Installation of Monitor Wells at Three Sites in Miami-Dade County

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Keith Smith, P.G.
Natalie Kraft, Technical Editor

Resource Evaluation Section, Water Supply Bureau

South Florida Water Management District | 3301 Gun Club Road | West Palm Beach, FL 33406

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EXECUTIVE SUMMARY

A series of shallow groundwater monitor wells were constructed in the agricultural area east of the L-31W levee in Miami-Dade County, Florida, in response to concerns that Everglades restoration activities may increase groundwater levels in the area. The wells were equipped with telemetry so groundwater levels can be monitored in real time, enabling the South Florida Water Management District to use the water level data when making operational adjustments to the regional water management system. In addition, water level data from these wells will be used to enhance groundwater and surface water models of the area. Three of the wells were added to a groundwater quality monitoring network operated by Miami-Dade County.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

District	South Florida Water Management District
NAVD88	North American Vertical Datum of 1988
PVC	polyvinyl chloride
SCADA	Supervisory Control and Data Acquisition
SFWMD	South Florida Water Management District

INTRODUCTION

The South Florida Water Management District (SFWMD or District) operates the regional flood control/water supply system that includes the southern Miami-Dade County agricultural area. The District has constructed, or plans to construct, several water management projects associated with Everglades restoration activities that may cause increased water flow into and through the Everglades, resulting in higher water levels in Everglades National Park. There are concerns that increased water levels in the Everglades could result in increased seepage under the L-31W levee, which could increase groundwater levels on the eastern side of the levee and impact agricultural operations in the area.

In response to this concern, a series of shallow groundwater monitor wells were constructed east of the L-31W levee, generally west of Homestead, Florida (**Figure 1**). Seven potential sites for constructing groundwater monitor wells were identified and evaluated (**Figure 2**). Three sites were selected for construction of monitor wells. Two of the sites had three-well clusters installed, while the third site had a single monitor well installed (**Figure 3**). The wells are equipped with telemetry, so groundwater levels can be monitored in real time through the District's Supervisory Control and Data Acquisition (SCADA) system, enabling the District to use the water level data when making operational adjustments to the regional water management system. In addition, water level data from the wells will be used to enhance groundwater and surface water models of the area.

The land use is mainly agricultural, mostly ornamentals and small vegetables, with isolated residential properties throughout the area and urban/suburban areas to the east. Everglades National Park lies to the west, separated from the agricultural and urban/suburban areas by the L-31W/L-31N/C-111 canal. The canal is a part of the Central and Southern Florida (C&SF) Project, which is operated by the SFWMD and provides flood control and water supply for the area. The topography is extremely flat, with elevations generally less than 10 feet North American Vertical Datum of 1988 (NAVD88).

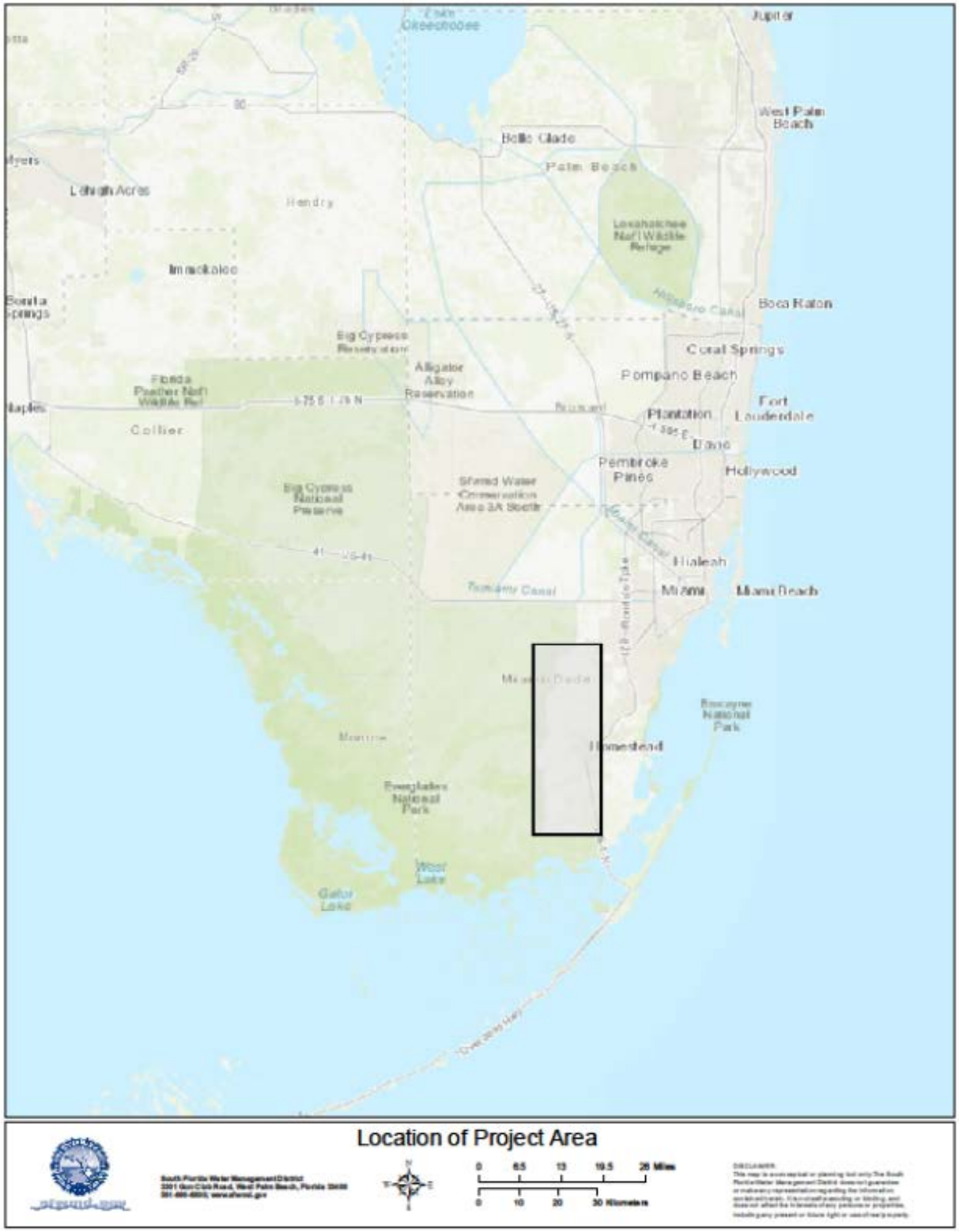

Figure 1. Location of project area.

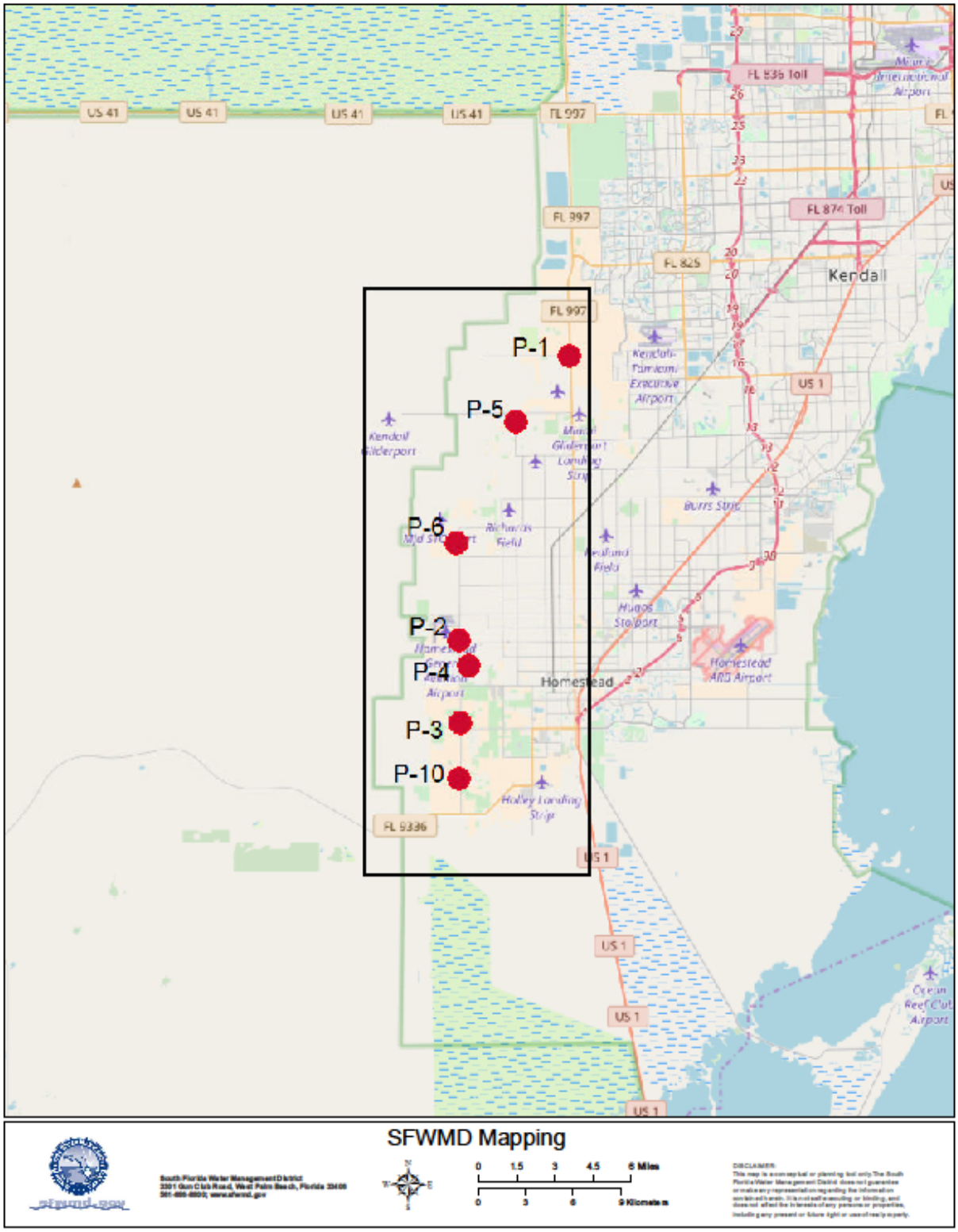

Figure 2. Project area (including seven potential drilling sites).

Figure 3. Actual well site locations.

STRATIGRAPHY AND HYDROSTRATIGRAPHY

Lithology

The project area is underlain by siliciclastic and carbonate deposits of Pliocene and Holocene age to depths of less than 200 feet (Fish and Stewart 1991; Reese and Cunningham 2000; Wacker et al. 2014). The limestones of the Fort Thompson Formation and the Miami Limestone form the surficial deposits and are underlain by the Pinecrest Sand and Ochopee Limestone of the Tamiami Formation. The wells in this project were completed in the Miami Limestone and Fort Thompson Formation.

Hydrogeology

The Biscayne aquifer is the primary source for water supply in Miami-Dade County. It forms the shallowest layer of the surficial aquifer system, which also includes the deeper, semi-confined and less productive gray limestone aquifer. Within the project area, the Biscayne aquifer consists of the Fort Thompson Formation and the Miami Limestone. The thickness of the Biscayne aquifer is defined by land surface or the water table on top, and the confining to semi-confining sand and limestone of the Pinecrest Sand Member of the Tamiami Formation on the bottom (Wacker et al. 2014). The bottom of the Biscayne aquifer in the project area is approximately -55 feet NAVD88. The Biscayne aquifer is one of the most productive aquifers in the world (Parker et al. 1955), with measured transmissivities between 500,000 and 2 million ft^2/day. All wells constructed for this project were finished in the Biscayne aquifer.

SITE SELECTION

Seven sites were identified for possible well installation (**Figure 2**) based on location, proximity to regional surface water features, site access, and other factors. Generally, all the sites are located along a north/south line approximately 0.5 miles east of the L-31W canal. The north/south line along which the sites are located stretches from just south of the C-1W canal in the north to just north of Ingraham Highway (CR9336) in the south. Five of the sites were located away from regional surface water features; however, two sites were located adjacent to regional surface water features, specifically the C-113 canal and Loveland Slough. Two of the sites not near surface water features were designated as potential sites for three-well clusters; the remaining sites were designated as single, shallow well sites.

All potential drilling sites were evaluated based on information gathered during field inspections. The evaluations were based on a variety of factors, including proximity to irrigation wells, suitability for telemetry (i.e., clear radio path to nearest microwave network tower), space on site to maneuver the drilling rig, space on site for multiple wells and associated telemetry equipment, site security (ability to be fenced off from public access), ease of access for maintenance personnel, and permission from the property owner(s). Based on the evaluation of these factors, three sites were selected for drilling: P-2, P-3, and P-6 (**Figure 3**). Sites P-2 and P-3 are designated for three-well clusters, and P-6 was designated to have a single shallow well installed.

DRILLING SITE DESCRIPTIONS

Site P-2 is located at 28700 SW 217th Avenue, on the property of the Miami-Homestead General Aviation Airport (**Figure 4**). The site is located inside the perimeter fence a little more than 0.5 miles south of the main entrance to the airport. The site is accessed through the main airport entrance (which is unlocked during daylight hours), turning south and then east at the end of the fence, and proceeding along the west side of the fence line approximately 0.5 miles to the site, which is situated in a corner of the property just north of a stand of trees.

Figure 4. Location of site P-2.

Site P-3 is located east of the intersection of SW 217th Avenue and SW 213th Avenue (**Figure 5**). The site is a farm field, and the well site is located approximately 700 feet east of the intersection on the south side of SW 213th Avenue. SW 213th Avenue is an unpaved private road; however, it is not gated and can be accessed from SW 217th Avenue.

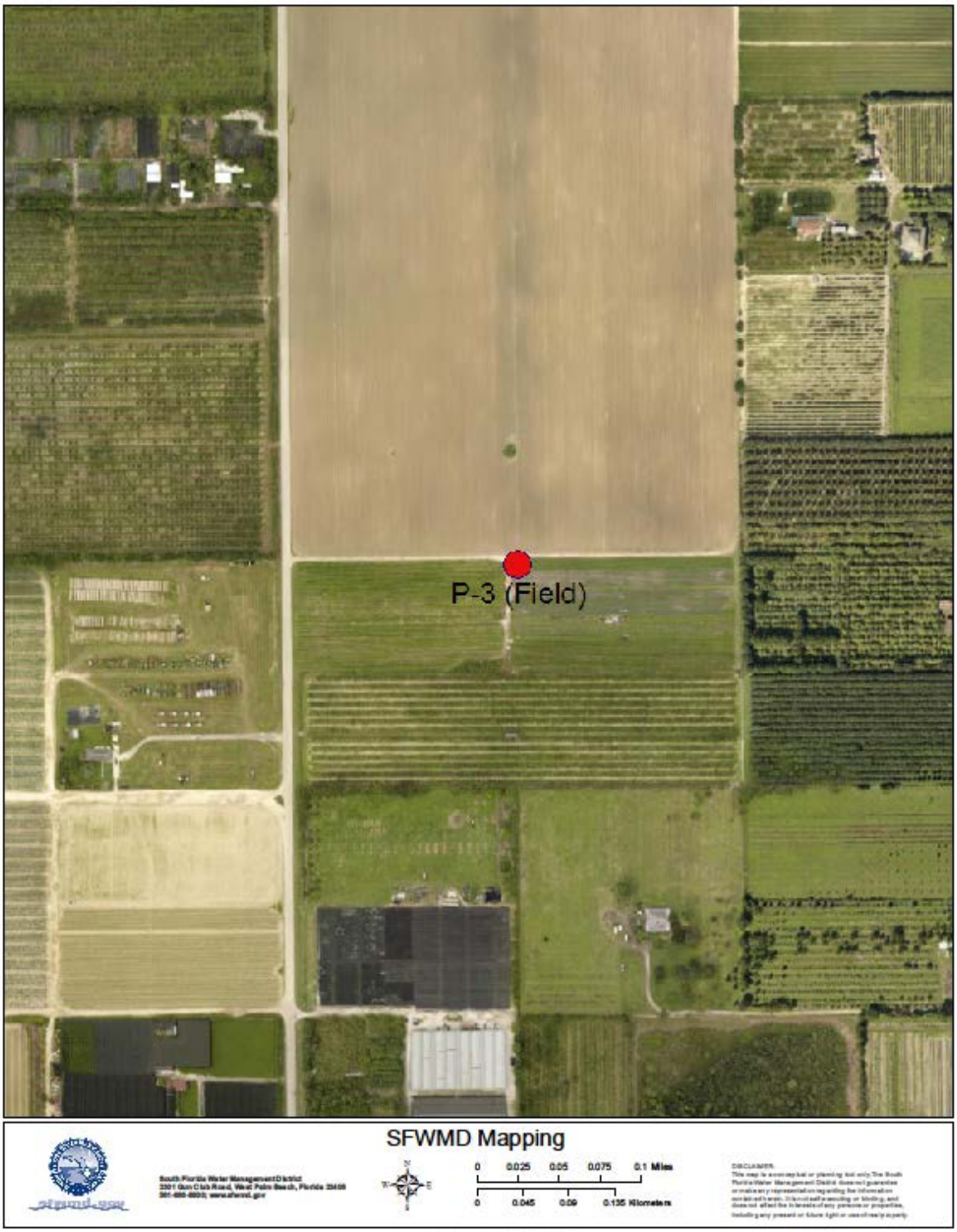

Figure 5. Location of site P-3.

