	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS			**SW8270C**		**(SW3520C)**		Analyst: **CO**
Ethyl methanesulfonate	< 0.628		0.628	5.00	µg/L	1	11/13/2009 5:28:00 AM
Fluoranthene	< 0.719		0.719	5.00	µg/L	1	11/13/2009 5:28:00 AM
Fluorene	< 0.660		0.660	5.00	µg/L	1	11/13/2009 5:28:00 AM
Hexachlorobenzene	< 0.547		0.547	5.00	µg/L	1	11/13/2009 5:28:00 AM
Hexachlorobutadiene	< 0.640		0.640	5.00	µg/L	1	11/13/2009 5:28:00 AM
Hexachlorocyclopentadiene	< 0.628		0.628	10.0	µg/L	1	11/13/2009 5:28:00 AM
Hexachloroethane	< 0.610		0.610	5.00	µg/L	1	11/13/2009 5:28:00 AM
Indeno(1,2,3-cd)pyrene	< 0.760		0.760	10.0	µg/L	1	11/13/2009 5:28:00 AM
Isophorone	< 0.501		0.501	5.00	µg/L	1	11/13/2009 5:28:00 AM
m,p-cresol	< 0.924	A	0.924	10.0	µg/L	1	11/13/2009 5:28:00 AM
Methyl methanesulfonate	< 0.512		0.512	5.00	µg/L	1	11/13/2009 5:28:00 AM
N-Nitroso-di-n-butylamine	< 0.899		0.899	5.00	µg/L	1	11/13/2009 5:28:00 AM
N-Nitrosodi-n-propylamine	< 0.653		0.653	5.00	µg/L	1	11/13/2009 5:28:00 AM
N-Nitrosodiethylamine	< 0.665		0.665	20.0	µg/L	1	11/13/2009 5:28:00 AM
N-Nitrosodimethylamine	< 0.865		0.865	5.00	µg/L	1	11/13/2009 5:28:00 AM
N-Nitrosodiphenylamine	< 0.632		0.632	5.00	µg/L	1	11/13/2009 5:28:00 AM
N-Nitrosopiperidine	< 0.589		0.589	5.00	µg/L	1	11/13/2009 5:28:00 AM
Naphthalene	< 0.654		0.654	5.00	µg/L	1	11/13/2009 5:28:00 AM
Nitrobenzene	< 0.635		0.635	5.00	µg/L	1	11/13/2009 5:28:00 AM
p-Dimethylaminoazobenzene	< 0.546	A	0.546	10.0	µg/L	1	11/13/2009 5:28:00 AM
Pentachlorobenzene	< 0.413		0.413	5.00	µg/L	1	11/13/2009 5:28:00 AM
Pentachloronitrobenzene	< 0.840		0.840	5.00	µg/L	1	11/13/2009 5:28:00 AM
Pentachlorophenol	< 0.731		0.731	6.00	µg/L	1	11/13/2009 5:28:00 AM
Phenacetin	< 0.458		0.458	5.00	µg/L	1	11/13/2009 5:28:00 AM
Phenanthrene	< 0.636		0.636	5.00	µg/L	1	11/13/2009 5:28:00 AM
Phenol	< 0.709		0.709	8.00	µg/L	1	11/13/2009 5:28:00 AM
Pronamide	< 0.644		0.644	5.00	µg/L	1	11/13/2009 5:28:00 AM
Pyrene	< 0.686		0.686	10.0	µg/L	1	11/13/2009 5:28:00 AM
Pyridine	< 0.871		0.871	5.00	µg/L	1	11/13/2009 5:28:00 AM
Surr: 2,4,6-Tribromophenol	56.7		0	30-124	%REC	1	11/13/2009 5:28:00 AM
Surr: 2-Fluorobiphenyl	46.8		0	42-143	%REC	1	11/13/2009 5:28:00 AM
Surr: 2-Fluorophenol	25.4		0	17-121	%REC	1	11/13/2009 5:28:00 AM
Surr: 4-Terphenyl-d14	66.2		0	23-150	%REC	1	11/13/2009 5:28:00 AM
Surr: Nitrobenzene-d5	54.0		0	28-116	%REC	1	11/13/2009 5:28:00 AM
Surr: Phenol-d5	39.3		0	27-112	%REC	1	11/13/2009 5:28:00 AM
VOLATILES BY GC/MS			**SW8260B**				Analyst: **SG**
1,1,1-Trichloroethane	< 0.13		0.13	0.50	µg/L	1	11/11/2009 5:51:00 PM
1,1,2,2-Tetrachloroethane	< 0.06		0.06	1.00	µg/L	1	11/11/2009 5:51:00 PM
1,1,2-Trichloroethane	< 0.10		0.10	0.50	µg/L	1	11/11/2009 5:51:00 PM

Qualifiers:

