

**FINAL
IPEC QUARTERLY LONG-TERM
GROUNDWATER MONITORING REPORT
QUARTER THREE 2009
(REPORT NO. 7)
INDIAN POINT ENERGY CENTER
BUCHANAN, NEW YORK**

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Quarter Three 2009 (Report No. 7)
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Dear Mr. Donahue:

GZA GeoEnvironmental of New York (GZA) is pleased to provide this Quarterly Groundwater Monitoring Report for Indian Point Energy Center located at 450 Broadway, Buchanan, NY.


We trust that this information satisfies your present needs. Should you need any additional information, please do not hesitate to call us at (781) 278-3805.


Very truly yours,

GZA GEOENVIRONMENTAL OF NEW YORK


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1.0 EXECUTIVE SUMMARY

On behalf of Entergy Nuclear Northeast, Inc., GZA GeoEnvironmental of New York (GZA) has completed the Q3 2009 quarterly groundwater monitoring for the Indian Point Energy Center (IPEC), culminating in this report. Interpretations of the monitoring data have been made in the context of the current Conceptual Site Model. Development of this model began at the outset of the site investigations and has been iteratively enhanced as subsequent data has become available, in part through quarterly monitoring. The report has been written with a focus on the most recent quarterly data; relationships to prior data and more in-depth technical explanations have typically been relegated to footnotes. This report format was chosen to allow efficient assimilation by those already familiar with the project. The footnotes contain important information and should be carefully read by all, but particularly by those less familiar with the technologies involved and the project history.

Based on the quarterly groundwater sampling data for Q3 2009, GZA concludes that, as predicted, groundwater contaminants continue to migrate toward the Hudson River to the West, and have not migrated off the Site to the North, East or South.

Radionuclide concentrations measured during Q3 2009 were combined with previous quarterly and Post-quarterly data to compute rolling average concentrations reflective of groundwater contaminant levels over the past twelve months. These data were multiplied by the associated individual zone-specific groundwater flux values, derived from the recalibrated Precipitation Mass Balance Model¹, to compute yearly average radionuclide release rates to the Discharge Canal and Hudson River. The Conceptual Site Model (CSM), upon which these computation are based, continues to be validated through: (1) Precipitation Mass Balance Model calibration analyses, as based on groundwater elevation data collected in 2007, 2008, and 2009²; (2) the behavior of both the Unit 1 Strontium plume and the Unit 2 Tritium plume as evaluated each quarter; and (3) additional tracer data collected in 2008/2009. These data, in our opinion, continue to support the use of the current CSM as a basis for Long Term Monitoring Program design.

From both qualitative and quantitative perspectives, the most recent quarterly data further support the conclusion that the overall Tritium activity in the Unit 2 plume is decreasing. These reductions are evident in this quarter (as well as Q2 2009), as shown on **Figures 6 and 6A** where the shaded plume³ no longer extends downgradient of MW-37 (and thus, no longer extends to the river), as it has previously. It is further visually evident from **Figure 6A** that the core of the plume has also shown a marked decrease in concentration and extent over time.

¹ Refer to **Appendix H** of the Quarter 2 2009 Quarterly Long-Term Groundwater Monitoring Report for discussion on the recalibration of the Precipitation Mass Balance Model. Precipitation and groundwater elevation data were collected onsite between 2007 and 2009 and used to compute groundwater fluxes across the site. The precipitation data from 2007-2009 sufficiently encompassed the historical variability of precipitation. Therefore, maximum onsite fluxes were calculated from the groundwater elevation data, and used to conservatively recalibrate the Precipitation Mass Balance Model, as discussed and employed in the Q2 2009 Quarterly LTM Report.

² The formulation and basis for the Precipitation Mass Balance model, as well as the overall CSM, is presented in the Hydrogeologic Site Investigation Report, January 7, 2008, prepared by GZA GeoEnvironmental, Inc, on behalf of Enercon Services, Inc., for Entergy Nuclear Northeast, Indian Point Energy Center, 450 Broadway, Buchanan, NY 10511.

³ The plume shading on **Figure 6** demarks the estimated boundary that separates Tritium levels greater than 5,000 pCi/L from those below this value. This plume delineation boundary value equates to one-quarter of the drinking water standard for Tritium. Although GZA emphasizes that drinking water standards (USEPA MCLs) do not apply to the IPEC property given that there are no drinking water sources on or proximate to the site, the MCLs do provide a useful benchmark for comparisons of relative human risk. Where yearly rolling average radionuclide activity data were available for multiple depths at a given location, GZA used the highest value to develop plume delineations. This is a typical approach to represent three-dimensional contaminant data sets on two-dimensional maps.

Section 1.0 Executive Summary

Within the overall decreasing trends in Tritium activity, three localized exceptions of note were identified this quarter:

- Noticeable increases in Tritium activity were observed in the shallowest intervals of MW-31 and MW-32 this quarter⁴ (as well as Q2 2009); the variability exhibited by the Tritium data from these wells are consistent with episodic releases of Tritium historically stored in the subsurface via natural and anthropogenic Retention Mechanisms⁵. This conclusion is further supported by the tracer data and other analyses discussed in Section 3.6 of the Q1 2009 Long Term Monitoring Report.
- A recent increase in Tritium level at MW-36-24 is likely related to the same mechanisms associated with the recent Tritium increases in MW-31 and MW-32.
- A recent increase in Tritium level at MW-50-42 is possibly related to an observed transient leak in the waste distillation tank valving within the Unit 1 FSB or the recent Tritium increases in MW-31 and MW-32.

The overall Sr-90 activity within the Unit 1 plume had generally been stable or decreasing in response to the West Pool demineralization activities conducted by Entergy beginning in 2006. However, the final defueling of the Unit 1 SFPs has resulted in a noticeable increase in Strontium levels proximate to the SFPs, as well as initial indications of increases in Strontium plume activity downgradient (see **Figure 7** and **7A**). This is as was predicted given the requirement to temporarily raise the pool levels for fuel rod removal, thus increasing leakage rate from the SFPs⁶. As expected, the levels proximate to the pool have since decreased and it is expected that levels downgradient of the pool will return to pre-defueling levels as this additional strontium contaminated water flushes through the groundwater flow system. It is anticipated that this flushing mechanism will be protracted given the impact of partitioning on Strontium levels in the groundwater. However, over time it is expected that downgradient Strontium plume levels will also resume an overall downward trend once this transient perturbation has passed through the system.

Based on the data and analyses provided herein, our conclusion is that the Tritium and Strontium plumes are both undergoing overall long-term reductions in activity. Given this conclusion, and the recognition that Entergy has terminated all identified leaks in the Unit 2 SFP⁷ and has decommissioned the Unit 1 SFPs, these plumes satisfy the requirements for Monitored Natural Attenuation (MNA), the remedial technology selected for the IPEC Site. However, it is also concluded that, while a portion of the above cited localized leakage traveled directly to the saturated groundwater regime and resulted in the observed transient “peaks” in radionuclide levels, additional portions of these releases likely remain above the water table as

⁴ As discussed in **Section 3.4.4**, the samples exhibiting I.L. exceedances were Post-Q3 samples.

⁵ These Retentions Mechanisms are discussed along with the CSM in the previously cited Hydrogeologic Site Investigation Report.

⁶ As of late 2008, all the fuel rods have been removed from the Unit 1 SFPs and the pool water has been drained. As such, the Unit 1 SFPs is no longer an active source of radionuclides to the subsurface.

⁷ Further justification for this conclusion can be found in Section 3.6 of the Q1 2009 Quarterly Monitoring Report as well as the Hydrogeologic Site Investigation Report. The Q1 2009 Report summarizes additional, more quantitative analyses have been completed to further investigate the integrity of the Unit 2 SFP. These analyses provide further support for the original conclusion that the Unit 2 SFP is no longer leaking. However, these analyses cannot definitively rule out the possibility of a remaining small leak which could then also be supplying Tritium to the groundwater flow regime in addition to the Retention Mechanism(s). While it is not possible to quantify the size the minimum detectable leak with any degree of certainty, we believe that the maximum leak rate from the Unit 2 SFP that could potentially remain undetected by the groundwater monitoring system is less than 10 to 30 gpd (0.007 to 0.021 gallons per minute). It is also likely that if a small leak exists in the Unit 2 SFP liner, it should not get worse with time. This opinion is based on liner evaluations previously conducted by Entergy. It is further emphasized that while a leak of more than 0.02 gallons per minute should be large enough to be readily detectable with the existing Long Term Monitoring Program, this amount of Tritium release to the river is still small compared to permitted levels of Tritium discharge to the river through the Discharge Canal.

Section 1.0 Executive Summary

recharge to the various Retention Mechanisms. This additional unsaturated zone source recharge will likely be manifested in the future as additional non-specific peaks in radionuclide levels due to episodic releases to the groundwater flow regime from these mechanisms (e.g., from intense/prolonged precipitation events). These localized release events also interfere with the goal of resetting Site Investigation Levels (I.L.s); updating of Strontium I.L.s must therefore await return to the original Strontium baseline levels existing prior to Unit 1 defueling, and additional seasonal data is required to better assess Tritium response to precipitation-driven Retention Mechanism release variability. Therefore, the ultimate confirmation of the above conclusions will require monitoring over a number of years so as to allow ranges in seasonal variation to be adequately reflected in the monitoring data and thus demonstrate continued depletion of Tritium and Strontium from the Retention Mechanisms.

In summary, based on the data collected to date, the apparent strength of the CSM to evaluate that data, and the completion of source interdictions by Entergy, we believe all Program Objectives (see **Section 3.0**) are being met. These objectives are consistent with and fully encompass the guidance provided in the NEI Groundwater Protection Initiative (GPI).



2.0 SCOPE OF WORK

During Q3 2009, GZA performed groundwater monitoring activities at IPEC in Buchanan, New York (Site) as part of IPEC's overall Long Term Groundwater Monitoring Program (LTMP)⁸. The overall foundation for the development and execution of this LTMP is based on the CSM, a description of which is contained within GZA's Hydrogeologic Site Investigation Report⁹. The scope of work completed for this quarter's monitoring is described in the Sections below. Refer to **Figures 1 and 2** for a Site Location Plan and Site Plan. **Figure 3** provides a Lower Hudson Valley Geologic Map and **Figure 4** summarizes Current and Potential Future SSC Source Locations.

2.1 Groundwater Elevation Measurement

GZA maintains a network of long-term monitoring transducers and dataloggers as part of the instrumentation located across the Site, and downloads these instruments on a quarterly basis¹⁰. Transducer installation logs are presented in **Appendix B**.

These instruments record groundwater elevation and temperature measurements at regular time intervals,¹¹ and the original, more extensive network, provided critical data inputs for the development of the CSM and the computation of yearly radiological dose to the Hudson River. Over the first nine quarters of the LTM program (Q2 2007 through Q2 2009), sufficient data was collected from the original network of transducers to capture groundwater elevation response to seasonal and yearly precipitation variability. Therefore, starting with this Q3 2009 quarterly report, the transducer monitoring program was refocused on a select set of locations to routinely monitor the on-Site groundwater conditions. These long-term monitoring locations were selected¹² to provide the data required to document that groundwater flow conditions remain consistent with the CSM, thus demonstrating the veracity of the subsequent dose computations.

During the quarterly sampling, GZA downloaded groundwater elevation data from the long-term monitoring transducers, which was collected over the entire duration of the quarter. The low-tide groundwater elevation data during Q3 2009 (08/09/2009) from these 22 transducers are presented in **Table 2** and compared to historic minimum and maximum values on **Figure 5A**¹³ and demonstrate that substantial variations to the observed flow field have not occurred. These

⁸ Refer to the "Final Quarterly Long-Term Groundwater Monitoring Report Q2-Q4 2007 (Report No. 1)," dated May 2008 for Site background information and a description of the environmental setting.

⁹ Hydrogeologic Site Investigation Report, January 7, 2008, prepared by GZA GeoEnvironmental, Inc, on behalf of Enercon Services, Inc., for Entergy Nuclear Northeast, Indian Point Energy Center, 450 Broadway, Buchanan, NY 10511.

¹⁰ With regard to these ongoing long term monitoring locations, it is noted that the transducers have a limited life. While some of the transducers can be replaced, and have been replaced in the past, others are permanently installed in the subsurface and are no longer accessible for replacement. However, with time, the base of data upon which model validity is assessed becomes increasingly more robust. Therefore, if some of these transducers fail over time, it is not likely that replacement will be imperative. This is because the likelihood of encountering a precipitation event substantially outside the already captured range becomes increasingly more remote with time as more data is collected. In addition, it is again emphasized that considerable conservatism has been incorporated within the model development and the dose rates computed are still far below those permitted by regulation.

¹¹ Currently, transducers record groundwater elevation and temperature readings on a 20 minute time interval so as to allow capture of tidal variability.

¹² The rationale for the specific locations and depths included in the LTMP transducer redeployment are provided in Appendix K of the Q1 2009 Quarterly Monitoring Report (Report No.5), dated July 2, 2010 and Appendix J of the Q2 2009 Quarterly Monitoring Report (Report No.6).

¹³ **Figure 5**, which previously presented shallow and deep groundwater contours, can be found in quarterly reports prior to, and including Q2 2009. This figure is no longer required given that sufficient quarterly contour data has already been obtained (See Q2 2009 for further analysis).

Section 2.0 Scope of Work

data thus further validate the applicability of the Precipitation Mass Balance Model (PMBM) for use in subsequent radiological dose computations – see **Section 3.1**.

2.2 Groundwater Sampling

During Q3 2009, GZA collected groundwater samples for radionuclide analysis from scheduled sampling intervals within select monitoring installations (“wells”) as shown in **Table 3**. Chains of Custody for samples collected by GZA are presented in **Appendix C**.

GZA used a number of different types of pumping equipment depending upon the sampling method and the characteristics of the individual monitoring installation¹⁴. **Table 1** lists the monitoring installations sampled, the sampling depths and elevations within sampling installations, and the sampling method and equipment used.

In general, GZA implemented two basic methods of sampling to collect representative groundwater samples: the Low Flow method and a modified well volume purge method. The Low Flow method allows collection of representative groundwater samples from discrete sampling zones within a monitoring installation, while limiting the accumulation of wastewater¹⁵. As agreed by Entergy Nuclear Northeast, the NRC, NYSDEC, and GZA, the modified traditional purge method¹⁶ allows for the collection of a representative groundwater sample from a monitoring installation after purging 1.5 volumes of water¹⁷. We implemented this method in wells where low flow sampling was not practical. Sampling Data Sheets summarizing water quality data and sampling information are presented in **Appendix D**.

With all of the above sampling methods, GZA used dedicated sampling equipment, including polyethylene and/or nylon tubing and submersible electric pumps to the extent practical. The use of dedicated sampling equipment limits the possibility of cross-contamination between monitoring installations and/or individual multi-level samples within a single installation. Refer to **Table 1** for a summary of the sampling methods, equipment, frequency, and depths employed during this quarter’s groundwater monitoring round.

2.3 Vapor Containment Building Foundation Drain Sampling

GZA collected a water sample from MH-5 on-Site to characterize discharge from foundation drain around and below the Unit 2 Vapor Containment Structure (the drain includes both the foundation drain around the building periphery (“curtain drain”) as well as that around the sump near the middle of the structure¹⁸). This drain, along with B-1 and B-6, are being used as an integral part of the early leak detection monitoring network. Prior to the Q2 2009 quarterly sampling event¹⁹, Entergy modified the cover of MH-5 to allow access to this sampling location

¹⁴ Refer to Section 4.3 of the Final 2007 Quarterly Long-Term Groundwater Monitoring Report No. 1, dated May 2008, for sampling method and equipment selection rationale.

¹⁵ As described in: Low-Flow Sample Collection, GZA, 7/18/2007

¹⁶ As described in: Modified Traditional Groundwater Sample Collection, GZA, 7/18/2007

¹⁷ When external factors (such as well-surface-flooding from storm water runoff or overland flow of plant component leaks) might have infiltrated the top of the well and impacted ambient groundwater conditions at a specific sampling location, GZA typically purged three to five volumes of water (using the modified traditional purge method) prior to collection of a sample to attempt to obtain a representative groundwater sample.

¹⁸ We could not verify that a foundation drain exists around the reactor sump in Unit 2. The assumption that it does exist is based on the plans for Unit 3 and the similarities in construction of both units.

¹⁹ Prior to Q3 2008, GZA was able to sample the east drain line in manhole MH-5 to capture drainage from the Unit 2 Vapor Containment Foundation Drains. GZA also previously sampled the east drain line in manhole B-1 to capture drainage from the Unit 3 Vapor Containment South Curtain Drain. In addition, GZA sampled the manhole B-6 during earlier sampling quarters to capture drainage from the Unit 3 Vapor Containment North Curtain Drain and Reactor Sump Foundation Drain. During early attempts to collect a discrete sample specifically representative of the east drain line in B-6, this catch basin was used as a clean water discharge point for some unidentified plant work. As a result, the height of the water within the manhole was above the drain

Section 2.0 Scope of Work

without compromising plant security. As such, samples were collected from this location during the Mid-Q3-2009 sampling round. The Mid-Q3-2009 results indicate similar Tritium levels in MH-5 when compared to the Mid-Q2-2009 results; all other radionuclides were non-detect.

2.4 Proactive Mid-Quarter and Confirmatory Sample Collection

During the Q3 2009 monitoring period, there were no activities that required increased sampling. However, investigation level (I.L.) exceedances for Tritium were reported for the Q3-2009 sampling results at sampling locations MW-31-49 and MW-32-59. Additionally, the Tritium results from these two sampling locations in Q2 2009 represented historical maximum levels. Consequently, additional mid-quarter groundwater samples were collected from all sampling intervals in these two monitoring locations, as well as MW-30, post-Q3 2009 to evaluate these elevated Tritium results.

The results of the confirmatory and mid-quarter samples are presented in **Section 3.4** along with the quarterly data. Sampling Data Sheets summarizing water quality data and sampling information are presented in **Appendix E**.

2.5 Preventative Maintenance

GZA performed general wellhead maintenance tasks, such as housekeeping of well vaults and roadboxes, and replacement of dedicated sampling equipment, tubing and transducers, as required.

lines, which only permitted collection of a composite sample. By mid-year 2008, these discharge operations had ceased, and during the Q2 2008 attempt to collect a sample from this location, GZA observed no flow of water through this drain. It is possible that flow within this drain is being restricted by sediment further upgradient in the drain.



3.0 DATA EVALUATION

The Long Term Monitoring Program was designed to provide data to address four main objectives:

- Monitor radionuclide concentrations and evaluate groundwater flow rate to both detect and characterize current and potential future off-Site groundwater contaminant migration to the Hudson River, both via direct groundwater discharge to the river and through infiltration into the Discharge Canal, from abnormal radionuclide releases of liquid effluents, so as to allow computation of potential radiation dose to the public from these releases;
- Monitor groundwater proximate to Systems, Structures and Components (SSCs) which exhibit a credible probability of resulting in a visually undetected release of radionuclides to the subsurface carrying an activity level of significance;
- Monitor groundwater along the property boundary to confirm that contaminated groundwater is not migrating off of the property to locations other than the river; and
- Monitor the groundwater plumes identified on-Site to demonstrate overall reductions in total activity over time as is consistent with the requirements of Monitored Natural Attenuation (MNA)²⁰, the selected remediation for the IPEC Site.

These objectives are consistent with and fully encompass the guidance provided in the NEI Groundwater Protection Initiative (GPI). The following sections provide data analyses to address these four objectives.

3.1 Groundwater Mass Flux Computation

As presented in the Hydrogeologic Site Investigation Report, the groundwater flow in both the upper and lower flow zones is toward the power block area from the North, East and South, with subsequent discharge to the Hudson River to the West. We estimate that groundwater flow associated with infiltration from the watershed may be as deep as 350 feet, but still ultimately discharges to the river. A corollary to this conclusion is that there is no groundwater flow, and thus no off-Site radionuclide migration from the power block area to the North, East or South.

To estimate groundwater flow (i.e., groundwater mass flux) beneath the Site, a groundwater flow model was constructed based on a precipitation mass balance analysis. This analysis is based on the precept that, on a long term average, the groundwater flowing through and discharging from the aquifer is equal to the watershed infiltration recharge; this conclusion was reached because the only substantial source of recharge to the aquifer is areal recharge derived from precipitation. The previous fourteen year average for precipitation measured at the Site is approximately 36 inches per year. Based on a USGS infiltration study²¹, as well as the groundwater flux model calibration, approximately 25 percent of the precipitation falling on pervious surfaces over the Site watershed area results in infiltration recharge to the groundwater.

The Precipitation Mass Balance Model (PMBM) was initially calibrated²² to groundwater fluxes based on a Darcy's Law Model with groundwater gradients derived from Q2 2007 (June 1,

²⁰ The selection of MNA as the remedial strategy for the Site is discussed further in the Hydrogeologic Site Investigation Report.

²¹ USGS. Water Use, Ground-Water Recharge and Availability, and Quality of Water in the Greenwich Area, Fairfield County, Connecticut and Westchester County, New York, 2000-2002.

²² The calibration compared the total groundwater flow values for each of the six on-Site flow zones computed independently using the PMBM and the Darcy's Law Model. The two models use different sets of input parameters which are not dependent or related

Section 3.0 Data Evaluation

2007) groundwater elevation contours²³ (initial reference data set). This calibration not only verified the reasonableness of the overall groundwater flow rates predicted by the PMBM, but also allowed further discretization of the groundwater flow into upper and lower flow zones as well as flow volumes upgradient and downgradient of the Discharge Canal. The PMBM was also recalibrated²⁴ after collecting the final full set of transducer data in Q2 2009²⁵. Data analyses demonstrated that recalibration to the Q4 2008 data set yielded the most conservative (highest dose to the river) calibration of the nine quarterly data sets obtained during the LTMP, and was thus adopted for all subsequent dose computations. The analyses upon which this conclusion is based and details of the recalibration are provided in the Q2 2009 LTM Report.

Since precipitation represents the driving variable for groundwater flux in the PMBM, the yearly precipitation just prior to Q3 2009 (approximately 30.4 inches) was calculated and input into the recalibrated model to compute the flows used in the estimation of Q3 2009 dose values. Based on the USGS study cited above, the aquifer recharge rate is therefore approximately 8 inches for the year prior to the Q3 2009 monitoring event. Applying this information to the pervious surfaces within the six individual groundwater flow zones shown on **Figure 4**, it is estimated that approximately 3.3 gpm of groundwater flowed into the Discharge Canal from the upper and lower zones in the previous year. In addition, approximately 6.5 gpm of groundwater flowed into the Hudson River from each of the upper and lower zones. Storm water discharging into the Discharge Canal and directly into the Hudson River was estimated to be 34.6 and 3.6 gpm, respectively. These flows can be further subdivided into flow zones with further detail as shown in the table in **Appendix F**.

to each other. The groundwater flow computed using the PMBM is based on yearly precipitation amounts and the proportion of this precipitation that results in infiltration recharge to the groundwater. The Darcy's Law Model, on the other hand, is based on the measured groundwater flow gradients (as computed from groundwater elevation contours) and estimates of the formation hydraulic conductivity.

²³ Groundwater elevation snapshots from transducer data at low river tides were used to construct both upper groundwater flow zone (water table) and lower groundwater flow zone (potentiometric head) contours for each quarterly LTM report from Q2 2007 to Q2 2009. The deep zone groundwater contours illustrated a subdued reflection of the upper zone groundwater contours, demonstrating that the anthropogenic effects of the Site are generally shallow. Refer to the Q2 2009 LTM Report prepared by GZA and the Hydrogeologic Site Investigation Report prepared by GZA and dated January 7, 2008 for further discussion.

²⁴ After reviewing the groundwater elevation and precipitation data from the Indian Point meteorological station over the time period from Q2 2007 to Q2 2009, it was concluded that sufficient seasonal data had been collected to encompass the majority of the precipitation variability observed over the last fourteen years (fifty-six quarters); see analysis in Appendix H of the Q2 2009 Monitoring Report. As such, the PMBM was recalibrated. To be conservative, the model was recalibrated to the quarterly data set that yielded the largest total and/or Unit ½ Zone groundwater flows from the Darcy's Law Model (note that the Unit ½ Zone contains the vast majority of the radionuclide impacted groundwater). Based on these analyses, the PMBM was recalibrated to the groundwater fluxes from Q4 2008. While this quarter did not yield the highest total flow through the entire site, it did provide a high total flow and the highest flow through the Unit ½ Zone, and thus the highest computed dose. The recalibration of the model to the Q4 2008 data yielded Unit ½ Zone and total groundwater fluxes approximately 40% and 25% greater, respectively, than the original reference (Q2 2007) data set.

²⁵ To continue to validate the appropriateness and applicability of the PMBM, a subset of the existing transducers are being maintained and monitored quarterly as part of the Long Term Monitoring Program, starting with this Q3 2009 quarterly report. The primary objective of maintaining these transducers is to provide ongoing confirmatory data that demonstrate substantial changes to the on-Site groundwater flow field have not taken place and thus verify that the basic assumptions inherent in the PMBM continue to remain valid. The transducer locations are provided on **Figure 5A** of this quarterly report, and the rationale for the selection of these specific individual transducer locations is discussed in the Q1 and Q2 2009 Quarterly LTM Reports. With regard to these ongoing long-term monitoring locations, it is noted that the transducers have a limited life. While some of the transducers can be replaced, and have been replaced in the past, others are permanently installed in the subsurface and are no longer accessible for replacement. However, with time, the base of data upon which model validity is assessed becomes increasingly more robust. Therefore, if some of these transducers fail over time, it is not likely that replacement will be imperative. This is because the likelihood of encountering a precipitation event substantially outside the already captured range becomes increasingly more remote with time as more data is collected. In addition, it is again emphasized that considerable conservatism has been incorporated within the model development and the dose rates computed are still far below those permitted by regulation.

Section 3.0 Data Evaluation

3.2 Groundwater Sampling Results

Groundwater samples collected on behalf of Entergy during Q3 2009 were analyzed at GEL Laboratories for Tritium, Sr-90, Cs-137, Co-60, and Ni-63²⁶. Table 3 presents the Q3 2009 analytical results for these radionuclides. The rolling yearly averages, which are calculated using all the valid data from the previous year [Q4 08 through Q3 09] including mid-quarter and confirmatory samples, are also presented in Table 3. Table 4 presents minimum detection concentrations (MDC), standard deviation, and I.L.s assigned to each well for the Q3-2009 analytical results. Table 5 presents historic Site groundwater analytical data. Isopleth maps of rolling averages for Tritium and Sr-90 are presented in Figures 6 and 7, respectively. Figure 8 presents a data map of rolling averages for Cs-137, Co-60, and Ni-63²⁷.

An overall evaluation of the sample handling, shipment and analytical procedures, indicate that the quality assurance quality control protocols have been met for Q3 2009, and the analytical results should be useable. This conclusion is further supported by a review of the Q3 2009 analytical data, as compared to previous historical trends. Refer to Section 5.2.2 of the Final 2007 Quarterly Long-Term Groundwater Monitoring Report No. 1 for further details pursuant to quality assurance quality control protocols.

3.3 Radionuclide Release Rates

The recalibrated PMBM-derived groundwater flows within each of the six flow zones are multiplied by yearly rolling average radionuclide levels within each zone to compute groundwater radionuclide release rates to the Discharge Canal and Hudson River. These groundwater radionuclide release rates are computed separately for upper and lower flow zones as well as upgradient and downgradient of the Discharge Canal. The selection of specific monitoring locations for each of the six zones is described in the January 25, 2008 Memorandum – Synopsis of Long Term Monitoring Plan Bases.

Storm drain flows²⁸ computed based on yearly precipitation rates are multiplied by radionuclide concentrations measured in the storm drains to compute the associated storm drain radionuclide release rates²⁹ to the Discharge Canal and Hudson River.

The radionuclide release rates from the groundwater and storm drains to the Discharge Canal and Hudson River for Q3 2009 are shown in the table below.

²⁶ It should be noted that samples were also analyzed for gamma emitters via gamma spectroscopy. Although only Co-60 and Cs-137 are reported, gamma spectroscopy could detect and identify other gamma emitters if they became present in groundwater.

²⁷ Isopleths were not drawn for Cs-137, Co-60, and Ni-63 because the few positive detections observed did not indicate the existence of a groundwater plume containing these radionuclides. This is likely a result of the high surface affinity (highly adsorptive nature) of these radionuclides for solid geological materials. They therefore tend to rapidly partition out of the groundwater.

²⁸ The storm drain flows also include groundwater discharges from the foundation drains for Unit 2 and Unit 3 VC Buildings, but not from the Unit 1 NCD and SFDS, which are otherwise accounted for.

²⁹ It is noted that storm drain samples are not typically taken at times coincident with peak, or even average storm drain flow rates. By its very nature, the vast majority of the flow through the storm drain system tends to be episodic and of short duration due to storm events; sampling rounds are generally scheduled to avoid such events. Radionuclide concentrations are primarily due to groundwater infiltration into the drains and thus tend to be highest during periods of little rain when this infiltration is not diluted by the storm water flow. This incongruence therefore yields a high bias to the dose computation because the elevated concentrations associated with low flow rates are multiplied by the much higher flow rates based on total yearly rainfall.

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	GROUNDWATER AND SURFACE WATER TO RIVER (CI/YR)	GROUNDWATER AND SURFACE WATER TO CANAL (CI/YR)
Northern Clean Zone*	2.97E-04	0.00E+00**
Unit 2 North Zone	0.00E+00***	3.42E-02
Unit ½ Zone	2.58E-03	2.02E-03
Unit 3 North Zone	2.71E-03	3.50E-04
Unit 3 South Zone	1.33E-03	3.87E-03
Southern Clean Zone*	3.49E-03	0.00E+00****

* Activity in the Northern Clean Zone is attributable to an assumed Tritium background concentration of 150 pCi/L in the groundwater. The remaining radionuclides were assumed to not be present in this streamtube. Radionuclide release rate in the Southern Clean Zone is calculated from activity measured in monitoring wells MW-40 and MW-51.

** The radionuclide release rate to the Discharge Canal from the Northern Clean Zone is zero because the Discharge canal does not extend far enough to the north to be downgradient of the Northern Clean Zone.

*** The zero contribution to radionuclide dose to the river through the Unit 2 North Zone groundwater is due to a model-computed groundwater flow of zero through this zone. This simplified estimate results in an overall high bias to the dose computations, and is therefore conservative as explained further in **Appendix F**.

**** The radionuclide release rate to the Discharge Canal from the Southern Clean Zone has been computed to be zero because groundwater in this zone appears to flow under the Discharge Canal and directly to the river. This conclusion has been reached given that the surface water level in the Discharge Canal is, on average tidally, equal to the proximate groundwater elevation, both of which are above the water level elevation in the Hudson River. This approximation results in a conservatively high dose estimation.

Release rates are then used by Entergy to calculate the radiological dose to the environment via the Discharge Canal and the Hudson River using the procedure outlined in the Liquid Radioactive Effluents (0-CY-2740) document, prepared by Entergy and dated January 12, 2007.

3.4 SSCs and Property Boundary Monitoring

In addition to providing the data for dose computation as discussed above, the Long Term Monitoring Program has been designed to also provide rapid detection of potential leaks from SSCs. This monitoring is specifically focused on those SSCs which exhibit a credible probability of resulting in a visually undetected release of radionuclides to the subsurface³⁰. The monitored SSCs are shown on **Figure 4** and a description of the specific monitoring installations associated with each SSC are provided in the January 25, 2008 Memorandum – Synopsis of Long Term Monitoring Plan Bases. In addition to monitoring the SSCs, on-Site and off-Site wells are used to monitor the property boundaries for unanticipated radionuclide migration across these boundaries. Again, the rationale underpinning the selection of wells designated for this purpose is provided in the above cited Memorandum. These monitoring protocols are consistent with the NEI Groundwater Protection Initiative (GPI).

Entergy has also started the planning process to add an additional multi-level monitoring installation located near the south west corner of the Unit 3 Transformer Yard, downgradient of MW-46³¹. The sampling of U1-NCD and U1-SFDS will also be continued as part of the Long Term Monitoring Program.

³⁰ As discussed further in the following sections, reporting of visually identified spills/leaks within structures is included within Condition Reports under Entergy's Corrective Action Program. Additional emphasis has been placed on routine review of these reports as they potentially relate to GPI objectives.

³¹ A cross section has also previously been developed through the Unit 3 area to supplement **Figure 4** and further demonstrate the relationship of site groundwater flow patterns and monitoring well placement relative to the individual Unit 3 SSCs (similar cross

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I.L.s were established for the associated monitoring wells to set quantitative radionuclide concentrations above which further action would be undertaken. As part of the ongoing groundwater monitoring program, the reported analytical concentrations are compared against I.L.s established based on the criteria summarized in the table below. I.L.s are currently computed each year based on yearly averages of all the valid groundwater sampling analytical results of the previous year including aliquot, confirmatory, and mid-quarter sample results³². The monitoring well-specific I.L.s are presented in **Table 4** and are established for comparison with 2009 analytical results based on the quarterly samples collected and analyzed in 2008.

WELL ID	INVESTIGATION LEVELS (I.L.S)		
	TRITIUM pCi/L	Sr-90 pCi/L	OTHER PLANT-RELATED RADIONUCLIDES
Off-Site Boundary Wells (LAF-002)	any detection*	any detection*	any detection*
On-Site Boundary Wells (MW-40, MW-51, MW-52, and MW-107)	1,000**	2**	any detection*
Riverfront Boundary Wells (MW-60, MW-62, MW-63)	2,000**	2**	any detection*
All Other Wells	>2x average***	>2x average***	>2x average***

* A radionuclide is positively detected when the result is greater than or equal to the MDC and 3 times the 1 sigma uncertainty.

** The values of 1000 and 2000 pCi/L for H-3 and 2 pCi/L for Sr-90 have been chosen to be low enough to result in timely detection of a new release or change to an existing release and still be outside the normal expected range of sample results at these locations, to the extent possible with the currently available data over time.

*** Any positively detected radionuclide that has a result greater than 2 times the average from the previous year. However, the IL is not reached until an H-3 result is also greater than 1000 pCi/L or a Sr-90 result is also greater than 2 pCi/L.

In the event that the analytical results of a groundwater sample exceed the designated I.L., the following series of actions will be considered:

- Contact the laboratory to verify that all quality control checks were satisfactory, sufficient sample volume was used; required MDC's were met, etc.;
- Re-analyze aliquots of the original sample;
- Re-sample the location (confirmatory sample) to verify the result;
- Increase the frequency of sampling for this location;
- Initiate an investigation utilizing Entergy's corrective action program and related resources as appropriate (e.g. site engineering / radiation protection); and

sections were previously developed for Units 1 and 2, as presented in the Hydrogeologic Site Investigation Report). This Unit 3 cross section C-C' is included in the Q1 2009 Quarterly Report as Figure 4A.

³² The calculation of ILs and yearly rolling averages prior to the Q1 2009 Report were based on the analytical results from the quarterly sampling rounds only, and therefore excluded aliquot, confirmatory and mid-quarter sample results. For the Q1 2009 Report and thereafter, if an aliquot analytical result confirms that the original quarterly analytical result was false, then only the aliquot result is utilized in the yearly IL calculation. If the aliquot result confirms the original quarterly result is valid, then both the original and the aliquot results are averaged together and then averaged into the yearly IL calculation as a single value. Confirmatory analytical results have the potential to impact the use of the original quarterly sample in the same manner as aliquots; however, unlike aliquots, these "independent samples" are averaged directly into the yearly rolling average without "pre-averaging" with the associated quarterly sample. Similar to confirmatory samples, mid-quarter samples are also averaged directly into the yearly rolling average calculation. However, mid-quarter sample results do not have any impact on the use of the initial quarterly samples as can either aliquot or confirmatory samples, as described above. In the case of both confirmatory and mid-quarter sample results, direct averaging into the yearly average of these additional results can somewhat bias the yearly average toward a particular quarter/season. However, given that confirmatory and mid-quarter samples are typically taken to confirm and/or prepare for uncharacteristically high radionuclide concentrations, this direct averaging provides a high bias to the subsequent yearly dose computations, and is thus conservative. In cases such as this where some bias inevitably will be created, establishing a conservative bias in the dose computations is considered more important than maintaining a seasonal non-bias.

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- Initiation of source/ground water remediation techniques commensurate with the potential dose impact analyses and good environmental stewardship.

3.4.1 Proactive Mid-Quarter Samples

During the Q3 2009 monitoring period, there were no activities that required increased sampling. However, investigation level (I.L.) exceedances for Tritium were reported for the Q3-2009 sampling results at sampling locations MW-31-49 and MW-32-59. Additionally, the Tritium results from these two sampling locations in Q2 2009 represented historical maximum levels. Consequently, additional mid-quarter groundwater samples were collected from all sampling intervals in these two monitoring locations, as well as MW-30, post-Q3 2009 to evaluate these elevated Tritium results. The results of these samples are reported and discussed below along with the quarterly samples.

3.4.2 Previous Q2-2009 Investigation Level Exceedances

As indicated in the previous Q2 2009 Quarterly LTM Report, a comparison of the Q2 2009 analytical results to their respective I.L. values shows that the I.L.s were initially exceeded in ten samples. Two of the sampling locations (MW-31-49 and MW-32-59) still indicate radionuclide concentrations exceed their I.L.s in Q3 2009 samples, and one sampling location (U1-CSS) was not subsequently sampled Post Q2 2009; these results are therefore discussed in **Section 3.4.4** below. The remaining seven I.L. exceedances (MW-31-85, MW-39-102, MW-42-49, MW-43-62, MW-45-42, MW-53-82, and MW-67-173) were resolved by the Post Q2 2009 sampling results and are discussed individually below.

MW-31-85. The Q2 2009 result at this location indicated Tritium was detected at the highest concentration since the initiation of the LTMP (fall 2007), exceeding the I.L. by a factor slightly above two. The following two samples (Post Q2 2009 and the Q3 2009) have shown a progressive decrease in the Tritium levels to concentrations not only below the I.L., but also nearly an order of magnitude below the Q2 2009 sample results. While the exact cause of the elevated Q2 2009 Tritium detection at this location is unclear, it is likely related to the mobilization of stored Tritium within the shallow bedrock fractures near the Unit 2 SFP. Additional locations proximate to the Unit 2 SFP (MW-30 and MW-32) have also shown peaks in Tritium levels over the past two quarterly sampling events, as would be consistent with this hypothesis. This storage/Retention Mechanism was initially elucidated by the tracer test and described in the Hydrogeologic Site Investigation Report, with further confirmatory support subsequently obtained as described in Section 3.6.2 of the Q1 2009 Long Term Monitoring Report. However, it is also recognized that this Tritium increase may also be related to the Unit 2 ISFSI work (see Section 3.6.4 of the Q1 2009 Monitoring Report) and will therefore be subject to added scrutiny during the upcoming quarterly monitoring rounds to evaluate the observed variability in Tritium levels.

MW-39-102. The Q2 2009 results at this location indicated Strontium was detected slightly above the I.L., while the Q3 2009 results showed a decrease in Strontium activity to below the I.L. and back down to typical historic levels. The Strontium exceedance was originally attributed in the Q1 2009 Quarterly LTM Report to natural geohydrologic variability because the monitoring installation is not located downgradient of the Unit 1 defueling activities, the remaining five sampling zones (39-67, 39-84, 39-124, 39-183, and 39-195) at this location did not meet their I.L.s, and all other installations in the vicinity (MW-41, MW-44, and MW-45) did

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not show Strontium increases during both the Q1 and Q2 2009 sampling events. The Q3 2009 results agree with this initial conclusion³³.

MW-42-49. Because the water levels in the Unit 1 SFPs were increased during late April 2008 as part of the process for final fuel removal for ISFSI storage, it was anticipated that increased radionuclide levels³⁴ would be observed shortly after raising of pool levels based on previous work. The expected increase was initially observed in the post-Q3 08 Mid Quarter samples, which yielded an abrupt Strontium level increase to three times the I.L. for MW-42-49³⁵. Elevated Strontium levels (compared to those typically observed during pool demineralization) were observed in MW-42-49 through the Q2 2009 analytical results³⁶. The recent Q3 2009 analytical results indicate Strontium levels decreased by nearly two orders of magnitude from the Q2 2009 results, to activities below the I.L. and generally consistent with activities observed prior to the Unit 1 SFP defueling activities. Other radionuclide levels (Cesium and Nickel) indicated similar decreasing trends from Q2 to Q3 2009 at MW-42-49. As such, the observed behavior is consistent with that anticipate in response to the defueling activities.

While the radionuclide peaks associated with this temporary release have dissipated, it is emphasized that the input of these radionuclides (and Tritium) to the vadose zone during the Unit 1 defueling activities will likely serve to recharge the Retention Mechanism(s) in the area. As such, additional peaks could occur do to subsequent releases from storage and into the groundwater flow regime.

MW-43-62. The Q2 2009 results at this location indicated Cesium was detected for the first time since the initiation of the LTM (fall 2007) program. Similar to the historic samples, the Q3 2009 analytical results indicate that the Cesium levels were back down to below MDC. These Q3 2009 analytical results therefore agree with the initial conclusion in the Q2 2009 Quarterly LTM Report that the Q2 2009 Cesium detection was likely related to a false laboratory detection³⁷.

MW-45-42. The Q2 2009 result at this location indicated Tritium was detected at slightly greater than the I.L., and at a level above that of any previous historic data. A noticeable increase in Tritium activity was also concurrently observed in Manhole A2 during routine 80-10 Effluents Program sampling (3/25/09 and 4/1/2009 sample dates), which is located proximate to the Unit 3 FSB. The Q2 2009 Tritium results were followed by the Q3 2009 result (7/24/2009) which returned to historic Tritium levels at this sampling location and also fell below the I.L. Additionally, Manhole A2 showed a rapid decrease to historic Tritium levels starting with the

³³ It is also noted that the Strontium activity in the upper interval at this sampling location (39-67) is higher than the I.L. for the MW-39-102 interval, and the transducer data from all zones at this monitoring installation indicate a downward vertical gradient. A distinct increase in Strontium levels in the sampling zone immediately below the 102' interval (39-124) is observed in the Q3 2009 analytical results.

³⁴ It was anticipated that Tritium levels would increase somewhat, but it was unclear if increased Strontium levels should be expected given Entergy's demineralization of the pools prior to raising the water levels. In fact, the previously enhanced demineralization, begun in April 2006, was resulting in a consistent decrease in Strontium levels in MW-42-49.

³⁵ As indicated, Strontium levels increased even though the SFPs were being aggressively demineralized. This result is not unexpected given that the increase in leakage rate, even at reduced Strontium levels, could result in increased groundwater Strontium levels due to additional partitioning from the solid subsurface materials back into the groundwater as well as the additional leakage rate as compared to the groundwater flow rate.

³⁶ The Q2 2009 analytical results showed a large reduction in Tritium levels from the abrupt spike exhibited in the Post Q1 2009 results at MW-42-49 (Tritium levels reached almost nine times the I.L.). Similar Strontium trends from Q1 to Q2 2009 were observed in the U1-NCD analytical results.

³⁷ (1) the absence of Cesium in the samples analyzed during the past quarterly sampling events at this location; (2) the absence of Cesium in the upper sampling zone (MW-43-28) during Q2 2009; (3) the stable levels of the other radionuclides within MW-43-62 during Q2 2009; and (4) the absence of a plausible source led to the initial conclusion that this Cesium detection in MW-43-62 is likely related to a false positive from the laboratory. In addition, the MDC values were analyzed for these samples to verify that the positive Cesium result was not due to a lower detection limit than typical. This was not the case, as the Q2 2009 MDC is greater than the Q3 2009 MDC, further supporting the conclusion of a false positive.

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April 4, 2009 sample, and Tritium levels have remained stable in A2 throughout this monitoring period.

While the specific source of the elevated Tritium during Q2 2009 is unclear, the subsequent sampling results in Manhole A2 and MW-45-42 indicate that this was a one-time transient event. The lower sampling interval at this location (MW-45-61) has indicated stable Tritium levels through Q3 2009; therefore, a surficial release to the storm drain system, with subsequent exfiltration to the groundwater, appears the most plausible explanation. Entergy is currently planning additional investigations to identify the root cause of this transient Tritium increase³⁸.

MW-53-82. The Q2 2009 results at this location indicated Cesium was detected for the first time since the initiation of the LTM Program (fall 2007). However, the current Q3 2009 analytical results show that Cesium no longer present above MDC. GZA initially concluded in the Q2 2009 Quarterly LTM Report that the Cesium detection was likely related to the Unit 1 defueling activities³⁹. The Q3 2009 results agree with this initial conclusion because the current reduction of Cesium levels to below MDC follow reductions further upgradient, as would be expected in response to removal of the Unit 1 source term.

While the radionuclide peaks associated with this temporary release have dissipated, it is emphasized that the input of radionuclides (i.e. Tritium, Strontium, Cesium, etc.) to the vadose zone during the Unit 1 defueling activities will likely serve to recharge the Retention Mechanism(s) in the area. As such, additional peaks could occur do to subsequent releases from storage into the groundwater flow regime.

MW-67-173. The Q2 2009 results at this location indicated Nickel was detected for the first time since the initiation of the LTM Program (fall 2007). Similar to historical samples collected at MW-67-173, the Q3 2009 analytical results indicate that Nickel levels were again below MDC. These Q3 2009 analytical results agree with the initial conclusion in the Q2 2009 Quarterly LTM Report that the Q2 2009 Nickel detection was likely related to a false laboratory detection⁴⁰.

3.4.3 Q3-2009 Boundary Investigation Levels

A comparison of the Q3 2009 analytical results for the On and Off-Site Boundary Wells to their respective I.L. values shows that the I.L.s were not met for any of the monitoring locations. Therefore, there was no requirement to further investigate radionuclide activity in these wells. However, monitoring installations MW-40 and MW-51 are being further evaluated on a routine basis, as discussed below.

MW-40 and MW-51. While there have been no historic exceedances at these two southern boundary locations, and the data from this quarter (Q3 2009) generally falls within previous ranges, these monitoring locations continue to be closely scrutinized on a routine basis given the sensitivity associated with the southern power block boundary. Even though it is recognized that the peak Tritium levels detected are low (less than 350 pCi/L) and near the lower limit of

³⁸ These investigations are focused on a suspected SFP seasonal vapor depositional source.

³⁹ Given that: (1) this monitoring installation is located downgradient of the Unit 1 SFPs and also downgradient of MW-42-49 (which exhibited a large, short-duration Cesium peak in Q1 and Q2 2009); and (2) this well also yielded Strontium levels exceeding the I.L. in Q1 2009 (a signature of the Unit 1 SFP activity), the cause of this Cesium detection was initially concluded to likely be associated with response to Unit 1 defueling activities.

⁴⁰ The initial conclusion that this Nickel detection was likely related to a false laboratory detection was based on: (1) the absence of Nickel in the samples analyzed during the past quarterly sampling events at this location; (2) the absence of Nickel in all six of the other sampling intervals (67-39, 67-105, 67-219, 67-276, 67-323, and 67-340) during Q2 2009; (3) the stable levels of the other radionuclides within MW-67-173 during Q2 2009; and (4) the absence of a plausible source for Nickel this far downgradient on the Site. In further support of this hypothesis, it is noted that the laboratory analysis of the Q1 2009 sample from MW-67-173 resulted in a false positive Cesium detection (confirmed with a non-detect result upon reanalysis of an aliquot sample). Additionally, review of the MDC values verifies that this detection did not result from a lower MDC than typically seen at MW-67-173.

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detection, there appears to be a general correlation in Tritium peaks at multiple depth intervals in both of these monitoring installations (see **Figure H1** in **Appendix H**). The most appropriate metric to evaluate if these peaks could be due to groundwater migration of Tritium from the power block area is the relative groundwater elevations between these boundary locations and the power block areas where Tritium contamination exists. As discussed at length in the CSM sections of the Site Investigation Report, southern boundary groundwater elevations are well above those in the power block area. As such, groundwater, and thus Tritium in the groundwater, cannot migrate from the power block to the south; in fact, groundwater is migrating in the opposite direction. This conclusion was previously validated for nine quarters (between Q2 2007 and Q2 2009) though analyses of groundwater elevation contours (see **Figure 5** in the quarterly reports prior to Q3 2009). In addition, starting with the Q1 2009 Quarterly Report, **Figure 5A** is being generated to specifically compare high importance transducer readings to historic maximum and minimum readings. The objective of this analysis is to demonstrate that substantial changes to the on-site groundwater flow field have not taken place and that the CSM remains valid. Multiple sampling zones from both the MW-40 and MW-51 monitoring installations are included in this analysis. Based on these analyses, as well as the substantial body of data developed over the last 5 years of investigation which underpin our CSM, we state, with a high degree of confidence, that the low level peaks in the Tritium activities observed in these two monitoring installations are not due to groundwater migration from the power block area. This conclusion has continued to be validated each quarter. However, we do not yet have a definitive explanation for the observed peaks. Further investigation into other potential mechanisms, such as atmospheric Tritium washout and seasonal laboratory biases are ongoing.

3.4.4 Q3-2009 SSC Investigation Levels

For the SSC monitoring wells, a comparison of the Q3 2009 and Post-Q3 Mid-Quarter analytical results to their respective I.L. values shows that the I.L.s were exceeded in six samples. Additionally, one sampling location (U1-CSS) exceeded the respective I.L.s in Q2 2009; however, subsequent samples have not currently been collected. The following table summarizes the cases where the I.L.s were met, and the exceedances are individually discussed below.

WELL ID	RADIONUCLIDE	RESULT (PCI/L)***	REANALYZED RESULT (PCI/L)	INVESTIGATION LEVEL (PCI/L)
MW-31-49	H3	31,400	NA*	15,470
MW-32-59	H3	18,600	NA*	10,031
MW-36-24	H3	2,920	NA*	2,254
MW-36-41	Sr-90	7.12	NA*	4.36
MW-37-40	Sr-90	11.9	NA*	2.26
MW-50-42	H3	1,060	NA*	1,000
U1-CSS (Q2 2009)	H3 / Sr-90	3,280 / 35.6	NA*	3,088 / 14.8

* NA indicates that the sample was not reanalyzed.
 ** ND indicates that the radionuclide was not detected greater than or equal to the MDC and 3 times the 1 sigma uncertainty.
 *** A radionuclide is positively detected when the result is greater than or equal to the MDC and 3 times the 1 sigma uncertainty.

MW-31-49: The Q3 2009 result for this location did not exceed the Tritium I.L. However, the Post-Q3 2009 Mid Quarter result indicates Tritium activity exceeded the I.L. by a factor of

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slightly over two⁴¹. While the Post Q2 Mid Quarter, the Q3 2009 and the first Post Q3 Mid Quarter samples all yielded Tritium levels below the I.L., this sampling location recently yielded its highest Tritium concentration since the Q2 2007 initiation of the LTM program (in Q2 2009). The other sampling zones at this location (31-63 and 31-85) have also shown variable Tritium levels. While the exact cause(s) of the transient Tritium peaks at this location is currently unclear, it is likely related to the mobilization of stored Tritium within the shallow bedrock fractures near the Unit 2 SFP. This storage/Retention Mechanism was initially hypothesized based on the tracer test, as described in the Hydrogeologic Site Investigation Report, with further confirmatory support subsequently obtained as described in Section 3.6.2 of the Q1 2009 Long Term Monitoring Report. However, it is also recognized that the variability in Tritium activity may be related to the Unit 2 ISFSI work (see Section 3.6.4 of the Q1 2009 Quarterly LTM Report). This location will therefore be subject to added scrutiny during the upcoming quarterly monitoring rounds to evaluate the observed variability in Tritium levels.

MW-32-59: Similar to MW-31-49, the Q3 2009 Tritium results for MW-32-59 were below the I.L. However, the Post Q3 2009 Mid Quarter results at this location indicate an exceedance of the Tritium I.L. by a factor slightly under two⁴². While the Post Q2 Mid Quarter, the Q3 2009 and the second Post Q3 2009 Mid Quarter Tritium results were all below the I.L., and the remaining four deeper zones at this location (32-85, 32-149, 32-173, and 32-190) reflect generally stable to decreasing trends, this location also recently exhibited Tritium activities which were the highest recorded since the fall 2007 initiation of the LTMP (in Q2 2009), exceeding the I.L. by a factor over six. As for MW-31-49 above, we believe that the observed Tritium peak is likely related to the mobilization of stored Tritium within the shallow bedrock fractures near the Unit 2 SFP. This storage/Retention Mechanism was initially hypothesized based on the tracer test as described in the Hydrogeologic Site Investigation Report, with further confirmatory support subsequently obtained as described in Section 3.6.2 of the Q1 2009 Long Term Monitoring Report. However, it is also recognized that this Tritium increase may be related to the Unit 2 ISFSI work. This location will therefore be subject to added scrutiny during the upcoming quarterly monitoring rounds to evaluate the observed behavior in Tritium levels.

MW-36-24: The Q3 2009 results indicate Tritium was detected slightly above the I.L. at this location. The previous tritium levels at this location have shown a stable to decreasing trend since Q1 2008. While the exact cause of this elevated Tritium activity is unclear, it may also be related to the increased Tritium levels observed in MW-31 and 32 during previous quarters⁴³. It is also recognized that this Tritium increase may be related to the Unit 2 ISFSI work or possibly the valve leak associated with the waste distillation tanks that was observed in the Unit 1 FSB. This location will be subject to added scrutiny during the upcoming quarterly monitoring round.

MW-36-41: The Q3 2009 results at this location indicate Strontium exceeded the I.L. by a factor of slightly less than two; however, no 2008 samples were collected from this sampling location and the I.L. was calculated from one Strontium result collected in 2007. Additionally, the remaining two zones at this location (36-24 and 36-52) indicated Q3 2009 Strontium results were within their typical historical ranges. Therefore, while the exact cause of this elevated Strontium activity is unclear, this Strontium exceedance could be a result of local variations in

⁴¹ There were two Post Q3 Mid Quarter samples taken in an effort to further elucidate the variability in the Tritium results observed to date; one was taken on 9/1/09 and the other on 9/14/09. The first of these two samples did not exceed the I.L. We therefore chose to focus on the 2nd sample with the higher Tritium activity.

⁴² There were two Post Q3 Mid Quarter samples taken in an effort to further elucidate the recent peak in Tritium activity; one was taken, one on 8/31/09 and one on 9/15/09. The first of these two samples exceed the I.L. and the second did not. We therefore chose to focus on the first sample with the higher Tritium activity.

⁴³ MW-36 is downgradient of MW-31 and MW-32. The elevated Tritium levels in MW-31 and 32 are likely related to the mobilization of stored Tritium within the shallow bedrock fractures near the Unit 2 SFP.

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flow paths or other in-situ processes (natural geohydrologic variability). However, it is also noted that this sampling installation is located within the delineated Unit 1 Strontium plume (downgradient of Unit 1 SFPs). Therefore, the Strontium increase could represent a delayed response to the Unit 1 defueling activities (also see discussion for MW-37-40 below). This location will therefore be subject to added scrutiny during the upcoming quarterly monitoring round.

MW-37-40: The Q3 2009 results at this location indicate Strontium was detected approximately five times the I.L. The remaining three zones at this location (37-22, 37-32, and 37-57) also indicated an increase of Strontium levels during the Q3 2009 sampling event. Given that this sampling location is downgradient of the Unit 1 SFPs, these Strontium increases likely represent a delayed response to the increase in water levels in the Unit 1 SFPs during previous defueling activities (this conclusion increases the probability that MW-36-41 (discussed above) is responding to defueling activities). It is anticipated that Strontium activity at this monitoring location will eventually return to stable, lower levels with time because the Unit 1 fuel has been completely removed and the water was drained from the Unit 1 SFPs. This location will be subject to added scrutiny during the upcoming quarterly monitoring round and it has been added to **Figure 7A**.

MW-50-42: The Q3 2009 results at this location indicate that while Tritium levels were slightly above the I.L., the overall magnitude of the activity is relatively low (about 1000 pCi/L). However, the lower sampling zone at this location (50-66) also indicated a limited increase in Tritium levels during the previous quarter (Q2 2009) followed by a larger magnitude decrease during the Q3 2009 sampling event. The elevated Tritium levels at MW-50-42 are possibly related to the leak in the valves associated with the waste distillation tanks located to the east of the Unit 1 FSB. The leaking valves, located in the FSB, were quickly repaired and the leak was eliminated. Similar to MW-50-66, it is anticipated that Tritium levels at this monitoring location will return to stable, lower levels with time. This location will be subject to added scrutiny during the upcoming quarterly monitoring round.

U1-CSS: The previous (Q2 2009) results at this location indicated Strontium was detected at greater than two times the I.L. and Tritium was detected slightly above the I.L. Because Post Q2 or Q3 2009 samples were not scheduled to be collected from this sampling location, the Q2 2009 Strontium and Tritium exceedances are not resolved. However, the Unit 1 Containment Spray Sump (CSS) is located downgradient of the Unit 1 SFPs, with the associated piping trench backfill forming a preferential flow path leading back to the U1-NCD (see Section 8 of the Hydrogeologic Site Investigation Report for further discussion). The Strontium increase in monitoring installation U1-CSS is therefore likely in response to the Unit 1 SFPs defueling and associated temporary increase in leakage. Similar to the other Unit 1 monitoring locations, it is anticipated that the Strontium levels at this location will eventually decrease given that the remaining fuel has been removed and the water drained from the Unit 1 SFPs.

The Tritium increase in U1-CSS is likely related to the valve leak associated with the waste distillation tanks, as observed in the Unit 1 FSB. Given that these valves were immediately repaired, it is anticipated that the Tritium levels will decrease to stable levels at U1-CSS. In this regard, it is noted that the valve leak was first detected in the groundwater at location MW-42-49 during Q1 2009, and that much larger Tritium peak quickly attenuated to typical levels. Notwithstanding the above, this location will be subject to added scrutiny during the upcoming quarterly monitoring round.

U1-NCD AND U1-SFDS: Sampling of the Unit 1 North Curtain Drain (U1-NCD) and the Unit 1 Sphere Foundation Drain Sump (U1-SFDS) are currently included as part of the Long Term Monitoring Program. These drains have been documented to capture a large proportion of the

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Strontium leakage from the Unit 1 SFPs, and continue to collect groundwater containing Strontium and Cesium and direct it to treatment. These drains have also historically been assumed to collect some groundwater contaminated with Tritium from the Unit 2 SFP. This conclusion was validated by the tracer test conducted as part of the hydrogeologic site investigation (see the Hydrogeologic Site Investigation Report prepared by GZA and dated January 7, 2008). The amount of quarterly sampling data is currently insufficient to set Tritium I.L.s for these drains. However, visual inspection of the existing data was performed and decreases in Tritium levels (as well as all of other radionuclides) were observed in samples from both drains from Q2 2009 to Q3 2009. Strontium data from these drains is also summarized on **Figure 7A**.

3.4.5 Conclusions - Boundary and SSC Leak Detection Monitoring

Recognizing that measured activities in the Off-Site and On-Site Boundary Wells have remained below I.L. levels, this overall data set continues to demonstrate that radionuclides are migrating toward the Hudson River to the West, and are not migrating off of the property to the North, East or South, as expected given groundwater flow directions from the property periphery toward the power block area.

Given the analyses discussed above, there is also no compelling reason to believe that any new unidentified leaks have developed in the SSCs monitored relative to Unit 2 or 3. With the exception of locations MW-31-49, MW-32-59, and MW-36-24, Tritium levels within the U2 plume⁴⁴ have remained below their I.L.s and the plume is continuing to exhibit overall long-term reductions in Tritium activity. While recent increases in Tritium levels have been observed in MW-31 and MW-32, these data are consistent with episodic releases of Tritium historically stored in the subsurface via natural and anthropogenic Retention Mechanisms⁴⁵, which is further supported by the tracer data and other analyses⁴⁶ discussed in Section 3.6 of the Q1 2009 Long Term Monitoring Report.

Relative to the Unit 1 data, increased leakage was anticipated during final fuel removal from Unit 1 SFPs. This leakage was readily detected as increased Strontium in the groundwater by the Long Term Monitoring Program. These initial near-pool and more recent downgradient Strontium increases are being routinely monitored as summarized on **Figure 7A**, and are expected to continue to show further decreases with time. The recent increase in Tritium levels at U1-CSS and MW-50-42 are likely attributed to an observed transient leak in the waste distillation tank valving within the Unit 1 FSB, rather than increased leakage from the SSCs associated with Unit 2 and 3. This leakage episode was rapidly identified and immediately repaired.

Overall, GZA believes that continued monitoring will further demonstrate decreasing long term trends in groundwater contaminant activities over time for both the Unit 1 and Unit 2 plumes given the source interdictions completed by Entergy. However, ultimate confirmation of these conclusions will require monitoring over a number of years to demonstrate continued depletion of Tritium and Strontium from the Retention Mechanisms originally sourced by: (1) historic Unit 2 SFP Tritium leakage; and (2) the historic and more recent Strontium leakage due to Unit 1 defueling. It is further noted that quantification of these overall radionuclide reductions

⁴⁴ It is noted that there is no Tritium plume associated with Unit 3.

⁴⁵ These retention mechanisms are discussed along with the CSM in the previously cited Hydrogeologic Site Investigation Report.

⁴⁶ These data and analyses further support a conclusion that the Unit 2 SFP had ceased leaking after the transfer canal "pin hole leak" was repaired in late 2007. However, given the more recent behavior observed in the Unit 2 collection box data (see Section 3.6 of the Q1 2009 Long Term Monitoring Report), additional investigations/data evaluations are underway to further rule out potential Unit 2 SFP leak mechanisms.

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will require that ranges in seasonal variation to be adequately reflected in the monitoring data and any further additions of radionuclides to the Retention Mechanisms, such as through the transient releases discussed above, be dissipated from the geohydrologic flow regime.

Given the above cited constraints, we have not yet been successful in recalibrating the I.L.s that were originally established at the beginning of the LTMP in 2007. Since inception of this program, it has been observed that I.L.s have been routinely exceeded in a number of cases where subsequent data have demonstrated that no new leaks have occurred. The majority of these cases occur where the radionuclide levels are generally low and/or near their detection limits. It appears that data variability, likely due to seasonal precipitation influences and local variations in flow paths and/or other in-situ processes, is the primary cause of these false positives⁴⁷, particularly pursuant to Tritium. Therefore, the basis upon which the I.L.s are computed needs to be re-evaluated in light of the long-term natural transient variability of the groundwater system in response to precipitation events, etc. Furthermore, while re-evaluation/re-setting of I.L.s is a clear goal, it is still premature given the lack of sufficient data. This is particularly true given the recent behavior in Strontium levels due to the Unit 1 defueling (see **Figure 7A**) and the transient Tritium releases discussed above and in the Q1 2009 Quarterly LTM Report. As such, the current I.L.s will remain in effect while a sufficient data base is acquired to allow better quantification of the natural (non-leak related) variability in the data.

Three critical conclusions can be drawn from the above summarized data and analyses: 1) the current CSM for the IPEC site provides a good basis for the design of the Long Term Monitoring Program; 2) the procedures and rationale used for selecting monitoring locations for leak detection have been further validated given the clear detection of the confirmed Unit 1 SFPs increased leakage during fuel removal, the detection of Tritium leakage from the waste distillation tank valves within the Unit 1 FSB, and the surficial release of Tritium to Manhole A2 in Q1 2009; and 3) increases in Strontium levels following a documented leak take longer to materialize in the groundwater⁴⁸ than might otherwise be expected.

3.5 Plume Natural Attenuation Monitoring

The fourth and final objective of the Long Term Monitoring Program is to evaluate if the groundwater plumes identified on-Site demonstrate overall reductions in total activity over time, as is consistent with the requirements of Monitored Natural Attenuation (MNA), the selected remediation for the IPEC Site⁴⁹.

Given the likely ages of the leaks identified and characterized during the hydrogeologic investigation, it is probable that the Unit 2 (Tritium) and Unit 1 (Strontium) plumes had reached steady state conditions prior to the beginning of the quarterly monitoring. Given that: (1) the identified leaks in the Unit 2 SFP have all been previously repaired (the last leak repaired in 2007) and; (2) the water in the Unit 1 West Pool underwent intensified demineralization (beginning in April 2006 with a reduction in Strontium levels of over 95 percent), one might expect that the plumes should have started to markedly attenuate toward zero with time. Both plumes have in fact generally shown significant levels of attenuation, when they are viewed in their entirety and past release events and expected seasonal variability in the sampling data are

⁴⁷ In this context, "false positive" does not refer to an error in the actual data value. Rather, it means that a new release was not associated with the I.L. exceedance in question. While I.L.s are meant to be set at conservatively low values, and thus "false positives" should be expected, a corollary objective is to set I.L. values which keep the number of false positives low enough to eliminate development of complacency.

⁴⁸ Given the proximity of monitoring installations to documented release events, the delay in release arrival is likely due primarily to Strontium partitioning and the time required for leakage to traverse anthropogenic features

⁴⁹ The selection of MNA as the remediation for the Site is more fully discussed in the Hydrogeologic Site Investigation Report.

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accounted for. However, the attenuation has not been as rapid as we originally anticipated during time frames subsequent to the source interdictions implemented by Entergy.

In the case of the Unit 2 Tritium plume, levels have dropped markedly from the highest levels measured during the two-year hydrogeologic investigation. However, the rate of Tritium decrease with time has decreased. This rate of reduction has been difficult to predict due to the impact of natural geologic and anthropogenic Retention Mechanisms. These subsurface features have trapped and stored Tritium released during historic Unit 2 SFP leaks, and are now slowly releasing this Tritium to the groundwater flow regime after the physical leaks have been repaired. This conclusion is consistent with the original CSM presented in the Hydrogeologic Site Investigation Report, as further supported by the tracer test data in that report as well as subsequent tracer data, as described in Section 3.6 of the Q1 2009 Quarterly Monitoring Report, dated July 2, 2010. Further discussion of this quarter's data pursuant to evaluation of the Unit 2 Tritium plume MNA is provided in **Section 3.51** below.

Relative to the Unit 1 Strontium plume, Strontium levels should drop much more slowly than Tritium levels. This is because, in addition to the Retention Mechanisms discussed above for Tritium (which also apply to Strontium), Strontium also undergoes partitioning whereby this radionuclide is adsorbed from the groundwater onto solid surfaces (both geologic and anthropogenic). When the input of Strontium to the groundwater is reduced (such as via fuel pool demineralization) the solid surfaces desorb Strontium back into the groundwater, thus maintaining Strontium levels. Strontium partitioning is therefore expected to substantially slow plume attenuation. Despite partitioning effects, some plume attenuation was observed in response to pool demineralization prior to defueling, particularly proximate to the pool. However, defueling of Unit 1 resulted in a temporarily increase in the leakage rate of West Pool water into the formation. This was expected based on previous work on the Unit 1 SFPs, but was unavoidable given the requirement to raise the pool level for fuel rod removal⁵⁰. The increased leakage rate has resulted in a noticeable increase in Strontium levels in the immediate vicinity of the fuel pool as discussed further in **Section 3.5.2** below.

3.5.1 Unit 2 Tritium Plume Attenuation

Qualitative Evaluation

From a qualitative perspective, a reduction in overall Tritium activity in the Unit 2 plume can be seen through a comparison of the Q3 2009 delineated boundary (**Figure 6**) to those in prior reports. Not only have Tritium levels within the plume generally shown an overall, long-term decreasing trend, but the reductions have recently become particularly evident in the delineated shaded bounds of the plume. As is clear this quarter and in Q2 2009, the shaded plume⁵¹ no longer extends to the river as it did in previous quarters through Q1 2009. In fact, the shaded boundary now terminates upgradient of MW-37, over two hundred feet from the river. This trend over time has been summarized on **Figure 6A**, which is a compilation of the quarterly Tritium plume maps as well as that from the Investigation Report.

⁵⁰ As of late 2008, all the fuel rods have been removed from the Unit 1 SFPs and the pool water has been drained. As such, the Unit 1 SFPs is no longer an active source of radionuclides to the subsurface.

⁵¹ The plume shading on **Figure 6** demarks the estimated boundary that separates Tritium levels greater than 5,000 pCi/L from those below this value. This plume delineation boundary value equates to one-quarter of the drinking water standard for Tritium. Although GZA emphasizes that drinking water standards (USEPA MCLs) do not apply to the IPEC property given that there are no drinking water sources on or proximate to the site, the MCLs do provide a useful benchmark for comparisons of relative human risk. Where yearly rolling average radionuclide activity data were available for multiple depths at a given location, GZA used the highest value to develop plume delineations. This is a typical approach to represent three-dimensional contaminant data sets on two-dimensional maps.

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Mann-Kendall Quantitative Analysis

To more quantitatively evaluate MNA progress, a Mann-Kendall analysis, as referenced in USEPA Guidance for Data Quality Assessment – Practical Methods for Data Analysis,⁵² was performed on the Tritium levels measured during Q3 2009 at monitoring locations associated with the IP2-SFP and downgradient Unit 2 Tritium plume. This statistical technique was chosen because it is particularly well suited for data sets with a limited number of points. Each of the vertical monitoring intervals at each monitoring installation location was analyzed separately. In general, only data collected after final completion of the multi-level installation⁵³ was used. However, there were a number of exceptions to this generalization where open borehole and/or borehole packer testing data were also used. These data were incorporated where possible given the importance of early time data (proximate to when documented leaks were still active). Additional, more detailed discussion relative to the basis for these analyses is provided in Section 3.6 of the Q1 2009 Quarterly LTM Report.

Graphs showing the variation in Tritium concentration over time in the immediate vicinity of the Unit 2 SFP are presented as **Figures G-1, G-2 and G-3** in **Appendix G**, for MW-30, 31 and 32, respectively. Additional graphs are also presented in the appendix for the other monitoring locations downgradient of the Unit 2 SFP (see **Figures G-4 through G-14** for MW-33 through 37, 42⁵⁴, 49, 50, 53⁵⁵ 55 and 111)⁵⁶.

The Mann–Kendall analyses for the individual monitoring points are summarized on **Table G-1** in **Appendix G**. The table includes the results of the analysis for each depth interval (“well”) at each of the multi-level monitoring locations enumerated above. The table is color coded, with green shading designating wells showing a decreasing trend, yellow for no trend, and red for an increasing trend.

Comparison of **Table G-1** for Q3 2009 to that from Q2 2009 demonstrates that there have been no major changes. Of the 32 intervals included on the table for Q3 2009, approximately two-thirds (20) show a decreasing trend, as compared to 23 intervals last quarter. It is important to note that this group of “decreasing wells” includes all those located within the core of the plume with the highest Tritium concentrations (MW-30-69, MW-33 and MW-111, with historic yearly

⁵² USEPA Guidance for Data Quality Assessment – Practical Methods for Data Analysis, EPA QA/G9, QA00 UDATE; EPA/600/R-96/084, July, 2000.

⁵³ Each borehole was completed as a multi-level installation. These multi-level completions were designed to segregate the borehole length into individual sampling zones with depth. The sampling zones were generally established to coincide with the more productive zones of the fractured bedrock and overburden (both natural soils and backfill). These sampling zones were then isolated from each other with various types of seals placed in the open borehole. The objective of the seals is to prevent vertical flow through the borehole and thus establish the same conditions in the formation which existed prior to the drilling of the borehole. As such, the Tritium data is considered depth-discrete. It is noted that the multi-level installations at some monitoring locations were removed and replaced with upgraded systems, such as for the monitoring installation at MW-32.

⁵⁴ MW-42 and MW-53 are located downgradient of the Unit 1 SFPs, rather than the Unit 2 SFP. However, these two wells were included in the analyses, as requested by NRC, due to the apparent contribution of Unit 2 SFP Tritium to the Unit 1 groundwater flow regime via vadose zone transport (see **Figure 6**). It is noted that any decreasing Tritium trend in this area due to the termination of leaks from the Unit 2 SFP could be masked by increased leakage of Tritiated water from the Unit 1 SFPs up through the completion of defueling in November 2008.

⁵⁵ MW-42 and MW-53 are located downgradient of the Unit 1 SFPs, rather than the Unit 2 SFP. However, these two wells were included in the analyses, as requested by NRC, due to the apparent contribution of Unit 2 SFP Tritium to the Unit 1 groundwater flow regime via vadose zone transport (see **Figure 6**). It is noted that any decreasing Tritium trend in this area due to the termination of leaks from the Unit 2 SFP could be masked by increased leakage of Tritiated water from the Unit 1 SFPs up through the completion of defueling in November 2008.

⁵⁶ Monitoring locations MW-66 and MW-67, also located downgradient of the Unit 2 SFP, could not be included in the analyses because the data sets for these two wells do not yet include the recommended minimum number of data points (ten) for the Mann–Kendall analysis method.

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average Tritium concentrations > 40,000 pCi/L). These high-concentration wells better represent overall plume behavior because they encompass a great percentage of the Tritium activity in the plume.