Site P-6 is located at 21805 SW 236th Street (**Figure 6**). The site is a 5-acre residential lot, and the well site is located at the southeast corner. SW 236th Street is an unpaved private road; however, it is not gated and can be accessed from SW 217th Avenue.

Figure 6. Location of site P-6.

WELL DRILLING

Well depths for this project were determined prior to any well construction. The three-well sites (P-2 and P-3) were planned for 15-foot, 35-foot, and 55-foot deep wells, and the single well site (P-6) was planned for a 15-foot deep well. Well depths were determined using existing data in the area, particularly from monitor wells installed by the SFWMD at the S-356 temporary pump station on the Tamiami Canal just north of the project area, which were constructed in the year before the current study. A 55-foot core was obtained at that site, and the U.S. Geological Survey (USGS) conducted a full suite of geophysical logs, including optical borehole imaging (OBI) on the core hole, enabling reliable identification of flow zones at a location relatively close to the project area (SFWMD 2015).

All wells are 2-inch diameter polyvinyl chloride (PVC) casings with 5-foot, 0.06- or 0.03-inch slotted well screens. A 0.25- to 0.125-inch gravel pack was installed in each well around the screens, extending 2 feet above the screen and topped by 2 feet of bentonite pellets, which were allowed to hydrate prior to cementing in the 2-inch PVC casing to land surface. Eight-inch diameter gray PVC surface casing was installed to a depth of 3 to 4 feet at each well, and to a height of 4 feet above land surface. Each well was developed by air lifting for a minimum of 1 hour, or until the water produced was visually clear. Each well was completed with a 3-foot by 3-foot by 6-inch-thick reinforced concrete well pad. Well construction details are listed in **Table 1**, and more detailed specifications are provided in **Appendix A**.

Table 1. Well construction details.

Site	P-2 (Airport) L31NW02			P-3 (Field) L31NW03			P-6 (House) L31NW06
Lat./Long.	252933.28/803233.27			252717.58/803224.08			253247.02/803242.49
Planar (x/y)	807050.192/4215310625			807939.544/407834.953			806138.497/441087.835
Well Number	GW1	GW2	GW3	GW1	GW2	GW3	GW1
Depth	55 ft	35 ft	15 ft	15 ft	35 ft	53.5 ft	15 ft
Elevation of Top of Pad (NAVD88)	6.97 ft	6.97 ft	7.03 ft	6.89 ft	6.72 ft	6.44 ft	6.22 ft
Screened Interval	50-55 ft	30-35 ft	10-15 ft	10-15 ft	30-35 ft	48.5-53.5 ft	10-15 ft
Screen Slot Size	0.06 in.	0.03 in.	0.03 in.	0.03 in.	0.03 in.	0.03 in.	0.03 in.

Note: Well diameter for all wells is 2 inches.

Well drilling at site P-2 commenced on July 5, 2016. The 55-foot deep well was attempted first, using 5.875-inch diameter hollow-stem augers. However, an extremely hard layer was encountered at approximately 30 feet deep, which the augers were unable to penetrate. The augers were removed from the hole and a different drill bit was installed to penetrate this layer, but the attempt was unsuccessful. The augers were removed again, and the hole either collapsed or filled in below 20 feet deep. The decision was made to finish this as the 15-foot well, so 5 feet of bentonite pellets were installed to bring the well depth to 15 feet, and the well was finished as described above.

On July 6, 2016, drilling started on the 35-foot well using hollow-stem augers. A very hard layer was encountered at 26 feet, but the augers were able to penetrate though to 29 feet, at which point the augers were unable to advance through a second hard layer. The decision was made to switch to coring. On July 7, 2016, drilling resumed on this well. A 12-inch diameter borehole was reamed out to a depth of 3 feet to allow for installation of the 8-inch surface casing. Coring began at a depth of 29 feet; however, circulation was lost, and no samples were recovered from the core barrel. Water circulation was increased, and the core barrel was advanced, but it got stuck almost immediately. The core barrels were removed from the hole and

again, no samples were recovered. The bit was extremely hot, and the circulation holes in the core barrel appeared to be plugged. At this point, drilling was suspended for the day and the decision was made to switch to mud-rotary drilling.

Drilling commenced again on July 19, 2016, when the borehole was mudded up and a tri-cone rotary bit was inserted into the borehole. The bottom was tagged at 18 feet deep, so approximately 11 feet of the borehole had filled in during the 12-day period when no work was done at the site. This time, the hard layer was able to be penetrated, and drilling became much easier at 32 feet deep. The decision was made to make this the deep well, so drilling continued after a depth of 35 feet was reached. Circulation was lost at a depth of 37 feet, so drilling paused while more mud was mixed. The last 4 or 5 feet of the borehole had a high content of fine sand, so the decision was made to finish this well with 0.03-slotted screen. The drillers returned the next day to install the 35-foot well using mud, and this well was completed without any of the problems encountered during construction of the previous wells at this site.

Transcribed field notes and brief descriptions of the samples that were obtained are in presented in **Appendix B**. Detailed lithologic descriptions were not done for this project because of the limited number of samples that were obtained from the drilling operation. A composite description of samples obtained from all three wells at this site show white sandy limestone from land surface to 25 feet deep, gray limestone mixed in with white limestone between 28 and 35 feet deep, and white sandy limestone between 35 and 55 feet deep. The gray limestone encountered between 28 and 35 feet deep accounted for 20 to 35 percent of the samples and seemed to correspond to the extremely hard layers encountered at these depths.

Drilling at site P-3 began on June 1, 2016. Hollow stem augers were used at this site, so few samples were returned to the surface during drilling. The 15-foot well was drilled without incident. The 35-foot well was also drilled without incident; however, when the augers were removed from the hole, one of the teeth on the bit was bent out. A welder was brought out to the site the next day; the bit was repaired and the 55-foot well was drilled. When installing the casing and well screen on this well, it was discovered that the last 1.5 feet of the well had filled in, so the decision was made to finish this well at a depth of 53.5 feet. Transcribed field notes and brief descriptions of the samples that were obtained are in presented in **Appendix B**. A composite description from samples obtained from all three wells show white chalky/silty limestone from land surface to 7 feet deep, white sandy limestone at 15 feet deep, and creamy white fine sandy limestone from 35 to 55 feet deep.

Well drilling at site P-6 was conducted on June 3, 2016. The well was drilled using 5.875-inch diameter hollow stem augers. Sampling was limited as few cuttings came to the surface during drilling; the samples seem to show a dirty white silty/sandy limestone for the entire 15-foot depth of the well. Transcribed field notes and brief descriptions of the few samples that were obtained are presented in **Appendix B**. The well was finished as described above.

WELLHEAD CONSTRUCTION AND TELEMETRY INSTALLATION

Design and installation of the telemetry equipment was completed by the District's SCADA Design and Installation group. All the wellheads were finished in a similar manner. A platform was constructed approximately 3 feet above land surface to hold a lockable housing that protected the top of the well casing and provided a place to mount equipment. Each well had a measuring point (top of 2-inch casing) and a reference elevation determined by survey. The survey report in included as **Appendix C**. Each well was equipped with a pressure transducer, which was programmed to record water levels at 15-minute intervals. Each site was equipped with the necessary equipment (data logger, radio, antennae, battery, and solar panel) to allow real-time monitoring of water levels.

The wells at each site were given names associated with the overall project. The wells at site P-2 were designated as L31NW02GW1 (55-foot deep well), L31NW02GW2 (35-foot deep well), and L31NWGW3 (15-foot deep well), and these wells began transmitting data on April 6, 2017. The wells at site P-3 were designated as L31MW03GW1 (15-foot deep well), L31NW03GW2 (35-foot deep well), and L31NW03GW3 (53.5-foot deep well), and these wells began transmitting data on March 21, 2017. Note that the well numbering nomenclature is not consistent between sites (well numbers versus well depth); this occurred when the telemetry equipment was installed and added to the District's network. It is planned to correct the inconsistency by renaming the wells at the P-3 site. The well at site P-6 was designated L31NW06GW, and this well began transmitting data on February 2, 2017. Photographs of the final configuration of the wells with monitoring and telemetry equipment installed are presented in **Figures 7** through **9**. Hydrographs of the groundwater levels are presented in **Figures 10** through **12**. Surface water hydrographs at the closest station to each site are plotted in each figure. Water levels in the three monitored zones track closely to each other and to the nearest monitored surface water features, which indicates a high degree of connectivity between them. Other features of the hydrographs worth noting are the peaks associated with the heavy rainfalls of Hurricane Irma that occurred around September 10, 2017, and the increased water levels that occurred around June 2017 corresponding to the regional water management system shifting from dry season to wet season operations.

Figure 7. Completed wells with telemetry equipment installed at site P-2 (L31NW02).

Figure 8. Completed wells with telemetry equipment installed at site P-3 (L31NW03).

Figure 9. Completed well with telemetry equipment installed at site P-6 (L31NW06).

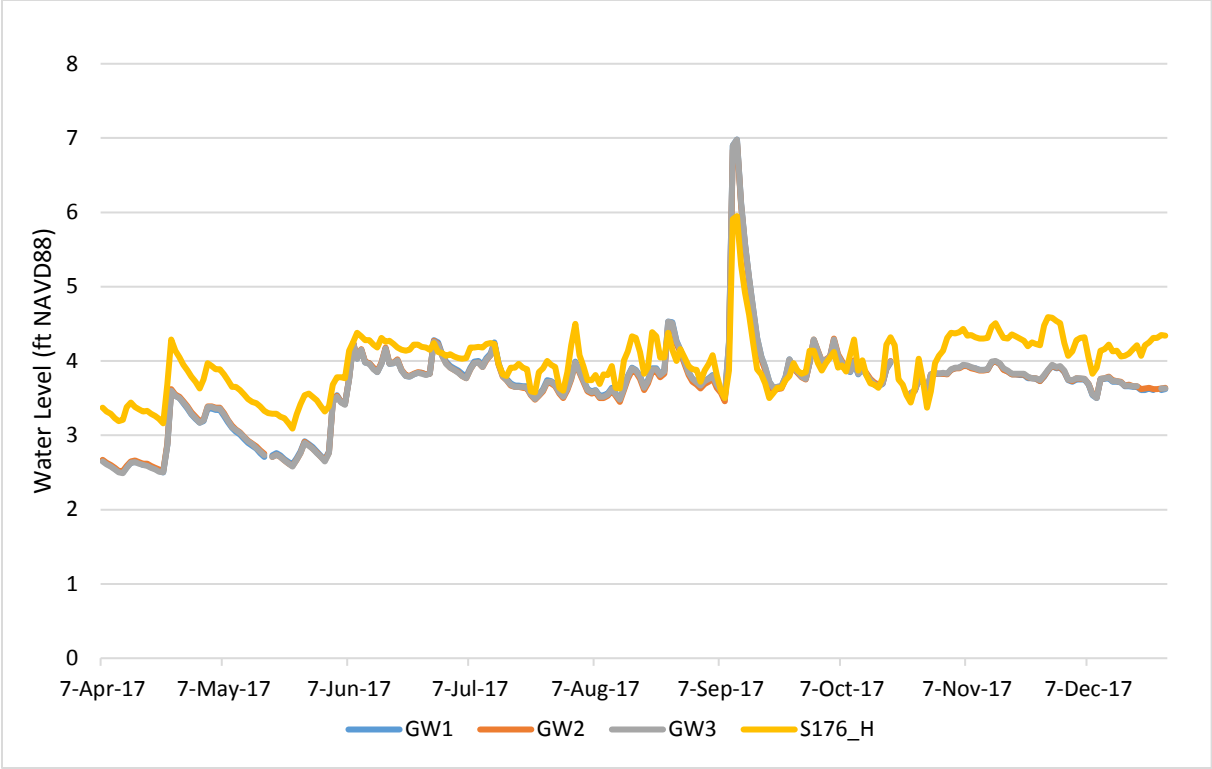

Figure 10. Water levels at site P-2 (L31NW02).

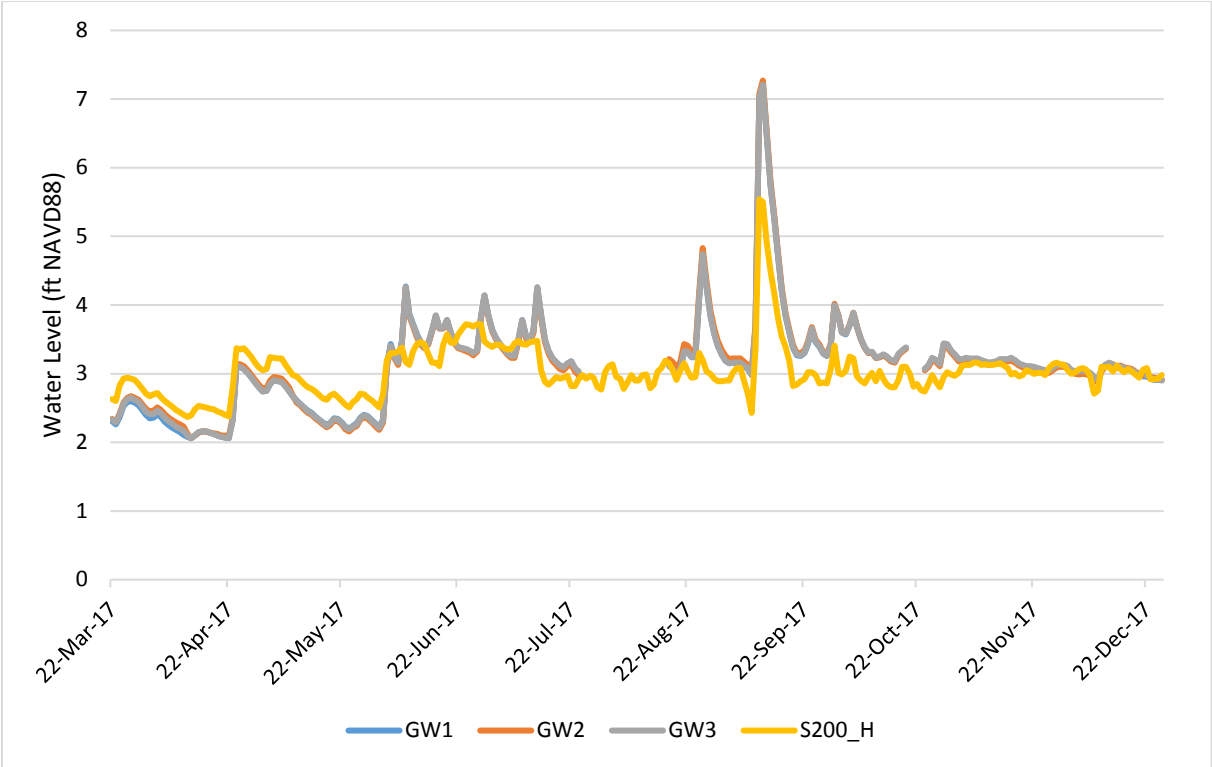

Figure 11. Water levels at site P-3 (L32NW03).