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PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	4522-Deep Eddy Well D/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 9:30:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-002	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILES BY GC/MS			**SW8260B**				Analyst: **SG**
1,1-Dichloroethane	< 0.16		0.16	0.50	µg/L	1	11/11/2009 5:51:00 PM
1,1-Dichloroethene	< 0.12		0.12	0.50	µg/L	1	11/11/2009 5:51:00 PM
1,2,3-Trichlorobenzene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 5:51:00 PM
1,2,3-Trichloropropane	< 0.11		0.11	1.00	µg/L	1	11/11/2009 5:51:00 PM
1,2,4-Trichlorobenzene	< 0.08		0.08	0.50	µg/L	1	11/11/2009 5:51:00 PM
1,2-Dibromo-3-chloropropane	< 0.15		0.15	1.00	µg/L	1	11/11/2009 5:51:00 PM
1,2-Dibromoethane	< 0.09		0.09	1.00	µg/L	1	11/11/2009 5:51:00 PM
1,2-Dichlorobenzene	< 0.08		0.08	0.50	µg/L	1	11/11/2009 5:51:00 PM
1,2-Dichloroethane	< 0.15		0.15	0.50	µg/L	1	11/11/2009 5:51:00 PM
1,2-Dichloroethene, Total	< 0.21	A	0.21	0.50	µg/L	1	11/11/2009 5:51:00 PM
1,2-Dichloropropane	< 0.15		0.15	0.50	µg/L	1	11/11/2009 5:51:00 PM
1,3-Dichlorobenzene	< 0.07		0.07	0.50	µg/L	1	11/11/2009 5:51:00 PM
1,4-Dichlorobenzene	< 0.06		0.06	0.50	µg/L	1	11/11/2009 5:51:00 PM
2-Butanone	< 0.36		0.36	5.00	µg/L	1	11/11/2009 5:51:00 PM
2-Chloroethyl vinyl ether	< 0.12		0.12	0.50	µg/L	1	11/11/2009 5:51:00 PM
2-Hexanone	< 0.08		0.08	5.00	µg/L	1	11/11/2009 5:51:00 PM
4-Methyl-2-pentanone	< 0.13		0.13	5.00	µg/L	1	11/11/2009 5:51:00 PM
Acetone	< 0.43		0.43	5.00	µg/L	1	11/11/2009 5:51:00 PM
Acrolein	< 2.83		2.83	10.0	µg/L	1	11/11/2009 5:51:00 PM
Acrylonitrile	< 0.24		0.24	5.00	µg/L	1	11/11/2009 5:51:00 PM
Benzene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 5:51:00 PM
Bromodichloromethane	< 0.13		0.13	0.50	µg/L	1	11/11/2009 5:51:00 PM
Bromoform	< 0.08		0.08	0.50	µg/L	1	11/11/2009 5:51:00 PM
Bromomethane	< 0.41		0.41	1.50	µg/L	1	11/11/2009 5:51:00 PM
Carbon Disulfide	< 0.15		0.15	0.50	µg/L	1	11/11/2009 5:51:00 PM
Carbon Tetrachloride	< 0.14		0.14	0.50	µg/L	1	11/11/2009 5:51:00 PM
Chlorobenzene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 5:51:00 PM
Chloroethane	< 0.17		0.17	1.00	µg/L	1	11/11/2009 5:51:00 PM
Chloroform	0.22	J	0.12	0.50	µg/L	1	11/11/2009 5:51:00 PM
Chloromethane	0.21	J	0.13	0.50	µg/L	1	11/11/2009 5:51:00 PM
cis-1,2-Dichloroethene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 5:51:00 PM
cis-1,3-Dichloropropene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 5:51:00 PM
Dibromochloromethane	< 0.10		0.10	0.50	µg/L	1	11/11/2009 5:51:00 PM
Dibromomethane	< 0.11		0.11	0.50	µg/L	1	11/11/2009 5:51:00 PM
Dichlorodifluoromethane	< 0.17		0.17	1.00	µg/L	1	11/11/2009 5:51:00 PM
Ethyl Methacrylate	< 0.06		0.06	1.00	µg/L	1	11/11/2009 5:51:00 PM
Ethylbenzene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 5:51:00 PM
Iodomethane	< 0.12		0.12	0.50	µg/L	1	11/11/2009 5:51:00 PM
m,p-Xylene	< 0.23		0.23	1.00	µg/L	1	11/11/2009 5:51:00 PM
Methyl tert-butyl ether	< 0.16		0.16	0.50	µg/L	1	11/11/2009 5:51:00 PM

Qualifiers:

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X Value Exceeds Maximum Contaminant Level (MCL)