Of the 11 wells shaded in yellow (exhibiting “no trend”), only 6 provide valid representations (as shaded) of Unit 2 plume behavior. The shading designation for the others cannot be used to infer conclusions relative to plume trends for Unit 2 based on this analysis, as follows:

- Three (MW-42-49, MW-42-78, and MW-53-82) are located downgradient of the Unit 1 SFPs, rather than the Unit 2 SFP, and therefore are not yet expected to show a decreasing trend due to Unit 1 defueling⁵⁷ and the previously discussed U1 FSB valve leak.
- Inspection of the graph for MW-36-24 (**Figure G-7**) shows a rapid and large decrease in Tritium concentrations at early times in this overburden (discharge canal backfill) well (from > 30,000 pCi/L to <3,000 pCi/L). This large decrease is followed by a number of small perturbations around a relatively flat trend. While it is visually clear that this well has shown a major decrease in Tritium levels since containment of the 2005 shrinkage crack leak, the Mann-Kendall analysis only evaluates number of increases relative to decreases and does not weight the analysis relative to the magnitude of the change. As such, visual inspection demonstrates that this location actually exhibits an overall decreasing trend, even though the analysis results in a no trend designation (yellow shading on table).
- Inspection of the graph for MW-55-35 (**Figure G-13**) shows a distinctly decreasing trend in Tritium concentrations at early times, followed by relatively stable Tritium levels through the present quarter. Because the Mann-Kendall analysis does not incorporate the magnitude of decrease or increase in data, small perturbations during the relatively stable portion of the time series have resulted in a no trend designation. The data (and a visual inspection of **Figure G-13**) demonstrate that Tritium levels have decreased from >9,000 pCi/L to relatively stable concentrations of ~2,500 pCi/L over the monitoring period.

It is noted that five of the six remaining “no trend” wells are all associated with the shallow sampling ports of two monitoring locations: MW-31, and MW-32. These two locations are actually not located downgradient of the Unit 2 SFP from a saturated groundwater flow standpoint. Rather, they are generally located up- and cross-gradient⁵⁸. Interval MW-31-85 is also part of this group of upgradient wells. This is the only well for which the Mann-Kendall analysis indicates an increasing trend. The upper-most interval in both MW-31 and MW-32 have shown an additional abrupt increase in Tritium over the last three quarters (Q1 through Q3 2009). The current and historic variability in these data can be explained by either: 1) an ongoing small episodic (< 5L/day) leak in the Unit 2 SFP; 2) a “Retention Mechanism” in the saturated and unsaturated zones under the SFP that can retain substantial volumes of highly

⁵⁷ MW-42 and MW-53 are located downgradient of the Unit 1 SFPs, rather than the Unit 2 SFP. However, these two wells were included in the analyses due to the historic hypothesis that the Unit 2 SFP contributes Tritium to the Unit 1 groundwater flow regime via vadose zone transport (see the graphic representation in **Figure 6** herein and the discussion in the Hydrogeologic Site Investigation Report). It is noted that any decreasing Tritium trend in this area due to the termination of leaks from the Unit 2 SFP could be masked by increased leakage of Tritiated water from the Unit 1 SFPs up through the completion of defueling in November 2008, and then thereafter via the Retention Mechanism(s).

⁵⁸ While not downgradient of the SFP from a groundwater flow perspective, Tritium leakage from the SFP can still migrate to these locations via vadose zone transport above the water table along dipping bedrock fractures. During the site investigation work, a tracer test was performed which clearly demonstrated that water released proximate to the SFP foundations (adjacent to MW-30) does migrate to the east and south past MW-31 and MW-32 prior to entering the water table, and then flows with the groundwater through these wells and then to the river to the west. This vadose zone migration mechanism is discussed more fully in the Hydrogeologic Site Investigation Report.

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Tritiated water (e.g., historic SFP leakage) for substantial amounts of time⁵⁹; and/or 3) a combination of the above⁶⁰. While Tritium concentrations in the groundwater plume could be impacted by both an ongoing leak and the Retention Mechanisms cited above, tracer concentrations in the groundwater cannot be replenished by SFP leakage. As discussed in further detail in Section 3.6 of the Q1 2009 Quarterly Monitoring Report, the original and updated tracer data strongly support a Retention Mechanism explanation. In addition, it would be expected that Tritium release from the Retention Mechanisms would be episodic, for example as associated with periods of increased infiltration from precipitation. Such episodic releases would be expected to result in the peaks in Tritium concentrations observed.

The sixth and final remaining interval reported as “no trend”, MW-30-84, is located immediately next to the SFP and generally downgradient of MW-31-85 (interval with increasing trend). While the Mann Kendall analysis yields no trend for this interval over the full monitoring time frame, the interval actually appears to exhibit a slightly increasing trend beginning in the late fall of 2008. The specific reason for this increase is not known, but it is worth noting that the Tritium activity in this interval is over an order of magnitude below that of the interval immediately above (MW-30-69), which shows a decreasing trend. The trend in MW-30-84 may be reflective of that in MW-31-85, both of which are being subjected to added scrutiny through more frequent monitoring.

Based on the evaluation summarized above, the Mann-Kendall analyses of the individual depth intervals within the groundwater monitoring installations located proximate to and downgradient of the Unit 2 SFP overwhelmingly support a conclusion that the Tritium plume has exhibited an overall decreasing trend with time since monitoring began. However, it is noted that as the rapidly decreasing trends in Tritium activity give way to much more slowly decreasing trends as an asymptote is approached, the variability of the Tritium sampling results due to hydrogeologic and laboratory variability are likely to result in more “no trend” classifications based on the Mann-Kendall analysis. Therefore, identification of another, more appropriate method is being investigated, particularly as the total LTMP data set becomes more robust with time.

Tritium Plume Total Activity Analysis

As discussed above, the individual well trend data, when viewed collectively, support a conclusion that the Tritium plume concentrations have been decreasing with time since monitoring began. Another method to analyze plume behavior is to compute the total Tritium activity in the plume at multiple snapshots over time. This procedure⁶¹ was implemented for each quarterly Long Term Monitoring sampling round from Q2 2007 to Q3 2009. In addition, the bounding Tritium concentrations from Figure 8.1 of the Hydrogeologic Site Investigation Report⁶² have also been included as a starting point for the graph. These data are summarized as a histogram on **Figure G-15 in Appendix G**.

⁵⁹ This hypothesized “Retention Mechanism” is supported by our understanding of the construction methods used for the IP2-SFP and adjacent structures, evaluations of contaminant concentration variability trends over short timeframes and precipitation events, as well as the original tracer test results, as further described in Sections 7.0 and 8.0 of the Hydrologic Site Investigation Report.

⁶⁰ It is also recognized that the potential exists for a fourth potential source of Tritium; that is any other leak or spill above the upgradient portions of the Unit 2 Tritium plume (such as the distillate tank valve leak discussed in **Section 3.4** above).

⁶¹ The individual sampling point Tritium concentrations were multiplied by the groundwater volumes in representative zones (discretized over area and depth), as computed using soil and bedrock effective porosities developed from the pumping and tracer tests (see the Hydrogeologic Site Investigation Report for further information).

⁶² Hydrogeologic Site Investigation Report, January 7, 2008, prepared by GZA GeoEnvironmental, Inc. on behalf of Enercon Services, Inc., for Entergy Nuclear Northeast, Indian Point Energy Center, 450 Broadway, Buchanan, NY 10511.

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As can be seen from the figure, the total Tritium activity in the plume downgradient of the Unit 2 SFP has shown a distinctly decreasing trend over time. The total Tritium activity in the plume has decreased 45 percent since Q2 2007, and has decreased by 89 percent when compared to the bounding level Tritium concentrations. In addition, it is also important to note that the graph continues to appear to be approaching a horizontal asymptote⁶³. This general "first order" plume decay is what would be expected for a plume undergoing Monitored Natural Attenuation after source termination.

Conclusion- Unit 2 Tritium Plume MNA

Based on the data and analyses provided above, our conclusion is that the Tritium plume is undergoing overall, long-term reductions in activity which are consistent with Monitored Natural Attenuation (MNA), the remedial technology selected for the IPEC Site. Given this conclusion and the recognition that Entergy has terminated all identified leaks in the Unit 2 SFP, the Unit 2 Tritium plume satisfies the requirements for Monitored Natural Attenuation.

Further justification for this conclusion can be found in Section 3.6 of the Q1 2009 Quarterly Monitoring Report as well as the Hydrogeologic Site Investigation Report.

3.5.2 Unit 1 Strontium Plume Attenuation

Despite the effects of partitioning, as discussed above, the overall Strontium activity within the Unit 1 plume had generally shown some attenuation in response to the West Pool demineralization activities conducted by Entergy in preparation for defueling. This work began in 2006 and resulted in an approximately 98% reduction in Strontium in the West Pool (see **Figure 7A**: U1-NCD, U1-SFDS, MW-42, U1-CSS). However, the final defueling of the Unit 1 SFPs has resulted in a noticeable increase in Strontium levels proximate to the SFPs (U1-NCD, U1-SFDS, MW-42, and U1-CSS), as well as initial indications of increases in the Strontium plume levels downgradient (MW-53, MW-55, MW-54, MW-57, MW-50, and MW-37). This is as was predicted given the requirement to temporarily raise the pool levels for fuel rod removal, thus increasing the leakage rate from the SFPs⁶⁴.

The data for Q3 2009 indicate that the overall Strontium levels continued to exhibit a general decrease and have now reached pre-defueling levels in the immediate vicinity of the pool (U1-NCD, MW-42 and potentially MW-53). These monitoring locations would be expected to be the first to reflect the complete decommissioning of the SFPs given their location/function. The U1-SFDS, which is located further from the West Pool, has also begun to show a decreasing trend from Q2 2009 to Q3 2009.

Farther downgradient, the Q3 2009 data appear to be showing an increasing trend in Strontium activity as the previous increase in U1-SFPs leakage works its way towards the river. This behavior is most evident at monitoring locations U1-CSS, MW-37, MW-55 and MW-57⁶⁵. MW-54 and MW-50, however, appear to already be exhibiting a decreasing trend, even though they

⁶³ A horizontal asymptote could indicate that a persistent, unidentified leak still remains in the Unit 2 SFP. With Tritium at approximately 30,000,000 pCi/L in the SFP, a leak rate directly from the pool of only approximately 10 L/day would be sufficient to provide the required Tritium input to the groundwater. However, the available data do not appear to support a conclusion of such a leak. The rationale underlying this conclusion is discussed more fully in Section 3.6 of the Q1 2009 Quarterly Monitoring Report. In addition, the resumption of a more rapid decrease in total Tritium levels during Q2 2009 and Q3 2009 also provides strong support for this conclusion.

⁶⁴ As of late 2008, all the fuel rods have been removed from the Unit 1 SFPs and the pool water has been drained. As such, the Unit 1 SFPs is no longer an active source of radionuclides to the subsurface.

⁶⁵ Based on Q2 2009 data; this installation is sampled annually.

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are progressively farther downgradient than the wells cited above. This behavior serves to again emphasize that the IPEC Site is located in a bedrock fracture controlled hydrologic regime⁶⁶. As such, this type of localized “distance-based inconsistency” is to be expected and likely indicates that these wells are closer to (or within) the more pervious preferential flow pathway that is hypothesized to be responsible for the convergence and narrowing of the Tritium and Strontium plumes as they move toward the river from sources centered at widely spaced locations upgradient⁶⁷.

Farther downgradient, in the vicinity of the river, there are no peaks in Strontium activity that can be clearly attributed to the Unit 1 defueling, perhaps with the exception of a mid-depth monitoring interval in MW-62 (MW-62-138). This depth interval in particular (along with, but to a lesser extent the shallower intervals in overburden) appears to show a distinctly increasing trend in Q1 2009 followed by a steady decrease over the past two quarterly monitoring events. However, it is believed that this location is less likely to be responding to Unit 1 defueling given that it does not appear to be proximate to (or within) the preferential flow path cite above.

From an overall, long-term perspective, it is expected that the levels somewhat more downgradient of the pool than MW-42 (e.g., U1-SFDS) will continue to decrease to pre-defueling levels similar to U1-NCD and MW-42. Strontium levels farther downgradient of the pool are expected to increase as this additional Strontium-contaminated water flushes through the groundwater flow system. It is expected that this flushing mechanism will be protracted given the aforementioned impact of partitioning on Strontium levels in the groundwater. However, over time it is expected that downgradient Strontium plume levels will also resume an overall downward trend once this perturbation has passed through the system; decreasing trends are expected and predicted given that Entergy has terminated all leaks in the Unit 1 SFPs through decommissioning and the Unit 1 Strontium plume continues to decrease in accord with Monitored Natural Attenuation. Given this conclusion and the recognition that Entergy has terminated all identified leaks in the Unit 1 SFPs through decommissioning, the Unit 1 Strontium plume satisfies the requirements for Monitored Natural Attenuation.

⁶⁶ While groundwater flow through the fractured bedrock at the IPEC Site is highly preferential at small areal scales, it is characterized by sufficiently interconnected small bedrock fractures to allow the hydrogeologic system to function and be modeled as a non-homogeneous, anisotropic, porous media at Site-wide scales.

⁶⁷ By way of contrast, in a porous media flow regime, the centerlines of plumes that start at widely spaced locations (spaced perpendicular to the groundwater flow path) will typically remain widely spaced (although the edges of the plumes will likely move closer as the plumes get wider through dispersion). In the case of fracture flow at IPEC however, not only do the Strontium and Tritium plume centerlines converge, but the plumes also get narrower as they move downgradient. In addition, MW-50 displays high relative Strontium concentrations and fault gouge was encountered during the drilling of this well. These behaviors/data are hallmark signatures of a more highly fractured zone preferentially controlling groundwater flow and thus the migration of the contaminants therein (see the Site Hydrologic Investigation Report for further CSM-focused discussion of this issue).



4.0 CONCLUSIONS AND PLANNED ACTIVITIES

In summary, based on the data collected to date, the apparent strength of the CSM to evaluate that data, and the completion of source interdictions by Entergy, we believe all Program Objectives (see Section 3.0) are being met. These objectives are consistent with and fully encompass the guidance provided in the NEI Groundwater Protection Initiative (GPI).

Based on the specific results and evaluation of the Q3 2009 groundwater monitoring within the context of the Long Term Monitoring Program, IPEC plans to continue routine groundwater sampling and related maintenance. This work will be conducted in accordance with the IPEC Radiological Groundwater Monitoring Program IP-SMM-CY-110, and will incorporate the enhancements described herein.

More specifically, evaluation of data collected during Q3 2009 has shown the following:

- While I.L.s have been met at a number of locations this quarter, there is no definitive evidence of new leaks from the Systems, Structures, or Components monitored, with the exception of the anticipated additional leakage from the Unit 1 SFPs during the 2008 activities, the identified and repaired leakage from the waste distillation tank valves within the Unit 1 FSB in Q1 2009, and the transient surficial Tritium release to Unit 3 Manhole A2 in Q2 2009.
 - Based on past work, additional leakage was expected during the raising of water levels in the Unit 1 SFPs for final fuel removal to ISFSI storage. Unit 1 SFPs leakage was terminated with the drainage and sealing of the pools. This previous, transient leakage was initially verified as pronounced increases in Strontium and Cesium in the monitoring locations closest to Unit 1, and continues to be monitored.
 - The Q1 2009 leakage from the waste distillation tank valves was independently⁶⁸ identified based on an increase in Tritium levels in monitoring installation MW-42 proximate to the tanks. These valves were immediately repaired. The impact of this release over time and downgradient will be specifically scrutinized during subsequent monitoring rounds. Elevated Tritium activity was detected in Unit 3 Manhole A2 during routine 80-10 Effluents Program sampling during Q2 2009. This manhole is located proximate to the Unit 3 FSB. Subsequent re-sampling of this manhole shows rapidly decreasing Tritium activity, indicating that this was a one-time transient event. This elevated Tritium was also detected in a proximate groundwater monitoring installation (MW-45), likely due to exfiltration of Tritium from the manhole; the Tritium levels in this well have also returned to previous historic trends. While the specific root source of the elevated Tritium is still unclear at this time, Entergy has formulated a plan to investigate a suspected SFP seasonal vapor depositional source.

As such, these data support the validity of the current CSM for use as a basis for Long Term Monitoring Program design. It is further noted that, while a portion of these three documented localized leakage events traveled directly to the saturated groundwater regime and resulted in the observed transient “peaks” in radionuclide levels, additional portions of these releases likely remain above the water table as recharge to the various Retention Mechanisms. This additional

⁶⁸ The valve leakage was initially identified during routine visual inspection rounds and immediately repaired. Given that the leak was within the Unit 1 FSB structure, it was documented in a Condition Report under Entergy's Corrective Action Program. This valve leak and repair subsequently came to light within the GPI program during investigations into the cause of the abrupt increase in Tritium levels in MW-42. Additional emphasis has therefore been placed on routine review of these reports as they potentially relate to GPI objectives.

Section 4.0 Conclusions and Planned Activities

unsaturated zone source recharge will likely be manifested in the future as additional non-specific peaks in radionuclide levels due to episodic releases to the groundwater flow regime from these mechanisms (e.g., from intense/prolonged precipitation events).

- Based on the Q3 2009 data, as well as that collected during previous quarters, it currently appears that the Tritium I.L.s originally established are somewhat too sensitive relative to natural seasonal/precipitation-driven transient variations in radionuclide activities, as well as the variability inherent in the laboratory analyses. Relative to Strontium from the Unit 1 SFPs, the increases in activity in a number of monitoring points, due to the previous Unit 1 defueling activities, limit our ability to establish Strontium baseline levels for assessment of new I.L.s pursuant to the Monitored Natural Attenuation (MNA) of this plume. It is anticipated that this additional Strontium activity will take a number of quarters to flush through the groundwater flow system and attenuate to reasonably stable levels. As such, the originally established I.L.s will continue to be used until sufficient data is collected to allow re-evaluation of I.L. levels for the radionuclides of interest.
- As discussed in the Q2 2009 report, GZA believes that sufficient seasonal/yearly data had been collected through Q2 2009 (nine quarters of data⁶⁹) to allow recalibration of the Precipitation Mass Balance Model. This Model, as used to compute groundwater flux through the Site as part of the radionuclide dose computation, was therefore recalibrated during Q2 2009. To be conservative, the model was recalibrated to the quarter yielding the highest, rather than average, computed dose (Q4 2008 Darcy calculations). This will result in a high, conservative bias to the dose computation for this quarter (Q3 2009), as well as all subsequent quarters going forward.
- From both qualitative and quantitative perspectives, the most recent quarterly data (Q3 2009) provides further support to the conclusion that the overall Tritium activity in the Unit 2 plume is decreasing. These reductions have become particularly evident on the more recent quarterly report **Figures 6 and 6A** where the shaded plume⁷⁰ no longer extends to the river as it did prior to Q2 2009. It is further visually evident from **Figure 6A** that the core of the plume (with quarterly rolling average activities greater than 100,000 pCi/L and 2007 bounding core activities greater than 250,000 pCi/L) has also shown a marked decrease in concentration and extent. Based on the data and analyses provided above, our conclusion is that the Tritium plume is undergoing long-term, overall reductions in activity which are consistent with Monitored Natural Attenuation (MNA), the remedial technology selected for the IPEC Site. Given this conclusion, and the recognition that Entergy has terminated all identified leaks in the Unit 2 SFP⁷¹, the Unit 2 Tritium plume satisfies the requirements for Monitored Natural Attenuation.

⁶⁹ After reviewing the groundwater elevation and precipitation data from the Indian Point meteorological station over the time period from Q2 2007 to Q2 2009, it was concluded that sufficient seasonal data had been collected to encompass the majority of the precipitation variability observed over the last fourteen years (fifty-six quarters); see analysis in Appendix H of the Q2 2009 LTM Report.

⁷⁰ The plume shading on **Figure 6** demarks the estimated boundary that separates Tritium levels greater than 5,000 pCi/L from those below this value. This plume delineation boundary value equates to one-quarter of the drinking water standard for Tritium. Although GZA emphasizes that drinking water standards (USEPA MCLs) do not apply to the IPEC property given that there are no drinking water sources on or proximate to the site, the MCLs do provide a useful benchmark for comparisons of relative human risk. Where yearly rolling average radionuclide activity data were available for multiple depths at a given location, GZA used the highest value to develop plume delineations. This is a typical approach to represent three-dimensional contaminant data sets on two-dimensional maps.

⁷¹ Further justification for this conclusion can be found in Section 3.6 of the Q1 2009 Quarterly Monitoring Report as well as the Hydrogeologic Site Investigation Report. The Q1 2009 Report summarizes additional, more quantitative analyses that have been completed to further investigate the integrity of the Unit 2 SFP. These analyses provide further support for the original conclusion that the Unit 2 SFP is no longer leaking. However, these analyses cannot definitively rule out the possibility of a remaining small

Section 4.0 Conclusions and Planned Activities

- The overall Strontium activity within the Unit 1 plume had generally been stable or decreasing in response to the West Pool demineralization activities conducted by Entergy beginning in 2006. However, the final defueling of the Unit 1 SFPs resulted in an initial, noticeable increase followed by a commensurate decrease in Strontium levels proximate to the SFPs, with current indications of increases in the downgradient Strontium levels (see **Figure 7** and **7A**). This is as was predicted given the requirement to temporarily raise the pool levels for rod removal, thus increasing leakage rate from the SFPs⁷². As anticipated, the levels proximate to the pool have recently decreased to pre-defueling Strontium levels, and levels downgradient of the pool are increasing as this additional Strontium-contaminated water flushes through the groundwater flow system. It is expected that this flushing mechanism will be protracted given the aforementioned impact of partitioning on Strontium levels in the groundwater. However, over time it is expected that downgradient Strontium plume levels will also resume an overall downward trend once this perturbation is finished passing through the system. Given this conclusion and the recognition that Entergy has terminated all identified leaks in the Unit 1 SFPs through decommissioning, the Unit 1 Strontium plume satisfies the requirements for Monitored Natural Attenuation. However, as indicated above, the establishment of updated I.L.s for the Unit 1 Strontium plume must await return to the original Strontium baseline levels existing prior to Unit 1 defueling.

leak which could then also be supplying Tritium to the groundwater flow regime in addition to the Retention Mechanism(s). While it is not possible to quantify the size the minimum detectable leak with any degree of certainty, we believe that the maximum leak rate from the Unit 2 SFP that could potentially remain undetected by the groundwater monitoring system is less than 10 to 30 gpd (0.007 to 0.021 gallons per minute). It is also likely that if a small leak exists in the Unit 2 SFP liner, it should not get worse with time, as based on liner evaluations previously conducted by Entergy. It is further emphasized that while a leak of less than 0.02 gallons per minute should be large enough to be readily detectable with the existing Long Term Monitoring Program, this amount of Tritium release to the river is still small compared to permitted levels of Tritium discharge to the river through the Discharge Canal.

⁷² As of late 2008, all the fuel rods have been removed from the Unit 1 SFPs and the pool water has been drained. As such, the Unit 1 SFPs is no longer an active source of radionuclides to the subsurface.



TABLES

Table 1 Groundwater Sampling Methods, Equipment, Frequency, and Depths

Table 2 Historic Quarterly Low Tide Groundwater Elevations

Table 3 2009 3rd Groundwater Analytical Results and Averages

Table 4 2009 3rd Quarter Groundwater Analytical Results and I.L.s

Table 5 Historic Groundwater Analytical Results

TABLE 1
GROUNDWATER SAMPLING METHODS, EQUIPMENT, FREQUENCY AND DEPTHS
INDIAN POINT ENERGY CENTER
BUCHANAN, NY

Well ID ¹	Sampling Method	Sampling Equipment Used	Projected 2009 Sampling Frequency ²	SAMPLING INTERVAL ³				SAMPLING DEPTH ⁴	
				Ft Below Top of Casing		Elevation in Feet msl		Feet Below TOC	Elevation in Feet msl
				Top	Bottom	Top	Bottom		
MW-30-69	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	67.3	71.3	8.4	4.4	69.3	6.4
MW-30-84	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	77.3	85.4	-1.6	-9.5	83.8	-8.1
MW-31-19	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	31.8	49.3	40.8	26.3	48.8	26.8
MW-31-63	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	57.3	63.8	20.3	11.8	63.3	12.3
MW-31-85	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	69.8	85.4	5.8	-9.6	84.8	-9.2
MW-32-59	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	28.3	61.3	48.8	15.8	58.8	18.3
MW-32-85	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	79.3	92.8	-2.2	-15.7	85.3	-85.3
MW-32-131	Waterloo Low Flow	Waterloo Multilevel System	Inactive	125.8	138.3	-48.7	-61.2	130.8	-53.7
MW-32-149	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	125.8	156.8	-70.2	-79.7	149.3	-72.2
MW-32-173	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	165.8	174.3	-88.7	-97.2	172.8	-95.7
MW-32-190	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	180.3	193.9	-103.2	-116.8	190.3	-113.7
MW-33	Low Flow	Penstaltic Pump	Annually	8.0	30.0	10.6	-11.7	16	2.8
MW-34	Low Flow	Penstaltic Pump	Inactive	5.0	30.0	13.5	-11.5	16.5	2.0
MW-35	Low Flow	Penstaltic Pump	Annually	6.5	30.0	12.1	-11.4	15.0	3.6
MW-36-24 ⁵	Low Flow	Penstaltic Pump	Quarterly	11.0	24.0	0.8	-12.2	17.0	-5.2
MW-36-41	Low Flow	Penstaltic Pump	Inactive	36.0	41.0	-24.2	-29.2	37.0	-25.2
MW-36-52	Low Flow	Penstaltic Pump	Quarterly	48.0	53.0	-36.2	-41.2	50.0	-38.2
MW-37-22	Low Flow	Penstaltic Pump	Quarterly	12.0	22.0	3.0	-7.0	17.0	-2.0
MW-37-32	Low Flow	Penstaltic Pump	Quarterly	28.0	32.5	-13.0	-17.5	29.0	-14.0
MW-37-40	Low Flow	Penstaltic Pump	Quarterly	38.5	40.5	-23.5	-24.5	39.0	-24.0
MW-37-57	Low Flow	Penstaltic Pump	Quarterly	52.0	57.0	-37.0	-42.0	55.0	-40.0
MW-38	Low Flow	Penstaltic Pump	Inactive	5.0	40.0	9.3	-25.7	25.4	-11.1
MW-39-67	Waterloo Low Flow	Waterloo Multilevel System	Bi-Annually	65.0	70.5	15.0	9.5	67.0	13.0
MW-39-84	Waterloo Low Flow	Waterloo Multilevel System	Bi-Annually	76.5	85.0	3.5	-5.0	83.5	-3.5
MW-39-102	Waterloo Low Flow	Waterloo Multilevel System	Bi-Annually	95.0	103.0	-13.0	-23.0	101.5	-21.5
MW-39-124	Waterloo Low Flow	Waterloo Multilevel System	Bi-Annually	115.0	126.5	-35.0	-46.5	124.0	-44.0
MW-39-183	Waterloo Low Flow	Waterloo Multilevel System	Bi-Annually	169.5	186.0	-89.5	-106.0	182.5	-102.5
MW-39-195	Waterloo Low Flow	Waterloo Multilevel System	Bi-Annually	193.0	198.6	-113.0	-118.4	195.0	-115.0
MW-40-27	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	18.2	35.2	55.0	38.0	26.7	46.5
MW-40-46	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	44.2	53.7	29.0	19.5	46.2	27.0
MW-40-81	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	64.7	84.2	8.5	-11.0	80.7	-7.5
MW-40-100	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	93.2	106.7	-20.0	-33.5	100.2	-27.0
MW-40-127	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	125.2	136.7	-52.0	-63.5	127.2	-54.0
MW-40-162	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	158.7	190.3	-85.5	-116.9	161.7	-88.5
MW-41-40	Low Flow	Penstaltic Pump	Bi-Annually	22.0	42.0	32.9	12.9	36.0	18.9
MW-41-63	Modified Well Vol. Purge	Water Pump	Bi-Annually	59.0	64.0	-4.1	-9.1	61.0	-6.1
MW-42-49	Modified Well Vol. Purge	Submersible Pump	Quarterly	31.0	51.0	38.7	18.7	41.0	28.7
MW-42-78	Modified Well Vol. Purge	Water Pump	Quarterly	69.0	79.0	0.7	-9.3	74.0	-4.3
MW-43-28	Low Flow	Submersible Pump	Bi-Annually	8.0	28.0	40.8	20.7	23.0	25.8
MW-43-62	Low Flow	Submersible Pump	Bi-Annually	42.0	62.0	6.8	-13.2	54.0	-5.2
MW-44-66	Modified Well Vol. Purge	Submersible Pump	Quarterly	52.0	67.0	11.5	26.5	63.0	30.5
MW-44-102	Modified Well Vol. Purge	Water Pump	Quarterly	79.0	104.0	14.5	-10.5	80.0	13.5
MW-45-42	Modified Well Vol. Purge	Penstaltic Pump	Quarterly	27.5	42.5	26.2	11.2	37.0	16.0
MW-45-61	Modified Well Vol. Purge	Penstaltic Pump	Quarterly	51.5	61.5	2.2	-7.8	58.0	-4.4
MW-46	Modified Well Vol. Purge	Submersible Pump	Quarterly	6.0	30.0	12.1	-11.9	10.5	7.6
MW-47-56	Low Flow	Submersible Pump	Inactive	36.0	56.0	34.3	14.3	52.0	18.3
MW-47-80	Modified Well Vol. Purge	Water Pump	Inactive	70.0	80.0	0.3	-9.7	72.0	-1.7

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Methods, Frequency, Depths

TABLE 1
GROUNDWATER SAMPLING METHODS, EQUIPMENT, FREQUENCY AND DEPTHS
INDIAN POINT ENERGY CENTER
BUCHANAN, NY

Well ID ¹	Sampling Method	Sampling Equipment Used	Projected 2009 Sampling Frequency ²	SAMPLING INTERVAL ³				SAMPLING DEPTH ⁴	
				FT Below Top of Casing		Elevation in Feet msl		Feet Below TOC	Elevation in Feet msl
				Top	Bottom	Top	Bottom		
MW-48-23	Low Flow	Peristaltic Pump	Inactive	8.0	23.0	7.4	-7.6	15.8	-0.4
MW-48-37	Low Flow	Peristaltic Pump	Inactive	33.0	38.0	-17.6	22.6	35.8	-20.4
MW-49-26	Low Flow	Peristaltic Pump	Quarterly	15.0	25.0	-0.3	-10.4	20.0	-5.3
MW-49-42	Low Flow	Peristaltic Pump	Quarterly	3.0	42.0	-17.4	-27.4	37.0	-22.3
MW-49-65	Low Flow	Peristaltic Pump	Quarterly	60.0	65.0	-45.4	-50.4	61.0	-46.4
MW-50-42	Low Flow	Peristaltic Pump	Quarterly	22.0	42.0	-7.1	-27.1	27.0	-12.1
MW-50-66	Low Flow	Peristaltic Pump	Quarterly	62.0	67.0	-47.1	-52.1	60.0	-45.1
MW-51-10	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	29.7	41.2	38.0	23.5	39.7	28.0
MW-51-79	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	63.2	81.2	4.5	-13.5	78.7	-11.0
MW-51-104	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	101.2	111.2	-33.5	-43.5	103.7	-36.0
MW-51-135	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	130.2	143.7	-62.5	-76.0	135.2	-67.5
MW-51-163	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	154.7	166.2	-87.0	-98.5	162.7	-93.0
MW-51-189	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	184.2	197.8	-116.5	-129.9	189.2	-121.5
MW-52-11	Modified Well Vol. Purge	Peristaltic Pump	Annually	2.0	12.0	14.8	4.8	10.0	6.8
MW-52-18	Waterloo Low Flow	Waterloo Multilevel System	Annually	10.0	30.0	4.9	-15.1	17.5	-2.6
MW-52-48	Waterloo Low Flow	Waterloo Multilevel System	Annually	48.0	56.0	-33.1	-41.1	48.0	-33.1
MW-52-64	Waterloo Low Flow	Waterloo Multilevel System	Annually	59.0	71.5	-44.1	-56.6	64.0	-49.1
MW-52-122	Waterloo Low Flow	Waterloo Multilevel System	Annually	110.5	123.5	-95.6	-108.6	122.0	-107.1
MW-52-162	Waterloo Low Flow	Waterloo Multilevel System	Annually	154.5	164.0	-139.6	-149.1	161.5	-146.6
MW-52-181	Waterloo Low Flow	Waterloo Multilevel System	Annually	171.0	198.1	-136.1	-183.0	181.0	-166.1
MW-53-82	Low Flow	Submersible Pump	Quarterly	62.0	82.0	8.3	-11.7	75.0	-4.7
MW-53-120	Modified Well Vol. Purge	Water Pump	Quarterly	100.0	120.0	-29.7	-49.7	105.0	-34.7
MW-54-37	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	29.0	42.0	-15.9	-28.9	36.5	-23.4
MW-54-58	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	51.5	64.0	-38.4	-50.9	57.5	-44.4
MW-54-123	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	116.0	126.0	-102.9	-112.9	123.0	-109.9
MW-54-141	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	135.0	155.5	-121.9	-142.4	141.0	-130.9
MW-54-173	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	170.5	182.0	-157.4	-168.9	172.5	-159.4
MW-54-190	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	185.0	203.6	-171.9	-190.3	190.0	-176.9
MW-55-24	Low Flow	Peristaltic Pump	Quarterly	14.0	24.0	4.3	-5.8	16.0	2.3
MW-55-35	Low Flow	Peristaltic Pump	Quarterly	30.0	35.0	-11.8	-16.8	32.0	-13.8
MW-55-54	Low Flow	Peristaltic Pump	Quarterly	44.0	54.0	-25.8	-35.8	47.0	-28.8
MW-56-53	Modified Well Vol. Purge	Submersible Pump	Bi-Annually	49.2	54.2	21.0	16.0	52.0	18.3
MW-56-83	Modified Well Vol. Purge	Water Pump	Bi-Annually	69.9	84.9	0.4	-14.6	74.0	-3.7
MW-57-11	Modified Well Vol. Purge	Peristaltic Pump	Bi-Annually	6.0	11.0	9.0	4.0	10.0	5.0
MW-57-20	Modified Well Vol. Purge	Peristaltic Pump	Bi-Annually	15.5	20.5	-0.5	-5.5	19.0	-4.0
MW-57-45	Modified Well Vol. Purge	Peristaltic Pump	Bi-Annually	30.5	45.5	-15.5	-30.5	40.0	-25.0
MW-58-26	Low Flow	Peristaltic Pump	Quarterly	16.0	26.0	-1.4	-11.4	20.0	-5.4
MW-58-65	Low Flow	Peristaltic Pump	Quarterly	50.0	65.0	-35.4	-50.4	54.0	-39.4
MW-59-32	Low Flow	Peristaltic Pump	Inactive	21.0	31.0	-6.5	-16.5	27.0	-12.5
MW-59-45	Low Flow	Peristaltic Pump	Inactive	35.0	45.0	-20.5	-30.5	42.0	-27.5
MW-59-68	Low Flow	Peristaltic Pump	Inactive	53.0	68.0	-38.5	-53.5	58.0	-43.5
MW-60-35	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	24.9	39.4	-12.4	-26.9	34.9	-22.4
MW-60-53	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	45.4	59.4	-32.9	-46.9	53.4	-40.9
MW-60-72	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	66.1	78.9	-53.9	-66.1	72.4	-59.9
MW-60-133	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	124.9	141.4	-112.4	-128.9	134.9	-122.4
MW-60-154	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	147.4	164.9	-134.9	-152.4	154.4	-141.9
MW-60-176	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	170.9	200.4	-158.4	-187.8	175.9	-163.4

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Methods, Frequency, Depths

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BUCHANAN, NY

Well ID ¹	Sampling Method	Sampling Equipment Used	Projected 2009 Sampling Frequency ²	SAMPLING INTERVAL ³				SAMPLING DEPTH ⁴	
				Ft Below Top of Casing		Elevation in Feet msl		Feet Below TOC	Elevation in Feet msl
				Top	Bottom	Top	Bottom		
MW-62-18	Low Flow	Peristaltic Pump	Quarterly	4.7	14.7	10.0	0.0	13.5	1.2
MW-62-37	Low Flow	Peristaltic Pump	Quarterly	33.3	38.3	-18.6	-23.6	34.5	-19.8
MW-62-53	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	49.6	54.1	-36.8	-41.3	53.1	-40.3
MW-62-71	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	61.1	82.6	-48.3	-69.8	71.1	-58.3
MW-62-92	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	88.6	99.1	-75.8	-86.3	91.6	-78.8
MW-62-138	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	126.1	143.6	-113.3	-130.8	138.1	-125.3
MW-62-182	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	177.6	198.7	-164.8	-185.7	182.1	-169.3
MW-63-18	Low Flow	Peristaltic Pump	Quarterly	8.0	18.0	-3.8	-13.8	14.9	0.7
MW-63-34	Low Flow	Peristaltic Pump	Quarterly	30.0	35.0	-15.8	-20.8	31.5	-17.3
MW-63-50	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	41.5	58.0	-29.2	-45.7	49.5	-37.2
MW-63-93	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	81.5	100.5	-69.2	-88.2	93.0	-80.7
MW-63-112	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	106.5	112.0	-94.2	-99.7	111.5	-99.2
MW-63-163	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	150.5	165.0	-127.5	-132.7	162.5	-150.2
MW-63-174	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	168.0	191.1	-155.7	-178.6	174.0	-161.7
MW-66-21	Modified Well Vol. Purge	Peristaltic Pump	Quarterly	7.0	27.0	6.0	-7.0	14.1	0
MW-66-36	Modified Well Vol. Purge	Peristaltic Pump	Quarterly	31.0	36.0	-17.0	-22.0	33.6	-19.5
MW-67-39	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	28.8	54.3	-15.8	-41.3	38.3	-25.8
MW-67-105	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	90.3	110.8	-77.3	-97.8	104.8	-92.3
MW-67-173	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	164.8	188.3	-151.8	-175.3	172.3	-159.8
MW-67-219	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	209.3	229.8	-196.3	-216.8	218.8	-206.3
MW-67-275	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	250.8	281.3	-237.8	-268.3	275.3	-262.8
MW-67-323	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	317.8	328.3	-304.8	-315.3	322.3	-309.8
MW-67-340	Waterloo Low Flow	Waterloo Multilevel System	Quarterly	335.3	347.9	-322.3	-334.9	339.8	-327.3
MW-107	Low Flow	Submersible Pump	Quarterly	105.1	126.1	34.9	13.9	32.7	110.1
MW-111	Low Flow	Peristaltic Pump	Bi-Annually	11.6	17.4	7.0	1.5	16.5	2.4
U3-ID	Modified Well Vol. Purge	Peristaltic Pump	Quarterly	25.0	27.6	-10.2	-12.8	25.6	-10.8
U3-F1	Low Flow	Peristaltic Pump	Quarterly	0.2	1.2	3.1	2.1	5.7	2.8
U3-F2	Low Flow	Peristaltic Pump	Quarterly	0.6	1.6	2.7	1.7	5.7	2.6
U1-CSS	Low Flow	Peristaltic Pump	Bi-Annually	NA	10.2	NA	4.9	14.0	6.1
LAF-002	Low Flow	NA	Bi-Annually	NA	NA	NA	NA	NA	-22.3
U1-NCDS	Grab	NA	Quarterly	NA	NA	NA	NA	NA	NA
U1-SFDS	Grab	NA	Quarterly	NA	NA	NA	NA	NA	NA
MH-5 ⁶	Grab	NA	Inactive	NA	NA	NA	NA	NA	NA
B-1 ⁶	Grab	NA	Inactive	NA	NA	NA	NA	NA	NA
B-6 ⁶	Grab	NA	Inactive	NA	NA	NA	NA	NA	NA

Notes:

- For nested multi-level monitoring wells, suffix of well ID indicates depth (rounded to nearest foot) from reference point on casing to bottom of well screen. For Waterloo multi-level systems, suffix indicates depth (rounded to nearest foot) from reference point on casing to top of sampling port. Well IDs without a suffix are open bedrock wellbores.
- Projected sampling frequencies presented for 2009 are subject to change.
- For nested multi-level monitoring wells, interval includes well screen and sand pack. For Waterloo multi-level systems, interval includes open wellbore between bottom of 1st packer above and top of 1st packer below sampling port. For open bedrock wellbores, interval extends from bottom of casing to bottom of hole.
- Sampling depths within sampling intervals (i.e. location of pump intake) have been located adjacent to a transmissive zone where possible.
- Dot pattern denotes sampling interval is positioned within overburden. Open box indicates sampling interval is in bedrock.
- These locations are storm drains.

TABLE 2
 HISTORIC QUARTERLY LOW TIDE GROUNDWATER ELEVATIONS
 INDIAN POINT ENERGY CENTER
 BUCHANAN, NY

Well ID	LOW RIVER TIDE GROUNDWATER ELEVATIONS (Feet msl)											
	Quarter 2 nd , 2007	Quarter 3 rd , 2007	Quarter 4 th , 2007	Quarter 1 st , 2008	Quarter 2 nd , 2008	Quarter 3 rd , 2008	Quarter 4 th , 2008	Quarter 1 st , 2009	Quarter 2 nd , 2009	Quarter 3 rd , 2009	Quarter 4 th , 2009	
FR-1	NA	-0.86	-1.87	-2.15	-1.13	-1.05	-1.69	-3.28	-1.52	-0.27	-0.27	
E-2	50.23	48.62	51.87	53.73	52.11	52.90	50.75	NA	NA	NA	NA	
MW-30-69	11.83	11.53	12.00	11.77	11.71	12.33	12.33	13.13	11.84	13.76	13.76	
MW-30-84	12.77	12.47	12.83	NA	13.06	12.68	12.36	13.13	12.82	12.82	12.48	
MW-31-49	44.09	NA	45.40	47.30	46.14	45.39	46.44	44.13	45.40	-	-	
MW-31-63	11.56	NA	12.71	45.32	43.96	42.17	41.21	44.12	43.20	-	-	
MW-31-85	39.59	NA	40.81	43.19	41.89	40.58	39.64	42.10	40.64	-	-	
MW-32-48	NA	42.12	46.73	48.31	47.77	46.98	45.79	48.08	47.31	-	-	
MW-32-59	NA	41.44	45.99	47.99	46.75	45.72	44.48	46.83	45.62	-	-	
MW-32-85 (MW-32-92) ^{1/2}	10.27	12.35	12.78	13.30	13.17	12.30	12.16	12.60	11.61	-	-	
MW-32-131 (MW-32-140) ^{1/2}	13.11	11.96	13.21	25.01	15.67	11.34	11.53	11.86	11.06	-	-	
MW-32-149 (MW-32-165) ^{1/2}	8.18	9.87	10.06	10.20	10.04	9.71	9.77	10.00	9.18	-	-	
MW-32-173	NA	9.73	9.92	9.70	9.45	9.45	9.45	9.68	8.81	-	-	
MW-32-190 (MW-32-196) ^{1/2}	6.74	8.05	7.88	7.88	7.52	7.16	7.05	7.24	6.26	-	-	
MW-33	10.08	9.80	10.38	11.49	11.66	10.55	10.60	11.23	10.52	-	-	
MW-34	9.87	9.82	10.44	11.63	12.03	10.54	10.54	11.25	10.54	-	-	
MW-35	10.03	9.67	10.37	11.65	12.06	10.68	10.68	11.36	NA	-	-	
MW-36-21	8.89	7.31	7.67	6.85	6.86	7.58	9.05	NA	7.25	-	-	
MW-36-41	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	-	
MW-36-52	7.43	6.43	6.45	6.42	6.29	6.99	7.45	8.12	6.62	-	-	
MW-37-22	5.51	5.15	4.83	4.66	4.18	5.55	5.55	4.45	5.24	-	-	
MW-37-32	5.51	5.07	4.82	4.63	4.05	5.36	5.61	4.55	5.32	-	-	
MW-37-40	5.40	6.83	6.19	6.17	5.95	6.18	6.04	5.46	6.19	-	-	
MW-37-57	7.07	6.23	6.39	6.28	6.07	6.64	6.20	6.50	6.56	-	-	
MW-38	3.01	2.19	1.46	2.22	1.53	2.12	1.22	NA	2.24	-	-	
MW-39-67	NA	NA	26.84	32.30	31.69	25.96	25.21	28.74	NA	-	-	
MW-39-84	NA	NA	26.64	31.94	31.48	25.78	25.12	28.62	NA	-	-	
MW-39-100	NA	NA	26.38	30.99	31.34	25.52	24.79	28.52	NA	-	-	
MW-39-102	NA	NA	26.31	31.56	NA	NA	NA	NA	NA	-	-	
MW-39-124	NA	NA	26.05	28.37	30.67	25.07	24.43	27.74	NA	-	-	
MW-39-183	NA	NA	25.28	29.74	29.83	22.33	23.79	26.78	NA	-	-	
MW-39-195	NA	NA	24.36	28.80	28.89	23.35	22.70	25.63	NA	-	-	
MW-40-27	NA	NA	55.16	60.39	59.59	54.70	54.22	59.53	57.25	58.75	-	
MW-40-46	NA	47.27	53.19	59.35	59.09	52.57	52.35	59.13	56.56	-	-	
MW-40-81	NA	11.65	47.45	56.06	55.78	47.28	46.83	55.67	53.13	-	-	
MW-40-100	NA	39.17	45.18	54.10	53.75	41.83	41.32	53.59	51.24	-	-	
MW-40-127	NA	38.89	44.60	53.61	53.39	44.33	43.87	53.29	50.59	-	-	
MW-40-162	NA	36.67	41.09	50.49	50.26	41.52	40.66	49.76	46.80	48.42	-	
MW-41-40	29.87	NA	32.18	36.57	33.81	31.28	30.71	33.62	32.05	-	-	
MW-41-63	25.94	NA	27.77	33.31	32.76	27.53	26.96	30.38	28.39	-	-	
MW-42-49	NA	NA	34.55	34.96	34.81	34.43	34.43	34.78	34.47	-	-	
MW-42-78	NA	NA	35.71	36.63	36.28	35.38	35.07	36.03	35.75	-	-	
MW-43-28	32.75	31.08	31.98	33.47	33.95	32.51	33.43	33.43	32.54	32.66	-	
MW-43-62	30.83	NA	NA	NA	32.16	30.48	31.76	34.13	30.88	NA	-	
MW-44-67	33.36	NA	34.36	37.99	35.17	34.00	34.96	34.96	34.50	NA	-	
MW-44-102	23.10	NA	24.84	NA	30.88	25.86	25.16	28.09	27.41	-	-	
MW-45-42	NA	24.82	28.47	34.19	37.16	23.63	25.45	32.02	25.03	-	-	
MW-45-61	NA	21.33	27.57	32.91	32.16	27.16	26.68	29.59	25.25	-	-	
MW-46	12.80	11.95	12.57	15.05	14.97	12.62	12.81	14.29	12.47	12.83	-	

TABLE 2
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 INDIAN POINT ENERGY CENTER
 BUCHANAN, NY

Well ID	LOW RIVER TIDE GROUNDWATER ELEVATIONS (Feet msl)											
	Quarter 2 nd , 2007	Quarter 3 rd , 2007	Quarter 4 th , 2007	Quarter 1 st , 2008	Quarter 2 nd , 2008	Quarter 3 rd , 2008	Quarter 4 th , 2008	Quarter 1 st , 2009	Quarter 2 nd , 2009	Quarter 3 rd , 2009	Quarter 4 th , 2009	
MW-47-56	21.83	20.77	23.05	27.76	22.84	22.84	22.37	26.51	23.43	-	-	
MW-47-80	22.29	21.41	21.82	26.33	28.35	21.52	21.08	26.37	24.18	-	-	
MW-48-23	-0.08	-0.27	-0.39	-1.14	-0.23	-0.18	-0.48	-0.91	-0.19	-	-	
MW-48-37	0.64	0.26	-0.06	-0.18	0.32	0.05	-0.15	-0.50	0.04	-	-	
MW-49-26	1.04	NA	-0.37	-0.62	0.51	0.37	0.49	-0.25	0.54	-	-	
MW-49-42	0.31	0.90	0.40	-0.44	0.92	1.02	0.63	-0.06	0.51	-	-	
MW-49-65	0.89	1.01	0.34	0.07	0.70	0.68	0.47	-0.08	0.57	-	-	
MW-50-42	7.24	NA	NA	NA	5.24	6.40	7.06	5.66	6.09	-	-	
MW-50-66	3.71	NA	NA	1.97	2.24	2.83	2.34	1.95	2.82	-	-	
MW-51-40	NA	48.69	50.07	51.95	52.35	49.44	49.24	49.32	45.15	46.45	-	
MW-51-79	NA	39.92	41.07	42.91	44.17	40.71	40.36	42.75	37.78	-	-	
MW-51-102	NA	35.98	38.07	38.46	39.04	36.56	36.17	38.18	37.98	-	-	
MW-51-104	NA	NA	37.93	38.41	39.02	36.49	36.03	37.99	37.49	-	-	
MW-51-135	NA	37.42	39.17	39.99	40.71	38.10	37.68	39.75	39.31	-	-	
MW-51-163	NA	33.79	34.83	36.15	36.77	34.30	33.90	35.74	35.44	-	-	
MW-51-189	NA	29.33	30.16	31.34	31.59	29.65	29.36	30.81	30.48	32.18	-	
MW-52-11	6.04	5.61	8.12	8.47	8.85	8.65	8.44	8.19	9.20	-	-	
MW-52-18	6.54	NA	8.63	6.04	6.07	5.89	6.02	5.78	5.87	-	-	
MW-52-48	7.08	NA	6.55	6.23	5.95	6.20	6.14	6.05	5.75	-	-	
MW-52-64	5.96	NA	5.90	5.25	5.03	5.21	5.16	5.20	4.89	-	-	
MW-52-118	5.34	NA	4.41	4.44	4.32	4.36	4.68	4.23	4.23	-	-	
MW-52-122	5.25	NA	4.26	4.32	4.18	4.21	4.55	4.11	4.20	-	-	
MW-52-162	0.67	NA	-0.80	-1.31	-0.80	-0.98	-1.30	-2.07	-1.18	-	-	
MW-52-181	0.41	NA	-1.08	-1.56	-1.00	-1.30	-1.64	-2.38	-1.54	-	-	
MW-53-82	NA	9.59	10.03	11.99	12.60	10.35	NA	11.11	NA	11.11	-	
MW-53-120	9.91	9.18	9.59	10.87	11.49	9.76	NA	10.55	9.78	10.43	-	
MW-54-35	NA	NA	6.40	6.27	6.36	6.16	6.41	5.75	5.87	-	-	
MW-54-37	7.52	NA	6.58	6.45	6.33	6.30	6.38	5.90	6.04	-	-	
MW-54-58	6.86	NA	5.82	5.60	5.55	5.53	5.76	5.49	5.17	-	-	
MW-54-123	5.69	NA	4.16	3.65	3.52	4.01	4.06	2.99	3.56	-	-	
MW-51-144	8.85	NA	7.13	6.60	6.48	6.92	6.97	5.89	6.53	-	-	
MW-54-173	5.17	NA	3.52	2.99	2.85	3.27	3.29	2.19	2.72	-	-	
MW-54-190	5.08	NA	3.46	2.91	2.76	3.16	3.13	2.00	2.49	-	-	
MW-55-24	8.56	7.82	7.97	8.17	8.16	8.18	9.02	8.35	8.06	8.39	-	
MW-55-35	8.10	7.29	7.52	7.60	7.59	7.69	8.30	7.63	7.63	9.49	-	
MW-55-54	8.47	7.65	7.75	8.08	8.32	8.22	8.82	NA	7.89	8.14	-	
MW-56-33	21.04	20.16	NA	NA	29.23	NA	21.90	27.33	22.06	-	-	
MW-56-83	21.10	20.10	22.18	26.41	29.16	NA	21.51	25.13	22.60	-	-	
MW-57-11	9.57	8.83	9.36	10.99	NA	10.03	10.27	11.11	10.09	-	-	
MW-57-20	9.38	NA	NA	NA	12.07	NA	9.92	10.63	9.84	-	-	
MW-57-45	9.08	NA	NA	NA	10.59	NA	NA	10.71	NA	-	-	
MW-58-26	8.03	6.49	6.58	8.32	7.29	7.19	7.56	7.56	7.40	-	-	
MW-58-65	6.03	6.83	6.22	NA	7.36	7.13	6.46	6.68	6.70	-	-	
MW-59-32	1.06	NA	0.67	0.42	0.77	0.81	0.47	0.31	1.37	-	-	
MW-59-45	1.06	1.27	0.42	NA	9.23	NA	2.52	0.44	NA	-	-	
MW-59-68	2.91	2.51	1.97	0.90	-0.11	NA	-1.79	-5.66	7.93	-	-	

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 BUCHANAN, NY

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	Quarter 2 nd , 2007	Quarter 3 rd , 2007	Quarter 4 th , 2007	Quarter 1 st , 2008	Quarter 2 nd , 2008	Quarter 3 rd , 2008	Quarter 4 th , 2008	Quarter 1 st , 2009	Quarter 2 nd , 2009	Quarter 3 rd , 2009	Quarter 4 th , 2009	
MW-60-35	2.19	1.28	1.32	1.58	1.63	0.82	2.04	1.99	3.07	-	-	
MW-60-53	-0.63	-1.24	-1.67	-2.04	-1.37	-1.76	-2.03	-2.70	NA	-	-	
MW-60-55	NA	-0.28	-0.73	-1.10	-0.47	-0.90	-1.21	-1.91	NA	-	-	
MW-60-72	0.74	-0.09	-0.45	-0.68	-0.14	-0.64	NA	-1.43	0.28	-	-	
MW-60-135	0.94	0.11	-0.44	-0.90	-0.27	-0.71	-1.02	-1.72	0.11	-	-	
MW-60-154	0.08	-0.96	-1.61	-2.07	-1.49	-1.91	-2.25	-2.99	NA	-	-	
MW-60-176	-0.48	-1.38	-2.03	-2.57	-1.82	-2.16	-2.39	-3.41	NA	-	-	
MW-62-18	0.25	0.61	-0.37	-0.29	0.13	0.05	-0.12	-0.82	NA	-	-	
MW-62-37	0.59	0.61	-0.03	-0.46	0.49	0.59	-0.15	-1.13	0.11	-	-	
MW-62-52	NA	0.48	-0.30	-1.13	-0.19	-0.29	-0.53	-1.64	-0.42	-	-	
MW-62-53	0.95	0.54	-0.25	-1.01	-0.10	-0.16	-0.84	-2.03	-0.44	-	-	
MW-62-71	0.89	0.22	-0.36	-1.26	-0.55	-0.56	-1.24	-2.15	-1.03	-	-	
MW-62-92	1.07	0.58	-0.09	-0.76	-0.11	-0.10	-0.85	-1.68	-0.70	-	-	
MW-62-138	1.40	0.77	0.09	-0.29	0.13	0.26	-0.37	-1.33	-0.40	-	-	
MW-62-181	1.33	0.38	-0.33	-0.99	-0.32	-0.36	-0.92	NA	-0.88	-	-	
MW-62-182	NA	-0.33	-1.83	-0.78	-1.29	-1.25	-1.85	-2.66	-1.82	-	-	
MW-63-18	0.14	0.09	-0.10	-0.37	0.09	0.32	-0.68	-0.64	0.02	-	-	
MW-63-34	0.51	0.19	-0.09	-0.40	0.13	0.05	-0.13	-0.74	0.18	-	-	
MW-63-50	0.86	0.29	-0.38	-1.03	-0.47	-0.55	-1.24	-2.08	-0.45	-	-	
MW-63-91	1.16	0.48	-0.19	-0.87	-0.25	-0.16	-0.89	NA	-0.01	-	-	
MW-63-93	NA	0.55	-0.20	-0.87	-0.30	-0.24	-0.58	-1.68	-0.13	-	-	
MW-63-112	0.03	-0.82	-1.46	-2.05	-1.69	-1.60	-2.26	-3.14	-1.45	-	-	
MW-63-121	1.41	0.60	-0.18	-0.78	-0.24	-0.05	-0.86	-1.49	0.11	-	-	
MW-63-163	0.70	-0.09	-0.83	-1.48	-0.86	-0.90	-1.54	-2.46	-0.98	-	-	
MW-63-174	0.88	0.05	-0.65	-1.29	-0.62	-0.61	-1.19	-1.97	-0.59	-	-	
MW-65-48	NA	NA	NA	NA	38.60	43.22	NA	48.19	36.98	NA	40.08	
MW-65-80	NA	NA	NA	NA	34.97	32.25	32.72	33.71	33.30	33.79	33.79	
MW-66-21	0.26	0.17	-0.22	-0.74	0.05	0.17	0.29	-0.53	0.50	0.52	-	
MW-66-36	0.81	0.48	-0.04	-0.51	0.35	0.15	0.10	-0.86	0.51	-	-	
MW-67-39	NA	1.02	0.34	-0.33	0.36	0.41	-0.02	-0.07	-0.56	0.81	-	
MW-67-105	NA	1.39	0.61	-0.04	0.57	0.65	0.16	-0.67	-0.43	-	-	
MW-67-173	NA	0.75	-0.14	-0.83	-0.28	-0.26	-0.82	-1.62	-1.53	-	-	
MW-67-219	NA	0.74	-0.19	-0.91	-0.32	-0.32	-0.86	-1.87	-1.59	-	-	
MW-67-276	NA	1.61	0.60	-0.13	0.44	0.41	-0.14	-1.03	-0.91	-	-	
MW-67-323	NA	0.18	-0.96	-1.75	-1.13	-1.35	-1.63	-2.86	-2.73	-	-	
MW-67-340	NA	0.63	-0.32	-1.31	-0.87	-0.96	-1.56	-2.42	-2.40	-	-0.76	
MW-107	116.85	113.87	117.48	121.79	118.94	115.90	115.76	120.28	117.52	-	-	
MW-108	9.58	8.61	8.77	9.98	10.07	NA	9.02	9.65	9.26	-	-	
MW-109	9.52	6.80	7.22	9.50	10.12	7.82	7.88	NA	4.95	-	-	
MW-111	9.56	9.66	9.74	10.74	11.24	6.74	10.48	10.87	9.47	-	-	

TABLE 2
 HISTORIC QUARTERLY LOW TIDE GROUNDWATER ELEVATIONS
 INDIAN POINT ENERGY CENTER
 BUCHANAN, NY

Well ID	LOW RIVER TIDE GROUNDWATER ELEVATIONS (Feet msl)											
	Quarter 2 nd , 2007	Quarter 3 rd , 2007	Quarter 4 th , 2007	Quarter 1 st , 2008	Quarter 2 nd , 2008	Quarter 3 rd , 2008	Quarter 4 th , 2008	Quarter 1 st , 2009	Quarter 2 nd , 2009	Quarter 3 rd , 2009	Quarter 4 th , 2009	
OUT-1	NA	1.31	1.16	0.76	0.81	NA	NA	NA	1.08	-	-	
RW-1	NA	NA	30.15	NA	30.64	29.52	29.65	29.10	NA	-	-	
U1-CSS	NA	8.98	NA	NA	19.11	15.39	NA	20.46	13.89	-	-	
U3-1	4.20	NA	NA	NA	NA	NA	NA	NA	NA	-	-	
U3-2	5.34	NA	NA	NA	NA	NA	NA	NA	NA	-	-	
U3-3	7.53	6.52	6.63	8.67	9.25	8.25	8.94	9.13	7.29	-	-	
U3-4D	4.25	NA	3.55	3.22	2.74	3.49	2.69	3.41	3.75	-	-	
U3-4S	3.91	4.13	3.80	3.74	3.97	4.31	3.81	4.01	4.23	-	-	
U3-C71	NA	1.64	5.58	3.36	0.99	2.35	0.81	0.64	1.92	2.43	-	
U3-T1	4.51	4.12	3.67	3.99	3.86	4.33	3.69	3.33	4.12	-	-	
U3-T2	4.33	4.02	3.79	4.20	3.94	4.23	3.76	4.05	4.20	-	-	

Notes:
 NA - Data Not Available

- Quarter 2 groundwater elevations were measured on 6/10/07 at 6:26 am.
- Quarter 3 groundwater elevations were measured on 9/25/07 at 4:32 am.
- Quarter 4, 2007 groundwater elevations were measured on 12/9/07 at 4:15 am.
- Quarter 1, 2008 groundwater elevations were measured on 1/3/08 at 1:14 a.m.
- Quarter 2, 2008 groundwater elevations were measured on 4/4/08 at 5:14 pm.
- Quarter 3, 2008 groundwater elevations were measured on 7/10/08 at 11:35 am.
- Quarter 4, 2008 groundwater elevations were measured on 11/11/08 at 2:54 am.
- Quarter 1, 2009 groundwater elevations were measured on 1/9/09 at 2:42 am.
- Quarter 2, 2009 groundwater elevations were measured on 3/22/09 at 2:41 pm.
- Quarter 3, 2009 groundwater elevations were measured on 8/9/09 at 8:18 am.
- Subsequent to Quarter 2, 2009, as described in our June 14, 2010 memorandum which was included as Appendix J in the Quarter 1, 2009 Report, a reduced number of transducers will be maintained in long term operation. The rationale for this reduced transducer deployment is included in the June 14, 2010 memorandum.
- MW-32 groundwater elevations from 2nd quarter, 2007 were based on an initial Waterloo Multi-Level configuration, which was subsequently reconfigured; initial depth intervals approximately corresponding to current configuration are listed in parentheses. The current configuration intervals MW-32-18 and MW-32-173 have no representative equivalent within the old configuration.

TABLE 3
THIRD QUARTER 2009 GROUNDWATER ANALYTICAL RESULTS AND AVERAGES
INDIAN POINT ENERGY CENTER
BOULDER WY

Well ID#	SAMPLER LOCATION	SAMPLE ID		DEPTH (ft)	ANALYSIS RESULTS				YEARLY ROLLING AVERAGES*				WELL ID			
		SAMPLE #	DATE		Result	MUL	Unit	Limit	Average	Maximum	Minimum	Unit		Limit		
MW-41-1	0-10 ft	10	01-21-09	10-1209	1975.11	2.45	3.00	3.75	3.00	2.50	3.50	3.00	3.75	3.00	3.75	3.00
			01-21-09	10-1209	1975.11	2.45	3.00	3.75	3.00	2.50	3.50	3.00	3.75	3.00	3.75	3.00
			01-21-09	10-1209	1975.11	2.45	3.00	3.75	3.00	2.50	3.50	3.00	3.75	3.00	3.75	3.00
			01-21-09	10-1209	1975.11	2.45	3.00	3.75	3.00	2.50	3.50	3.00	3.75	3.00	3.75	3.00
MW-41-2	0-10 ft	11	01-21-09	10-1209	1975.11	2.45	3.00	3.75	3.00	2.50	3.50	3.00	3.75	3.00	3.75	3.00
			01-21-09	10-1209	1975.11	2.45	3.00	3.75	3.00	2.50	3.50	3.00	3.75	3.00	3.75	3.00
			01-21-09	10-1209	1975.11	2.45	3.00	3.75	3.00	2.50	3.50	3.00	3.75	3.00	3.75	3.00
			01-21-09	10-1209	1975.11	2.45	3.00	3.75	3.00	2.50	3.50	3.00	3.75	3.00	3.75	3.00

J:\J010-10920-11969-11969-1\AQI009_09_QuarterlyReportTables
Table 3 - Q3-09 Analytical Results and Averages.xlsx

TABLE 1
THIRD QUARTER 2000 GROUNDWATER ANALYTICAL RESULTS AND AVERAGES
INDIAN POINT ENERGY CENTER
BOULDER AV

Table with columns: Well ID, SAMPLE QUARTER, SAMPLE ID, SAMPLE DATE, DATE, SAMPLE TYPE, ANALYSIS RESULTS (MUTL, SOLIDS, MCL, AVERAGE), and YEARLY ROLLING AVERAGES (8-00, 1-17, 4-00, 7-00, AVERAGE). Rows include wells MW-65-1 through MW-65-34.

J:\MJD 12-02-1999\12-02-1999 Qtr3_2000 Data_2000 - Quarter 3, 2000 Analytical Results and Averages.xlsx

Page 4 of 7

TABLE 5 HISTORIC GROUNDWATER ANALYTICAL RESULTS INDIAN POINT ENERGY CENTER BUCRAHAN, NY

ANALYSIS RESULTS. Table with columns: WHIT1, SAMPLE ZONE, GROUNDWATER ANALYTICAL RESULTS (TOPIUM, MDC, SR-90, CR-137, Cr+6, Ni+2, Result, MDC, SR-90, CR-137, Cr+6, Ni+2, Result, MDC), SAMPLE COLLECTION, and WHIT1. The table lists numerous analytical results for various sample zones and dates.

JMT7000 - 6.00CV1785J17860.01 MG03000 - Quarter-3 FINAULT table.1
Table 5 - Historic GW Analytical Results MSK, Mohawk PMA

TABLE 5
HISTORIC GROUNDWATER ANALYTICAL RESULTS
INDIAN POINT ENERGY CENTER
BUCRAHAN, KY

Table with 26 columns: WHIT ID, Sample Zone, Date, Time, Sample Collection, Analyte (VITAMIN (ug/L), MDC, Sr-90 (ug/L), Cs-137 (dpm/L), Co-60 (ug/L), MDC, Result, MDC, Sr-90 (ug/L), Cs-137 (dpm/L), Co-60 (ug/L), MDC, Result, MDC, MDC, Result, MDC, MDC, Result, MDC, MDC, Result, MDC, MDC, Result, MDC, WHIT ID)

TABLE 5
HISTORIC CRODINAWATER ANALYTICAL RESULTS
INDIAN POINT ENERGY CENTER
BUCRAWAY, NY

Table with columns: WH ID, Sample Zone, Sample Collection, TBT (PC/L), Sr-90 (dC/L), Cs-137 (dC/L), Co-60 (dC/L), Ni-63 (dC/L), and WH ID. Each section contains a list of analytical data rows with various numerical results and detection limits.

TABLE 5
HISTORIC GROUNDWATER ANALYTICAL RESULTS
INDIAN POINT ENERGY CENTER
BUCRAHAN, NY

Well ID ¹	SAMPLE ZONE CENTER, depth to below top of casing	SAMPLE ZONE CENTER, PERC operation in unit ²	SAMPLE COLLECTION		ANALYSIS RESULTS												Well ID ¹				
			Date	Time	TRITIUM (pCi/L)			Sr-90 (pCi/L)			Cs-137 (pCi/L)			Co-60 (pCi/L)				Ni-63 (pCi/L)			
			Result	Std Dev.	MDC	Result	Std Dev.	MDC	Result	Std Dev.	MDC	Result	Std Dev.	MDC	Result	Std Dev.	MDC	Result	Std Dev.	MDC	
LAF-502	NA	-22.3	3/7/2007	14:45	153E+02	1.53E+02	1.53E+02	1.53E+02	3.10E+02	4.80E+02	7.11E+02	5.10E+02	5.10E+02	7.20E+02	NA	NA	NA	NA	NA	NA	LAF-502
005	NA	-22.3	6/5/2009	2:18	6.56E+02	1.53E+02	6.56E+02	6.56E+02	5.10E+02	5.10E+02	5.10E+02	5.10E+02	5.10E+02	5.10E+02	NA	NA	NA	NA	NA	NA	NA
006	NA	-22.3	6/5/2009	2:18	6.56E+02	1.53E+02	6.56E+02	6.56E+02	5.10E+02	5.10E+02	5.10E+02	5.10E+02	5.10E+02	5.10E+02	NA	NA	NA	NA	NA	NA	NA
007	NA	-22.3	10/22/2007	10:50	1.48E+02	1.48E+02	6.28E+01	6.28E+01	4.91E+01	4.91E+01	4.91E+01	4.91E+01	4.91E+01	4.91E+01	NA	NA	NA	NA	NA	NA	NA
009	NA	-22.3	4/10/2009	7:03	3.45E+02	3.45E+02	3.02E+01	3.02E+01	4.29E+01	4.29E+01	4.29E+01	4.29E+01	4.29E+01	4.29E+01	NA	NA	NA	NA	NA	NA	NA
010	NA	-22.3	10/17/2008	10:22	1.32E+02	1.32E+02	4.09E+01	4.09E+01	2.50E+01	2.50E+01	2.50E+01	2.50E+01	2.50E+01	2.50E+01	NA	NA	NA	NA	NA	NA	NA
011	NA	-22.3	4/21/2009	14:24	1.03E+02	1.03E+02	1.77E+01	1.77E+01	6.25E+01	6.25E+01	6.25E+01	6.25E+01	6.25E+01	6.25E+01	NA	NA	NA	NA	NA	NA	NA
001	NA	-22.3	6/5/2009	12:35	7.23E+02	7.23E+02	3.02E+01	3.02E+01	2.82E+01	2.82E+01	2.82E+01	2.82E+01	2.82E+01	2.82E+01	NA	NA	NA	NA	NA	NA	E-1
002	NA	-22.3	6/5/2009	12:35	7.23E+02	7.23E+02	3.02E+01	3.02E+01	2.82E+01	2.82E+01	2.82E+01	2.82E+01	2.82E+01	2.82E+01	NA	NA	NA	NA	NA	NA	NA
003	NA	-22.3	10/22/2007	14:49	1.08E+02	1.08E+02	4.63E+02	4.63E+02	6.01E+02	6.01E+02	6.01E+02	6.01E+02	6.01E+02	6.01E+02	NA	NA	NA	NA	NA	NA	NA
004	NA	-22.3	10/22/2007	14:49	1.08E+02	1.08E+02	4.63E+02	4.63E+02	6.01E+02	6.01E+02	6.01E+02	6.01E+02	6.01E+02	6.01E+02	NA	NA	NA	NA	NA	NA	NA
005	NA	-22.3	4/18/2008	18:24	1.17E+02	1.17E+02	1.81E+02	1.81E+02	3.81E+01	3.81E+01	3.81E+01	3.81E+01	3.81E+01	3.81E+01	NA	NA	NA	NA	NA	NA	NA
006	NA	-22.3	6/5/2009	13:50	8.11E+02	8.11E+02	7.89E+01	7.89E+01	9.21E+01	9.21E+01	9.21E+01	9.21E+01	9.21E+01	9.21E+01	NA	NA	NA	NA	NA	NA	NA
E-6	NA	-22.3	6/5/2009	7:03	4.13E+02	4.13E+02	1.01E+01	1.01E+01	4.27E+01	4.27E+01	4.27E+01	4.27E+01	4.27E+01	4.27E+01	NA	NA	NA	NA	NA	NA	NA
007	NA	-22.3	10/22/2007	11:50	1.70E+02	1.70E+02	2.54E+02	2.54E+02	4.34E+01	4.34E+01	4.34E+01	4.34E+01	4.34E+01	4.34E+01	NA	NA	NA	NA	NA	NA	NA
008	NA	-22.3	10/22/2007	11:50	1.70E+02	1.70E+02	2.54E+02	2.54E+02	4.34E+01	4.34E+01	4.34E+01	4.34E+01	4.34E+01	4.34E+01	NA	NA	NA	NA	NA	NA	NA
004	NA	-22.3	10/22/2007	16:50	4.23E+02	4.23E+02	1.04E+01	1.04E+01	7.93E+01	7.93E+01	7.93E+01	7.93E+01	7.93E+01	7.93E+01	NA	NA	NA	NA	NA	NA	NA
005	NA	-22.3	4/25/2008	14:15	5.23E+01	5.23E+01	2.93E+01	2.93E+01	2.93E+01	2.93E+01	2.93E+01	2.93E+01	2.93E+01	2.93E+01	NA	NA	NA	NA	NA	NA	NA
006	NA	-22.3	6/5/2009	2:43	1.08E+02	1.08E+02	1.65E+02	1.65E+02	7.18E+01	7.18E+01	7.18E+01	7.18E+01	7.18E+01	7.18E+01	NA	NA	NA	NA	NA	NA	NA

Notes

1. For meter multi-level monitoring wells, suffix of well ID indicates depth measured to nearest foot from reference point on casing to bottom of level screen. For Waterloo multi-level systems, suffix indicates depth measured to nearest foot from reference point on casing to top of sampling port. Well ID's without a suffix are open borehole wells.
2. Sampling depths within a sampling interval (usually of pump intake) have been established at location of most sensitive zone. To the extent possible.
3. N/A indicates that the constituent was not analyzed.
4. Current well identification are shown for each location. Minor name changes have been made based on altered transmitter installation.
5. Notation: Sample depth in feet; MDC = minimum detection limit; Std Dev = standard deviation; MDC = minimum detection limit; Result = analytical result.
6. All data were analyzed by the laboratory and their quality control (QC) data are shown in the Appendix, 5.5b, 5.5c.
7. These constituents are from drums, not from ongoing well.