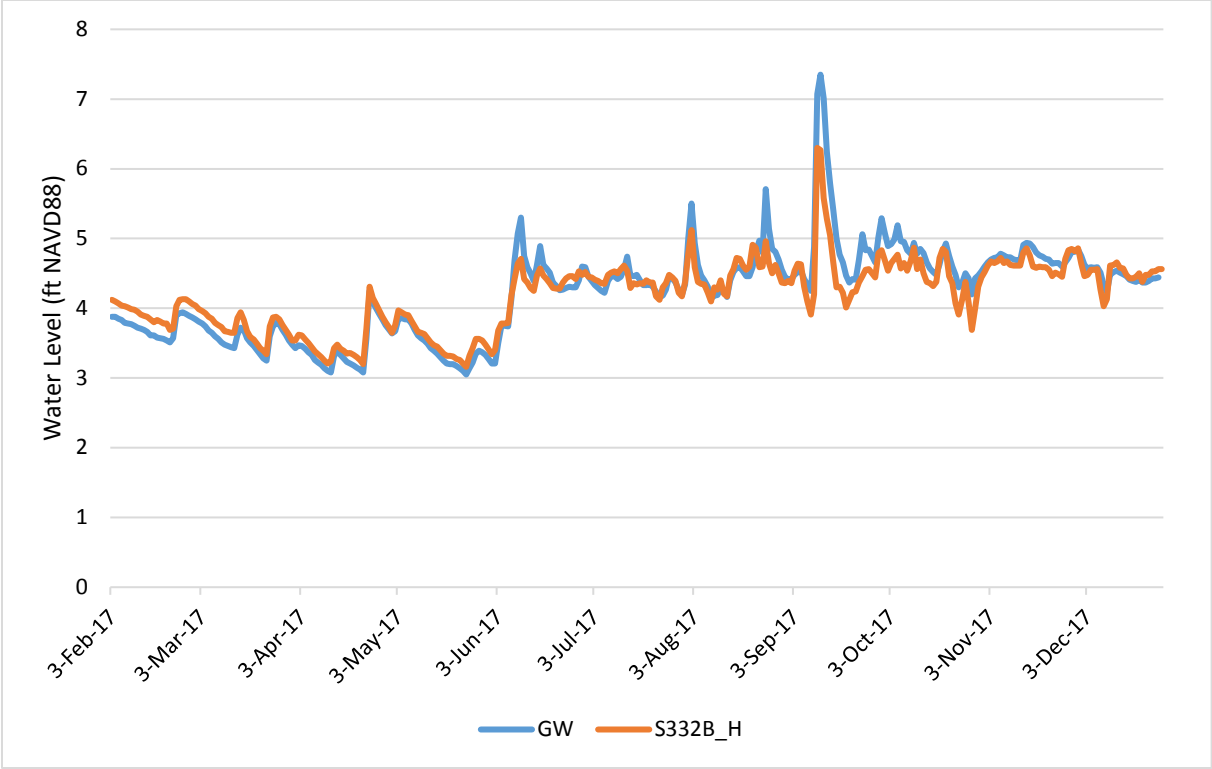

Figure 12. Water levels at site P-6 (L31NW06).

WATER QUALITY SAMPLING

The wells at site P-2 have been added to a groundwater quality network managed by the Environmental Resources Group of the Miami-Dade Department of Regulatory and Economic Resources. As part of this network, all three wells at this site will be sampled twice a year. The initial sampling event took place on May 18, 2017. The wells were sampled for typical physical parameters, cations/anions, and an extensive range of herbicides, pesticides, and other organic compounds. The physical parameters and cations/anions are presented in **Table 2**, and the complete set of water quality parameters sampled are presented in **Appendix D**. The physical parameters were plotted on Stiff (1951) diagrams (**Figures 13** through **15**). All three zones exhibited similar shapes, which are indicative of water typically found in limestone aquifers (Hounslow 1995). Ionic balances were calculated for each well and ranged from 1.01 to 1.02, which is very close to the ideal balance of 1.0.

Table 2. Water quality data from site P-2 (L31NW02) (Miami-Homestead Airport).

Well	L31NW02GW-1 (deep)	L31NW02GW-2 (intermediate)	L31NW02GW-3 (shallow)	Units
Calcium	69.1	66	70.1	mg/L
Chloride	50	50	48	mg/L
Color (Apparent)	38	35	30	PCU
Dissolved Oxygen (Field)	0.09	0.1	0.12	mg/L
Hardness, Carbonate	204	194	204	mg/L
Iron	1130	636	473	µg/L
Nitrate	0.01	0.01	0.03	mg/L
Magnesium	7.52	7.2	7.06	mg/L
pH	6.93	6.94	6.94	None
Potassium	3.7	3.5	3.1	mg/L
Sodium	33.1	32.6	33.8	mg/L
Sulfate*	4	4	4	mg/L
Specific Conductivity (Field)	548.1	550.7	554.7	µmhos/cm
Temperature (Field)	26.67	28.13	27.6	°C
Turbidity	1.6	0.7	0.5	NTU

* Listed at detection limit.

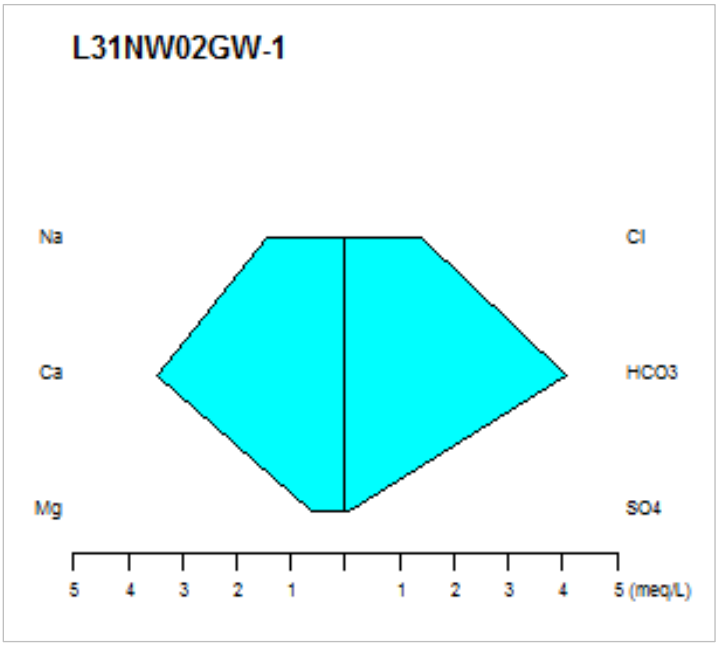

Figure 13. Stiff Diagram for Well L31NW02GW-1.

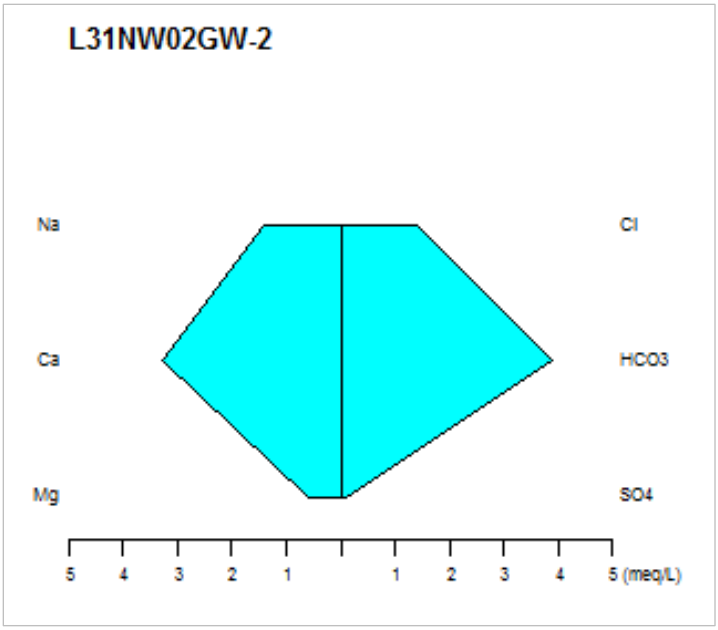

Figure 14. Stiff Diagram for Well L31NW02GW-2.

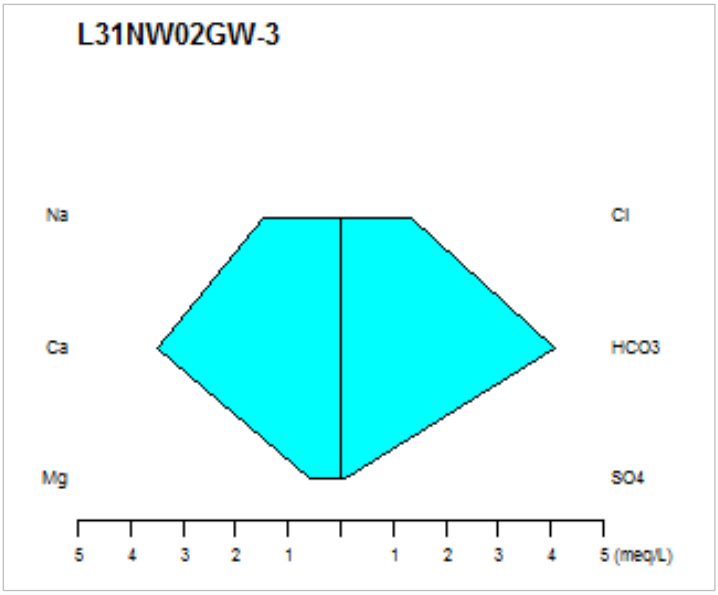

Figure 15. Stiff Diagram for Well L31NW02GW-3.

SUMMARY

Seven potential drilling sites were evaluated to install wells that could be used to monitor water levels in the shallow aquifer in the agricultural area generally west of Homestead. A total of seven wells were installed at three sites. Telemetry was installed in all the wells to allow real-time monitoring of water levels. These wells will support operation of the regional water management system in the area. Three wells at the Homestead General Aviation Airport were added to a regional groundwater quality monitoring network operated by Miami-Dade County.

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APPENDIX A
STATEMENT OF WORK FOR INSTALLATION OF MONITOR WELLS

Drill and install shallow monitoring wells at seven locations in the South Dade Agricultural Area, Miami-Dade County, Florida

I. INTRODUCTION

This monitor well drilling project is being conducted to collect information on the potential for groundwater flooding associated with operation of existing and proposed water management projects near the agricultural areas of western and southern Miami-Dade County, Florida. The project calls for monitoring wells to be constructed at up to seven sites. Five sites will consist of a single well with a total depth anticipated to be fifteen feet. Two sites will consist of up to three wells with anticipated depths of approximately fifteen, thirty-five, and fifty-five feet. A total of eleven wells are included in this project. Approximate drilling locations are shown in **Figure 1**.

II. GENERAL INFORMATION AND OVERVIEW

2.1 Scope of Work

The South Florida Water Management District (DISTRICT) seeks a State of Florida licensed water well contractor (CONTRACTOR) to install a total of eleven shallow monitoring wells at seven sites in southern and western Miami-Dade County. This project involves drilling and installing fifteen-foot-deep wells at five sites, and drilling and installing up to three wells at each of two sites with anticipated depths of fifteen, thirty-five, and fifty-five feet. Actual depths will be determined on site during drilling operations. All wells will be constructed of two-inch threaded polyvinyl chloride (PVC) casing and will require five-foot screened intervals. All wells will be in separate boreholes.

The DISTRICT will provide an on-site geologist during drilling operations to oversee collection of field samples and data, and to oversee well construction operations. Based on the availability of funds, the DISTRICT may only complete a portion of the work. The DISTRICT reserves the right to terminate the contract without any further restitution other than payment for services rendered and material installed.

2.2 Permits and Utility Clearance

The proposed drilling sites are located on privately owned and publicly owned lands. The DISTRICT will be responsible for obtaining permission from the landowners to allow access to the properties to allow installation of the monitoring wells. The CONTRACTOR shall be responsible for obtaining any local, state, or federal drilling permits or occupational licenses, to obtain clearance from all applicable utilities, and to provide notification to local municipalities prior to the start of drilling operations. All site visits with a utility representative are the responsibility of the CONTRACTOR. The CONTRACTOR shall also conform to any local or county ordinances pertaining to noise levels and working hours, etc. to avoid any unnecessary delays. Should any unanticipated delays occur due to permit acquisition, the DISTRICT reserves the right to postpone the start of the contract.

2.3 Project Schedule and Time Constraints

The wells shall be constructed in a timely manner to minimize impacts to the sites. Once work on a borehole has started, it must proceed until the total depth of the borehole is reached. All work shall be completed within 30 days after contract award.

2.4 Equipment and Personnel

The DISTRICT requires that a Water Well CONTRACTOR, licensed in the State of Florida or the appropriate Water Management District, be responsible for work performed under the contract**. A copy of the current Florida Water Well Contractor license must be submitted with the quotation.** All equipment utilized by the CONTRACTOR and any subcontractor(s) must be in good working order. The CONTRACTOR shall provide and operate drilling and support equipment with adequate load/weight capacity for the projected drilling depths. There will be no compensation for downtime incurred due to equipment failure or personnel problems. Unnecessary delays or work stoppages because of equipment or personnel problems will not be accepted nor considered a valid reason for extending the length of the contract.

2.5 Final Deliverables

Deliverables to the DISTRICT shall include:

A) Successful installation, construction, and development of all monitor wells described in this document.

B) Bagged geologic samples (grab samples from the boreholes).

C) Restoration of all drill sites.

D) Well completion reports signed by the Florida-licensed Water Well CONTRACTOR.

Payment shall be made according to the schedule in Section VII.

III. SITE INFORMATION AND ENVIRONMENTAL REQUIREMENTS

3.1 Site Description

The drilling sites are located in a rural area of Miami-Dade County, generally located along a north/south line approximately one mile east of the L-31 canal, stretching from SW 136th Street to SW 376th Street.

3.2 Minimizing Impacts of Drilling

Negative impact to the site property as a result of the drilling activities must be minimized.

- The staging areas must be secured in order to prevent mishaps with the general public and to prevent vandalism to equipment and supplies. The CONTRACTOR is responsible for securing the drill sites.
- Activity at the drill site is restricted to specified, small areas.
- No vegetation will be cut without permission from the DISTRICT project manager or site geologist.
- If dry weather conditions make the risk of wildfires high, personnel must refrain from smoking or use of potential ignition sources. At other times, smoking is permitted if all cigarette butts are properly disposed of. At no time shall they be thrown on the ground.

- At all sites, drilling (and other loud tasks) should be performed during normal working hours (7:00 a.m. to 7:00 p.m., Monday through Friday) unless permission is given by the DISTRICT site geologist.

3.3 Mobilization, Demobilization and Site Cleanup and Staging Area Security

Mobilization shall include costs for all materials, equipment and labor required to prepare the sites for drilling operations, install appropriate pit or surface casing (if necessary), and conduct any other measures that the CONTRACTOR feels are necessary to protect and secure their equipment during drilling operations. Part of the mobilization/set-up and demobilization costs may entail meeting several environmental requirements. The cost for providing the required equipment/facilities and services shall be part of the mobilization/ demobilization price.

A) The CONTRACTOR may use the drill sites as a staging area for equipment, supplies, and equipment cleaning. The sites are unsecured and open to the public. Care must be taken to secure the sites to protect equipment and supplies and to avoid mishaps in regards to the general public. The CONTRACTOR shall maintain the sites and staging areas in an orderly and functional manner during all drilling and well construction operations. Inoperable equipment or equipment that will not be used within a one (1) week period should not be stored or remain on the site.

B) The CONTRACTOR shall be responsible for removing debris and trash from the drill sites daily.

C) The CONTRACTOR shall mobilize to the drilling site, ensure all drilling and containerization equipment is properly set up, and complete all necessary steam cleaning of the drill rig, equipment, supplies, and all materials to be placed in the well bores according to the guidelines in Section 3.4, Equipment Cleaning. The CONTRATOR shall set up the drill rig at the designated location, transport equipment and supplies to the site, prepare equipment for drilling operations, and complete any additional cleaning.

D) Formation water generated during drilling may be discharged to land surface at the drill site. In residential areas, the CONTRACTOR shall remove all well cuttings from the site. The CONTRACTOR may spread and grade well cuttings at drill sites not in residential areas. Drilling fluids may be discharged to land surface only in non-residential areas. Drilling fluids shall be removed from the site in residential areas.

E) The CONTRACTOR shall comply with all Occupational Safety and Health Administration (OSHA)/United States Environmental Protection Agency (EPA) requirements regarding heavy equipment, electrical and mechanical operations, storage of compressed and flammable gases, and storage and handling of hazardous materials. Necessary personal safety equipment and containment and absorbent materials will be required on site for the duration of drilling operations. If conditions exist that may be in violation of either OSHA or EPA standards, a site visit from the appropriate representative may be requested by the DISTRICT.

F) Once all drilling and well construction operations have ceased, the CONTRACTOR is required to remove all equipment and restore the sites to original grade and condition. A DISTRICT representative must approve site restoration prior to mobilizing to the next site.

3.4 Equipment Cleaning

The wells may be used for long-term environmental monitoring. As such, extreme care must be taken in the installation process to prevent any cross-contamination from any other drill sites and from general

contamination. All equipment used in the borehole and all equipment that could transport sediments from one site to another must be cleaned according to the following:

A) The CONTRACTOR shall wash (utilizing Liquidnox™ soap) and steam clean the rig prior to starting any drilling activities. The drilling rig components (drill rods, augers, and bits) pumps, grout barrels, shovels, wheelbarrows, hoses, split spoons, coring barrels, and temporary casing must be steamed cleaned in the same manner prior to use and between each hole. The acrylic liners used in obtaining and storing unconsolidated samples and the caps shall all be washed with Liquidnox™ soap and thoroughly rinsed, prior to use.