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LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	4522-Deep Eddy Well D/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 9:30:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-002	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILES BY GC/MS			**SW8260B**				Analyst: **SG**
Methylene chloride	< 0.10		0.10	0.50	µg/L	1	11/11/2009 5:51:00 PM
Naphthalene	< 0.06		0.06	0.50	µg/L	1	11/11/2009 5:51:00 PM
o-Xylene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 5:51:00 PM
Styrene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 5:51:00 PM
Tetrachloroethene	< 0.12		0.12	0.50	µg/L	1	11/11/2009 5:51:00 PM
Toluene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 5:51:00 PM
trans-1,2-Dichloroethene	< 0.12		0.12	0.50	µg/L	1	11/11/2009 5:51:00 PM
trans-1,3-Dichloropropene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 5:51:00 PM
trans-1,4-Dichloro-2-butene	< 0.11		0.11	0.50	µg/L	1	11/11/2009 5:51:00 PM
Trichloroethene	< 0.13		0.13	0.50	µg/L	1	11/11/2009 5:51:00 PM
Trichlorofluoromethane	< 0.17		0.17	0.50	µg/L	1	11/11/2009 5:51:00 PM
Vinyl Acetate	< 0.11		0.11	0.50	µg/L	1	11/11/2009 5:51:00 PM
Vinyl chloride	< 0.24		0.24	1.00	µg/L	1	11/11/2009 5:51:00 PM
Xylenes, Total	< 0.21		0.21	0.50	µg/L	1	11/11/2009 5:51:00 PM
Surr: 1,2-Dichloroethane-d4	98.4		0	70-130	%REC	1	11/11/2009 5:51:00 PM
Surr: 4-Bromofluorobenzene	103		0	70-130	%REC	1	11/11/2009 5:51:00 PM
Surr: Toluene-d8	102		0	70-130	%REC	1	11/11/2009 5:51:00 PM
OIL AND GREASE, HEM			**E1664**				Analyst: **MH**
Oil & Grease, Total Recoverable	0.50	J	0.40	2.52	mg/L	1	11/13/2009
ANIONS BY ION CHROMATOGRAPHY			**E300.0**				Analyst: **WR**
Chloride	41.7		0.017	1.00	mg/L	1	11/9/2009 6:35:00 PM
Fluoride	0.251		0.002	0.010	mg/L	1	11/9/2009 6:35:00 PM
Phosphorus, Orthophosphate (As P)	0.040		0.002	0.010	mg/L	1	11/9/2009 6:35:00 PM
Sulfate	36.2		0.015	1.00	mg/L	1	11/9/2009 6:35:00 PM
ALKALINITY			**SM2320 B**				Analyst: **JB**
Alkalinity, Total (As CaCO3)	232		0.1	2	mg/L CaCO3	1	11/11/2009
CHLOROPHYLL AND PHEOPHYTIN			**E445.0**				Analyst: **ZP**
Chlorophyll A	< 0.04		0.04	0.5	µg/L	1	11/11/2009
Pheophytin A	< 0.04		0.04	0.5	µg/L	1	11/11/2009
NITRATE AND NITRITE			**SM4500-NO3-H**				Analyst: **KK**
Nitrogen, Nitrate & Nitrite	0.308		0.004	0.020	mg/L	1	11/16/2009
AMMONIA AS N			**E350.1**				Analyst: **ML**
Nitrogen, Ammonia (As N)	0.060		0.005	0.020	mg/L	1	11/16/2009
ORGANIC CARBON, TOTAL			**SM5310D**				Analyst: **CM**
Organic Carbon, Total	1.67		0.025	0.500	mg/L	1	11/12/2009

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PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	4522-Deep Eddy Well D/S
Lab Order:	0911234	**Collection Date:**	11/9/2009 9:30:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-002	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
TOTAL SUSPENDED SOLIDS			**SM2540D**				Analyst: **JB**
Suspended Solids (Residue, Non-Filterable)	< 1.0		1.0	2.0	mg/L	2	11/10/2009
VOLATILE SUSPENDED SOLIDS			**E160.4**				Analyst: **JB**
Volatile Suspended Solids	< 1.00		1.00	2.00	mg/L	2	11/10/2009

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X Value Exceeds Maximum Contaminant Level (MCL)

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LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	4524-Deep Eddy Pool
Lab Order:	0911234	**Collection Date:**	11/9/2009 10:15:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-003	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
CHLOROPHYLL AND PHEOPHYTIN			**E445.0**				Analyst: **ZP**
Chlorophyll A	< 0.04		0.04	0.5	µg/L	1	11/11/2009
Pheophytin A	< 0.04		0.04	0.5	µg/L	1	11/11/2009

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	10-Town Lake @ Deep Eddy
Lab Order:	0911234	**Collection Date:**	11/9/2009 10:25:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911234-004	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
CHLOROPHYLL AND PHEOPHYTIN			**E445.0**				Analyst: **ZP**
Chlorophyll A	12.3	X	0.04	0.5	µg/L	1	11/11/2009
Pheophytin A	2.1	X	0.04	0.5	µg/L	1	11/11/2009

Qualifiers:

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X Value Exceeds Maximum Contaminant Level (MCL)

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LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT: COA WPDR
Project: Emergency Investigations
Lab Order: 0911234

CASE NARRATIVE

Reporting Comments:
On 11/12/09, a Preliminary Report was provided on samples 0911234-001 and 0911234-002 for the following parameters only: Volatiles (SW8260B), Anions (E300) and TSS (SM2540D).

Final Analysis Report

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT: COA WPDR
Lab Order: 0911254
Project: Emergency Investigations
Lab ID: 0911254-001

Client Sample ID: 759-Deep Eddy Well U/S
Collection Date: 11/10/2009 11:00:00 AM
Matrix: GROUNDWATER
Tag No:

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
ORGANOPHOSPHORUS PESTICIDES			**SW8141A**		**(SW3520C)**		Analyst: **BC**
Ethyl Parathion	< 0.11		0.11	0.50	µg/L	1	11/12/2009 7:28:42 PM
Methyl parathion	< 0.13		0.13	0.50	µg/L	1	11/12/2009 7:28:42 PM
Azinphosmethyl	< 0.11		0.11	0.50	µg/L	1	11/12/2009 7:28:42 PM
Chloropyrifos	< 0.09		0.09	0.50	µg/L	1	11/12/2009 7:28:42 PM
Demeton, Total	< 0.17		0.17	0.50	µg/L	1	11/12/2009 7:28:42 PM
Demeton-O	< 0.15		0.15	0.50	µg/L	1	11/12/2009 7:28:42 PM
Demeton-S	< 0.13		0.13	0.50	µg/L	1	11/12/2009 7:28:42 PM
Diazinon	< 0.10		0.10	0.50	µg/L	1	11/12/2009 7:28:42 PM
Malathion	< 0.09		0.09	0.50	µg/L	1	11/12/2009 7:28:42 PM
Surr: Phorate	96.6		0	70-130	%REC	1	11/12/2009 7:28:42 PM
Surr: Triphenyl Phosphate	110		0	70-130	%REC	1	11/12/2009 7:28:42 PM
CHLORINATED HERBICIDES			**SW8151A**		**(SW8151A)**		Analyst: **CO**
2,4,5-T	< 0.17		0.17	0.52	µg/L	1	11/18/2009 2:10:08 PM
2,4,5-TP (Silvex)	< 0.19		0.19	0.52	µg/L	1	11/18/2009 2:10:08 PM
2,4-D	< 0.13		0.13	0.52	µg/L	1	11/18/2009 2:10:08 PM
Dalapon	< 0.17		0.17	0.52	µg/L	1	11/18/2009 2:10:08 PM
Dicamba	< 0.16		0.16	0.52	µg/L	1	11/18/2009 2:10:08 PM
Dinoseb	< 0.21		0.21	0.52	µg/L	1	11/18/2009 2:10:08 PM
Pentachlorophenol	< 0.15		0.15	0.52	µg/L	1	11/18/2009 2:10:08 PM
Picloram	< 0.11		0.11	0.52	µg/L	1	11/18/2009 2:10:08 PM
Surr: 2,4-DB	96.9		0.07	70-130	%REC	1	11/18/2009 2:10:08 PM
TNRCC METHOD 1005-TPH			**TX1005**		**(TX1005)**		Analyst: **SM**
>C12-C28	< 0.5	A	0.5	4.5	mg/L	1	11/19/2009 6:56:27 PM
>C28-C35	0.6	JA	0.1	4.5	mg/L	1	11/19/2009 6:56:27 PM
C6-C12	0.7	JA	0.5	4.5	mg/L	1	11/19/2009 6:56:27 PM
C6-C35	< 0.6		0.6	4.5	mg/L	1	11/19/2009 6:56:27 PM
Surr: a,a,a-Trifluorotoluene	103		0	70-130	%REC	1	11/19/2009 6:56:27 PM
Surr: o-Terphenyl	82.7		0	70-130	%REC	1	11/19/2009 6:56:27 PM
ICP METALS, TOTAL RECOVERABLE			**E200.7**				Analyst: **MV**
Calcium	109		0.0260	0.200	mg/L	1	11/16/2009 1:06:08 PM
Iron	0.0845		0.00290	0.0500	mg/L	1	11/16/2009 1:06:08 PM
Magnesium	24.4		0.0117	0.200	mg/L	1	11/16/2009 1:06:08 PM
Potassium	3.24		0.0537	0.200	mg/L	1	11/16/2009 1:06:08 PM
Sodium	34.4		0.0200	0.600	mg/L	1	11/16/2009 1:06:08 PM
ICPMS METALS, TOTAL RECOVERABLE			**E200.8**				Analyst: **SW**
Arsenic	1.36	J	0.643	2.00	µg/L	1	11/12/2009 11:37:48 AM

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
J Analyte Detected Below Quantitation Limits
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	759-Deep Eddy Well U/S
Lab Order:	0911254	**Collection Date:**	11/10/2009 11:00:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911254-001	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
ICPMS METALS, TOTAL RECOVERABLE			**E200.8**				Analyst: **SW**
Copper	0.927	J	0.086	2.00	µg/L	1	11/12/2009 11:37:48 AM
Lead	< 0.087		0.087	1.00	µg/L	1	11/12/2009 11:37:48 AM
Nickel	3.66		0.122	2.00	µg/L	1	11/12/2009 11:37:48 AM
Strontium	796		0.430	10.0	µg/L	10	11/12/2009 12:41:12 PM
Zinc	4.60	J	1.29	5.00	µg/L	1	11/12/2009 11:37:48 AM
HARDNESS, TOTAL			**SM2340 B**				Analyst: **MV**
Hardness, Calcium/Magnesium (As CaCO3)	371		0.065	1.32	mg/L	1	11/16/2009
ORGANIC COMPOUNDS			**E525.2**		**(E525.2)**		Analyst: **SG**
Bromacil	< 0.0421	A	0.0421	0.214	µg/L	1	11/12/2009 8:01:00 PM
Surr: 1,3-Dimethyl-2-nitrobenzene	93.0		0	70-130	%REC	1	11/12/2009 8:01:00 PM
Surr: Perylene-d12	81.4		0	70-130	%REC	1	11/12/2009 8:01:00 PM
Surr: Pyrene-d10	101		0	70-130	%REC	1	11/12/2009 8:01:00 PM
Surr: Triphenyl Phosphate	108		0	70-130	%REC	1	11/12/2009 8:01:00 PM
SEMIVOLATILE ORGANICS			**SW8270C**		**(SW3520C)**		Analyst: **CO**
1&2-Chloronaphthalene	< 1.27	A	1.27	10.0	µg/L	1	11/20/2009 5:15:00 PM
1,2,4,5-Tetrachlorobenzene	< 0.617		0.617	10.0	µg/L	1	11/20/2009 5:15:00 PM
1,2,4-Trichlorobenzene	< 0.585		0.585	5.00	µg/L	1	11/20/2009 5:15:00 PM
1,2-Dichlorobenzene	< 0.711		0.711	5.00	µg/L	1	11/20/2009 5:15:00 PM
1,2-Diphenylhydrazine	< 0.553		0.553	5.00	µg/L	1	11/20/2009 5:15:00 PM
1,3-Dichlorobenzene	< 0.764		0.764	5.00	µg/L	1	11/20/2009 5:15:00 PM
1,4-Dichlorobenzene	< 0.871		0.871	5.00	µg/L	1	11/20/2009 5:15:00 PM
1-Naphthylamine	< 0.932	A	0.932	10.0	µg/L	1	11/20/2009 5:15:00 PM
2,3,4,6-Tetrachlorophenol	< 1.19		1.19	10.0	µg/L	1	11/20/2009 5:15:00 PM
2,4,5-Trichlorophenol	< 0.861		0.861	6.00	µg/L	1	11/20/2009 5:15:00 PM
2,4,6-Trichlorophenol	< 0.614		0.614	5.00	µg/L	1	11/20/2009 5:15:00 PM
2,4-Dichlorophenol	< 0.768		0.768	5.00	µg/L	1	11/20/2009 5:15:00 PM
2,4-Dimethylphenol	< 0.785		0.785	5.00	µg/L	1	11/20/2009 5:15:00 PM
2,4-Dinitrophenol	< 1.12		1.12	50.0	µg/L	1	11/20/2009 5:15:00 PM
2,4-Dinitrotoluene	< 0.627		0.627	10.0	µg/L	1	11/20/2009 5:15:00 PM
2,6-Dichlorophenol	< 0.492		0.492	5.00	µg/L	1	11/20/2009 5:15:00 PM
2,6-Dinitrotoluene	< 0.712		0.712	5.00	µg/L	1	11/20/2009 5:15:00 PM
2-Chlorophenol	< 0.606		0.606	5.00	µg/L	1	11/20/2009 5:15:00 PM
2-Methylnaphthalene	< 0.542		0.542	5.00	µg/L	1	11/20/2009 5:15:00 PM
2-Methylphenol	< 0.633		0.633	5.00	µg/L	1	11/20/2009 5:15:00 PM
2-Naphthylamine	< 0.562		0.562	5.00	µg/L	1	11/20/2009 5:15:00 PM
2-Nitroaniline	< 0.929		0.929	5.00	µg/L	1	11/20/2009 5:15:00 PM
2-Nitrophenol	< 0.534		0.534	5.00	µg/L	1	11/20/2009 5:15:00 PM
2-Picoline	< 0.766		0.766	5.00	µg/L	1	11/20/2009 5:15:00 PM