FIGURES

- Figure 1 Site Location Plan**
- Figure 2 Site Plan**
- Figure 3 Lower Hudson Valley Geologic Map**
- Figure 4 3rd Quarter Current and Potential Future SSC Source Locations**
- Figure 5A 3rd Quarter Long-Term Transducer Monitoring Evaluation Map**
- Figure 6 3rd Quarter 2009 Average Tritium Activity Map**
- Figure 6A 3rd Quarter Temporal Trends in Unit 2 Rolling Average Tritium Activity Maps**
- Figure 7 3rd Quarter 2009 Average Strontium-90 Activity Map**
- Figure 7A 3rd Quarter Sr-90 Baseline Analysis – Unit 1 Defueling Evaluation**
- Figure 8 3rd Quarter 2009 Average Cesium, Cobalt, and Nickel Activity Map**



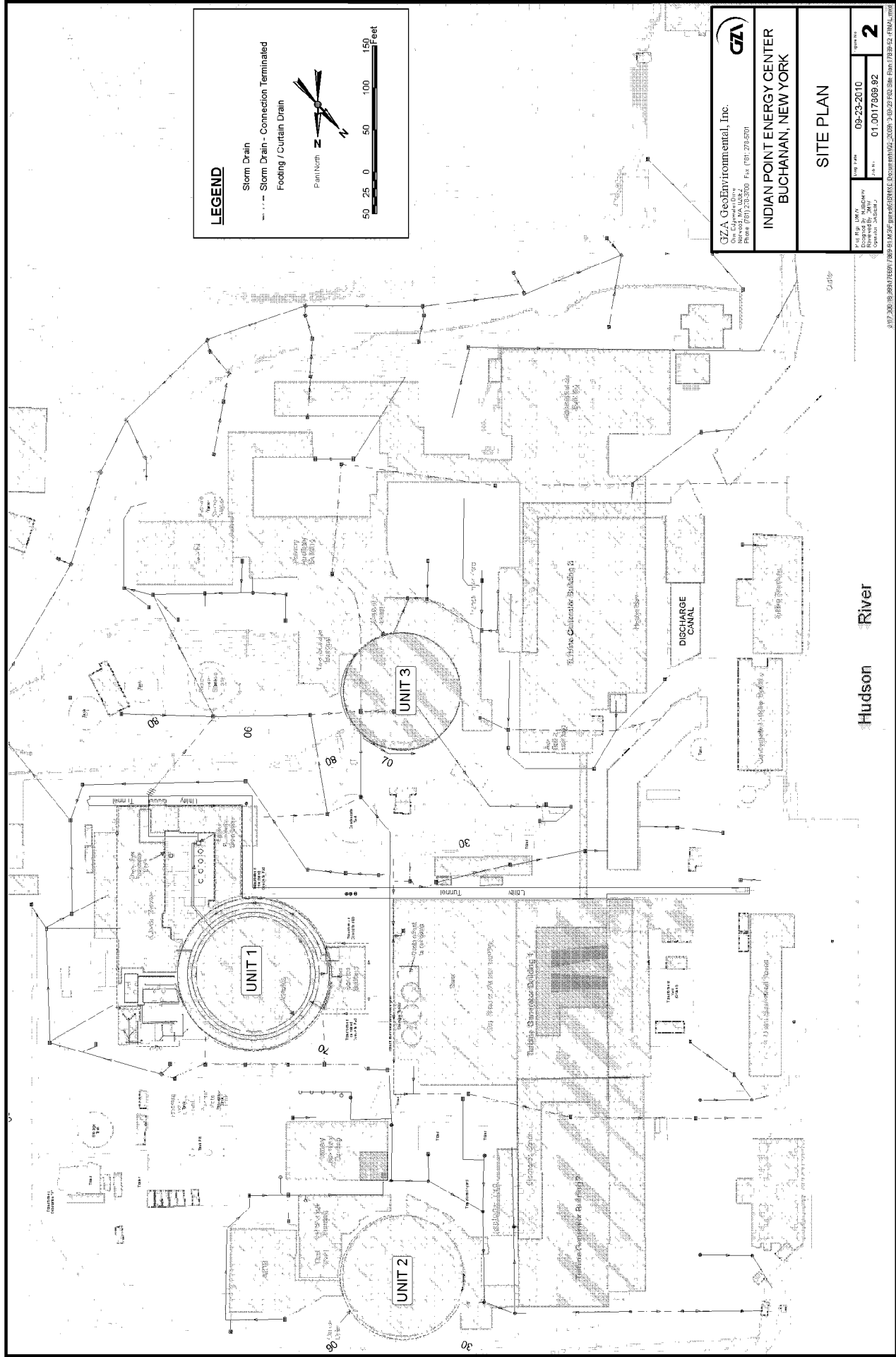
GZA GeoEnvironmental, Inc.
 1100 Pennsylvania Ave., Suite 200
 New York, NY 10005
 Phone: 718 278-3700 Fax: (314) 278-5071

**INDIAN POINT ENERGY CENTER
 BUCHANAN, NEW YORK**

SITE LOCATION PLAN

Proj. No.	1
Proj. Mgr.	M. B. Brennan
Rev.	10-12-2010
Drawn By	JOHN
Checked By	01 0017869.92

NY 100118 38917869.92 10-12-2010 10:00:00 AM 100118 38917869.92 10-12-2010 10:00:00 AM 100118 38917869.92 10-12-2010 10:00:00 AM



LEGEND

- Storm Drain
- Storm Drain - Connection Terminated
- Footings / Curtain Drain

Plan North **N**

0 25 50 100 150 Feet

GZA GeoEnvironmental, Inc.
 One Cambridge Drive
 Newark, NJ 07102
 Phone: (973) 383-8300 Fax: (973) 383-8370

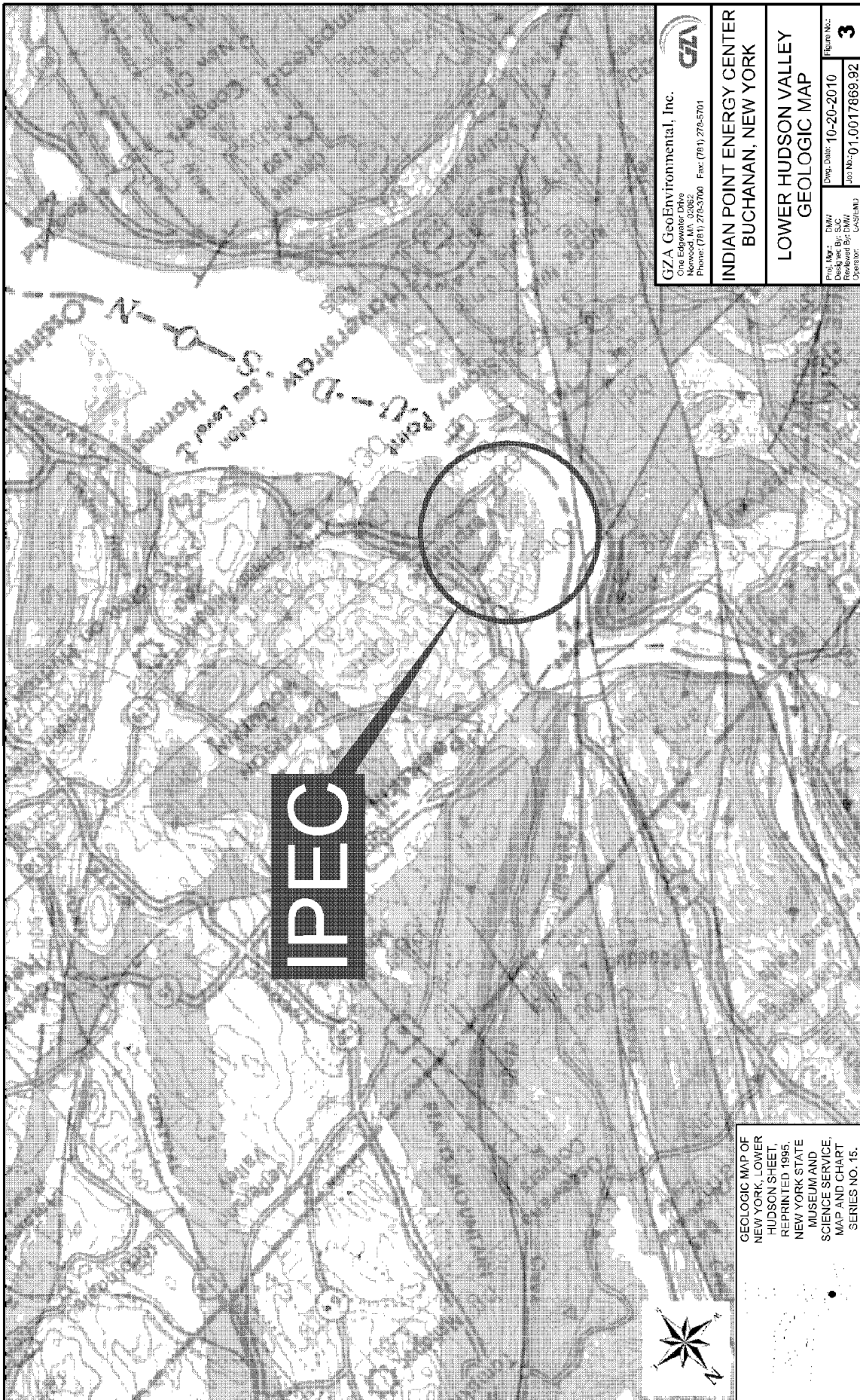
**INDIAN POINT ENERGY CENTER
 BUCHANAN, NEW YORK**

SITE PLAN

PLN. FILE NO.	09-23-2010
PROJECT NO.	01-0017809-92
DATE	2

REVISED: 08/28/10
 DRAWN BY: M. K. B. / J. B. S.
 CHECKED BY: M. K. B. / J. B. S.
 APPROVED BY: M. K. B. / J. B. S.

REVISED: 08/28/10
 DRAWN BY: M. K. B. / J. B. S.
 CHECKED BY: M. K. B. / J. B. S.
 APPROVED BY: M. K. B. / J. B. S.



IPEC

GZA GeoEnvironmental, Inc.
 One Edgewater Drive
 Monticello, NY 12548
 Project: (914) 275-3700 Fax: (914) 275-5701

**INDIAN POINT ENERGY CENTER
 BUCHANAN, NEW YORK**

**LOWER HUDSON VALLEY
 GEOLOGIC MAP**

Proj. No.: DMW
 Drawn by: S.C.
 Operator: CAS/MD
 Date: 10-20-2010
 Job No.: 01.0017869.92
 Figure No.: **3**



GEOLOGIC MAP OF
 NEW YORK, LOWER
 HUDSON SHEET,
 REPRINTED, 1985
 NEW YORK STATE
 MUSEUM AND
 SCIENCE SERVICE,
 MAP AND CHART
 SERIES NO. 45.

GZA - \17,000-18,999\17869-91.mxd Figures \003\02009\10-10-20 F03 Lower Hudson Valley Geologic Map 17869-91 - FMAP.dwg [16-3] October 20, 2010 - 10:28am e:epov.scott

3rd QUARTER 2009 CURRENT AND POTENTIAL FUTURE SSC SOURCE LOCATIONS

LEGEND

- Monitoring Installation - Designation
- Long-term Radiological Monitoring Installation Designation
- Standby Radiological Monitoring Installation Location
- Potential Future Source Locations
- Probable Legacy Release SSCs
- Activity Data
- Isopleth
- Groundwater Elevation Contours
- Streamtubes

Activity Data

Bounding activity: 1.0×10^3 Ci

Source: 1.0×10^3 Ci

Activity: 1.0×10^3 Ci

Groundwater Elevation Contours

1111/2008 (10 Interval)

Contours Other Than 10 Interval

Streamtubes

Isopleth

Bounding activity: 1.0×10^3 Ci

Source: 1.0×10^3 Ci

Activity: 1.0×10^3 Ci



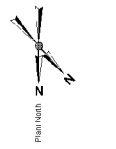
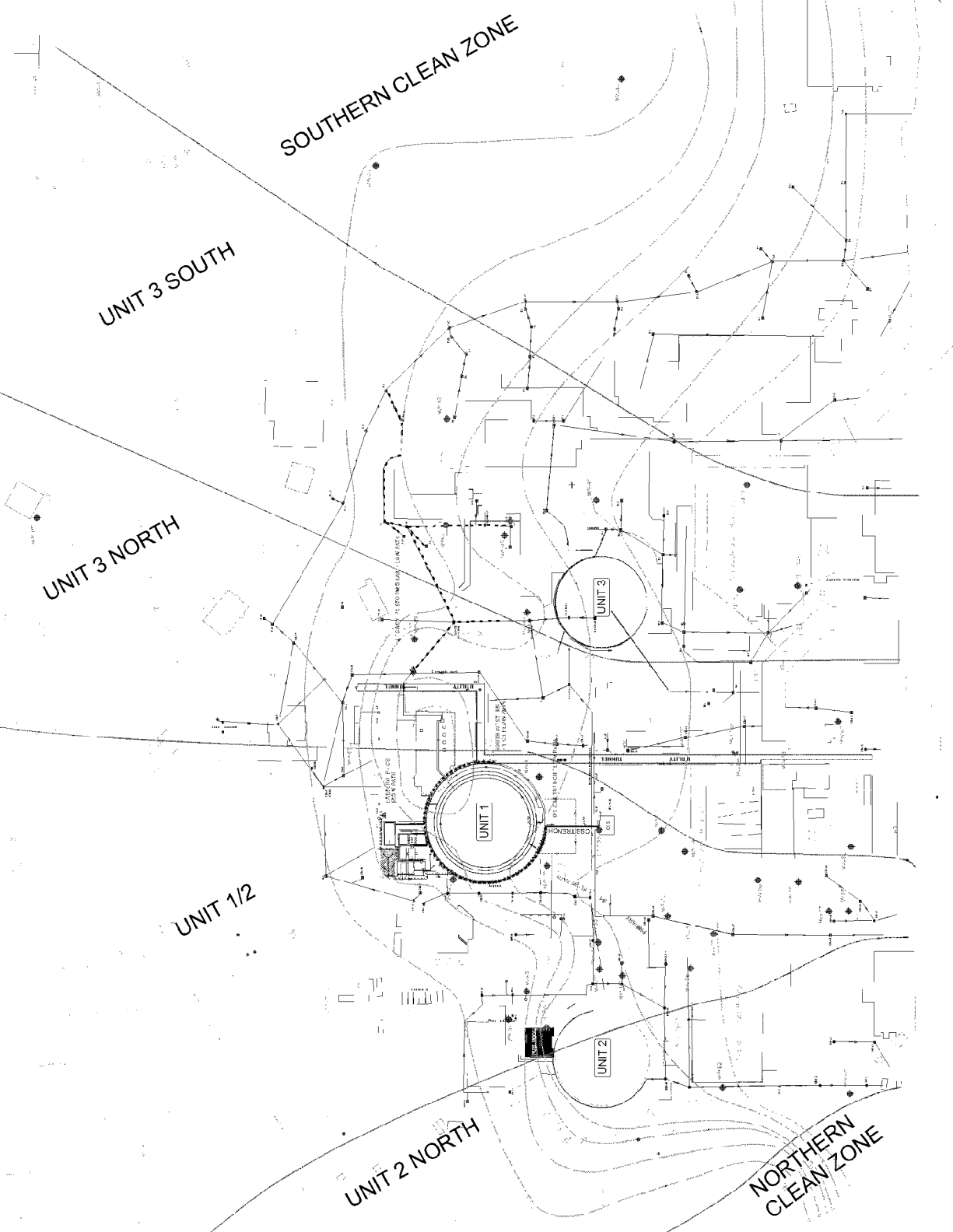
GA GeoEnvironmental, Inc.

INDIAN POINT ENERGY CENTER
BUCHANAN, NEW YORK

3rd QUARTER 2009
CURRENT AND POTENTIAL FUTURE
SSC SOURCE LOCATIONS

Project No.: 09-25-20-0
Revision No.: 010073897.XL
Scale: 1" = 100'

Page: 4





APPENDIX A: LIMITATIONS

HYDROGEOLOGICAL LIMITATIONS

1. The conclusions and recommendations submitted in this report are based in part upon the radiological, chemical and physical data from water analyses. These data were obtained from specific sampling locations at specific times. The full nature and extent of variations in the data between these specific locations and times are not known. The conditions existing between these specific locations and times have only been inferred using interpolation and extrapolation based on judgment.
2. The subsurface profiles described in the text and presented in the report figures are intended to convey anticipated trends in subsurface conditions. The conditions shown are approximate and generalized and were developed, in part, based on judgment. For specific information at specific locations, refer to the individual subsurface investigation logs.
3. Water level readings (piezometric pressures) have been made in the specific borings, monitoring wells, and Waterloo installations at times and under conditions stated. These data have been reviewed and interpretations have been made in the text and on the figures of this report. However, it must be noted that temporal and spatial fluctuations in the level of the groundwater may occur due to variations in rainfall and other factors different from those prevailing at the time and location measurements were made.
4. Where quantitative laboratory testing has been conducted by an outside laboratory, GZA has relied upon the validity of the data provided, and has not conducted an independent laboratory evaluation of the reliability of these data.
5. Radiological and chemical analyses have been performed for specific parameters during the course of this study, as summarized in the text. Additional constituents not searched for may be present in soil and groundwater at the site.
6. Variations in the types and concentrations of contaminants and variations in their flow paths may occur due to seasonal water table fluctuations, past and current plant operational practices, the passage of time, and other factors. Should additional data (water analyses, water elevations, subsurface deposits, plant construction and operation, etc.) become available in the future, these data should be reviewed by GZA, and the conclusions and recommendations presented herein modified accordingly.
7. This monitoring report was developed by GZA GeoEnvironmental Inc for the exclusive of Entergy Nuclear Northeast (Entergy) at the Indian Point Energy Center. Any use of data or information provided in the report, by parties other than Entergy, is prohibited without the prior written permission of Entergy and GZA.



APPENDIX B: TRANSDUCER INSTALLATION LOGS

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	I-2 n
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>41.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>80.92</u>	DATE	<u>8/14/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>82.23</u>		
SERIAL NUMBER	<u>16587 (I2 n)</u>	CASING DIAMETER (INCH)	<u>2</u>		

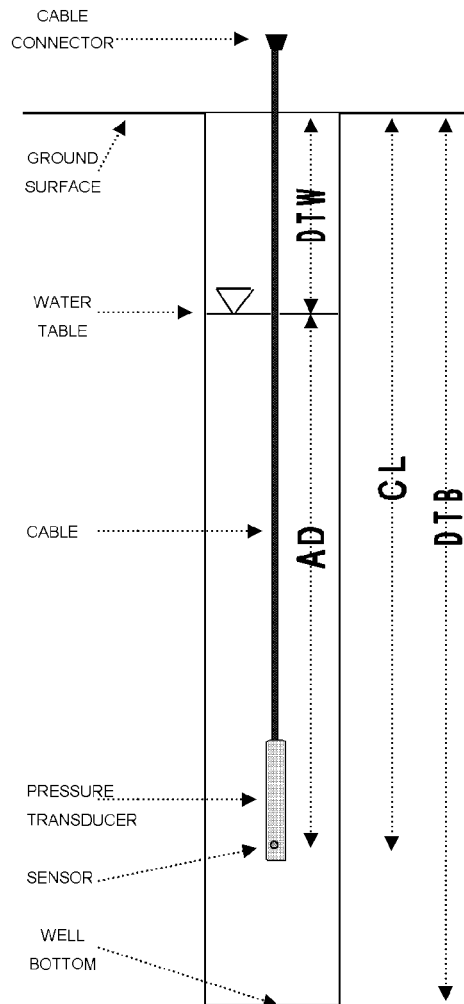
STATIC GROUNDWATER TABLE ELEVATION (FT) 52.46

GZA ENGINEER M. Britos A. Altieri

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>41.00</u>	FT
GROUND ELEVATION:	<u>80.92</u>	FT M.S.L.
CASING ELEVATION:	<u>82.23</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>above</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>1.31</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>10:38</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>29.77</u>	FT
ACTUAL DEPTH:	<u>+ 43.274</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 73.044</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>82.23</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 29.77</u>	FT
REFERENCE ELEVATION:	<u>= 52.46</u>	FT M.S.L.
TEST NAME:	<u>I-2</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>10:38</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:

GZA WELL ID: I-2

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	I-2 n
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>41.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>80.92</u>	DATE	<u>8/14/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>82.23</u>		
SERIAL NUMBER	<u>11998</u>	CASING DIAMETER (INCH)	<u>2</u>		

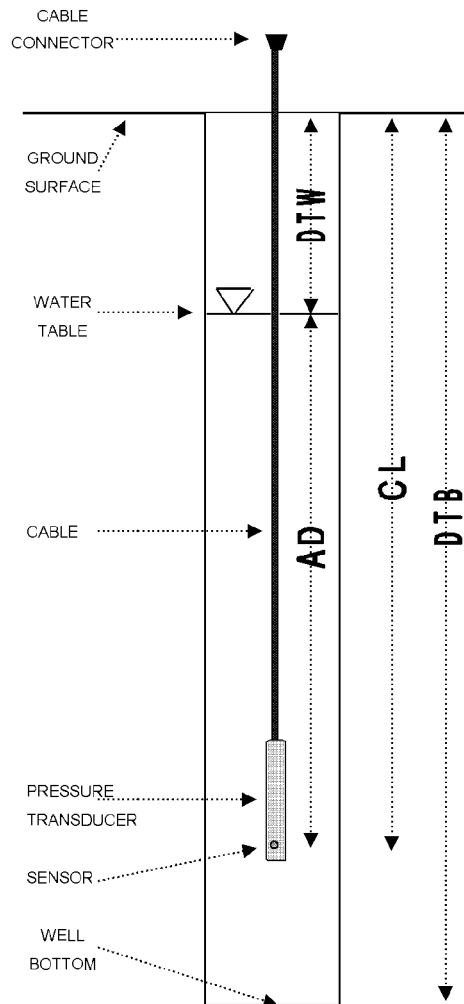
STATIC GROUNDWATER TABLE ELEVATION (FT) 52.47

GZA ENGINEER M. Britos A. Altieri

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>41.00</u>	FT
GROUND ELEVATION:	<u>80.92</u>	FT M.S.L.
CASING ELEVATION:	<u>82.23</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>above</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>1.31</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>11:04</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>29.76</u>	FT
ACTUAL DEPTH:	<u>+ 8.763</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 38.523</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>82.23</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 29.76</u>	FT
REFERENCE ELEVATION:	<u>= 52.47</u>	FT M.S.L.
TEST NAME:	<u>I-2</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>11:04</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:

GZA WELL ID: I-2

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-33
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>30.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>18.859</u>	DATE	<u>8/17/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>18.619</u>		
SERIAL NUMBER	<u>5385</u>	CASING DIAMETER (INCH)	<u>4</u>		

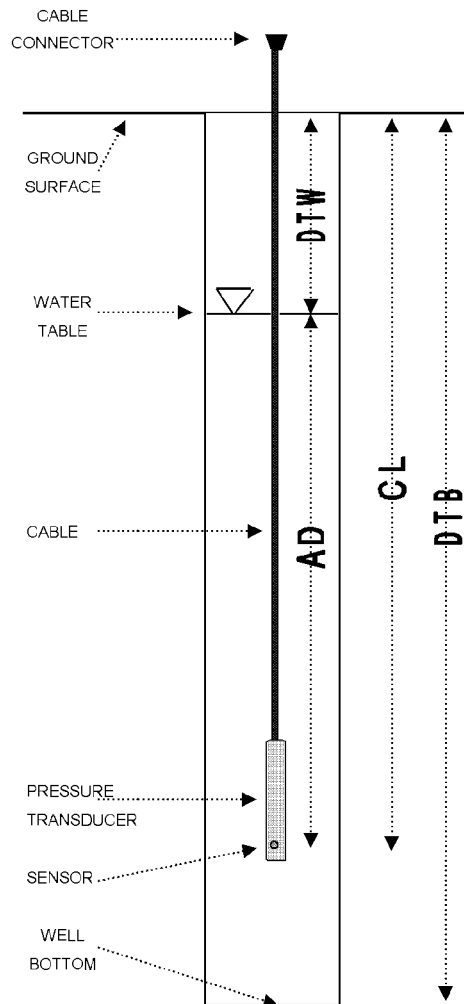
STATIC GROUNDWATER TABLE ELEVATION (FT) 10.32

GZA ENGINEER M. Britos A. Altieri

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>30.00</u>	FT
GROUND ELEVATION:	<u>18.859</u>	FT M.S.L.
CASING ELEVATION:	<u>18.619</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.240</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:		HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>8.30</u>	FT
ACTUAL DEPTH:	<u>+ 17.073</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 25.373</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>18.619</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 8.30</u>	FT
REFERENCE ELEVATION:	<u>= 10.319</u>	FT M.S.L.
TEST NAME:	<u>MW-33</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:		HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
Battery 6%. Replaced battery, started new test.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-34
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>29.20</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>18.481</u>	DATE	<u>8/17/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>18.071</u>		
SERIAL NUMBER	<u>3894</u>	CASING DIAMETER (INCH)	<u>4</u>		

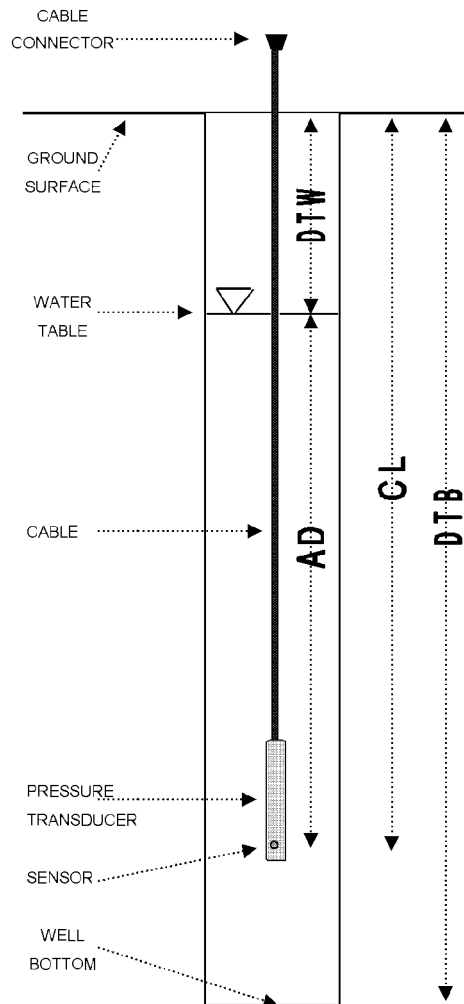
STATIC GROUNDWATER TABLE ELEVATION (FT) * 10.37

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>29.20</u>	FT
GROUND ELEVATION:	<u>18.481</u>	FT M.S.L.
CASING ELEVATION:	<u>18.071</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.410</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>12:31</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>7.70</u>	* FT
ACTUAL DEPTH:	<u>+ 17.836</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 25.536</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>18.071</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 7.70</u>	* FT
REFERENCE ELEVATION:	<u>= 10.371</u>	FT M.S.L.
TEST NAME:	<u>MW-34</u>	
LOGGING INTERVAL:	<u>1353</u>	MIN
TEST START TIME:	<u>12:31</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES: **Bat. 30%, replaced. There is a layer of oil on the surface. Unable to get a DTW level. Program new test using DTP level.**
Previous data downloaded is too far off. Do not use.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-35
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>29.80</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>18.604</u>	DATE	<u>8/17/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>18.444</u>		
SERIAL NUMBER	<u>195</u>	CASING DIAMETER (INCH)	<u>4</u>		

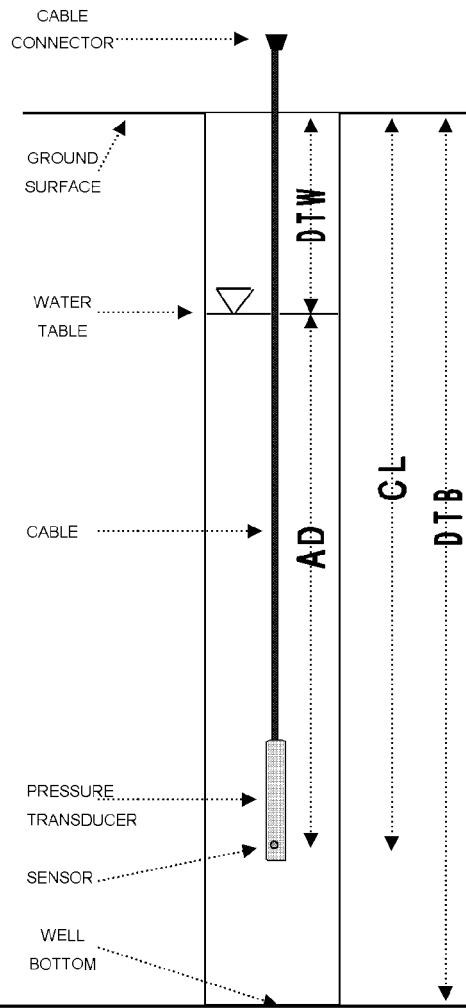
STATIC GROUNDWATER TABLE ELEVATION (FT) 10.32

GZA ENGINEER M. Britos A. Altieri

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>29.80</u>	FT
GROUND ELEVATION:	<u>18.604</u>	FT M.S.L.
CASING ELEVATION:	<u>18.444</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.160</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>11:34</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>8.12</u>	FT
ACTUAL DEPTH:	<u>+ 17.328</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 25.448</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>18.444</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 8.12</u>	FT
REFERENCE ELEVATION:	<u>= 10.324</u>	FT M.S.L.
TEST NAME:	<u>MW-35</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>11:34</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 Batt. 32%, replaced. Start new test. No test to download.
 Oil in well.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-36-24
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>54.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>11.799</u>	DATE	<u>8/25/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>11.598</u>		
SERIAL NUMBER	<u>5376</u>	CASING DIAMETER (INCH)	<u>2</u>		

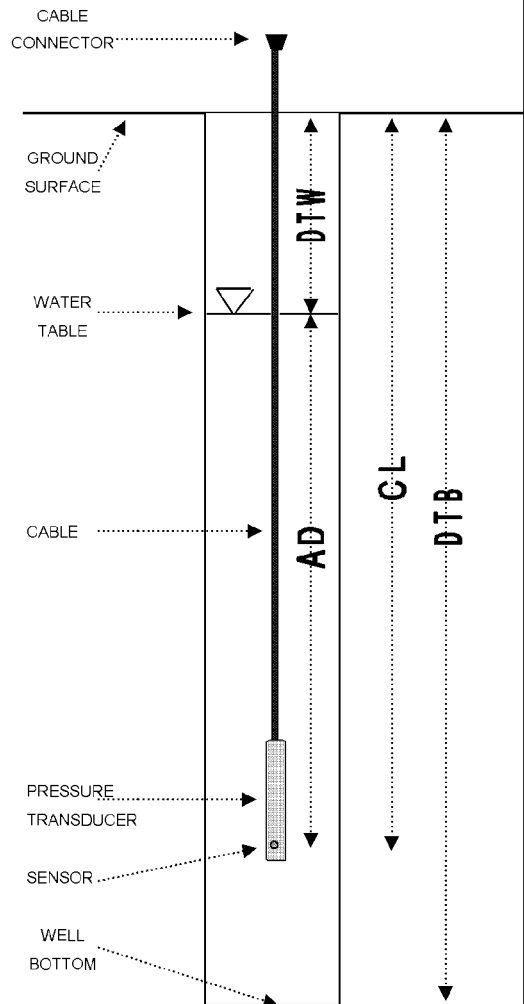
STATIC GROUNDWATER TABLE ELEVATION (FT) 7.21

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>24.00</u>	FT
GROUND ELEVATION:	<u>11.799</u>	FT M.S.L.
CASING ELEVATION:	<u>11.598</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.201</u>	FT
	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>12:49</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>4.39</u>	FT
ACTUAL DEPTH:	<u>+ 42.109</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 46.499</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>11.598</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 4.39</u>	FT
REFERENCE ELEVATION:	<u>= 7.208</u>	FT M.S.L.
TEST NAME:	<u>MW-36-24</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>12:49</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
Difference = -6.537 Reset

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-43-62
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>63.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>48.761</u>	DATE	<u>8/20/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>47.821</u>		
SERIAL NUMBER	<u>16236</u>	CASING DIAMETER (INCH)	<u>2</u>		

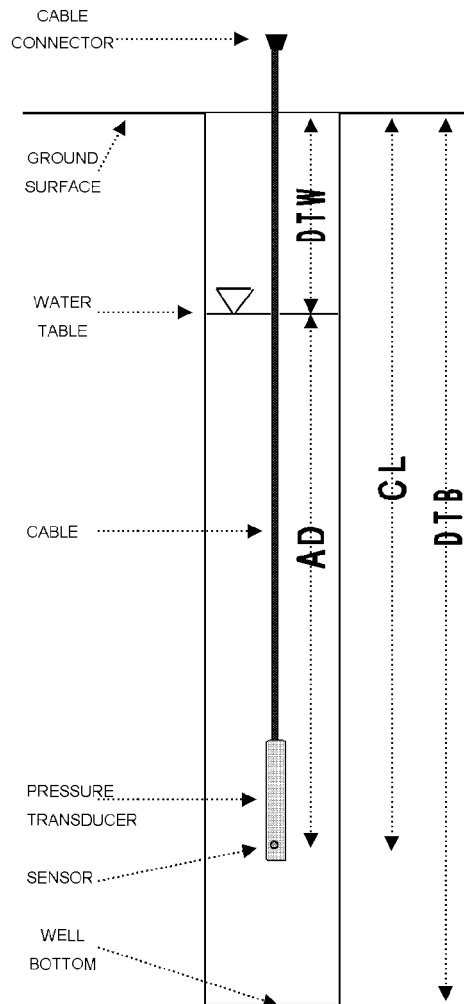
STATIC GROUNDWATER TABLE ELEVATION (FT) 30.70

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>63.00</u>	FT
GROUND ELEVATION:	<u>48.761</u>	FT M.S.L.
CASING ELEVATION:	<u>47.821</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.940</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>13:46</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>17.12</u>	FT
ACTUAL DEPTH:	<u>+ 35.753</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 52.873</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>47.821</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 17.12</u>	FT
REFERENCE ELEVATION:	<u>= 30.701</u>	FT M.S.L.
TEST NAME:	<u>MW-43-62</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>13:46</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 Difference = 0.519
 reset transducer depth also.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-45-42
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>65.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>53.66</u>	DATE	<u>8/20/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>53.20</u>		
SERIAL NUMBER	<u>6082</u>	CASING DIAMETER (INCH)	<u>2</u>		

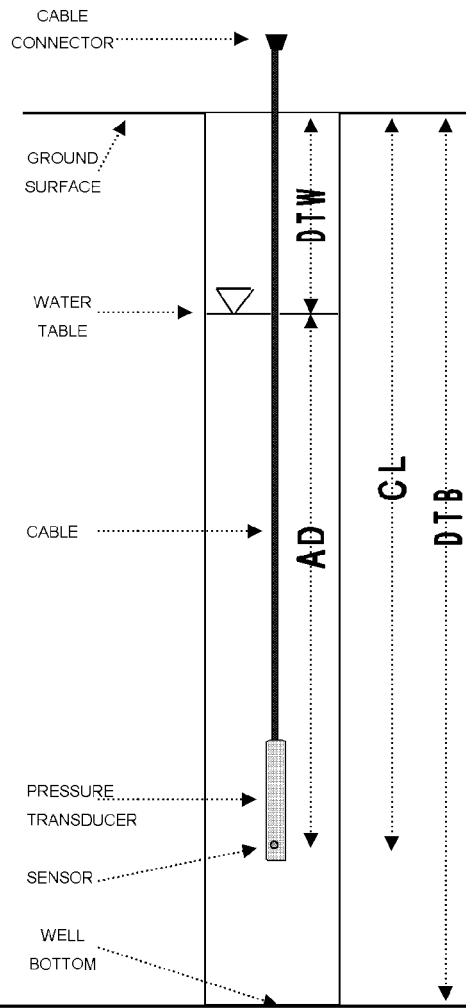
STATIC GROUNDWATER TABLE ELEVATION (FT) 28.66

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>42.00</u>	FT
GROUND ELEVATION:	<u>53.66</u>	FT M.S.L.
CASING ELEVATION:	<u>53.20</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.46</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>15:03</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>24.54</u>	FT
ACTUAL DEPTH:	<u>+ 16.505</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 41.045</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>53.20</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 24.54</u>	FT
REFERENCE ELEVATION:	<u>= 28.66</u>	FT M.S.L.
TEST NAME:	<u>MW-45-42</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>15:03</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
No test to download. Reset with same readings. Start new test.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-45-61
	Entergy Indian Point Energy Center	SHEET	1 of 1
		FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>67.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>53.662</u>	DATE	<u>8/20/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>53.217</u>		
SERIAL NUMBER	<u>16930</u>	CASING DIAMETER (INCH)	<u>1</u>		

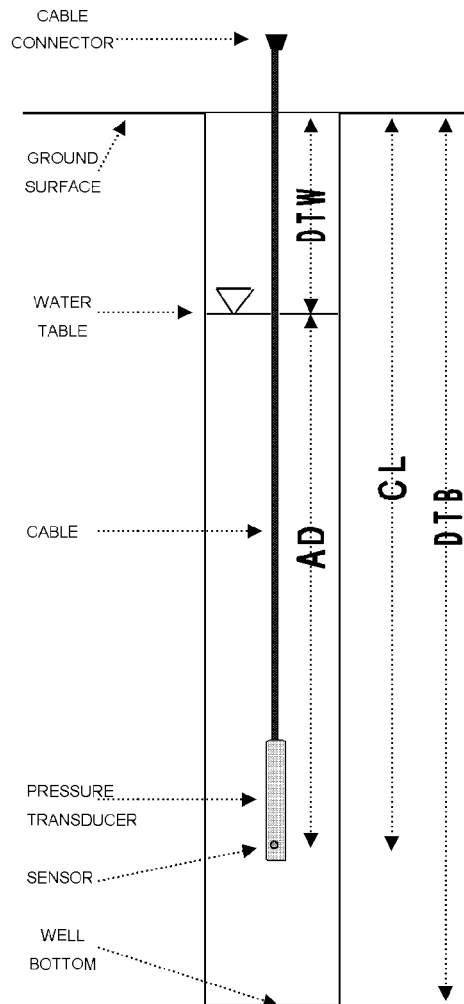
STATIC GROUNDWATER TABLE ELEVATION (FT) 27.82

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>61.00</u>	FT
GROUND ELEVATION:	<u>53.662</u>	FT M.S.L.
CASING ELEVATION:	<u>53.217</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.45</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>14:45</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>25.400</u>	FT
ACTUAL DEPTH:	<u>+ 40.714</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 66.114</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>53.217</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 25.40</u>	FT
REFERENCE ELEVATION:	<u>= 27.817</u>	FT M.S.L.
TEST NAME:	<u>MW-45-61</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>14:45</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 no test to download.
 Difference = 5.007
 Reset, start new test.

GZA WELL ID: MW-45-61

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-50-42
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>67.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>14.92</u>	DATE	<u>8/7/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>14.45</u>		
SERIAL NUMBER	<u>9904</u>	CASING DIAMETER (INCH)	<u>2</u>		

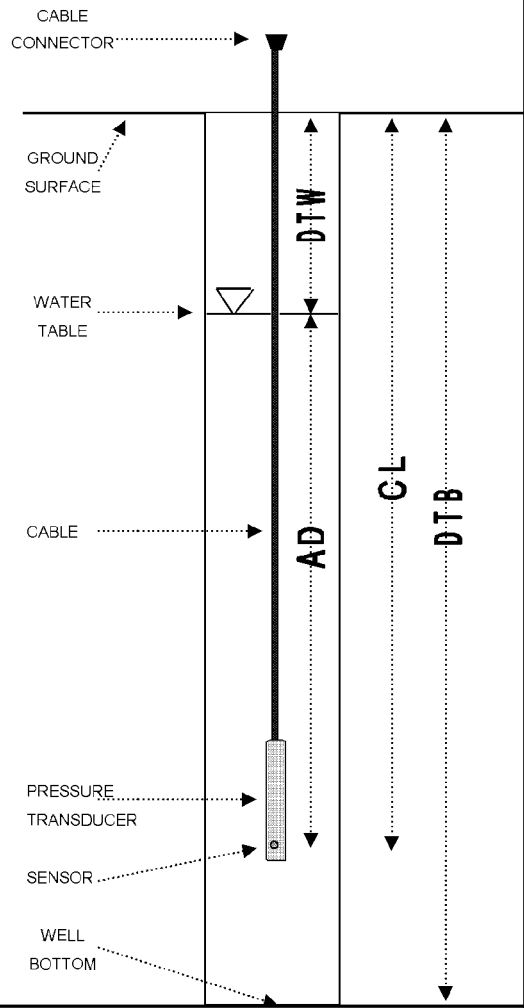
STATIC GROUNDWATER TABLE ELEVATION (FT) 6.65

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>42.00</u>	FT
GROUND ELEVATION:	<u>14.92</u>	FT M.S.L.
CASING ELEVATION:	<u>14.45</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.47</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>11:24</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>7.80</u>	FT
ACTUAL DEPTH:	<u>+ 33.178</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 40.978</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>14.45</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 7.80</u>	FT
REFERENCE ELEVATION:	<u>= 6.65</u>	FT M.S.L.
TEST NAME:	<u>MW-50-42</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>11:24</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
Abend. Pulled out and replaced batteries. Start new test.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-52-11
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>12.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>16.77</u>	DATE	<u>8/18/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>16.28</u>		
SERIAL NUMBER	<u>14150</u>	CASING DIAMETER (INCH)	<u>2</u>		

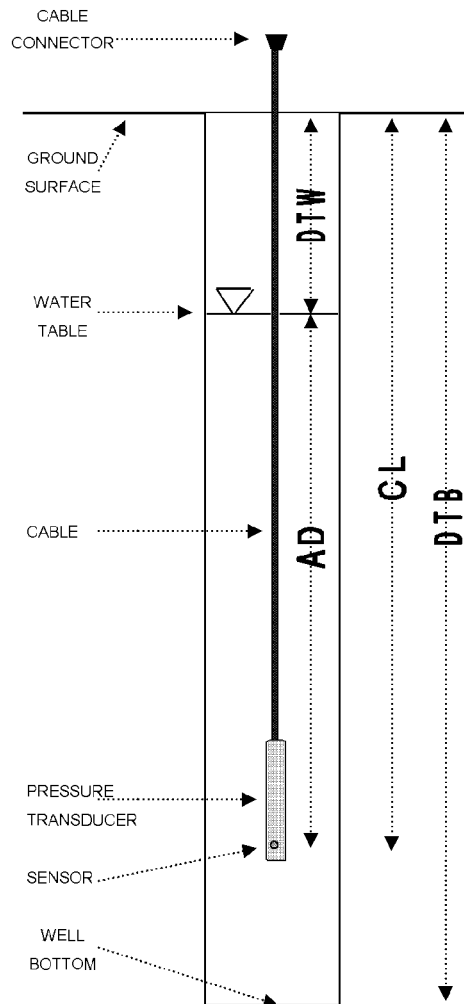
STATIC GROUNDWATER TABLE ELEVATION (FT) 8.27

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>11.00</u>	FT
GROUND ELEVATION:	<u>16.77</u>	FT M.S.L.
CASING ELEVATION:	<u>16.28</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.49</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>15:19</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>8.01</u>	FT
ACTUAL DEPTH:	<u>+ -14.21</u>	FT
THEORETICAL CABLE LENGTH:	<u>= -6.20</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>* 16.28</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 8.01</u>	FT
REFERENCE ELEVATION:	<u>= 8.27</u>	FT M.S.L.
TEST NAME:	<u>MW-52-11</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>15:19</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 Difference 1.098'. Reset.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-55-35
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>77.50</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>18.25</u>	DATE	<u>8/5/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>17.77</u>		
SERIAL NUMBER	<u>3414</u>	CASING DIAMETER (INCH)	<u>1</u>		

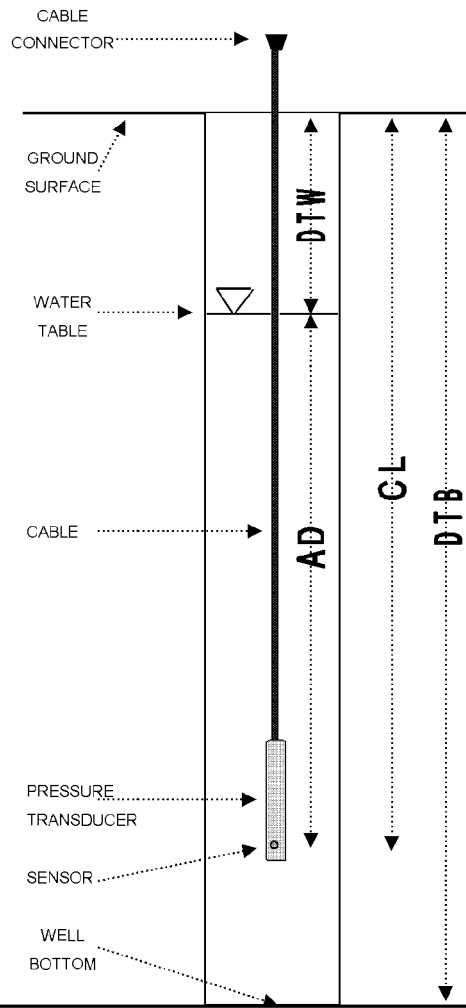
STATIC GROUNDWATER TABLE ELEVATION (FT) 8.37

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>35.00</u>	FT
GROUND ELEVATION:	<u>18.25</u>	FT M.S.L.
CASING ELEVATION:	<u>17.77</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.48</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>10:14</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>9.40</u>	FT
ACTUAL DEPTH:	<u>+ 24.27</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 33.67</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>17.77</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 9.40</u>	FT
REFERENCE ELEVATION:	<u>= 8.37</u>	FT M.S.L.
TEST NAME:	<u>MW-55-35</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>10:14</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
Abend. Pulled out and replaced batteries. Start new test.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-55-35
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>77.50</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>18.25</u>	DATE	<u>8/17/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>17.77</u>		
SERIAL NUMBER	<u>3414</u>	CASING DIAMETER (INCH)	<u>1</u>		

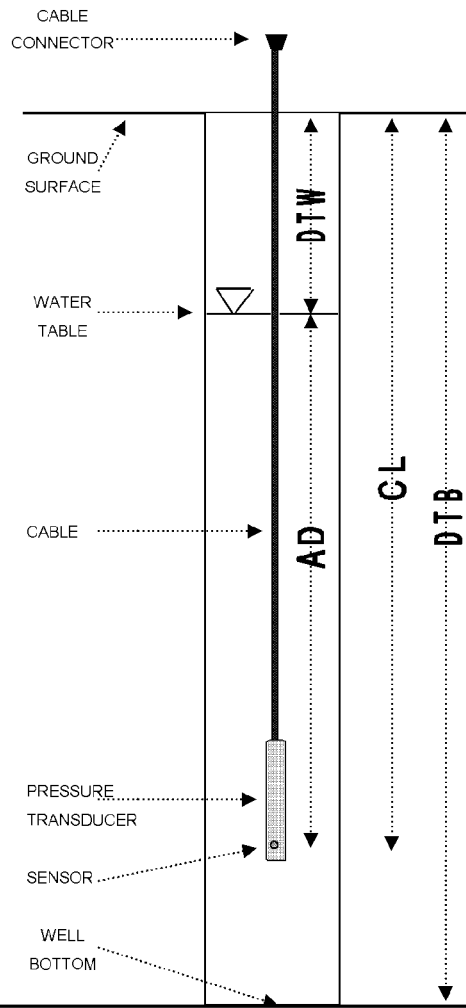
STATIC GROUNDWATER TABLE ELEVATION (FT) 7.53

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>35.00</u>	FT
GROUND ELEVATION:	<u>18.25</u>	FT M.S.L.
CASING ELEVATION:	<u>17.77</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.48</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>13:15</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>10.24</u>	FT
ACTUAL DEPTH:	<u>+ 23.46</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 33.70</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>17.77</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 10.24</u>	FT
REFERENCE ELEVATION:	<u>= 7.53</u>	FT M.S.L.
TEST NAME:	<u>MW-55-35</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>13:15</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 1.977' off. Reset.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-56-53
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>88.50</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>70.26</u>	DATE	<u>8/25/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>69.32</u>		
SERIAL NUMBER	<u>16499</u>	CASING DIAMETER (INCH)	<u>2</u>		

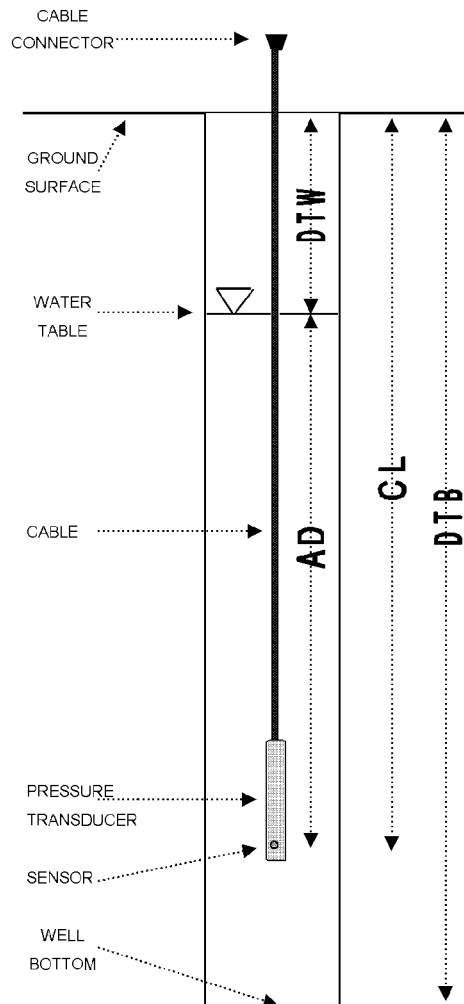
STATIC GROUNDWATER TABLE ELEVATION (FT) 22.79

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>53.00</u>	FT
GROUND ELEVATION:	<u>70.26</u>	FT M.S.L.
CASING ELEVATION:	<u>69.32</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.94</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>14:19</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>46.53</u>	FT
ACTUAL DEPTH:	<u>+ 43.469</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 89.999</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>69.32</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 46.53</u>	FT
REFERENCE ELEVATION:	<u>= 22.79</u>	FT M.S.L.
TEST NAME:	<u>MW-56-53</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>14:19</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 Difference = 0.465. Reset.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-57-11
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>46.50</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>14.98</u>	DATE	<u>8/18/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>14.73</u>		
SERIAL NUMBER	<u>16389</u>	CASING DIAMETER (INCH)	<u>1</u>		

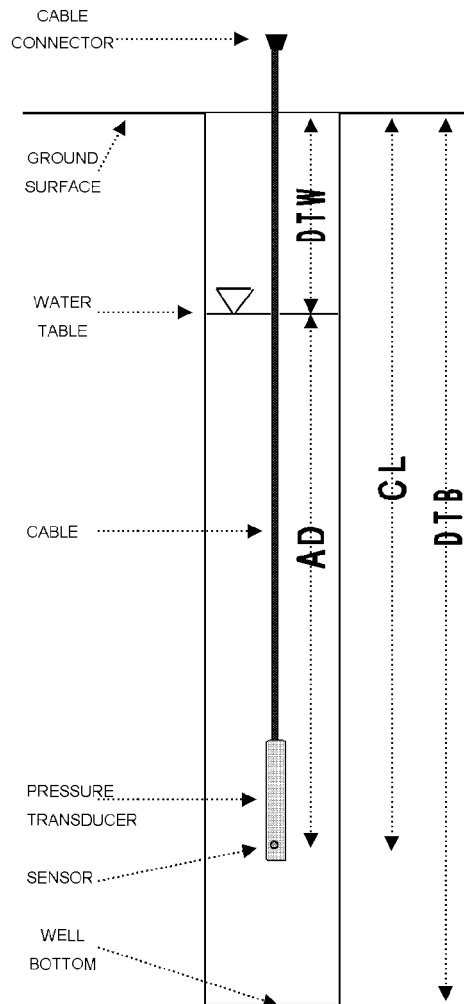
STATIC GROUNDWATER TABLE ELEVATION (FT) 9.34

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>11.00</u>	FT
GROUND ELEVATION:	<u>14.98</u>	FT M.S.L.
CASING ELEVATION:	<u>14.73</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.25</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>14:25</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>5.39</u>	FT
ACTUAL DEPTH:	<u>+ 39.555</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 44.945</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>14.73</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 5.39</u>	FT
REFERENCE ELEVATION:	<u>= 9.34</u>	FT M.S.L.
TEST NAME:	<u>MW-57-11n</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>14:26</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
Difference >0.3'. Reset. New test started.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-57-45
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>46.50</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>14.98</u>	DATE	<u>8/18/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>14.81</u>		
SERIAL NUMBER	<u>16642</u>	CASING DIAMETER (INCH)	<u>1</u>		

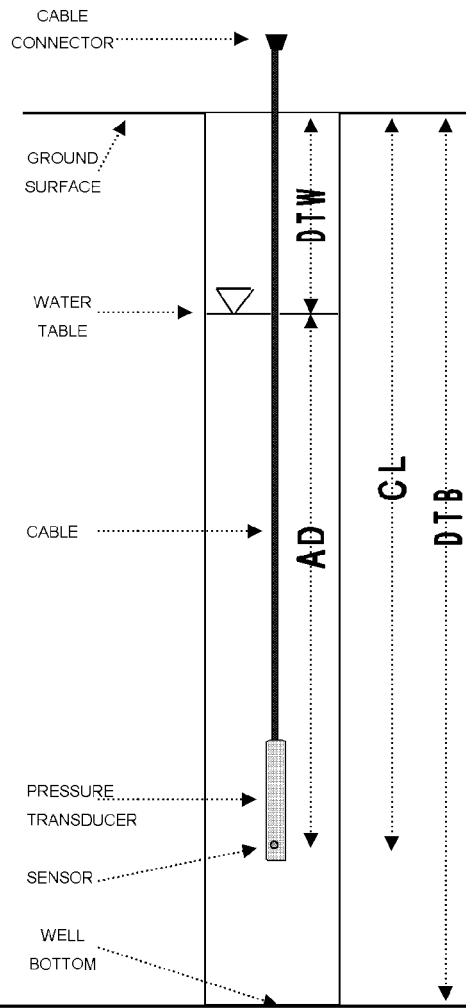
STATIC GROUNDWATER TABLE ELEVATION (FT) 8.91

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>45.00</u>	FT
GROUND ELEVATION:	<u>14.98</u>	FT M.S.L.
CASING ELEVATION:	<u>14.81</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.17</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>14:33</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>5.90</u>	FT
ACTUAL DEPTH:	<u>+ 72.294</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 78.194</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>14.81</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 5.90</u>	FT
REFERENCE ELEVATION:	<u>= 8.91</u>	FT M.S.L.
TEST NAME:	<u>MW-57-45n</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>14:33</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	Entergy Indian Point Energy Center	WELL ID	MW-58-65
			SHEET	1 of 1
			FILE NO.	01.0017869.91
			PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>72.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>14.57</u>	DATE	
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>14.25</u>		
SERIAL NUMBER		CASING DIAMETER (INCH)	<u>1</u>		

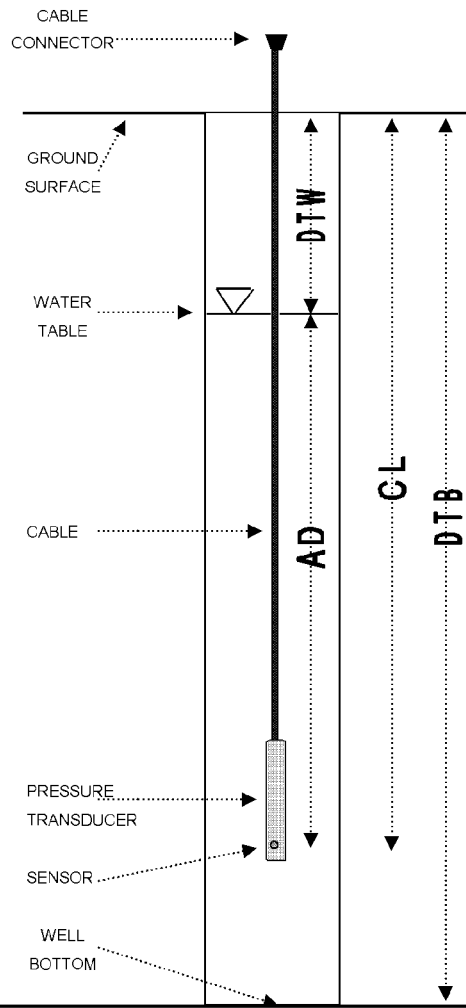
STATIC GROUNDWATER TABLE ELEVATION (FT) 14.25

GZA ENGINEER M. Britos A. Altieri

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>65.00</u>		FT
GROUND ELEVATION:	<u>14.57</u>		FT M.S.L.
CASING ELEVATION:	<u>14.25</u>		FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>		
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.32</u>		FT
MEASURED CABLE LENGTH:	<u>--</u>		FT
TIME OF MEASUREMENT:			HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>		
DEPTH TO WATER:			FT
ACTUAL DEPTH:	<u>+</u>		FT
THEORETICAL CABLE LENGTH:	<u>= 0.000</u>		FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check	
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check	
ELEVATION OF MEASURING POINT:	<u>14.25</u>		FT M.S.L.
DEPTH TO WATER:	<u>- 0.00</u>		FT
REFERENCE ELEVATION:	<u>= 14.25</u>		FT M.S.L.
TEST NAME:	<u>MW-58-65</u>		
LOGGING INTERVAL:	<u>20</u>		MIN
TEST START TIME:			HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-59-32
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>77.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>14.52</u>	DATE	<u>8/19/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>14.41</u>		
SERIAL NUMBER	<u>16489</u>	CASING DIAMETER (INCH)	<u>1</u>		

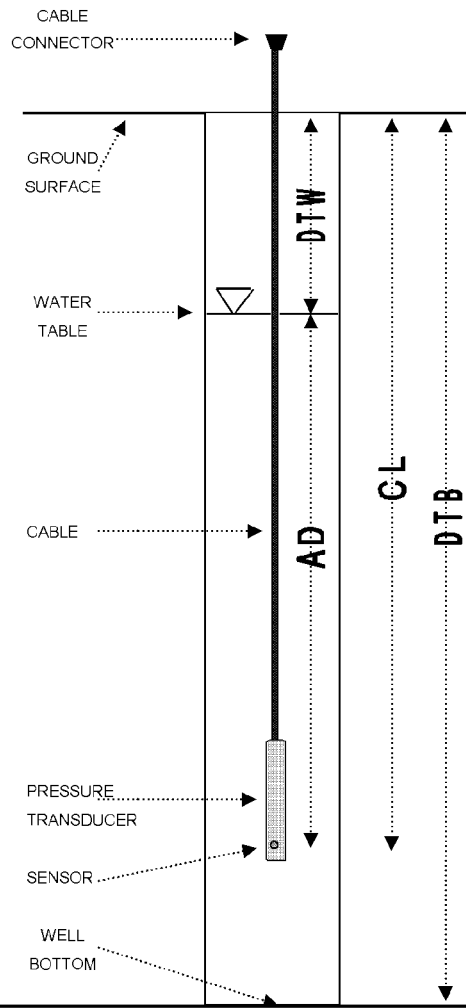
STATIC GROUNDWATER TABLE ELEVATION (FT) 2.10

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>32.00</u>	FT
GROUND ELEVATION:	<u>14.52</u>	FT M.S.L.
CASING ELEVATION:	<u>14.41</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.11</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>9:50</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>12.31</u>	FT
ACTUAL DEPTH:	<u>+ 47.38</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 59.69</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>14.41</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 12.31</u>	FT
REFERENCE ELEVATION:	<u>= 2.10</u>	FT M.S.L.
TEST NAME:	<u>MW-59-32n</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>9:50</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 difference >0.3'. Reset.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-59-45
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>77.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>14.52</u>	DATE	<u>8/19/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>13.90</u>		
SERIAL NUMBER	<u>16437</u>	CASING DIAMETER (INCH)	<u>1</u>		

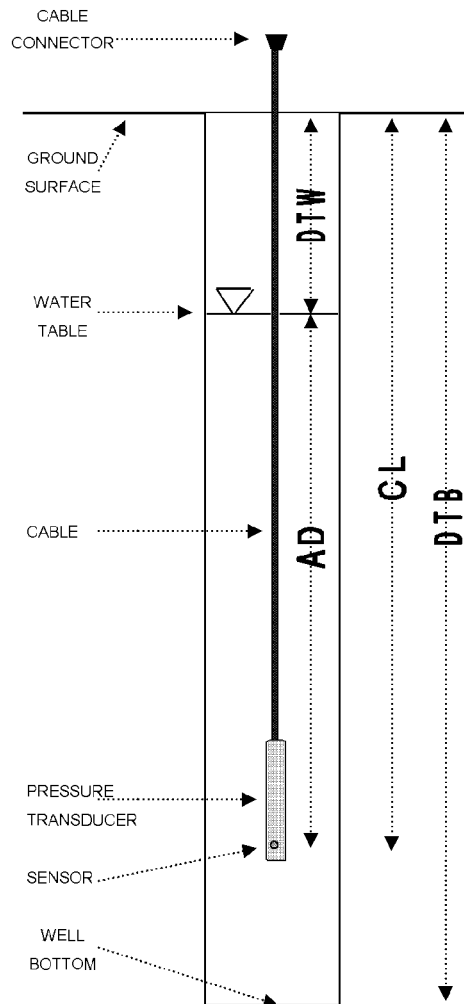
STATIC GROUNDWATER TABLE ELEVATION (FT) 4.30

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>45.00</u>	FT
GROUND ELEVATION:	<u>14.52</u>	FT M.S.L.
CASING ELEVATION:	<u>13.90</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.62</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>10:55</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>9.60</u>	FT
ACTUAL DEPTH:	<u>+ 65.49</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 75.09</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>13.90</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 9.60</u>	FT
REFERENCE ELEVATION:	<u>= 4.30</u>	FT M.S.L.
TEST NAME:	<u>MW-59-45n</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>10:55</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 New installation. Previous transducer had water in it. Replaced both transducer and cable. Non-vented now.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW59-68
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>77.00</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>14.52</u>	DATE	<u>8/19/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>14.23</u>		
SERIAL NUMBER	<u>14381</u>	CASING DIAMETER (INCH)	<u>1</u>		

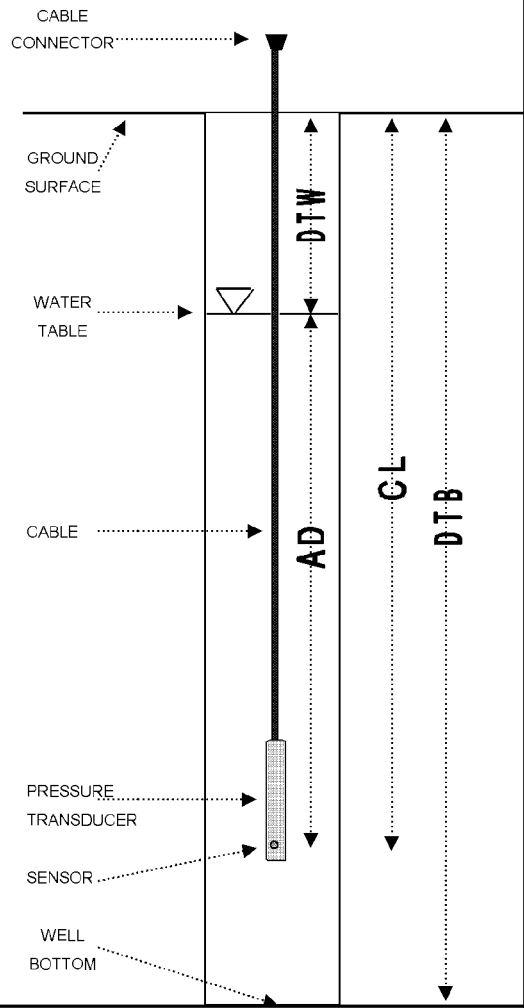
STATIC GROUNDWATER TABLE ELEVATION (FT) 5.12

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>68.30</u>	FT
GROUND ELEVATION:	<u>14.52</u>	FT M.S.L.
CASING ELEVATION:	<u>14.23</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>-</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.29</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>10:10</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>9.11</u>	FT
ACTUAL DEPTH:	<u>+ 60.23</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 69.34</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>14.23</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 9.11</u>	FT
REFERENCE ELEVATION:	<u>= 5.12</u>	FT M.S.L.
TEST NAME:	<u>MW59-68n</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>10:10</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 Difference 6.52. Transducer reading -1.470. Reset.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-108
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>11.90</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>14.48</u>	DATE	<u>8/17/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>14.23</u>		
SERIAL NUMBER	<u>20738</u>	CASING DIAMETER (INCH)	<u>4</u>		

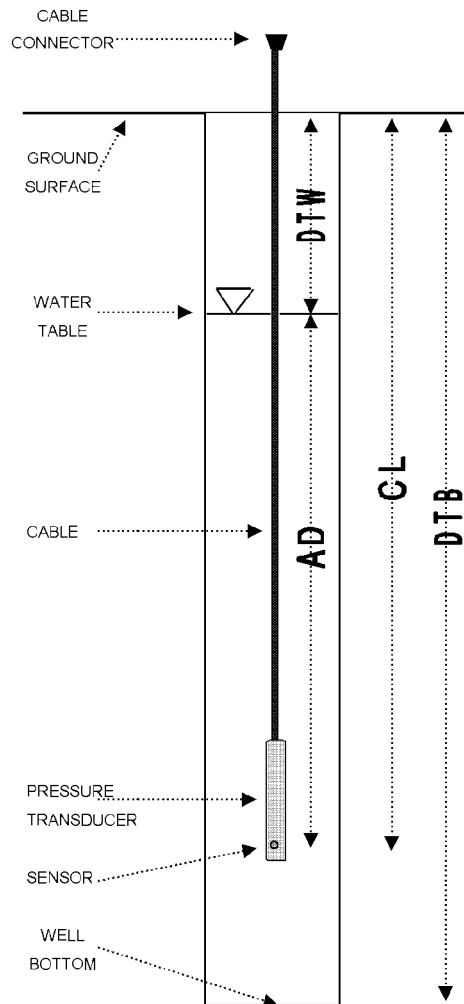
STATIC GROUNDWATER TABLE ELEVATION (FT) 9.34

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>11.60</u>	FT
GROUND ELEVATION:	<u>14.48</u>	FT M.S.L.
CASING ELEVATION:	<u>14.23</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.25</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>10:13</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>4.89</u>	FT
ACTUAL DEPTH:	<u>+ 9.34</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 14.23</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>14.23</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 4.89</u>	FT
REFERENCE ELEVATION:	<u>= 9.34</u>	FT M.S.L.
TEST NAME:	<u>MW-108</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>10:13</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
Battery 30%. Replaced and started new test.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-109
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>11.80</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>14.554</u>	DATE	<u>8/17/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>14.254</u>		
SERIAL NUMBER	<u>15214</u>	CASING DIAMETER (INCH)	<u>2</u>		

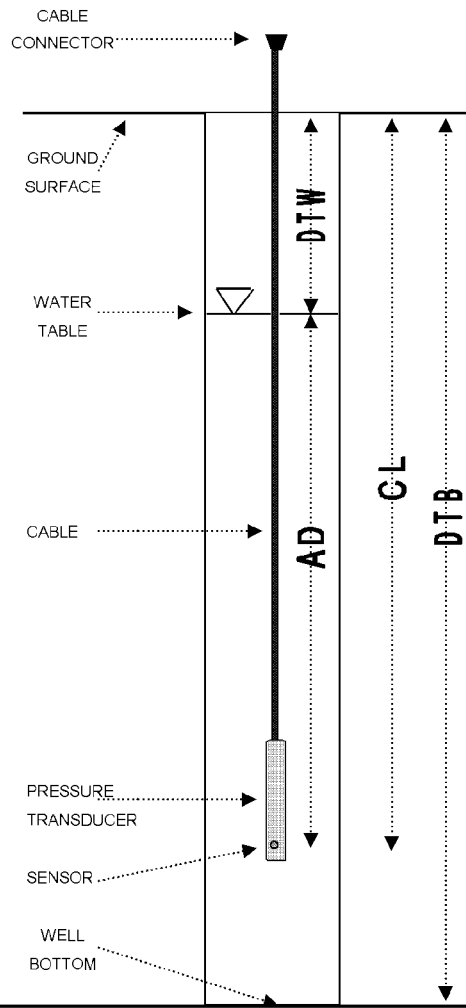
STATIC GROUNDWATER TABLE ELEVATION (FT) 7.77

GZA ENGINEER M. Britos A. Altieri

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>11.80</u>	FT
GROUND ELEVATION:	<u>14.554</u>	FT M.S.L.
CASING ELEVATION:	<u>14.254</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.300</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>9:23</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>6.48</u>	FT
ACTUAL DEPTH:	<u>+ 15.54</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 22.02</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>14.254</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 6.48</u>	FT
REFERENCE ELEVATION:	<u>= 7.774</u>	FT M.S.L.
TEST NAME:	<u>MW-109</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>9:23</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 > 3' data difference. Reset.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	MW-111
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>17.70</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>18.93</u>	DATE	<u>8/17/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>18.38</u>		
SERIAL NUMBER	<u>6767</u>	CASING DIAMETER (INCH)	<u>2</u>		

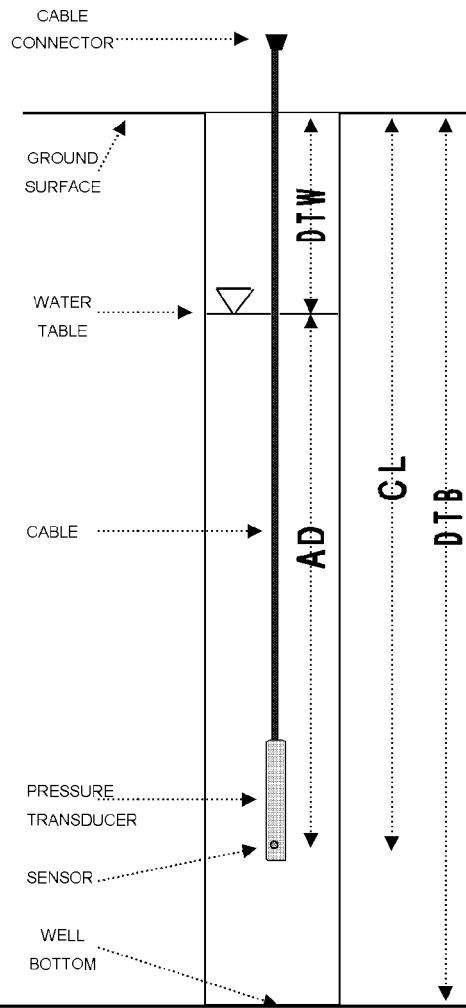
STATIC GROUNDWATER TABLE ELEVATION (FT) 9.60

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>17.70</u>	FT
GROUND ELEVATION:	<u>18.93</u>	FT M.S.L.
CASING ELEVATION:	<u>18.38</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>below</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>-0.55</u>	FT
	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>14:14</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>8.78</u>	FT
ACTUAL DEPTH:	<u>+ 6.88</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 15.66</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>18.38</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 8.78</u>	FT
REFERENCE ELEVATION:	<u>= 9.600</u>	FT M.S.L.
TEST NAME:	<u>MW-111</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>14:14</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
Abend. Pulled out and replaced batteries. Start new test.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	OUT-1
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>--</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>8.20</u>	DATE	<u>8/26/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>11.89</u>		
SERIAL NUMBER	<u>16044</u>	CASING DIAMETER (INCH)	<u>2</u>		

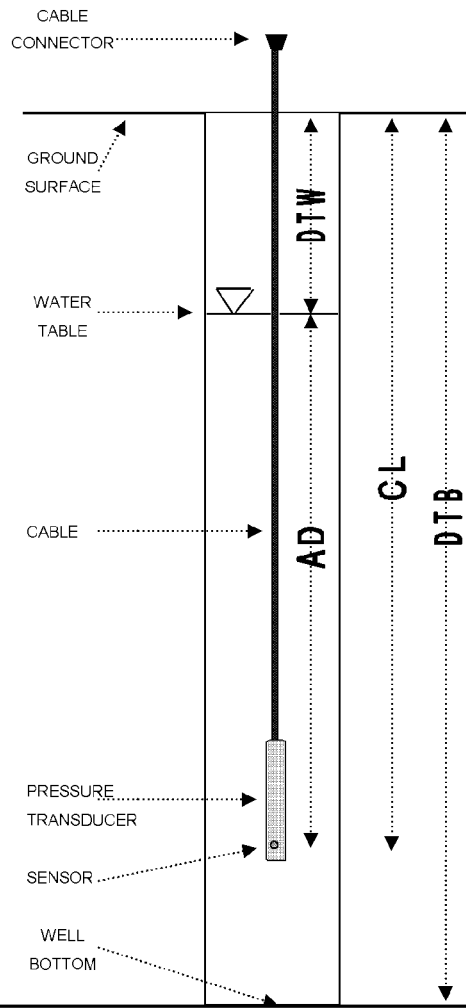
STATIC GROUNDWATER TABLE ELEVATION (FT) 2.61

GZA ENGINEER M. Britos A. Altieri

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>--</u>	FT
GROUND ELEVATION:	<u>8.20</u>	FT M.S.L.
CASING ELEVATION:	<u>11.89</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>above</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>3.69</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>7:57</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>9.28</u>	FT
ACTUAL DEPTH:	<u>+ 44.229</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 53.509</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>11.891</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 9.280</u>	FT
REFERENCE ELEVATION:	<u>= 2.611</u>	FT M.S.L.
TEST NAME:	<u>OUT-1</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>7:59</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES: Difference = -0.315. Reset.