B) The CONTRACTOR shall provide ample buckets, brushes, water and Liquidnox™ solution to complete the cleaning as described in this document.

C) During the cleaning process and well construction, all personnel shall wear latex type (disposable) gloves to prevent contamination. The CONTRACTOR shall provide sawhorses or a small bench(s) to support the risers prior to installation and shall plastic wrap the cleaned components to protect them from new contamination.

D) The CONTRACTOR shall steam clean and flush all tank interiors off-site with clean water before mobilizing to the initial site.

IV. GENERAL DRILLING AND WELL CONSTRUCTION REQUIREMENTS

4.1 Formation Samples

The CONTRACTOR shall obtain geologic samples from each borehole at each site. The samples shall be obtained in 5 foot intervals via grab samples dependent upon the formation sediments encountered.

The DISTRICT will provide a site geologist who will be responsible to collect, describe, and photograph samples obtained during drilling operations. The CONTRACTOR shall provide the DISTRICT geologist safe access to collect and inspect the samples, and shall accommodate the DISTRICT geologist in retrieving representative samples, including moderating drill rates and circulation, as necessary.

4.2 Drilling Logs

The CONTRACTOR shall furnish the DISTRICT with a daily drilling record. The logs shall accurately describe the following: geologic materials and depths encountered; depths of lost circulation zones and methods of regaining circulation; drilling rate, time, and depth; description of any unusual occurrences or problems during drilling; diameters and lengths of drill rod and casing; and any other work performed at the site.

4.3 Drilling

The CONTRACTOR shall drill a nominal 12-inch diameter borehole to a depth of at least 4 feet below land surface. The purpose of this borehole is to accommodate the 8-inch PVC casing (see Section 4.6 below). It is up to the CONTRACTOR to determine whether they want to install (grout into place) the 8-inch PVC casing at this time, or make accommodations to keep this borehole open during drilling and install the 8-inch PVC casing at a later time. The contractor shall then drill a 5-7/8 inch diameter borehole to the total depth of the well and install the 2-inch well casing and screen as stated below.

4.4 Well Casing (PVC) and Slotted Screen and Filter Pack

The CONTRACTOR shall provide 2-inch diameter Schedule 40 PVC Tri-Loc riser and screens (or equivalent). The well screens shall be 0.060 inch slotted screen in 5-foot sections (**Figure 2**). All well casings and screen joints shall be connected by threaded connections with manufacturer-supplied "O" rings, cleaned and sealed in plastic at the factory. The DISTRICT will only authorize payment for casing installed to the actual depth and grouted into place back to land surface. All casing and slotted screens shall be of new, first quality material and free of defects in manufacturing and handling.

The CONTRACTOR shall install a gravel pack (1/4 by 1/8 inch gravel) dropped or pumped into the borehole via a 1-inch tremie pipe and placed to a level that extends at least two feet above the top of the screen. This will account for any filter pack settling during well development. Placement of the gravel pack shall be determined by a hard tag. Two (2) feet of bentonite pellets should be placed above the filter pack and hydrated to provide a seal between the filter pack and the cement grout.

The deeper wells (approximately 35 and 55 feet deep) shall be fitted with centralizers constructed of PVC. If different material is proposed, it must be approved by the DISTRICT prior to commencement of fieldwork. The centralizers will be spaced about every 20 feet beginning one (1) foot above the top of the screen. All centralizers are to be oriented the same to allow the use of the tremie pipe within the annulus. As stated in Section 3.4, all centralizers, well risers, and well screens shall be steam cleaned, and disposable latex gloves shall be worn at all times during the cleaning, well construction, and installation process.

4.5 Cement Grouting

All work performed shall conform to State of Florida well drilling practices and to AWWA standards. The CONTRACTOR shall be responsible for calculating volumes pumped during grouting operations. The DISTRICT geologist will review methods and volumes prior to commencement of pumping neat cement grout. The method used must completely fill grout from the bottom of the annular space to land surface. If more than one (1) stage of cement is required, a minimum of eight (8) hours setting time is required between successive cement lifts. All subsequent cement lifts shall be tagged by the tremie method prior to installing an additional stage.

4.6 Wellhead Completion

All wellheads shall be completed above grade to facilitate installation of monitoring and telemetry equipment. The 2-inch PVC well casing shall extend four feet above ground surface and be encased in 8-inch gray (UV resistant) Schedule 80 PVC that extends 3.5 feet above land surface. The 8-inch PVC casing shall be grouted in place in an approximate 12-inch diameter borehole to a depth of approximately four feet below land surface. The annular space between the 8-inch and 2-inch PVC casings shall be filled with grout from the bottom of the 8-inch PVC casing to approximately 8 inches below the top of the 8-inch PVC casing (above land surface). Half-inch holes will be drilled in the 8-inch casing just above the top of the grout for drainage. All casings must be absolutely straight and plumb. The CONTRACTOR shall construct a three foot by three foot by six inch thick wellpad at each well. The well pad shall have ASTM A615, Grade 60, #5 (5/8-inch diameter) reinforcing bar. Spacing of such bars shall be at every 12 inches starting 6 inches from the edge of the well pad form. The bars shall be placed at 90 degrees to each other and attached to each other prior to pouring of the cement pad. The bars shall be elevated from the bottom by at least 4 inches**. Figure 3** is a schematic of the wellhead configuration, and **Figure 4** is a photograph of similarly completed wellheads.

4.7 Well Development

The DISTRICT requires all monitor wells to be developed by over pumping with a centrifugal pump until all visible particulate matter has been removed from the formation. The CONTRACTOR shall furnish all equipment, pumps, oil/water separators for use on the compressors, piping, and appurtenances required to successfully develop each well. When the final cement lift has had time to set (at least 8 hours), the well shall be developed until the water becomes clear or water quality field parameters become stable. At a minimum, the well shall be developed for one hour. Development water may discharge onto the ground if the water is determined to have a specific conductance of less than 1,275 uS/cm.

V. WELL ABANDONMENT

Should a borehole or well be determined by the DISTRICT geologist to be unacceptable, the CONTRACTOR shall abandon the hole by grouting the hole from bottom to surface, following DISTRICT well abandonment methods. A well may be declared unacceptable due to the CONTRACTOR's failure to complete the drilling, incorrect casing placement, a lost tool, or for any other CONTRACTOR failures to complete the well in a satisfactory manner. Under these circumstances, no payment will be made to the CONTRACTOR for the well abandonment operations and the CONTRACTOR must provide a new well, meeting the original specifications, at no additional cost to the DISTRICT.

VI. STANDBY TIME

During the normal progression of work, the CONTRACTOR will be authorized standby time when it is necessary for DISTRICT personnel to perform work or conduct tests that are not specified in the Contract, such as the optical borehole imaging. The CONTRACTOR will be notified in advance and the amount of time authorized will be mutually agreed upon and noted on the CONTRACTOR's daily logs.

VII. PAYMENT SCHEDULE

Payment will be remitted after completion and acceptance of all deliverables in accordance with this SOW.

Item Description	Estimated Quantity	Unit	Unit Price	Extended Price
1. Mobilization and demobilization.	1	Lump Sum		
2. Seven shallow (15 foot deep) monitor wells. Cost includes well screen, well casing, filter pack, bentonite, cement,well pad, and well development.	105	Linear Foot		
3. Four deep (35 to 55 foot deep) monitor wells. Cost includes well screen, well casing and centralizers, filter pack, bentonite, cement, well pad, and well development.	180	Linear Foot		
4. Standby Time	8	Hour		
TOTAL				

Estimated time to complete well construction	Days After Purchase Order Award	

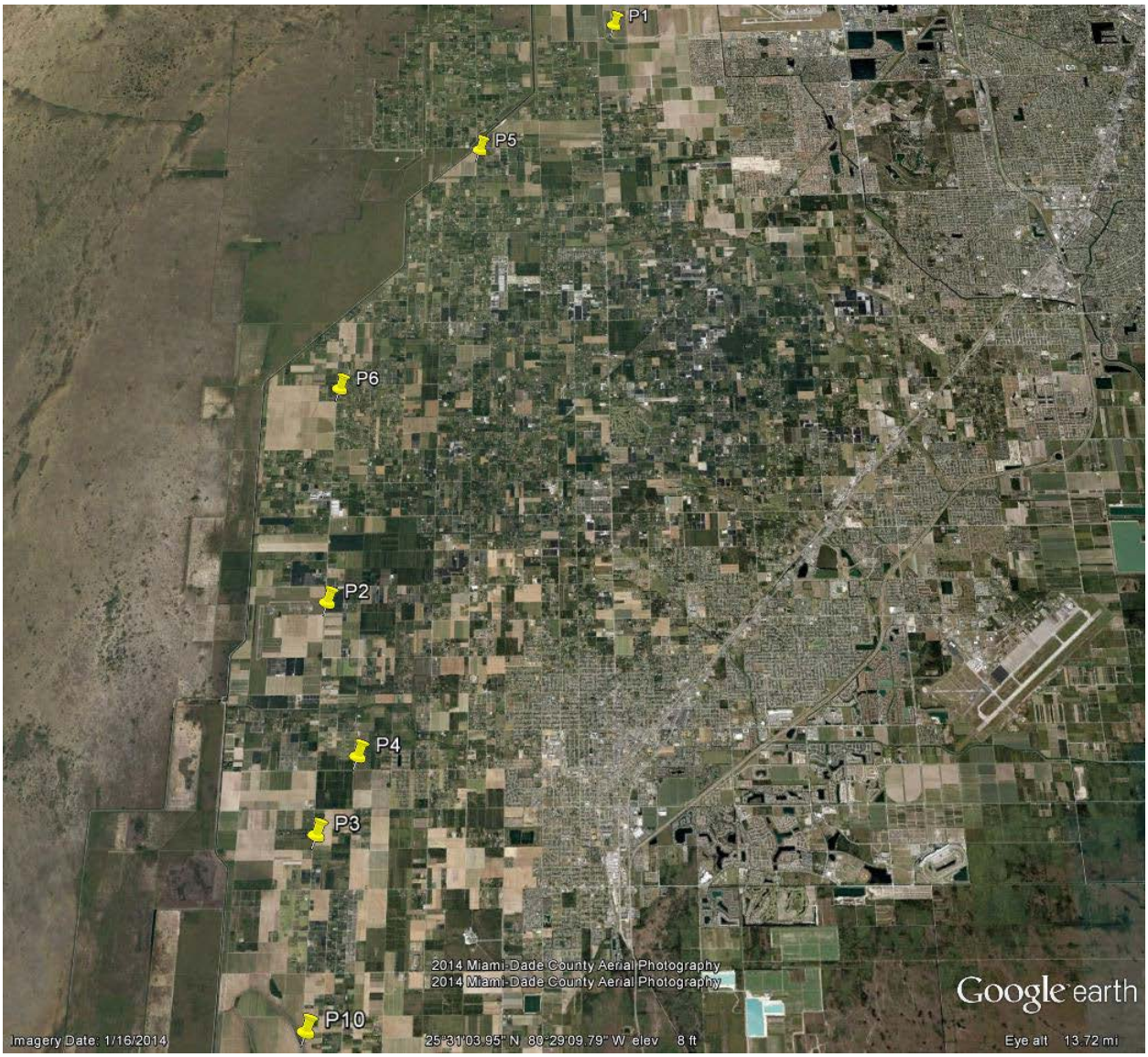


Figure 1. General Location of Project ("Pins" denote drilling locations)

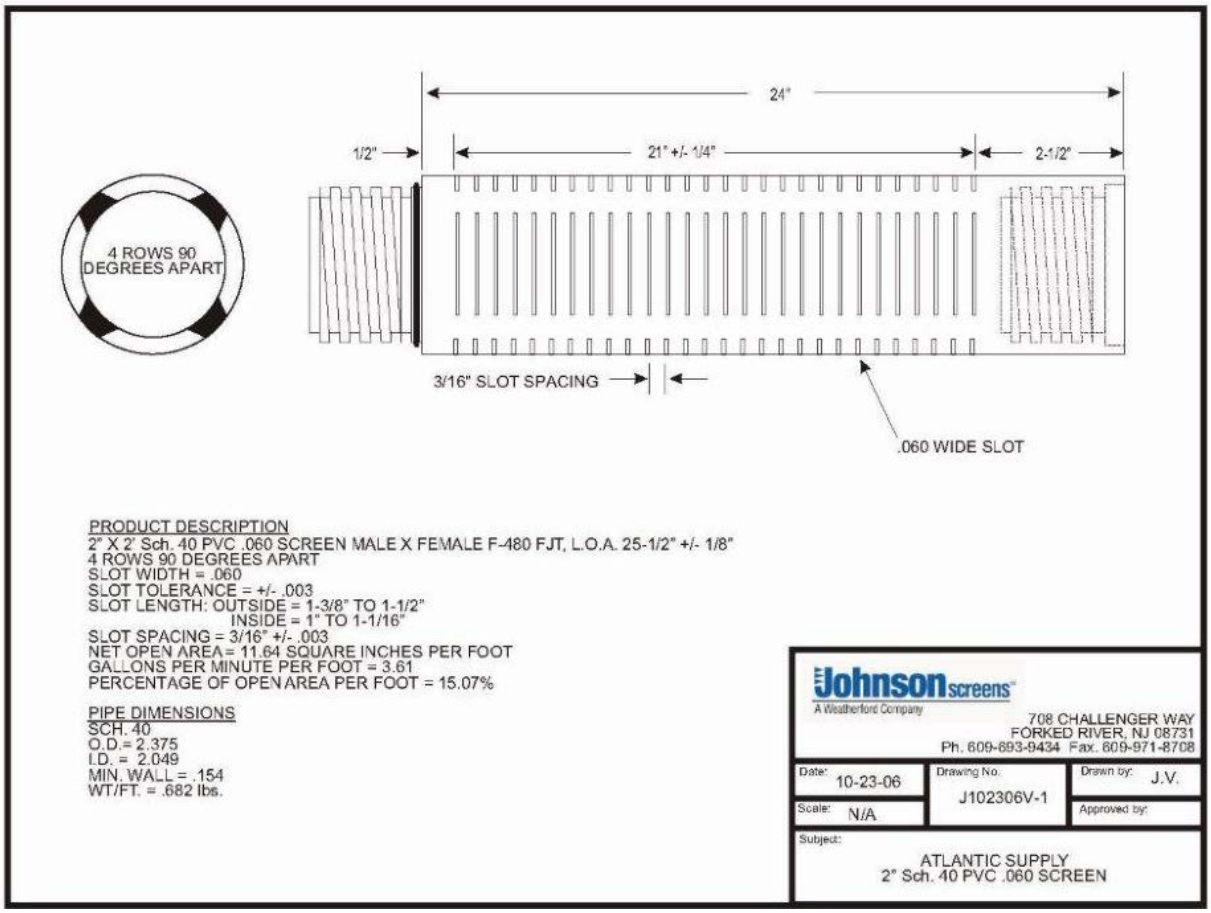


Figure 2. Sample Well Screen Specification

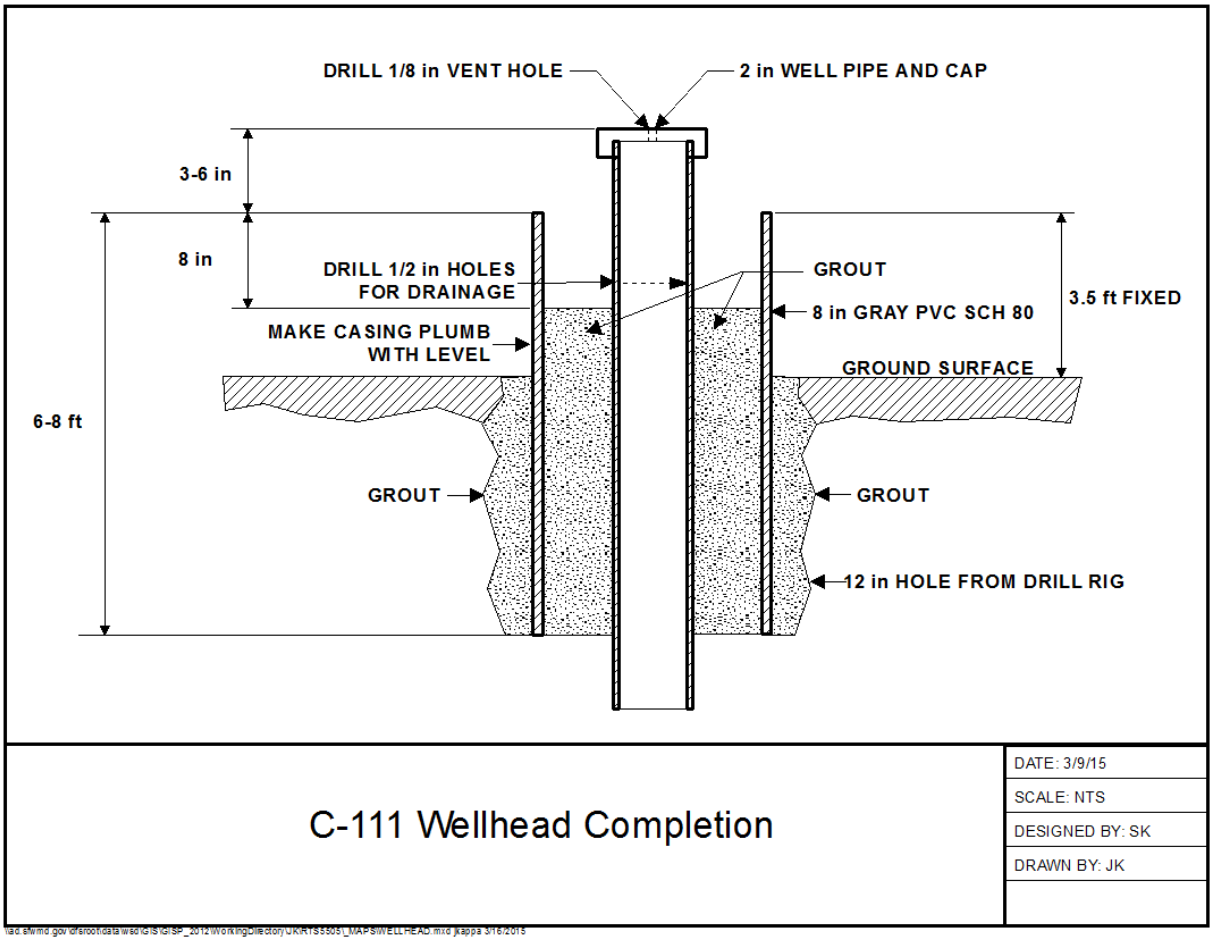


Figure 3. Wellhead Completion Details

Figure 4. Photograph of Similar Well Completions (with Protective Bollards)