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
J Analyte Detected Below Quantitation Limits
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	759-Deep Eddy Well U/S
Lab Order:	0911254	**Collection Date:**	11/10/2009 11:00:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911254-001	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS			**SW8270C**		**(SW3520C)**		Analyst: **CO**
3,3'-Dichlorobenzidine	< 0.886		0.886	5.00	µg/L	1	11/20/2009 5:15:00 PM
3-Methylcholanthrene	< 0.647		0.647	5.00	µg/L	1	11/20/2009 5:15:00 PM
3-Nitroaniline	< 0.640		0.640	5.00	µg/L	1	11/20/2009 5:15:00 PM
4,6-Dinitro-2-methylphenol	< 0.863		0.863	50.0	µg/L	1	11/20/2009 5:15:00 PM
4-Aminobiphenyl	< 0.632		0.632	5.00	µg/L	1	11/20/2009 5:15:00 PM
4-Bromophenyl phenyl ether	< 0.651		0.651	5.00	µg/L	1	11/20/2009 5:15:00 PM
4-Chloro-3-methylphenol	< 0.596		0.596	5.00	µg/L	1	11/20/2009 5:15:00 PM
4-Chloroaniline	< 1.07		1.07	5.00	µg/L	1	11/20/2009 5:15:00 PM
4-Chlorophenyl phenyl ether	< 0.573		0.573	5.00	µg/L	1	11/20/2009 5:15:00 PM
4-Nitroaniline	< 1.52		1.52	15.0	µg/L	1	11/20/2009 5:15:00 PM
4-Nitrophenol	< 1.14		1.14	10.0	µg/L	1	11/20/2009 5:15:00 PM
7,12-Dimethylbenz(a)anthracene	< 0.648		0.648	5.00	µg/L	1	11/20/2009 5:15:00 PM
Acenaphthene	< 0.648		0.648	5.00	µg/L	1	11/20/2009 5:15:00 PM
Acenaphthylene	< 0.725		0.725	5.00	µg/L	1	11/20/2009 5:15:00 PM
Acetophenone	< 0.599		0.599	5.00	µg/L	1	11/20/2009 5:15:00 PM
Aniline	< 1.38		1.38	5.00	µg/L	1	11/20/2009 5:15:00 PM
Anthracene	< 0.926		0.926	5.00	µg/L	1	11/20/2009 5:15:00 PM
Atrazine	< 1.32	N	1.32	5.00	µg/L	1	11/20/2009 5:15:00 PM
Benzidine	< 2.71		2.71	5.00	µg/L	1	11/20/2009 5:15:00 PM
Benzo(a)anthracene	< 0.700		0.700	5.00	µg/L	1	11/20/2009 5:15:00 PM
Benzo(a)pyrene	< 0.801		0.801	5.00	µg/L	1	11/20/2009 5:15:00 PM
Benzo(b)fluoranthene	< 0.886		0.886	5.00	µg/L	1	11/20/2009 5:15:00 PM
Benzo(g,h,i)perylene	< 0.959		0.959	15.0	µg/L	1	11/20/2009 5:15:00 PM
Benzo(k)fluoranthene	< 0.988		0.988	5.00	µg/L	1	11/20/2009 5:15:00 PM
Benzoic acid	< 1.73		1.73	50.0	µg/L	1	11/20/2009 5:15:00 PM
Benzyl alcohol	< 0.594		0.594	10.0	µg/L	1	11/20/2009 5:15:00 PM
Bis(2-chloroethoxy)methane	< 0.775		0.775	5.00	µg/L	1	11/20/2009 5:15:00 PM
Bis(2-chloroethyl)ether	< 0.807		0.807	5.00	µg/L	1	11/20/2009 5:15:00 PM
Bis(2-chloroisopropyl)ether	< 0.652		0.652	5.00	µg/L	1	11/20/2009 5:15:00 PM
Bis(2-ethylhexyl)phthalate	< 0.619		0.619	5.00	µg/L	1	11/20/2009 5:15:00 PM
Butyl benzyl phthalate	< 0.670		0.670	5.00	µg/L	1	11/20/2009 5:15:00 PM
Carbaryl	< 0.567		0.567	5.00	µg/L	1	11/20/2009 5:15:00 PM
Carbazole	< 0.621		0.621	5.00	µg/L	1	11/20/2009 5:15:00 PM
Chrysene	< 0.884		0.884	5.00	µg/L	1	11/20/2009 5:15:00 PM
Cresols, Total	< 1.50	A	1.50	10.0	µg/L	1	11/20/2009 5:15:00 PM
Di-n-butyl phthalate	< 0.594		0.594	5.00	µg/L	1	11/20/2009 5:15:00 PM
Di-n-octyl phthalate	< 0.870		0.870	5.00	µg/L	1	11/20/2009 5:15:00 PM
Dibenz(a,j)acridine	< 0.769		0.769	10.0	µg/L	1	11/20/2009 5:15:00 PM
Dibenz(a,h)anthracene	< 0.567		0.567	10.0	µg/L	1	11/20/2009 5:15:00 PM
Dibenzofuran	< 0.673		0.673	5.00	µg/L	1	11/20/2009 5:15:00 PM