TRANSDUCER INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 440 NINTH AVENUE, 18th FLOOR NEW YORK, NEW YORK 10001 SCIENTISTS AND ENGINEERS	Client	WELL ID	U3-C1
	Entergy	SHEET	1 of 1
	Indian Point Energy Center	FILE NO.	01.0017869.91
		PROJECT LOCATION	Indian Point

MANUFACTURER	<u>In-Situ</u>	FINAL BORING DEPTH (FT)	<u>NA</u>	DATUM	<u>NGVD 29</u>
MAKE	<u>MiniTroll</u>	GROUND ELEVATION (FT)	<u>15.003</u>	DATE	<u>8/14/09</u>
PSI CAPACITY	<u>30</u>	CASING ELEVATION (FT)	<u>18.060</u>		
SERIAL NUMBER	<u>11949</u>	CASING DIAMETER (INCH)	<u>2</u>		

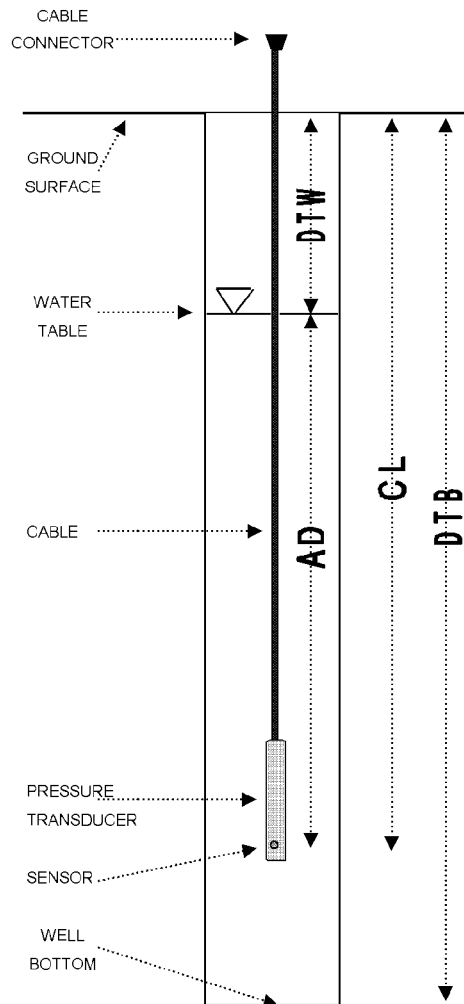
STATIC GROUNDWATER TABLE ELEVATION (FT) 2.36

GZA ENGINEER M. Britos

ELEVATION OF MEASURING POINT - DEPTH TO WATER = REFERENCE ELEVATION (WATER TABLE ELEVATION)

DEPTH TO WATER + ACTUAL DEPTH = CABLE LENGTH (if transducer is functioning properly)

DEPTH TO BOTTOM:	<u>NA</u>	FT
GROUND ELEVATION:	<u>15.003</u>	FT M.S.L.
CASING ELEVATION:	<u>18.060</u>	FT M.S.L.
CASING ABOVE (+) OR BELOW (-) GROUND:	<u>above</u>	
DISTANCE FROM CASING TO GROUND (+ OR -):	<u>3.057</u>	FT
MEASURED CABLE LENGTH:	<u>--</u>	FT
TIME OF MEASUREMENT:	<u>12:11</u>	HRS
MEASUREMENT TAKEN FROM:	<u>TOC</u>	
DEPTH TO WATER:	<u>15.70</u>	FT
ACTUAL DEPTH:	<u>+ 5.819</u>	FT
THEORETICAL CABLE LENGTH:	<u>= 21.519</u>	FT
HAVE CLOCKS BEEN SYNCHRONIZED?	<input checked="" type="checkbox"/>	check
IS TRANSDUCER SET TO TAKE "SURFACE" READINGS?	<input checked="" type="checkbox"/>	check
ELEVATION OF MEASURING POINT:	<u>18.060</u>	FT M.S.L.
DEPTH TO WATER:	<u>- 15.70</u>	FT
REFERENCE ELEVATION:	<u>= 2.360</u>	FT M.S.L.
TEST NAME:	<u>U3-C1-2</u>	
LOGGING INTERVAL:	<u>20</u>	MIN
TEST START TIME:	<u>12:12</u>	HRS



LEGEND: **DTW** - DEPTH TO WATER
DTB - DEPTH TO BOTTOM OF WELL
AD - ACTUAL DEPTH OF TRANSDUCER UNDER WATER
CL - CABLE LENGTH FROM SENSOR TO GROUND SURFACE/ TOP OF CASING

NOTES:
 New installation. Second transducer in well.



APPENDIX C: CHAINS OF CUSTODY

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page 1 of 1
 Project # Energy GW Mon Prog
 GEL Order # _____
 GEL Work Order Number: _____
 Phone # (914) 736-8405
 Fax # (914) 734-6247
 Sample Analysis Requested (5) (Fill in the number of containers for each isotope)

Client Name: Energy
 Project/Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511
 Collected by: Miguel Britos Sent Results To: Patrick Donahue

Should this sample be considered:
 Radioactive TSCA Regulated
 Total number of containers: _____
 Tritium (H3) _____
 Gamma Spec (GS) _____
 Strontium 90 (Sr90) _____

Sample ID	Date Collected (mm-dd-yy)	Time Collected (Military) (hh:mm)	OC Code	Field Filtered (M)	Sample Matrix (M)	Radioactive	Sample Analysis Requested (5)				
							Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)		
MW-32-59 (013)	09/15/09	1433	N	N	GW	Y	N	1	1	1	1
MW-32-85 (016)	09/15/09	1506	N	N	GW	Y	N	1	1	1	1
MW-32-149 (014)	09/15/09	1234									
MW-32-173 (012)	09/15/09	1211									
MW-32-190 (015)	09/15/09	1213									

TAT Requested: Normal Rush: _____ Specify: _____ (Subject to Surcharge)
 Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
 Yes No
 Circle Deliverable: C of A / GC Summary / Level 1 / Level 2 / Level 3 / Level 4 / Level 5 / Level 6 / Level 7 / Level 8 / Level 9 / Level 10 / Level 11 / Level 12 / Level 13 / Level 14 / Level 15 / Level 16 / Level 17 / Level 18 / Level 19 / Level 20 / Level 21 / Level 22 / Level 23 / Level 24 / Level 25 / Level 26 / Level 27 / Level 28 / Level 29 / Level 30 / Level 31 / Level 32 / Level 33 / Level 34 / Level 35 / Level 36 / Level 37 / Level 38 / Level 39 / Level 40 / Level 41 / Level 42 / Level 43 / Level 44 / Level 45 / Level 46 / Level 47 / Level 48 / Level 49 / Level 50 / Level 51 / Level 52 / Level 53 / Level 54 / Level 55 / Level 56 / Level 57 / Level 58 / Level 59 / Level 60 / Level 61 / Level 62 / Level 63 / Level 64 / Level 65 / Level 66 / Level 67 / Level 68 / Level 69 / Level 70 / Level 71 / Level 72 / Level 73 / Level 74 / Level 75 / Level 76 / Level 77 / Level 78 / Level 79 / Level 80 / Level 81 / Level 82 / Level 83 / Level 84 / Level 85 / Level 86 / Level 87 / Level 88 / Level 89 / Level 90 / Level 91 / Level 92 / Level 93 / Level 94 / Level 95 / Level 96 / Level 97 / Level 98 / Level 99 / Level 100

Chain of Custody Signatures				Sample Shipping and Delivery Details			
Authorized By (Signed)	Date	Time	Received by (Signed)	Date	Time	GEL PM	ERIN TRENT
<i>[Signature]</i>	09/15/09	1700	<i>[Signature]</i>	09/15/09	1700	Method of Shipment:	FEDDEX
						Date Shipped:	
						Airbill #:	

1) Chain of Custody Number - Time Determined
 2) OC Codes: N - Normal Sample, TM - Trip Blank, RD - Field Duplicate, BR - Equipment Blank, MS - Matrix Spike Sample, MSD - Matrix Spike Duplicate Sample, G - Grab, C - Composite
 3) Field Filtered - First liquid retained, indicate with a 'Y' for yes the sample was field filtered or 'N' for no sample was not field filtered
 4) Matrix Codes: DW - Drinking Water, GW - Groundwater, SW - Surface Water, WW - Wastewater, W - Water, M - Mine, L - Liquid, SD - Sediment, SL - Sludge, SW - Solid Waste, O - Oil, P - Pore, P-W - Pore Water, F - Fuel, N - None
 5) Sample Analysis Requested - Analytical method requested (e.g. 8200M, 8010M, 8100M, 8300M, 8400M, 8500M, 8600M, 8700M, 8800M, 8900M, 9000M, 9100M, 9200M, 9300M, 9400M, 9500M, 9600M, 9700M, 9800M, 9900M, 1000M)
 6) Preservative Type: HA - Hydrochloric Acid, NI - Nitric Acid, SF - Sodium Fluoride, SA - Sulfuric Acid, AA - Acetic Acid, HX - Hexane, ST - Sodium Thiosulfate. If no preservative is added - leave field blank
 WHITE - LABORATORY YELLOW = FILE PINK - CLIENT

OZARK UNDERGROUND LABORATORY, INC.
 1572 Aley Lane Protem, MO 65733 (417) 785-4289 fax (417) 785-4290 email: out@tri-labs.net
SAMPLE COLLECTION DATA SHEET for FLUORESCENCE ANALYSIS

Project: GZA Environmental Inc. / Indian Point Week No: _____ Samples Collected By: Miguel Britos (GZA Environmental)
 Samples Shipped By: GEL Laboratories Samples Received By: _____
 Date Samples Shipped: / / Date Samples Received: / / Time Samples Received: _____ Return Cooler? Yes No
 Bill to: GZA Environmental Inc. Send Results to: Dave Winslow, GZA Environmental Inc.
 Analyze for: Fluorescein Eosine Rhodamine WT Other _____ Ship cooler to: GEL Labs

# CHAR PLOT	LAB NUMBER	STATION NUMBER 1-4 Numbers	STATION NAME	PLACED		COLLECTED		WATER REPORT
				DATE	TIME	DATE	TIME	
		270	MW-32-59 (013)			09/15/09	1427	
		280	MW-32-85 (016)			09/15/09	1435	
		290	MW-32-131			09/15/09	1241	
		300	MW-32-149 (014)			09/15/09	1153	
		312	MW-32-173 (019)			09/15/09	1140	
		310	MW-32-190 (015)			09/15/09	1131	

COMMENTS: _____
 This sheet filled out by OUL staff? Yes No Charts for samples on this page proofed by OUL: _____
 Page 1 of 1
 Shared:\form\con.doc, Rev. 8/90

GC# Number: 50013510
 GEL Work Order Number: (914) 736-8405
 Phone #: (914) 736-8405
 Fax #: (914) 734-6247

Client Name: Entergy
 Project/Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511

Collected by: Miguel Britos
 Sent Requires To: Patrick Donahue

Sample ID: MW-31-49 (019)
 MW-31-63 (019)
 MW-31-85 (019)

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hh:mm)	QC Code	Field Filtered	Sample Matrix	Radioactive	TSCA Regulated	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)
MW-31-49 (019)	09/14/09	1113	N	N	GW	Y	N	1	1	1	1
MW-31-63 (019)	09/14/09	1245	N	N	GW	Y	N	1	1	1	1
MW-31-85 (019)	09/14/09	1205	N	N	GW	Y	N	1	1	1	1

TAT Requested: Normal
 Rush:
 Specify: (Subject to Sampling) Fax Results: Yes / No

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Chain of Custody Signatures	Received by (Signed)	Date	Time	Time	Time
<i>[Signature]</i>	SECURED STORAGE	09/11/09	1430	09/11/09	1430
<i>[Signature]</i>					

Sample Shipping and Delivery Details
 GEL PM: ERIN TRENT
 Method of Shipment: FEDEX
 Date Shipped: []

1) Chain of Custody Number - Client Determined
 2) QC Codes: N - Normal Sample, TB - Trip Blank, FD - Field Duplicate, EM - Equipment Blank, MW - Matrix Spike Sample, MSQ - Matrix Spike Duplicate Sample, Q - Grab, C - Composite
 3) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for no the sample was not field filtered
 4) Matrix Codes: DW - Drinking Water, GW - Groundwater, SW - Surface Water, WW - Wastewater, ML - Mine Liquid, SO - Sediment, SL - Sludge, SS - Solid Waste, DR - Drill P. Filter, P - Filter, W - Waste
 5) Sample Analysis Requested: Analytical method requested (e.g. #350M, #618M, #74M) and number of containers provided for each (e.g. #350M 3, #618M 2, #74M 1)
 6) Preservative Type: HA - Hydrochloric Acid, NI - Nitric Acid, SH - Sodium Hydroxide, SA - Sulfuric Acid, AA - Acetic Acid, RH - Hexane, ST - Sodium Thiosulfate. If no preservative is added - leave field blank
 WHITE - LABORATORY
 YELLOW - FILE
 PINK - CLIENT

GEL Chain of Custody and Analytical Request

*See www.gel.com for GEL's Sample Acceptance SOP**

Page: 1 of 1
 Project # Energy GW Mon Prog
 GEL Quote # _____
 COC Number 50013510
 PO Number: _____
 Client Name: Energy Phone # (914) 736-8405
 Project/Site Name: Indian Point Energy Center Fax # (914) 734-6247
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511
 GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (833) 556-8171
 Fax: (843) 766-1178

Collected by: Miguel Britos Send Results To: Patrick Donahue
 Sample ID _____
 *For container - indicate start and stop date/time

Sample ID	*Time Collected (mm-dd-yy)	*Time (hh:mm)	QC Code	Field Filtered?	Sample Matrix	Radioactive	CSCA Registered	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Comments
MM-30-69-(027)	09/12/09	1045	N	N	GW	Y	N	1	1	1	1	2 Liter Poly
MM-30-84-(018)	09/12/09	1222	N	N	GW	Y	N	1	1	1	1	2 Liter Poly

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

TAT Requested: Normal Rush _____ Specialty: _____ (Subject to Surcharge) Fax Results: Yes / No

Circle Deliverable: CoA / QC Summary / Level 1 / Level 2 / Level 3 / Level 4 / Level 5

Sample Collection Time Zone: Eastern Pacific Other _____

Mounting: _____

Chain of Custody Signatures		Sample Shipping and Delivery Details	
Acquisition By (Signed)	Date	Received by (Signed)	Date
<u>[Signature]</u>	09/12/09 1340	<u>SECURER</u>	09/12/09 1340
		Method of Shipment: <u>FEDEX</u>	Date Shipped: _____
		Airbill #: _____	

GEL P.M.E. ERIN TRENT

For Lab Receipt to GEL:
 Eastern: Pacific: _____
 YES: _____ NO: _____
 Center: _____

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page: 1 of 1
 Project #: **Energy GW Mon Prog**
 GEL Quote #:
 CCGC Number: 50013510
 PO Number: 50013510
 Client Name: **Energy**
 Project/Site Name: **Indian Point Energy Center**
 Address: **450 Broadway, Suite 3, Buchanan, NY 10511**
 Phone #: (914) 736-8405
 Fax #: (914) 734-6247
 GEL Work Order Number: **GEL Work Order Number:**
 GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 746-1178

Sample Analysis Requested ⁽⁹⁾ (Fill in the number of containers for each test)

Should this sample be considered:
 TSCA Regulated
 Total number of containers
 Tritium (H3)
 Gamma Spec (GS)
 Strontium 90 (Sr90)

Comments
 Note: extra sample is required for sample specific QC

Sample ID	*Time Collected (mm-dd-yy)	*Time Collected (hh:mm)	QC Code	Field Filtered ⁽⁹⁾	Sample Matrix ⁽⁹⁾	Radioactive	TSCA Regulated	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Preservative Type (9)	Comments
MMW-31-49-(018)	09/01/09	1022	N	N	GW	Y	N	1	1	1	1		2 Liter Poly
MMW-31-63-(018)	09/01/09	1150	N	N	GW	Y	N	1	1	1	1		2 Liter Poly
MMW-31-85-(018)	09/01/09	1152	N	N	GW	Y	N	1	1	1	1		2 Liter Poly

FAT Requested: Normal: Rush: Specialty: (Subject to Surcharges)
 FAT Results: Yes No
 Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: **Are there any known hazards applicable to these samples? If so, please list the hazards**

Chain of Custody Signatures

Sample Shipping and Delivery Details

Requested By (Signed)	Date	Time	Received By (Signed)	Date	Time
<i>[Signature]</i>	09/01/09	1400	SECURED STORAGE	09/01/09	1400
			Airbill #:		
			Airbill #:		

1) Chain of Custody Number = Critical Document
 2) QC Codes: N=Normal Sample, FB=Field Blank, FD=Field Duplicate, ER=Equipment Blank, MS=Matrix Spike Sample, MSD=Matrix Spike Duplicate Sample, GP=Grab, C=Composite
 3) Field Filtered: For liquid matrix use, indicate with a Y. For gas the sample was field filtered on N. For sample was not field filtered
 4) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, M=Mine Liquid, SO=Soil, SPS=Soil, S=Sludge, SS=Solid Waste, O=Oil, P=Filter, P=Water, P=Ice, P=Total, N=Normal
 5) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B, 7190B) and number of containers provided for method (i.e. 2300B, 3, 6010B/2794 = 1)
 6) Preservation Type: HV=Hydrochloric Acid, NI=Nitric Acid, SH=Sulfuric Acid, AA=Acetic Acid, BX=Hexane, ST=Sodium Thiosulfate. If no preservative is added, leave field blank
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

OZARK UNDERGROUND LABORATORY, INC.

1572 Aley Lane Proton, MO 65733 (417) 785-4289 fax (417) 785-4290 email: oul@tri-lakes.net

SAMPLE COLLECTION DATA SHEET for FLUORESCENCE ANALYSIS

Project: GZA Environmental Inc. / Indian Point Week No: _____ Samples Collected By: Miguel Britos (GZA Environmental)
 Samples Shipped By: GEL Laboratories Samples Received By: _____

Date Samples Shipped: ___/___/___ Date Samples Received: ___/___/___ Time Samples Received: _____ Return Cooler? Yes No

Bill to: GZA Environmental Inc. Send Results to: Dave Rusczyk, GZA Environmental Inc.

Analyze for: Fluorescein Eosine Rhodamine WT Other _____ Ship cooler to: GEL Labs

# CHAR REC'D	LAB NUMBER	STATION NUMBER 1-4 Numbers	STATION NAME	PLACED		COLLECTED		# WATER REC'D
				DATE	TIME	DATE	TIME	
		240	MW-31-49-(018)			09/01/04		
		250	MW-31-63-(018)			01/01/09	1109	
		260	MW-31-85-(018)			01/01/09	1132	

Please indicate stations where dye was visible in the field for field technician use - use black ink only

COMMENTS:

This sheet filled out by OUL staff? Yes No Charts for samples on this page proofed by OUL: _____
 Page 1 of 1 Fishwell forms.doc, Rev. 8/99

OZARK UNDERGROUND LABORATORY, INC.
 1572 Aley Lane Protem, MO 65733 (417) 785-4289 fax (417) 785-4290 email: oul@trilakes.net
SAMPLE COLLECTION DATA SHEET for FLUORESCENCE ANALYSIS

Project: GZA Environmental Inc. / Indian Point Week No: _____ Samples Collected By: Miguel Britos (GZA Environmental)
 Samples Shipped By: GEL Laboratories Samples Received By: _____
 Date Samples Shipped: / / Date Samples Received: / / Time Samples Received: : Return Cooler? Yes No _____
 Bill to: GZA Environmental Inc. Send Results to: Dave Winslow, GZA Environmental Inc.
 Analyze for: Fluorescein Eosine Rhodamine WT Other _____ Ship cooler to: GEL Labs

# CHAR REC'D	LAB NUMBER	STATION NUMBER <small>1-4 Numbers</small>	STATION NAME	PLACED		COLLECTED		# WATER REC'D
				DATE	TIME	DATE	TIME	
		270	MW-32-59-(012)			8/31/09	1323	
		280	MW-32-85-(015)			8/31/09	1344	
		290	MW-32-131			8/31/09	1126	
		300	MW-32-149-(013)			8/31/09	1034	
		312	MW-32-173-(011)			8/31/09	1100	
		310	MW-32-190-014)			8/31/09	1105	

Please indicate stations where dye was visible in the field for field technician use - use black ink only

COMMENTS: _____

This sheet filed out by OUL staff? Yes No Charts for samples on this page proofed by OUL: _____

Client Name: Energy
 Project/Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511
 Phone #: (914) 736-8405
 Fax #: (914) 734-6247
 GEL Work Order Number: 50013510

Collected by: Miguel Britos
 Sand Results To: Patrick Donahue
 Sample Analysis Requested (S) (H) in the number of containers for each test

Sample ID	Date Collected (mm-dd-yy)	Time Collected (Military)	QC Code	Field Filtered	Sample Matrix (S)	Radioactive	TSCA Regulated	Total number of containers			Preservative Type (P)	Comments Note: extra sample is required for sample specific QC
								Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)		
MW-32-59-(012)	08/31/09	1324	N	N	GW	Y	N	1	1	1		2 Liter Poly
MW-32-85-(015)	08/31/09	1411	N	N	GW	Y	N	1	1	1		2 Liter Poly
MW-32-149-(013)	08/31/09	1129	N	N	GW	Y	N	1	1	1		2 Liter Poly
MW-32-173-(011)	08/31/09	1131	N	N	GW	Y	N	1	1	1		2 Liter Poly
MW-32-190-(014)	08/31/09	1141	N	N	GW	Y	N	1	1	1		2 Liter Poly

TAT Requested: Normal Rush Specify: (Subject to Scheduling) Test Results: Yes No
 Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Chain of Custody Signatures

Requested By (Signed)	Date	Received By (Signed)	Date
<i>[Signature]</i>	08/31/09	SECURED	08/31/09
		STEVENS	08/31/09
			1600

Method of Shipment: FEDEX
 Date Shipped:
 Airbill #:
 Airbill #:

Sample Shipping and Delivery Details

Sample Collection Time Zone: Eastern / Pacific / Other

For Lab Receiving Use Only

Custody Seal Intact?	YES
Cooler Temp?	ND

WHITE = LABORATORY
 YELLOW = FILE
 PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page: 1 of 1
 Project #: **Emergency GW Mon Prog**
 GEL Quote #
 CQC Number: 50013510
 PO Number:

Client Name: **Entergy**
 Project/Site Name: **Indian Point Energy Center**
 Address: **450 Broadway, Suite 3, Buchanan, NY 10511**
 Collected by: **M. Britos**
 Sample ID: **MH-5-(006)**

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

GEL Work Order Number:
 Phone #: (914) 735-8405
 Fax #: (914) 734-8247

Sample Analysis Requested ^(S) (Fill in the number of containers for each test)

Should this sample be considered:	
Radioactive	Y
TSCA Regulated	Y
Total number of containers	
Tritium (H3)	1
Gamma Spec (GS)	1
Strontium 90 (Sr90)	1

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military (hhmm))	QC Code	Field Filtered ^(F)	Sample Matrix ^(M)	Radioactive	TSCA Regulated	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Comments
MH-5-(006)	08/24/09	1015	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly Note: extra sample is required for sample specific QC

TAT Requested: Normal Rush Specify: _____ (Subject to Surcharges) Fax Results: Yes No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: **Are there any known hazards applicable to these samples? If so, please list the hazards**

Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time	GEL PM	Method of Shipment	Date Shipped
<i>[Signature]</i>	08/24/09	1530	SECURED STORAGE	08/24/09	1530	BRIN TRENT	FEDEX	

Chain of Custody Signatures

Sample Shipping and Delivery Details

Sample Collection Time Zone: Eastern Pacific Other _____

For Lab Receiving Use Only

Custody Seal Broken: YES / NO

cooler Temp: _____

1) Chain of Custody Number - Client Determined
 2) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MRS = Matrix Spike Duplicate Sample, C = Composite
 3) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered
 4) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, ML=Milk, Liquid, SP=Soil, S0=Settlement, SL=Sludge, SS=Solid Waste, O=Oil, P=Filter, F=Filter, L=Line, P=Pack, M=Metal
 5) Sample Analysis Requested: Analytical method requested (i.e. SR08, 6010B, 7610) and number of variations provided for each (i.e. SR08 - 2, 6010B/7610 - 1)
 6) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Acetic Acid, HX = Hexane, ST = Sodium Thiosulfate. If no preservative is added, leave field blank
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

GEL Chain of Custody and Analytical Request

** See www.gel.com for GEL's Sample Acceptance SOP**

Project #: 1 of 1
 Project Name: Energy GW Mon Prog
 GEL Order #: _____
 COC Number: 50013510
 PO Number: 50013510
 GEL Work Order Number: _____

Client Name: Energy Phone #: (914) 736-8405
 Project/Site Name: Indian Point Energy Center Fax #: (914) 734-8247
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511

Collected by: M. BELTOS Send Results To: Patrick Donahue
 Sample ID: _____

Sample ID	Date Collected (mm/dd/yy)	Time Collected (hh:mm)	QC Code	Field Filtered ^(b)	Sample Matrix ^(c)	Radioactive	FSCA Regulated	Total number of containers				Comments
								Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Nickel 63 (Ni63)	
MW-51-40-(012)	08/12/09	1342	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-51-79-(012)	08/12/09	1354	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-51-104-(010)	08/12/09	1114	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-51-135-(010)	08/12/09	1122	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-51-163-(010)	08/12/09	1128	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-51-189-(010)	08/12/09	1111	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly

TAT Requested: Normal Rush Specify: _____ (subject to surcharge) Fax Results: Yes No
 Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Chain of Custody Signatures
 Relinquished By (Signed) _____ Date _____ Time _____
 Received By (Signed) _____ Date _____ Time _____
 SECURED STORAGE 8/13/09 1059
 AIRBILL # _____

Sample Shipping and Delivery Details
 GEL PM: ERIN TRENT
 Method of Shipment: FDEX
 Date Shipped: _____
 Airbill #: _____
 For Lab Receiving Use Only
 Tare/Seal Intact? YES
 Cooler Temp: _____

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Page: 1 of 1
 Project #: **Energy GW Mon Prog**
 GEL Order #:
 COC Number: 50013510

GEL Work Order Number:

Client Name: **Energy** Phone #: (914) 736-8405

Project/Site Name: **Indian Point Energy Center** Fax #: (914) 734-6247

Address: **450 Broadway, Suite 2, Buchanan, NY 10511**

Collected by: **M. BATES** Send Results To: **Patrick Donahue**

Sample Analysis Requested (5) (fill in the number of containers for each test)

Preservative Type (6)

Comments
 Note: extra sample is required for sample specific QC

Sample ID	Date Collected (mm-dd-yy)	Time Collected (Militars) (hh:mm)	QC Code or	Field Filtered (0)	Sample Matrix (0)	Should this sample be considered:		Total number of containers				Comments	
						Radioactive	TSCA Regulated	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Nickel 63 (Ni63)		
MW-60-35-(010)	08/11/09	1441	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-60-53-(010)	08/11/09	1426	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-60-53-(010)-B			N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-60-53-(010)-D	08/11/09	1442	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-60-53-(010)-S	08/11/09	1458	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-60-72-(010)	08/11/09	1040	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-60-135-(010)	08/11/09	1052	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-60-154-(010)	08/11/09	1114	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-60-176-(010)	08/11/09	1149	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly

TAT Requested: Normal Rush: Specify: (Subject to Storage) Fax Results: Yes No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: **Are there any known hazards applicable to these samples? If so, please list the hazards**

Sample Collection Time Zone
 Eastern
 Central
 Other
 Mountain

Chain of Custody Signatures

Released By (Signed)	Date	Time	Received by (Signed)	Date	Time
<i>[Signature]</i>	08/11/09	1630	SECURE STORAGE	08/11/09	1630

Sample Shipping and Delivery Details

GEL PM: **ERIN TRENT**

Method of Shipment: **FEDFX**

Date Shipped:

Airbill #

Artbill #

For Lab Receiving Use Only

Carbonyl Sulf Intact?

YES NO

Cooler Temp: C

- 1) Chain of Custody Number -- (Item Determined)
- 2) QC Codes: N = Normal Sample, EB = Trip Blank, RW = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSP = Matrix Spike Duplicate Sample, G = Grab, C = Composite
- 3) Field Filtered For liquid matrices, indicate with a 'F' for yes the sample was field filtered
- 4) Matrix Codes: HW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, MW=Water, ML=Minor Liquid, SD=Soil, SP=Sealant, SL=Sludge, SS=Solid Waste, O-GW, K=Filter, P=Pipe, B=Line, F=Feed, N=Net
- 5) Sample Analysis Requester: Analytical method requested (e.g. 8160A, 6010B, 7470) and number of containers provided for each (e.g. 6360B, 3, 60/03/7394 - 1)
- 6) Preservative Type: HA = Hydrochloric Acid, NA = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Acetic Acid, BK = Boric Acid, ST = Sodium Thiosulfate. If no preservative is added, leave field blank

WHITE = LABORATORY

YELLOW = FILE

PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Client Name: Energy
 Project/Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511

Phone #: (914) 736-8405
 Fax #: (914) 734-5247

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

GEL Work Order Number:
 Sample Analysis Requested (6) (fill in the number of containers for each test)

Sample ID	Date Collected (mm-dd-yy)	*Time Collected (Military) (hh:mm)	QC Code	Field Filtered (a)	Sample Matrix (b)	Radioactive	TSCA Regulated	Sample Analysis Requested (6) (fill in the number of containers for each test)				Comments Note: extra sample is required for sample specific QC	
								Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)		Nickel 63 (Ni63)
MW-42-49-(018)	08/10/09	1200	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-42-78-(013)	08/10/09	1240	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly

Collected by: M. Botos
 Sent Results To: Patrick Donahue
 TAT Requested: Normal Rush
 Specify: (Subject to Scheduling) Fax Results: Yes / No
 Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Relinquished By (Signed)	Date	Time	Received By (Signed)	Date	Time	Method of Shipment	Date Shipped
<i>[Signature]</i>	08/10/09	1400	<i>[Signature]</i>	08/15/09	1400	FEDEX	

Chain of Custody Signatures
 Chain of Custody Number - Client Determined
 1) Chain of Custody Number - Client Determined
 2) QC Codes: N= Normal Sample, TB= Trip Blank, FB= Field Duplicate, ER= Equipment Blank, MSB= Matrix Spike Duplicate Sample, Q= Carb, C= Composite
 3) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for no sample was not field filtered
 4) Matrix Codes: BW= Drinking Water, GW= Groundwater, SW= Surface Water, WW= Waste Water, W= Water, ML= Milk, L= Liquid, SD= Soil, SDP= Sediment, SL= Sludge, SP= Solid Waste, O= Oil, P= Filter, P= Vial, L= Drum, P= Pallet, W= Rack
 5) Sample Analysis Requested: Analytical method requested (i.e. 8200B, 4010B, 4120) and number of containers provided for each (i.e. 8200B 3, 60170B 7/470L 3)
 6) Preservative Type: HA= Hydrochloric Acid, NI= Nitric Acid, SIF= Sodium Hydroxide, SA= Sulfuric Acid, AA= Acetic Acid, HV= Heptane, ST= Sodium Thiosulfate, if no preservative is added = none field blank
 WHITE = LABORATORY
 YELLOW = FILE
 PINK = CLIENT

Sample Shipping and Delivery Details
 GEL PM: ERIN TRENT
 Method of Shipment: FEDEX
 Date Shipped:
 Airbill #:
 For Lab Receiving Use Only
 Custody Seal Intact? YES/NO
 Cooler Temp: °C

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page: 1 of 1
 Project #: Energy GW Mon Prog
 GEL Quote #: _____
 COC Number: 50013510
 PO Number: 50013510
 Client Name: Energy
 Project/Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511
 Phone #: (914) 736-8405
 Fax #: (914) 734-6247
 GEL Work Order Number: _____
 GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Sample Analysis Requested ⁽⁹⁾ (Fill in the number of containers for each test)

Sample ID <small>* For computers - indicate tier and sign identifier</small>	Date Collected (mm-dd-yy)	Time Collected (hh:mm)	QC Code (#)	Field Filtered ⁽⁹⁾	Sample Matrix ⁽⁹⁾	Radioactive	TSCA Regulated	Total number of containers				Comments <small>Note: extra sample is required for sample specific QC</small>
								Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Nickel 63 (Ni63)	
MW-49-26-(017)	8/1/09	1050	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-49-42-(017)	8/1/09	1055	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-49-65-(017)	8/1/09	1248	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly

TAT Requested: Normal Rush Specific: _____ (Subject to Surcharge) Fax Results Yes No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

Chain of Custody Signatures				Sample Shipping and Delivery Details			
Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time	Method of Shipment:	Date Shipped:
<i>Erin Trent</i>	8/1/09	1030	<i>Erin Trent</i>	8/1/09	1030	FEDEX	
						Airbill #	
						Airbill #	

1) Chain of Custody Number = Client Determined
 2) QC Codes: N=Normal Sample, TB=Trip Blank, PB=Field Duplicate, EB=Equipment Blank, MS=Matrix Spike Sample, MSB=Matrix Spike Duplicate Sample, G=Grab, C=Composite
 3) Field Filtered: For liquid samples, indicate with a 'Y' - for yes the sample was field filtered or 'N' - for sample was not field filtered
 4) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, MW=Mine Water, ML=Mine Liquid, SO=Soil, SB=Soil/Slurry, SL=Sludge, SS=Solid Waste, O=Oil, P=Filter, P-W=U-Tine, P-F=Pack, N=Pack
 5) Sample Analysis Requested: Analytical method requested (i.e. 8260R, 8210B, 7170) and number of containers provided for each (i.e. 8260R, 1, 60/09/7/204, 1)
 6) Preservative Type: HA=Hydrochloric Acid, NI=Nitric Acid, SH=Sodium Hydroxide, SA=Sulfuric Acid, AA=Ascorbic Acid, HX=Hexane, ST=Sodium Thiosulfate. If no preservative is added = 'raw field blank'
 WHITE = LABORATORY
 YELLOW = FILE
 PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page: 1 of 1
 Project #: **Energy GW Mon Prog**
 GEL Quote #: _____
 COC Number: 50013510
 PO Number: 50013510

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

GEL Work Order Number: _____

Client Name: **Energy** Phone #: (914) 736-8405

Project/Site Name: **Indian Point Energy Center** Fax #: (914) 734-6247

Address: **450 Broadway, Suite 3, Buchanan, NY 10511**

Collected by: **CB, MB** Send Results To: **Patrick Donahue**

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (hh:mm)	QC Code	Field Filtered ¹⁾	Sample Matrix ²⁾	Radioactive	TSCA Regulated	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Nickel 63 (Ni63)	Comments
MM-50-42-(018)	08/07/09	1313	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MM-50-66-(023)	08/07/09	1612	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly

Should this sample be considered:
 Total number of containers:
 Tritium (H3)
 Gamma Spec (GS)
 Strontium 90 (Sr90)
 Nickel 63 (Ni63)
 Comments:
 Note: extra sample is required for sample specific Or

TAT Requested	Normal	Rush	Specify:	(Subject to Surcharge)	Fax Results:	Yes	No	Circle Deliverable: C=Cat A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4
	<input checked="" type="checkbox"/>							

Remarks: **Are there any known hazards applicable to these samples? If so, please list the hazards**

Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time	Method of Shipment:	Date Shipped:
<i>[Signature]</i>	08/07/09	1630	SECURED STORAGE	08/07/09	1630	FEDEX	

Chain of Custody Signatures
 GEL P.M.: ERIN TRENT
 Method of Shipment: FEDEX
 Airbill #: _____
 Sample Shipping and Delivery Details
 Airbill #: _____

For Lab Packaging Use Only
 Custody Seal Point: _____
 IZSS: _____
 Coder Temp: _____

1) Chain of Custody Number - Client Determined
 2) QC Code: N = Normal Sample, TR = Trip Blank, PD = Field Duplicate, ER = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 3) Field Filtered: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered
 4) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Wastewater, MW=Mine Liquid, SD=Soil, SDP=Soil, SLS=Sludge, SWS=Soil/Water, O=Oil, P=Filter, P-W=Filter, F=Fuel, N=Nucl
 5) Sample Analysis Requested: Analytical method requested (i.e. 8201B, 6010A/7470A) and number of containers provided for each (i.e. 1/200, 3, 6/100/7470A - 1)
 6) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Acetic Acid, HV = Hexane, SF = Sodium Fluoride. If no preservative is added = leave field blank
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Page 1 of 1
 Project # Energy GW Mon Prog
 GEL Order #
 COC Number # 50013510
 PO Number: 50013510

GEL Work Order Number:

Phone #: (914) 736-8405

Fax #: (914) 734-6247

Sample Analysis Requested ^(#) (fill in the number of containers for each test)

Preservative Type (6)

Client Name: Energy
 Project Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511

Collected by: CB, MB Sent Results To: Patrick Donahue

Sample ID

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (hh:mm)	QC Code #	Field Filtered?	Sample Matrix	Radioactive	TSCA Regulated	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Comments
MW-30-69-(026)	8/6/09	1216	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-30-84-(017)	8/6/09	1238	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly

*For comparison - indicate start and stop date/time

← Preservative Type (6)
 Comments
 Note: extra sample is required for sample specific QC

FAI Requested Normal: Rush Specify: _____ (Subject to Surcharge) Fax Results Yes / No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Sample Collection Time Zone: Eastern Pacific Other _____

Mountain

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Chain of Custody Signatures

Relinquished By, (Signed)	Date	Time	Received by (Signed)	Date	Time
<i>[Signature]</i>	8/6/09	1630	Secured Storage	8/6/09	1630
			Airbill #:		
			Airbill #:		

Sample Shipping and Delivery Details

GEL P.M.:	ERIN TRENT
Method of Shipment:	FEDEX
Date Shipped:	

For Lab Retrieval Use Only

Quarant. Seal Intact? YES / NO

Cooler Temp: C

1) Chain of Custody Number - Client Determined

2) QC Codes: N= Normal Sample, TB= Trip Blank, FD= Field Duplicate, EB= Equipment Blank, MS= Matrix Spike Sample, MSD= Matrix Spike Duplicate Sample, G= Grab, C= Composite

3) Field Filtered: For field matrices, indicate with a 'Y' for yes or a field filtered on 'N' for sample was not field filtered

4) Matrix Codes: DW= Drinking Water, GW= Groundwater, SW= Surface Water, WW= Waste Water, W= Water, ML= Milk, Liquid, SO= Soil, SP= Sediment, SL= Sludge, SS= Solid Waste, O= Oil, P= Fiber, P= Paper, U= Urine, B= Fecal, N= Nail

5) Sample Analysis Requested: Analytical method requested (i.e. 8246B, 6910B, 4729) and number of containers provided for each (i.e. 2406 3, 6910B 2/2/4 - 4)

6) Preservative Type: H= Hydrochloric Acid, N= Nitric Acid, SB= Sodium Hydroxide, SA= Sulfuric Acid, AA= Acetic Acid, HV= Hexane, ST= Sodium Thiosulfate. If no preservative is added = leave field blank

WHITE = LABORATORY

YELLOW = FIELD

PINK = CLIENT

Sample ID <i>*For comparatives - indicate start and stop date/time</i>	Date Collected <i>(mm dd yy)</i>	Time Collected <i>(Military) (hhmm)</i>	QC Code or Field Filtered ⁽⁶⁾	Sample Matrix ⁽⁴⁾	Radioactive	TSCA Regulated	Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each row)				Comments <i>Note: extra sample is required for sample specific OR</i>
							Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	
MM-55-24-(011)	8/5/09	1352	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MM-55-35-(010)	8/5/09	1340	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MM-55-54-(011)	8/5/09	1325	N	GW	Y	Y	1	1	1	1	2 Liter Poly

TAT Requested: Normal Rush Specify: (Subject to sampling) Fax Results: Yes No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received By (Signed)	Date	Time
<i>Erin Trent</i>	8/5/09	1544	<i>Erin Trent</i>	8/5/09	1544

Sample Shipping and Delivery Details

GEL PM: ERIN TRENT
 Method of Shipment: FEDEX
 Date Shipped:
 Airbill #:
 Airbill #:

Sample Collection Time Zone:
 Eastern Pacific Central Other Mountain

For Lab Receiving (See Tab)
 Custody Seal Present? YES NO
 Cooler Temp?
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOPs

Page: 1 of 1
 Project #: Energy GW Mon Prog
 GEL Quote #:
 COC Number ⁽¹⁾: 50013510
 PO Number:

GEL Work Order Number:
 Phone #: (914) 736-8405
 Fax #: (914) 734-6247
 Project/Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Client Name: Energy Sample Analysis Requested ⁽²⁾ (Fill in the number of containers for each test)

Should this sample be considered:
 Radioactive: Y Tritium (H3): 1
 ISCA Registered: Y Gamma Spec (GS): 1
 Total number of containers: 1 Strontium 90 (Sr90): 1

Collected by: CB, MB Send Results To: Patrick Donahue
 Comments: None, extra sample is required for sample specific QC

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military Standard)	QC Code	Field Filtered ⁽³⁾	Sample Matrix	Radiometric	ISCA Registered	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Comments
U34D-(021)	08/05/09	1406	N	N	GW	Y	Y	1	1	1	1	2 Tier Poly

TAT Requested: Normal Rush: Specify: (Subject to Scheduling) Fax Results: Yes / No Grade Deliverable: C or A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Chain of Custody Signatures				Sample Shipping and Delivery Details			
Requested By (Signed)	Date	Time	Received By (Signed)	Date	Time	GEL PM:	Date Shipped:
<i>Erin Trent</i>	08/05/09	1600	<i>Erin Trent</i>	08/05/09	1600	ERIN TRENT	PEDEX

1) Chain of Custody Number = Client Determined
 2) QC Codes: N = Normal Sample, TR = Trip Blank, FD = Field Duplicate, FB = Field Blank, MS = Matrix Spike Sample, MNS = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 3) Field Filtered: For liquid material, indicate with a 'Y' for yes the sample was field filtered or 'N' for no (for sample was not field filtered)
 4) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, MW=Marine Liquid SO Sal, SP=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Pipe, U=Urine, F=Food, N=Nose
 5) Sample Analysis Requested: Analytical method requested (e.g. 8268B, 6010B, 7470) and number of containers provided for each (i.e. 4268B 3, 6010B 7, 7470 1)
 6) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sulfuric Acid, AA = Acetic Acid, RX = Benzene, ST = Sodium Thiosulfate. If no preservative is added = leave field blank
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

Client Name: **Energy** Phone #: (914) 736-6405
 Project Site Name: **Indian Point Energy Center** Fax #: (914) 734-6247
 Address: **450 Broadway, Suite 3, Buchanan, NY 10511**

Collected by: **J.P. M13** Sent Results To: **Patrick Donahue**
 For comparison - only use when not comparing data

Sample ID	Date Collected (mm-dd-yy)	Time Collected (M:MM:SS)	QC Code ID	Field Filtered?	Sample Integrity	Radionuclide	TSCA Regulated	Total number of containers				Comments
								Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr-90)	Nickel 63 (Ni63)	
MW-54-37-(010)	8/4/09	1435	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-54-58-(010)	8/4/09	1430	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-54-173-(010)	8/4/09	1410	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-54-144-(010)	8/4/09	1110	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-54-173-(010)	8/4/09	1115	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-54-190-(010)	8/4/09	1120	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly

Level Requested: **Normal** **Resur** **Specify** **Subject to sampling** **Pass Results** **Yes** **No** **Circle Deliverable** **Level 1** / **Level 2** / **Level 3** / **Level 4**
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Requested By (signed)	Date	Type	Received by (signed)	Date	Time
<i>[Signature]</i>	8/4/09	1705	<i>[Signature]</i>	8/4/09	1705

Chain of Custody Signatures
 GEL POC: **ERIN TRENT**
 Method of Shipment: **FEDEX**
 Date Shipped:
 Airbill #:
Sample Shipping and Delivery Details
 Sample Collection Time Zone: **Eastern** / **Pacific** / **Central** / **Mountain**
 For Lab Review Use Only
 Custody Seal Intact? **YES**
 Cooler Temp. **NO**

2) OC/Cables N: Normal Sample; TB: Top Blank; ED: Field Duplicate; EB: Equipment Blank; MS: Matrix Spike Sample; MSD: Matrix Spike Duplicate; Sample: Co: Grab; C = Composite
 3) Field Filtered: If liquid samples, indicate with a Y - If no, the sample was not filtered as N - If sample was not field filtered
 4) Matrix: Coded DW: Drinking Water; GW: Groundwater; SW: Surface Water; WW: Waste Water; W: Water; M: Make Liquid; RO: Sol; SP: Sediment; SL: Sludge; SR: Sol; W: Water; O: Oil; P: Filter; P: Filter; F: Feed; N: New
 5) Sample Analysis Requested: A: Aqueous; B: Bivalent; C: Cation; D: Divalent; E: Elemental; F: Fluoride; G: Gas; H: Heavy Metals; I: Inorganic; J: Organic; K: Organic; L: Organic; M: Organic; N: Organic; O: Oil; P: Filter; Q: Oil; R: Filter; S: Filter; T: Filter; U: Filter; V: Filter; W: Filter; X: Filter; Y: Filter
 6) Preservative Type: HA: Hydrochloric Acid; NI: Nitric Acid; SU: Sulfuric Acid; AS: Acetic Acid; HA: Hydrochloric Acid; NI: Nitric Acid; SU: Sulfuric Acid; AS: Acetic Acid
WHITE = LABORATORY
YELLOW = FILE
PINK = CLIENT

GEL Chain of Custody and Analytical Request

Project #: Energy GW Mon Prog of 1 of 1
 GEL Contact #: 50013510
 PO Number: 50013510
 Client Name: Energy
 Project Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511
 Contacted by: CB, MB
 Sample ID: Sample ID
 Collected by: Patrick Donahue
 *Note: Sample ID - indicate start and stop date time

Phone #: (914) 736-8405
 Fax #: (914) 734-6247
 Sample Analysis Requested ⁽⁵⁾ (H) in the number of containers for each test

Should this sample be considered:
 Radioactive: Y
 TSCA Regulated: Y
 Total number of containers:
 Tritium (H3): 1
 Gamma Spec (GS): 1
 Strontium 90 (Sr90): 1

Sample ID	* Date Collected (mm-dd-yy)	* Time Collected (Military) (hh:mm)	QC Code	Field Filtered	Sample Matrix	Radioactive	TSCA Regulated	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Preservative Type (5)	Comments
MW-36-24 (015)	08/04/09	1609	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly
MW-36-41 (009)	08/04/09	1429	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly
MW-36-52 (014)	08/04/09	1202	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly

FAI Reference Number	Rank	Specify	(Subject to Signature)	Test Results	Yes	No	Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Chain of Custody Signatories	Received by (Signature)	Date	Time	Method of Shipment	Date Shipped
1. <u>Erin Trent</u>	<u>Erin Trent</u>	8/4/09	1700	FEDEX	
2. <u>Patrick Donahue</u>	<u>Patrick Donahue</u>	8/4/09	1700		
3. <u>Airbill #</u>	<u>Airbill #</u>				

Sample Shipping and Delivery Details
 Sample Collection Time Zone: Eastern
 For Lab Receiving Use Only
 Oxydry Seal Intact? YES
 Cooler Temp: NO

1.1 Unit - Client/Worker - Client Laboratory
 2.1 QC Codes - N = No Sample, DR = Trip Data, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 4.1 Field Protocol - See Field manual, include with A - for a field sample was field filtered or N - for sample was not field filtered
 4.2 Matrix Spike (MS) - Where GW - Groundwater, SW - Surface Water, WW - Wastewater, MW - Marine, ML - Mill, SL - Solid, SS - Solid Waste, O - Oil, F - Fiber, P - Waste, H - Vapor, F - Fuel, N - Noise
 5.1 Sample Analysis Request - Analytical method requested (i.e. MS08, 6010B, 7170) and number of containers provided for each (i.e. 63608, 3, 6910B, 770, 1)
 6.1 Preservation Type - HW - Hydrochloric Acid, HCl - Hydrochloric Acid, SA - Sulfuric Acid, AA - Acetic Acid, HW - Heavy, ST - Sodium Thiosulfate, If no preservative is added - leave field blank
 WHITE = LABORATORY
 YELLOW = FILE
 PINK = CLIENT

GEL Chain of Custody and Analytical Request

Page: 1 of 1
 Project #: **Energy GW Mon Prog**
 GEL Order #: **50013510**
 PO Number: **50013510**

GEL Work Order Number:

See www.gel.com for GEL's Sample Acceptance SOP

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Client Name: **Entergy** Phone #: **(914) 736-8405** Sample Analysis Requested ⁽⁹⁾ (Fill in the number of containers for each test)

Project/Site Name: **Indian Point Energy Center** Tax #: **(914) 734-6247**

Address: **450 Broadway, Suite 3, Buchanan, NY 10511**

Collected by: **CB, MB** Sent Results To: **Patrick Donahue**

Sample ID <small>- For containers - indicate start and stop date/time</small>	Time Collected (mm-dd-yy)	Time (hh:mm)	QC Code (1)	Field Filtered (2)	Sample Matrix (3)	Radioactive	TSCA Required	Total number of containers			Comments <small>Note: extra sample is required for sample specific QC</small>
								Tritium (13)	Gamma Spec (GS)	Strontium 90 (Sr90)	
MM-32-59-(011)	03/03/09	1504	N	N	GW	Y	Y	1	1	1	2 Liter Poly
MM-32-85-(014)	03/03/09	1520	N	N	GW	Y	Y	1	1	1	2 Liter Poly
MM-32-149-(012)	03/03/09	1243	N	N	GW	Y	Y	1	1	1	2 Liter Poly
MM-32-173-(010)	03/03/09	1237	N	N	GW	Y	Y	1	1	1	2 Liter Poly
MM-32-190-(013)	03/03/09	1245	N	N	GW	Y	Y	1	1	1	2 Liter Poly

Remarks: **Are there any known hazards applicable to these samples? If so, please list the hazards**

AT Requested: Normal Rush Specific (subject to charges) Yes No Circle Detachable: C of A / GC Summary / Level 1 / Level 2 / Level 3 / Level 4

Sample Collection Time Zone: Eastern Pacific Other _____

Chain of Custody Signatures

Relinquished by (signed)	Date	Time	Received by (signed)	Date	Time
<i>Carl Burgis</i>	8/3/09	1610	SECURED STORAGE	8/3/09	1610

Sample Shipping and Delivery Details

GEL PM: **ERIN TRENT** Method of Shipment: **FEDEX** Date Shipped: _____

Airbill #: _____

For Lab Receiving Use Only

Custody Seal Intact? **YES**

Cooler Temp: **C**

- 11 Chain of Custody Number: **Client Determined**
- 2) QC Codes: N - Normal Sample; TB - Trip Blank; ED - Field Duplicate; EB - Equipment Blank; MS - Matrix Spike Sample; MS2 - Matrix Spike Duplicate Sample; G - Grav; C - Composite
- 3) Field Filtered: F - liquid matrix; indicate with a Y - for yes the sample was field filtered or N - for no the sample was not field filtered
- 4) Matrix Codes: DW - Drinking Water; GW - Groundwater; SW - Surface Water; WW - Wastewater; ML - Mill/Liquid; SD - Solid; SS - Solid Waste; O - Oil; P - Filter; W - Filter; L - Filter; N - None
- 5) Sample Analysis Requested: Analytical method requested (ie: 8160B, 6010B, 7900) and number of containers provided for each (ie: 2, 2000, 1, 6010B/7900 - 1)
- 6) Boxes per Type: HA - High-purity Acid; NI - Nitric Acid; SH - Sodium Hydroxide; SA - Sulfuric Acid; AA - Acetic Acid; BK - Hexane; ST - Sodium Thiosulfate; If no preservative is added - leave field blank
- WHITE = LABORATORY YELLOW = FILE PINK = CLIENT**

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

GEL Laboratories, LLC
 2940 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Client Name: Entergy Phone #: (914) 736-8405
 Project/Site Name: Indian Point Energy Center Fax #: (914) 734-6247
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511

Collected by: CB, MB Sent Results To: Patrick Donahue
 Sample ID: MW-43-28-(012) Collected (mm-dd-yy): 01/31/09 Prime (Military) (hh:mm): 1310 QC Code: N Field Filtered (Y/N): N Sample Matrix: GW
 MW-43-62-(012) Collected (mm-dd-yy): 07/31/08 Prime (Military) (hh:mm): 1252 QC Code: N Field Filtered (Y/N): N Sample Matrix: GW

Sample ID	Date Collected (mm-dd-yy)	Prime (Military) (hh:mm)	QC Code	Field Filtered (Y/N)	Sample Matrix	Radiative	TSCA Regulated	Total number of containers				Comments Note: extra sample is required for sample specific CR
								Tritium (H3)	Gamma Spec (CS)	Strontium 90 (Sr90)		
MW-43-28-(012)	01/31/09	1310	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-43-62-(012)	07/31/08	1252	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly

TAT Requested: Normal Rush: Specific: (Subject to Surcharge) Fax Results: Yes / No
 Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
 Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4
 Sample Collection Time Zone: Eastern Pacific Other
 Mountain

Chain of Custody Signatures				Sample Shipping and Delivery Details			
Requisitioned By (Signed)	Date	Time	Received by (Signed)	Date	Time	GEL PM	ERIN TRENT
<i>[Signature]</i>	7/31/09	1345	<i>[Signature]</i>	7/2/09	1345	Method of Shipment	FEDEX
						Airbill #:	

- 1) Chain of Custody Number - Client Determined
 - 2) QC Order - No - Normal Sample - TB - Trip Blank - PD - Field Duplicate - FB - Equipment Blank - MS - Water Spike Sample - MD - Minor Spike - Duplicate Sample - G - Grab - C - Composite
 - 3) Field Filtered - For liquid matrices, indicate with a Y - for not the sample was field filtered on X - for sample was not field filtered
 - 4) Matrix Codes - DW - Drinking Water - GW - Groundwater - SW - Surface Water - WW - Waste Water - W - Water - BL - Misc. Liquid - SCS - Soil - Sediment - SL - Sludge - SS - Solid Waste - O - Oil - F - Filter - P - Wipe - U - Urine - P - Fuel - N - Nod
 - 5) Sample Analysis Requested - Analytical method requested (ie. 8260B, 801.0B/479B) and number of containers provided for each (ie. 8260B x 60/100/200 - 1)
 - 6) Preservative Type - HA - Hydrochloric Acid - NA - Nitric Acid - SH - Sodium Hydroxide - SA - Sulfuric Acid - AA - Acetic Acid - HX - Hexane - ST - Sodium Thiosulfate - If no preservative is added - leave field blank
- WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page 1 of 1
 Project: **Energy GW Mon Prog**
 GEL Order #: **50013510**
 PO Number: **50013510**
 Client Name: **Energy**
 Project Site Name: **Indian Point Energy Center**
 Address: **450 Broadway, Suite 3, Buchanan, NY 10511**
 Phone #: **(914) 736-8405**
 Fax #: **(914) 734-6247**
 GEL Order Number: **50013510**
 GEL Work Order Number:
 GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 769-1178

Collected by: **CB, MB** Sent Results To: **Patrick Donahue**
 Sample ID: **1420**
 *For empty, make sure and stop here!
 MW-63-18-(010) 7/30/09 1420 N N GW Y Y 1 1 1 1
 MW-63-34-(010) 7/30/09 1400 N N GW Y Y 1 1 1 1
 MW-63-50-(010) 07/30/09 1105 N N GW Y Y 1 1 1 1
 MW-63-93-(011) 07/30/09 1130 N N GW Y Y 1 1 1 1
 MW-63-112-(010) 7/30/09 1354 N N GW Y Y 1 1 1 1
 MW-63-121-(010) 7/30/09 1403 N N GW Y Y 1 1 1 1
 MW-63-163-(010) 7/30/09 1345 N N GW Y Y 1 1 1 1
 MW-63-174-(010) 7/30/09 1305 N N GW Y Y 1 1 1 1

Remarks: **Are there any known hazards applicable to these samples? If so, please list the hazards**
 Chain of Custody Signatures
 Relinquished By (signed): _____ Date: _____ Time: _____
 Received by (signed): _____ Date: _____ Time: _____
 Method of Shipment: **FEDEX**
 Date Shipped: _____
 Airbill #: _____
 Airbill #:

Sample Analysis Requested (9) (fill in the number of containers for each test)
 Tritium (H3) Gamma Spec (GS) Strontium 90 (Sr90)
 Total number of containers: 1 1 1
 Comments: **Note: extra sample is required for sample specific QC**

Sample Collection Time Zone: **Eastern**
 For Lab Receiving Use Only
 Custody Seal Intact? **YES**
 Cooler Temp: _____

1. Chain of Custody Number - Client Documented
 2. GEL Codes: N - Non-hazardous Sample, EB - Trip Blank, MB - Field Duplicate, EB - Equipment Blank, MSB - Matrix Spike Sample, MSB - Matrix Spike Duplicate Sample, G - Grab, C - Composite
 3. Field Filtered - For liquid samples, indicate with a Y - if yes the sample was field filtered or N - for sample was not field filtered
 4. Matrix Codes: DM - Drinking Water, GW - Groundwater, SW - Surface Water, WW - Wastewater, ML - Mixed Liquid, SD - Storage, SS - Solid Waste, O - Oil, F - Filter, T - Turbidity, P - Preservative Added, N - None
 5. Sample Analysis Requested - Analytical method requested (i.e. #500R, #600R, #700R) number of containers provided for each (i.e. #500S, 3, #600P, #700P, 1)
 6. Preservative Type: HA - Hydrochloric Acid, NI - Nitric Acid, SH - Sodium Hydroxide, SA - Sulfuric Acid, AA - Acetic Acid, HV - Hexane, ST - Sodium Thiosulfate. If no preservative is added - leave field blank
WHITE = LABORATORY YELLOW = FIELD PINK = CLIENT

Client Name: **Energy** Phone #: **(914) 736-8405**
 Project Site Name: **Indian Point Energy Center** Fax #: **(914) 734-6247**
 Address: **450 Broadway, Suite 3, Buchanan, NY 10511**

Collected by: **C.B. M.B.** Sent Results To: **Patrick Donahue**
 Sample Analysis Requested (9) (Fill in the number of containers for each test)

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military (hours))	QC Code or Filtered (N)	Field Filtered (N)	Sample Matrix (N)	Should this sample be considered:		Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Preservative Type (9)	Comments Note: extra sample is required for sample specific QC
						Radiactive	TSCA Regulated						
MW-44-66-(013)	7/29/09	1256	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly
MW-44-102-(014)	7/29/09	1258	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly

Remarks: **Are there any known hazards applicable to these samples? If so, please list the hazards**
 Circle Detractable C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Requested By: **ERIN TRENT** Date: **7/29/09** Time: **1530**
 Received by (initials): **ERIN TRENT** Date: **7/29/09** Time: **1530**
 Method of Shipment: **FEDDEX** Date Shipped: **7/29/09**
 Airbill #: **Airbill #:**
 Airbill #: **Airbill #:**

Chain of Custody Signatures

Sample Shipping and Delivery Details

GEL P.M.: **ERIN TRENT**
 Method of Shipment: **FEDDEX**
 Date Shipped: **7/29/09**

For Lab Receiving Use Only

Charity Seal intact? **YES**
 Cooler Temp. **C**

GEL Chain of Custody and Analytical Request

** See www.gel.com for GEL's Sample Acceptance SOPs **

Page: 1 of 1
 Project # Energy GW Mon Prog
 GEL Quote # 15
 COC Number 15
 PO Number: 50013510

GEL Work Order Number:

GEL Laboratories, LLC
 2940 Savage Road
 Charleston, SC 29407
 Phone: (843) 555-8171
 Fax: (843) 786-1178

Client Name: Energy Phone #: (914) 736-8405
 Project/Site Name: Indian Point Energy Center Fax #: (914) 734-6247
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511

Collected by: CB, MB Send Results To: Patrick Donahue

Sample ID	Date Collected (mm-dd-yy)	Time Collected (hh:mm)	QC Code as Filed	Field Filtered (9)	Sample Matrix (6)	Radioactive	TSCA Regulated	Should this sample be considered:	Sample Analysis Requested (9) (Fill in the number of containers for each test)			Preservative Type (5)	Comments Note: extra sample is required for sample specific QC		
									Total number of containers	Tritium (H3)	Gamma Spec (GS)			Strontium 90 (Sr90)	
MW-44-66-(013)	7/29/09	12:56	N	N	GW	Y	Y		1	1	1		2 Liter Poly		
MW-44-102-(014)	7/29/09	1:28	N	N	GW	Y	Y		1	1	1		2 Liter Poly		

TAT Requested: Normal Rush: Specify: _____ (Subject to Surcharges) Pass Results: Yes No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Chain of Custody Signatures				Sample Shipping and Delivery Details			
Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time	GEL PM:	ERIN TRENT
<i>[Signature]</i>	7/29/09	15:30	SECURED STORAGE	7/29/09	15:30	Method of Shipment:	FEDEX
						Airbill #:	
						Date Shipped:	

1) Chain of Custody Number = Client Determined
 2) QC Codes: N - Normal Sample, TB - Top Blank, BP - Field Duplicate, EB - Equipment Blank, MS - Matrix Spike Sample, MSP - Matrix Spike Duplicate Sample, G - Grab, C - Composite
 3) Field Spouse: For liquid matrices, indicate with a 'V' for the sample was field filtered or 'N' for sample was not field filtered.
 4) Matrix Codes: DM - Drinking Water, CM - Groundwater, SW - Surface Water, WW - Waste Water, W - Water, ML - Milk, LQ - Soda, SD - Sediment, SL - Sludge, SS - Solid Waste, O - Oil, P - Filter, P - White, L - Liqueur, F - Food, N - Nails
 5) Sample Analysis Requested: Analytical method requested if a 8760B, 6010B or 4700 number of containers provided for each (ie. d-90B, J, 6676B, 7476A - 1)
 6) Preservative Type: HA - Hydrochloric Acid, NI - Nitric Acid, SH - Sodium Hydroxide, SA - Sulfuric Acid, AA - Acetic Acid, BK - Boric Acid, ST - Sodium Thiosulfate. If no preservative is added = None (solid State)
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Product: **Energy GW Mon Prog**
 GEL Order #: **50013510**
 PO Number: **50013510**

GEL Work Order Number: **50013510**

GEL Laboratories, LLC
 2140 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Client Name: **Energy** Phone #: **(914) 736-8405**

Sample Analysis Requested (9) (Fill in the number of containers for each test)

Project/Site Name: **Indian Point Energy Center** Fax #: **(914) 734-6247**

Address: **450 Broadway, Suite 3, Buchanan, NY 10511**

Collected by: **Send Results To: Patrick Donahue**

Should this sample be considered:
 Radiative: TSCA Regulated:

Sample ID: **7128109** Date Collected (mm-dd-yy): **1-11-13**

Total number of containers:
 Tritium (H3): Gamma Spec (GS): Strontium 90 (Sr90): Nickel 63 (Ni63):

QC Code: **1410** Field Filtration: **N** Sample Matrix: **GW**

Comments: **Note: extra sample is required for sample specific QC**

Remarks: **For comparison - indicate error and any difference**

Preservative Type (6): **2 Liter Poly**

Requested	Normal	✓	Rush	Speedy	(Subject to Surcharge)	Fax Results	Yes	No	Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4	Sample Collection Time Zone	Eastern	Pacific	Other
1	1												
2	2												
3	3												

Remarks: **Are there any known hazards applicable to these samples? If so, please list the hazards**

Requested By (Signed)	Date	Time	Received by (Signed)	Date	Time
<i>Erin Trent</i>	1/11/13	10:50	<i>Erin Trent</i>	1/11/13	10:50

Chain of Custody Signatures: **GEL PM: ERIN TRENT** Method of Shipment: **FEDEX** Date Shipped: **1/11/13**

Sample Shipping and Delivery Details: **Method of Shipment: FEDEX** **Date Shipped: 1/11/13**

1) Chain of Custody Number - Client Determined
 2) QC Codes: N - Normal Sample, TB - Trip Blank, SD - Field Duplicate, EB - Equipment Blank, MS - Matrix Spike Sample, MSIP - Matrix Spike Duplicate Sample, G - Grab, C - Composite
 3) Field Labels: For radiometric samples, use R with a Y - for yes the sample was field filtered or N - for sample was not field filtered
 4) Matrix Codes: DW - Drinking Water, GW - Groundwater, SW - Surface Water, MW - Waste Water, ML - Mixed Liquid, SD - Soil, SS - Solid Waste, O-GU - Petroleum, P-W-PC - Petroleum, N - Natural
 5) Sample Analysis Requested: Analytical method requested (e.g. 8350B, 6010B/7170B) and number of containers provided for each (e.g. 3/60B - 3, 6010B/7170B - 1)
 6) Preservative Type: BA - Hydrochloric Acid, HI - Nitric Acid, SH - Sodium Hydroxide, SA - Sulfuric Acid, AA - Acetic Acid, AX - Hexane, ST - Sodium Thiosulfate. (If no preservative is added, leave field blank)
WHITE = LABORATORY **YELLOW = FILE** **PINK = CLIENT**

GEL Chain of Custody and Analytical Request

** See www.gel.com for GEL's Sample Acceptance SOP **

Page: 1 of 1
 Project #: Energy GW Mon Prog
 GEL Quote #: 50013610
 PO Number: 50013610
 GEL Work Order Number:
 Phone #: (914) 735-8405
 FAX #: (914) 734-6247
 Project Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10611
 Collected by: CB, MB
 Sent Results To: Patrick Donahue
 Sample ID: MW-67-30-(010)
 MW-67-105-(009)
 MW-67-173-(010)
 MW-67-219-(009)
 MW-67-276-(009)
 MW-67-323-(009)
 MW-67-440-(009)
 Date Collected: 7/28/09
 Time Collected (hh:mm): 15:09
 QC Code: N
 Field Filtered: N
 Sample Matrix: GW
 Radiometric: Y
 TSCA Regulated: Y
 Total number of containers: 1
 Tritium (H3): 1
 Gamma Spec (GS): 1
 Strontium 90 (Sr90): 1
 Nickel 63 (Ni63): 1
 Comments: Note: extra sample is required for sample specific OC
 Preservative Type (6):
 GEL Laboratories, LLC
 2940 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Sample ID	Date Collected (mm-dd-yy)	Time Collected (hh:mm)	QC Code	Field Filtered	Sample Matrix	Radiometric	TSCA Regulated	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Nickel 63 (Ni63)	Comments
MW-67-30-(010)	7/28/09	15:09	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-67-105-(009)	7/28/09	15:24	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-67-173-(010)	7/28/09	11:11	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-67-219-(009)	07/28/09	11:14	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-67-276-(009)	07/28/09	11:25	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly
MW-67-323-(009)	07/28/09	11:20	N	N	GW	Y	Y	1	1	1	1	1	2 Liter Poly

TAI Requested: Normal Rush: Specific: (Subject to Storage) Fax Results: Yes No Circle Deliverable: C of A / OC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time	Method of Shipment	Airbill #	Date Shipped
Erin Trent	7/28/09	15:09	FedEx					

Chain of Custody Signatures
 Sample Shipping and Delivery Details
 GEL PM: ERIN TRENT
 Method of Shipment: FEDEX
 Airbill #:
 Date Shipped:
 For Lab Receiving Use Only
 Custody Seal Intact? YES
 Cooler Temp: C

1) If the following number is then determined:
 2) OK - Codes: N - Normal Sample, IB - Trip Blank, PD - Field Duplicate, EB - Equipment Blank, MS - Matrix Spike Sample, MSD - Matrix Spike Duplicate Sample, G - Grab, C - Composite
 3) Field Blank - The liquid in the container indicates with a 'Y' - the gas filter sample was field filtered or 'N' - the sample was not field filtered
 4) Matrix Spike - HW - Drinking Water, GW - Groundwater, SW - Surface Water, WW - Wastewater, MW - Meteoric Water, ML - Meteoric Liquid, SO - Soil, SD - Sediment, SL - Sludge, SS - Solid Waste, O - Oil, F - Filter, P - Waste, B - Bottle, W - Wash
 5) Sample Analysis Requested - Analytical method requested (i.e. 8240B, 6010B, 7270) and number of containers provided for each (i.e. 6260B, 3, 6010B, 7, 70L, 1)
 6) Preservative Type: HA - Hydrochloric Acid, NI - Nitric Acid, SH - Sulfuric Acid, AS - Ascorbic Acid, AA - Acetic Acid, HCL - Hydrochloric Acid, NI - Nitric Acid, SH - Sulfuric Acid, AS - Ascorbic Acid, AA - Acetic Acid
 WHITE = LABORATORY
 YELLOW = FILE
 PINK = CLIENT

NRC FORM 303 (4-2004)		U.S. NUCLEAR REGULATORY COMMISSION		LABORATORY USE ONLY	
REQUEST FOR ANALYSIS AND CHAIN OF CUSTODY				CONTROL NUMBER	
LABORATORY: _____				LICENSEE NUMBER	
SAMPLE LOCATION (LICENSEE) INDIAN POINT ENERGY CENTER				DOCKET NO.	
SAMPLE SUBMITTED					
# TOTAL	TYPE	VOLUME	WEIGHT	DATE SAMPLES SUBMITTED	PRIORITY
1	GROUND WATER	2000 ML	~ 2 Kg		<input type="checkbox"/> ROUTINE <input type="checkbox"/> URGENT
SAMPLE COLLECTION INTERVAL					
				START	MONTH
				DAY	YEAR
				STOP	TIME
INSPECTOR RESPONSIBLE Jim Noggle (USNRC)			TELEPHONE NUMBER (610) 337-5063		
ANALYSIS TO BE PERFORMED		LIST DESIRED LLD (Optional)	OTHER TYPE OF ANALYSIS (Specify)		LIST DESIRED LLD (Optional)
<input type="checkbox"/> GROSS ALPHA (GA)			<input checked="" type="checkbox"/> STRONTIUM-90 (Sr90)		
<input type="checkbox"/> GROSS BETA (GB)			<input checked="" type="checkbox"/> NICKEL-63 (Ni63)		
<input checked="" type="checkbox"/> GAMMA SPEC (GS)			<input type="checkbox"/>		
<input checked="" type="checkbox"/> TRITIUM (H3)			<input type="checkbox"/>		
<input type="checkbox"/> CARBON-14 (C14)			<input type="checkbox"/>		
<input type="checkbox"/> IODINE-125 (I125)			<input type="checkbox"/>		
RELENSHISHED BY	RECEIVED BY	DATE	TIME	REASON FOR CHANGE OF CUSTODY	
<i>Clay B...</i>	<i>SECURED STORAGE</i>	<i>7/26/09</i>	<i>1650</i>		
FEE RECOVERABLE <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES TAC NUMBER _____					
REMARKS:					
NOTE: SAMPLES WILL BE DISCARDED AFTER ANALYSIS UNLESS REASON ARE NOTED IN REMARKS ABOVE.					

NRC FORM 303 (4-2004)		U.S. NUCLEAR REGULATORY COMMISSION		
REQUEST FOR ANALYSIS AND CHAIN OF CUSTODY		LABORATORY USE ONLY		
LABORATORY: _____		CONTROL NUMBER _____		
SAMPLE LOCATION (LICENSEE) INDIAN POINT ENERGY CENTER		LICENSEE NUMBER _____	DOCKET NO. _____	
SAMPLE SUBMITTED		DATE SAMPLES SUBMITTED _____		
# TOTAL	TYPE	VOLUME	WEIGHT	
1	GROUND WATER	2000 ML	~ 2 Kg	
		PRIORITY <input type="checkbox"/> ROUTINE <input type="checkbox"/> URGENT		
		SAMPLE COLLECTION INTERVAL		
		START	STOP	
		MONTH	DAY	
		YEAR	TIME	
INSPECTOR RESPONSIBLE Jim Noggle (USNRC)		TELEPHONE NUMBER (610) 337-5063		
ANALYSIS TO BE PERFORMED	LIST DESIRED LLD (Optional)	OTHER TYPE OF ANALYSIS (Specify)	LIST DESIRED LLD (Optional)	
<input type="checkbox"/> GROSS ALPHA (GA)		<input checked="" type="checkbox"/> STRONTIUM-90 (Sr90)		
<input type="checkbox"/> GROSS BETA (GB)		<input checked="" type="checkbox"/> NICKEL-63 (Ni63)		
<input checked="" type="checkbox"/> GAMMA SPEC (GS)		<input type="checkbox"/>		
<input checked="" type="checkbox"/> TRITIUM (H3)		<input type="checkbox"/>		
<input type="checkbox"/> CARBON-14 (C14)		<input type="checkbox"/>		
<input type="checkbox"/> IODINE-125 (I125)		<input type="checkbox"/>		
RELENSHISHED BY	RECEIVED BY	DATE	TIME	REASON FOR CHANGE OF CUSTODY
[Signature]	[Signature]	7/28/09	1650	
FEE RECOVERABLE <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES				
TAC NUMBER _____				
REMARKS:				
[Blank space for remarks]				
NOTE: SAMPLES WILL BE DISCARDED AFTER ANALYSIS UNLESS REASON ARE NOTED IN REMARKS ABOVE.				