APPENDIX B
FIELD DRILLING LOGS (TRANSCRIBED)

TRANSCRIBED FIELD (DRILLING) NOTES

L31/South Dade Project

Driller: GFA International/Brian McCord

L31NW03-GW (P3, three wells, Mani Field)

Driller is going to try to use augers starting with 15-foot well. Will use augers to drill all three wells if it works. If not, he will try mud rotary. Property owner moved well location from south side of property to north side of property (along access road).

6/1/2016

Started drilling at 10:05 a.m.

Reached 15 feet at 10:22.

Last two or three feet returned no cuttings to surface – cuttings going out into voids or sand filled cavities in formation.

Flushed out augers – got sample from bottom of hole (sandy white limestone) – also got sample from mid-depth in hole.

Well finished with five feet of 0.060 screen and ¼ inch gravel pack.

Sample depths:

7-8, 15 ft

*****

Started drilling second well at 11:00 a.m.

No samples from first auger.

Sample obtained from middle of second auger.

Drilling got harder in third auger about 13 feet – no samples.

Fourth auger – alternating smooth drilling and chatter – no samples.

Fifth auger – chatter at 20-23 feet, smooth drilling 23-25 feet, no samples.

Sixth auger – mostly smooth drilling, some minor chatter.

Seventh (last) auger – mostly smooth drilling, finished drilling at 11_25 a.m.

Obtained bottom hole sample from GW2 (35 feet) when driller washed out auger stem prior to installing screen.

Got tremie line and well casing stuck – raising out through screen and pulling on augers to get loose – successful when augers pulled up about two feet. Well screen now hitting an obstruction preventing it from reaching the bottom of the hole. Pulled out screen and casing and re-augered last five feet or so of hole running steel tremie into augers. Washed out auger stem again. Successful installation of screen this time.

However, bits on auger were bent, so no more drilling today. Finished well pack and developed first two wells. Bringing welder out to site tomorrow to repair bit. Departed site about 12:30 p.m.

Sample depths:

7-8, 35 (augers), 35 (wash)

6/2/2016

Arrived on site ~8:30 a.m. Drillers on site developing well, filling water tank, and fixing auger bit. Started drilling GW3 (55 footer) at 9:30 a.m.

1st auger – samples from 2-3 feet and bottom (5 ft).

2nd auger – samples at 6-7 feet, no returns after that

3rd auger – light/moderate chatter, more chatter at 13 feet.

4th auger – light chatter, no returns

5th auger – light/moderate chatter, no returns

6th auger – a little smoother

7th auger – still smooth driller, more smooth near bottom (35 ft).

8th auger – more chatter, a little slower advance, a lot more chatter and slower stating at 36 feet, slowed rotation at 37 feet, very hard layer, broke through to softer layer at 38 feet, then fairly smooth to 40 feet.

9th auger – first two feet smooth (40-42 ft), last 3 feet moderate chatter (42-43 ft), very smooth to bottom (45 ft).

10th auger – light/moderate chatter, smoother with depth to 50 feet.

11th auger – hard layer at 50 feet, then smooth/light chatter to 51 feet, very smooth to total depth (55 feet) reached at 10:35 a.m. Dropped tremie pipe into auger string at 11:00, small sample from washing out hole, set bottom of screen at ~53.5 feet (couldn't advance screen deeper). Departed site approximately 12:30 p.m., drillers remained to complete well, pour pads, and clean up site.

Sample depths: 3, 5, 6, 7, 55 ft (wash)

6/3/2016

Site P6 (Mani house, Laura Mani on site to witness drilling)

Started drilling at 9:35 a.m.

Smooth drilling, minor chatter to total depth (15 feet) reached at 9:45 a.m.

Sample depths: 2, 3, 7 ft

7/5/2016

Homestead General Aviation Airport

Driller: Marcos (GFA International)

Started drilling with augers at 12:05 p.m.

0-5 Chalky sandy white limestone chunks

5-10 Mostly same, a little gooier

10-15 No returns, smooth drilling

15-20 Same (smooth)

20-25 A little chatter, no returns

25-30 More chatter, slower drilling

30-35 Very slow drilling at start of rod, pulled out augers, tried another bit to get through the hard layer. Failed, decided to make this the 15-ft well as holed caved back to 20 feet when augers removed. Installed 5 feet of bentonite pellets to backfill to 15 feet, set 5 feet of screen and 10 feet of casing. Departed site at 2:00 p.m.

7/6/2016

Arrived on site approximately 8:45 a.m. Moved rig to center site to drill 35 foot well with smaller diameter augers. Started drilling at 9:20 a.m. Didn't have all the parts needed for smaller augers, so switched back to larger augers.

0-5 Dry sample (not saved), drilled five feet in about one minute.

5-10 Same as well 1, quick smooth drilling

10-15 Some moderate chatter last 2-3 feet

15-20 Moderate chatter first foot, smooth and quick to 20 feet

20-25 Light to moderate chatter all the way down

25-30 Harder drilling, more chatter, very hard layer at 26 feet, softer to 29 feet, last foot very hard, couldn't get through, decided to core, done for the day.

7/7/2016

Arrived on site at 8:45 a.m., driller brought another rig to pump water from 15 foot well to support coring for final few feet of 35 foot well and 55 foot well. Started by reaming 35 foot well to allow installation of surface casing.

Started reaming at 9:15, reamed out 3 feet for 8-inch casing. Started assembling core tubes in drilled hole at 8:45. Not finding samples in core barrel – problem with water circulation or pressure – Called Brian around 11:00 a.m. to see if it can be adjusted properly. Got water circulating – advanced core barrel 5 feet or so – inner core barrel stuck at 11:45. No samples at 29 feet. Still not getting enough water to bottom of hole – barrel overheating – trip out to look at bit at 12:15 – core barrel plugged and bit very hot – called Brian McCord again at 12:20. Done for day – will return to have Brian drill out next week or later – crew will pad out shallow well today.

7/19/2016

Arrived at site at 9:15, drillers arrived 9:40 for next attempt at 35 foot well.

Set up for rotary/tri-cone bit to try to get through the hard layer. Mixed mud and ran into hole at 10:20. Tagged bottom at ~18 feet – hole filled in after being open for ~two weeks – almost emptied mud box cleaning out hole to 28 feet (extent of previous drilling attempt). Mixed some more mud, resumed drilling at 28 feet at 10:40.

1st sample – just white and gray limestone – got a little softer and grayer after 32 feet (no samples). Kept going after 35 feet – lost circulation at 37 feet, drilled to 40 feet, stopped and mixed more mud. Quick drilling from 40 to 50 feet and 50 to 55 feet (noon), overdrilled hole to 60 feet – last 4 to 5 feet mostly smooth. This well to become 55 foot well, finished with .030 slot screen because of sand content at bottom of well. Twice as many slots, so same amount of screen opening as .060 slot size. Will return later to construct 35 foot well.

****

SAMPLE DESCRIPTIONS

Homestead Airport 35 well (actually drilled deeper)

0-28 No samples

28-30 White and gray limestone (80% white), white is sandier than gray

30-32 Same

32-35 Higher gray limestone content (35%), otherwise same

35-37 Almost all white limestone (95%+)

37-40 Same

40-45 Same, cleaner sample

45-50 Same

50-55 Same

Homestead Airport "Last"

0-5 White/Cream Sandy Limestone

5-10 Same

10-15 Same

15-20 Same

20-25 Same

25-30 No samples

30-35 No samples

Homestead Airport "Deep" (turned out to be shallow)

0-5 Very White fine sandy limestone

5-10 Fine sand/a little white limestone

P3 GW3 (Mani Field)

3 White chalk/silt

5 Same

6 Same

7 A little sandier and darker

8-55 No samples

55 (wash) Mostly white sandy limestone <5% gray

P3 GW2

0-7 No samples

7-8 Dirty white chalk/silt/a little limestone

8-35 No samples

35 (wash) Creamy white sandy limestone

35 (augers) White sandy silty limestone

P3 GW1

0-7 no samples

7-8 Dirty white sandy limestone

8-15 No samples

15 White sandy limestone

P6 GW1

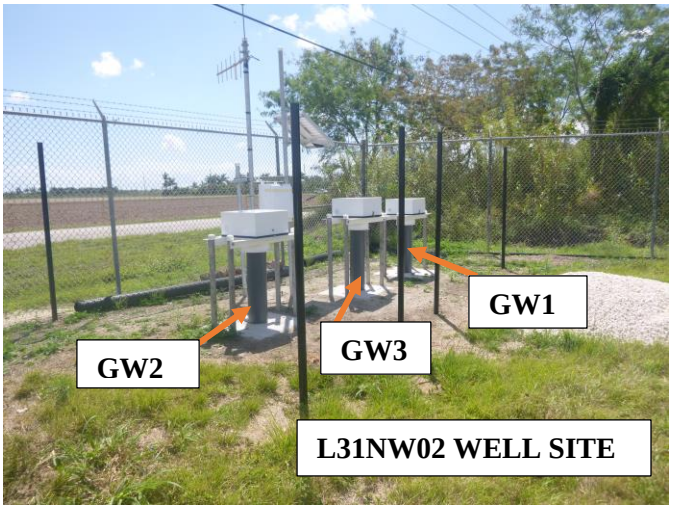
3 Dirty white sandy limestone

7 Dirtier white sandy silty limestone

APPENDIX C
SURVEY REPORT

SPECIFIC PURPOSE SURVEY
C111 IFAS GW WELL REPORT
REFERENCE ELEVATION

April, 2017



SOUTH FLORIDA WATER MANAGEMENT DISTRICT
SURVEY SECTION
3301 Gun Club Road West Palm Beach, Florida 33406
Phone: 561.686.8800 Fax: 561.682.0066

TABLE OF CONTENTS

Surveyor's Report

Report Date: 4/13/17

Submittal: Final

Prepared for: Brenda Mills & Hydrogeology – Linda Lindstrom

South Florida Water Management District

South Florida Water Management District
SURVEY SECTION
3301 Gun Club Road West Palm Beach, Florida
33406 Phone; 561.686.8800 Fax: 561.682.0066

OVERVIEW OF THE PROJECT

PURPOSE

The purpose of this Survey is to establish Reference Elevation for Groundwater wells monitored by the South Florida Water Management District (SFWMD). Third order elevations referring to both the North American Vertical Datum of 1988 (NAVD88) and the National Geodetic Vertical Datum of 1929 (NGVD29). NGVD 29 elevation shall be based on offset from NAVD 88 using USACE Corpscon 6.0.1.

Location of Project

The project is located in Miami/Dade County, Florida. Following is a map of Location.

General Location (Not to Scale)

VERTICAL DATUM FOR THE PROJECT

The vertical datum for the project is the North American Vertical Datum of 1988. For correlation with older data sets, the elevations of the benchmarks are also shown in the National Geodetic Vertical Datum (NGVD) of 1929. The NGVD 29 elevations were derived using data from published NGS superseded values when applicable, otherwise values provided by the South Florida Water Management District in a file named "NGVD29.txt" were used. The linear unit for all elevations is the U.S. survey feet unless otherwise stated.

LEVELING METHODS

CONFIGURATION OF LEVEL RUNS

The leveling for the project was performed in accordance with the Federal Geodetic Control Subcommittee standard for Second-Order, Class II geodetic leveling. A brief description of the procedures used is as follows. The run was started at one of the First or Second Order marks and continued through the Site Benchmark (Found or Established) at the well and closed on the original or additional First or Second Order NGS vertical mark. (See Figure 1. below).

For each well site, a closed loop was run from an established Third Order vertical mark and a Site Benchmark established.

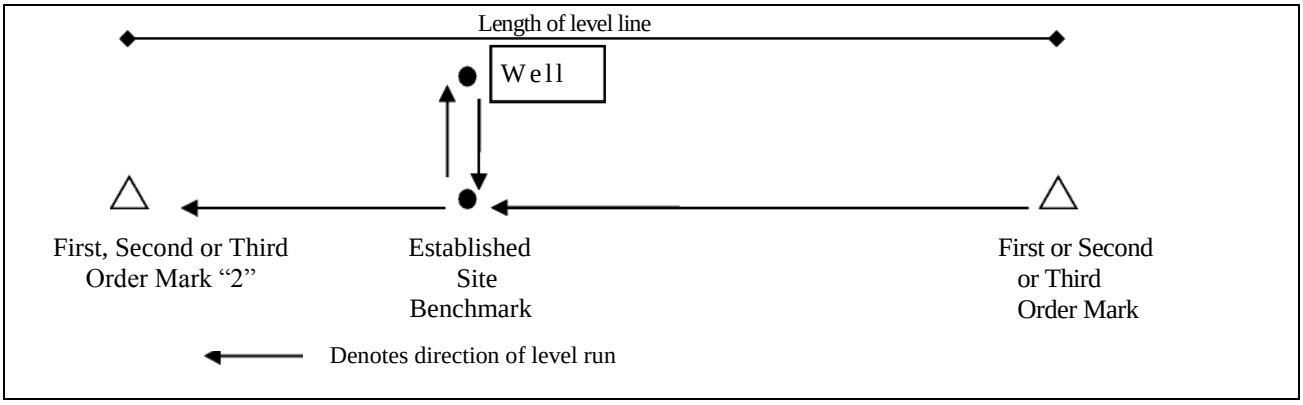


Figure 1 Typical Level Run Pattern

The FGCS maximum allowable misclosure for this type of run is 0.03' multiplied by the square root of the length of the line in miles.

EQUIPMENT USED

All leveling was performed with a Topcon Digital and Topcon A2G2 Levels.

INTRODUCTION

The following instrument was used for GPS observations:

(1) Garmin GPS Map 78.