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
J Analyte Detected Below Quantitation Limits
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT: COA WPDR
Lab Order: 0911254
Project: Emergency Investigations
Lab ID: 0911254-001

Client Sample ID: 759-Deep Eddy Well U/S
Collection Date: 11/10/2009 11:00:00 AM
Matrix: GROUNDWATER
Tag No:

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS			**SW8270C**		**(SW3520C)**		Analyst: **CO**
Diethyl phthalate	< 0.546		0.546	5.00	µg/L	1	11/20/2009 5:15:00 PM
Dimethyl phthalate	< 0.439		0.439	5.00	µg/L	1	11/20/2009 5:15:00 PM
Ethyl methanesulfonate	< 0.628		0.628	5.00	µg/L	1	11/20/2009 5:15:00 PM
Fluoranthene	< 0.719		0.719	5.00	µg/L	1	11/20/2009 5:15:00 PM
Fluorene	< 0.660		0.660	5.00	µg/L	1	11/20/2009 5:15:00 PM
Hexachlorobenzene	< 0.547		0.547	5.00	µg/L	1	11/20/2009 5:15:00 PM
Hexachlorobutadiene	< 0.640		0.640	5.00	µg/L	1	11/20/2009 5:15:00 PM
Hexachlorocyclopentadiene	< 0.628		0.628	10.0	µg/L	1	11/20/2009 5:15:00 PM
Hexachloroethane	< 0.610		0.610	5.00	µg/L	1	11/20/2009 5:15:00 PM
Indeno(1,2,3-cd)pyrene	< 0.760		0.760	10.0	µg/L	1	11/20/2009 5:15:00 PM
Isophorone	< 0.501		0.501	5.00	µg/L	1	11/20/2009 5:15:00 PM
m,p-cresol	< 0.924	A	0.924	10.0	µg/L	1	11/20/2009 5:15:00 PM
Methyl methanesulfonate	< 0.512		0.512	5.00	µg/L	1	11/20/2009 5:15:00 PM
N-Nitroso-di-n-butylamine	< 0.899		0.899	5.00	µg/L	1	11/20/2009 5:15:00 PM
N-Nitrosodi-n-propylamine	< 0.653		0.653	5.00	µg/L	1	11/20/2009 5:15:00 PM
N-Nitrosodiethylamine	< 0.665		0.665	20.0	µg/L	1	11/20/2009 5:15:00 PM
N-Nitrosodimethylamine	< 0.865		0.865	5.00	µg/L	1	11/20/2009 5:15:00 PM
N-Nitrosodiphenylamine	< 0.632		0.632	5.00	µg/L	1	11/20/2009 5:15:00 PM
N-Nitrosopiperidine	< 0.589		0.589	5.00	µg/L	1	11/20/2009 5:15:00 PM
Naphthalene	< 0.654		0.654	5.00	µg/L	1	11/20/2009 5:15:00 PM
Nitrobenzene	< 0.635		0.635	5.00	µg/L	1	11/20/2009 5:15:00 PM
p-Dimethylaminoazobenzene	< 0.546	A	0.546	10.0	µg/L	1	11/20/2009 5:15:00 PM
Pentachlorobenzene	< 0.413		0.413	5.00	µg/L	1	11/20/2009 5:15:00 PM
Pentachloronitrobenzene	< 0.840		0.840	5.00	µg/L	1	11/20/2009 5:15:00 PM
Pentachlorophenol	< 0.731		0.731	6.00	µg/L	1	11/20/2009 5:15:00 PM
Phenacetin	< 0.458		0.458	5.00	µg/L	1	11/20/2009 5:15:00 PM
Phenanthrene	< 0.636		0.636	5.00	µg/L	1	11/20/2009 5:15:00 PM
Phenol	< 0.709		0.709	8.00	µg/L	1	11/20/2009 5:15:00 PM
Pronamide	< 0.644		0.644	5.00	µg/L	1	11/20/2009 5:15:00 PM
Pyrene	< 0.686		0.686	10.0	µg/L	1	11/20/2009 5:15:00 PM
Pyridine	< 0.871		0.871	5.00	µg/L	1	11/20/2009 5:15:00 PM
Surr: 2,4,6-Tribromophenol	55.2		0	30-124	%REC	1	11/20/2009 5:15:00 PM
Surr: 2-Fluorobiphenyl	44.0		0	42-143	%REC	1	11/20/2009 5:15:00 PM
Surr: 2-Fluorophenol	39.9		0	17-121	%REC	1	11/20/2009 5:15:00 PM
Surr: 4-Terphenyl-d14	66.5		0	23-150	%REC	1	11/20/2009 5:15:00 PM
Surr: Nitrobenzene-d5	51.3		0	28-116	%REC	1	11/20/2009 5:15:00 PM
Surr: Phenol-d5	47.4		0	27-112	%REC	1	11/20/2009 5:15:00 PM
VOLATILES BY GC/MS			**SW8260B**				Analyst: **SG**
1,1,1-Trichloroethane	< 0.13		0.13	0.50	µg/L	1	11/11/2009 6:24:00 PM