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page: 1 of 1
 Project # Entergy GW Mon Prog
 GEL Order #
 CofC Number: 50013510
 PO Number: 50013510
 Client Name: Entergy Phone #: (914) 736-8405
 Project/Site Name: Indian Point Energy Center Fax #: (914) 734-8247
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511
 GEL Work Order Number:
 GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Sample Analysis Requested ⁽⁹⁾ (Fill in the number of containers for each test)

Should this sample be considered:	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Preservative Type (6)	Comments
Radioactive						Note: extra sample is required for sample specific QC
TSCA Regulated						

Collected by: CB/W/E Send Results To: Patrick Donahue

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (hh:mm)	QC Code	Pickup Method	Sample Matrix	Radioactive	TSCA Regulated	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Preservative Type (6)	Comments
MW-41-40-(013)	7/24/01	1533	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly
MW-41-03-(012)	7/24/01	1413	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly

TA1 Requested: Normal Rush Specify: _____ (Subject to exchange) Fax Results: Yes / No

Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Requested By (signature)	Date	Time	Received by (signature)	Date	Time

Chain of Custody Signatures

GEL PM: ERIN TRENT Date Shipped: _____

Method of Shipment: FEDEX

Airbill #: _____

Sample Shipping and Delivery Details

Sample Collection Time Zone: Eastern / Pacific / Other _____

Mountain

For Lab Receiving Use Only

Custody Seal Intact? YES / NO

Cooler Temp: _____ C

1) Chain of Custody Number - Green Determined
 2) QC Codes: N - Normal Sample, TB - Trip Blank, FD - Field Duplicate, EB - Equipment Blank, MS - Matrix Spike Sample, MSD - Matrix Spike Duplicate Sample, G - Grab, C - Composite
 3) Field Protocol: For liquid samples, indicate with a Y - for yes the sample was field filtered or N - for no sample was not field filtered.
 4) Matrix Codes: E=Env. Sampling, W=Water, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc. Liquid, S=Soil, SS=Sediment, SL=Sludge, SW=Solid Waste, O=Oil, F=Filter, P=Pipe, PE=Percol, X=None
 5) Sample Analysis Requested: Analytical method requested (e.g. 8260B, 8090B, 7090A, etc.)
 6) Preservative Type: HA - Hydrochloric Acid, NA - None, AA - Acetic Acid, AS - Ascorbic Acid, AX - Ascorbic Acid, SA - Sodium Thiosulfate, ST - Sodium Thiosulfate, If no preservative is added = leave field blank
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page: 1 of 1
 Project # Energy GW Mon Prog
 GEL Order # _____
 GEL Work Order Number: 50013510
 Client Name: Energy
 Project Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511
 Phone #: (914) 736-8405
 Fax #: (914) 734-6247
 GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Sample Analysis Requested (8) (fill in the number of containers for each test)

Sample ID	Date Collected (mm-dd-yy)	Time Collected (M:PM)	QC Code	Field Filled (Y/N)	Sample Matrix (6)	Radiation	TSCA Regulated	Total number of containers				Comments
								Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Preservative Type (6)	
MW-45-42-(017)	7/24/09	1430	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-45-61-(017)	7/24/09	1150	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly

Collected by: CS/MB Sent Results To: Patrick Donahue
 *For composite, indicate start and stop date/time.
 *Use Collected (mm-dd-yy) *Time Collected (M:PM)

1.1 Chain of Custody - Client Personnel
 2.1 QC Codes N - Normal Sample; TR - Trip Blank; FD - Field Duplicate; EB - Equipment Blank; MS - Matrix Spike Sample; MSO - Matrix Spike Duplicate Sample; GC - Grab; C - Composite
 4.1 Method Used: For liquid matrices, indicate with a Y - for yes the sample was field filtered or N - for sample was not field filtered
 4.1 Matrix Codes: DW - Drinking Water; GW - Groundwater; SW - Surface Water; WW - Waste Water; W - Water; ML - Milk Liquid; SD - Solid; SS - Sludge; SG - Solid Waste; O - Oil; P - Paper; E - Electronic; F - Food; W - Wood
 5.1 Sample Analysis Requested: Analytical method requested (i.e. SWAB, GB1887/30) name number of containers, provided for each (i.e. SWAB 3, GB1887/30 - 1)
 6.1 Preservative Type: HA - Hydrochloric Acid; NI - Nitric Acid; SB - Sodium Hydroxide; SA - Sulfuric Acid; AA - Acetic Acid; HX - Hexane; ST - Sodium Thiosulfate. If no preservative is added - leave field blank
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*
 JAV Requested: Normal Rush Specialty (Subject to Surcharges) Fax Results: Yes No
 Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4
 Sample Collection Time Zone: Eastern / Pacific / Other _____
 Mountain
 Chain of Custody Signatures
 Requested By (Signed) Date Time Received By (Signed) Date Time
Erin Trent 7/24/09 1540 Erin Trent 7/24/09 1540
 Method of Shipment: FIDEX Date Shipped: _____
 Airbill #: _____
 Sample Shipping and Delivery Details
 For Lab Receiving Use Only
 Custody Seal intact? YES
 Cooler Temp C

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page 1 of 1
 Project # **Energy GW Mon Prog**
 GEL Number: **50013510**
 GEL Work Order Number:
 Client Name: **Energy** Phone # (914) 736-9405
 Project Site Name: **Indian Point Energy Center** Fax #: (914) 734-6247
 Address: **450 Broadway, Suite 3, Buchanan, NY 10511**
 Collected by: **Send Results To: Patrick Donahue**
 Sample Analysis Requested (in the number of containers for each test)

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (hh:mm)	QC Code	Field Filtered to Match**	Sample	Radioactive	TSCA Regulated	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Preservative Type (6)	Comments
NW-37-22-(015)	07/23/04	1443	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly
NW-37-22-(015)	07/23/04	1416	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly
NW-37-57-(015)	07/23/04	1512	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly

Remarks: **Are there any known hazards applicable to these samples? If so, please list the hazards**
 Chain of Custody Signatures
 Prepared By: **[Signature]** Date: **7/23/04** Time: **1:58 PM**
 Received by: **[Signature]** Date: **7/23/04** Time: **12:45 PM**
 Method of Shipment: **FEDEX** Date Shipped:
 Airbill #: **Amhill A.**

Sample Collection Time Zone: Eastern / Pacific / Other
 Sample Collection Time Zone: Eastern / Pacific / Other
 Sample Collection Time Zone: Eastern / Pacific / Other
 Sample Collection Time Zone: Eastern / Pacific / Other

1) Groundwater Sample - Tap Water
 2) Groundwater Sample - Tap Water
 3) Groundwater Sample - Tap Water
 4) Groundwater Sample - Tap Water
 5) Groundwater Sample - Tap Water
 6) Groundwater Sample - Tap Water
 7) Groundwater Sample - Tap Water
 8) Groundwater Sample - Tap Water
 9) Groundwater Sample - Tap Water
 10) Groundwater Sample - Tap Water
 11) Groundwater Sample - Tap Water
 12) Groundwater Sample - Tap Water
 13) Groundwater Sample - Tap Water
 14) Groundwater Sample - Tap Water
 15) Groundwater Sample - Tap Water
 16) Groundwater Sample - Tap Water
 17) Groundwater Sample - Tap Water
 18) Groundwater Sample - Tap Water
 19) Groundwater Sample - Tap Water
 20) Groundwater Sample - Tap Water
 21) Groundwater Sample - Tap Water
 22) Groundwater Sample - Tap Water
 23) Groundwater Sample - Tap Water
 24) Groundwater Sample - Tap Water
 25) Groundwater Sample - Tap Water
 26) Groundwater Sample - Tap Water
 27) Groundwater Sample - Tap Water
 28) Groundwater Sample - Tap Water
 29) Groundwater Sample - Tap Water
 30) Groundwater Sample - Tap Water
 31) Groundwater Sample - Tap Water
 32) Groundwater Sample - Tap Water
 33) Groundwater Sample - Tap Water
 34) Groundwater Sample - Tap Water
 35) Groundwater Sample - Tap Water
 36) Groundwater Sample - Tap Water
 37) Groundwater Sample - Tap Water
 38) Groundwater Sample - Tap Water
 39) Groundwater Sample - Tap Water
 40) Groundwater Sample - Tap Water
 41) Groundwater Sample - Tap Water
 42) Groundwater Sample - Tap Water
 43) Groundwater Sample - Tap Water
 44) Groundwater Sample - Tap Water
 45) Groundwater Sample - Tap Water
 46) Groundwater Sample - Tap Water
 47) Groundwater Sample - Tap Water
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 49) Groundwater Sample - Tap Water
 50) Groundwater Sample - Tap Water
 51) Groundwater Sample - Tap Water
 52) Groundwater Sample - Tap Water
 53) Groundwater Sample - Tap Water
 54) Groundwater Sample - Tap Water
 55) Groundwater Sample - Tap Water
 56) Groundwater Sample - Tap Water
 57) Groundwater Sample - Tap Water
 58) Groundwater Sample - Tap Water
 59) Groundwater Sample - Tap Water
 60) Groundwater Sample - Tap Water
 61) Groundwater Sample - Tap Water
 62) Groundwater Sample - Tap Water
 63) Groundwater Sample - Tap Water
 64) Groundwater Sample - Tap Water
 65) Groundwater Sample - Tap Water
 66) Groundwater Sample - Tap Water
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 70) Groundwater Sample - Tap Water
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 75) Groundwater Sample - Tap Water
 76) Groundwater Sample - Tap Water
 77) Groundwater Sample - Tap Water
 78) Groundwater Sample - Tap Water
 79) Groundwater Sample - Tap Water
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 88) Groundwater Sample - Tap Water
 89) Groundwater Sample - Tap Water
 90) Groundwater Sample - Tap Water
 91) Groundwater Sample - Tap Water
 92) Groundwater Sample - Tap Water
 93) Groundwater Sample - Tap Water
 94) Groundwater Sample - Tap Water
 95) Groundwater Sample - Tap Water
 96) Groundwater Sample - Tap Water
 97) Groundwater Sample - Tap Water
 98) Groundwater Sample - Tap Water
 99) Groundwater Sample - Tap Water
 100) Groundwater Sample - Tap Water



New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-0001

CHAIN OF CUSTODY

Client: New York State Department of Environmental Conservation
Project: Entergy - Indian Point Ground Water Monitoring
Sampled by: AA, SB, M, B
Client Contact: Tim Rice (NYSDEC) Phone: (518) 402-8574

Sample Description:						Analysis / Method																									
Sample Location	Date Completed	Time Completed	Sample Matrix	Composite or Grab	No. of Containers	Gross Alpha	Gross Beta	Ni-59	Ni-63	Fe-55	Gamma	Tritium	I-129	P-32	C-14	Ce-144	Am-241	Np-237	Nb-94	Pu-238, 239/240	Pu-241	Ra-224, 226	Sr-89/90	Tc-99	U-234, 235, 238	Th-230, 232	Cs-137	Other			
MW-62-18-(010)	07/22/09	1424	GW	Grab	1						X	X																			
MW-62-37-(010)	07/22/09	1602	GW	Grab	1						X	X																			
MW-62-53-(009)	07/22/09	1401	GW	Grab	1						X	X																			
MW-62-71-(010)	07/22/09	1252	GW	Grab	1						X	X																			
MW-62-92-(010)	07/22/09	1137	GW	Grab	1						X	X																			
MW-62-138-(010)	07/22/09	1655	GW	Grab	1						X	X																			
MW-62-182-(010)	07/22/09	1700	GW	Grab	1						X	X																			
Relinquished by: <i>[Signature]</i> Date: 07/22/09 Time: 1709 Received by: <i>[Signature]</i> Date: 7/22/09 Time: 1709																															
Relinquished by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____																															
Shipments Method: _____																															
Turnaround Time Required: _____																															
Routine: _____																															
Rush: _____																															
Cooler Temp: _____																															
Comments: _____																															

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page: 1 of 1
 Project #: Entergy GW Mon Prog
 GEL Quote #: _____
 COC Number: 50013510
 PO Number: _____

GEL Work Order Number:

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 550-8171
 Fax: (843) 766-1178

Client Name: Entergy Phone #: (914) 736-8405 Sample Analysis Requested ⁽⁶⁾ (Fill in the number of containers for each test)

Project/Site Name: Indian Point Energy Center Fax #: (914) 734-6247

Address: 450 Broadway, Suite 3, Buchanan, NY 10511

Collected by: AA, SB, M.B Send Results To: Patrick Donahue

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hh:mm)	QC Code (a)	Field Filtered (b)	Sample Matrix (c)	Should this sample be considered:		Total number of containers			Comments Note: extra sample is required for sample specific COC
						Radioactive	TSCA Regulated	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	
MW-62-18-(010)	07/22/09	1424	N	N	GW	Y	Y	1	1	1	2 Liter Poly
MW-62-37-(010)	07/22/09	1602	N	N	GW	Y	Y	1	1	1	2 Liter Poly
MW-62-53-(009)	07/22/09	1401	N	N	GW	Y	Y	1	1	1	2 Liter Poly
MW-62-71-(010)	07/22/09	1252	N	N	GW	Y	Y	1	1	1	2 Liter Poly
MW-62-92-(010)	07/22/09	1137	N	N	GW	Y	Y	1	1	1	2 Liter Poly
MW-62-138-(010)	07/22/09	1655	N	N	GW	Y	Y	1	1	1	2 Liter Poly
MW-62-182-(010)	07/22/09	1700	N	N	GW	Y	Y	1	1	1	2 Liter Poly

FAT Requested: Normal Rush: _____ Specify: _____ (Subject to Surcharges) Fax Results: Yes No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

Sample Collection Time Zone: Eastern Pacific _____ Other _____ Mountain _____

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time
<i>[Signature]</i>	7/22/09	1720	SECURED	7/22/09	1720
			STORAGE		

Sample Shipping and Delivery Details

GEL P.M.: ERIN TRENT Date Shipped: _____
 Method of Shipment: FEDEX
 Airbill #: _____
 Airbill #: _____

- 1) Chain of Custody Number = Client Determined
 2) QC Codes: N= Normal Sample, TB = Trip Blank, FD= Field Duplicate, EB = Equipment Blank, MS= Matrix Spike Sample, MSD= Matrix Spike Duplicate Sample, G= Grab, C = Composite
 3) Field Filtered: For liquid matrices, indicate with a 'Y' for yes the sample was field filtered or 'N' for sample was not field filtered
 4) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Wastewater, MW=Mine Liquid, SD=Soil, SS=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, P=Paper, U=Urine, F=Feces, N=Nasal
 5) Sample Analysis Requested: Analytical method requested (i.e. 826/B, 610B/7470) and number of containers provided for each (i.e. 426/B-3, 607/B/7476-14)
 6) Preservative Type: HA= Hydrochloric Acid, NI = Nitric Acid, SH= Sodium Hydroxide, SA= Sulfuric Acid, AA= Acetic Acid, HX= Hexane, ST = Sodium Thiosulfate. If no preservative is added = leave field blank
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

QC Number: 50013510
 PO Number: 50013510

GEL Work Order Number:

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Client Name: Energy
 Phone #: (914) 736-6405

Sample Analysis Requested (9) (Fill in the number of containers for each test)

Project/Site Name: Indian Point Energy Center
 Fax #: (914) 734-6247

Address: 450 Broadway, Suite 3, Buchanan, NY 10511

Collected by: *APC/SL/MB*
 Sent Results To: Patrick Donahue

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military (hhmm))	QC Code on	Field Filtered (0)	Sample Matrix (0)	Should this sample be considered:		Total number of containers				Comments Note: extra sample is required for sample specific QC
						Radioactive	TSCA Regulated	Tritium (H3)	Gamma Spec (GIS)	Strontium 90 (Sr90)	Nickel 63 (Ni63)	
MM-53-R2-(012)	07/27/09	1606	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MM-53-L20-(016)	07/27/09	1318	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly

QA Requested: Normal Rush: Specify: _____ (Subject to surcharge) Fax Results: Yes No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Remarks: *Are there any known hazards applicable to these samples? If so, please list the hazards*

Chain of Custody Signatures				Sample Shipping and Delivery Details						
Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time	GEL PM	Method of Shipment	Date Shipped:	Sample Collection Time Zone	For Lab Receiving Use Only
<i>[Signature]</i>	7/27/09	1704	<i>[Signature]</i>	7/27/09	1705	ERIN TRENT	FEDEX		Eastern	Custody Seal Intact? YES
									Central	Cooler Temp: C
									Other	

- 1-3 Chain of Custody Number - Chain Determined
- 1-3 QC Codes: N - Normal Sample, TB - Trip Blank, FD - Field Duplicate, EB - Equipment Blank, MS - Matrix Spike Sample, MSD - Matrix Spike Duplicate Sample, GS - Grab, C - Composite
- 1-3 Field Filtered: Yes - Filtered, Indicate with a Y - for yes, the sample was field filtered or N - for no, the sample was not field filtered
- 1-3 Matrix Codes: DW - Drinking Water, GW - Groundwater, SW - Surface Water, WW - Waste Water, W - Water, ML - Major Liquid, SOL - Solid, SP - Sediment, SL - Sludge, SS - Solid Waste, O - Oil, F - Filter, P - Waste, U - Uranium, J - Fuel, N - Nuisance
- 1-3 Sample Analysis Requested: Analytical method requested (i.e. SXOR, 6010B, 209RAD) and number of containers provided for each (i.e. 3, 02/08/2/04 - 1)
- 1-3 Preservative Type: MA - Hydrochloric Acid, NI - Nitric Acid, SH - Sodium Hydroxide, SA - Saline Acid, AA - Acetic Acid, BX - Hexane, ST - Sodium Thiosulfate. If no preservative is added - leave field blank

WHITE = LABORATORY
 YELLOW = FILE
 PINK = CLIENT



New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-0001

CHAIN OF CUSTODY

Client: New York State Department of Environmental Conservation						Analysis / Method																							
Project: Entergy- Indian Point Ground Water Monitoring																													
Sampled by: <u>APCC/AMA</u>																													
Client Contact: Tim Rice (NYSDEC)						Phone: (518) 402-8574																							
Sample Description:																													
Sample Location	Date Completed	Time Completed	Sample Matrix	Composite or Grab	No. of Containers	Gross Alpha	Gross Beta	Ni-59	Ni-63	Fe-55	Gamma	Tritium	I-129	P-32	C-14	Ce-144	Am-241	Np-237	Nb-94	Pu-238, 239/240	Pu-241	Ra-224, 226	Sr-89/90	Tc-99	U-234, 235, 238	Th-230, 232	Ce-137	Other	
MW-53-82-(012)	7/24/05	1626	GW	Grab	1			X	X	X	X	X											X	X					
MW-53-120-(016)	7/24/05	1315	GW	Grab	1			X	X	X	X	X											X	X					
Relinquished by: <u>[Signature]</u> Date: <u>7/24/05</u> Time: <u>1633</u>						Received by: <u>[Signature]</u> Date: <u>7/24/05</u> Time: <u>1635</u>																							
Relinquished by: _____ Date: _____ Time: _____						Received by: _____ Date: _____ Time: _____																							
Relinquished by: _____ Date: _____ Time: _____						Received by: _____ Date: _____ Time: _____																							
Shipment Method: _____						AirBill Number: _____																							
Turnaround Time Required: _____						Comments: _____																							
Routine: _____																													
Rush: _____																													
Cooler Temp: _____																													



New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-0004

CHAIN OF CUSTODY

Client: New York State Department of Environmental Conservation						Analysis / Method																							
Project: Entergy- Indian Point Ground Water Monitoring																													
Sampled by: <i>ATC</i>																													
Client Contact: Tim Rice (NYSDEC)						Phone: (518) 402-8574																							
Sample Description:																													
Sample Location	Date Completed	Time Completed	Sample Matrix	Composite or Grab	No. of Containers	Gross Alpha	Gross Beta	Ni-59	Ni-63	Fe-55	Gamma	Tritium	I-129	P-32	C-14	Ce-144	Am-241	Np-237	Nb-94	Pu-238, 239/240	Pu-241	Ra-224, 226	Sr-89/90	Tc-99	U-234, 235, 238	Th-230, 232	Cs-137	Other	
MW-31-49-(017)	07/24/08	1153	GW	Grab	1						X	X																	
MW-31-63-(017)	07/21/09	1250	GW	Grab	1						X	X												X					
MW-31-85-(017)	07/21/09	1213	GW	Grab	1						X	X												X					
Relinquished by: <i>[Signature]</i> Date: 7/21/09 Time: 1633 Received by: <i>[Signature]</i> Date: 7/21/09 Time: 1633																													
Relinquished by: _____ Date: _____ Time: _____																													
Relinquished by: _____ Date: _____ Time: _____																													
Shipment Method: _____						AirBill Number: _____																							
Turnaround Time Required: _____						Comments: _____																							
Routine: _____																													
Rush: _____																													
Cooler Temp: _____																													

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Page: 1 of 1
 Project #: Energy GW Mon Prog
 GEL Quote #: _____
 COC Number: 50013510
 PO Number: _____
 Client Name: Energy
 Project/Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511
 Phone #: (914) 736-8405
 Fax #: (914) 734-8247
 GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8471
 Fax: (843) 766-1178

Client Name: Energy
 Project/Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511
 Phone #: (914) 736-8405
 Fax #: (914) 734-8247
 GEL Work Order Number: _____
 Sample Analysis Requested ⁽⁶⁾ (fill in the number of containers for each test)

Sample ID	Date Collected (mm-dd-yy)	Time Collected (hh:mm)	OR Code or Field Filtered ⁽⁵⁾	Sample Matrix ⁽⁶⁾	Radioactive	TSCA Regulated	Sample Analysis Requested ⁽⁶⁾				Comments Note: extra sample is required for sample specific QC
							Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	
MW-31-49-(017)	07/24/09	1153	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-31-63-(017)	07/24/09	1250	N	GW	Y	Y	1	1	1	1	2 Liter Poly
MW-31-85-(017)	07/24/09	1213	N	GW	Y	Y	1	1	1	1	2 Liter Poly

Collected by: AP/CB Send Results To: Patrick Donahue
 TAT Requested: Normal Rush: Specify: _____ (subject to surcharge) Fax Results: Yes / No
 Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
 Circle Deliverable: G / A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4
 Sample Collection Time Zone: Eastern / Pacific / Other _____
 Mountain

Requisition # (Signed)	Date	Time	Received By (Signed)	Date	Time	GEL P.M.	Method of Shipment	Date Shipped	Airbill #
<u>712404</u>	<u>7/24/09</u>	<u>1705</u>	<u>Seamus</u>	<u>7/24/09</u>	<u>1705</u>	<u>ERIN TRENT</u>	<u>FEDEX</u>		
<u>712402</u>	<u>7/24/09</u>	<u>1705</u>	<u>Seamus</u>	<u>7/24/09</u>	<u>1705</u>	<u>ERIN TRENT</u>	<u>FEDEX</u>		
<u>712403</u>	<u>7/24/09</u>	<u>1705</u>	<u>Seamus</u>	<u>7/24/09</u>	<u>1705</u>	<u>ERIN TRENT</u>	<u>FEDEX</u>		

Chain of Custody Signatures
 Sample Shipping and Delivery Details
 For Lab Receiving (Use Only)
 Custody Seal Intact? YES / NO
 Cooler Temp: C
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Client Name: **Entropy** Phone #: (914) 736-8405
 Project/Site Name: **Indian Point Energy Center** Fax #: (914) 734-6247
 Address: **450 Broadway, Suite 3, Buchanan, NY 10511**

Project/Site Name: **Indian Point Energy Center** Fax #: (914) 734-6247
 GEL Work Order Number: **500135110**

Collected by: **Miguel Britos** Send Results To: **Patrick Donahue**
 Sample ID: **Sample ID**

*For comparison, indicate start and stop date/time.
 Date Collected (mm-dd-yy) Time Collected (Military) (hh:mm) QC Code Field Filtered (Y/N) Sample Matrix (M)

Date Collected (mm-dd-yy)	Time Collected (Military) (hh:mm)	QC Code	Field Filtered (Y/N)	Sample Matrix (M)	Radioactive	TSCA Regulated	Total number of containers	Tritium (HT)	Gamma Spec (GS)	Strontium 90 (Sr90)	Comments
07/20/09	1450	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
07/20/09	1511	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
07/20/09	128	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
07/20/09	131	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
07/20/09	1209	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly
07/20/09	1257	N	N	GW	Y	Y	1	1	1	1	2 Liter Poly

TAT Requested: Normal Rush Specify: _____ (Subject to Scheduling) Fax Results Yes No Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards.

Chain of Custody Signatures
 Requisitioned By (Signed) Date Time Received By (Signed) Date Time
Erin Trent 7/21/09 0900 **FEDEX** 7/21/09 0900

Sample Shipping and Delivery Details
 GEL P/N: **ERIN TRENT**
 Method of Shipment: **FEDEX**
 Date Shipped: _____
 Airbill #: _____
 For Lab Receiving Use Only:
 Custody Seal Intact? YES/NO
 Custody Seals? YES/NO



New York State Department of Environmental Conservation
 625 Broadway
 Albany, New York 12233-0001

CHAIN OF CUSTODY

Client: New York State Department of Environmental Conservation
Project: Energy- Indian Point Ground Water Monitoring
Sampled by: Miguel Bites
Client Contact: Tim Rice (NYSDEC) **Phone:** (518) 402-8574

Sample Description:

Sample Location	Date Completed	Time Completed	Sample Matrix	Composite or Grab	No. of Containers	Gross Alpha	Gross Beta	Ni-59	Ni-63	Fe-55	Gamma	Tritium	I-129	P-32	C-14	Ce-144	Am-241	Np-237	Nb-94	Pu-238, 239/240	Pu-241	Ra-224, 226	Sr-89/90	Tc-99	U-234, 235, 238	Th-230, 232	Cs-137	Other		
MW-40-27-(008)	07/20/09	1450	GW	Grab	1						X	X																		
MW-40-46-(009)	07/20/09	1511	GW	Grab	1						X	X																		
MW-40-81-(009)	07/20/09	1128	GW	Grab	1						X	X																		
MW-40-100-(011)	07/20/09	1131	GW	Grab	1						X	X																		
MW-40-127-(011)	07/20/09	1209	GW	Grab	1						X	X																		
MW-40-162-(009)	07/20/09	1257	GW	Grab	1						X	X																		

Relinquished by: *[Signature]* **Date:** 07/20/09 **Time:** 1518 **Received by:** *[Signature]* **Date:** 7/20/09 **Time:** 1518
Relinquished by: *[Signature]* **Date:** _____ **Time:** _____ **Received by:** _____ **Date:** _____ **Time:** _____
Shipment Method: _____ **AirBilt Number:** _____

Turnaround Time Required: _____ **Comments:** _____
Routine: _____
Rush: _____
Cooler Temp: _____

Sample ID	Time Collected (mm-dd-yy)	Time (Military) (hhmm)	QC Code	Field Entered	Sample Matrix (9)	Radioactive	TSCA Regulated	Total number of containers				Preservative Type (6)	Comments Note: extra sample is required for sample specific QC
								Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)			
U3-T1 (025)	07/14/09	1108	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly
U3-T2 (030)	07/14/09	1304	N	N	GW	Y	Y	1	1	1	1		2 Liter Poly

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards
 Chain of Custody Signatures
 GEL PM: ERIN TRENT
 Method of Shipment: FEDEX
 Date Shipped:
 Sample Shipping and Delivery Details
 Sample Collection Time Zone: Eastern Pacific Other
 Mountain

Relinquished By (Special)	Date	Time	Received By (Special)	Date	Time
<i>[Signature]</i>	7/14/09	1450	<i>[Signature]</i>	7/14/09	1450

1) Chain of Custody Name - Chain Personnel
 2) QC Code - N - Not a Sample; FB - Trip Blank; RP - Field Duplicate; EB - Equipment Blank; MS - Matrix Spike Sample; MSB - Matrix Spike Duplicate Sample; C - Comb. C = Composite
 3) Field Filtered - For liquid matrices, indicate with a 'Y' for Yes the sample was field filtered or 'N' for sample was not field filtered
 4) Matrix Spike (M) - Drinking Water - GW - Ground Water; SW - Surface Water; WW - Waste Water; MW - Mine Liquid; SO - Soil; SD - Sediment; SL - Sludge; SS - Solid Waste; O - Oil; P - Filter; P - Wipe; T - Urine; P - Urine; N - Nail
 5) Sample Analysis Request - Analytical method requested (i.e. RADON, 9010B, 2470) and number of containers provided for each (i.e. 6360B, 3, 6090B/7470A, 1)
 6) Preservation: 1 - Acetic Acid; 2 - Hydrochloric Acid; 3 - Nitric Acid; 4 - Sodium Hydroxide; 5 - Sulfuric Acid; 6 - Ascorbic Acid; 7 - Benzene; 8 - Sodium Thiosulfate; If no preservative is added - leave field blank
 WHITE = LABORATORY
 YELLOW = FILE
 PINK = CLIENT

GEL Chain of Custody and Analytical Request

See www.gel.com for GEL's Sample Acceptance SOP

Client Name: Energy
 Project Site Name: Indian Point Energy Center
 Address: 450 Broadway, Suite 3, Buchanan, NY 10511

Phone #: (914) 736-8405
 Fax #: (914) 734-6247
 GEL Work Order Number: _____

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 550-8171
 Fax: (843) 790-1178

Sample Analysis Requested ^(S) (Fill in the number of containers for each test)

Collected by: APV/MJB
 Send Results To: Patrick Donahue

Should this sample be considered:
 Radioactive:
 TSCA Regulated:
 Total number of containers:
 Tritium (H3):
 Gamma Spec (GS):
 Strontium 90 (Sr90):

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military/Abbrev)	QC Code to Entered	Field #	Sample Matrix	Radioactive	TSCA Regulated	Total number of containers	Tritium (H3)	Gamma Spec (GS)	Strontium 90 (Sr90)	Comments
<u>MW-46(017)</u>	<u>07/14/05</u>	<u>13:57</u>	<u>N</u>	<u>N</u>	<u>GW</u>	<u>Y</u>	<u>Y</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>2 Liter Poly</u>
*For composite, combine start and stop times												

TAT Requested	Normal	✓	Flush	Specify:	(Subject to Surcharge)	Fax Results:	Yes	No	Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards									

Chain of Custody Signatures				Sample Shipping and Delivery Details			
Relinquished by (signed)	Date	Time	Received by (signed)	Date	Time	GEL Pkt:	ERIN TRENT
<u>[Signature]</u>	<u>11/14/05</u>	<u>14:58</u>	<u>[Signature]</u>	<u>7/14/05</u>	<u>14:58</u>	Method of Shipment:	<u>FEDEX</u>
						Date Shipped:	
						Airbill #	
						Airbill #	

1) Chain of Custody Number (Must be determined)
 2) QC Code: N - Normal Sample, TB - Trip Blank, FD - Field Duplicate, EB - Equipment Blank, MS - Matrix Spike Sample, MSD - Matrix Spike Duplicate Sample, G - Grab, C - Composite
 3) Field Filtered: Field equal number, indicate with a 'Y' for yes the sample was field filtered or 'N' for no field filtered
 4) Matrix Codes: BW - Drinking Water, GW - Groundwater, SW - Surface Water, WW - Waste Water, W - Water, ML - Milk Liquid, SLS - Solid, SLS - Solid Waste, O - Oil, P - Filter, P - Filter, U - Urine, F - Food, N - Nuts
 5) Sample Analysis Requested: Analytical method requested (e.g., 8200B, 6010B, 2170B) or number of containers provided for each (e.g., 6/200B, 3, 6/210B, 2/200) (1)
 6) Preservative Type: HA - Hydrochloric Acid, NF - Nitric Acid, SH - Sodium Hydroxide, SA - Sulfuric Acid, AA - Acetic Acid, HE - Benzene, SF - Sodium Thiosulfate (If no preservative is added, leave field blank)
 WHITE = LABORATORY YELLOW = FILE PINK = CLIENT



APPENDIX D: 3RD QUARTER 2009 SAMPLING DATA SHEETS

WELL ID: MW 51-189

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Cloudy, 80's

PROJECT NO: 01.0017869.92
 DATE: 8/12/09
 SAMPLER(S): M BR, TOS

SAMPLING INTERVAL (depth in ft below top of casing)

184.2 to 197.8

TOTAL VOLUME PURGED:

1.85 gal

SAMPLING PORT

189

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)	
0947	0							56/56	50	
0957	0.1	16.34	1.610	0.88	6.04	-238.6	-	↓	↓	
1003	0.25	16.13	1.612	0.53	6.16	-227.4	-			
1012	0.65	15.97	1.618	0.24	6.40	-297.6	6.32			
1021	0.85	15.80	1.618	0.20	6.60	-273.4	6.62			
1028	1.0	15.86	1.618	0.17	6.64	-256.1	5.97			
1036	1.2	15.86	1.615	0.16	6.70	-243.7	4.75			
1044	1.5	15.87	1.609	0.14	6.73	-240.1	4.84			
1050	1.7	15.86	1.605	0.14	6.15	-236.8	4.92			
1051		PUMP OFF								
1052		START SAMPLE COLLECTION								
1111		SAMPLE COMPLETED								
		PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	3 200704293

NOTES AND OBSERVATIONS:

WELL ID: MW 51-163

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Cloudy, 80's

PROJECT NO: 01.0017869.92
 DATE: 8/12/09
 SAMPLER(S): M. BRITOS

SAMPLING INTERVAL (depth in ft below top of casing)
1547 to 1662

TOTAL VOLUME PURGED: 130 gal

SAMPLING PORT
163 2

PURGE RATE: variable (gal / min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
0947	0	PUMP ON						56/56	50
0957	0.1	17.24	2.082	0.80	6.87	-168.6	-	↓	↓
1003	0.15	17.17	2.052	0.42	7.03	-147.7	-		
1012	0.35	17.15	2.037	0.27	7.13	-143.7	13.08		
1021	0.60	17.00	2.039	0.24	7.14	-146.1	12.59		
1028	0.75	17.04	2.035	0.21	7.15	-142.3	11.45		
1036	0.90	17.05	2.036	0.20	7.15	-128.6	10.31		
1044	1.0	17.12	2.032	0.18	7.17	-117.6	9.59		
1053	1.10	17.22	2.030	0.17	7.17	-111.9	9.27		
1058	1.15	17.20	2.028	0.17	7.18	-112.2	9.69		
1059		PUMP OFF							
1100		START SAMPLE COLLECTION							
1123		SAMPLE COMPLETED : 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	2 200704293

NOTES AND OBSERVATIONS:

WELL ID: MW 51-135

SAMPLE ID: 010

**GZA GeoEnvironmental of New York
Waterloo Sampling Data Sheet**

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Cloudy, 80's

PROJECT NO: 01.0017869.92
 DATE: 8/12/09
 SAMPLER(S): M. BRITOS

SAMPLING INTERVAL (depth in ft below top of casing)
130.2 to 143.7

TOTAL VOLUME PURGED: 2.60 gal

SAMPLING PORT
135 3

PURGE RATE: variable (gal / min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
0947	0	PUMP ON	6.0					5.6/5.6	50
0958	0.3	15.50	2.278	0.19	6.48	26.3	—	↓	↓
1004	0.5	15.40	2.290	0.17	6.60	47.4	—		
1013	0.9	15.38	2.294	0.14	6.71	60.5	7.02		
1022	1.1	15.25	2.298	0.14	6.78	58.6	5.86		
1029	1.35	15.30	2.296	0.14	6.81	57.6	1.65		
1037	1.80	15.28	2.297	0.14	6.83	57.3	2.40		
1045	2.0	15.29	2.299	0.16	6.85	55.8	2.41		
1053	2.2	15.37	2.299	0.16	6.86	56.1	2.64		
1101	2.45	15.40	2.301	0.16	6.67	57.4	2.15		
1105		PUMP OFF							
1108		START SAMPLE COLLECTION							
1122		SAMPLE COMPLETED: 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	<u>6</u> <u>200704293</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 51-104

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Cloudy, 80's

PROJECT NO: 01.0017369.92
 DATE: 8/12/09
 SAMPLER(S): M. BRITTS

SAMPLING INTERVAL (depth in ft below top of casing)
101.2 to 111.2

TOTAL VOLUME PURGED: 515 gal

SAMPLING PORT
104

PURGE RATE: variable (gal / min)

PURGE METHOD: Double Valve Pump

4

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressur (psi)
0947	0	PUMP	ON					5.6/5.6	50
0958	0.75	14.35	2.727	1.86	7.13	17.0	—		
1013	1.70	14.23	2.722	1.34	7.04	18.7			
1022	2.20	14.14	2.719	1.27	6.98	25.7	7.43		
1029	2.75	14.16	2.717	1.19	6.92	33.0	4.97		
1037	3.20	14.11	2.720	1.17	6.86	41.6	4.60		
1045	3.90	14.13	2.722	1.13	6.83	42.4	4.63		
1053	4.35	14.14	2.724	1.12	6.81	44.4	4.28		
1101	4.90	14.21	2.724	1.10	6.80	46.5	4.49		
1103		PUMP	OFF						
1104		START SAMPLE COLLECTION							
1114		SAMPLE COMPLETED = 2 L IPEC							
		PUMP	OFF						

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	5 200706293

NOTES AND OBSERVATIONS:

WELL ID: MW 51-40

SAMPLE ID: 012

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: cloudy, 80's

PROJECT NO: 01.0017869.92
DATE: 8/12/09
SAMPLER(S): M BRITCS

SAMPLING INTERVAL (depth in ft below top of casing)
29.7 to 44.2

TOTAL VOLUME PURGED: 255 gal

SAMPLING PORT
40

PURGE RATE: variable (gal/min)
PURGE METHOD: Double Valve Pump

7

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1227	0	PUMP ON						6.5/8.4	25
1235	0.5	15.82	2911	4.56	6.98	-114.3	-		
1245	0.75	15.35	2930	4.69	7.01	-80.1	-		
1254	1.0	15.25	2942	4.82	7.03	-42.4	9.22		
1306	1.5	15.24	2941	4.85	7.04	-41.6	7.78		
1311	1.7	15.27	2935	4.82	7.04	-40.0	8.11		
1316	1.9	15.27	2939	4.99	7.04	-29.9	5.55		
1322	2.2	15.30	2943	5.02	7.05	-28.6	5.80		
1327	2.4	15.33	2947	5.03	7.05	-27.2	5.66		
1329		PUMP OFF							
1331		START SAMPLE COLLECTION							
1342		SAMPLE COMPLETED 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	<u>6</u> <u>200704293</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 51.79

SAMPLE ID: 012

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Cloudy, 80's

PROJECT NO: 01.0017869.92
 DATE: 8/12/09
 SAMPLER(S): M. BRITOS

SAMPLING INTERVAL (depth in ft below top of casing)
63.2 to 81.2

TOTAL VOLUME PURGED: 1.35 gal

SAMPLING PORT
79

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

6

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1227	0	PUMP ON						65/84	25
1235	0.05	17.57	2.572	0.36	6.64	74	-		
1245	0.20	16.89	2.566	1.03	6.79	367	-		
1254	0.50	16.61	2.552	1.07	6.84	634	7.52		
1306	0.80	16.62	2.556	1.09	6.88	634	6.75		
1311	0.90	16.67	2.555	1.09	6.89	626	5.57		
1316	1.0	16.70	2.557	1.10	6.88	616	6.00		
1322	1.1	16.74	2.560	1.08	6.89	598	5.85		
1327	1.2	16.76	2.562	1.09	6.90	590	6.01	↓	↓
1328		PUMP OFF							
1329		START SAMPLE COLLECTION							
1354		SAMPLE COMPLETED - 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	2 200704293

NOTES AND OBSERVATIONS:

WELL ID: MW 60-35

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, 80's

PROJECT NO: 01.0017869.02
 DATE: 8/11/09
 SAMPLER(S): M BRITUS

SAMPLING INTERVAL (depth in ft below top of casing)
34.4 to 39.4

TOTAL VOLUME PURGED: 1.30 gal

SAMPLING PORT
35

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

7

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pres (psi)
1300	0							5/7	20
			PUMP ON						
1315	0.4	20.76	3426	0.71	7.15	169.6	--		
1325	0.65	21.75	3330	1.05	7.23	178.3	--		
1330	0.75	22.24	3261	1.39	7.30	184.0	9.21		
1335	0.85	22.21	3221	1.90	7.31	187.2	7.73		
1340	0.90	22.31	3185	2.18	7.30	189.2	5.72		
1345	0.95	22.48	3076	2.34	7.25	189.0	7.79		
1351	1.0	22.26	2950	2.70	7.18	189.7	7.67		
1356	1.05	22.11	2911	2.93	7.18	189.4	7.49		
1401	1.10	22.02	2903	2.91	7.18	189.8	7.44		
1406	1.15	21.93	2842	2.88	7.19	190.1	7.52	↓	↓
1407			PUMP OFF						
1408			START SAMPLE COLLECTION						
1441			SAMPLE COMPLETED						
					2	L IPEC			
					2	L SPIKE			
					2	L DUPLICATE			

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde Turbidity meter	2 200704293

NOTES AND OBSERVATIONS:

WELL ID: MW 60-53

SAMPLE ID: 010

**GZA GeoEnvironmental of New York
Waterloo Sampling Data Sheet**

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 CATHER: Sunny, 80's

PROJECT NO: 01.0017869.92
 DATE: 8/11/09
 SAMPLER(S): M. BRITOS

SAMPLING INTERVAL (depth in ft below top of casing)
45.4 to 59.4

TOTAL VOLUME PURGED: 185 gal

SAMPLING PORT
53

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

6

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pres (psi)
1300	0	PUMP ON						5/7	20
1315	0.4	19.88	3.772	1.19	7.68	-109.6	-		
1325	0.65	19.96	3.780	1.10	7.64	-99.9	8.86		
1330	0.75	19.78	3.805	1.11	7.69	-94.9	8.95		
1335	0.85	19.72	3.804	1.13	7.68	-93.1	5.87		
1340	1.0	19.55	3.809	1.15	7.69	-87.4	6.		
1345	1.15	19.42	3.816	1.18	7.70	-83.8	7.29		
1351	1.30	19.34	3.809	1.23	7.70	-74.2	7.74		
1356	1.45	19.29	3.818	1.27	7.70	-72.1	7.88		
1401	1.60	19.26	3.815	1.28	7.70	-70.4	7.93		
1406	1.70	19.26	3.822	1.29	7.69	-68.9	7.69		
1407		PUMP OFF							
1409		START SAMPLE COLLECTION							
1426		SAMPLE COMPLETED							
1458		"	"	"	2 L IPEC				
1442		"	"	"	2 L SPIRE				
1458		"	"	"	2 L DUPLICATE				
1458		PUMP OFF							

FOR ANALYSIS

Equipment Used	Equipment Identification #
I 556 MPS Reader and 5563 Sonde Turbidity meter	<u>6</u> <u>200704293</u>

REMARKS AND OBSERVATIONS:

WELL ID: MW 60-72

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Sunny 80's

PROJECT NO: 01.0017869.92
DATE: 8/11/07
SAMPLER(S): M. BRITOS

SAMPLING INTERVAL (depth in ft below top of casing)
66.4 to 78.2

TOTAL VOLUME PURGED: 3.25 gal

SAMPLING PORT
72

PURGE RATE: variable (gal/min)
PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pres (psi)
0934	0	PUMP	OFF					5/15	30
0950	1.0	17.41	4.476	0.44	6.85	-199.6	—	5/15	32
1000	1.4	17.36	4.429	0.42	6.92	-185.7			
1004	2.0	16.93	4.418	0.41	7.01	-154.4	9.48		
1018	2.5	16.78	4.417	0.39	7.05	-132.0	10.34		
1027	2.9	16.77	4.410	0.39	7.01	-127.4	10.62		
1032	3.1	16.11	4.417	0.33	7.07	-124.9	10.45	↓	↓
1032		PUMP	OFF						
1033		START	SAMPLE COLLECTION						
1040		SAMPLE	COMPLETED 1.2 L IPEC						
		PUMP	OFF						

Equipment Used	Equipment Identification #
I 556 MPS Reader and 556J Sonde	5
Turbidity meter	200104293

NOTES AND OBSERVATIONS:

WELL ID: MW 60-135

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: 13 Sunny, 80's

PROJECT NO: 01.0017869.92
 DATE: 8/11/04
 SAMPLER(S): M-DRITUS

SAMPLING INTERVAL (depth in ft below top of casing)
124.9 to 141.4

TOTAL VOLUME PURGED: 225 gal

SAMPLING PORT
135

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pres (psi)
09:54	0	PUMP	off					5/5	30
09:56	0.6	18.39	2.151	0.39	7.36	-201.4	—	5/5	30
10:00	0.8	18.14	2.210	0.34	7.33	-213.0	—		
10:04	1.2	17.68	2.254	0.24	7.33	-213.4	14.40		
10:08	1.6	17.48	2.261	0.20	7.35	-213.4	1.75		
10:27	1.9	17.27	2.271	0.19	7.34	-212.0	8.57		
10:35	2.1	17.26	2.273	0.18	7.35	-211.7	8.62	↓	↓
10:36		PUMP	OFF						
10:37		START	SAMPLE COLLECTION						
10:52		SAMPLE	COMPLETED - 2 L IPEC						
		PUMP	OFF						

Equipment Used	Equipment Identification #
I 556 MPS Reader and 556J Sonde Turbidity meter	<u>6</u> <u>2004154243</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 60-154

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, 80's

PROJECT NO: 01.0017869.92
 DATE: 8/11/09
 SAMPLER(S): M. BRITTON

SAMPLING INTERVAL (depth in ft below top of casing)
147.4 to 164.9

TOTAL VOLUME PURGED: 255 gal

SAMPLING PORT
154

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (µl)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pres (psi)
09:34	0	PLM1	ON					5/5	30
09:50	0.4	19.22	1764	0.81	6.60	17.8			32
10:00	0.6	18.33	1781	0.63	6.75	12.1			1
10:04	1.0	18.33	1801	0.49	6.91	8.4	1.54		
10:18	1.2	18.15	1812	0.41	7.00	6.3	8.90		
10:27	1.4	17.53	1814	0.35	7.10	3.1	8.16		
10:35	1.7	17.86	1811	0.32	7.10	3.0	9.40		
10:45	2.0	17.70	1811	0.26	7.14	2.8	9.84		
10:50	2.2	17.65	1811	0.25	7.14	2.6	10.02		
10:55	2.4	17.73	1801	0.24	7.15	2.4	10.44		
10:56		PUMP OFF							
10:57		START SAMPLE COLLECTION							
11:14		STOP SAMPLE COLLECTION							
		PUMP OFF							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde	3
turbidity meter	2001070213

NOTES AND OBSERVATIONS:

WELL ID: MW Co-176

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, 80's

PROJECT NO: 01.0017869.92
 DATE: 8/11/09
 SAMPLER(S): M. BRITTON

SAMPLING INTERVAL (depth in ft below top of casing)
170.9 to 200.4

TOTAL VOLUME PURGED: 0.85 gal

SAMPLING PORT
176

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pres (psi)
10:34	0	PUMP	0.6					5/5	30
10:35	0.03	24.01	0.770	0.30	6.81	54.4	-	5/5	32
10:36	0.1	23.44	0.782	0.16	6.35	21.7	-		
10:39	0.15	22.64	0.715	0.12	6.79	6.0	12.65		
10:38	0.25	22.30	0.763	0.02	6.90	12.5	10.39		
10:37	0.35	22.52	0.754	0.04	6.92	23.1	9.81		
10:35	0.45	22.43	0.762	0.04	7.00	24.0	10.04		
10:45	0.60	21.45	0.762	0.10	7.01	36.2	10.00		
10:56	0.75	21.85	0.761	0.09	7.02	36.0	9.92		
10:55	0.70	21.83	0.752	0.07	7.03	37.4	9.98		
10:56		PUMP OFF							
10:57		START SAMPLE COLLECTION							
11:49		SAMPLE COMPLETED							
		PUMP OFF							

Equipment Used	Equipment Identification #
I 556 MPS Reader and 5563 Sonde Turbidity meter	<u>2</u> <u>101104293</u>

NOTES AND OBSERVATIONS:

WELL ID: MW-12 1c

SAMPLE ID: 018

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Overcast clouds 90-95'

PROJECT NO: 01.0017869.92
 DATE: 8/10/09 8/10/09
 SAMPLER(S): CB/mB
 PUMP DEPTH: 41 ft

WATER QUALITY: DTW = 34.730 Transducer Actual Depth 13.791 TRAINED PERSONNEL 34628

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (mg/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
953	13.790		PUMP	OK				5/10 @ 24	
1001	13.631	22.87	3.651	7.09	6.48	40.4	-	5/12 @ 23	
1007	13.606	22.37	3.350	5.79	7.66	54.8	-	5/11 @ 23	
1013	13.613	23.93	2.980	5.63	7.17	43.0	-	5/10 @ 30.03	
1021	13.667	24.18	2.490	5.30	7.28	34.6	8.15		0.07
1032	13.669	24.34	1.975	5.22	7.41	28.0	7.71		0.10
1040	13.658	24.42	1.316	5.06	7.46	12.1	7.70		0.15
1046	13.658	24.01	1.669	5.16	7.52	12.7	7.97		0.21
1051	13.650	23.75	1.570	5.29	7.54	13.1	6.18		0.27
1056	13.637	23.30	1.521	5.21	7.55	13.4	7.09		0.33
1101	13.633	23.32	1.416	4.80	7.58	15.5	6.14		0.40
1107	13.629	23.51	1.371	4.99	7.61	18.2	0.0		0.50
1112	13.622	23.45	1.363	5.04	7.61	18.9	0.0		0.55
1117	13.615	23.37	1.331	5.09	7.61	19.3	0.0		0.60
1119		57.16	SAMPLE COMP	2.1	7.15	2.2	1.8		
1200			PUMP OFF						

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	5
flow meter	---
turbidity meter	200704213

NOTES AND OBSERVATIONS: Total volume purged 0.15 gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

WELL ID: MW-42-78
SAMPLE ID: C13

CLIENT: Energy - IPEC
SITE: Buchanan, NY
WEATHER: Sun, Clouds 40-45°

PROJECT NO: 01.0017869.92
DATE: 8/5/09
SAMPLER(S): Blow

WATER COLUMN HEIGHT (ft) Well Diameter: 1 in

$$\frac{78}{\text{DTB}} - \frac{33.240}{\text{DTW}} = \frac{44.76}{\text{Water Column Height}} \text{ ft}$$

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 44.76 x 0.041 Multiplier = 1.84 gal Well Volume

1.84 x 1.5 = 2.76 gal Designed Purge Volume

TOTAL VOLUME PURGED: 2.76 gal

WATER QUALITY: DTW = GW Elevation

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
1211	0	PUMP	NA						
1214	0.15	-	18.20	2.362	7.01	7.34	183.4	-	
1217	0.35	-	18.19	2.313	5.37	7.26	171.8	6.414	
1219	0.60	-	18.17	2.340	4.73	7.12	146.7	20.43	
1222	0.90	-	18.29	2.317	4.60	7.08	131.2	275.2	
1225	1.20	-	18.24	2.325	4.31	7.04	51.7	215.7	
1227	1.50	-	18.02	2.380	4.24	7.05	124.1	284.3	
1229	1.80	-	17.91	2.368	4.10	7.02	123.2	267.5	
1231	2.10	-	17.97	2.367	3.98	7.04	119.1	222.3	
1233	2.40	-	17.93	2.360	4.60	7.05	117.3	212.4	
1235	2.70	-	17.81	2.352	3.53	7.07	116.4	200.6	
1238		PUMP							
1240		SAMPLE COMPLETE							
1240		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	6 2007071243

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.

WELL ID: MW-89-2
 SAMPLE ID: 017

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, 70's

PROJECT NO: 01.0017869.92
 DATE: 8/17/09
 SAMPLER(S): 2.5 liter
 PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 13.93 Transducer Actual Depth #554' @ 10.752

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes (gpt)
0910	10.717	PUMP ON							0
0924	10.721	21.70	2.120	0.44	7.01	152.6	—	>1	0.0
0936		21.58	2.106	0.87	7.21	143.3	3.13		0.4
0945		21.66	2.171	0.69	7.24	141.6	4.44		0.6
0955		21.74	2.151	0.52	7.25	140.5	6.33		0.8
1002		21.76	2.190	0.65	7.26	139.6	3.42		1.1
1005		21.77	2.192	0.62	7.26	139.3	6.69		1.2
1010		21.78	2.194	0.54	7.27	138.6	5.58		1.3
1015		21.79	2.196	0.51	7.27	137.9	0.00		1.4
1020		21.84	2.196	0.50	7.27	136.8	0.00		1.5
1025		21.89	2.195	0.49	7.27	136.7	0.00	↓	1.6
1028		PUMP OFF							
1049		START SAMPLE COLLECTION							
1050		COMPLETE SAMPLE COLLECTION & REC							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	3
flow meter	3
turbidity meter	200701254

NOTES AND OBSERVATIONS: Total volume purged 18 gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msd.

WELL ID: 21249-92
 SAMPLE ID: 017

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Cloudy, 70s

PROJECT NO: 01.0017869.92
 DATE: 8/7/09
 SAMPLER(S): CR/MPR
 PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 13.64 Transducer Actual Depth 13.440

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes (gal)
0916	13.406	PUMP ON							0
0924	13.364	21.02	2.063	2.11	7.01	220.5	—	1.5	0.01
0936	13.410	21.88	2.080	0.24	7.10	182.8	3.53		0.4
0945	13.441	21.87	2.081	0.43	7.12	167.4	4.06		0.6
0955	13.490	21.89	2.080	0.40	7.14	127.1	3.05		1.05
1006	13.547	21.88	2.082	0.62	7.15	102.4	4.58		1.25
1005	13.560	21.91	2.082	0.32	7.16	92.0	3.70		1.35
1010	13.578	21.91	2.082	0.32	7.16	85.9	3.55		1.45
1015	13.613	21.90	2.082	0.28	7.16	75.0	0.37		1.55
1020	13.652	21.91	2.082	0.27	7.17	69.0	0.00		1.70
1025	13.679	21.94	2.081	0.25	7.17	57.6	0.00		2.0
1030	13.724	21.96	2.081	0.24	7.17	59.1	0.00	↓	2.15
1039	PUMP OFF								
1040	START SAMPLE COLLECTION								
1055	COMPLETE SAMPLE COLLECTION								20 IPEC

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	S
flow meter	FL
turbidity meter	100701259

NOTES AND OBSERVATIONS:

Total volume purged 2.35 gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.

Groundwater Elevation measurements are given in feet msl

WELL ID: 01-0017869-025

SAMPLE ID: 017

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC

PROJECT NO: 01.0017869.92

SITE: Buchanan, NY

DATE: 8/7/09

WEATHER: Sunny, 70's

SAMPLER(S): COMB

PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 13.57 Transducer Actual Depth 12.298

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (wt)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes (gal)
0916	12.335	21.00	1.865	6.16	7.57	187.4	---	2.05	0.01
0955	12.441	21.57	1.865	6.16	7.57	187.4	---	2.05	0.02
1002	12.466	21.45	1.866	6.41	7.56	166.7	6.57		0.03
1005	12.423	21.53	1.864	6.41	7.57	143.4	5.90		0.07
1010	12.463	21.66	1.865	5.91	7.58	157.8	1.89		0.1
1015	12.494	21.96	1.869	5.55	7.57	153.1	1.48		0.2
1020	12.596	22.00	1.865	5.42	7.56	151.9	4.46		0.3
1025	12.501	22.28	1.871	5.31	7.56	149.5	3.44		0.35
1030	12.605	22.32	1.877	5.49	7.58	152.1	3.54		0.4
1040	12.607	22.46	1.887	4.71	7.56	146.4	4.86		0.45
1050	12.719	22.50	1.896	4.80	7.56	149.6	3.51		0.50
1056	12.851	22.59	1.897	4.79	7.56	144.4	3.24		0.55
1105	12.896	22.63	1.898	4.50	7.61	146.3	2.96		0.6
1110	12.911	22.72	1.897	4.19	7.57	146.4	0.24		0.65
1115	12.907	22.85	1.898	4.75	7.57	145.3	0.00		0.7
1120	12.955	22.86	1.899	4.72	7.56	144.8	0.00		0.75
1125	12.988	22.86	1.900	4.70	7.56	144.6	0.00		
1126	Pump off								
1127	START SAMPLE COLLECTION								
1248	COMPLETED SAMPLE COLLECTION								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	6
flow meter	2
turbidity meter	706701254

NOTES AND OBSERVATIONS:

Total volume purged 0.95 gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.

Groundwater Elevation measurements are given in feet msl.

WELL ID: MW-50 60
 SAMPLE ID: 023

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: sunny 70's

PROJECT NO: 01.0017869.92
 DATE: 8/7/04
 SAMPLER(S): CB MB
 PUMP DEPTH: 60 ft

WATER QUALITY: DTW = 1042 GW Elevation 3933 ACTUAL DEPTH = 83.941 @ 1053

Time	DTW or GW Elevation (feet)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
	<u>39198</u>								
<u>1149</u>			<u>0</u>	<u>PUMP ON</u>					
<u>1208</u>	<u>88.515</u>	<u>24.6</u>	<u>2.212</u>	<u>0.29</u>	<u>7.17</u>	<u>124.3</u>		<u>0.2</u>	
<u>1217</u>	<u>89.052</u>	<u>24.40</u>	<u>2.204</u>	<u>1.82</u>	<u>7.15</u>	<u>102.3</u>			
<u>1223</u>	<u>89.124</u>	<u>24.24</u>	<u>2.257</u>	<u>0.90</u>	<u>7.15</u>	<u>94.1</u>	<u>0.41</u>		<u>0.01</u>
<u>1229</u>	<u>89.17</u>	<u>23.99</u>	<u>2.276</u>	<u>0.71</u>	<u>7.16</u>	<u>87.8</u>	<u>7.68</u>		<u>0.03</u>
<u>1238</u>	<u>88.827</u>	<u>24.49</u>	<u>2.284</u>	<u>1.10</u>	<u>7.18</u>	<u>78.7</u>	<u>7.50</u>		<u>0.06</u>
<u>1243</u>	<u>88.842</u>	<u>24.42</u>	<u>2.297</u>	<u>1.08</u>	<u>7.19</u>	<u>79.0</u>	<u>7.39</u>		<u>0.1</u>
<u>1253</u>	<u>88.799</u>	<u>24.30</u>	<u>2.309</u>	<u>1.03</u>	<u>7.17</u>	<u>72.7</u>	<u>7.30</u>		<u>0.14</u>
<u>1259</u>	<u>89.113</u>	<u>24.52</u>	<u>2.312</u>	<u>1.06</u>	<u>7.19</u>	<u>71.2</u>	<u>7.26</u>		<u>0.16</u>
<u>1304</u>									<u>START SAMPLE COLLECTION</u>
<u>1602</u>									<u>SAMPLE COMPLETED</u>
									<u>PUMP OFF</u>

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	<u>5</u>
flow meter	<u>K1</u>
turbidity meter	<u>200704273</u>

NOTES AND OBSERVATIONS:

Total volume purged 0.3 gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.

Groundwater Elevation measurements are given in feet msl.

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

MW 50-42
WELL ID: _____
SAMPLE ID: 018

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Sunny 70's

PROJECT NO: 01.0017869.92
DATE: 8/7/07
SAMPLER(S): CB M13
PUMP DEPTH: 27 ft

WATER QUALITY: DTW = 7.50 Transducer Actual Depth 33.173 REVISION: 6.654 ^{VE} 11/24

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Purged Notes (gal)
	<u>33.217</u>								
<u>11:44</u>	<u>1.76</u>		PUMP ON					<u>0.5</u>	
<u>12:05</u>	<u>1.74</u>	<u>24.57</u>	<u>1.286</u>	<u>2.30</u>	<u>7.84</u>	<u>127.1</u>	-		
<u>12:17</u>	<u>7.78</u>	<u>25.37</u>	<u>1.279</u>	<u>1.06</u>	<u>8.14</u>	<u>86.3</u>			
<u>12:23</u>	<u>7.78</u>	<u>25.57</u>	<u>1.301</u>	<u>0.68</u>	<u>8.20</u>	<u>84.9</u>	<u>8.53</u>		<u>0.2</u>
<u>12:29</u>	<u>7.76</u>	<u>25.67</u>	<u>1.302</u>	<u>0.50</u>	<u>8.26</u>	<u>83.2</u>	<u>8.67</u>		<u>0.3</u>
<u>12:35</u>	<u>7.76</u>	<u>25.78</u>	<u>1.303</u>	<u>0.49</u>	<u>8.30</u>	<u>84.8</u>	<u>8.27</u>		<u>0.5</u>
<u>12:43</u>	<u>7.76</u>	<u>25.87</u>	<u>1.303</u>	<u>0.50</u>	<u>8.31</u>	<u>85.4</u>	<u>8.20</u>		<u>0.6</u>
<u>12:48</u>	<u>7.76</u>	<u>25.81</u>	<u>1.304</u>	<u>0.48</u>	<u>8.30</u>	<u>86.2</u>	<u>8.27</u>		<u>0.7</u>
<u>12:50</u>	START SAMPLE COLLECTION								
<u>13:13</u>	SAMPLE COMPLETED : 2 L IPEC								
	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	<u>3</u>
flow meter	<u>K1 #1</u>
turbidity meter	<u>200704243</u>

NOTES AND OBSERVATIONS: Total volume purged 4.85 gal
Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.

WELL ID: MW 30-69

SAMPLE ID: C24

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, 70s

PROJECT NO: 01.0017869.92
 DATE: 3/6/09
 SAMPLER(S): CP/MB

SAMPLING INTERVAL (depth in ft below top of casing)
67.3 to 71.3

TOTAL VOLUME PURGED: 1.9 gal

SAMPLING PORT
69

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
11:00	0	PUMP ON						6/7	46
11:03	0.01	26.18	1.710	12.55	7.95	170.2	---	4/7	46
11:07	0.15	26.17	1.717	13.14	7.94	171.2	---	4/7	47
11:25	0.4	26.54	1.471	13.13	7.74	170.2	---		
11:30	0.5	26.37	1.425	12.54	8.02	171.6	---		
11:35	1.0	26.22	1.416	12.58	8.03	172.4	---		
11:40	1.0	26.12	1.413	12.54	8.04	176.4	---		
11:45	1.2	25.91	1.454	10.10	8.05	171.3	---		
11:50	1.4	25.76	1.444	9.15	8.05	171.6	---		
11:55	1.5	25.42	1.444	9.72	8.06	172.0	---		
12:00	1.7	25.81	1.448	9.90	8.06	171.9	---		
12:00	PUMP OFF								
12:01	START SAMPLE COLLECTION								
12:10	COMPLETED SAMPLE COLLECTION								

Equipment Used	Equipment Identification #
556 MPS Reader and 5563 Sonde Turbidity meter	2

NOTES AND OBSERVATIONS:

MW-30-84
(017)

WELL ID: MW 30-84

SAMPLE ID: 017

**GZA GeoEnvironmental of New York
Waterloo Sampling Data Sheet**

CLIENT: Energy IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny 70°

PROJECT NO: 01707601 017076017869.92
 DATE: 8/10/01 8/15/01
 SAMPLER(S): 28/118 28/118

SAMPLING INTERVAL (depth in ft below top of casing)
77.3 to 85.1

TOTAL VOLUME PURGED: 1.2 gal

SAMPLING PORT
84

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1110	0	PUMP ON	DN					117	40
1119	0.01	26.57	11055	1.08	6.78	-22.1	---	117	42
1125	0.1	27.18	11080	0.91	6.67	-34.0	---		
1130	0.25	27.17	11010	0.80	6.92	-37.0	---		
1135	0.4	27.10	11071	0.53	6.74	-35.3	---		
1140	0.45	27.15	11073	0.54	6.95	-35.8	---		
1145	0.5	26.98	11033	4.50	7.30	-19.5	---		
1150	0.6	26.65	11031	4.60	8.05	-26.8	---		
1155	0.7	26.65	11031	4.62	8.02	-25.7	---		
1200	0.8	26.60	11030	4.63	8.04	-24.8	---		
1205	1.0	26.60	11030	4.60	8.05	-27.3	---		
1207	PUMP OFF								
1208	START SAMPLE COLLECTION								
1208	COMPLETE SAMPLE COLLECTION								

Equipment Used	Equipment Identification #
556 MPS Reader and 5563 Sonde Turbidity meter	5

NOTES AND OBSERVATIONS:

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

WELL ID: 33 4D
SAMPLE ID: C21

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Scattered 90°

PROJECT NO: 01.0017869.92
DATE: 8/5/09
SAMPLER(S): CB, MB

WATER COLUMN HEIGHT (ft) 27.25 DTW 9.93 = 17.32 Water Column Height ft
Well Diameter: _____ in

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 17.32 x 0.653 = 11.3 gal
Multiplier Well Volume
11.3 x 1.5 = 17 gal
Designed Purge Volume

TOTAL VOLUME PURGED: _____ gal

WATER QUALITY: DTW = 4.93 Transducer Actual Depth 50.577 READING 4.93

Time	Volume Purged (gal)	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)	Notes
1202	0										PUMP ON
1206	0.4		31.67	2063	6.97	8.11	-134	7.07			
1212	0.8		31.83	2045	1.22	8.10	-225	1.98			
1222	1.4+1 = 2.4		32.53	2036	1.69	9.18	-282	8.3			
1232	2.0+1.5 = 3.5		32.84	2039	1.92	9.19	-273	8.01			
1238	2.5+1.8 = 4.3		32.92	2041	2.11	9.19	-256	7.29			
1246	3.5+2.5 = 6.0		32.99	2041	2.14	9.19	-271	6.97			
1256	4.5+3.5 = 8.0		32.80	2041	2.25	9.19	-303	6.40			
1306	5+3 = 8.3		32.75	2041	2.32	9.19	-313	6.29			
1315	TOTAL	9.8									Well dry Pump off. Let well to recharge
1350											START SAMPLE COLLECTION
1406											SAMPLE COLLECTION 2 2 18" EC PUMP OFF

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	5
turbidity meter	200104293

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

WELL ID: MW-55-3
SAMPLE ID: 010

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: sunny, humid, 30s

PROJECT NO: 01.0017869.92
DATE: 8/5/09
SAMPLER(S): C.B. COMMERCIAL
PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 9.40 Transducer Actual Depth 24.276 READING - 6.379

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
1034	24.297		PUMP	ON					
1043	24.134	22.50	1.163	2.74	7.29	46.7	7.76	1	0.01
1055		22.81	1.230	0.63	7.30	26.3	4.04		0.05
1105		22.74	1.303	0.49	7.32	24.6	8.65		0.5
1115		23.01	1.373	0.41	7.33	26.8	7.73		0.75
1125		23.40	1.417	0.36	7.34	25.7	5.28		1.0
1135		23.72	1.458	0.32	7.35	18.0	5.36		1.25
1145		24.18	1.542	0.32	7.33	20.3	4.63		1.35
1150		24.37	1.506	0.31	7.31	24.1	4.18		1.5
1155		24.91	1.571	0.29	7.31	53.6	3.01		1.65
1200		25.91	1.609	0.34	7.30	24.9	1.34		1.75
1210		27.49	1.631	0.38	7.31	40.0	4.50		1.85
1215		28.19	1.635	0.35	7.31	40.7	4.63		1.90
1220		28.54	1.637	0.37	7.31	68.7	4.14		1.95
1225		28.65	1.638	0.31	7.31	46.1	4.01		1.97
1230		28.75	1.640	0.31	7.31	59.8	4.02	✓	1.98
1235		START SAMPLE COLLECTION							
1340		COMPLETED SAMPLE COLLECTION: 20 IPEC							
1340		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	2
flow meter	Kc
turbidity meter	20701254

NOTES AND OBSERVATIONS: Total volume purged 2.18 gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msd.

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

WELL ID: MW-55-51
SAMPLE ID: 011

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: SUNNY, Humid 80s

PROJECT NO: 01.0017869.92
DATE: 8/5/09
SAMPLER(S): C-REINFORCED
PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 9.00 Transducer Actual Depth 41.176 reading = 8.727

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (µl)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes (gals)
1034	41.811								
1043	41.770	26.64	2.845	6.27	7.14	117.3	-		0.1
1055	41.780	26.70	2.748	3.24	7.25	100.1	11.04	0.5	0.05
1105	41.782	26.13	2.755	3.13	7.28	101.1	8.20		0.1
1115	41.786	26.06	2.751	3.17	7.30	93.3	9.37		0.2
1125	41.792	26.39	2.759	3.12	7.31	97.2	8.40		0.4
1135	41.798	26.57	2.765	3.06	7.32	96.6	1.56		0.6
1145	41.788	26.88	2.763	3.10	7.32	94.3	5.39		0.8
1150	41.802	26.75	2.762	3.15	7.33	92.9	4.41		1.0
1155	41.813	27.12	2.756	3.05	7.32	90.5	4.58		1.1
1200	41.813	27.85	2.758	3.86	7.35	86.5	3.44		1.2
1210	41.827	28.31	2.761	3.78	7.35	83.4	2.79		1.3
1215	41.827	29.40	2.769	3.74	7.35	82.3	1.64		1.4
1220	41.829	29.69	2.771	3.76	7.36	82.2	1.14		1.4
1225	41.831	29.80	2.774	2.78	7.36	83.1	0.91		1.5
1230	41.837	30.03	2.774	2.79	7.37	84.0	0.87		1.5
1235	41.823	29.34	2.779	2.78	7.38	90.4	0.78		1.6
1240	START SAMPLE COLLECTION								
1325	COMPLETED SAMPLE COLLECTION: 2 IPEC								
1325	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	1
flow meter	2
turbidity meter	100701254

NOTES AND OBSERVATIONS:

Total volume purged 18 gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.

Groundwater Elevation measurements are given in feet msl.

WELL ID: MW 55-24
 SAMPLE ID: 011

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: SUNNY, HUMID, 80s

PROJECT NO: 01.0017869.92
 DATE: 8/5/09
 SAMPLER(S): C BEAUMER/LWT
 PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 9.00 Transducer Actual Depth 6.744 READING 8.747

Time	DTW or (Actual Depth)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (u/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
10:34	6.774		PUMP	0.0					
10:43	6.617	26.82	0.482		7.81	69.2	-	0.3	0.01
10:53	6.676	28.66	0.939	0.96	8.08	23.7	-		0.01
11:05	6.673	30.38	0.978	1.17	8.21	29.8	7.25		0.01
11:15	6.678	31.57	1.012	1.23	8.32	30.4	7.06		0.02
11:25	6.777	32.76	1.037	1.13	8.39	31.5	7.90		0.03
11:35	6.409	34.20	1.110	1.53	8.47	31.4	4.41		0.1
11:45	6.458	27.31	1.106	0.16	8.45	31.0	2.02		0.2
11:50	6.471	27.42	1.102	0.30	8.42	27.5	4.14		0.3
11:55	6.428	27.37	1.174	0.12	8.41	28.7	4.53		0.4
12:00	6.534	27.71	1.177	0.62	8.42	30.3	4.49		0.5
12:10	6.514	28.39	1.134	0.58	8.43	30.5	4.24		0.6
12:15	6.576	28.66	1.134	0.53	8.44	27.5	4.30		0.7
12:20	START SAMPLE COLLECTION								
12:52	COMPLETED SAMPLE COLLECTION 26.54 min								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	6
flow meter	1
turbidity meter	200701254

NOTES AND OBSERVATIONS: Total volume purged 0.9 gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

**GZA GeoEnvironmental of New York
Modified Traditional Purge
Sampling Data Sheet**

WELL ID: MW-36-52
SAMPLE ID: 014

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Mostly sunny high 80's

PROJECT NO: 01.0017869.92
DATE: 8/4/09
SAMPLER(S): CB, MB

WATER COLUMN HEIGHT (ft) 52 DTB = 4.27 DTW = 47.73 Water Column Height ft
Well Diameter: _____ in

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 47.73 x 0.041 Multiplier = 1.95 Well Volume gal

1.95 x 1.5 = 2.93 gal
Designed Purge Volume

TOTAL VOLUME PURGED: 3.15 gal

WATER QUALITY: DTW = _____ Transducer Actual Depth _____

Time	Volume Purged (gal)	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)	Notes
1111	0	PUMP ON									
1115	0.05	—	26.40	1.267	3.50	6.86	54.7	—	—	—	
1118	0.15	—	25.40	1.460	3.26	6.86	-16.4	7.5-6.1	—	—	
1121	0.60	—	24.06	1.511	3.13	6.86	-35.2	17.8-8.0	—	—	
1124	0.80	—	23.90	1.500	2.42	6.90	-35.5	34.3-2	—	—	
1126	1.0	Wet-dry Stop pump. Water stopped reaching the surface. Lower tubing to 1 foot above bottom of well.									
1128		Pump on									
1130	1.25	—	23.99	1.452	2.90	7.03	-27.3	45.2-7	—	—	
1134	1.60	—	26.62	1.476	4.80	6.97	-39.0	47.2-8	—	—	
1135		Pump off. Foot valve clogged. Pull out tubing and clean valve.									
1146	2.30	Pump on									
1150	2.60	—	24.49	1.463	3.30	7.09	-10.3	41.8-6	—	—	
1152	2.90	—	24.83	1.478	2.57	7.06	-11.1	76.5-4	—	—	
1153	3.00	—									
1154		PUMP OFF									
1202		START SAMPLE COLLECTION									
		SAMPLE COMPLETED: 2 L IPEC									

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	2
turbidity meter	200701254

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

WELL ID: MW 36-41
SAMPLE ID: 609

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Mostly sunny, upper 80's

PROJECT NO: 01.0017869.92
DATE: 8/4/09
SAMPLER(S): CB, M.B

WATER COLUMN HEIGHT (ft) Well Diameter: _____ in

$$\frac{4.1}{DTB} - \frac{4.22}{DTW} = \frac{36.78}{\text{Water Column Height}}$$

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 36.78 x 0.041 = 1.50 gal
Multiplier Well Volume

1.50 x 1.5 = 2.25 gal
Designed Purge Volume

TOTAL VOLUME PURGED: 2.30 gal

WATER QUALITY: DTW = GW Elevation

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
1257	0	PUMP	CN						
1301	0.1		25.68	1.416	0.17	7.23	577	24.95	
1303	0.5		25.35	1.830	0.24	7.33	30.4	33.21	
1306	0.8		25.67	1.447	0.19	7.50	-52.0	141.4	
1310	1.0		25.80	1.433	0.19	7.51	-13.2	183.9	
1314	1.1		26.00	1.500	0.23	7.47	-6.7	119.3	
1318	1.3		26.04	1.771	0.27	7.37	+15.0	204.4	
1323	1.45		25.92	1.787	0.69	7.36	26.5	257.3	
1330	1.60		25.80	1.801	1.09	7.36	30.1	84.64	
1342	1.80		25.52	1.818	1.66	7.35	35.2	17.17	
1350	1.90		25.39	1.819	1.72	7.35	36.9	12.31	
1355	1.95		25.30	1.818	1.73	7.34	36.6	14.08	
1400	2.05		25.28	1.816	1.71	7.34	35.7	14.78	
1405	2.15		25.27	1.815	1.87	7.34	36.4	15.09	
1406		START	SAMPLE COLLECTION						
1429		SAMPLE COMPLETED	: 2 L IPEC						
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	2
turbidity meter	200701254

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

WELL ID: MW-36
SAMPLE ID: 015

CLIENT: Entergy - IPEC

PROJECT NO: 01.0017869.92

SITE: Buchanan, NY

DATE: 08/04/09

WEATHER: Mostly sunny upper 80's

SAMPLER(S): CB, MB

PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 4.35 GW Elevation 13141 ACTUAL DEPTH = 41453 @ 1049

Time	ACTUAL DTW or GW Elevation DEPTH	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Purged Notes (gci)
1433	41433		PUMP ON						0
1439	41431	28.43	1182	0.73	7.83	30.0	4.54		0.05
1440	41431		PUMP OFF						
1524	41421		PUMP ON					2	0.15
1530	41420	28.61	1.279	0.41	7.96	47.7	4.60		0.25
1538	41422	28.79	1.286	0.22	7.97	48.1	3.87		0.60
1543	41420	28.81	1.287	0.24	7.97	48.7	4.39		0.75
1548	41420	28.83	1.287	0.25	7.97	48.8	4.22		0.85
1553	41420	28.85	1.287	0.23	7.98	49.1	4.40		1.0
1554		START SAMPLE COLLECTION							
1609		SAMPLE COMPLETED: 2 L. IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	2
flow meter	200701254
turbidity meter	

NOTES AND OBSERVATIONS:

Total volume purged 1.15 gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.