BENCHMARKS USED

Description	X, (Easting) 83/86 Coordinates	Y, (Northing) 83/86 Coordinates	Latitude	Longitude
BM J-477-R	806857	442404	25 33 00	80 32 34.5
BM MB-44	807114	421195	25 29 29.9	80 32 32.5
BM P-532	807246	410471	25 27 43.7	80 32 31.5
BM J-500	807387	399949	25 25 59.5	80 32 30.4

CONTROL BENCHMARK

Vertical Control Points
J-477-R IS NEW

Name:J-477-R

Elev(NGVD29): 7.88
Elev(NAVD88): 6.36
Northing: 442,404
Easting: 806,857

Location1:
SW 232 ST --- 14' NORTH OF PROJECTED C/L FROM THE EAST
Location2:
SW 217 AVE --- 12' WEST OF PROJECTED C/L FROM THE SOUTH
Location3:

Description1: 1/2" IP 0.7' BELOW ASPHALT.
Description2:

Field Book: 612-64
Zones:
Circuit: DA-132-B-R
Set Date: 03-19-2011
Locator:6843
Last-Check: 12-09-2009
Adjustment:
Adjustment-Date: 03-19-2011
Status:NEW


J-477-R

Vertical Control Points
MB-44 IS EXISTING

Name:MB-44

Elev(NGVD29): 8.33
Elev(NAVD88): 6.81
Northing: 421,195
Easting: 807,114

Location1:
SW 296 ST --- 92.5' NORTH OF C/L
Location2:
SW 217 AVE --- 16.0' EAST OF C/L
Location3:

Description1: BRASS BAR IN CONC MON.
Description2:

Field Book: 431-04
Zones: V
Circuit: 620.622
Set Date:
Locator:7841
Last-Check: 02-23-2012
Adjustment:
Adjustment-Date: 03-09-2011
Status:EXISTING


MB44

Vertical Control Points
P-532 IS EXISTING

Name:P-532

Elev(NGVD29): 8.18
Elev(NAVD88): 6.67
Northing: 410,471
Easting: 807,246

Location1:
SW 328 ST --- 2' NORTH OF C/L
Location2:
SW 217 AVE --- ON C/L
Location3:

Description1: PK NAIL AND BRASS WASHER ON THE EXISTING SEC COR MON IN INTERSECTION.
Description2:

Field Book: 529-21
Zones: V
Circuit: 558
Set Date:
Locator:7843
Last-Check: 02-21-2012
Adjustment:
Adjustment-Date: 03-09-2011
Status:EXISTING


P532

Vertical Control Points
J-500 IS CHANGED

Name:J-500

Elev(NGVD29): 6.74
Elev(NAVD88): 5.23
Northing: 399,949
Easting: 807,387

Location1:
SW 360 ST --- 82' NORTH OF C/L
Location2:
SW 217 AVE --- 15' EAST OF C/L
Location3:

Description1: BRASS BAR IN CONC MON.
Description2:

Field Book: 431-02
Zones: V
Circuit: 560,596,605
Set Date: 08-19-2007
Locator:7845
Last-Check: 02-16-2012
Adjustment:
Adjustment-Date: 03-09-2011
Status:CHANGED


J500

PROJECT RESULTS

The following tables list the elevations established for each existing or new mark, the level run misclosure, "to-reach" description for each mark and a photo of the mark. All elevations and coordinates are in US Survey Feet.

SURVEYOR'S REPORT
VERTICAL CONTROL
WELL - L31NW06

BM J-477-R	Elevation:	**6.36ft**	(NAVD 88)	7.88 ft.	(NGVD 29)
Site BM	**L31NW06**	**6.24 ft.**	(NAVD 88)	**7.81ft**	(NGVD 29)
Reference Elevation		9.72ft	(NAVD 88)	11.29ft	(NGVD 29)
Top of Well Pad Elevation		6.22ft	(NAVD 88)	7.79ft	(NGVD 29)
Ground Elevation		6.3ft	(NAVD 88)	7.9ft	(NGVD 29)
Length of Run:	.40 mi				
Max Allowable Misclosure:	0.00 ft				
Actual Misclosure:	0.00 ft				

To Reach WELL L31NW06:

TO REACH the Mark and Site from the intersection of SW 232 St and SW 217 Ave. Go South on 217 Ave for 0.25 mile to the North Side of a farm field and fence line. Go west on North side of farm field (South fence line) for 0.14 mile to Well Site and Mark. Well is inside Wooden enclosure with gate. Mark is SFWMD Alum Disk set in Concrete base for Well and Stamped "BM L31NW06 2017".

L31NW06 WELLSITE

Benchmark set at wellsite for well **L31NW06**

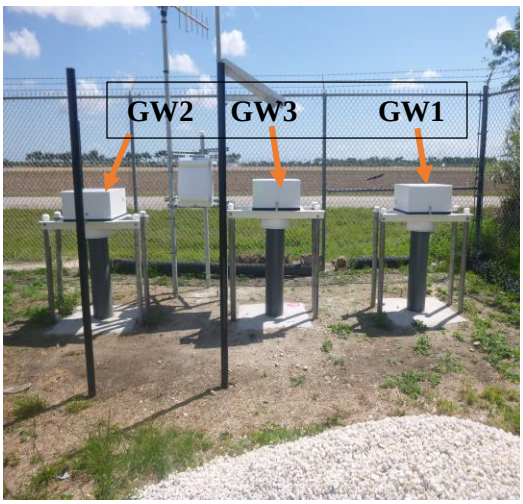
SURVEYOR'S REPORT
VERTICAL CONTROL
WELL - L31NW02 GW1

BM MB44	Elevation:	**6.81ft**	(NAVD 88)	8.35ft	(NGVD 29)
Site BM	**L31NW02**	**7.04 ft.**	(NAVD 88)	**8.58ft**	(NGVD 29)
Reference Elevation		10.56ft	(NAVD 88)	12.10ft	(NGVD 29)
Top of Well Pad Elevation		6.97ft	(NAVD 88)	8.51ft	(NGVD 29)
Ground Elevation		6.9ft	(NAVD 88)	8.4ft	(NGVD 29)

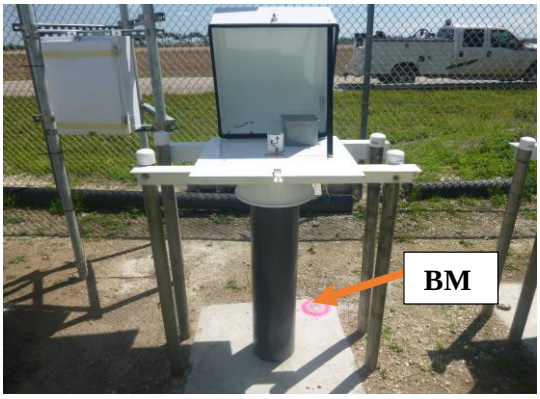
Length of Run:	.05 mi
Max Allowable Misclosure:	0.00 ft
Actual Misclosure:	0.00 ft

To Reach WELL L31NW02:

TO REACH the Mark and Site from the intersection of SW 296 St. (Avocado) and SW 217 Ave. go North on SW 217 Ave for 450 feet. Site is located inside chain link fence enclosure for the Airport. (For Access go North on SW 217th Ave to Main Airport entrance. Enter and go 125ft +/- to the end of fence. Make U turn to get on inside of fence and follow fence line back to Site). Mark is SFWMD Alum Disk set in Concrete Base for GW3 (Middle Well) and Stamped: BM L31NW02 2017.



L31NW02 WELLSITE



Benchmark Set at wellsite for wells **L31NW02 – GW1, GW2 and GW3.**

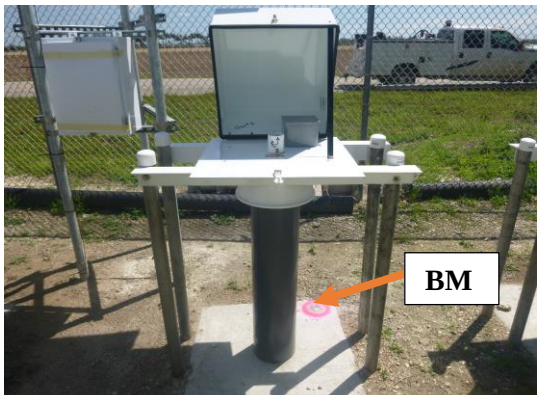
SURVEYOR'S REPORT
VERTICAL CONTROL
WELL - L31NW02 GW2

BM MB44	Elevation:	**6.81ft**	(NAVD 88)	8.35ft	(NGVD 29)
Site BM	**L31NW02**	**7.04 ft.**	(NAVD 88)	**8.58ft**	(NGVD 29)
Reference Elevation		10.45ft	(NAVD 88)	11.99ft	(NGVD 29)
Top of Well Pad Elevation		6.97ft	(NAVD 88)	8.51ft	(NGVD 29)
Ground Elevation		6.8ft	(NAVD 88)	8.3ft	(NGVD 29)
Length of Run:	.05 mi				
Max Allowable Misclosure:	0.00 ft				
Actual Misclosure:	0.00 ft				

To Reach WELL L31NW02:

TO REACH the Mark and Site from the intersection of SW 296 St. (Avocado) and SW 217 Ave. go North on SW 217 Ave for 450 feet. Site is located inside chain link fence enclosure for the Airport. (For Access go North on SW 217th Ave to Main Airport entrance. Enter and go 125ft +/- to the end of fence. Make U turn to get on inside of fence and follow fence line back to Site). Mark is SFWMD Alum Disk set in Concrete Base for GW3 (Middle Well) and Stamped: BM L31NW02 2017.

L31NW02 WELLSITE



Benchmark Set at wellsite for wells **L31NW02 – GW1, GW2 and GW3.**

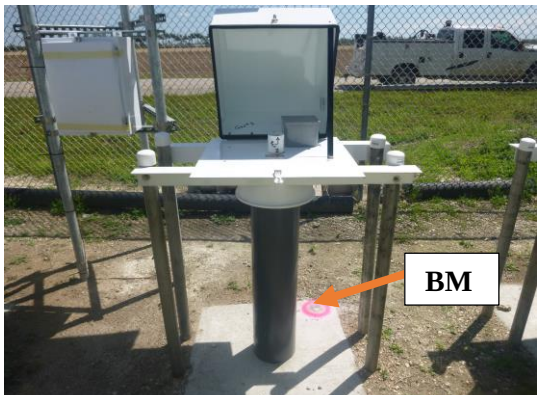
SURVEYOR'S REPORT
VERTICAL CONTROL
WELL - L31NW02 GW3

BM MB44	Elevation:	**6.81ft**	(NAVD 88)	8.35ft	(NGVD 29)
Site BM	**L31NW02**	**7.04 ft.**	(NAVD 88)	**8.58ft**	(NGVD 29)
Reference Elevation		10.73ft	(NAVD 88)	12.27ft	(NGVD 29)
Top of Well Pad Elevation		7.03ft	(NAVD 88)	8.57ft	(NGVD 29)
Ground Elevation		7.0ft	(NAVD 88)	8.5ft	(NGVD 29)
Length of Run:	.05 mi				
Max Allowable Misclosure:	0.00 ft				
Actual Misclosure:	0.00 ft				

To Reach WELL L31NW02:

TO REACH the Mark and Site from the intersection of SW 296 St. (Avocado) and SW 217 Ave. go North on SW 217 Ave for 450 feet. Site is located inside chain link fence enclosure for the Airport. (For Access go North on SW 217th Ave to Main Airport entrance. Enter and go 125ft +/- to the end of fence. Make U turn to get on inside of fence and follow fence line back to Site). Mark is SFWMD Alum Disk set in Concrete Base for GW3 (Middle Well) and Stamped: BM L31NW02 2017.

L31NW02 WELLSITE



Benchmark Set at wellsite for wells **L31NW02 – GW1, GW2 and GW3.**

SURVEYOR'S REPORT
VERTICAL CONTROL
WELL - L31NW03 GW1

BM P-532	Elevation:	**6.67ft**	(NAVD 88)	8.22ft	(NGVD 29)
Site BM	**L31NW03**	**6.89 ft.**	(NAVD 88)	**8.44ft**	(NGVD 29)
Reference Elevation		10.68ft	(NAVD 88)	12.23ft	(NGVD 29)
Top of Well Pad Elevation		6.89ft	(NAVD 88)	8.44ft	(NGVD 29)
Ground Elevation		6.9ft	(NAVD 88)	8.5ft	(NGVD 29)
Length of Run:	.05 mi				
Max Allowable Misclosure:	0.00 ft				
Actual Misclosure:	0.00 ft				

To Reach WELL L31NW03:

TO REACH the Mark and Site from the intersection of SW 328 St. and SW 217 Ave. go South on SW 217 Ave for 0.5ml. To a Shell Rock Rd on Left (SW 336 St.) Make Left and go 0.13ml to Well Site and BM. Mark is SFWMD Alum Disk set in Concrete Base for GW1 (North Well) and Stamped: BM L31NW03 2017.

L31NW03 WELLSITE

Benchmark Set at wellsite for wells **L31NW03 – GW1, GW2 and GW3.**

SURVEYOR'S REPORT
VERTICAL CONTROL
WELL - L31NW03 GW2

BM P-532	Elevation:	**6.67ft**	(NAVD 88)	8.22ft	(NGVD 29)
Site BM	**L31NW03**	**6.89 ft.**	(NAVD 88)	**8.44ft**	(NGVD 29)
Reference Elevation		10.41ft	(NAVD 88)	11.96ft	(NGVD 29)
Top of Well Pad Elevation		6.72ft	(NAVD 88)	8.27ft	(NGVD 29)
Ground Elevation		6.7ft	(NAVD 88)	8.2ft	(NGVD 29)

Length of Run:	.05 mi
Max Allowable Misclosure:	0.00 ft
Actual Misclosure:	0.00 ft

To Reach WELL L31NW03:

TO REACH the Mark and Site from the intersection of SW 328 St. and SW 217 Ave. go South on SW 217 Ave for 0.5ml. To a Shell Rock Rd on Left (SW 336 St.) Make Left and go 0.13ml to Well Site and BM. Mark is SFWMD Alum Disk set in Concrete Base for GW1 (North Well) and Stamped: BM L31NW03 2017.

L31NW03 WELLSITE

Benchmark Set at wellsite for wells **L31NW03 – GW1, GW2 and GW3.**

SURVEYOR'S REPORT
VERTICAL CONTROL
WELL - L31NW03 GW3

BM P-532	Elevation:	**6.67ft**	(NAVD 88)	8.22ft	(NGVD 29)
Site BM	**L31NW03**	**6.89 ft.**	(NAVD 88)	**8.44ft**	(NGVD 29)
Reference Elevation		10.27ft	(NAVD 88)	11.82ft	(NGVD 29)
Top of Well Pad Elevation		6.44ft	(NAVD 88)	7.99ft	(NGVD 29)
Ground Elevation		6.5ft	(NAVD 88)	8.0ft	(NGVD 29)
Length of Run:	.05 mi				
Max Allowable Misclosure:	0.00 ft				
Actual Misclosure:	0.00 ft				

To Reach WELL L31NW03:

TO REACH the Mark and Site from the intersection of SW 328 St. and SW 217 Ave. go South on SW 217 Ave for 0.5ml. To a Shell Rock Rd on Left (SW 336 St.) Make Left and go 0.13ml to Well Site and BM. Mark is SFWMD Alum Disk set in Concrete Base for GW1 (North Well) and Stamped: BM L31NW03 2017.

L31NW03 WELLSITE

Benchmark Set at wellsite for wells **L31NW03 – GW1, GW2 and GW3.**

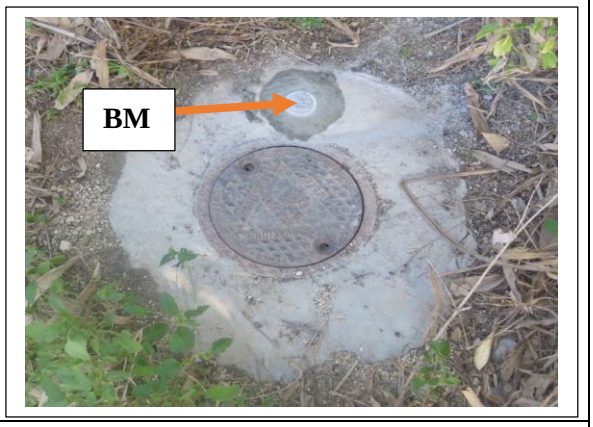
SURVEYOR'S REPORT
VERTICAL CONTROL
WELL – C111W11 GW

BM J-500	Elevation:	**5.23ft**	(NAVD 88)	6.79ft	(NGVD 29)
Site BM	**C111W11**	**5.03 ft.**	(NAVD 88)	**6.59ft**	(NGVD 29)
Reference Elevation (Well A & B)		4.537ft	(NAVD 88)	6.097ft	(NGVD 29)
Top of Well Pad Elevation		5.00ft	(NAVD 88)	6.56ft	(NGVD 29)
Ground Elevation		5.0ft	(NAVD 88)	6.6ft	(NGVD 29)
Length of Run:	.13 mi				
Max Allowable Misclosure:	0.00 ft				
Actual Misclosure:	0.00 ft				

To Reach WELL C111W11 GW:

TO REACH the Mark and Site from the intersection of SW 360 St. and SW 217 Ave. go West on SW 360 St for 0.13ml. (Shell Rock Rd) to Well Site and BM on the right. Mark is SFWMD Alum Disk set in Concrete Base for GW Well (Manhole Cover) and Stamped: BM C111W11 2017.