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
J Analyte Detected Below Quantitation Limits
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	759-Deep Eddy Well U/S
Lab Order:	0911254	**Collection Date:**	11/10/2009 11:00:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911254-001	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILES BY GC/MS			**SW8260B**				Analyst: **SG**
1,1,2,2-Tetrachloroethane	< 0.06		0.06	1.00	µg/L	1	11/11/2009 6:24:00 PM
1,1,2-Trichloroethane	< 0.10		0.10	0.50	µg/L	1	11/11/2009 6:24:00 PM
1,1-Dichloroethane	< 0.16		0.16	0.50	µg/L	1	11/11/2009 6:24:00 PM
1,1-Dichloroethene	< 0.12		0.12	0.50	µg/L	1	11/11/2009 6:24:00 PM
1,2,3-Trichlorobenzene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 6:24:00 PM
1,2,3-Trichloropropane	< 0.11		0.11	1.00	µg/L	1	11/11/2009 6:24:00 PM
1,2,4-Trichlorobenzene	< 0.08		0.08	0.50	µg/L	1	11/11/2009 6:24:00 PM
1,2-Dibromo-3-chloropropane	< 0.15		0.15	1.00	µg/L	1	11/11/2009 6:24:00 PM
1,2-Dibromoethane	< 0.09		0.09	1.00	µg/L	1	11/11/2009 6:24:00 PM
1,2-Dichlorobenzene	< 0.08		0.08	0.50	µg/L	1	11/11/2009 6:24:00 PM
1,2-Dichloroethane	< 0.15		0.15	0.50	µg/L	1	11/11/2009 6:24:00 PM
1,2-Dichloroethene, Total	< 0.21	A	0.21	0.50	µg/L	1	11/11/2009 6:24:00 PM
1,2-Dichloropropane	< 0.15		0.15	0.50	µg/L	1	11/11/2009 6:24:00 PM
1,3-Dichlorobenzene	< 0.07		0.07	0.50	µg/L	1	11/11/2009 6:24:00 PM
1,4-Dichlorobenzene	< 0.06		0.06	0.50	µg/L	1	11/11/2009 6:24:00 PM
2-Butanone	< 0.36		0.36	5.00	µg/L	1	11/11/2009 6:24:00 PM
2-Chloroethyl vinyl ether	< 0.12		0.12	0.50	µg/L	1	11/11/2009 6:24:00 PM
2-Hexanone	< 0.08		0.08	5.00	µg/L	1	11/11/2009 6:24:00 PM
4-Methyl-2-pentanone	< 0.13		0.13	5.00	µg/L	1	11/11/2009 6:24:00 PM
Acetone	< 0.43		0.43	5.00	µg/L	1	11/11/2009 6:24:00 PM
Acrolein	< 2.83		2.83	10.0	µg/L	1	11/11/2009 6:24:00 PM
Acrylonitrile	< 0.24		0.24	5.00	µg/L	1	11/11/2009 6:24:00 PM
Benzene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 6:24:00 PM
Bromodichloromethane	< 0.13		0.13	0.50	µg/L	1	11/11/2009 6:24:00 PM
Bromoform	< 0.08		0.08	0.50	µg/L	1	11/11/2009 6:24:00 PM
Bromomethane	< 0.41		0.41	1.50	µg/L	1	11/11/2009 6:24:00 PM
Carbon Disulfide	< 0.15		0.15	0.50	µg/L	1	11/11/2009 6:24:00 PM
Carbon Tetrachloride	< 0.14		0.14	0.50	µg/L	1	11/11/2009 6:24:00 PM
Chlorobenzene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 6:24:00 PM
Chloroethane	< 0.17		0.17	1.00	µg/L	1	11/11/2009 6:24:00 PM
Chloroform	< 0.12		0.12	0.50	µg/L	1	11/11/2009 6:24:00 PM
Chloromethane	< 0.13		0.13	0.50	µg/L	1	11/11/2009 6:24:00 PM
cis-1,2-Dichloroethene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 6:24:00 PM
cis-1,3-Dichloropropene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 6:24:00 PM
Dibromochloromethane	< 0.10		0.10	0.50	µg/L	1	11/11/2009 6:24:00 PM
Dibromomethane	< 0.11		0.11	0.50	µg/L	1	11/11/2009 6:24:00 PM
Dichlorodifluoromethane	< 0.17		0.17	1.00	µg/L	1	11/11/2009 6:24:00 PM
Ethyl Methacrylate	< 0.06		0.06	1.00	µg/L	1	11/11/2009 6:24:00 PM
Ethylbenzene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 6:24:00 PM
Iodomethane	< 0.12		0.12	0.50	µg/L	1	11/11/2009 6:24:00 PM