WELL ID: MW 54 - 190

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 CATHER: SURVIVY, WARM, SO5

PROJECT NO: 01.0017869.02
 DATE: 3/4/09
 SAMPLER(S): 6MM6

AMPLING INTERVAL (depth in ft below top of casing)
185.0 to 203.6

TOTAL VOLUME PURGED: 2.5 gal

AMPLING PORT
190

PURGE RATE: variable (gal / min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psf)
0958	0	PUMP ON						3/4	40
1001	0.01	23.05	1.818	4.46	6.04	-46.6	-		
1010	0.60	22.51	1.804	0.61	6.54	-65.0	2.70		
1020	1.0	22.00	1.836	0.33	7.15	-68.7	2.04		
1030	1.5	21.77	1.815	0.27	7.31	-66.7	1.61		
1035	1.75	21.67	1.808	0.33	7.33	-60.0	2.35		
1040	2.0	21.56	1.900	0.27	7.36	-58.3	2.17		
1045	2.1	21.48	1.901	0.25	7.37	-58.7	1.43		
1050	2.25	21.41	1.901	0.24	7.39	-57.6	1.40		
1055	2.30	21.35	1.901	0.21	7.40	-56.6	1.39		
1003		PUMP OFF							
1004		START SAMPLE COLLECTION							
1120		COMPLETED SAMPLE COLLECTION 2L IPEC							

Equipment Used	Equipment Identification #
I 556 MPS Reader and 5563 Sonde turbidity meter	<u>200705273</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 54-173

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: SW, W, W, W, W, 80's

PROJECT NO: 01.0017569.92
 DATE: 8/1/09
 SAMPLER(S): C/B/M/B

SAMPLING INTERVAL (depth in ft below top of casing)
170.5 to 182.0

TOTAL VOLUME PURGED: 2.7 gal

SAMPLING PORT
173

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
0955	0	PUMP ON						8/4	40
1001	0.01	22.83	1.835	1.55	6.03	95.6	—		
1010	0.50	22.15	1.864	0.16	6.17	57.2	2.16		
1020	1.0	21.74	1.862	0.13	6.60	27.5	2.39		
1030	1.5	21.51	1.857	0.08	6.78	6.9	2.60		
1035	1.75	21.33	1.855	0.04	6.85	-9.7	3.14		
1040	2.0	21.28	1.854	0.07	6.91	-10.3	3.13		
1045	2.25	21.20	1.853	0.07	6.93	-16.4	3.56		
1050	2.3	21.13	1.853	0.06	6.97	-20.7	3.46		
1055	2.5	21.05	1.851	0.06	6.97	-20.6	3.54	↓	↓
1003		PUMP OFF							
1004		START SAMPLE COLLECTION							
1115		COMPLETED SAMPLE COLLECTION							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde Turbidity meter	5 200709293

NOTES AND OBSERVATIONS:

WELL ID: MW 54-114

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: sunny, warm, SW's

PROJECT NO: 01.0017969.92
 DATE: 3/4/09
 SAMPLER(S): CVMB

SAMPLING INTERVAL (depth in ft below top of casing)
135.0 to 155.5

TOTAL VOLUME PURGED: 2.7 gal

SAMPLING PORT 144 3

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
0958	0	Pump ON						8/4	40
10:01	0.01	22.66	1.862	2.14	5.96	44.7	—		
10:02	0.50	22.01	1.971	0.45	6.76	49.9	1.51		
10:20	1.0	21.66	1.944	0.41	6.98	41.2	4.75		
10:40	1.5	21.43	1.954	0.38	7.07	44.0	4.63		
10:55	1.75	21.30	1.963	0.34	7.09	43.4	3.78		
10:40	2.0	21.19	1.970	0.30	7.11	42.7	3.63		
10:45	2.25	21.12	1.973	0.31	7.12	41.8	3.69		
10:50	2.5	21.10	1.975	0.31	7.14	41.0	3.60		
10:55		Pump OFF							
10:56		START SAMPLE COLLECTION							
11:10		COMPLETED SAMPLE COLLECTION. 26 IPEC							

Equipment Used	Equipment Identification #
1556 MPS Reader and 556J Sonde conductivity meter	200704293

REMARKS AND OBSERVATIONS:

WELL ID: MW 54 . 37

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 CATHER: SUNNY, WARM, 90s

PROJECT NO: 010017369.92
 DATE: 8/4/09
 SAMPLER(S): CGM112

SAMPLING INTERVAL (depth in ft below top of casing)
29.0 to 42.0

TOTAL VOLUME PURGED: 3.45 gal

PURGE RATE: variable (gal / min)

SAMPLING PORT
37

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pres (psi)
1310	0	Pump ON						0/4	2.0
1317	0.01	22.60	2.194	0.30	6.90	-92.9			
1320	0.15	22.05	2.241	0.38	7.42	-71.3	4.86		
1330	1.25	21.87	2.247	0.81	7.44	-51.3	5.05		
1340	2.00	21.80	2.248	0.79	7.44	-42.6	3.95		
1345	2.25	21.77	2.248	0.77	7.44	-40.0	0.00		
1350	2.5	21.74	2.248	0.75	7.44	-38.5	0.00		
1355	3.25	21.71	2.24	0.72	7.44	-37.9	0.00		
1400		PUMP OFF							
1401		START SAMPLE COLLECTION							
1410		COMPLETED SAMPLE COLLECTION							

Equipment Used	Equipment Identification #
I 556 MPS Reader and 556J Sonde Turbidity meter	<u>6</u> 200704293

REMARKS AND OBSERVATIONS:

WELL ID: MW 57-58

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 TE: Buchanan, NY
 CATHER: SUNNY, WATSON 805

PROJECT NO: 01.0017869.92
 DATE: 3/4/09
 SAMPLER(S): CGMIB

SAMPLING INTERVAL (depth in ft below top of casing)
51.5 to 64.0

TOTAL VOLUME PURGED: 3.1 gal

SAMPLING PORT
58

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pres (psi)
1310	0	PUMP	0.0					0/4	20
1312	0.01	22.82	1.790	1.60	6.66	-56.7			
1320	0.5	22.10	1.718	2.20	6.66	-66.1	6.58		
1330	1.0	21.92	1.700	0.16	6.84	-71.5	7.33		
1340	1.25	21.78	1.717	0.13	6.90	-65.6	6.14		
1345	1.50	21.77	1.743	0.12	6.92	-63.3	4.75		
1350	1.75	21.73	1.760	0.12	6.94	-57.1	5.11		
1355	2.25	21.68	1.778	0.12	6.95	-56.5	4.23		
1400	2.5	21.65	1.782	0.12	6.96	-55.4	3.67		
1405	2.6	21.67	1.792	0.12	6.96	-52.8	0.01		
1410	2.7	21.66	1.795	0.11	6.96	-52.7	0.00		
1415	2.8	21.67	1.798	0.11	6.97	-49.7	0.00		
1420	2.9	21.69	1.803	0.10	6.97	-48.9	0.00		
1420		PUMP OFF							
1421		START SAMPLE COLLECTION							
1430		COMPLETE SAMPLE COLLECTION							

Equipment Used	Equipment Identification #
556 MPS Reader and 5561 Sonde	5
Conductivity meter	200704293

NOTES AND OBSERVATIONS:

WELL ID: MW 54-123

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, Warm, 80's

PROJECT NO: 01.0017869.92
 DATE: 8/4/09
 SAMPLER(S): CBMB

AMPLING INTERVAL (depth in ft below top of casing)
116.0 to 126.0

TOTAL VOLUME PURGED: 1.8 gal

AMPLING PORT
123

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pres (psi)
1310	0	Pump On						6/4	20
1315	0.01	22.31	1.815	0.22	6.20	-32.8			
1320	0.05	22.13	1.817	0.32	6.14	-51.9	4.32		
1330	0.50	22.57	1.808	0.27	6.08	-76.8	9.48		
1340	1.00	22.41	1.805	0.19	6.94	-105.2	8.87		
1345	1.1	22.32	1.805	0.16	7.00	-106.8	2.78		
1350	1.2	22.29	1.805	0.14	7.03	-102.2	2.50		
1355	1.25	22.21	1.805	0.16	7.06	-102.1	2.51		
1400	1.3	22.17	1.806	0.18	7.03	-102.6	2.47		
1405	1.4	22.18	1.806	0.15	7.03	-103.2	0.00		
1410	1.5	22.17	1.805	0.14	7.09	-103.6	0.00		
1415	1.6	22.16	1.805	0.13	7.10	-103.8	0.00		
1415		Pump OFF							
1416		START SAMPLE COLLECTION							
1435		COMPLETED SAMPLE COLLECTION: 2L IPEC							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde	1
Turbidity meter	200704243

NOTES AND OBSERVATIONS:

WELL ID: MW 32-59

SAMPLE ID: 011

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 CATHER: SUNNY 80's

PROJECT NO: 01.0017869.92
 DATE: 8/3/09
 SAMPLER(S): 181MB

SAMPLING INTERVAL (depth in ft below top of casing)
283 to 613

TOTAL VOLUME PURGED: 7.20 gal

SAMPLING PORT
59

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

6

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
1310	0	PUMP	0.01					617	40
1315	0.01	20.72	1.031	3.04	6.42	36.8			
1325	1.0	20.65	1.065	2.67	6.38	32.5	7.20		
1332	1.5	20.57	1.064	2.60	7.17	32.7	10.33		
1340	2.0	20.57	1.063	2.60	7.53	31.7	12.81		
1346	2.5	PUMP OFF CONTROL BOX BATTERY DIED							
1355		PUMP ON NEW CONTROL BOX BATTERY IS 70%							
1400	2.75	20.63	1.060	3.25	7.67	48.3	21.38		
1410	3.5	20.62	1.053	3.26	7.69	44.7	14.01		
1415	4.0	20.59	1.042	3.26	7.74	42.7	14.00		
1420	4.25	20.53	1.038	3.25	7.73	43.1	13.05		
1425	4.5	20.52	1.034	3.24	7.74	43.3	8.11		
1430	5.0	20.52	1.024	3.25	7.76	43.6	3.34		
1435	5.25	20.49	1.015	3.17	7.76	44.3	2.45		
1440	5.50	20.48	1.002	3.21	7.76	44.9	2.82		
1445	6.00	20.52	0.992	3.24	7.76	45.0	2.73		
1450	6.50	20.54	0.987	3.20	7.76	46.0	2.60		
1455	7.00	20.57	0.982	3.23	7.76	46.3	2.60		
1456		PUMP OFF							
1457		START SAMPLE COLLECTION							
1504		COMPLETED SAMPLE COLLECTION 112V 2L IPEC							

Equipment Used	Equipment Identification #
556 MPS Reader and 5563 Sonde	5
turbidity meter	20104243

REMARKS AND OBSERVATIONS:

WELL ID: MW 32 - 85

SAMPLE ID: 014

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: sun, 80s

PROJECT NO: 01.0017869.92
 DATE: 8/3/09
 SAMPLER(S): CB100B

SAMPLING INTERVAL (depth in ft below top of casing)
79.3 to 92.8

TOTAL VOLUME PURGED: 2.70 gal

SAMPLING PORT 85 5

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1310	0	PUMP ON						617	40
1320	0.01	22.08	1.712	3.90	6.98	-30.9			
1325	0.02	22.05	1.624	1.63	7.02	-32.8	7.40		
1332	0.05	22.16	1.673	0.77	7.05	-30.0	6.01		
1340	0.50	22.20	1.685	0.71	7.05	-35.6	9.83		
1345	0.75	22.09	1.675	0.96	7.06	-30.4			
1346		PUMP OFF CONTROL BOX BATTERY DIED							
1355		PUMP ON NEW CONTROL BOX BATTERY @ 70%						617	40
1400	0.9	22.27	1.705	2.05	7.08	-75.6	10.60		
1410	1.0	22.18	1.676	2.08	7.08	-63.8	7.90		
1415	1.25	22.23	1.674	2.81	7.17	-57.0	8.22		
1420	1.5	22.27	1.616	2.77	7.08	-58.8	5.08		
1425	1.75	22.20	1.687	2.65	7.08	-50.1	3.39		
1430	1.90	22.21	1.702	2.32	7.07	-51.6	0.03		
1435	2.00	22.15	1.712	2.19	7.07	-50.7	0.00		
1440	2.10	22.07	1.720	2.01	7.07	-48.1	0.00		
1445	2.25	22.08	1.725	1.95	7.07	-48.7	0.00		
1460	2.50	22.13	1.725	1.87	7.07	-49.1	0.00		
1465		PUMP OFF							
1464		START SAMPLE COLLECTION							
1520		COMPLETED SAMPLE COLLECTION 26 IPEC							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde	1
turbidity meter	200704293

NOTES AND OBSERVATIONS:

WELL ID: MW 32-149

SAMPLE ID: 012

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Mostly sunny 50s

PROJECT NO: 01 0017869.92
 DATE: 8/3/04
 SAMPLER(S): CB, MB

SAMPLING INTERVAL (depth in ft below top of casing)
147.3 to 156.3

TOTAL VOLUME PURGED: 0.50 gal

SAMPLING PORT
149

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1045	0	PUMP ON						72/4	52
1100	0.01	24.77	2.126	0.65	6.68	-239.8	—		
1110	0.05	24.16	2.005	0.25	6.60	-226.0	—		
1120	0.10	23.70	1.834	0.13	6.74	-255.3	—		
1130	0.15	23.64	1.783	0.10	6.78	-228.2	4.54		
1140	0.18	23.36	1.750	0.07	6.80	-238.1	6.90		
1150	0.20	23.24	1.730	0.08	6.81	-240.0	6.82		
1155	0.25	23.22	1.709	0.07	6.82	-246.1	6.94		
1200	0.30	23.18	1.705	0.07	6.82	-250.4	7.05	↓	↓
1202		PUMP OFF							
1204		START SAMPLE COLLECTION							
1243		SAMPLE COMPLETED: 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
1556 MPS Reader and 3563 Sonde Turbidity meter	<u>5</u> <u>200704293</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 32-173

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Mostly sunny 80's

PROJECT NO: 01.0017369.92
 DATE: 8/3/09
 SAMPLER(S): CG, MB

SAMPLING INTERVAL (depth in ft below top of casing)
105.8 to 174.3

TOTAL VOLUME PURGED: 0.80 gal

SAMPLING PORT
173

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/L)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
1045	0	PUMP ON						7.2/9	52
1100	0.01	23.65	1.822	0.90	6.57	-246.4	—		
1110	0.05	22.86	1.861	0.54	6.71	-236.5	—		
1120	0.20	22.67	1.864	0.30	6.71	-202.7	—		
1130	0.30	22.74	1.861	0.25	6.38	-181.0	5.90		
1140	0.35	22.39	1.855	0.17	6.86	-181.3	6.09		
1150	0.40	22.36	1.856	0.16	6.85	-180.2	6.40		
1155	0.50	22.37	1.852	0.15	6.80	-174.9	6.48		
1200	0.60	22.31	1.852	0.14	6.83	-171.4	6.51	↓	↓
1202		PUMP OFF							
1204		START SAMPLE COLLECTION							
1237		SAMPLE COMPLETED: 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
I 556 MPS Reader and 5563 Sonde turbidity meter	<u>4</u> <u>200104293</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 32.190

SAMPLE ID: 013

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Mostly sunny 80's

PROJECT NO: 01.0017869.92
 DATE: 8/3/04
 SAMPLER(S): CB, MB

SAMPLING INTERVAL (depth in ft below top of casing)
180.3 to 193.9

TOTAL VOLUME PURGED: 0.45 gal

SAMPLING PORT
190

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
1045	0							7.2/9	52
1100	0.01	25.27	1.186	7.75	6.96	-178.1	—		
1110	0.05	23.93	1.671	1.29	6.07	-184.7	—		
1120	0.10	23.67	1.631	0.39	6.88	-199.9	—		
1130	0.15	23.62	1.678	0.33	6.96	-198.0	6.54		
1140	0.18	23.40	1.677	0.26	7.02	-191.9	8.06		
1150	0.20	23.26	1.676	0.24	7.02	-191.7	9.01		
1155	0.23	23.40	1.674	0.24	7.03	-190.8	9.31		
1200	0.25	23.31	1.676	0.23	7.04	-189.5	9.45	↓	↓
1202		PUMP OFF							
1204		START SAMPLE COLLECTION							
1245		SAMPLE COMPLETED		2 L	IPEC				
		PUMP OFF							

Equipment Used	Equipment Identification #
I 356 MPS Reader and 5563 Sonda turbidity meter	200104293

NOTES AND OBSERVATIONS:

WELL ID: MW-43-6.2
 SAMPLE ID: 012

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Heavy Rain 80's

PROJECT NO: 01.0017869.92
 DATE: 1/31/09
 SAMPLER(S): C.B.M.B.
 PUMP DEPTH: 535 ft

1515
 DTW = 31.491 GW Elevation 31.491 ACTUAL DEPTH = 37.570

Time	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes (gal)
1016	31.575	PUMP ON							
1040	37.387	22.03	2.336	2.63	6.75	-47.9	—	0.5	0.01
1050	37.205	20.92	2.856	1.29	6.71	-21.0	8.29		0.1
1100	30.955	19.65	2.817	0.66	6.71	16.3	6.85		0.9
1110	30.908	19.18	2.804	0.53	6.70	29.6	13.49		0.5
1125	37.229	19.86	2.785	0.72	6.15	70.9	21.57		0.75
1135	37.229	20.64	2.787	1.30	6.31	41.4	21.18		0.80
1145	37.229	21.23	2.785	1.30	6.35	43.2	16.72		0.95
1153	37.329	21.37	2.775	0.84	6.36	48.0	9.06		1.05
1201	37.364	21.67	2.777	0.80	6.36	48.5	10.17		1.10
1206	37.399	21.95	2.779	0.82	6.36	49.1	8.37		1.12
1211	37.348	22.16	2.779	0.88	6.37	48.9	8.09		1.14
1216	37.328	22.13	2.773	0.89	6.37	48.8	8.18	↓	1.18
1217		START SAMPLE COLLECTION							
1252		SAMPLE COMPLETED 2 L IPEC							
		PUMP OFF							
* NOTE									

6/16
 6/12 & 3

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	1
flow meter	
turbidity meter	200704293

NOTES AND OBSERVATIONS:

Total volume purged _____ gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.

Groundwater Elevation measurements are given in feet msl.

* MW 43 needs a separate set up with initial box and manifold for each measurement.

WELL ID: MW 43-28
 SAMPLE ID: C12

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Heavy Rain 80's

PROJECT NO: 01.0017869.92
 DATE: 7/31/09
 SAMPLER(S): C12 MB
 PUMP DEPTH: 25 ft

WATER QUALITY: DTW = 1515 GW Elevation 32.97 ft ACTUAL DEPTH = 11845

Time	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
1010	11.347	PUMP ON							
1030		PUMP OFF							
1057	11.775	PUMP ON							
1110	11.634	21.58	4.735	3.35	6.80	163.9	3.29	0.2	0.21
1125	11.578	22.01	4.639	1.51	6.79	140.7	5.51		0.05
1135	11.555	22.15	4.605	1.41	6.80	113.5	3.50		0.03
1145	11.530	22.84	4.573	1.21	6.82	98.5	3.00		0.1
1153	11.514	22.93	4.550	1.21	6.80	83.6	3.05		0.12
1201	11.503	23.09	4.531	1.26	6.80	81.5	4.11		0.15
1206	11.501	23.20	4.524	1.18	6.81	76.0	4.06		0.18
1211	11.483	23.42	4.515	1.15	6.81	72.0	4.15		0.20
1219	11.453	23.80	4.503	1.05	6.82	66.8	3.99		0.25
1224	11.451	23.88	4.499	1.02	6.82	65.5	4.10		0.28
1229	11.444	23.93	4.495	1.01	6.82	64.6	4.05		0.30
12.30		START SAMPLE COLLECTION							
1310		SAMPLE COMPLETED 2 L IPEC							
1311		PUMP OFF							
* NOTE									

6/2/17

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	6
flow meter	
turbidity meter	200704293

NOTES AND OBSERVATIONS: Total volume purged _____ gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.

Groundwater Elevation measurements are given in feet msl.

* MW-43 made a set up with control box for each elevation.

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

MW-44-66
WELL ID: ~~MW 44-67C~~
SAMPLE ID: 013

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Cloudy, humid 80's

PROJECT NO: 01.0017869.92
DATE: 7/29/09
SAMPLER(S): CB, MB

WATER COLUMN HEIGHT (ft) Well Diameter: 2 in

$\frac{67}{DTB} - \frac{56.44}{DTW} = \frac{10.56}{\text{Water Column Height}}$ ft

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 10.56 x $\frac{0.163}{\text{Multiplier}}$ = 1.72 gal
Well Volume

1.72 x 1.5 = 2.58 gal
Designed Purge Volume

TOTAL VOLUME PURGED: 1.72 gal

WATER QUALITY: DTW = 56.44 GW Elevation 36.611 ACTUAL DEPTH = 7.746

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
1023	0	PUMP ON							
1032	0.01	7.369	21.31	2.605	7.39	6.02	668	-	6/6@45
1045	0.15	6.560	19.86	2.977	2.70	6.31	3.4	-	
1052	0.25	6.157	19.90	3.067	2.86	6.55	-3.1	10.62	
1100	0.40	5.691	19.78	3.096	3.03	6.71	-5.1	9.13	
1105	0.45	5.440	19.98	3.090	3.05	6.77	-5.2	5.01	
1110	0.50	5.245	19.92	3.095	3.23	6.81	-6.1	4.40	
1115	0.55	4.962	19.79	3.093	3.56	6.84	-40.6	4.73	
1120	0.60	4.770	19.74	3.085	3.44	6.85	-8.8	3.33	
1132	0.82	4.236	20.27	3.076	3.31	6.88	-9.3	6.06	
1135	0.90	4.127	20.31	3.077	3.31	6.89	-5.0	5.73	
1140	1.05	3.995	20.41	3.074	3.29	6.89	-4.5	4.45	
1145	1.10	3.753	20.33	3.071	3.34	6.89	-2.5	7.72	
1150	1.15	3.535	20.36	3.071	3.35	6.88	-1.1	7.66	
1155	1.25	3.305	19.87	3.083	3.41	6.88	-0.9	7.23	
1200	1.30	3.189	20.06	3.071	3.25	6.86	-0.8	6.92	
1205	1.50	2.987	20.00	3.077	3.20	6.86	6.5	12.34	
1210	1.60	2.665	19.95	3.081	3.18	6.86	8.9	17.91	Equipment
1215	1.65	2.515	19.95	3.084	3.14	6.86	9.8	6.56	Identification #
YSI 556 MPS Reader and 5563 Sonde									5
turbidity meter									200701254
1220	1.70	2.305	19.91	3.090	3.08	6.86	11.6		

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.

1250 COMPLETED SAMPLE COLLECTION 2L IPEC
1250 PUMP OFF

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

WELL ID: MW-44-1
SAMPLE ID: 014

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: overcast, humid, 80's

PROJECT NO: 01.0017869.92
DATE: 7/29/09
SAMPLER(S): CB/MB

WATER COLUMN HEIGHT (ft) Well Diameter: 1 in

$$\frac{102}{\text{DTB}} \cdot \frac{56.44}{\text{DTW}} = \frac{45.56}{\text{Water Column Height}} \text{ ft}$$

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 45.56 x 0.041 Multiplier = 1.87 gal Well Volume

1.87 x 1.5 = 2.8 gal Designed Purge Volume

TOTAL VOLUME PURGED: 2.8 gal

WATER QUALITY: DTW = 56.44 GW Elevation 29.330 ACTUAL DEPTH = 34.870

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
1108	0	PUMP ON							
1110	0.01		17.40	1.203	12.54	6.98	159.8	—	
1112		PUMP OFF							SILT CLOGGING TUBE
1148	1.2	PUMP ON							
1152	1.7		20.08	1.441	34.9	7.28	162.5	71.67	
1155	2.2		19.71	1.403	40.0	7.10	191.9	187.6	
1201	2.7		19.47	1.462	48.2	7.08	215.4		
1203		START SAMPLE COLLECTION							
1208		COMPLETED SAMPLE COLLECTION: IPEC							
1208		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	RENTAL SIN 01A0138 200701254

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.
1112 PUMP OFF DUE TO BUILD UP OF SILT IN TUBE

WELL ID: MW 63-50

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Mostly sunny 80s

PROJECT NO: 01 0017869.92
 DATE: 7/30/09
 SAMPLER(S): 1B MP

SAMPLING INTERVAL (depth in ft below top of casing)
41.5 to 58.0

TOTAL VOLUME PURGED: 2.65 gal

SAMPLING PORT 90 7

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
1000	0	PUMP ON						818	23
1009	0.1	19.94	1.284	0.26	6.89	-155.4			
1015	0.45	19.65	1.279	0.26	6.98	-140.4	4.50		
1025	1.0	19.26	1.277	0.25	7.11	-132.2	4.68		
1032	1.4	19.25	1.275	0.22	7.17	-132.7	4.60		
1039	1.8	19.12	1.275	0.21	7.20	-156.1	4.45		
1044	2.1	19.12	1.275	0.21	7.22	-151.0	0.0		
1049	2.3	19.08	1.276	0.21	7.22	-151.3	0.0		
1054	2.5	19.04	1.276	0.20	7.22	151.6	0.0	↓	↓
1055		PUMP OFF							
1056		START SAMPLE COLLECTION							
1105		SAMPLE COMPLETED : 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde conductivity meter	5 200704293

REMARKS AND OBSERVATIONS:

WELL ID: MW 63-99

SAMPLE ID: 010011

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Mostly sunny, 80's

PROJECT NO: 01.0017869.92
 DATE: 7/30/09
 SAMPLER(S): CBTMB

SAMPLING INTERVAL (depth in ft below top of casing)
81.5 to 100.5
~~58.8~~

TOTAL VOLUME PURGED: 2.15 gal

SAMPLING PORT
50 5

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1000	0	PUMP ON						7/8	23
1009	0.01	20.84	1.487	0.57	7.45	-105.4	-		
1015	0.2	21.09	1.496	0.42	7.43	-65.6	-		
1025	0.4	20.78	1.502	0.34	7.43	-40.1	4.60		
1034	0.8	20.60	1.503	0.32	7.45	-38.9	4.45		
1039	1.0	20.54	1.504	0.31	7.47	-37.3	4.28		
1044	1.15	20.58	1.503	0.28	7.48	-30.0	0.91		
1050	1.35	20.19	1.504	0.27	7.47	-31.7	1.58		
1055	1.45	20.17	1.504	0.26	7.46	-32.6	1.49		
1100	1.70	20.15	1.503	0.27	7.48	-33.2	1.54		
1107	2.00	20.13	1.502	0.28	7.49	-34.5	1.56	↓	↓
1108		PUMP OFF							
1109		START SAMPLE COLLECTION							
1130		SAMPLE COMPLETED							
1130		PUMP OFF							

Equipment Used	Equipment Identification #
1326 MPS Reader and 5563 Sonde turbidity meter	<u>6</u> <u>200104293</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 03 - 174

SAMPLE ID: 010

**GZA GeoEnvironmental of New York
Waterloo Sampling Data Sheet**

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sun + clouds 80's

PROJECT NO: 01.0017969.92
 DATE: 7/23/07
 SAMPLER(S): CBMR

SAMPLING INTERVAL (depth in ft below top of casing)
108.0 to 171.1

TOTAL VOLUME PURGED: 0.9 gal

SAMPLING PORT
174

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1147	0	PUMP OFF	0.0					8/8	30
1158	0.05	21.21	0.477	0.64	7.94	-193.3			
1205	0.1	20.78	0.452	0.31	7.41	-153.8	1.84		
1213	0.2	20.50	0.448	0.31	7.34	-136.1	0.42		
1219	0.3	20.22	0.447	0.27	7.31	-123.5	0.07		
1225	0.4	20.25	0.448	0.26	7.32	-107.4	0.00		
1232	0.6	20.19	0.464	0.24	7.33	-106.3	0.00		
1237	0.7	20.23	0.466	0.23	7.34	-103.4	0.00		
1238		PUMP OFF							
1239		START SAMPLE COLLECTION							
1305		COMPLETED SAMPLE COLLECTION. 2L ZIR							
1305		PUMP OFF							

Equipment Used	Equipment Identification #
I 556 MPS Reader and 556.3 Sonde Turbidity meter	<u>200704293</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 63-103

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sun + Clouds 80's

PROJECT NO: 01.0017869.92
 DATE: 7/30/07
 SAMPLER(S): Combe

SAMPLING INTERVAL (depth in ft below top of casing)
150.5 to 165

TOTAL VOLUME PURGED: 19 gal

SAMPLING PORT
1103 2

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gall)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
1147	0	PUMP	ON					5/8	30
1158	0.05	21.21	0.925	24.21	7.40	-290.5	-		
1206	0.1	20.63	0.904	22.50	7.12	-248.5			
1214	0.2	20.50	0.900	21.56	7.04	-232.3	6.44		
1220	0.3	20.23	0.897	20.91	7.00	-232.7	4.99		
1226	0.4	20.26	0.899	20.30	7.01	-233.2	3.18		
1232	0.6	20.00	0.901	19.80	6.98	-222.0	4.45		
1242	0.9	20.30	0.908	18.94	7.01	-222.1	4.83		
1250	1.1	20.55	0.923	18.40	7.02	-226.5	3.51		
1255	1.2	20.30	0.917	18.22	7.11	-216.5	2.97		
1305	1.5	20.25	0.914	17.90	6.99	-215.3	2.21		
1310	1.7	20.57	0.918	17.67	6.97	-212.9	2.26		
1320		START SAMPLE COLLECTION							
1345		COMPLETED SAMPLE COLLECTION 2L ZPC							
1345		PUMP OFF							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde Turbidity meter	C:AO138 serial 300104293

NOTES AND OBSERVATIONS:

WELL ID: MW 63-121

SAMPLE ID: 01C

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sun + clouds 80°F

PROJECT NO: 01.0017869.92
 DATE: 11/30/09
 SAMPLER(S): CB1003

SAMPLING INTERVAL (depth in ft below top of casing)
113 to 121.5

TOTAL VOLUME PURGED: 30 gal

SAMPLING PORT
121 3

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (µg/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
1147	0	PUMP ON	ON					8/8	30
1159	0.15	20.41	1.557	0.16	7.06	-192.5	-		
1207	0.30	20.07	1.590	0.12	7.09	-165.3			
1214	0.40	19.86	1.598	0.12	7.11	-87.4	4.10		
1220	0.60	19.67	1.598	0.12	7.11	-80.3	3.59		
1226	0.85	19.66	1.595	0.11	7.12	-50.8	3.72		
1233	1.10	19.52	1.586	0.09	7.12	-64.3	2.81		
1243	1.50	19.71	1.585	0.09	7.13	-55.9	2.45		
1250	1.90	19.78	1.582	0.08	7.16	-73.3	0.28		
1255	2.0	19.63	1.577	0.09	7.13	-87.3	0.10		
1305	2.2	19.66	1.570	0.09	7.14	-71.2	0.00		
1310	2.3	19.64	1.567	0.11	7.14	-67.7	0.00		
1320	2.4	19.79	1.566	0.10	7.14	-64.0	0.00		
1325	2.5	20.01	1.560	0.09	7.15	-47.7	0.10		
1330	2.6	20.20	1.561	0.09	7.15	-51.1	0.00		
1335	2.7	20.24	1.557	0.10	7.16	-63.4	0.00		
1340	2.8	20.18	1.558	0.10	7.16	-60.4	0.00		
1341		PUMP OFF							
1342		START SAMPLE COLLECTION							
1403		SAMPLE COMPLETED			2	IPEC			
		PUMP OFF							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde	5
Turbidity meter	201704213

NOTES AND OBSERVATIONS:

WELL ID: MW 63-112

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Mostly sunny, 80's

PROJECT NO: 01.0017869.92
 DATE: 7/26/09
 SAMPLER(S): 25min

SAMPLING INTERVAL (depth in ft below top of casing):
106.5 to 112.0

TOTAL VOLUME PURGED: 38 gal

SAMPLING PORT: 112 4

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
1147	0	PUMP	0.0					8/8	30
1200	0.25	19.30	1.315	0.46	7.15	-18.4	—		
1208	0.50	19.12	1.364	0.38	7.17	-11.5			
1215	0.85	18.88	1.375	0.38	7.17	-8.9	0.90		
1221	1.1	18.79	1.377	0.34	7.17	-8.0	0.83		
1227	1.5	18.69	1.377	0.36	7.17	-7.2	0.00		
1233	1.9	18.75	1.373	0.34	7.17	-6.0	0.00		
1242	2.2	18.44	1.373	0.30	7.18	-1.0	0.00		
1250	2.4	18.83	1.373	0.26	7.19	1.2	0.00		
1255	2.3	18.78	1.372	0.25	7.19	1.4	0.00		
1305	2.5	18.84	1.373	0.23	7.19	0.8	0.00		
1310	2.8	18.87	1.376	0.26	7.20	1.7	0.00		
1320	3.1	19.07	1.377	0.24	7.20	1.2	0.00		
1325	3.3	19.11	1.378	0.25	7.20	1.0	0.00		
1335	3.6	19.00	1.380	0.24	7.20	1.6	0.00		
		START SAMPLE COLLECTION							
1339		PUMP OFF							
1340		START SAMPLE COLLECTION							
1354		COMPLETE SAMPLE COLLECTION: 2L IPEC							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde	3
Turbidity meter	2007C 4293

REMARKS AND OBSERVATIONS:

WELL ID: MAL 03 34
 SAMPLE ID: 010

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: partly cloudy

PROJECT NO: 01.0017869.92
 DATE: 7/30/09
 SAMPLER(S): 03/MB
 PUMP DEPTH: 215 ft

WATER QUALITY: DTW = 11.07 GW Elevation 141.9 ACTUAL DEPTH 11.46

Time	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes (gall)
1001	14.548	Pump On							0
1025	14.334	27.73	1403	1.22	7.24	-970	2.77		0.05
1040	14.265	29.70	1470	0.92	7.32	-923	4.25		0.15
1060	14.185	29.70	1472	0.63	7.34	-904	4.70		0.20
1080	14.110	29.70	1483	0.57	7.35	-987	6.27		0.25
1105	14.031	29.03	1481	0.59	7.37	-1000	9.04		0.30
1120	14.054	28.77	1472	0.54	7.34	-957	3.51		0.32
1135	14.007	28.74	1473	0.23	7.34	-920	6.50		0.30
1120	13.971	28.21	1471	0.52	7.34	-954	2.50		0.10
1125	13.907	28.69	1468	0.51	7.34	-923	2.68		0.15
1130	START SAMPLE COLLECTION								
1140	COMPLETE 20 SAMPLE COLLECTION: 2L SPEC								
1140	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	3
flow meter	FC
turbidity meter	200701254

NOTES AND OBSERVATIONS: Total volume purged 0.65 gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

WELL ID: AW 0518SAMPLE ID: 010

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC

SITE: Buchanan, NY

WEATHER: Sunny, Humid, 80°

PROJECT NO: 01.0017869.92

DATE: 7/30/09SAMPLER(S): CBLWRPUMP DEPTH: 14.9 ft

WATER QUALITY:

DTW = 11.65 GW Elevation 1409As Turb
DCP 711

S. 794

Time	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes (GAL)
1002	5.794	Pump ON	0.912						0
1025	5.24	28.08	1.912	2.40	7.12	137.4	33.73		0.1
1040	5.401	29.32	1.857	0.95	7.18	164.7	16.77		0.20
1050	5.340	28.89	1.770	2.03	7.24	177.3	14.21		0.30
1100	5.765	26.02	1.693	0.92	7.27	177.1	10.67		0.40
1105	5.233	26.81	1.604	0.92	7.27	174.1	16.55		0.50
1110	5.60	26.70	1.604	0.92	7.29	181.4	7.24		0.60
1115	5.170	26.32	1.637	0.40	7.31	182.3	5.33		0.70
1120	5.139	26.81	1.629	0.51	7.30	177	7.52		0.80
1125	5.109	27.15	1.623	0.34	7.32	179.3	6.56		0.90
1130	5.062	28.69	1.607	0.33	7.32	170.1	6.85		1.0
1140	5.021	28.09	1.603	0.31	7.32	175.6	6.50		1.1
1142	START	SAMPLE COLLECTION							
1420	COMPLETE	SAMPLE COLLECTION							
1420	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	1
flow meter	2
turbidity meter	200101254

NOTES AND OBSERVATIONS:

Total volume purged 1.3 gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.

Groundwater elevation measurements are given in feet msl.

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

Mw 44-06
WELL ID: ~~MW 44-07 Co~~
SAMPLE ID: 013

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Cloudy, humid 80's

PROJECT NO: 01.0017869.92
DATE: 7/29/09
SAMPLER(S): CB, MB

WATER COLUMN HEIGHT (ft) Well Diameter: 2 in

$$\frac{27}{DTB} - \frac{56.44}{DTW} = \frac{10.56}{\text{Water Column Height}}$$

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 10.56 x $\frac{0.163}{\text{Multiplier}}$ = 1.72 gal

1.72 x 15 = 25.8 gal

TOTAL VOLUME PURGED: 1.72 gal

WATER QUALITY: DTW = 56.44 GW Elevation 36.611 ACTUAL DEPTH = 7.746

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
1023	0	PUMP ON							
1032	0.01	7.369	21.31	2.605	7.39	6.02	668	-	6/6@45
1045	0.15	6.560	19.86	2.977	2.10	6.31	34	-	
1052	0.25	6.157	19.90	3.062	2.86	6.55	-5.1	10.02	
1100	0.40	5.691	19.78	3.096	3.03	6.71	-5.1	9.13	
1105	0.45	5.440	19.78	3.090	3.05	6.77	-5.2	5.01	
1110	0.50	5.245	19.92	3.095	3.23	6.81	-6.1	4.40	
1115	0.55	4.962	19.79	3.043	3.56	6.84	-40.6	4.73	
1120	0.60	4.770	19.74	3.085	3.44	6.85	-8.8	3.33	
1132	0.82	4.226	20.27	3.076	3.31	6.88	-7.3	0.06	
1135	0.90	4.127	20.31	3.077	3.31	6.89	-5.0	5.73	
1140	1.05	3.975	20.41	3.074	3.21	6.89	-4.5	4.45	
1145	1.10	3.753	20.33	3.071	3.54	6.87	-2.5	7.72	
1150	1.15	3.635	20.36	3.071	3.55	6.88	-1.1	7.66	
1155	1.25	3.305	19.87	3.053	3.41	6.85	-0.9	7.23	
1200	1.30	3.187	20.06	3.071	3.25	6.86	-0.8	6.97	
1205	1.50	2.987	20.00	3.077	3.20	6.86	6.5	12.54	
1210	1.60	2.665	19.95	3.051	3.15	6.86	8.9	17.91	Equipment
1215	1.65	2.675	19.95	3.054	3.14	6.86	7.8	18.66	Identification #
YSI 556 MPS Reader and 5563 Sonde									5
turbidity meter									200701254
1220	1.70	2.305	19.91	3.050	3.08	6.86	11.6		

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.
 1250 COMPLETED SAMPLE COLLECTION 20 IPEC
 1250 PUMP OFF

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

WELL ID: MW 44-102
SAMPLE ID: 014

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: overcast, humid, 80's

PROJECT NO: 01.0017869.92
DATE: 7/29/09
SAMPLER(S): 23/118

WATER COLUMN HEIGHT (ft) Well Diameter: 1 in

$\frac{102}{DTB} - \frac{56.44}{DTW} = \frac{45.56}{\text{Water Column Height}}$ ft

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 45.56 x $\frac{0.041}{\text{Multiplier}}$ = 1.87 gal

1.87 x 1.5 = 2.8 gal

TOTAL VOLUME PURGED: 2.8 gal

WATER QUALITY: DTW = 56.44 GW Elevation 29.330 ACTUAL DEPTH = 37.870

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
1108	0	PUMP ON							
1110	0.01		17.40	1703	12.54	6.98	154.8	-	
1112		PUMP OFF - SIG. CLOGGING TUBE							
1143	1.2	PUMP ON							
1152	1.7		20.08	1441	34.9	7.28	102.5	1167	
1155	2.2		19.71	1463	40.0	7.10	191.9	1876	
1201	2.7		19.47	1462	48.2	7.08	215.4		
1203		START SAMPLE COLLECTION							
1205		COMPLETE SAMPLE COLLECTION & IPEC							
1208		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	RENTAL CO. 0101058 200701254

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.
1112 PUMP OFF DUE TO CLOGG. EP OF SIG. IN TUBE

WELL ID: AW-60-21

SAMPLE ID: 010

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC

SITE: Buchanan, NY

WEATHER: SWANNY, WAZIA, 20'S, 10' cloud

PROJECT NO: 01.0017869.92

DATE: 7/28/09

SAMPLER(S): COMB

PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 12.10 GW Elevation 1118' ACTUAL DEPTH = ~~8.46~~ ^{8.340}

Time	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
945	8.018								PUMP ON
1005	8.018	22.77	1.782	0.48	7.18	-149.0	-		0.1
1015	8.241	24.04	1.775	0.24	7.23	-131.9	7.41		0.13
1025	7.981	25.39	1.776	0.26	7.25	-155.3	7.82		0.17
1035	7.915	26.55	1.780	0.46	7.27	-142.5	13.31		0.19
1045	7.900	27.75	1.778	0.71	7.27	-131.9	16.94		0.21
1055	7.829	28.11	1.778	0.23	7.26	-171.2	76.39*		0.25
1100	7.776	27.82	1.781	0.18	7.24	-145.1	48.32		0.30
1105	7.756	27.02	1.773	0.17	7.26	-145.0	32.58		0.32
1110	7.742	26.06	1.751	0.25	7.25	-146.9	19.67		0.35
1115	7.698	25.47	1.731	0.23	7.24	-148.8	13.59		0.40
1120	7.688	25.31	1.714	0.25	7.23	-146.5	7.49		0.45
1125	7.673	26.36	1.697	0.22	7.22	-144.5	6.15		0.47
1130	7.667	25.40	1.689	0.19	7.21	-146.8	3.85		0.50
1135	7.631	25.42	1.681	0.22	7.21	-131.5	2.98		0.52
1140	7.619	25.46	1.663	0.24	7.20	-119.5	2.17		0.55
1145	7.611	25.46	1.656	0.23	7.19	-122.0	2.01		0.60
1150	7.615	25.51	1.640	0.23	7.18	-115.7	1.95		0.65
1155	7.613	25.51	1.643	0.23	7.17	-113.0	1.78		0.7
1157	START SAMPLE COLLECTION								
1234+140	COMPLETED SAMPLE COLLECTION - 22 LITER @ 26 L/min (NO OBSERVATION)								
1234+140	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	6
flow meter	3
turbidity meter	20707213

NOTES AND OBSERVATIONS:

Total volume purged 0.7 gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.

Groundwater Elevation measurements are given in feet msl.

* MURKY, BROWN & PINK WATER, SLIGHT HYDROGEN SULFIDE ODOR, GREEN PRESENT

WELL ID: MW-66-36
 SAMPLE ID: 069

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, w/ light, humid, 80's

PROJECT NO: 01.0017869.92
 DATE: 7/28/09
 SAMPLER(S): 131413
 PUMP DEPTH: _____ ft

WATER QUALITY:

DTW = 12.12 GW ELEVATION 1440
 Transducer Actual Depth 14.475

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
945	14.307	PUMP	0.00						
1005	14.160	26.42	2.730	5.66	7.46	400	—		0.01
1015	14.132	24.31	2.744	0.03	7.48	53.7	10.22		0.1
1025	14.084	25.05	2.793	0.54	7.50	72.4	7.16		0.2
1035	14.001	25.45	2.797	2.44	7.52	75.9	6.19		0.3
1045	14.013	26.64	2.801	0.35	7.54	73.6	6.30		0.4
1055	13.984	25.92	2.804	0.39	7.54	77.0	3.51		0.5
1100	13.962	25.76	2.800	0.33	7.55	101.8	2.34		0.55
1105	13.945	25.90	2.803	0.30	7.55	105.6	1.17		0.60
1110	13.928	25.79	2.811	0.54	7.55	106.4	1.08		0.65
1115	13.910	25.78	2.811	0.36	7.56	110.2	1.72		0.70
1120	13.904	25.84	2.807		7.55	107.2	1.79		0.75
1125	START SAMPLE COLLECTION								
1341	COMPLETED SAMPLE COLLECTION 2L IPEC P 2L USN RC (NOT OBSERVED)								
1341	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	4
flow meter	2
turbidity meter	200704293

NOTES AND OBSERVATIONS: Total volume purged 0.7 gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msd.

WELL ID: MW 67-340

SAMPLE ID: 009

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, humid, 80's

PROJECT NO: 01 0017869.92
 DATE: 7/28/09
 SAMPLER(S): CB, MB

SAMPLING INTERVAL (depth in ft below top of casing) 1
335.3 to 347.9

TOTAL VOLUME PURGED: 2.55 gal

SAMPLING PORT 340

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
928	0	PUMP ON	ON					6/6	47
946	0.5	19.43	0.801	0.88	7.01	-248.3	—		
958	0.8	19.32	0.797	0.32	7.00	-260.0	11.12		
1011	1.4	19.80	0.798	0.19	6.98	-254.0	10.59		
1017	1.6	20.02	0.800	0.17	6.98	-251.1	7.44		
1026	2.0	20.04	0.802	0.15	6.97	-250.6	7.09		
1031	2.2	20.00	0.803	0.15	6.97	-247.8	7.34	↓	↓
1032		PUMP OFF							
1038		START SAMPLE COLLECTION							
1120		SAMPLE COMPLETED: 2 L IPEC							
1120		2 L NRC (not observed)							
1120		PUMP OFF							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde	3
turbidity meter	200701254

NOTES AND OBSERVATIONS:

WELL ID: MW 67-323

SAMPLE ID: 009

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, humid 80's

PROJECT NO: 01.0017869.92
 DATE: 7/28/09
 SAMPLER(S): CB, MB

SAMPLING INTERVAL (depth in ft below top of casing) 2
317.8 to 328.3

TOTAL VOLUME PURGED: 1.75 gal

SAMPLING PORT 323

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
928	0	PUMP ON						6/6	47
946	0.3	19.53	0.888	1.22	6.77	-246.3	—	↓	↓
958	0.6	19.52	0.881	0.40	6.80	-260.0			
1011	1.1	20.12	0.872	0.25	6.84	-272.1	9.56		
1017	1.2	20.24	0.871	0.20	6.85	-276.4	7.27		
1026	1.5	20.38	0.865	0.19	6.87	-280.1	7.20		
1031	1.6	20.33	0.862	0.18	6.87	-284.3	7.01		
1032		PUMP OFF							
1038		START SAMPLE COLLECTION							
1125		SAMPLE COMPLETED: 2 L IPEC							
1125		PUMP OFF							

Equipment Used	Equipment Identification #
I 556 MPS Reader and 5563 Sonde Turbidity meter	1 200701254

NOTES AND OBSERVATIONS:

WELL ID: MW 67-276SAMPLE ID: 009

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

 CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, humid 80's

 PROJECT NO: 01.0017869.92
 DATE: 7/28/09
 SAMPLER(S): CB, MB

 SAMPLING INTERVAL (depth in ft below top of casing) 3
250.8 to 281.3
TOTAL VOLUME PURGED: 275 gal

SAMPLING PORT

PURGE RATE: variable (gal/min)276

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
928	0	PUMP ON	ON					6/6	47
946	0.5	18.92	0.947	0.65	6.84	-92.7			
958	1.2	18.82	0.943	0.20	6.92	-104.8			
1011	2.0	19.39	0.941	0.13	6.98	-109.6	10.76		
1017	2.2	19.43	0.942	0.10	6.98	-109.6	8.68		
1026	2.5	19.48	0.943	0.11	6.99	-110.3	8.26		
1031	2.6	19.57	0.942	0.10	6.98	-110.7	8.34		
1032		PUMP OFF							
1038		START SAMPLE COLLECTION							
1114		SAMPLE COMPLETED			2 L IPEC				
1114		PUMP OFF			2 L NEC	(not observed)			

Equipment Used

Equipment Identification

 556 MPS Reader and 5563 Sonde
 Turbidity meter

5
200701254

NOTES AND OBSERVATIONS:

WELL ID: MW 67-219

SAMPLE ID: 009

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, humid 80's

PROJECT NO: 01.0017569.92
 DATE: 7/28/09
 SAMPLER(S): CB, MB

AMPLING INTERVAL (depth in ft below top of casing)
209 to 229.8 4

TOTAL VOLUME PURGED: 335 gal

AMPLING PORT
219

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
928	0	PUMP ON						6/6	47
946	0.6	18.53	0.969	1.45	6.99	-134.3	—		
958	1.3	18.42	0.969	2.54	7.00	-126.3	—		
1011	2.1	18.97	0.984	2.78	7.01	-120.6	4.05		
1017	2.4	19.00	0.984	2.86	7.01	-119.4	7.83		
1026	2.6	18.96	0.985	2.84	7.00	-117.8	7.09		
1031	2.9	19.02	0.989	2.83	7.00	-115.4	7.00		
1039	3.2	19.06	0.986	2.81	7.00	-112.2	6.99		
1040		PUMP OFF							
1042		START SAMPLE COLLECTION							
1111		SAMPLE COMPLETED: 2 L IPEC							
1111		PUMP OFF							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde turbidity meter	01A0138 rev10-1 200701254

NOTES AND OBSERVATIONS:

WELL ID: MW 67-173SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

 CLIENT: Energy IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, humid 80's

 PROJECT NO. 01.0017869.92
 DATE: 7/28/09
 SAMPLER(S): CB, MB

 SAMPLING INTERVAL (depth in ft below top of casing)
164.8 to 188.3

 TOTAL VOLUME PURGED: 5 1.75 gal

 SAMPLING PORT
173
PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SL)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1315	0	PUMP ON						8/8	22
1327	0.1	22.73	0.950	2.38	6.50	-241.0	—		
1335	0.4	22.39	0.970	0.03	6.40	-304.0	3.43		
1345	0.6	22.66	0.991	0.0	6.41	-288.4	1.24		
1403	1.0	21.68	0.964	0.0	6.42	-285.4	1.74		
1416	1.4	21.08	0.950	0.0	6.46	-300.2	1.0		
1421	1.5	21.18	0.951	0.0	6.48	-297.6	1.06		
1426	1.6	21.12	0.950	0.0	6.49	-295.4	1.12	↓	↓
1428		PUMP OFF							
1429		START SAMPLE COLLECTION							
1524		SAMPLE COMPLETED							
						2 L IPEC			
						2 L NRC (not observed)			
		PUMP OFF							

Equipment Used

Equipment Identification

 1556 MPS Reader and 5563 Sonde
 turbidity meter

01A0138 serial
200704293

NOTES AND OBSERVATIONS:

WELL ID: MW 67-105

SAMPLE ID: 009

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: sunny, humid 80's

PROJECT NO: 01.0017869.92
 DATE: 7/28/09
 SAMPLER(S): CB, MB

SAMPLING INTERVAL (depth in ft below top of casing)
90.3 to 110.8

6 TOTAL VOLUME PURGED: 3.15 gal

SAMPLING PORT
105

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1315	0	PUMP ON						8/8	22
1327	0.25	23.11	1.580	0.19	6.39	-228.0	—	↓	↓
1335	0.70	22.90	1.587	0.10	6.62	-247.7	5.35	↓	↓
1345	0.95	23.03	1.588	0.09	6.70	-240.4	4.48		
1403	1.75	22.03	1.582	0.06	6.73	-234.9	4.15		
1416	2.15	21.38	1.583	0.05	6.75	-228.8	2.74		
1421	2.30	21.44	1.579	0.05	6.73	-224.1	2.83		
1426	2.50	21.50	1.579	0.07	6.75	-220.0	2.69		
1435	3.0	21.39	1.580	0.07	6.78	-216.4	2.75	↑	↓
1437		PUMP OFF							
1439		START SAMPLE COLLECTION							
1515		SAMPLE COMPLETED			2 L IPEC				
		PUMP OFF			2 L NRC (not observed)				

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde turbidity meter	<u>5</u> <u>200704293</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 67-39

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny, humid 80's

PROJECT NO: 01.0017869.92
 DATE: 7/28/09
 SAMPLER(S): CB, MB

SAMPLING INTERVAL (depth in ft below top of casing):
28.8 to 54.3

TOTAL VOLUME PURGED: 355 gal

SAMPLING PORT:
39

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1315	0	PUMP ON						8/8	22
1327	0.4	21.70	2.012	0.71	7.37	-168	—	↓	↓
1335	1.0	21.37	1.994	0.56	7.72	-211.3	2.70		
1345	1.5	21.84	1.985	0.54	7.80	-200.4	1.40		
1403	2.5	20.91	2.004	0.73	7.80	-202.8	2.17		
1416	2.9	20.35	2.013	0.41	7.81	-209.1	1.49		
1421	3.1	20.41	2.006	0.39	7.80	-209.5	1.52		
1426	3.4	20.44	2.009	0.43	7.81	-210.2	1.44		
1428		PUMP OFF							
1429		START SAMPLE COLLECTION							
1504		SAMPLE COMPLETED : 2 L IPEC 2 L NRC (not observed)							
1504		PUMP OFF							

Equipment Used	Equipment Identification #
1556 MPS Reader and 5563 Sonde turbidity meter	300704293

NOTES AND OBSERVATIONS:

WELL ID: MW 66-21

SAMPLE ID: _____

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Energy - IPEC

PROJECT NO: 01.0017869.92

SITE: Buchanan, NY

DATE: 7/27/09

WEATHER: Sun, clouds, humid 80's

SAMPLER(S): CB, MB

PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 12.63 GW Elevation = 0.710 ACTUAL DEPTH = 7.938 (@ 1019)

Time	DTW or GW Elevation <small>ACTUAL DEPTH</small>	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Purged Notes gal.
1109	7.840	0.00	PUMP	0.00					
1120	7.800								0
1128	7.770								0
1136	7.722	23.72	2.084	0.30	6.74	-216.2	—	0.3	0.01
1148	7.750	24.29	2.029	0.33	6.83	-210.1	8.41		0.05
1158	7.736	24.61	1.957	0.23	6.90	-213.1	11.04		0.15
1206	7.730	25.03	1.928	0.22	6.93	-210.3	15.40		0.20
1213	7.799	25.37	1.912	0.19	6.95	-184.1	47.74		0.25
1220	7.860	25.81	1.902	0.18	6.96	-191.8	37.47		0.30
1227	7.862	26.41	1.900	0.23	6.97	-182.5	31.15		0.35
1235	7.840	26.76	1.903	0.19	6.97	-177.2	30.26		0.40
1240	7.852	26.89	1.905	0.16	6.97	-185.7	16.67		0.12
1248	7.935	26.83	1.901	0.19	6.97	-212.9	14.03		0.45
1250	7.893	26.70	1.890	0.10	6.97	-212.1	12.70		0.47
1255	7.953	26.91	1.856	0.07	6.97	-214.8	14.05		0.49
1305	7.953	27.26	1.881	0.09	6.97	-210.0	14.02		0.50
1310	7.974	27.49	1.880	0.07	6.95	-176.7			0.55
1315	NRC UNAVAILABLE FOR SPLIT SAMPLE								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	5
flow meter	KJ #2
turbidity meter	200704243

NOTES AND OBSERVATIONS:

Total volume purged 0.7 gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.

Groundwater Elevation measurements are given in feet msl.

WELL ID: MW-66-36

SAMPLE ID: _____

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC

PROJECT NO: 01.0017869.92

SITE: Buchanan, NY

DATE: 11/27/11

WEATHER: Sun + clouds humid 80's

SAMPLER(S): CA MB

PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 12.29 GW Elevation 1.031 ACTUAL DEPTH = 14.310 (@ 1017)

Time	DTW or GW Elevation <small>DEPTH ACTUAL</small>	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Purged Notes (gal)
1109	14.281	0	PUMP ON						
1120	14.302							0.3	0
1128	14.265								0
1136	14.291	23.48	2.754	1.14	7.60	-483	-		0.01
1148	14.337	23.35	2.721	0.50	7.60	584	7.00		0.1
1158	14.310	23.58	2.714	0.46	7.61	-518	4.91		0.2
1206	14.410	23.54	2.713	0.39	7.62	-663	5.03		0.3
1213	14.443	24.05	2.713	0.39	7.63	-701	5.06		0.35
1220	14.482	24.13	2.716	0.40	7.65	-787	4.46		0.40
1227	14.519	24.29	2.712	0.36	7.65	-666	5.46		0.45
1235	14.545	24.51	2.711	0.35	7.65	-776	3.25		0.50
1240	14.589	24.77	2.712	0.35	7.66	-754	3.06		0.55
1245	14.654	24.87	2.713	0.41	7.67	-766	1.80		0.60
1250	14.681	24.99	2.711	0.35	7.61	-749	2.18		0.65
1255	14.694	25.02	2.712	0.37	7.68	-824	1.75		0.67
1305	14.747	25.10	2.709	0.36	7.67	-682	1.72		0.75
1312	14.502	25.07	2.709	0.36	7.67	-870			0.80
1315	NRC UNAVAILABLE FOR 5.17 SAMPLE								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	6
flow meter	K-I
turbidity meter	200704243

NOTES AND OBSERVATIONS:

Total volume purged 6.50 gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.

Groundwater Elevation measurements are given in feet msd.

WELL ID: MW 67-340

SAMPLE ID: 009

**GZA GeoEnvironmental of New York
Waterloo Sampling Data Sheet**

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Sun + clouds, humid 80's

PROJECT NO: 01.0017869.92
DATE: 7/27/09
SAMPLER(S): CB, MB

SAMPLING INTERVAL (depth in ft below top of casing) 1
335.3 to 347.9

TOTAL VOLUME PURGED: 2.35 gal

SAMPLING PORT
340

PURGE RATE: variable (gal / min)
PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
9:07	0	PUMP	ON					6/6	47
9:16	0.15	20.21	0.743	1.10	7.18	-188.5			
9:25	0.25	19.90	0.731	1.07	6.16	-230.8	2.13		
9:35	0.7	19.61	0.715	0.95	7.30	-226.9	1.65		
9:45	0.85	19.63	0.735	0.96	7.27	-222.6	2.18		
9:55	1.1	19.78	0.754	0.98	7.25	-228.7	2.13		
10:00	1.7	20.14	0.750	0.95	7.26	-231.2	1.13		
10:20	1.8	20.04	0.760	0.95	7.26	-227.3	1.97		
10:25	1.9	20.18	0.760	0.93	7.26	-226.6	1.06		
10:30	2.0	20.10	0.761	0.91	7.26	-224.4	1.05		
10:35	2.2	20.11	0.762	0.90	7.27	-223.3	1.00	↓	↓
10:45	PUMP OFF								
11:15	NRC WATER SAMPLE								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	<u>6</u> 200701254

NOTES AND OBSERVATIONS:

WELL ID: MW 67-323

SAMPLE ID: 009

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Sun+clouds, humid 80's

PROJECT NO: 01.0017869.92
DATE: 7/27/09
SAMPLER(S): CB, MB

SAMPLING INTERVAL (depth in ft below top of casing)
317.8 to 328.3

2 TOTAL VOLUME PURGED: 2.05 gal

SAMPLING PORT
323

PURGE RATE: variable (gal / min)
PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
9:07	0	PUMP ON	ON					6/6	47
9:16	0.15	20.13	0.820	4.66	6.55	-182.3	-		
9:25	0.25	19.41	0.957	0.17	6.19	-212.7	3.79		
9:35	0.35	19.03	0.833	10.41	6.71	-310.4	1.98		
9:45	0.50	19.69	0.758	12.09	6.73	-318.8	2.65		
9:55	1.20	19.81	0.754	12.55	6.73	-305.1	2.07		
10:00	1.60	20.15	0.770	12.50	6.75	-313.0	2.13		
10:15	1.70	20.45	0.770	11.77	6.71	-302.4	2.08		
10:35	1.75	20.14	0.776	10.96	6.71	-312.2	1.54		
10:30	1.90	20.17	0.74	10.89	6.71	-301.5	1.69		
10:55	1.90	20.53	0.167	9.76	6.71	-307.7	1.99		
11:40	1.00	PUMP OFF							
13:15									

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	01A0138 rental 200701254

NOTES AND OBSERVATIONS:

WELL ID: MW 67-276

SAMPLE ID: 009

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: sun + clouds, humid 80's

PROJECT NO: 01.0017869.92
 DATE: 7/27/09
 SAMPLER(S): CB, MB

SAMPLING INTERVAL (depth in ft below top of casing) 3
250.8 to 281.3

TOTAL VOLUME PURGED: 4.83 gal

SAMPLING PORT
276

PURGE RATE: variable (gal / min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
907	0	PUMP ON							
916	0.2	19.46	0.949	1.03	7.10	-257.4	—	6/6	97
925	0.25	19.54	0.953	0.93	7.12	-252.8	1.4		
935	0.8	19.13	0.956	0.91	7.23	-200.6	2.05		
945	1.2	19.03	0.953	0.94	7.26	-210.1	4.18		
955	1.9	19.32	0.958	0.95	7.27	-185.3	3.12		
1010	2.3	19.47	0.951	0.94	7.28	-194.7	5.22		
1015	2.5	19.31	0.951	0.97	7.28	-193.7	3.44		
1025	2.7	19.54	0.952	0.98	7.29	-193.0	3.76		
1030	3.0	19.41	0.952	0.94	7.29	-190.4	2.90		
1035	3.5	19.83	0.951	0.97	7.30	-186.1	3.25		
1050	4.0	20.04	0.952	0.96	7.30	-198.4	3.45		
1100	4.5	20.19	0.950	0.94	7.31	-202.4	3.39	↓	↓
1105	PUMP OFF								
1315	NRC UNAVAILABLE FOR SPLIT SAMPLE								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	4 200701254

NOTES AND OBSERVATIONS:

WELL ID: MW 61-219

SAMPLE ID: 009

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny clouds, humid 80's

PROJECT NO: 01.0017869.92
 DATE: 7/27/09
 SAMPLER(S): CB, MB

SAMPLING INTERVAL (depth in ft below top of casing) 209 to 229.8

4

TOTAL VOLUME PURGED: _____ gal

SAMPLING PORT 219

PURGE RATE: variable (gal / min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
9:07	0	PUMP	CN						
9:16	0.4	18.97	1.097	0.67	7.06	-180.0	—	6/6	47
9:20	0.9	18.95	1.103	0.77	7.12	-150.5	98.70		
9:35	1.7	18.70	1.103	0.91	7.17	-130.5	43.77		
9:45	1.5	18.77	1.100	0.92	7.15	-136.0	21.38		
9:55	1.85	18.55	1.100	0.94	7.17	-134.3	11.01		
10:10	2.5	19.10	1.099	0.91	7.17	-136.7	11.32		
10:15	3.0	19.03	1.098	0.94	7.18	-133.3	8.60		
10:25	3.25	19.15	1.099	0.91	7.19	-130.7	4.92		
10:30	4.0	19.01	1.098	0.98	7.19	-130.4	3.60		
10:35	4.2	19.41	1.099	0.96	7.19	-130.6	3.91		
10:50	4.8	19.42	1.102	0.94	7.20	-132.1	3.57	↓	↓
10:55	PUMP OFF								
13:15	NRC was available FOR SPLIT SAMPLE								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	1 200701254

NOTES AND OBSERVATIONS:

WELL ID: MW 41-40
 SAMPLE ID: 013

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: 01594AST, 11.11.09, 72.5

PROJECT NO: 01.0017869.92
 DATE: 7/24/09
 SAMPLER(S): CB, MB
 PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 20.4 (GW Elevation 30.609 ACTUAL DEPTH = 15.525)

Time	ACTUAL DTW or GW Elevation DEPTH	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
1249	15.525	C	PUMP	0.0					
1310	15.370	21.21	2.156	6.02	7.16	105.0	1614		0.25
1310	15.370	20.15	2.152	5.44	7.22	135.4	2664		0.25
1320	15.499	20.25	2.140	5.35	7.25	126.2	3001		0.26
1325	15.501	23.21	2.154	5.41	7.32	129.4	7133		0.32
1345	15.702	24.21	2.154	5.43	7.30	110.4	10.94		0.312
1355	15.444	23.21	2.153	5.36	7.34	112.9	11.92		
1400	15.370	23.53	2.154	5.45	7.32	112.9	9.94		
1405	15.312	24.21	2.127	6.23	7.32	106.5	8.36		
1415	15.387	26.74	2.154	6.21	7.31	105.4	2.125		
1420	15.312	27.24	2.160	6.15	7.32	101.4	7.20		
1430	15.316	27.92	2.162	6.25	7.32	96.1	4.47		
1430	15.402	25.32	2.174	6.75	7.32	92.7	3.73		
1440	15.707	27.01	2.181	5.57	7.34	120.4	4.81		
1445	15.384	29.10	2.179	5.53	7.33	95.2	4.20		
1450	15.395	29.5	2.175	5.60	7.32	47.1	4.28		
1451	SAMPLE COLLECTION								
1553	SAMPLE COLLECTION 2L Filter								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	1
flow meter	K1
turbidity meter	21070124

NOTES AND OBSERVATIONS: Total volume purged _____ gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

WELL ID: MW-41-03
SAMPLE ID: 012

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: UNREST. / HEAVY. 70's

PROJECT NO: 01.0017869.92
DATE: 7/29/09
SAMPLER(S): COMB

WATER COLUMN HEIGHT (ft) Well Diameter: 1 in

$$\frac{1.3}{DTB} - \frac{25.23}{DTW} = \frac{39.77}{\text{Water Column Height}} \text{ ft}$$

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 39.77 x 0.041 Multiplier = 1.63 gal Well Volume

1.63 x 1.5 = 2.44 gal Designed Purge Volume

TOTAL VOLUME PURGED: _____ gal

WATER QUALITY: DTW = 25.23 GW Elevation

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
1343	0	Pump ON							
1350	1.0		17.41	2587	6.17	6.82	190.2	47.24	
1355	1.5		18.24	2575	5.30	6.93	130.9	27.71	
1400	1.75		18.10	3007	2.76	7.00	123.8	18.48	
1405	2.00		19.00	3032	2.60	7.02	118.6		
1406	5.1ml	COMB							
1413	5.1ml	COMB							
1413	2.00	OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	4
turbidity meter	200701234

NOTES AND OBSERVATIONS:
Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

WELL ID: 46-45-01
SAMPLE ID: 017

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Partly Cloudy 25

PROJECT NO: 01.0017869.92
DATE: 7/24/09
SAMPLER(S): CAMR

WATER COLUMN HEIGHT (ft) Well Diameter: 1 in

$$\frac{61}{\text{DTB}} - \frac{22.53}{\text{DTW}} = \frac{38.47}{\text{Water Column Height}} \text{ ft}$$

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 38.47 x 0.041 Multiplier = 1.577 gal Well Volume

1.577 x 1.5 = 2.37 gal Designed Purge Volume

TOTAL VOLUME PURGED: 2.7 gal

WATER QUALITY: DTW = 22.53 GW Elevation

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
1122	0	PUMP ON							
1125	0.5		19.23	0.131	7.2	7.11	252	227.8	
1130	0.75		19.31	0.711	7.11	7.08	243.7	521.8	
1132	1.0		19.30	0.838	8.57	7.10	256.5	825.0	
1136	1.5		19.38	0.711	5.38	7.11	273.9	1017	
1140	2.0		19.30	0.968	9.26	7.12	256.1	1090	
1144	2.0	PUMP OFF							
1146	STARTED PUMP								
1147	2.3		19.90	0.997	6.86	7.11	275.6	1070	
1151	2.48	SAMPLE							
1156	2.0	SAMPLE PUMP OFF							COLLECTED 2L FOR

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	AGICAL for 41401 35
turbidity meter	720721254

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

WELL ID: MW-45-42
SAMPLE ID: 017

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Partly Cloudy 20's

PROJECT NO: 01.0017869.92
DATE: 7/24/09
SAMPLER(S): 1 BIAUS

WATER COLUMN HEIGHT (ft) Well Diameter: 2 in

$$\frac{42}{\text{DTB}} - \frac{21.27}{\text{DTW}} = \frac{20.73}{\text{Water Column Height}} \text{ ft}$$

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

$$\text{Water Column Height } \frac{20.73}{\text{Water Column Height}} \times \frac{0.163}{\text{Multiplier}} = \frac{3.379}{\text{Well Volume}} \text{ gal}$$

$$\frac{3.379}{\text{Well Volume}} \times 1.5 = \frac{5.07}{\text{Designed Purge Volume}} \text{ gal}$$

TOTAL VOLUME PURGED: 4.5 gal

WATER QUALITY: DTW = 21.27 GW Elevation

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
1104	0	PCMP	CA						6.5/7 @ 3.0
1110	0.2	16.617	19.13	0.773	0.54	7.66	131.5	10.84	
1117	0.7	13.775	18.53	0.613	0.71	8.75	144.9	7.63	
1122	1.5	12.102	18.38	0.591	0.15	7.44	77.2	6.28	
1126	2.0	11.33	18.38	0.564	0.25	8.96	77.7	10.25	
1132	2.5	8.744	18.42	0.584	0.03	9.18	40.7	2.131	
1135	3.0	7.618	18.45	0.609	0.04	9.08	40.8	11.71	
1140	3.5	5.281	18.44	0.620	0.00	9.37	74.7	71.50	
1143	4.0	3.654	18.65	0.621	0.23	9.28	40.6		
1150	STARTED TO PUMP CB								
1157	STARTED TO PUMP BELOW GROUND WATER SAMPLE 1.5								
1212	PURGE TO CLEAR WBY SET NIGHTING								
1421	START SAMPLE								
1430	SAMPLE COMPLETE 20.73								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	5
turbidity meter	200701254

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.