C111W11 GW WELLSITE



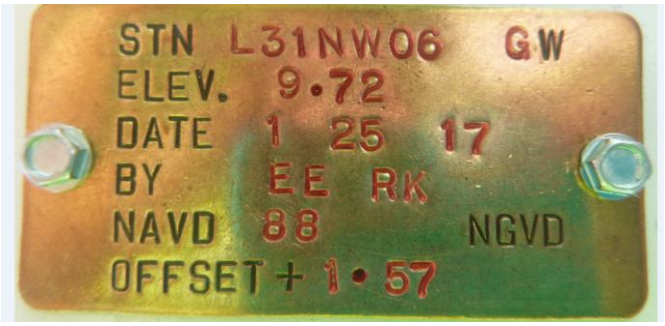
Benchmark Set at wellsite for well **C111W11 – GW**

SURVEYOR'S REPORT
PROJECT RESULTS
WELL L31NW06 GW

Site L31NW06 GW		**Date of Field Work** 1/25/17
Party Chief Ebanks/Kett	**Field Book Name/Number** **SCADA #12**	**Page Number(s)** Pg. 38
Site Benchmark Name L31NW06 2017	**Benchmark Elev. (NAVD 88)** 6.24ft	**Datum Offset to NGVD29** +1.57
Reference Elevation (NAVD 88) 9.72ft		**Existing Tag Elevation (Datum)** NA
Latitude **25° 32' 46.9"**		**Longitude** **80° 32' 42.3"**

Photographs

Overall Site	Benchmark Location	Benchmark Close Up
		

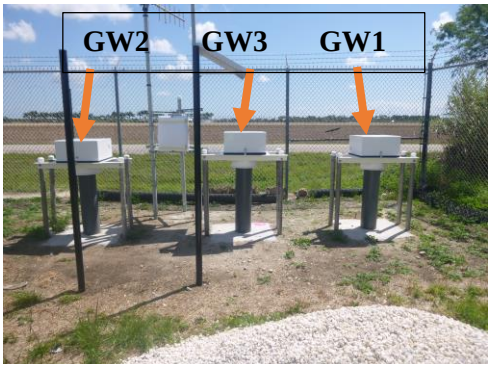
Brass Tag Close Up	Brass Tag + Reference Mark
	

SURVEYOR'S REPORT
PROJECT RESULTS
WELL L31NW02 GW1

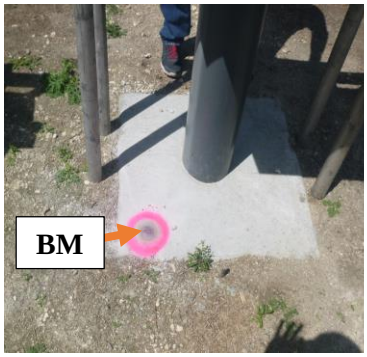
Site L31NW02 GW1		**Date of Field Work** 3/27/17
Party Chief Ebanks/Kett	**Field Book Name/Number** **SCADA #12**	**Page Number(s)** Pg. 45
Site Benchmark Name L31NW02 2017	**Benchmark Elev. (NAVD 88)** 7.04ft	**Datum Offset to** **NGVD29** +1.54
Reference Elevation (NAVD 88) 10.56ft		**Existing Tag Elevation (Datum)** NA
Latitude **25° 29' 33.5"**		**Longitude** **80° 32' 33.4"**

Photographs

Overall Site



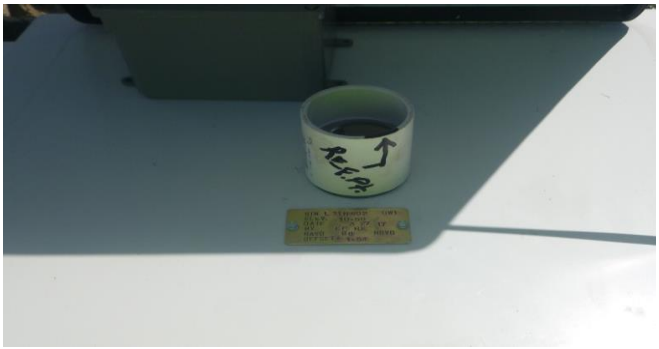
Benchmark Location



Benchmark Close Up

Brass Tag Close Up

Brass Tag + Reference Mark

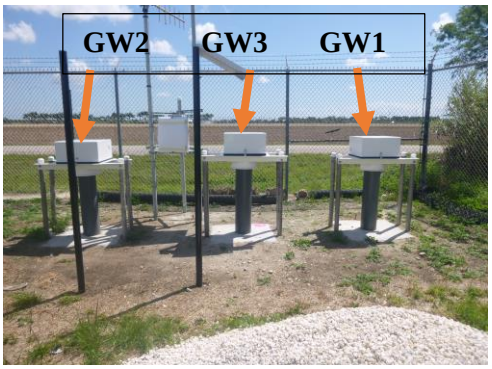


SURVEYOR'S REPORT
PROJECT RESULTS
WELL L31NW02 GW2

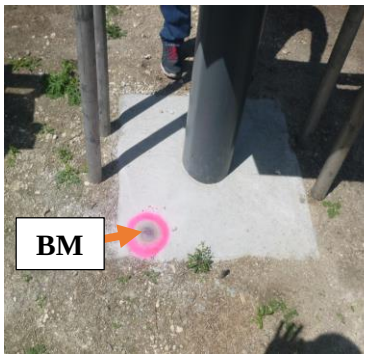
Site L31NW02 GW2		**Date of Field Work** 3/27/17
Party Chief Ebanks/Kett	**Field Book Name/Number** **SCADA #12**	**Page Number(s)** Pg. 45
Site Benchmark Name L31NW02 2017	**Benchmark Elev. (NAVD 88)** 7.04ft	**Datum Offset to** **NGVD29** +1.54
Reference Elevation (NAVD 88) 10.45ft		**Existing Tag Elevation (Datum)** NA
Latitude **25° 29' 33.5"**		**Longitude** **80° 32' 33.4"**

Photographs

Overall Site



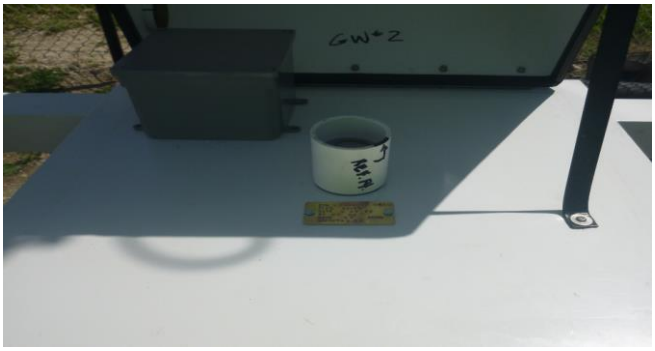
Benchmark Location



Benchmark Close Up

Brass Tag Close Up

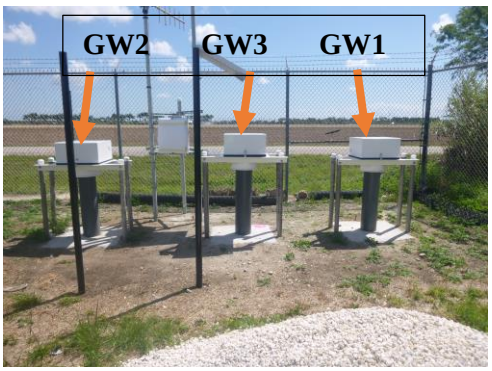
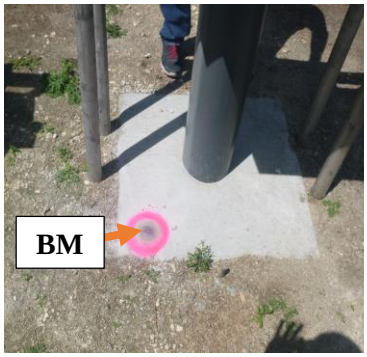
Brass Tag + Reference Mark

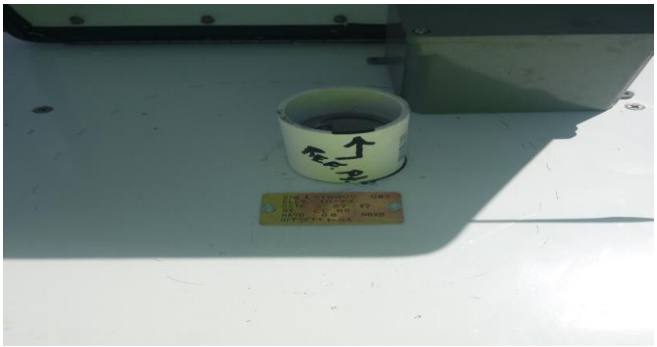


SURVEYOR'S REPORT
PROJECT RESULTS
WELL L31NW02 GW3

Site L31NW02 GW3		**Date of Field Work** 3/27/17
Party Chief Ebanks/Kett	**Field Book Name/Number** **SCADA #12**	**Page Number(s)** Pg. 45
Site Benchmark Name L31NW02 2017	**Benchmark Elev. (NAVD 88)** 7.04ft	**Datum Offset to** **NGVD29** +1.54
Reference Elevation (NAVD 88) 10.73ft		**Existing Tag Elevation (Datum)** NA
Latitude **25° 29' 33.5"**		**Longitude** **80° 32' 33.4"**

Photographs

Overall Site	Benchmark Location	Benchmark Close Up
		

Brass Tag Close Up	Brass Tag + Reference Mark
	

SURVEYOR'S REPORT
PROJECT RESULTS
WELL L31NW03 GW1

Site L31NW03 GW1		**Date of Field Work** 2/23/17 & 3/15/17
Party Chief Ebanks/Kett	**Field Book Name/Number** **SCADA #12**	**Page Number(s)** Pg. 41 & 44
Site Benchmark Name L31NW03 2017	**Benchmark Elev. (NAVD 88)** 6.89ft	**Datum Offset to NGVD29** +1.55
Reference Elevation (NAVD 88) 10.68ft		**Existing Tag Elevation (Datum)** NA
Latitude **25° 27' 17.5"**		**Longitude** **80° 32' 24.1"**

Photographs

Overall Site	Benchmark Location	Benchmark Close Up
		

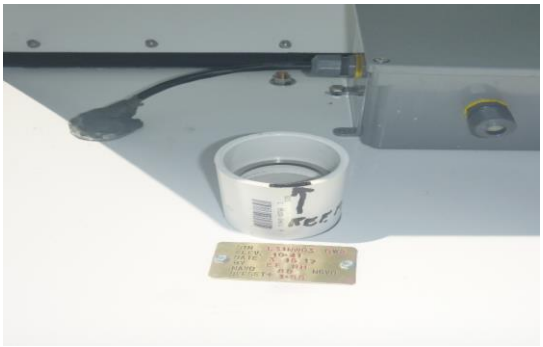
Brass Tag Close Up	Brass Tag + Reference Mark
	

SURVEYOR'S REPORT
PROJECT RESULTS
WELL L31NW03 GW2

Site L31NW03 GW2		**Date of Field Work** 2/23/17 & 3/15/17
Party Chief Ebanks/Kett	**Field Book Name/Number** **SCADA #12**	**Page Number(s)** Pg. 41 & 44
Site Benchmark Name L31NW03 2017	**Benchmark Elev. (NAVD 88)** 6.89ft	**Datum Offset to** **NGVD29** +1.55
Reference Elevation (NAVD 88) 10.41ft		**Existing Tag Elevation (Datum)** NA
Latitude **25° 27' 17.5"**		**Longitude** **80° 32' 24.1"**

Photographs

Overall Site	Benchmark Location	Benchmark Close Up
		

Brass Tag Close Up	Brass Tag + Reference Mark
	

SURVEYOR'S REPORT
PROJECT RESULTS
WELL L31NW03 GW3

Site L31NW03 GW3		**Date of Field Work** 2/23/17 & 3/15/17
Party Chief Ebanks/Kett	**Field Book Name/Number** **SCADA #12**	**Page Number(s)** Pg. 41 & 44
Site Benchmark Name L31NW03 2017	**Benchmark Elev. (NAVD 88)** 6.89ft	**Datum Offset to** **NGVD29** +1.55

Reference Elevation (NAVD 88) 10.27ft	**Existing Tag Elevation (Datum)** NA
Latitude **25° 27' 17.5"**	**Longitude** **80° 32' 24.1"**

Photographs

Overall Site	Benchmark Location	Benchmark Close Up
		

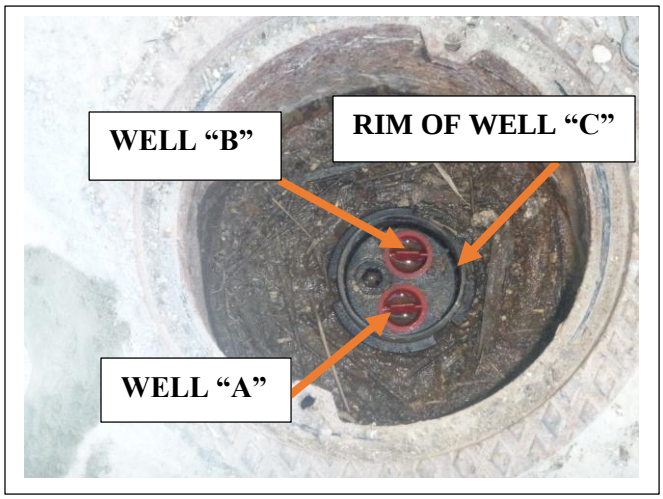
Brass Tag Close Up	Brass Tag + Reference Mark
	

Well Site: C111W11 GW

Party Chief: Elvie Ebanks	**Field Book Number:** SCADA #12	**Page Number:** 44
Benchmark Elevation (NAVD 88): 5.03′	**Date of Field Work:** March 15, 2017	**Datum Offset to NGVD 29:** 1.56′
Benchmark Agency: SFWMD	**Benchmark Type:** Alum. Disk Set in Concrete	**Benchmark Stamp:** BM C111W11 2017
Reference Elevation (NAVD88): Removable Cap "A" & "B" = 4.537′ (stamp on tag) Rim of Well "C" = 4.59′		**Natural Ground:** Adjacent Elevations Near Well Range from 5.0′ to 5.1′
Latitude: 25 25′ 58.8″		**Longitude:** -080 32′ 37.8″

Photographs:

Pic#1:



Pic#2:

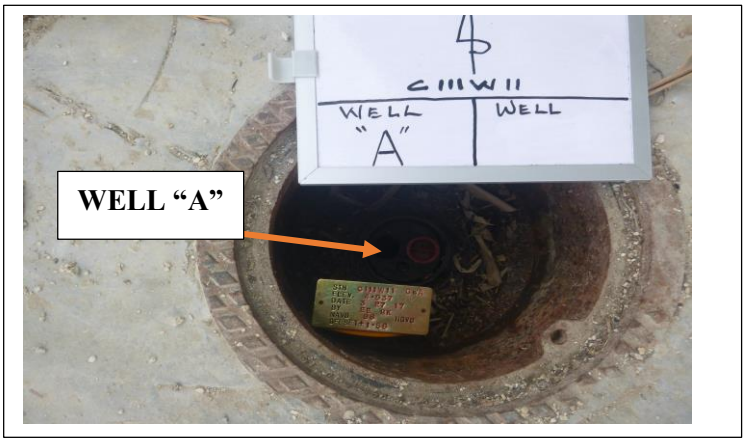
Pic#3 3Ft:

Pic#3 10Ft:

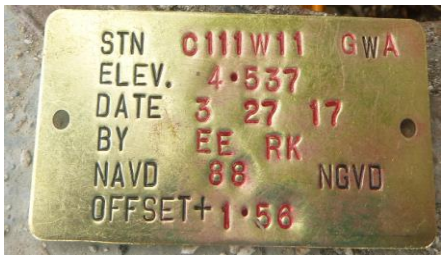
Well Site: C111W11 GW

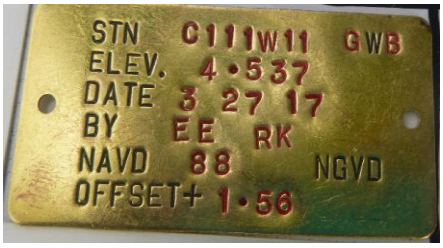
Continued

Pic#4: **Pic#5**



Pic#6 3Ft: **Pic#6 10Ft:** **Pic#7:**





1. A Picture looking down (top view) at the open well.
2. A picture looking down at the well head (with a ruler on it).
3. An oblique picture of the well approximately 3 feet and one at 10 feet from the well head.
4. A picture of the well and reference points A & B.
5. A picture looking down (Top view) of the benchmark disk.
6. An oblique picture of the benchmark at approximately 3 feet and on at 10 feet from the benchmark
7. A picture of the Brass Tag.