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
J Analyte Detected Below Quantitation Limits
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT: COA WPDR
Lab Order: 0911254
Project: Emergency Investigations
Lab ID: 0911254-001

Client Sample ID: 759-Deep Eddy Well U/S
Collection Date: 11/10/2009 11:00:00 AM
Matrix: GROUNDWATER
Tag No:

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILES BY GC/MS			**SW8260B**				Analyst: **SG**
m,p-Xylene	< 0.23		0.23	1.00	µg/L	1	11/11/2009 6:24:00 PM
Methyl tert-butyl ether	< 0.16		0.16	0.50	µg/L	1	11/11/2009 6:24:00 PM
Methylene chloride	< 0.10		0.10	0.50	µg/L	1	11/11/2009 6:24:00 PM
Naphthalene	< 0.06		0.06	0.50	µg/L	1	11/11/2009 6:24:00 PM
o-Xylene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 6:24:00 PM
Styrene	< 0.10		0.10	0.50	µg/L	1	11/11/2009 6:24:00 PM
Tetrachloroethene	0.23	J	0.12	0.50	µg/L	1	11/11/2009 6:24:00 PM
Toluene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 6:24:00 PM
trans-1,2-Dichloroethene	< 0.12		0.12	0.50	µg/L	1	11/11/2009 6:24:00 PM
trans-1,3-Dichloropropene	< 0.09		0.09	0.50	µg/L	1	11/11/2009 6:24:00 PM
trans-1,4-Dichloro-2-butene	< 0.11		0.11	0.50	µg/L	1	11/11/2009 6:24:00 PM
Trichloroethene	< 0.13		0.13	0.50	µg/L	1	11/11/2009 6:24:00 PM
Trichlorofluoromethane	< 0.17		0.17	0.50	µg/L	1	11/11/2009 6:24:00 PM
Vinyl Acetate	< 0.11		0.11	0.50	µg/L	1	11/11/2009 6:24:00 PM
Vinyl chloride	< 0.24		0.24	1.00	µg/L	1	11/11/2009 6:24:00 PM
Xylenes, Total	< 0.21		0.21	0.50	µg/L	1	11/11/2009 6:24:00 PM
Surr: 1,2-Dichloroethane-d4	102		0	70-130	%REC	1	11/11/2009 6:24:00 PM
Surr: 4-Bromofluorobenzene	102		0	70-130	%REC	1	11/11/2009 6:24:00 PM
Surr: Toluene-d8	101		0	70-130	%REC	1	11/11/2009 6:24:00 PM
OIL AND GREASE, HEM			**E1664**				Analyst: **MH**
Oil & Grease, Total Recoverable	< 0.40		0.40	2.52	mg/L	1	11/13/2009
ANIONS BY ION CHROMATOGRAPHY			**E300.0**				Analyst: **WR**
Chloride	44.4		0.017	1.00	mg/L	1	11/11/2009 3:05:00 PM
Fluoride	0.294		0.002	0.010	mg/L	1	11/11/2009 3:05:00 PM
Phosphorus, Orthophosphate (As P)	0.032		0.002	0.010	mg/L	1	11/11/2009 3:05:00 PM
Sulfate	44.1		0.015	1.00	mg/L	1	11/11/2009 3:05:00 PM
ALKALINITY			**SM2320 B**				Analyst: **JB**
Alkalinity, Total (As CaCO3)	305		0.1	2	mg/L CaCO3	1	11/11/2009
NITRATE AND NITRITE			**SM4500-NO3-H**				Analyst: **KK**
Nitrogen, Nitrate & Nitrite	1.41		0.004	0.020	mg/L	1	11/12/2009
AMMONIA AS N			**E350.1**				Analyst: **ML**
Nitrogen, Ammonia (As N)	< 0.005		0.005	0.020	mg/L	1	11/16/2009
ORGANIC CARBON, TOTAL			**SM5310D**				Analyst: **CM**
Organic Carbon, Total	0.860		0.025	0.500	mg/L	1	11/12/2009
TOTAL SUSPENDED SOLIDS			**SM2540D**				Analyst: **JB**

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
J Analyte Detected Below Quantitation Limits
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: *23-Nov-09*

CLIENT:	COA WPDR	**Client Sample ID:**	759-Deep Eddy Well U/S
Lab Order:	0911254	**Collection Date:**	11/10/2009 11:00:00 AM
Project:	Emergency Investigations	**Matrix:**	GROUNDWATER
Lab ID:	0911254-001	**Tag No:**	

Analyses	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
TOTAL SUSPENDED SOLIDS			**SM2540D**				Analyst: **JB**
Suspended Solids (Residue, Non-Filterable)	1.2		0.5	1.0	mg/L	1	11/16/2009
VOLATILE SUSPENDED SOLIDS			**E160.4**				Analyst: **JB**
Volatile Suspended Solids	< 0.500		0.500	1.00	mg/L	1	11/16/2009

Qualifiers:

A Not Available for Accreditation
B Analyte Detected in Method Blank
E Value Above Quantitation Range
H Holding Time Exceeded
J Analyte Detected Below Quantitation Limits
N Not Accredited
S Spike Recovery Outside Recovery Limits
X Value Exceeds Maximum Contaminant Level (MCL)

PQL: Practical Quantitation Limit