Handwritten note: 6.5/7 @ 3.0

WELL ID: W00-37-32

SAMPLE ID: _____

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: WINDY, CLOUDS, 80's

PROJECT NO: 01.0017869.92
 DATE: 7/23/09
 SAMPLER(S): M3/C5
 PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 8.91 Transducer Actual Depth

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
1236	<u>8.91</u>								
1310	15.472	Pump	2.010						
1340	15.481	27.46	2.232	1.15	7.11	108.8	2.35		0.1
1355	15.450	27.49	2.237	0.79	7.13	111.4	1.54		0.3
1400	15.438	27.44	2.239	0.59	7.15	114.0	1.75		0.7
1410	15.417	27.39	2.247	0.50	7.17	114.0	1.65		1.0
1420	15.417	27.35	2.249	0.54	7.17	114.0	2.41		1.5
1425	15.430	27.33	2.254	0.54	7.17	112.0	2.45		1.75
1430	15.450	27.31	2.258	0.46	7.17	112.1	2.49		2.0
1435	15.448	27.27	2.262	0.42	7.18	112.0	3.61		2.15
1440	15.446	27.26	2.265	0.42	7.18	111.6	3.41		2.30
1445	15.443	27.26	2.261	0.40	7.18	111.4	3.70		2.45
1450	START	SAMPLING							
1507	STOPPED	SAMPLING							2.6 PAUL AFCC
1508	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	3
flow meter	X
turbidity meter	Int. 701754

NOTES AND OBSERVATIONS: Total volume purged 2.5 gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

WELL ID: MW-37-40
 SAMPLE ID: _____

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: sun, clouds 80's

PROJECT NO: 01.0017869.92
 DATE: 7/23/09
 SAMPLER(S): CB, MB
 PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 7.48 Transducer Actual Depth

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (u/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
1214	32.362								
1310	32.090	PUMP ON							
1330	31.065	21.33	0.235	7.20	7.51	-196.8			
		CHARWELL	LOW FLOW SAMPLING TO MODIFIED PIGGIE						

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	
flow meter	
turbidity meter	

NOTES AND OBSERVATIONS: Total volume purged _____ gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msd.
LEVEL DROPPED BEFORE MORE THAN 0.5 GA

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

2 of 2
WELL ID: AW-37-10
SAMPLE ID: _____

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Sun + Clouds, 90's

PROJECT NO: 01.0017869.92
DATE: 7/23/09
SAMPLER(S): M&B

WATER COLUMN HEIGHT (ft) Well Diameter: 1 in

$$\frac{40}{\text{DTB}} - \frac{7.48}{\text{DTW}} = \frac{32.52}{\text{Water Column Height}}$$

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:
 Water Column Height 32.52 x 0.041 = 1.33 gal
 Multiplier Well Volume

1.33 x 1.5 = 199.5 gal
 Designed Purge Volume TOTAL VOLUME PURGED: 2 gal

WATER QUALITY: DTW = 7.48 Transducer Actual Depth

Time	Volume Purged (gal)	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SI)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)	Notes
1219	0	32.302									
1330		61.100									LOW PUMP PURGE
1340	0.5	28.395	25.40	1.969	0.44	7.36	-270.7	395.6			
1345	1.0	30.209	24.71	2.242	0.26	7.25	-258.7	1070.3			
1400	1.5	30.307	24.54	2.250	0.27	7.25	-221.5	1035.0			
1405	START SAMPLE										
1410	LOW FLOW SAMPLE 2L PUMP OFF										
1420	PUMP OFF										

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	<u>4</u> <u>20070254</u>

NOTES AND OBSERVATIONS:
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

WELL ID: MW-57-57
 SAMPLE ID: _____

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: WINDY CLOUDS, 60.5

PROJECT NO: 01.0017869.92
 DATE: 11/23/09
 SAMPLER(S): M5/C6
 PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 7.37 Transducer Actual Depth

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
1224	43.222								
1310	43.271	13.6	2.05	1.33	7.20	150.2	2.60	1	0.1 gal
1340	41.855	20.16	2.205	1.33	7.27	147.2	3.00		0.1 gal
1353	41.923	20.16	2.207	1.37	7.27	147.2	3.00		0.1 gal
1406	41.975	25.58	2.193	1.11	7.26	142.3	4.17		0.2 gal
1410	42.052	25.78	2.186	1.16	7.26	170.4	4.54		0.2 gal
1420	42.089	26.26	2.197	1.71	7.27	141.3	5.58		0.2 gal
1425	42.725	26.23	2.187	1.27	7.27	137.3	4.28		0.2 gal
1430	42.973	26.23	2.181	1.17	7.27	135.4	3.87		0.2 gal
1435	42.964	26.23	2.182	1.16	7.27	137.0	3.01		0.2 gal
1440	START SAMPLING								
1512	STOPPED SAMPLING								
1512	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	1
flow meter	3
turbidity meter	200751754

NOTES AND OBSERVATIONS: Total volume purged 1.75 gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

WELL ID: MW-37-22

SAMPLE ID: _____

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: SUN + CLOUDS 80°

PROJECT NO: 01.0017869.92
 DATE: 7/23/09
 SAMPLER(S): MB/CB
 PUMP DEPTH: 17 ft

WATER QUALITY: DTW = 9.08 Transducer Actual Depth

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Purged Notes (gal)
1250	9.08								
1357	9.08	27.91	2.529	1.26	6.70	-429	—	2	0.05
1410	9.08	28.04	2.564	0.90	6.75	-629	2.87	1	0.45
1415	9.08	28.04	2.565	0.75	6.76	-624	1.93	1	0.75
1420	9.08	28.01	2.563	0.73	6.76	-64.6	1.87	1	0.85
1425	9.08	28.00	2.563	0.71	6.76	-65.2	1.85	↓	0.95
1427	START SAMPLE COLLECTION								
1440	SAMPLE COMPLETE 2.2 L IPEC								
	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	SNIA0138 rental
flow meter	Ki
turbidity meter	200701294

NOTES AND OBSERVATIONS: Total volume purged 1 gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

WELL ID: PRO 04 18
WBO 07 37 01
 SAMPLE ID: _____

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: 70's (18.0C)

PROJECT NO: 01.0017869.92
 DATE: 7/22/09
 SAMPLER(S): MA 556/10
 PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 11.98 Transducer Actual Depth

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
1000	5.150	PUMP ON	2.000						0 gal
1012	5.186	21.78	2.184	1.01	7.38	-5.0	5.05	1.0	
1020	5.186	21.97	2.109	1.33	7.44	-19.10	7.09	1.0	
1028	5.186	21.75	2.077	1.27	7.47	-3.4	8.31	1.0	
1028	PUMP OFF								
1030	PUMP ON								
1035	5.186	22.93	1.984	1.78	7.50	11.8	9.09	1.0	
1040	5.186	23.03	1.970	1.22	7.52	32.0	7.73	1.0	
1045	5.186	24.00	1.971	1.13	7.53	22.7	6.90	1.0	
1050	5.186	24.46	1.975	1.11	7.53	12.2	3.70	1.0	0.5 gal
1055	5.186	24.75	2.028	1.08	7.52	0.2	6.51	1.0	
1100	5.186	24.84	2.009	1.06	7.51	10.2	5.27	1.0	
1105	5.186	25.46	2.128	1.16	7.58	-32.4	7.81	1.0	
1110	5.186	25.72	2.101	1.00	7.44	-29.4	5.78	1.0	
1115	5.186	26.16	2.430	0.88	7.53	-11.2	5.38	1.0	
1120	5.186	26.59	2.357	1.03	7.53	-17.6	5.08		
1120	PUMP OFF								
1125	PUMP ON								
1130	5.186	27.30	2.374	0.74	7.53	19.8	6.25	1.0	
1135	5.186	26.70	2.179	0.82	7.59	12.8	6.19	1.0	
1140	5.186	27.19	2.230	0.80	7.50	-23.7	5.86	1.0	
1145	5.186	27.50	2.260	0.94	7.60	-9.6	6.90	1.0	
1155	5.186	27.73	2.201	1.02	7.58	37.6	5.72	1.0	
1200	5.186	27.83	2.271	0.97	7.58	48.2	6.65	1.0	
1215	5.186	27.99	2.300	1.02	7.59	58.7	6.00	1.0	

1220 START SAMPLE

1224 SAMPLE COMPLETED - 2 L IPEC PUMP OFF Equipment Used 2 L DEC	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	3
flow meter	3
turbidity meter	200761254

NOTES AND OBSERVATIONS: Total volume purged _____ gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

WELL ID: MW 02 37
 SAMPLE ID: 1502

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: 70.5 F, OVERCAST

PROJECT NO: 01.0017869.92
 DATE: 7/22/09
 SAMPLER(S): AA/CBJ/AS
 PUMP DEPTH: _____ ft

WATER QUALITY: DTW = 11.10 Transducer Actual Depth

Time	DTW or Actual Depth	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
1000	14.384	22.30	1.134	3.52	7.60	130.4	22.43	1.0	0 gal
1002	14.448	22.30	1.134	3.52	7.60	130.4	22.43	1.0	
1020	14.525	22.04	1.131	1.73	7.73	88.2	14.69	1.0	
1025	14.558	22.24	1.135	1.29	7.77	69.1	13.05	1.0	
1025	PUMP OFF								
1030	PUMP ON								
1035	14.608	23.14	1.148	1.42	7.77	45.8	10.29	1.0	
1040	14.681	22.59	1.168	0.92	7.79	-12.5	9.17	1.0	
1045	14.725	23.57	1.169	0.10	7.79	-25.4	4.93	1.0	
1050	14.750	24.04	1.177	0.84	7.80	28.0	7.44	1.0	
1055	14.796	24.37	1.180	0.84	7.81	-22.4	0.70	1.0	
1100	14.825	24.39	1.183	0.77	7.81	-16.6	7.51	1.0	
1105	14.826	23.51	1.200	0.19	7.81	-11.7	6.71	1.0	
1110	14.826	21.95	1.198	0.72	7.82	-41.4	6.96	1.0	0.5 gal
1115	14.826	21.91	1.192	0.47	7.81	-53.5	6.62	1.0	0.5 gal
1120	PUMP OFF								
1125	PUMP ON								
1130	14.937	21.16	1.205	0.57	7.81	-58.6	7.10	1.0	
1135	15.003	21.93	1.209	0.44	7.77	-57.9	4.96	1.0	1.0 gal
1140	15.045	23.33	1.214	0.57	7.79	-51.4	4.59	1.0	
1145	15.072	23.81	1.218	0.53	7.79	-44.1	5.01	1.0	
1155	15.121	21.33	1.227	0.73	7.79	-32.5	4.37	1.0	
1200	15.137	23.71	1.236	0.81	7.79	-24.7	3.90		
1215	15.177	24.52	1.237	0.74	7.79	-17.1	3.78		
1220	START SAMPLE								

1502 SAMPLE COMPLETED 2 L IPEC

Equipment Used	Equipment Identification #
PUMP OFF	
YSI 556 MPS Reader and 5563 Sonde	1
flow meter	2
turbidity meter	200701254

NOTES AND OBSERVATIONS: Total volume purged _____ gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

WELL ID: MW 02-53

SAMPLE ID: 007

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Duchanan, NY
 WEATHER: Cloudy TC's 6

PROJECT NO: 01.0017869.92
 DATE: 7/22/09
 SAMPLER(S): AA, SB, MB

SAMPLING INTERVAL (depth in ft below top of casing)
49.6 to 54.1

TOTAL VOLUME PURGED: 6.9 gal

SAMPLING PORT
53

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
0945	0	PUMP ON						5/6	21
0950	0.1	21.43	1.292	0.74	8.32	-158	-		
1001	1.2	21.68	1.290	0.70	8.63	-172.5	1.28		
1007	0.25	21.82	1.301	0.67	8.57	-174.1	1.71		
1012	0.3	21.91	1.302	0.43	8.61	-179.5	2.11		
1017	0.35	22.12	1.303	0.35	8.52	-177.2	2.65		
1022	0.4	22.66	1.304	0.33	8.47	-153	1.19		
1027	0.45	22.16	1.305	0.29	8.08	-197	3.27		
1033	0.5	22.15	1.304	0.27	8.53	-236	2.21		
1038	0.55	22.26	1.306	0.28	8.62	-224	0.41		
1039-14		PUMP OFF	1.302	0.24					
1103	0.65	21.74	1.307	0.42	7.19	-31.1	2.66		
1111	0.7	22.12	1.303	0.34	7.19	-110.4	1.57		
1117	0.75	22.03	1.306	0.33	7.19	-127	1.82		
1120	0.8	22.17	1.307	0.31	7.20	-110.8	1.72		
1133	Stop	8-56	1.303						
1401	Sample completed Pump off								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	0 17 011 0138
turbidity meter	215704393

NOTES AND OBSERVATIONS:

WELL ID: MW 62-71

SAMPLE ID: 200

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Cloudy 70's 5

PROJECT NO: 01.0017569.92
 DATE: 7/22/09
 SAMPLER(S): AA, SB, MB

SAMPLING INTERVAL (depth in ft below top of casing)
61.1 to 82.6

TOTAL VOLUME PURGED: 2.55 gal

SAMPLING PORT
71

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
0945	0	PUMP	ON					516	.11
1056	0.2	20.65	1.354	0.51	6.17	128.7	-		
1102	0.35	20.28	1.361	0.35	6.60	-210.9	1.26		
1108	0.50	20.06	1.361	0.28	6.18	-175.4	2.25		
1113	0.65	19.92	1.361	0.22	6.73	-202.4	1.01		
1118	0.80	19.74	1.361	0.23	6.81	-185.4	0.86		
1123	0.95	19.72	1.361	0.21	6.73	-181.4	0.33		
1127	1.15	19.59	1.361	0.20	6.75	-178.4	0.51		
1132	1.20	19.59	1.363	0.19	6.73	-175.9	0.54		
1139	1.35	19.43	1.364	0.20	6.48	121.0	0.19		
1144	1.50	19.20	1.365	0.19	5.27	-24.0	1.26		
1150	1.65	19.37	1.366	0.17	5.2	-7.02	1.25		
1155	1.80	19.26	1.367	0.19	4.99	-132.1	1.68		
1155	1.95	19.26	1.370	0.17	5.02	-22.4	1.72		
1112	1.95	19.36	1.372	0.17	5.09	-10.6	0.76		
1118	2.0	19.29	1.373	0.17	5.24	-166.7	1.73		
1128	1.95	19.30	1.376	0.16	5.77	-164.2	1.17		
1131	1.90	19.40	1.376	0.28	6.03	100.5	2.11		
1141	2.0	19.10	1.379	0.22	5.96	-185.2	1.73		
1146	2.1	19.08	1.379	0.21	5.90	-188.3	1.82		
1151	2.2	19.10	1.379	0.20	5.88	-190.4	1.80		
1153		PUMP OFF							
1155		START SAMPLE COLLECTION							
1152		SAMPLE COMPLETED							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	4 211,761,053

NOTES AND OBSERVATIONS:

WELL ID: MW GZ-92

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: _____

4

PROJECT NO: 01.0017869.92
DATE: 7/22/09
SAMPLER(S): _____

SAMPLING INTERVAL (depth in ft below top of casing)

88.6 to 99.1

TOTAL VOLUME PURGED:

1.1 gal

SAMPLING PORT

9.2

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
0945	0	PUMP ON						516	21
957	0.2	21.27	1.331	6.80	6.93	-69.6	0.28		
1013	0.3	20.89	1.31	2.41	7.68	-70.1	0.28		
1029	0.4	20.56	1.333	6.40	7.16	-73.6	0.31		
1044	0.5	20.46	1.33	3.78	7.12	-74.6	0.45		
1059	0.6	20.35	1.334	0.35	7.2	-77.7	0.41		
1104	0.7	20.12	1.335	0.33	7.10	-78.3	0		
1129	0.8	20.29	1.335	0.71	7.13	-75.5	0		
1134	0.9	20.16	1.336	0.30	7.13	-76.2	0		
1135	0.92	Sample collection							
1137	0.94	Sample collection							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	SANITARI SA 1-1-1-1-1-1
turbidity meter	200701255

NOTES AND OBSERVATIONS:

WELL ID: MW 02-138

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: sun + clouds 70's

PROJECT NO: 01.0017869.92
 DATE: 7/22/09
 SAMPLER(S): AN, SB, MB

SAMPLING INTERVAL (depth in ft below top of casing)
126.1 to 143.0

TOTAL VOLUME PURGED: 365 gal

SAMPLING PORT
138

PURGE RATE: variable (gal / min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1406	0	PUMP	ON					6/43	40
1419	0.25	20.57	1.464	0.47	6.99	-72.3	1.38	6/43	30
1430	0.75	20.17	1.451	0.44	7.06	-45.5	0.76		
1440	1.0	20.25	1.453	0.39	7.07	-25.0	1.04		
1445	1.25	20.24	1.454	0.36	7.07	-17.5	1.48		
1452	1.40	20.17	1.452	0.33	7.07	-10.8	1.30		
1502	1.70	20.04	1.442	0.34	7.07	-3.2	1.80		
1510	1.80	20.07	1.439	0.34	7.08	2.9	1.15		
1515	2.00	20.10	1.434	0.34	7.08	22.9	1.25		
1525	2.30	20.34	1.428	0.35	7.07	75.5	1.73		
1531	2.35	20.38	1.421	0.35	7.08	50.7	1.92		
1540	2.5	20.50	1.422	0.35	7.07	71.7	1.63		
1550	3.0	20.51	1.420	0.35	7.05	-98.3	5.43		
1557	3.3	20.24	1.408	0.34	7.02	-97.6	3.75		
1606	3.5	20							
1608	START SAMPLE COLLECTION								
1655	SAMPLE COMPLETED : 2 L IPEC								
	PUMP OFF 2 L DEC								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	SNIAC135 RENTAL
turbidity meter	300104293

NOTES AND OBSERVATIONS:

WELL ID: MW 62-1A2

SAMPLE ID: 010

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sun + clouds 70's

PROJECT NO: 01.0017869.92
 DATE: 7/22/09
 SAMPLER(S): AA, SB, MB

SAMPLING INTERVAL (depth in ft below top of casing)
117.0 to 148.7

TOTAL VOLUME PURGED: 28 gal

SAMPLING PORT
182

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1406	0	PUMP	ON					0/43	40
1419	0.15	22.16	1.170	0.45	7.14	-256.1	6.00	0/43	30
1430	0.40	21.12	1.169	0.27	7.30	-201.4	1.41		
1440	0.60	20.85	1.168	0.26	7.32	-162.5	3.30		
1445	0.80	20.76	1.167	0.25	7.33	-144.7	1.76		
1452	1.0	20.74	1.167	0.24	7.34	-140.5	1.90		
1502	1.20	20.54	1.167	0.19	7.34	-146.0	1.38		
1510	1.40	20.55	1.171	0.18	7.34	-136.2	0.32		
1515	1.60	20.55	1.170	0.15	7.34	-142.7	0.77		
1525	1.70	20.63	1.172	0.50	7.35	-124.4	1.17		
1531	1.85	20.72	1.174	0.19	7.35	-132.0	1.10		
1540	2.0	20.82	1.173	0.16	7.33	-128.6	1.03		
1550	2.15	20.89	1.176	0.12	7.36	-132.7	4.29		
1557	2.40	20.63	1.179	0.120	7.36	-140.0	3.85		
1602	2.65	20.66	1.178	0.120	7.36	-136.8	3.29	✓	✓
1606	START SAMPLE COLLECTION								
1700	SAMPLE COMPLETED			2 L	IPEC				
	PUMP OFF			2 L	DEC				

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	4
turbidity meter	200704243

NOTES AND OBSERVATIONS:

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

WELL ID: MU 53-82
SAMPLE ID: 2014

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: 72.5 F Rain

PROJECT NO: 01.0017869.92
DATE: 7/21/04
SAMPLER(S): 1007 2.11-B
PUMP DEPTH: _____ ft

WATER QUALITY: 23.120 DTW = 27.508 At. Ground Depth
GW Elevation Development PSI

Time	DTW or GW Elevation (ft)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
1353	23.028							3.8	4.6
1358	23.028								
1359	23.028								
1359	23.028	18.73	4.223	5.72	6.98	2.1	2.86	6.18	3.7
1359		18.74	4.592	5.97	6.68	-17.1	4.51		2.8
1359	23.127	18.75	4.356	6.35	6.76	38.5	0.21		
1359	23.158	18.77	4.227	7.18	7.11	-87.9	6.87		
1410	23.191	18.66	4.158	7.88	7.21	-105.6	4.20		
1415	23.231	18.76	4.116	7.24	7.82	-127.8	3.87		
1425	23.218	19.06	4.081	7.36	7.90	-131.6	3.13		
1440	23.212	19.17	4.068	7.93	7.97	-129.9	2.53		
1450	23.369	19.21	4.062	7.96	7.98	-125.4	2.39		
1455	23.382	19.16	4.059	8.29	7.56	-112.0	2.90		
1500	23.391	19.30	4.060	8.05	7.57	-10.5	2.06		
1505	23.395	19.33	4.064	8.30	7.58	-78.9	1.93		
1510	23.397	19.11	4.112	8.42	7.27	-105.2	1.30		
1515	23.440	19.12	4.116	8.23	7.65	-56.9	2.30		
1530	23.286	18.18	4.291	8.26	7.07	-121.5	1.54		
1535	23.267	18.35	4.336	8.94	7.70	-127.4	1.71		
1540	23.280	18.44	4.342	8.87	7.71	-122.6	1.68		
1544	START SAMPLE COLLECTION								
1626	end sample collection								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	
flow meter	20274.2054
turbidity meter	

NOTES AND OBSERVATIONS: Total volume purged 1.5 gal
Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msf

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

WELL ID: MW-23-120
SAMPLE ID: 016

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: RAINY, 70'S F

PROJECT NO: 01.0017869.92
DATE: 7/21/09
SAMPLER(S): WB/A19/CB

WATER COLUMN HEIGHT (ft) Well Diameter: _____ in

$\frac{120}{\text{DTB}} - \frac{59.31}{\text{DTW}} = \frac{60.69}{\text{Water Column Height}}$ ft

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 60.69 x 0.041 Multiplier = 2.49 gal Well Volume

2.49 x 1.5 = 3.8 gal Designed Purge Volume

TOTAL VOLUME PURGED: _____ gal

WATER QUALITY: DTW = _____ GW Elevation _____

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
12:41	0	START	PUMP						
12:46	0.25		18.25	1.479	5.02	6.76	1063	30.53	
12:50	0.35		17.92	1.517	3.30	6.87	1011	305.3	
12:54	1.70		17.84	1.586	2.74	6.92	1011	348.9	
13:00	2.50		17.82	1.627	1.95	6.95	1047	286.2	
13:05	3.20		17.82	1.638	1.94	6.97	1160	249.3	
13:08	3.80	PUMP OFF							
13:11		START	SAMPLE COLLECTION						
13:18		END	20 - 016 Collection						

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	3
turbidity meter	200701254

NOTES AND OBSERVATIONS:
Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
Groundwater Elevation measurements are given in feet msl.

WELL ID: MW 31.63

SAMPLE ID: 017

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy IPEC
SITE: Buchanan, NY
WEATHER: Rain 70-5

PROJECT NO: 01.0017869.92
DATE: 7/23/05
SAMPLER(S): AD7/B

SAMPLING INTERVAL (depth in ft below top of casing)
558 to 638

TOTAL VOLUME PURGED: 1.7 gal

SAMPLING PORT
63

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	pH (SU)	Specific Conductivity (mS/m)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (°C)	ORP	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1116	Pump on								
1131	0.1	6.87	1.528	1.97	3.26	18.38	-77.0		
1134	0.15	6.98	1.513	0	0.10	18.40	68.2		
1145	0.2	7.01	1.547	0	1.78	18.26	51.5		
1150	0.25	7.04	1.552	0	1.89	18.62	47.7		
1157	0.35	7.06	1.524	0	1.77	18.00	-35.2		
1162	0.45	7.07	1.508	0	1.77	18.62	23.7		
1168	0.55	7.08	1.556	0	1.72	18.67	-14.2		
1173	0.65	7.07	1.562	0	1.70	18.05	-7.9		
1180	0.75	7.11	1.570	0	2.08	18.71	23.618		
1129	0.90	7.12	1.587	0	2.16	6.73	10.8		
1134	1.0	7.12	1.581	0	2.26	18.83	14.8		
1140	1.1	7.13	1.603	0	2.33	18.32	2.5		
1142	start sample collection								
1150	end sample collection								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 3563 Sonde turbidity meter	1115700093

NOTES AND OBSERVATIONS:

gal. purge used: 1.7 gal

WELL ID: MW 31-85
 SAMPLE ID: 017

**GZA GeoEnvironmental of New York
 Waterloo Sampling Data Sheet**

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: 16.5, KM

PROJECT NO: 01 0017869.92
 DATE: 7/2/09
 SAMPLER(S): ATCDB

SAMPLING INTERVAL (depth in ft below top of casing)
69.8 to 85.4

TOTAL VOLUME PURGED: 1.4 gal

PURGE RATE: variable (gal/min)

SAMPLING PORT
85

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	pH (SU)	Specific Conductivity (mS/m)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (°C)	ORP	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
10:10	0	7.24	2.177	2.58	3.60	19.09	42	617	29
10:21	0.25	7.22	2.181	2.6	3.8	18.82	38.7		
10:32	0.5	7.22	2.183	2.6	3.52	18.57	38.7		
10:44	0.75	7.27	2.183	2.6	3.52	18.57	38.7		
10:59	1.0	7.10	2.182	2.6	3.54	18.55	36.7		
11:06	1.25	7.08	2.182	2.6	3.71	18.58	36.2		
11:06	1.0	7.21	2.182	2.6	3.67	18.60	37.2		
11:07	1.2	7.20	2.182	2.6	3.72	18.65	37.7		
11:09	Pump Off.								
11:27	Start Sample Collection								
11:33	End Sample Collection								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	↙
turbidity meter	0017869.92

NOTES AND OBSERVATIONS:

1.4 gal purged

WELL ID MW 40 162

SAMPLE ID 009

GZA GeoEnvironmental of New York
Waterloo Sampling Data Sheet

CLIENT: Entergy IPEC
SITE: Buchanan, NY
WEATHER: Sunny 80's

PROJECT NO: 01001706402
DATE: 7/20/09
SAMPLER S: M. BRITTS

SAMPLING INTERVAL (depth in ft below top of casing):
158.7 to 190.3

TOTAL VOLUME PURGED: 085 gal

SAMPLING PORT: 162

PURGE RATE: variable gal/min

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	pH (SU)	Specific Conductivity (mS/m)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (C)	ORP	Drive Vent Cycle (seconds)	Drive Pressure (psf)
940	0.05	6.51	1.362	-	1.88	21.97	-134.2	6/8.7	40
1100	START SAMPLE COLLECTION								
1257	SAMPLE COMPLETED: 2 L IPEC								
	2 L DEC								
	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	
turbidity meter	200701254

NOTES AND OBSERVATIONS:

WELL ID MW 10 107

SAMPLE ID 111

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT Energy - IPEC
 SITE Buchanan, NY
 WEATHER Sunny 80's

PROJECT NO 0111170002
 DATE 7/20/09
 SAMPLER(S) M BRITTS

SAMPLING INTERVAL (depth in ft below top of casing)
125.2 to 136.7

TOTAL VOLUME PURGED: 2.0 gal

SAMPLING PORT
111

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	pH (SU)	Specific Conductivity (mS/m)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (C)	ORP	Drive Vent Cycle (seconds)	Drive Pressure (psi)
826	0	PUMP ON							
840	0.3	7.32	2.018	-	1.82	20.54	-160.7	6/8.7	40
								↓	↓
								↓	↓
								↓	↓
								↓	↓
								↓	↓
								↓	↓
								↓	↓
								↓	↓
1100	START SAMPLE COLLECTION								
1209	SAMPLE COMPLETED : 22 IPEC								
	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 556A Sonde	
turbidity meter	

NOTES AND OBSERVATIONS:

WELL ID: MW 102-10

SAMPLE ID: 102-10-1

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy IPEC
 SITE: Buchanan, NY
 WEATHER: _____

PROJECT NO: 01-0017865-94
 DATE: 10/11/01
 SAMPLER S: 102-10-1

SAMPLING INTERVAL (depth in ft below top of casing):
93.2 to 106.7

TOTAL VOLUME PURGED: 3.15 gal

SAMPLING PORT: _____

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

3

WATER QUALITY:

Time	Purged Volume (gal)	pH (SU)	Specific Conductivity (mS/m)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (°C)	ORP	Drive Vent Cycle (seconds)	Drive Pressure (psf)
8:26	0	PUMP	off						
8:40	0.4	6.87	2.528	—	1.72	17.60	-229.0	6/8.7	40
								↓	↓
								↓	↓
								↓	↓
								↓	↓
9:40								↓	↓
11:00	START SAMPLE COLLECTION								
11:31	SAMPLE COMPLETED: 2 L IPEC								
	PUMP OFF: 2 L DEC								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	
turbidity meter	

NOTES AND OBSERVATIONS:

WELL ID: MW 30-51
 SAMPLE ID: 3051

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Cloudy 20's

PROJECT NO: 01 0017869.9L
 DATE: 7/20/04
 SAMPLER(S): 4

SAMPLING INTERVAL (depth in ft below top of casing)
64.7 to 84.2

TOTAL VOLUME PURGED: 3.6 gal

SAMPLING PORT
21

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	pH (SU)	Specific Conductivity (mS/m)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (°C)	ORP	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
8:30	0.2	7.2	1.2	0.1	2.0	15.5	175		
8:35	0.2	7.2	1.2	0.1	2.0	15.5	175		
8:40	0.2	7.2	1.2	0.1	2.0	15.5	175		
8:45	0.2	7.2	1.2	0.1	2.0	15.5	175		
8:50	0.2	7.2	1.2	0.1	2.0	15.5	175		
8:55	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:00	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:05	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:10	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:15	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:20	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:25	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:30	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:35	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:40	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:45	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:50	0.2	7.2	1.2	0.1	2.0	15.5	175		
9:55	0.2	7.2	1.2	0.1	2.0	15.5	175		
10:00	0.2	7.2	1.2	0.1	2.0	15.5	175		
11:00	START SAMPLE COLLECTION								
11:28	SAMPLE COMPLETED								
	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	
turbidity meter	

NOTES AND OBSERVATIONS:

WELL ID: MW 40-46

SAMPLE ID: 009

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny 80's

PROJECT NO: 01.0017869.92
 DATE: 7/20/09
 SAMPLER(S): M. BRITOS

SAMPLING INTERVAL (depth in ft below top of casing)
44.2 to 53.7

TOTAL VOLUME PURGED: 1.75 gal

SAMPLING PORT 46

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	pH (SU)	Specific Conductivity (mS/m)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (°C)	ORP	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1254	0	PUMP	ON					5.6/64	20
1309	0.05	6.80	4.356	-	2.19	20.14	30.8		
1319	0.25	7.00	4.287	-	0.38	19.52	-2.8		
1327	0.40	7.03	4.305	-	0.34	19.26	+10.0		
1335	0.55	7.03	4.304	4.10	0.32	19.22	20.1		
1341	0.75	7.04	4.336	3.58	0.34	18.90	28.6		
1345	0.90	7.04	4.331	4.98	0.34	18.46	35.0		
1400	1.15	7.03	4.376	6.39	0.39	18.85	48.7		
1405	1.25	7.04	4.387	6.28	0.40	18.89	49.8		
1410	1.35	7.05	4.397	6.35	0.41	18.93	51.2		
1415	1.60	7.05	4.416	6.24	0.42	19.02	52.3	↓	↓
1417	PUMP	OFF							
1424	START	SAMPLE COLLECTION							
1511	SAMPLE	COMPLETED			2 L	IPEC			
				2 L	DEC				
	PUMP	OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	1 200701254

NOTES AND OBSERVATIONS:

Total volume purged: _____ gal

WELL ID: MW 40-27

SAMPLE ID: 008

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny 80's

PROJECT NO: 01.0017869.92
 DATE: 7/20/09
 SAMPLER(S): M. BRITOS

SAMPLING INTERVAL (depth in ft below top of casing)
18.2 to 35.2

TOTAL VOLUME PURGED: 325 gal

SAMPLING PORT
27

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	pH (SU)	Specific Conductivity (mS/m)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (°C)	ORP	Drive/Vent Cycle (seconds)	Drive Pressure (psf)
1259	0	PUMP	ON					56/64	20
1304	0.15	6.80	6.632	-	4.87	18.32	-144.3		
1319	0.75	6.80	7.068	-	3.52	17.79	-88.2		
1327	0.75	6.80	7.080	-	3.57	17.56	-73.7		
1335	1.15	6.80	7.072	4.11	3.59	17.52	-55.5		
1341	1.40	6.80	7.073	4.39	3.58	17.36	-44.5		
1345	1.65	6.80	7.063	5.96	3.46	17.30	-34.1		
1400	2.35	6.80	7.068	7.07	3.49	17.12	+1.3		
1405	2.60	6.80	7.068	7.16	3.45	17.07	+1.7		
1410	2.80	6.80	7.059	7.14	3.39	17.20	+2.5		
1415	3.00	6.80	7.062	7.08	3.44	17.23	+3.0	↓	↓
1417	PUMP OFF								
1424	START SAMPLE COLLECTION								
1450	SAMPLE COMPLETED				2 L	IPEC			
				2 L	DEC				
	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	4 200701254

NOTES AND OBSERVATIONS:

Total volume purged: _____ gal

GZA GeoEnvironmental of New York Modified Traditional Purge Sampling Data Sheet

WELL ID: MW-46
SAMPLE ID: 017

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Sunny 80's

PROJECT NO: 01.0017869.92
DATE: 7/14/09
SAMPLER(S): AA/MB

WATER COLUMN HEIGHT (ft) Well Diameter: _____ in

$$\frac{29.7}{\text{DTB}} - \frac{4.30}{\text{DTW}} = \frac{25.4}{\text{Water Column Height}}$$
ft

Diameter	Multipliers
1	0.041
2	0.163
4	0.653

GALLONS OF WATER PER WELL VOLUME:

Water Column Height 25.4 x 0.653 = 16.59 gal
Multiplier Well Volume

16.59 x 1.5 = 24.8 gal
Designed Purge Volume

TOTAL VOLUME PURGED: 24.8 gal

WATER QUALITY: DTW = 10.90 GW Elevation (104.57)

Time	Volume Purged (gal)	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Notes
1205	0	12.457	19.41	0.626	0.75	7.51	-170.8	15.72	0.9 + 0.9
1210	0.2	10.911	20.11	0.646	1.34	7.29	-140.9	5.11	0.4 + 0.4
1218	0.9	8.626	19.91	0.595	0.75	7.51	-170.8	15.72	0.9 + 0.9
1231	2.0	5.602	19.96	0.590	0.41	7.64	-158.2	10.15	2.5 + 2.5
1241	3.0	3.391	19.97	0.456	0.33	7.72	-123.3	3.92	3.0 + 3.0
1248	3.5	2.338	19.99	0.435	0.34	7.74	-111.3	4.85	3.8 + 4.0
1256	4.2	0.456	20.12	0.250	0.48	7.81	-86.8	7.95	4.5 + 4.8
1303	4.9	-1.070	20.15	0.368	0.74	7.65	-66.9	7.08	5.1 + 5.5
1313	5.6	-2.255	20.07	0.546	1.73	7.63	-44.1	6.56	5.8 + 6.2
1319	6.0	-3.291	20.12	0.653	2.24	7.63	30.6	5.77	6.3 + 6.6
1324	6.5	-4.221	20.09	0.718	3.07	7.64	79.8	0.91	6.7 + 7.0
1330	7.0	-5.413	20.11	0.573	3.37	7.65	25.5	4.83	7.3 + 7.5
1337	7.5	-5.841	20.12	0.721	4.32	7.67	24.9	5.16	7.7 + 8.0
1345	8.5	-7.374	20.17	1.033	5.66	7.68	-29.6	6.07	8.3 + 8.6
1350	10.0	-8.907	20.17	1.217	6.91	7.68	-29.6	6.07	8.3 + 8.6
1357	10.0	-8.907	20.17	1.217	6.91	7.68	-29.6	6.07	8.3 + 8.6

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	3
turbidity meter	200701254

NOTES AND OBSERVATIONS:

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

WELL ID: 03-72
 SAMPLE ID: 030

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny 80°

PROJECT NO: 01.0017869.92
 DATE: 7/14/09
 SAMPLER(S): AA/M.B
 PUMP DEPTH: _____ ft

WATER QUALITY: 3 DTW = 4.75 GW Elevation

Time	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
1102	4.926		PUMP ON						
1107	4.873	27.28	1.651	0.04	7.19	-110	0.885	1.5	
1118	4.874	26.79	1.601	0.02	7.32	-119	6.64		
1125	4.866	26.85	1.580	0.01	7.44	-123	6.74		
1130	4.864	27.33	1.574	0.00	7.43	-114	6.50		
1137	4.860	27.83	1.571	0.00	7.76	-121	1.71		
1142	4.858	28.30	1.570	0.00	7.47	-120	1.88		
1145	PUMP OFF								1
1154	PUMP ON								
1156	4.834	28.30	1.577	0.03	7.48	-122	2.42	3	
1202	4.848	29.58	1.574	0.00	7.47	-124	4.74		
1207	4.845	29.67	1.574	0.01	7.50	-112	7.87		
1212	4.845	29.60	1.570	0.01	7.47	-123	7.75		
1217	4.843	29.71	1.580	0.01	7.47	-128	1.65		
1222	4.841	29.74	1.567	0.01	7.47	-128	2.42		
1227	4.837	30.16	1.560	0.01	7.50	-132	1.83		
1230	4.830	30.11	1.560	0.01	7.50	-132	1.83		
1304	4.830	30.11	1.560	0.01	7.50	-132	1.83		

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	5
flow meter	K. 172
turbidity meter	200704273

NOTES AND OBSERVATIONS:

Total volume purged 11.5 gal

Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.

Handwritten note: All samples are from the same depth.

WELL ID: 332-71
 SAMPLE ID: r 25

GZA GeoEnvironmental of New York Low-Flow Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: 70's F, Sun

PROJECT NO: 01.0017869.92
 DATE: 7/14/09
 SAMPLER(S): AP/MS
 PUMP DEPTH: _____ ft

WATER QUALITY: 3.53 DTW = 3.110 GW Elevation

Time	DTW or GW Elevation	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Flow Rate (gal/hr)	Notes
117	3.431								
135	3.425	22						2.0	
142	3.440	21.74	227	3.93	7.43	-8	0.15		
147	3.443	22.71	261	2.3	7.31	-23.6	7.17		
152	3.477	22.16	280	1.16	7.51	-27.1	6.99	3	
155	3.470	23.25	282	0.11	7.62	-22.0	7.1		
160	3.461	23.53	272	0.71	7.63	-61.5	7.13		
165	3.453	23.42	251	2.25	7.63	-41.1	7.2		
168	3.446	23.44	256	0.52	7.64	-40.1	7.11		
171	3.460	23.5	251	1.16	7.64	-39.6	7.16		
177	3.431	23.53	247	0.44	7.64	-41.2	7.18		
183	3.421	23.6	246	1.12	7.65	-36.3	7.32		
187	3.416	23.63	241	0.38	7.64	-37.6	7.6		
192	3.410	23.61	231	0.37	7.65	-39.5	7.6		
196	3.41	23.6	231	0.37	7.65	-39.5	7.6		
20	3.41	23.6	231	0.37	7.65	-39.5	7.6		

Equipment Used	Equipment Identification #
YSI 356 MPS Reader and 5563 Sonde	4
flow meter	
turbidity meter	2607-1254

NOTES AND OBSERVATIONS: Total volume purged 5.2 gal
 Depth and Depth to Water (DTW) measurements are given in feet from top of casing.
 Groundwater Elevation measurements are given in feet msl.



APPENDIX E: POST-Q3 2009 MID-QUARTER SAMPLING DATA SHEETS

WELL ID: MW 32-59

SAMPLE ID: C13

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny 80°F

PROJECT NO: 01.0017869.92
 DATE: 9/15/09
 SAMPLER(S): M-BERTOS

SAMPLING INTERVAL (depth in ft below top of casing)
28.3 to 61.3

TOTAL VOLUME PURGED: 3.30 gal

SAMPLING PORT
59 6

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1332	0							617	52
1344	0.5	20.30	1.019	8.29	7.25	19.1	-	617	40
1349	0.75	20.27	1.006	5.17	7.33	21.8	-		
1355	1.20	20.40	1.002	5.09	7.45	26.6	9.21		
1400	1.60	20.40	1.002	5.00	7.47	30.0	8.07		
1410	2.20	20.39	0.647	4.66	7.68	31.1	8.15		
1419	2.85	20.41	0.649	4.64	7.74	32.5	8.10		
1424	3.15	20.44	0.639	4.62	7.76	32.9	8.17		
1426		START SAMPLE COLLECTION							
1427		TRACE TEST SAMPLE : 25 ml IPEC							
1433		SAMPLE COMPLETED. 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	<u>6</u> 200704243

NOTES AND OBSERVATIONS:

WELL ID: MW 32-85

SAMPLE ID: 016

**GZA GeoEnvironmental of New York
Waterloo Sampling Data Sheet**

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Sunny 80°F

PROJECT NO: 01.0017869.92
DATE: 9/15/09
SAMPLER(S): M. B21 PDS

SAMPLING INTERVAL (depth in ft below top of casing)
79.3 to 92.8

TOTAL VOLUME PURGED: 0.85 gal

SAMPLING PORT
85

PURGE RATE: variable (gal/min)
PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1332								617	52
1344	0.1	21.01	1.658	1.89	6.89	-79.1	-	617	40
1349	0.15	20.99	1.655	1.10	6.92	-72.6	-		
1355	0.25	22.23	1.654	0.91	6.94	-60.6	9.16		
1400	0.30	22.57	1.660	0.72	6.97	-53.4	8.45		
1410	0.45	22.62	1.668	0.63	6.97	-52.7	8.01		
1419	0.55	22.88	1.671	0.47	7.01	-49.1	7.93		
1424	0.60	22.84	1.671	0.45	7.02	-48.7	7.96		
1429	0.70	22.89	1.671	0.44	7.02	-48.0	7.94		
1432		START SAMPLE COLLECTION							
1435		TRALER TEST SAMPLE : 25 ml IPEC							
1506		SAMPLE COMPLETED : 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	1
turbidity meter	200704243

NOTES AND OBSERVATIONS:

WELL ID: MW 32-149

SAMPLE ID: 014

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny 80°F

PROJECT NO: 01.0017869.92
 DATE: 9/15/09
 SAMPLER(S): M. BR TCS

SAMPLING INTERVAL (depth in ft below top of casing)
147.3 to 156.8

TOTAL VOLUME PURGED: 1.0 gal

SAMPLING PORT
149

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

3

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1045	0	PUMP ON	ON					8/11	50
1055	0.05	22.07	1.982	0.99	6.91	-224.0	---	↓	↓
1100	0.10	22.03	2.024	0.79	6.97	-217.1	-		
1110	0.20	21.93	2.101	0.54	7.07	-204.9			
1117	0.35	22.06	2.104	0.40	7.08	-199.9	8.99		
1123	0.45	22.05	2.124	0.40	7.08	-203.0	7.87		
1132	0.55	22.15	2.131	0.40	7.08	-199.1	7.99		
1140	0.65	22.28	2.135	0.32	7.07	-197.8	8.11		
1145	0.75	22.31	2.134	0.33	7.07	-197.2	8.04		
1150	0.85	22.35	2.138	0.34	7.07	-199.0	8.09		
1151	START SAMPLE COLLECTION								
1153	TRACER TEST SAMPLE : 25 ml. IPEC								
1239	SAMPLE COMPLETED : 2 L IPEC								
	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	4
turbidity meter	200704293

NOTES AND OBSERVATIONS:
 1241 - 13

WELL ID: MW 32-173

SAMPLE ID: 012

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny 80°F

PROJECT NO: 01.0017869.92
 DATE: 9/15/09
 SAMPLER(S): M BRITDS

SAMPLING INTERVAL (depth in ft below top of casing)
165.8 to 174.3

TOTAL VOLUME PURGED: 0.95 gal

SAMPLING PORT
173

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

2

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1045	0	PUMP ON						8/11	50
1055	0.1	21.58	1.934	1.76	6.53	-165.1	-	↓	↓
1100	0.2	21.51	1.936	0.70	6.92	-160.4	-		
1110	0.4	21.44	1.942	0.35	7.01	-146.9			
1117	0.5	21.49	1.943	0.28	7.03	-145.3	8.33		
1123	0.6	21.59	1.943	0.22	7.04	-139.6	8.28		
1132	0.7	21.62	1.947	0.21	7.06	-139.0	8.19		
1137	0.8	21.64	1.947	0.20	7.06	-137.8	8.27		
1138	START SAMPLE COLLECTION								
1140	TRACER TEST SAMPLE : 25 ml IPEC								
1211	SAMPLE COMPLETED : 2 L IPEC								
	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	1 200704293

NOTES AND OBSERVATIONS:

WELL ID: MW 32-190

SAMPLE ID: 015

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny 80's

PROJECT NO: 01.0017869.92
 DATE: 9/15/09
 SAMPLER(S): M. BRITOS

SAMPLING INTERVAL (depth in ft below top of casing)
180.3 to 193.9

TOTAL VOLUME PURGED: 0.65 gal

SAMPLING PORT
190

PURGE RATE: variable (gal / min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
1045	0	PUMP ON						8/11	50
1055	0.05	22.15	1.614	4.36	6.85	-76.7	-	↓	↓
1100	0.10	22.09	1.622	0.82	6.88	-86.9	-	↓	↓
1110	0.20	22.09	1.639	0.39	6.95	-80.2	3.30	↓	↓
1117	0.30	22.18	1.641	0.32	7.01	-65.6	8.19	↓	↓
1123	0.40	22.21	1.643	0.30	7.02	-68.7	8.26	↓	↓
1128	0.50	22.26	1.643	0.29	7.03	-64.8	8.20	↓	↓
1130	START SAMPLE COLLECTION								
1131	TRACER TEST SAMPLE : 25 ml IPEC								
1213	SAMPLE COMPLETED 2 L IPEC								
	PUMP OFF								

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	<u>6</u> <u>200704293</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 31-119

SAMPLE ID: 219

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Sunny / 75° F

PROJECT NO: 01.0017869.92
DATE: 8/14/04
SAMPLER(S): 6700 P. 22

SAMPLING INTERVAL (depth in ft below top of casing)
64.2 to 69.2

TOTAL VOLUME PURGED: 1.25 gal

SAMPLING PORT
13

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
10:15	0.15	21.5	215	1.2	6.5	215	0.1	1.0	2.0
10:20	0.20	21.5	215	1.2	6.5	215	0.1	1.0	2.0
10:25	0.25	21.5	215	1.2	6.5	215	0.1	1.0	2.0
10:30	0.30	21.5	215	1.2	6.5	215	0.1	1.0	2.0
10:35	0.35	21.5	215	1.2	6.5	215	0.1	1.0	2.0
10:40	0.40	21.5	215	1.2	6.5	215	0.1	1.0	2.0
10:45	0.45	21.5	215	1.2	6.5	215	0.1	1.0	2.0
10:50	0.50	21.5	215	1.2	6.5	215	0.1	1.0	2.0
10:55	0.55	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:00	0.60	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:05	0.65	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:10	0.70	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:15	0.75	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:20	0.80	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:25	0.85	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:30	0.90	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:35	0.95	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:40	1.00	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:45	1.05	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:50	1.10	21.5	215	1.2	6.5	215	0.1	1.0	2.0
11:55	1.15	21.5	215	1.2	6.5	215	0.1	1.0	2.0
12:00	1.20	21.5	215	1.2	6.5	215	0.1	1.0	2.0
12:05	1.25	21.5	215	1.2	6.5	215	0.1	1.0	2.0

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	
turbidity meter	

NOTES AND OBSERVATIONS:

WELL ID: MW 31-03

SAMPLE ID: 014

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Clear 80°F

PROJECT NO: 01.0017869.92
 DATE: 9/1/09
 SAMPLER(S): M-307-103

SAMPLING INTERVAL (depth in ft below top of casing)
15.3 to 22.0

TOTAL VOLUME PURGED: 0.25 gal

SAMPLING PORT
10

PURGE RATE: variable (gal / min)
 PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
10:00	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:05	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:10	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:15	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:20	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:25	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:30	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:35	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:40	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:45	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:50	0.00	21.1	1.21	2.00	7.0	315	0.1		
10:55	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:00	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:05	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:10	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:15	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:20	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:25	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:30	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:35	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:40	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:45	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:50	0.00	21.1	1.21	2.00	7.0	315	0.1		
11:55	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:00	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:05	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:10	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:15	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:20	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:25	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:30	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:35	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:40	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:45	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:50	0.00	21.1	1.21	2.00	7.0	315	0.1		
12:55	0.00	21.1	1.21	2.00	7.0	315	0.1		
13:00	0.00	21.1	1.21	2.00	7.0	315	0.1		

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	
turbidity meter	

NOTES AND OBSERVATIONS:

WELL ID: MW 31-85

SAMPLE ID: 011

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: 2000-2008

PROJECT NO: 01.0017869.92
DATE: 9/11/09
SAMPLER(S): 2.5L-01

SAMPLING INTERVAL (depth in ft below top of casing)
29.8 to 35.4

TOTAL VOLUME PURGED: 0.95 gal

SAMPLING PORT
35

PURGE RATE: variable (gal / min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
101	0.1	17.1	1.1	0.0	7.5	100	0.1		
102	0.1	17.1	1.1	0.0	7.5	100	0.1		
103	0.1	17.1	1.1	0.0	7.5	100	0.1		
104	0.1	17.1	1.1	0.0	7.5	100	0.1		
105	0.1	17.1	1.1	0.0	7.5	100	0.1		
106	0.1	17.1	1.1	0.0	7.5	100	0.1		
107	0.1	17.1	1.1	0.0	7.5	100	0.1		
108	0.1	17.1	1.1	0.0	7.5	100	0.1		
109	0.1	17.1	1.1	0.0	7.5	100	0.1		
110	0.1	17.1	1.1	0.0	7.5	100	0.1		
111	0.1	17.1	1.1	0.0	7.5	100	0.1		
112	0.1	17.1	1.1	0.0	7.5	100	0.1		
113	0.1	17.1	1.1	0.0	7.5	100	0.1		
114	0.1	17.1	1.1	0.0	7.5	100	0.1		
115	0.1	17.1	1.1	0.0	7.5	100	0.1		
1205		TRACED							
		SAMPLE							
		16.2							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	
turbidity meter	

NOTES AND OBSERVATIONS:

WELL ID: MW 30-84

SAMPLE ID: 018

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Rain 70's

PROJECT NO: 01.0017869.92
 DATE: 9/12/09
 SAMPLER(S): M. BEITOS

SAMPLING INTERVAL (depth in ft below top of casing)
77.3 to 85.4

TOTAL VOLUME PURGED: 0.30 gal

SAMPLING PORT
84

PURGE RATE: variable (gal / min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
0950	0.0	PUMP ON						0/1	40
0957	0.08	26.67	1.615	4.38	7.04	913.4	—		
1005	0.05	25.56	1.668	3.18	7.06	97.5	—		
1015	0.10	25.49	1.665	2.90	7.08	97.5	—		
1020	0.15	25.42	1.664	2.88	7.09	97.0	—		
1025	0.18	25.38	1.665	2.87	7.08	97.3	—	↓	↓
1028		START SAMPLE COLLECTION							
1032		TRACER TEST SAMPLE : 25 ml. VOA							
1222		SAMPLE COMPLETED : 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde Turbidity meter	6

NOTES AND OBSERVATIONS:
3,550 ml added to 2" casing

WELL ID: MW 30-69

SAMPLE ID: 027

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Rain 70's

PROJECT NO: 01.0017869.92
DATE: 9/2/09
SAMPLER(S): M. BRITOS

SAMPLING INTERVAL (depth in ft below top of casing)
67.3 to 71.3

TOTAL VOLUME PURGED: 1.10 gal

SAMPLING PORT
69

PURGE RATE: variable (gal / min)
PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pressure (psi)
0950	0	PUMP	ON					0/7	40
0957	0.05	26.86	1.260	7.86	8.13	105.6	—	↓	↓
1005	0.40	26.95	1.240	7.75	8.21	101.6	✓	↓	↓
1015	0.75	26.83	1.284	7.62	8.27	97.9	—	↓	↓
1020	0.85	26.79	1.267	7.68	8.27	97.4	—	↓	↓
1025	0.95	26.73	1.270	7.70	8.28	97.1	—	↓	↓
1027		START SAMPLE COLLECTION							
1030		TRACER TEST SAMPLE : 25 ml. JOA							
1045		SAMPLE COMPLETED : 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	1

NOTES AND OBSERVATIONS:

WELL ID: MW 51-49

SAMPLE ID: C18

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Sunny 70's

PROJECT NO: 01.0017869.92
DATE: 9/1/09
SAMPLER(S): M. BRITOS

SAMPLING INTERVAL (depth in ft below top of casing)
34.8 to 49.3

TOTAL VOLUME PURGED: 1.15 gal

SAMPLING PORT
49

PURGE RATE: variable (gal/min)
PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
933	0	PUMP	0.0					6/7	24
940	0	19.65	1.845	3.27	6.73	99.8	—	↓	↓
950	0.4	19.34	1.963	1.82	6.87	72.6	—		
959	0.6	19.23	1.933	1.97	6.92	94.5	8.05		
1005	0.8	19.17	1.926	1.95	6.93	96.4	7.97		
1010	1.0	19.16	1.923	1.96	6.93	98.4	8.03		
1012		START SAMPLE COLLECTION							
1014		TRACE TEST SAMPLE							
1022		SAMPLE COMPLETED : 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	1
turbidity meter	200704293

NOTES AND OBSERVATIONS:

WELL ID: MW 31-63

SAMPLE ID: 013

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny 70's

PROJECT NO: 01.0017869.92
 DATE: 9/1/04
 SAMPLER(S): M BR 705

SAMPLING INTERVAL (depth in ft below top of casing)
55.5 to 63.3

TOTAL VOLUME PURGED: 0.90 gal

SAMPLING PORT
63

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)		
934	0	PUMP ON						6.7	29		
935	0							6.7	40		
938	0							6.7	29		
940	0	20.03	1576	3.80	7.16	-91.5	-	↓	↓		
950	0.02	19.95	1656	2.27	7.11	-90.2	-				
959	0.1	19.95	1643	1.83	7.12	-79.7	8.40				
1009	0.15	19.97	1630	1.64	7.13	-73.9	8.15				
1010	0.18	19.98	1619	1.62	7.13	-71.2	7.79				
1016	0.20	20.40	1578	1.71	7.14	-66.7	8.70				
1024	0.25	21.10	1554	1.67	7.15	-55.2	8.30				
1029	0.30	22.03	1550	1.65	7.15	-44.4	8.45				
1040	0.40	23.27	1540	1.61	7.15	-27.4	7.62				
1050	0.50	23.54	1568	1.60	7.15	-22.9	8.41				
1055	0.60	23.58	1581	1.58	7.13	-19.9	8.50				
1100	0.70	23.57	1584	1.58	7.13	-18.4	8.46				
1105	0.75	23.62	1583	1.57	7.12	-17.6	8.53				
1107		START SAMPLE COLLECTION									
1109		TRACER TEST SAMPLE									
1150		SAMPLE COMPLETED: 2 L IPEC									
		PUMP OFF									

Equipment Used	Equipment Identification #
YSI 356 MPS Reader and 3363 Sonde	4
turbidity meter	200704293

NOTES AND OBSERVATIONS:

WELL ID: MW 31-85

SAMPLE ID: C18

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Sunny 70's

PROJECT NO: 01.0017869.92
 DATE: 9/1/09
 SAMPLER(S): M. BRITTS

SAMPLING INTERVAL (depth in ft below top of casing)
69.8 to 85.4

TOTAL VOLUME PURGED: 2.25 gal

SAMPLING PORT
85

PURGE RATE: variable (gal/min)

PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
934	0	PUMP ON						6/7	29
935	0							6/7	40
938	0							6/7	29
940	0.01	19.80	2.184	2.10	7.01	-67.9	--		
950	0.2	20.00	2.135	2.02	7.04	-24.4	--		
959	0.35	19.95	2.124	2.15	7.04	-12.6			
1005	0.45	19.90	2.125	2.17	7.04	-7.8	7.91		
1010	0.55	19.85	2.118	2.20	7.03	5.7	8.08		
1016	0.65	20.09	2.110	2.19	7.03	1.9	8.82		
1024	0.80	20.50	2.110	2.30	7.01	+1.1	8.76		
1029	0.90	21.02	2.099	2.46	6.97	3.8	8.90		
1040	1.10	21.43	2.073	2.13	6.95	9.1	8.99		
1050	1.25	21.49	2.054	2.75	6.95	14.5	8.40		
1055	1.35	21.42	2.054	3.01	6.95	22.8	8.22		
1100	1.50	21.41	2.031	2.96	6.95	29.9	8.71		
1108	1.75	21.41	2.027	3.05	6.95	41.6	8.68		
1117	1.90	20.93	2.024	3.15	6.93	58.7	8.57		
1124	2.0	20.87	2.021	3.18	6.92	60.9	8.60		
1129	2.1	20.83	2.019	3.19	6.92	61.7	8.46	↓	↓
1130		START SAMPLE COLLECTION							
1132		TRACE TEST SAMPLE							
1152		SAMPLE COMPLETED							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	6
turbidity meter	200104293

NOTES AND OBSERVATIONS:

WELL ID: MW 32-59

SAMPLE ID: 012

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
 SITE: Buchanan, NY
 WEATHER: Cloudy 70's

PROJECT NO: 01.0017869.02
 DATE: 8/31/09
 SAMPLER(S): M. BRITUS

SAMPLING INTERVAL (depth in ft below top of casing)
28.3 to 61.3

TOTAL VOLUME PURGED: 2.55 gal

SAMPLING PORT
59

PURGE RATE: variable (gal / min)
 PURGE METHOD: Double Valve Pump

6

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Pres (psi)
1243	0	PUMP ON						6/7	40
1251	0.4	20.32	1.361	4.38	6.94	191.6	—	↓	↓
1300	1.2	20.13	1.373	4.78	7.13	172.1	8.60		
1305	1.8	20.12	1.376	4.80	7.18	160.0	7.03		
1311	2.2	20.16	1.375	4.76	7.20	156.1	7.20		
1316	2.4	20.15	1.375	4.74	7.22	153.7	7.16		
1317		START SAMPLE COLLECTION							
1323		TRACER TEST SAMPLE							
1324		SAMPLE COMPLETED: 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	1 <u>200704293</u>

NOTES AND OBSERVATIONS:

WELL ID: MW 32-131

SAMPLE ID: _____

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
 SITE: Buchanan, NY
 WEATHER: Cloudy 70's

PROJECT NO: 01.0017869.92
 DATE: 8/31/09
 SAMPLER(S): M. BRITTS

SAMPLING INTERVAL (depth in ft below top of casing)
125.3 to 138.3

TOTAL VOLUME PURGED: 0.20 gal

SAMPLING PORT
131

PURGE RATE: variable (gal/min)
 PURGE METHOD: Double Valve Pump

4

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)		
937	0	PUMP	ON					8/10	50		
950	0.05	20.30	0.800	9.30	8.11	-130.9	—	8/11	50		
		Blowing mostly air into flow cell.									
955	0.05	20.30	0.700	9.76	8.34	-89.3	—	↓	↓		
1001	0.05	20.33	0.650	9.86	8.47	-80.2	—				
1009	0.05	20.42	0.650	9.92	8.58	-70.6	—				
1023	0.05	20.71	0.550	9.84	8.70	-59.8	—				
1028	0.05	20.74	0.650	9.85	8.72	-57.1	—				
1034	0.10	21.02	0.600	9.79	8.75	-52.2	—				
1044	0.10	21.26	0.500	9.77	8.73	36.5	—				
1109	0.15	21.72	0.300	9.63	8.40	-24.8	—				
1112		START TRACER TEST SAMPLE COLLECTION									
1126		TRACER TEST SAMPLE COMPLETED									
		PUMP OFF									
		(It took 14 minutes to get 20 ml sample.)									
		Unable to get a 2 L SAMPLE due to very low flow rate.									

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde turbidity meter	4 200704243

NOTES AND OBSERVATIONS:

WELL ID: MW 32-149

SAMPLE ID: 013

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Energy - IPEC
SITE: Buchanan, NY
WEATHER: Cloudy, 70's

PROJECT NO: 01.0017869.92
DATE: 8/31/09
SAMPLER(S): M. DR. 105

SAMPLING INTERVAL (depth in ft below top of casing)
147.3 to 156.8

TOTAL VOLUME PURGED: 0.55 gal

SAMPLING PORT
149

PURGE RATE: variable (gal / min)

PURGE METHOD: Double Valve Pump

3

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press (psi)
926	0	PUMP ON	ON					72/4	62
937	0.05	20.66	1.712	0.33	6.71	-162.7	-	8/10	50
950	0.10	20.60	1.831	0.47	6.81	-153.5	-	8/11	50
955	0.15	20.55	1.850	0.36	6.55	-146.3	-		
1001	0.20	20.60	1.905	0.34	6.87	-141.4	8.16		
1004	0.25	20.10	1.937	0.29	6.90	-140.8	8.29		
1015	0.30	20.86	1.941	0.28	6.90	-139.9	8.19		
1023	0.35	20.91	1.947	0.27	6.90	-134.9	8.12		
1028	0.40	20.94	1.949	0.26	6.90	-137.2	8.05		
1030		START SAMPLE COLLECTION							
1034		TRACER TEST SAMPLE							
1129		SAMPLE COMPLETED 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 5563 Sonde	6
turbidity meter	200106243

NOTES AND OBSERVATIONS:

WELL ID: MW 32-173

SAMPLE ID: 011

GZA GeoEnvironmental of New York Waterloo Sampling Data Sheet

CLIENT: Entergy - IPEC
SITE: Buchanan, NY
WEATHER: Cloudy, 70's

PROJECT NO: 01.0017869.92
DATE: 8/3/09
SAMPLER(S): M BRITUS

SAMPLING INTERVAL (depth in ft below top of casing)
165.8 to 174.3

TOTAL VOLUME PURGED: 1.15 gal

SAMPLING PORT
173

PURGE RATE: variable (gal/min)
PURGE METHOD: Double Valve Pump

WATER QUALITY:

Time	Purged Volume (gal)	Temp (°C)	Specific Conductivity (S/cm)	Dissolved Oxygen (g/l)	pH (SU)	ORP	Turbidity (NTU)	Drive/Vent Cycle (seconds)	Drive Press. (psi)
9:26	0	PUMP	ON					72/9	62
9:37	0.05	20.59	1.864	1.94	7.00	-131.6	—	8/10	50
9:50	0.25	20.52	1.945	0.91	7.02	-120.9	—	8/11	50
9:55	0.35	20.50	1.955	0.65	7.02	-113.4	—		
10:01	0.45	20.47	1.958	0.51	7.01	-112.0	8.21		
10:04	0.55	20.53	1.960	0.41	6.98	-100.1	3.32		
10:15	0.65	20.58	1.961	0.35	6.96	-90.0	7.96		
10:23	0.75	20.66	1.962	0.33	6.97	-89.6	7.66		
10:28	0.80	20.10	1.964	0.31	6.99	-86.7	7.58		
10:34	0.90	20.77	1.968	0.25	6.97	-84.2	7.55		
10:44	0.95	20.80	1.969	0.25	6.97	-83.1	7.50		
10:49	1.0	20.87	1.970	0.25	6.97	-80.9	7.48		
10:51		START SAMPLE COLLECTION							
11:00		TRACER TEST SAMPLE							
11:31		SAMPLE COMPLETED: 2 L IPEC							
		PUMP OFF							

Equipment Used	Equipment Identification #
YSI 556 MPS Reader and 3563 Sunde	3
turbidity meter	2007C4293

NOTES AND OBSERVATIONS:



APPENDIX F: DOSE CALCULATIONS



Facility Groundwater Flux Calculation

Site Indian Point
Job No. 17869.91

Prepared By: JAS
Reviewed By: mb

Parameter Values:

year
2009

Totals						
Total Catchment Zone (ft ²)		Total Improved Zone (ft ²)		Recharge (ft/yr)	Precipitation (ft/yr)	
3,969,765		1,432,972		0.65	2.53	
Surface Area						
Northern Clean Zone Improved (ft ²)	Unit 2 North Improved Zone (ft ²)	Unit 1/2 Improved Zone (ft ²)	Unit 3 North Improved Zone (ft ²)	Unit 3 South Improved Zone (ft ²)	Southern Clean Improved Zone (ft ²)	
0	148,214	433,904	316,210	321,290	213,354	
Northern Clean Unimproved Zone (ft ²)	Unit 2 North Unimproved Zone (ft ²)	Unit 1/2 Unimproved Zone (ft ²)	Unit 3 North Unimproved Zone (ft ²)	Unit 3 South Unimproved Zone (ft ²)	Southern Clean Zone Unimproved (ft ²)	
106,429	204,317	438,221	323,116	288,882	585,600	
Discounted Area Within Zone	Discounted Area Within Zone	Discounted Area Within Zone	Discounted Area Within Zone	Discounted Area Within Zone	Discounted Area Within Zone	
50,265	0	291,186	106,718	17,730	144,347	
Northern Clean Zone Catchment (ft ²)	Unit 2 North Catchment Zone (ft ²)	Unit 1/2 Catchment Zone (ft ²)	Unit 3 North Catchment Zone (ft ²)	Unit 3 South Zone (ft ²)	Southern Clean Zone (ft ²)	
156,694	352,531	1,183,311	746,044	607,882	943,302	
Activity (pCi/L)						
Groundwater						
Upper Zone Before Canal	Northern Clean Zone Catchment	Unit 2 North	Unit 1/2	Unit 3 North	Unit 3 South Zone	Southern Clean Zone
150	150	297	3,261	327	774	204
Lower Zone Before Canal	150	251	2,540	1,188	479	207
Upper Zone After Canal	150	230	2,956	362	774	204
Lower Zone After Canal	150	526	1,016	531	479	207
Stormwater Discharging to Canal (pCi/L)						
Storm Water for Northern Clean Zone	Storm Water for Unit 2 North	Storm Water for Unit 1/2	Storm Water for Unit 3 North	Storm Water for Unit 3 South	Storm Water for Southern Clean Zone	
NA	1,423 Avg MH-4a	NA	0 Avg CE-14 and CB-34	0 Avg U3-CB-B8	0 Avg D1, C3, E6, & E10	
Stormwater Discharging to River (pCi/L)						
Storm Water for Northern Clean Zone	Storm Water for Unit 2 North	Storm Water for Unit 1/2	Storm Water for Unit 3 North	Storm Water for Unit 3 South	Storm Water for Southern Clean Zone	
NA	0 Avg. MH-1 and MH-12	0 Avg MH-14	683 Avg CB-15	NA	0 Avg E13, CB-C2	

Potential Water Received by Storm Drain System

=(Improved Area) x Precipitation

Northern Clean Area	Unit 2 North	Unit 1/2	Unit 3 North	Unit 3 South	Southern Clean Zone	Units
0	374,734	1,097,054	799,485	812,327	539,431	ft ³ /yr
0	1,027	3,006	2,190	2,226	1,478	ft ³ /day
0.00	5.33	15.61	11.38	11.56	7.68	GPM
0	10,611,288	31,065,119	22,638,895	23,002,541	15,274,991	L/Yr

The total amount of water available to be received by the storm system is computed as the combined area of buildings and paved areas in the catchment multiplied by the annual precipitation rate. Note this conservatively assumes that the amount of water lost to the atmosphere or other sinks after precipitation has fallen on paved or built up surfaces is zero.

Water Directly Recharged to Aquifer from Precipitation

=Unimproved Area x Recharge

Northern Clean Area	Unit 2 North	Unit 1/2	Unit 3 North	Unit 3 South	Southern Clean Zone	Units
69,963	134,311	288,072	212,405	176,741	384,954	ft ³ /yr
192	368	789	582	484	1,058	ft ³ /day
1.00	1.91	4.10	3.02	2.52	5.48	GPM
1,981,131	3,803,275	8,157,291	6,014,650	5,004,754	10,900,685	L/Yr

Note that this calculation reflects recharge to the aquifer in non-paved areas. The Recharge value listed above and used in this calculation reflects only that portion of precipitation that actually recharges the aquifer.



Facility Groundwater Flux Calculation

Site Indian Point
Job No. 17869.01

Prepared By: JAS
Reviewed By: mib

Water Recharged to Aquifer (Direct Recharge Plus Storm Water Leakage Minus Building Drain Removal)

= (Direct Recharge + X% Water Received by Storm System) - (Y% x Water Removed by Building Drains)

Total Water Discharged to Aquifer

Upper and Lower Zone	[Northern Clean Area Catchment + (0% Storm Drain Water)] ¹	[Unit 2 North + (50% Storm Drain Water)]-[5gpm]	[Unit 1/2 Area Catchment + (30% Storm Drain Water)]-[7.5 gpm]	[Unit 3 North Area Catchment + (60% Storm Drain Water)]-[7.5gpm]	[Unit 3 South Area + (10% Storm Drain Water)]	[Southern Clean Zone Area + (40% Storm Drain Water)]	Units
		69,963	-29,634	90,220	165,128	257,974	600,727
	192	-81	247	452	707	1,646	ft ³ /day
	1.00	-0.42	1.28	2.35	3.67	8.55	GPM
	1,981,131	-839,143	2,554,734	4,675,694	7,305,008	17,010,682	L/Yr

¹ There are no improved surfaces in Northern Clean Zone

While actual footing drain flow rates will vary with the magnitude and/or intensity of precipitation, the Unit 2 North Zone calculation includes a constant removal of 5 gpm from the groundwater system by the Unit 2 footing drain. This flow rate is fixed in the model because continuous flow data for the drain is not routinely measured. The value of 5 gpm is based on measurements made during the pumping test conducted on RW-1 in 2006. Since yearly precipitation prior to Q3 2009 was ~6 inches less than the fourteen year average, the actual footing drain withdrawal rate was likely less than the fixed 5 gpm value used by the model. As such, the model indicates that all the groundwater flow in this zone is accounted for by the drain (i.e., the model shows no groundwater flow to the river for the Q3 2009 data set. While it is likely that the footing drain flow rate is less than 5 gpm and some groundwater does flow to the river through this zone, the model approximation is conservative (i.e., results in a high bias to the dose computation). This is because the water removed from the Unit 2 footing drain, which would otherwise contribute to groundwater flow, is applied to the Unit 2 storm-drain water discharging to the canal through MH-4. This flow rate is multiplied times the radionuclide levels measured in MH-4, which are much higher than those applied to groundwater flowing through the Unit 2 North Zone.

Groundwater Discharged to Canal

=Water Recharged to Aquifer x X% flowing to Canal

Upper and Lower Zone	Northern Clean Area Catchment x 0%	Unit 2 North x 15.2%	Unit 1/2 Area Catchment 24.2%	Unit 3 North Area Catchment x 22.9%	Unit 3 South Area x68.4%	Southern Clean Zone Area x 0%	Units
		0	-4,504	21,833	37,814	176,454	0
	0	-12	60	104	483	0	ft ³ /day
	0.00	-0.06	0.31	0.54	2.51	0.00	GPM
	0	-127,550	618,246	1,070,780	4,996,625	0	L/Yr

Groundwater Discharged to River

=Water Recharged to Aquifer x X% flowing to River x Y% Flowing in Appropriate Vertical Zone

Upper Zone	Northern Clean Area Catchment x 100% x 59.3%	Unit 2 North x 84.8% x 15.1%	Unit 1/2 Area Catchment x 75.8% x 11.7%	Unit 3 North Area Catchment x 77.1% x 47.9%	Unit 3 South Area x 31.6% x 31.3%	Southern Clean Zone Area x 100% x 55.2%	Units
		41,488	-3,795	8,001	60,683	25,516	331,601
	114	-10	22	167	70	908	ft ³ /day
	0.59	-0.05	0.11	0.87	0.36	4.72	GPM
	1,174,311	-107,451	226,569	1,726,850	722,524	8,389,896	L/Yr
Lower Zone	Northern Clean Area Catchment x 100% x 40.7%	Unit 2 North x 84.8% x 84.9%	Unit 1/2 Area Catchment 75.8% x 88.3%	Unit 3 North Area Catchment x 77.1% x 52.1%	Unit 3 South Area x 31.6% x 68.7%	Southern Clean Zone Area x 100% x 44.8%	Units
		28,475	-21,335	60,385	66,330	56,004	289,126
	78	-58	165	182	153	737	ft ³ /day
	0.41	-0.30	0.86	0.94	0.80	3.83	GPM
	806,320	-604,143	1,709,919	1,878,265	1,585,859	7,620,785	L/Yr

Water Remaining in Storm Drains and Discharged to Canal

=Storm Drain Water x X% Not Leaking to Groundwater and Not Discharging to River

Northern Clean Area Catchment (0% Storm Drain Water)	Unit 2 North (45% Unit 2 North and 30% of Unit 1/2 Storm Drain Water). Plus 5 gpm (351k cf/yr) from U2 footing drain.	Unit 1/2 Area Catchment (0% Storm Drain Water)	Unit 3 North Area Catchment (3% Unit 3 North Storm Drain Water)	Unit 3 South Area (3% Unit 3 North and 42% Unit 3 South Storm Drain Water)	Southern Clean Zone Area (30% Unit 1/2, 27% Unit 3 North, 43% Unit 3 South, and 55% Southern Clean Zone Storm Drain Water)	Units
0	848,747	0	23,985	365,162	1,190,965	ft ³ /yr
0	2,325	0	66	1,000	3,263	ft ³ /day
0	12.08	0.00	0.34	5.20	16.95	GPM
0	24,034,993	0	679,167	10,340,234	33,724,375	L/Yr

Water Remaining in Storm Drains and Discharged to River

Northern Clean Area Catchment (0% Storm Drain Water)	Unit 2 North (5% Storm Drain Water)	Unit 1/2 Area Catchment (10% Storm Drain Water)	Unit 3 North Area Catchment (7% Storm Drain Water)	Unit 3 South Area (5% Storm Drain Water)	Southern Clean Zone Area (5% Storm Drain Water)	Units
0	18,737	109,705	55,964	40,616	26,972	ft ³ /yr
0	51	301	153	111	74	ft ³ /day
0	0.27	1.56	0.80	0.58	0.38	GPM
0	530,564	3,106,512	1,584,723	1,150,127	763,750	L/Yr



Facility Groundwater Flux Calculation

Site Indian Point
Job No. 17869.91

Prepared By: JAS
Reviewed By: mb

Flux Calculations

Conceptual Model: Migration Pathway Summary

	Northern Clean Area	Unit 2 North	Unit 1/2	Unit 3 North	Unit 3 South	Southern Clean Zone
GW	100% Upper and Lower Zone To River	84.8% Upper Zone and Lower Zone Flow To River. 15.2% Upper Zone and Lower Zone Flow to Canal	75.8% Upper Zone and Lower Zone To River. 24.2% Upper Zone and Lower Zone to Canal	77.1% Upper Zone and Lower Zone To River. 22.9% Upper Zone and Lower Zone to Canal	31.6% Upper Zone and Lower Zone To River. 68.4% Upper Zone and Lower Zone to Canal	100% Upper and Lower Zone To River
SW	NA	To Canal (Storm Water Considered Clean; Estimated at 5.5 GPM) and To River (5% Storm Water)	To Canal (60% Storm Water) and To River (10% Storm Water)	To Canal (33% Storm Water) and To River (7% Storm Water)	To Canal (85% Storm Water) and To River (5% Storm Water)	To Canal (55% Storm Water) and To River (5% Storm Water)

Flux (pCi/Yr)

	North Clean Area	Unit 2 North	Unit 1/2	Unit 3 North	Unit 3 South	South Clean Zone	Total
GW to River-Upper Zone	1.76E+08	0.00E+00	6.70E+08	6.25E+08	5.59E+08	1.91E+09	3.94E+09
GW to River-Lower Zone	1.21E+08	0.00E+00	1.74E+09	9.97E+08	7.59E+08	1.57E+09	5.19E+09
GW to Canal	0.00E+00	0.00E+00	2.02E+09	3.50E+08	3.87E+09	0.00E+00	6.23E+09
SW to Canal	NA	3.42E+10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.42E+10
SW to River	NA	0.00E+00	0.00E+00	1.08E+09	0.00E+00	0.00E+00	1.08E+09

Curies/Yr ==> 0.05

Notes:

The recharge rate used herein, 28% of precipitation (~10 in/yr), is within the range of values discussed in the USGS modeling report! The reported recharge ranged from 3.6 inches/year to 7.5 inches/year for a till to 20 inches per year for coarse grained glacially stratified deposits. A yearly rolling average precipitation value measured at the Facility meteorological station is also used in the computations. The catchment area was defined using an AutoCAD topo map for the Site and surrounding area. The catchment was defined by starting at the area marked "line of water grant" and tracking east, away from the River, to define portions of the land surface contributing water to the selected discharge zone. Calculations assume that run-off or overland flow in unimproved areas of the Site is negligible, there are no changes in storage and the Hudson River is a gaining stream.

1. USGS. Water Use, Ground-Water Recharge and Availability, and Quality of Water in the Greenwich Area, Fairfield County, Connecticut and Westchester County, New York, 2000-2002



APPENDIX G: UNIT 2 TRITIUM PLUME TREND ANALYSES

**TABLE G1
MANN-KENDALL TREND EVALUATION SUMMARY
TRITIUM IN GROUNDWATER NEAR UNIT 2
INDIAN POINT ENERGY CENTER
BUCHANAN, NY**

Well ID	Number of Data Points	Number of Times below MDC	Minimum Tritium Activity (pCi/L)	Maximum Tritium Activity (pCi/L)	Mann-Kendall Statistic (S)	Normalized Test Statistic (Z)	Probability	Trend at 95% Level of Significance
MW-30-69	31	0	7.36E+04	6.01E+05	-158	-2.67	0.996	decreasing
MW-30-84	18	0	3.78E+03	1.25E+04	-21	-0.76	0.776	no trend
MW-31-49	30	0	2.98E+02	4.84E+04	-7	-0.11	0.543	no trend
MW-31-63	18	0	5.00E+03	4.06E+04	10	0.34	0.633	no trend
MW-31-85	18	0	3.17E+02	1.88E+04	65	2.42	0.992	increasing
MW-32-59	17	0	4.13E+02	6.43E+04	-36	-1.44	0.925	no trend
MW-32-85	16	0	5.42E+03	1.26E+04	-4	-0.14	0.554	no trend
MW-32-131	6	1	1.29E+02	1.13E+04	2	NA	0.575	no trend
MW-32-149	14	0	1.99E+02	1.05E+04	-59	-3.18	0.999	decreasing
MW-32-173	12	0	4.71E+02	5.89E+03	-48	-3.22	0.999	decreasing
MW-32-190	15	0	1.72E+03	1.13E+04	-59	-2.87	0.998	decreasing
MW-33	22	0	2.30E+04	2.64E+05	-85	-2.37	0.991	decreasing
MW-35	19	0	1.04E+03	1.19E+05	-75	-2.59	0.995	decreasing
MW-36-24	13	2	1.54E+02	3.42E+04	2	0.06	0.524	no trend
MW-36-52	13	0	6.06E+03	2.68E+04	-54	-3.23	0.999	decreasing
MW-37-22	15	0	2.26E+03	3.49E+04	-49	-2.38	0.991	decreasing
MW-37-32	15	0	2.49E+03	3.01E+04	-57	-2.77	0.997	decreasing
MW-37-40	14	0	4.22E+03	1.70E+04	-77	-4.16	1.000	decreasing
MW-37-57	15	0	4.05E+03	4.48E+04	-69	-3.37	1.000	decreasing
MW-42-49	15	0	1.12E+03	7.22E+04	-9	-0.40	0.654	no trend
MW-42-78	10	0	3.46E+02	1.28E+03	-19	-1.61	0.946	no trend
MW-49-26	17	0	3.10E+03	1.54E+04	-108	-4.41	1.000	decreasing
MW-49-42	17	0	2.25E+03	1.13E+04	-112	-4.57	1.000	decreasing
MW-49-65	17	0	1.26E+03	5.76E+03	-98	-4.00	1.000	decreasing
MW-50-42	18	4	1.01E+02	9.75E+03	-50	-1.86	0.968	decreasing
MW-50-66	22	0	2.08E+03	1.08E+04	-167	-4.68	1.000	decreasing
MW-53-82	12	0	4.54E+02	1.32E+04	-8	-0.48	0.684	no trend
MW-53-120	15	0	4.42E+03	9.61E+03	-51	-2.47	0.993	decreasing
MW-55-24	11	0	7.82E+02	3.08E+03	-24	-1.79	0.963	decreasing
MW-55-35	10	0	8.53E+02	9.04E+03	-19	-1.61	0.946	no trend
MW-55-54	11	0	5.47E+03	1.31E+04	-37	-2.80	0.997	decreasing
MW-111	30	0	6.81E+03	5.78E+05	-138	-2.44	0.993	decreasing

Notes: Calculations based on Mann-Kendall trend evaluations as presented in U.S. EPA Practical Methods for Data Analysis, U.S. EPA QA/G-9 QA00 UPDATE, July 2000, Section 4.3.4

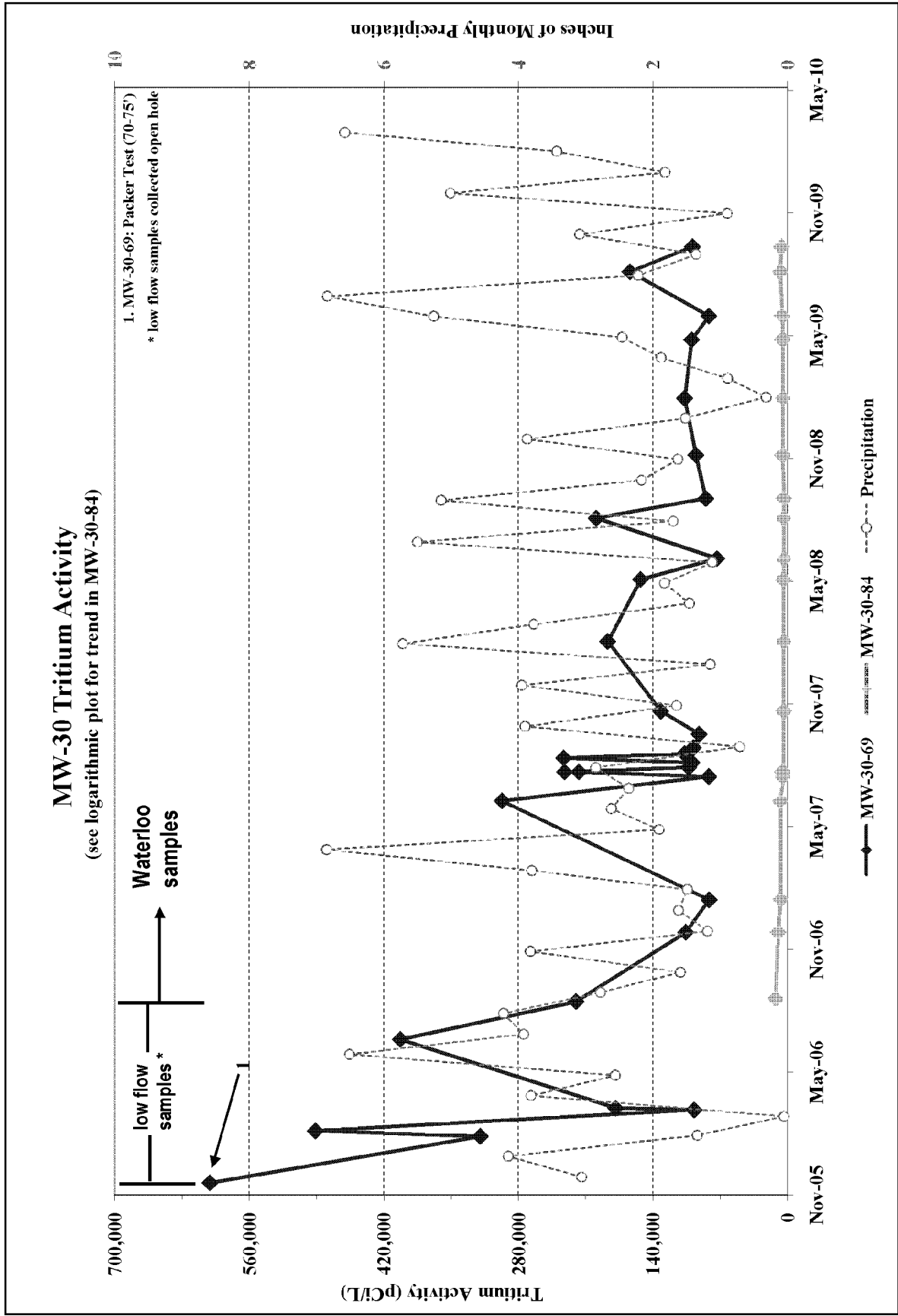


FIGURE G1

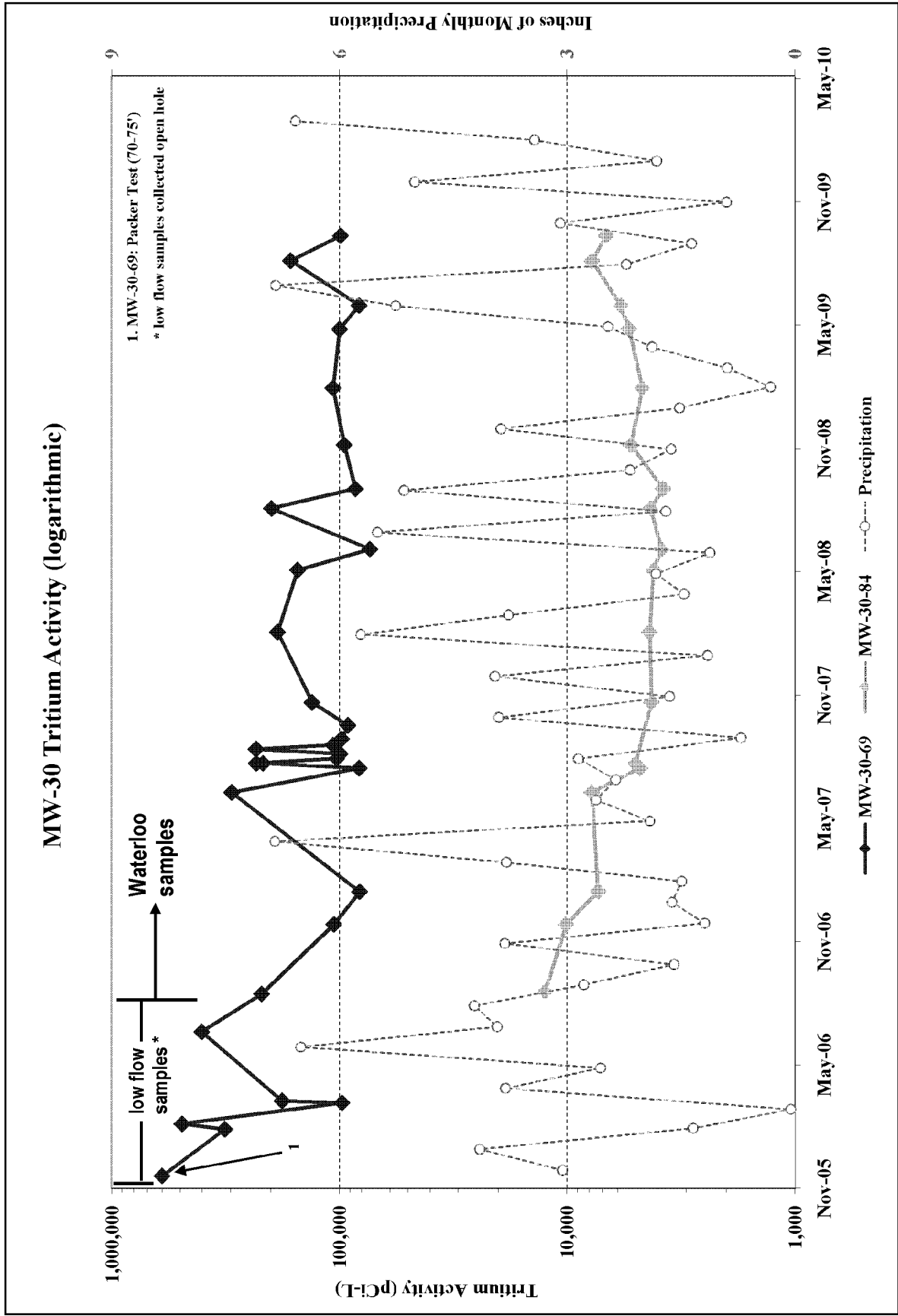


FIGURE G1a

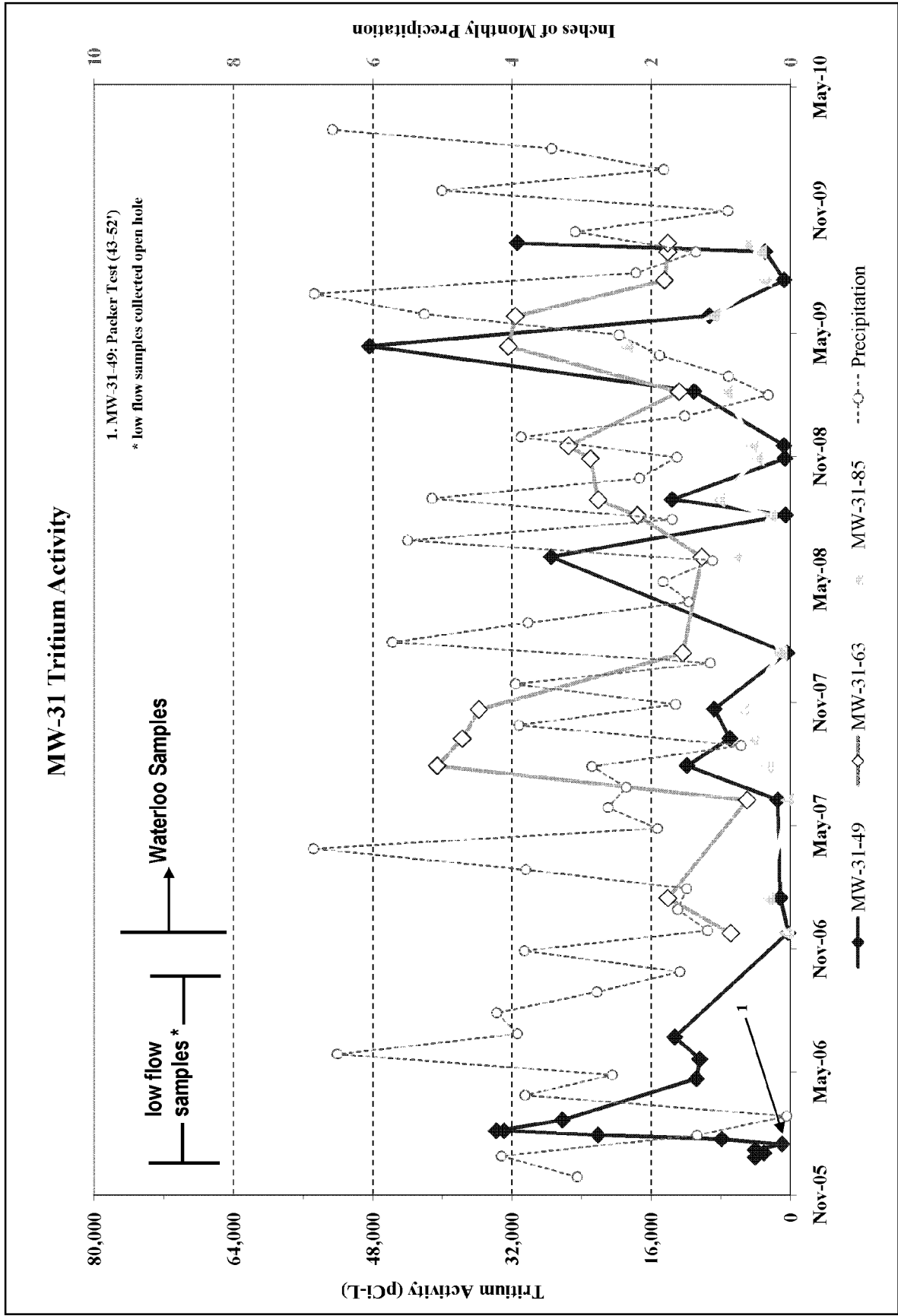


FIGURE G2

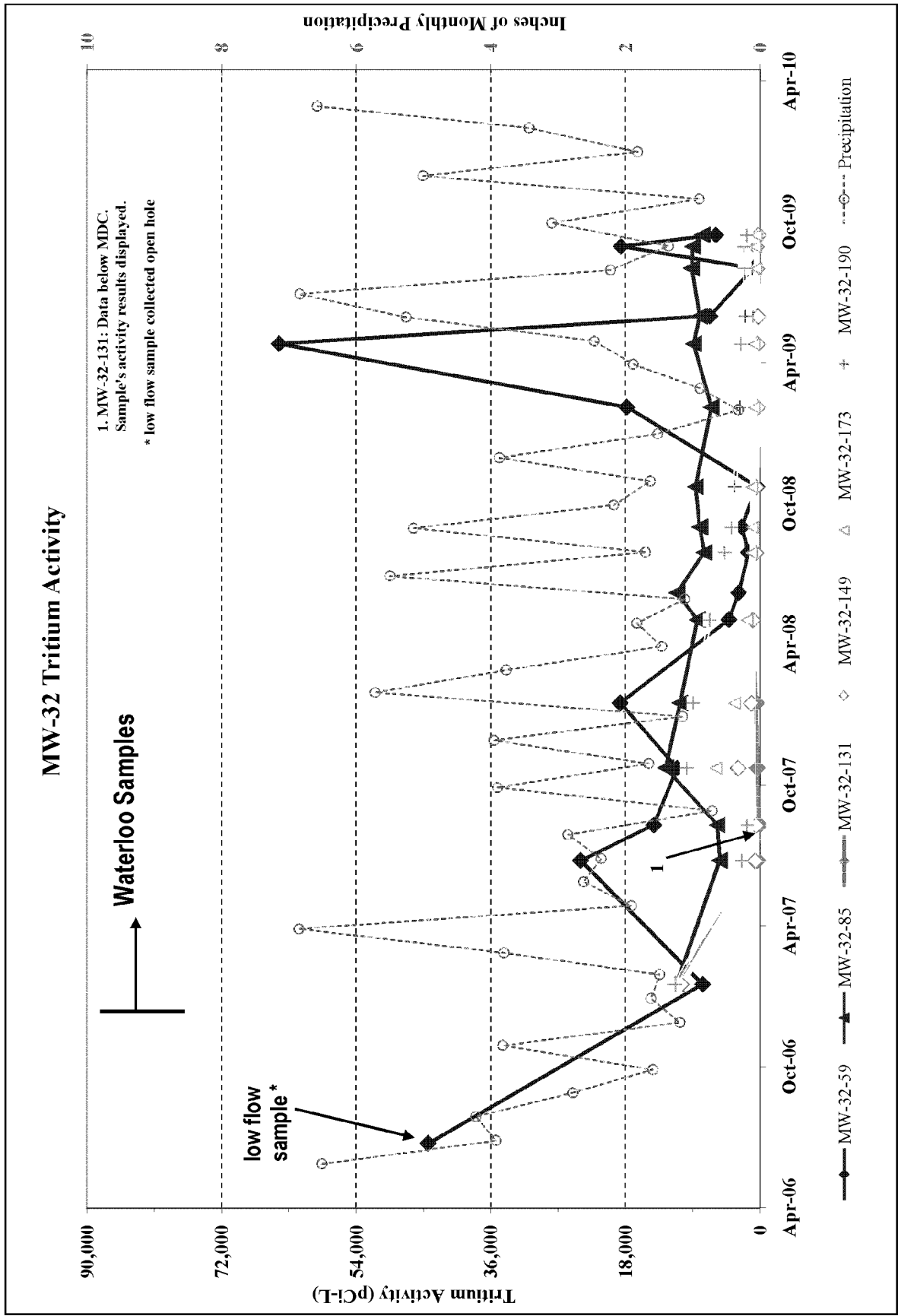


FIGURE G3

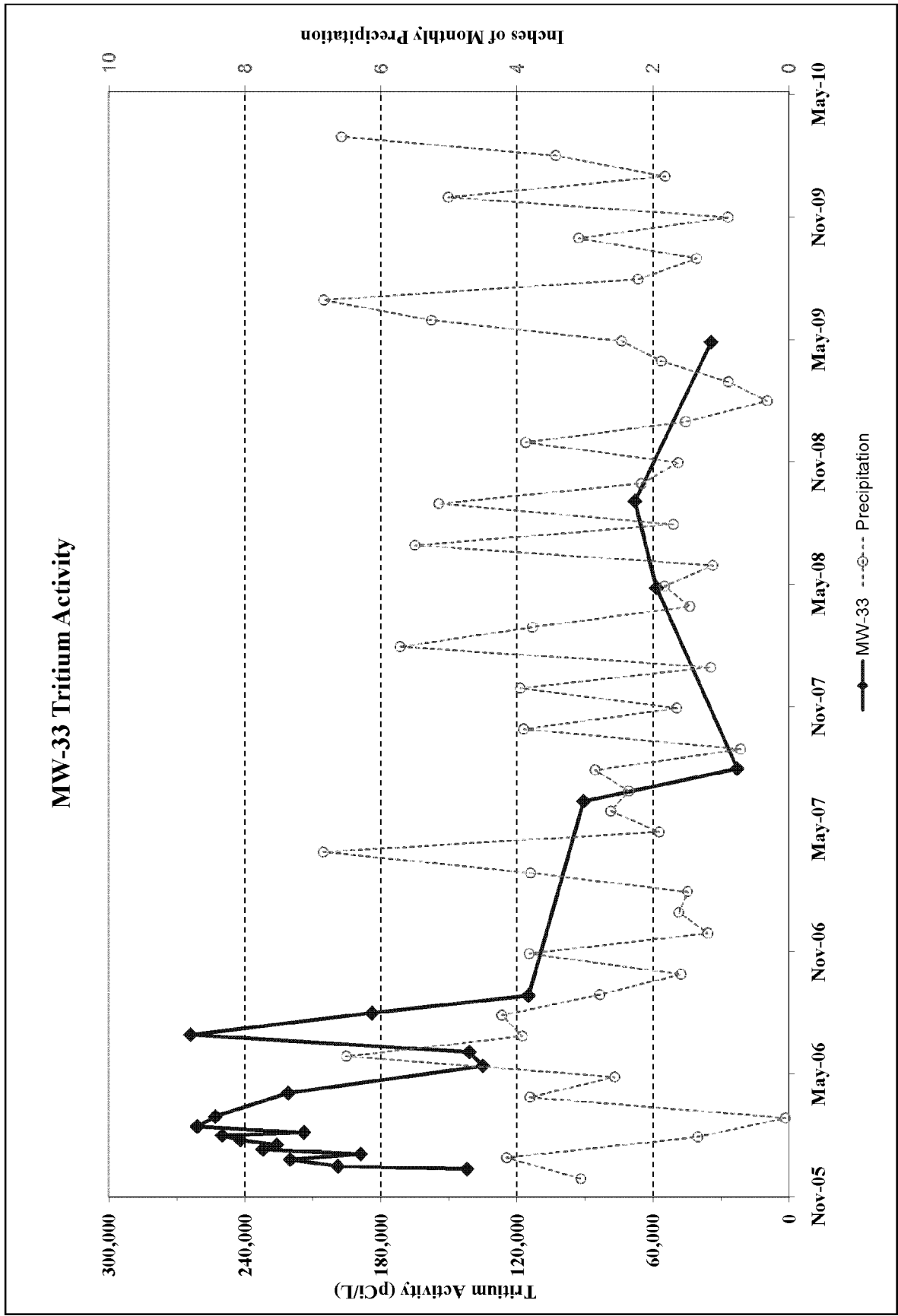


FIGURE G4

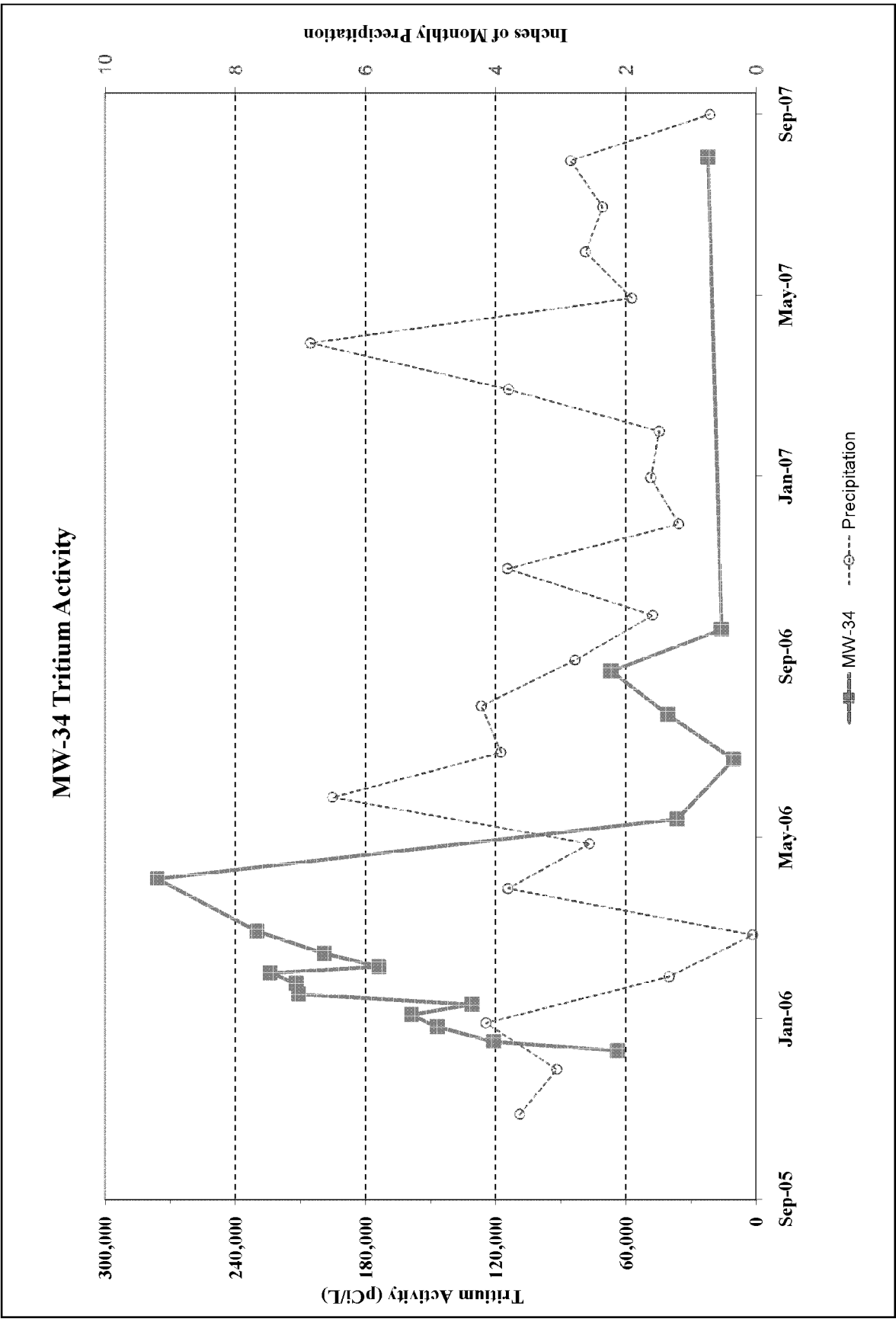


FIGURE G5

MW-35 Tritium Activity

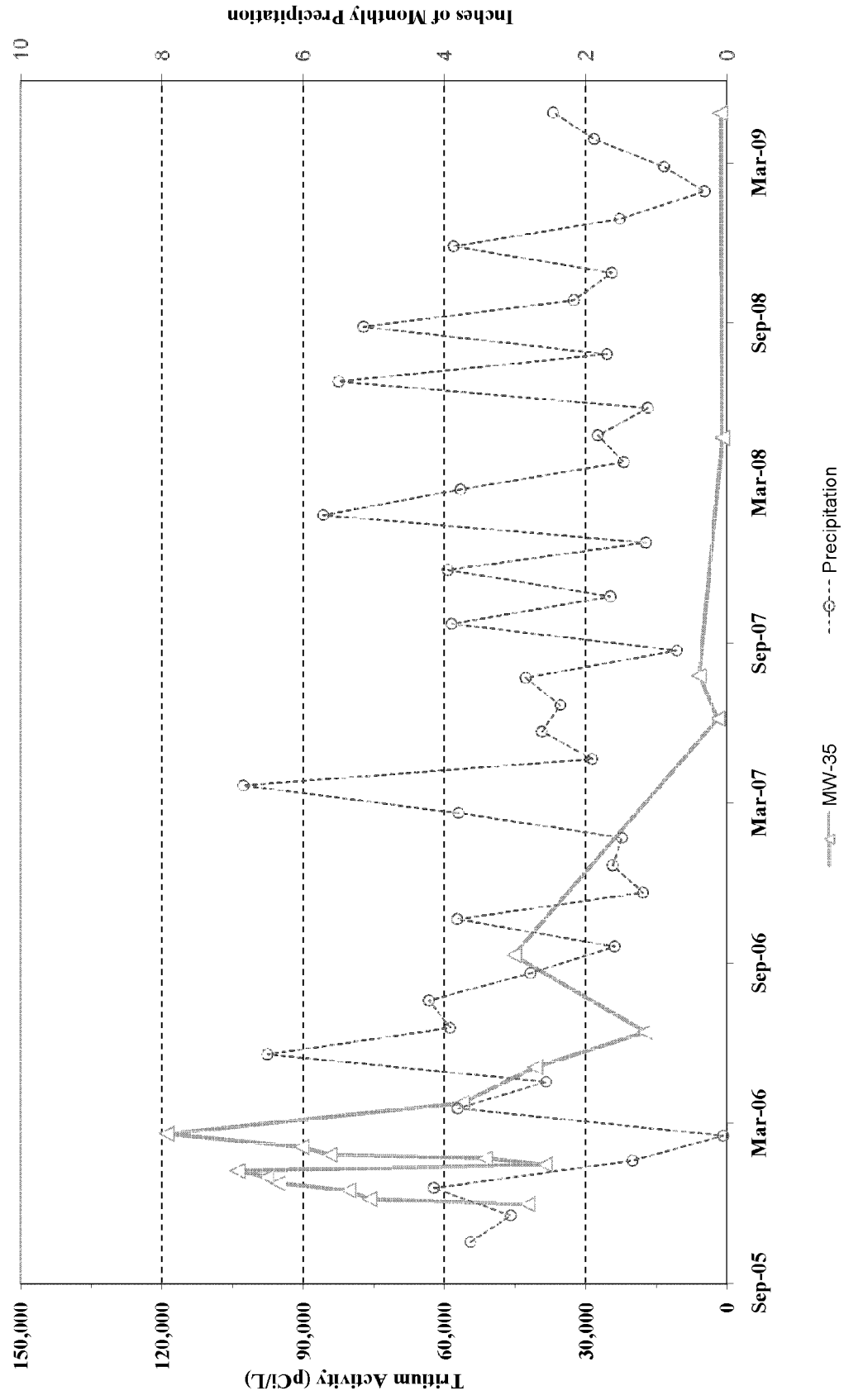


FIGURE G6

MW-36 Tritium Activity

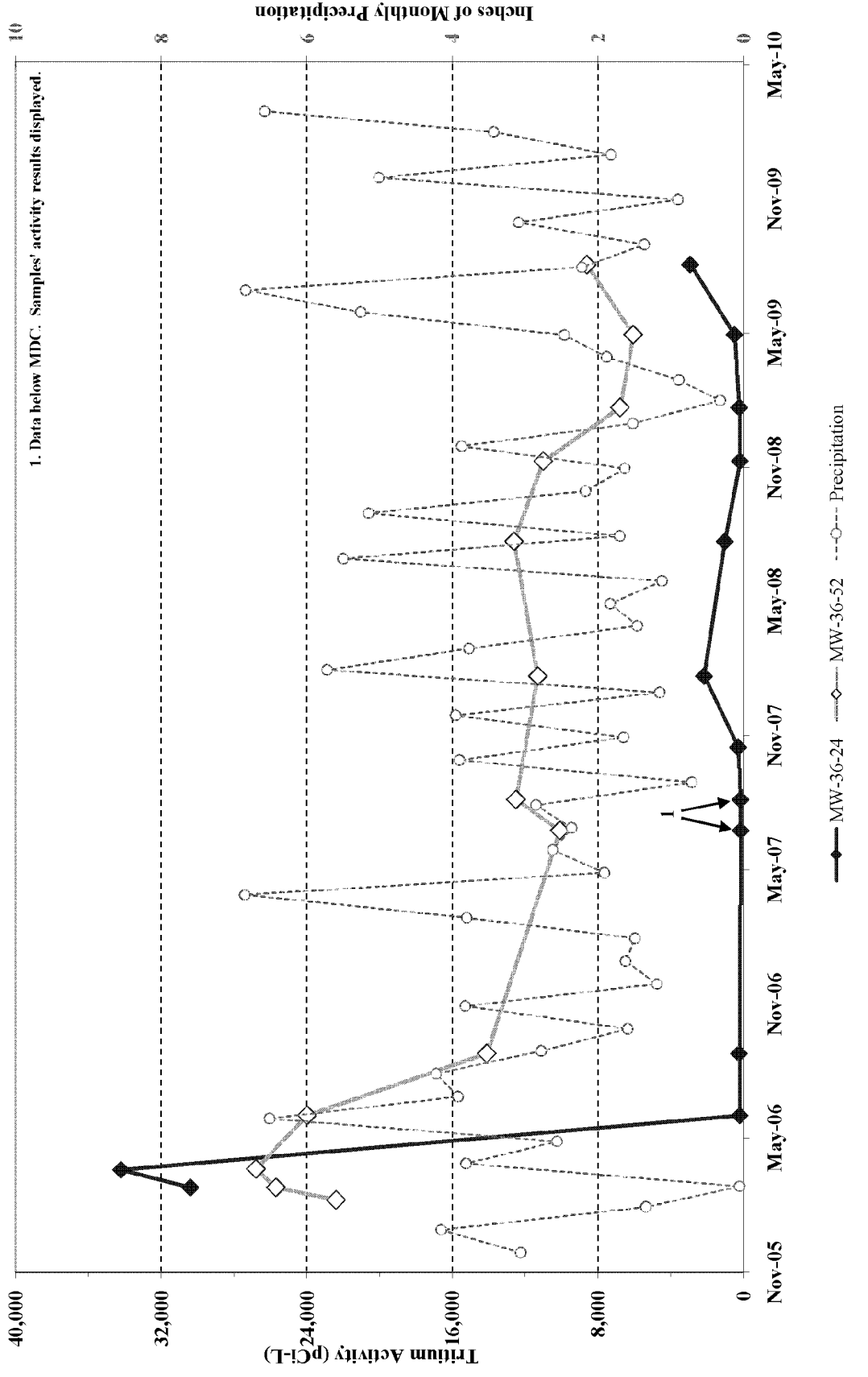


FIGURE G7

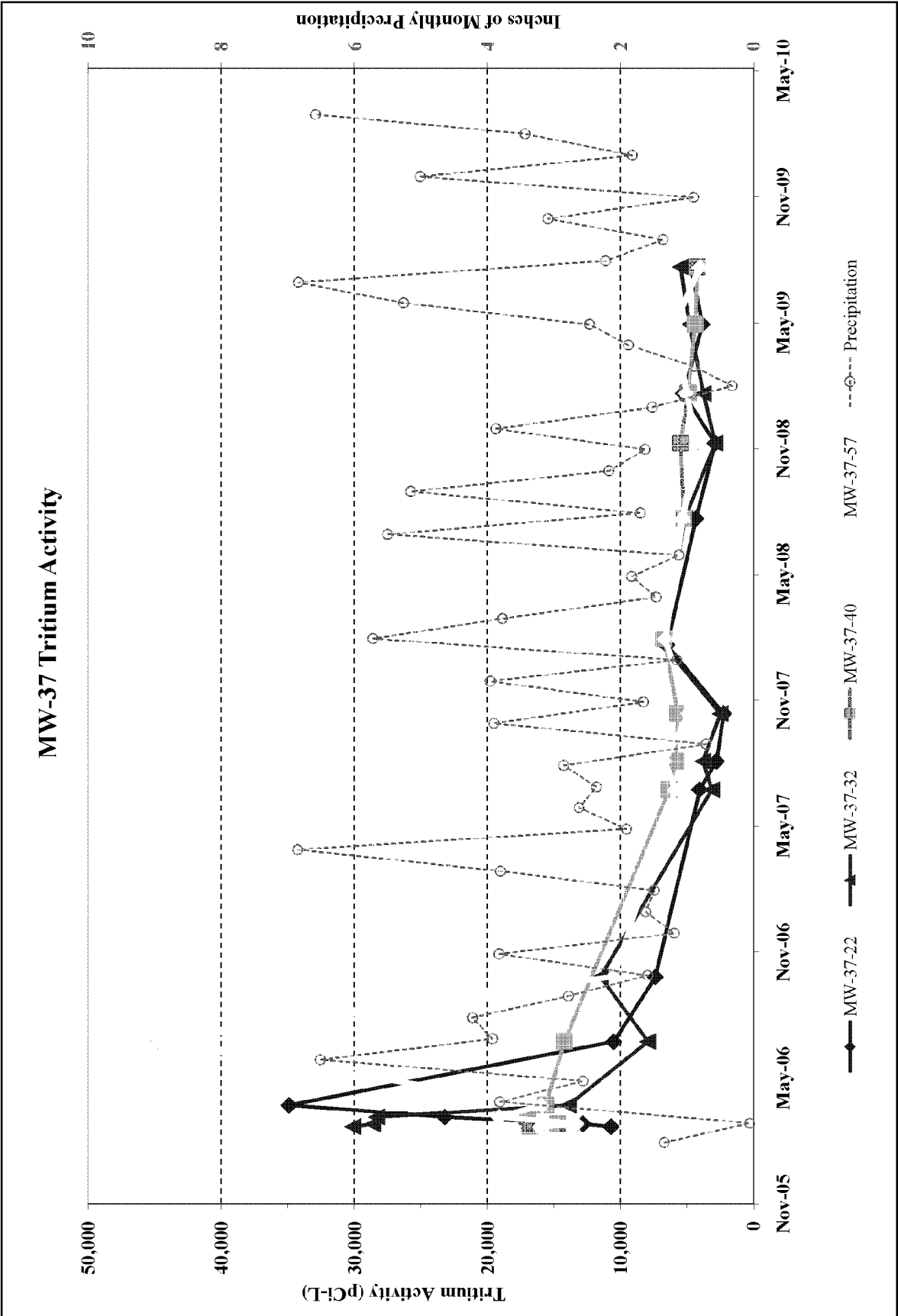


FIGURE G8

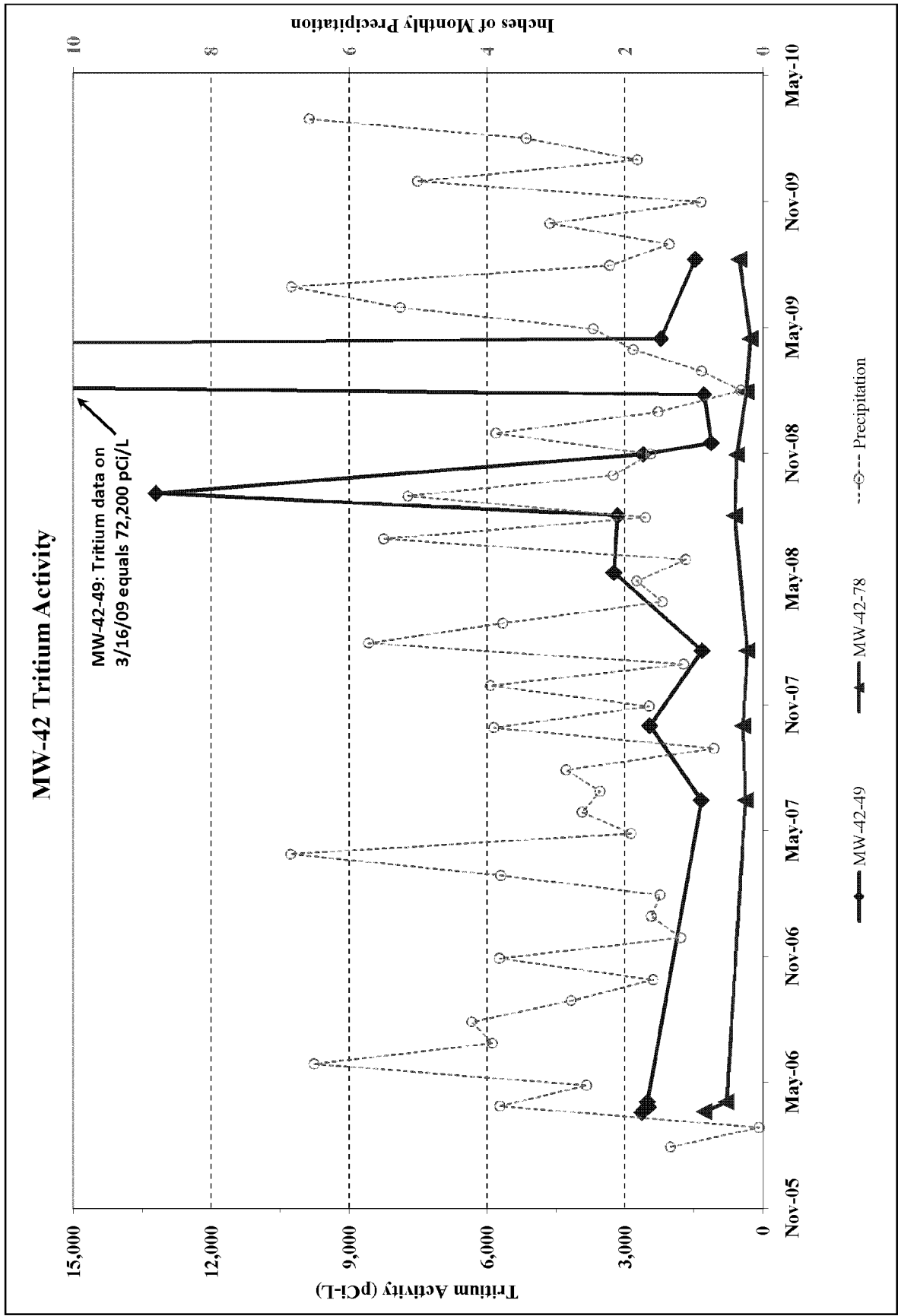


FIGURE G9

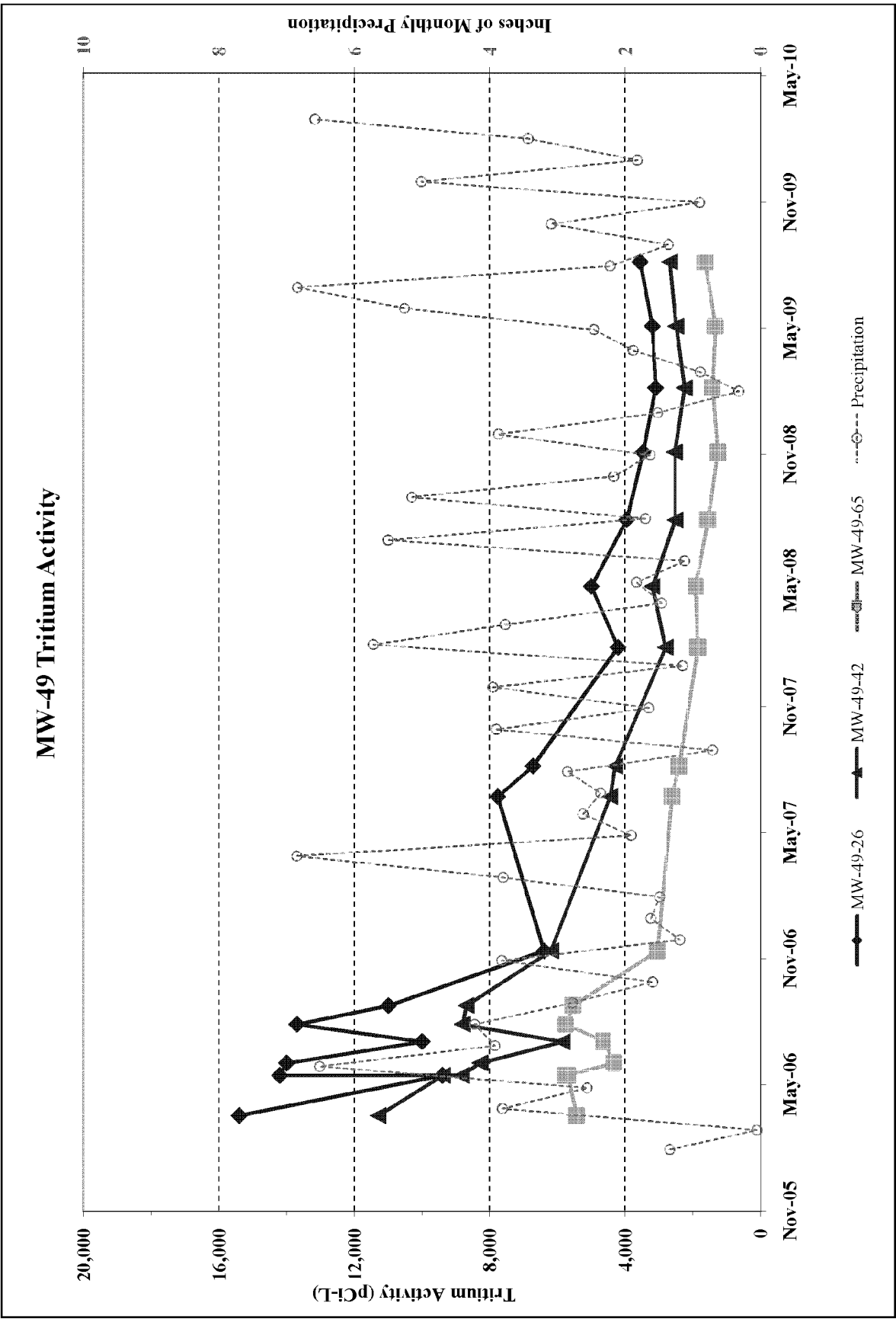


FIGURE G10

MW-50 Tritium Activity

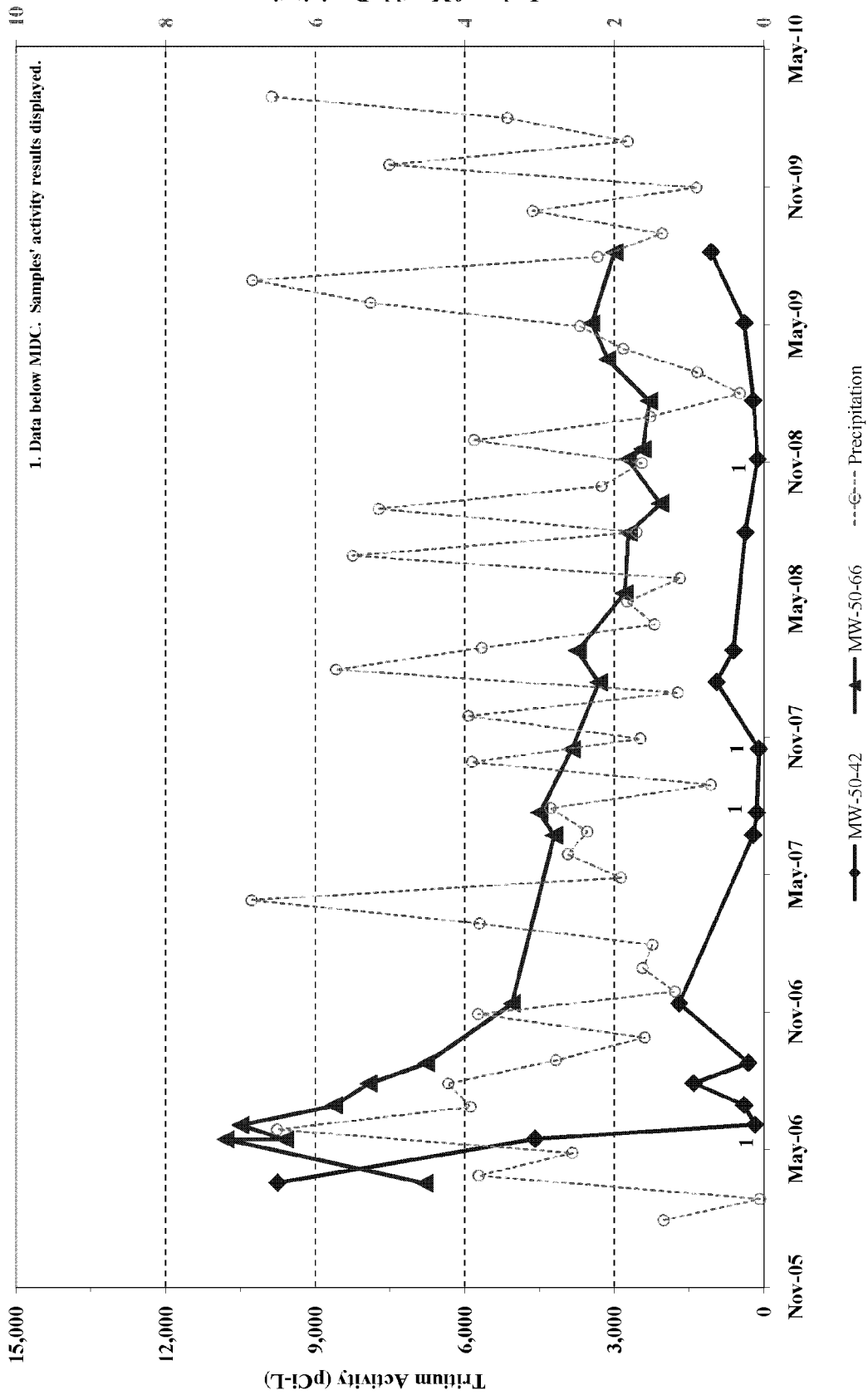


FIGURE G11

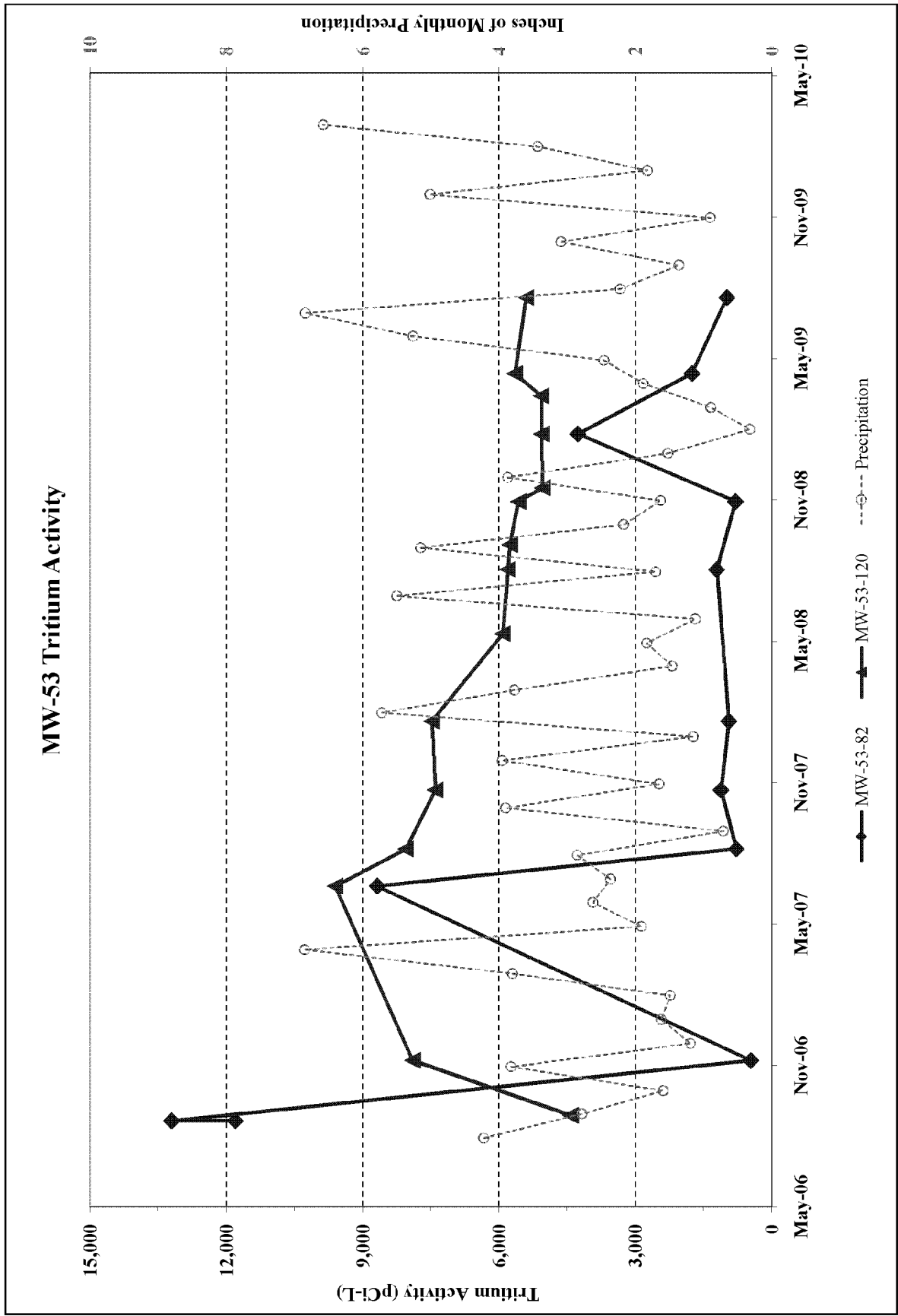


FIGURE G12

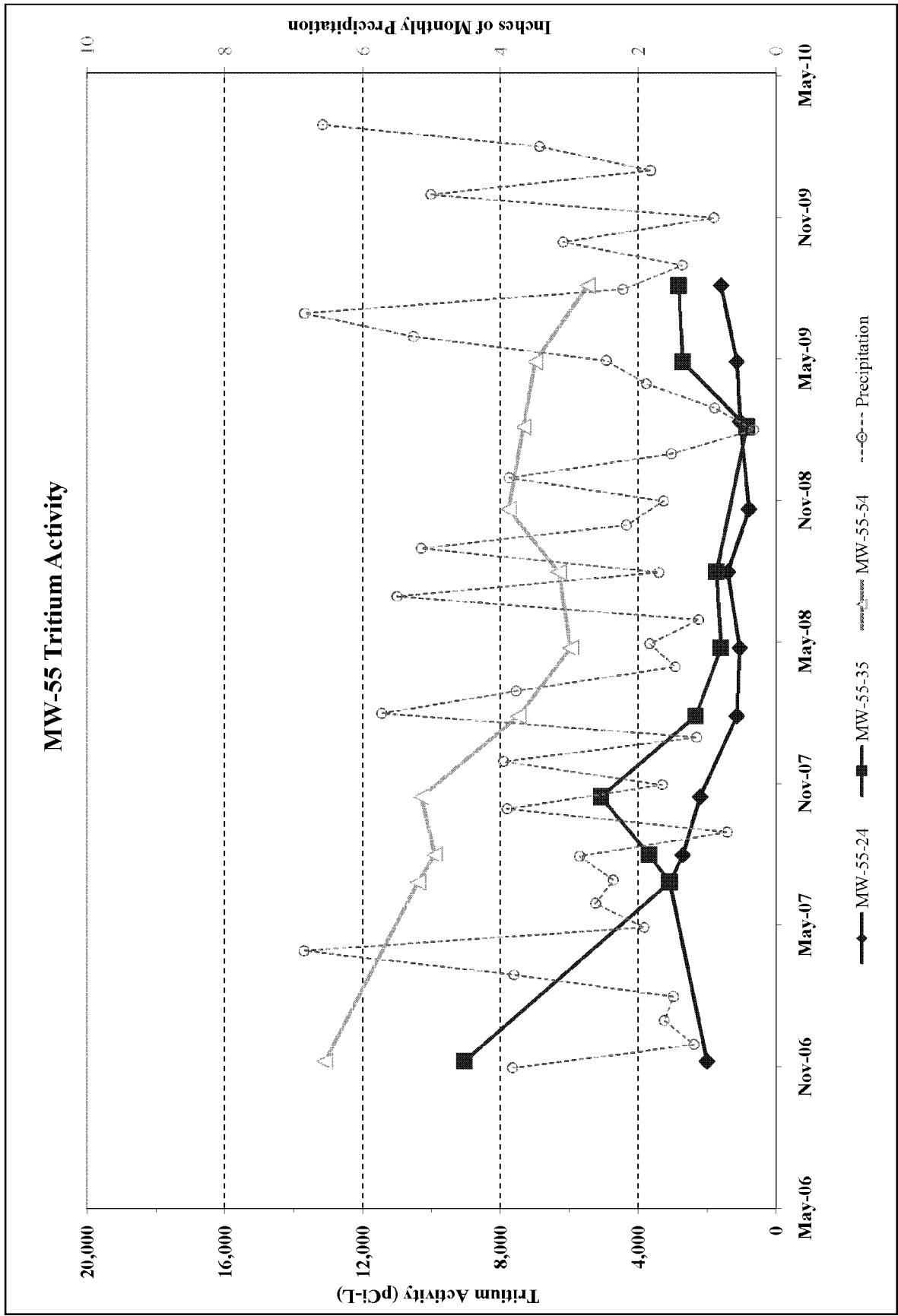


FIGURE G13

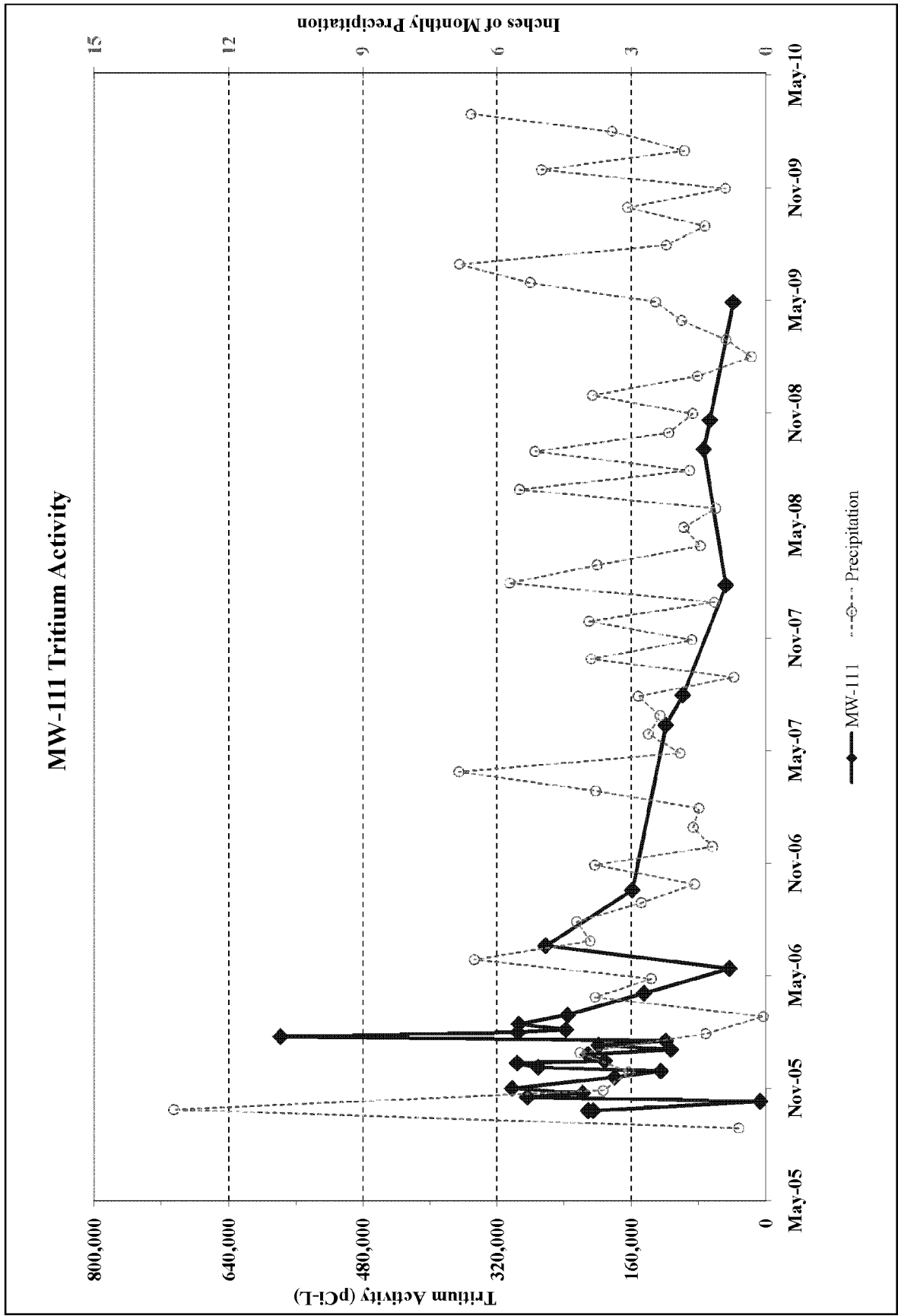
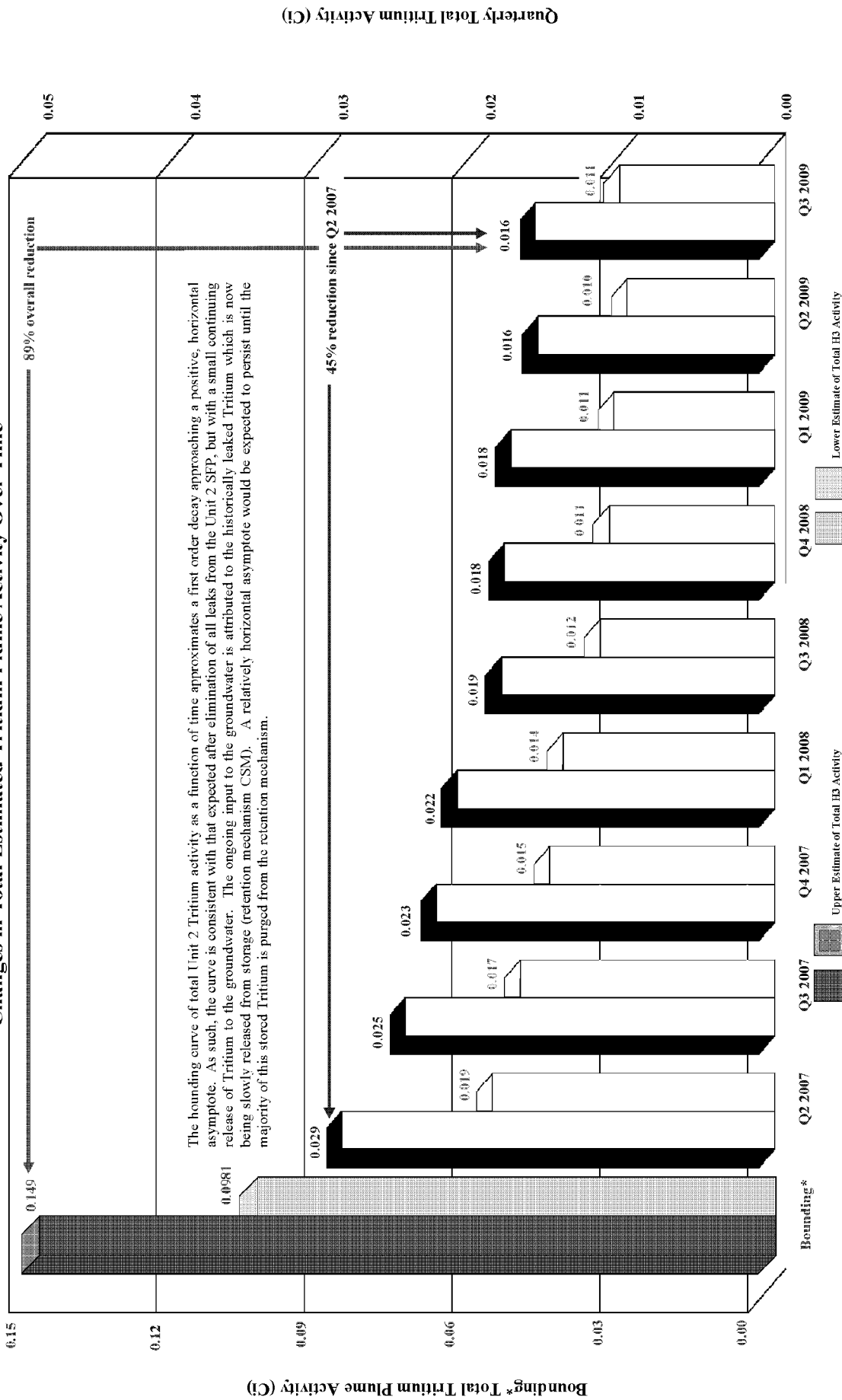


FIGURE G14

Changes in Total Estimated Tritium Plume Activity Over Time



Note: Lower estimate is based on a porosity of 0.0003 which was derived from a pumping test conducted in 2006. Upper estimate is based on a porosity of 0.003 derived from a tracer test conducted in 2007. The Q2 2007 to Q3 2009 Tritium plume activity estimates are each based on Tritium levels measured in the groundwater monitoring installations at individual, quarterly "snapshots" in time.
 * The bounding activity estimate, however, encompasses a longer period of time, and is focused on the Tritium levels existing during the earliest portions of the groundwater investigation. During this period of time, before termination of all the identified SFP leaks, Tritium concentrations were at their highest levels, but the network of monitoring installations was still being installed. Therefore, measurements made at multiple times were required to capture early data covering the full extent of the Tritium plume; primarily over the period from Nov 2005 through Nov 2006 (a smaller percentage of measurements through Sept 07). For the bounding Tritium plume activity estimate, the highest value recorded for each monitoring location during this time period was used in the analysis. For further discussion see Sections 6.0, 7.0 and 8.0 of the Final Hydrogeologic Site Investigation Report, prepared by GZA and dated January 7, 2008.

FIGURE G15



APPENDIX H: SOUTHERN BOUNDARY WELLS

TEMPORAL TRITIUM TRENDS IN SOUTHERN BOUNDARY WELLS

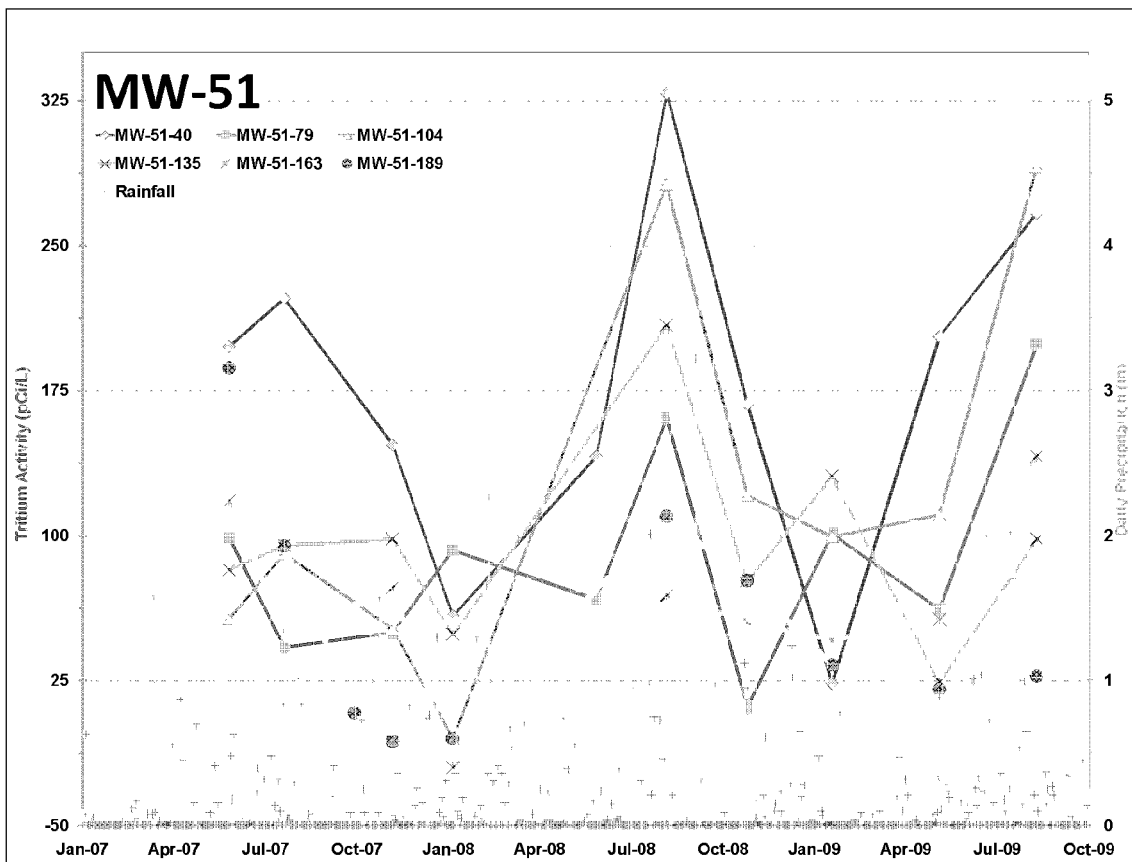
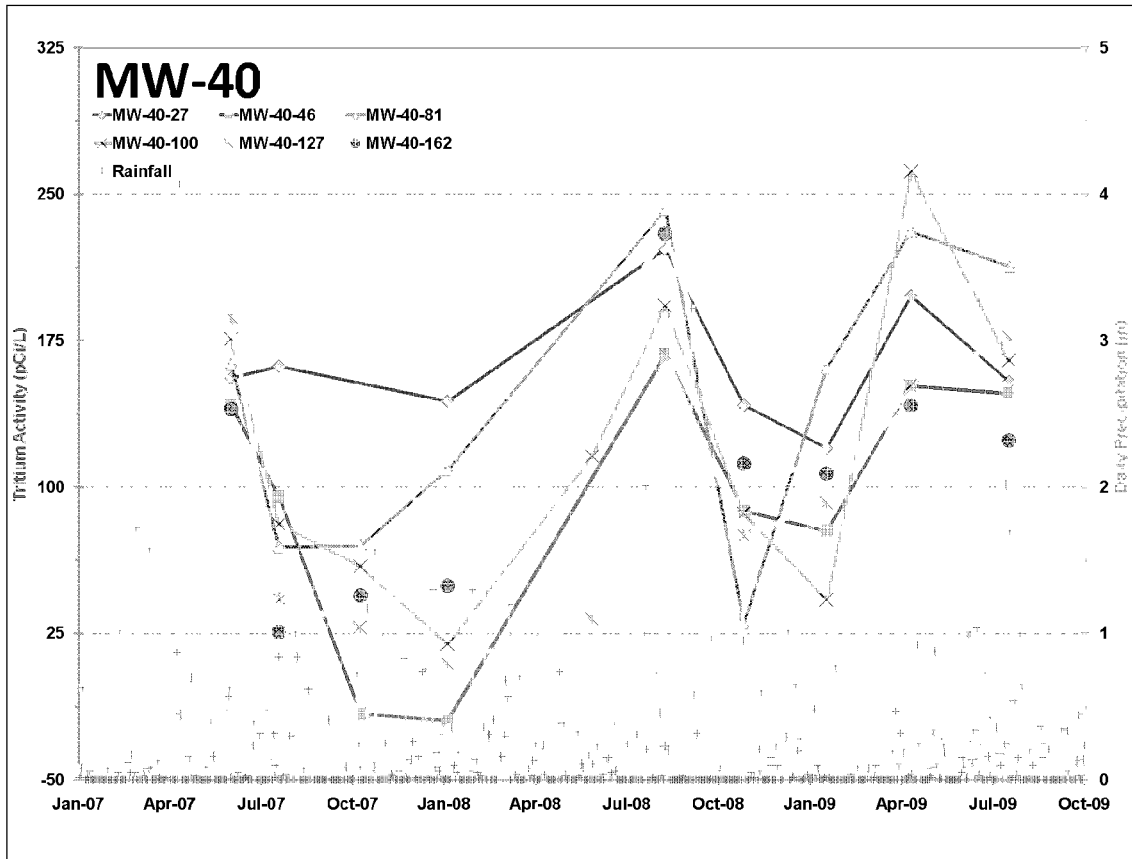


FIGURE H1