Abbreviation:

NAVD 88 – North American Vertical Datum of 1988
NGVD 29 – National Geodetic Vertical Datum of 1929
NAD 83/99- (Horizontal Datum) North American Datum
NGS – National Geodetic Survey.
SFWMD – South Florida Water Management District
PSM – Professional Surveyor & Mapper

SURVEYOR'S CERTIFICATION

I hereby certify that this Specific Purpose Survey was made under my responsible charge and meets applicable portions of the Standards of Practice set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 5J, Florida Administrative Code, pursuant to Section 472.027, Florida State Statutes.
This report is prepared for the sole and specific use of the South Florida Water Management District and is not assignable.

Date of Survey
January 25th thru March 27, 2017

Elvie D. Ebanks PSM
Professional Surveyor and Mapper
State of Florida
Certificate No. 5765

Appendix

Benchmark Description Sheets

COUNTY MIAMI/DADE	**PROJECT C-111 Spreader**	**DESIGNATION BM L31NW06 2017**
SECTION 20__	**TOWNSHIP 56_ SOUTH**	**RANGE _38_ EAST**
NAME OF QUADRANGLE _____		
Established by E._Ebanks_SFWMD	**Recovered by** _____ **(*Surveyor / Firm Name*)**	
DATE 1/25/17 (***Established or Recovered)***	**FIELD BOOK** SCADA FB#12 **PAGE** 38	
HORIZONTAL DATUM: **1927** ***1983*** **ADJ** ____ **Other**___ (circle one) ZONE **E** or **W**		
STATE PLANE COORDINATES	**N 441,086.953 ft**	**E *806,136.885* ft**
LATITUDE: N *25º 32' 47.02"*	**LONGITUDE: W** *80º 32' 42.49*"	
VERTICAL DATUM: MSL **1929** ***1988*** **Other** _____ (circle one)		**EL. 6.24ft**
VERTICAL DATUM: MSL ***1929*** **1988 Other** _____ (circle one)		**EL. ft**
CONTROL ACCURACY: HORIZONTAL 1 2 3 *SUB-METER* (circle one) **VERTICAL 1 2 3**		

DESCRIPTION

To Reach:

From the Intersection of SW 232nd St and SW 217th Ave. in Homestead, go South on SW 217th Ave. 0.25 ml. to a Farm Access Rd on Right. (north side of Farm field along Fence line) go west on Farm Access Rd. for 0.14 ml. to Well Site on Right (Fence Line) surrounded with wood fence enclosure and mark. Mark is located Top of Concrete Base for Well. Located at SE Corner.

NGS Benchmarks Used: Dade County Benchmark J-477-R

Notable Land marks: Well site L31NW06

SKETCH

PICTURE

COUNTY MIAMI/DADE	**PROJECT C-111 Spreader**	**DESIGNATION BM L31NW02 2017**
SECTION 5__	**TOWNSHIP 57_ SOUTH**	**RANGE _38_ EAST**
NAME OF QUADRANGLE _____		
Established by E. Ebanks SFWMD	**Recovered by** _____ **(*Surveyor / Firm Name*)**	
DATE 3/27/17 (***Established or Recovered)***	**FIELD BOOK** SCADA FB#12 **PAGE** 45	
HORIZONTAL DATUM: **1927** ***1983*** **ADJ** ____ **Other**___ (circle one) ZONE **E** or **W**		
STATE PLANE COORDINATES	**N 421,542.885 ft**	**E *807,036.624* ft**
LATITUDE: N *25º 29' 33.4"*	**LONGITUDE: W** *80º 32' 33.4*"	
VERTICAL DATUM: MSL **1929** ***1988*** **Other** _____ (circle one)		**EL. 7.04ft**
VERTICAL DATUM: MSL ***1929*** **1988 Other** _____ (circle one)		**EL. ft**
CONTROL ACCURACY: HORIZONTAL 1 2 3 *SUB-METER* (circle one) **VERTICAL 1 2 3**		

DESCRIPTION

To Reach:

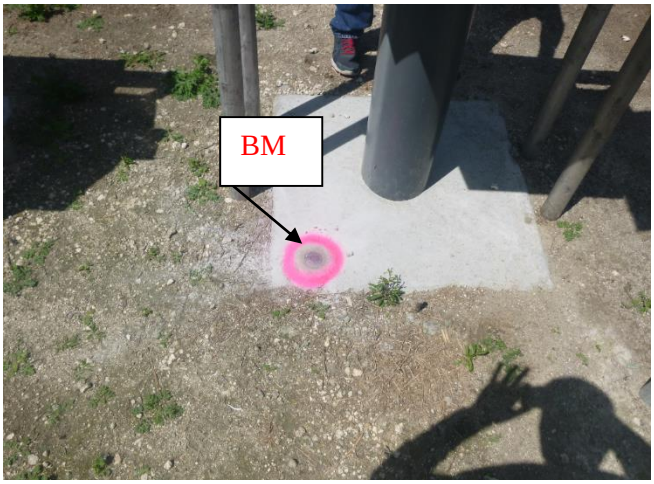
From the Intersection of SW 296nd St (Avocado) and SW 217th Ave. in Homestead, go North on SW 217th Ave. for 450ft. +/- to the Northside of a Tree Cluster inside fence line for Homestead Airport and Station location. Mark is set on SE Corner of Middle Well (GW3). For Access to Station, go North on SW217th Ave to Main Airport entrance. Enter and go 150ft +/- to end of chain link and make U-Turn to follow inside fence line to site.

NGS Benchmarks Used: **Dade County Benchmark MB-44**

Notable Land marks: Well site L31NW02

SKETCH

PICTURE



DESIGNATION: **L31NW03**		PROJECT: **C111 WELLS**	
ESTABLISHED BY: **SFWMD** RECOVERED BY:		SURVEYOR: **EBANKS** DATE**: 2/23/17**	
GEOGRAPHIC POSITION			
SECTION **21**	TOWNSHIP **57** SOUTH		RANGE **38** EAST
COUNTY **MIAMI/DADE**		NAME OF QUADRANGLE GEOGRAPHIC INDEX OF QUAD	
HORIZONTAL DATUM: 1927 (1983) Other_____ (circle one) ZONE (E) or W			
VERTICAL DATUM: MSL 1929 (1988) Other _____ (circle one)			
VERTICAL ACCURACY: 1 2 (3)			
STATE PLANE COORDINATE	(N) Y= 407,805.959	(E) X= 807,963.689	NAVD 88 **EL. 6.894'** NGVD 29 EL.
CORPSCON 6.0.1 CONVERSION FACTOR (NAVD88 TO NGVD29): Offset = **1.55'**			
LATITUDE: **25 27 17.3**		LONGITUDE: **80 32 23.8**	
RECOVERY DATA			
Stamping: "**BM L31NW03 2017"**			
From the Intersection of SW 328th and SW 217th Ave. in Homestead, go South on SW 217th Ave. for 0.5miles to SW 336th St (Shell Rock Rd) on Left. Take SW 336th St. on left for 0.13 mile to Wellsite on right and Mark. Mark is located Top of Concrete Base for GW1 (North Well).			
NOTABLE LAND MARKS:			
NGS SOURCE BENCHMARK: **Dade County P-532**			
FIELD BOOK **SCADA #12** PAGE **41**			
PICTURES			

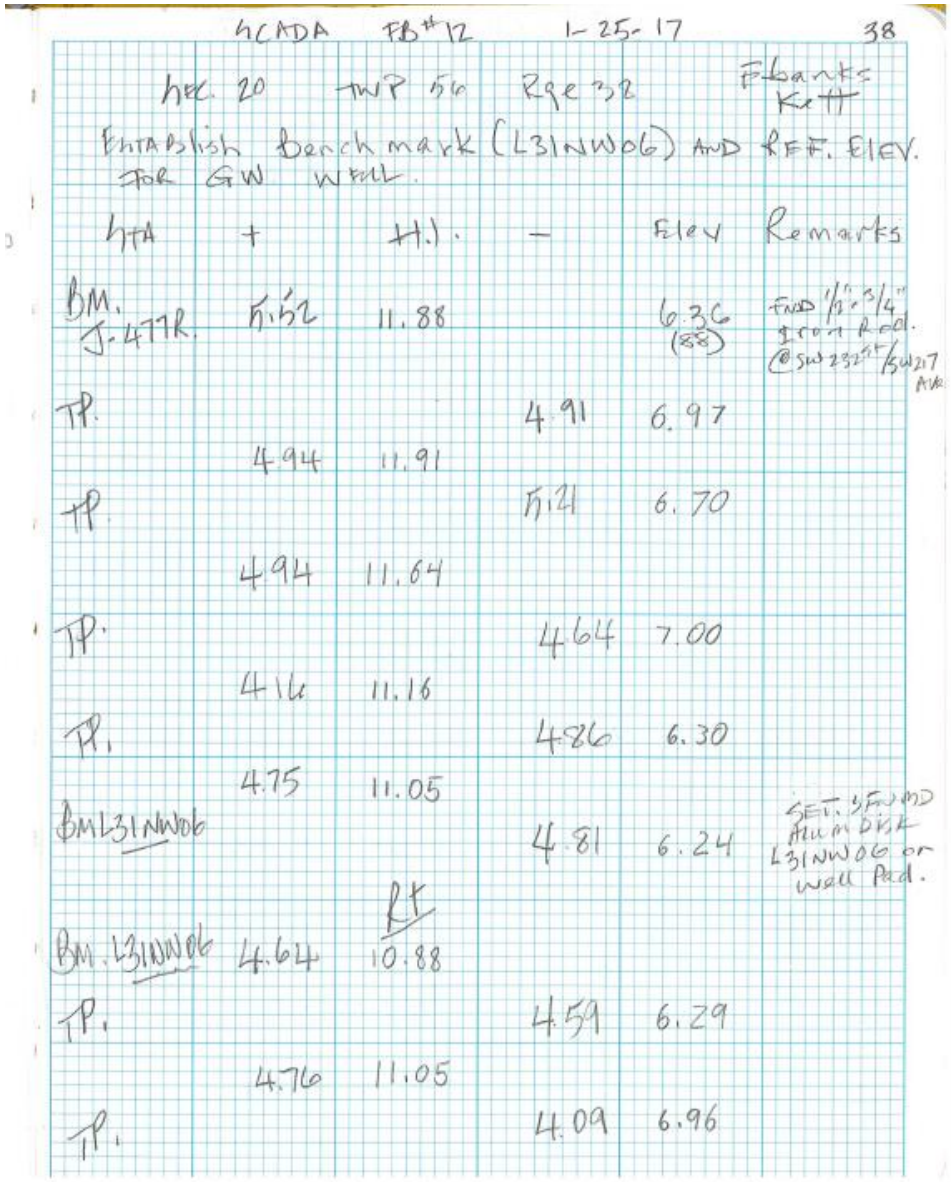
Overall Site

SKETCH

DESIGNATION: **C111W11**		PROJECT: **C111 WELLS**	
ESTABLISHED BY: **SFWMD** RECOVERED BY:		SURVEYOR: **EBANKS** DATE**: 3/15/17**	
GEOGRAPHIC POSITION			
SECTION **29**	TOWNSHIP **57** SOUTH		RANGE **38** EAST
COUNTY **MIAMI/DADE**		NAME OF QUADRANGLE GEOGRAPHIC INDEX OF QUAD	
HORIZONTAL DATUM: 1927 (1983) Other_____ (circle one) ZONE (E) or W			
VERTICAL DATUM: MSL 1929 (1988) Other _____ (circle one)			
VERTICAL ACCURACY: 1 2 (3)			
STATE PLANE COORDINATE	(N) Y= 399,886.739	(E) X= 806,707.592	NAVD 88 **EL. 5.03'** NGVD 29 EL.
CORPSCON 6.0.1 CONVERSION FACTOR (NAVD88 TO NGVD29): Offset = **1.56'**			
LATITUDE: **25 25 58.9**		LONGITUDE: **80 32 37.8**	
RECOVERY DATA			
Stamping: "**BM C111W11 2017"**			
To Reach: From the Intersection of CR997 (Krome Ave.) and SW 296 St. (Avocado) Go west on Avocado for 4.0 mls to SW 217 Ave. Go south on SW 217th Ave to SW 360th St. Make right and go 0.13ml to Well Site on Right. Mark set in Concrete Base for Well, North of MH cover.			
NOTABLE LAND MARKS:			
NGS SOURCE BENCHMARK: **Dade County J500**			
FIELD BOOK **SCADA #12** PAGE **44**			
PICTURES			

Overall Site

SKETCH

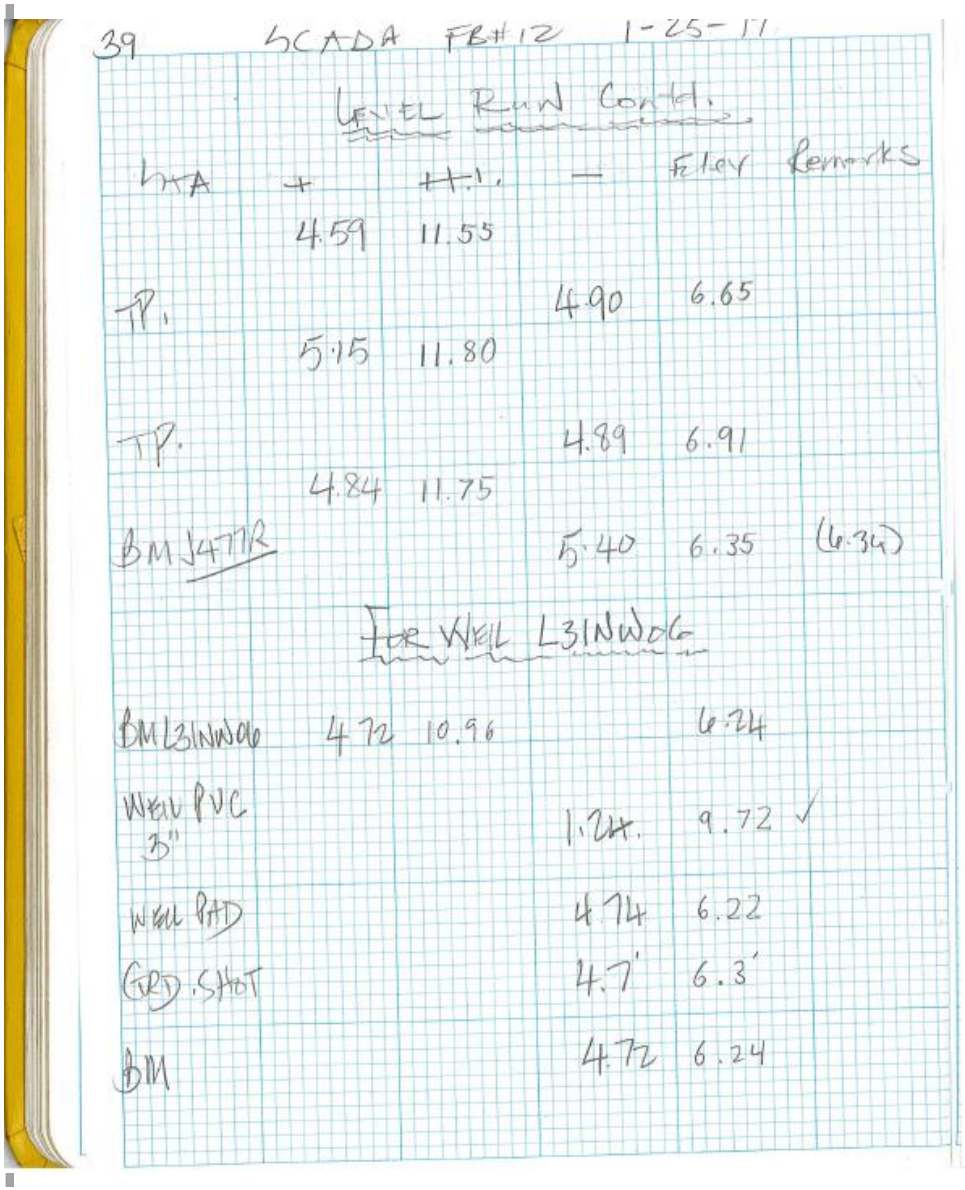


SCADA FB#12 1-25-17 38

Sec. 20 TWP 56 Rge 3W Flanks Keith

Establish bench mark (L31NW06) and REF. ELEV. for GW well.

HTA	+	HI.	−	Elev	Remarks
BM. J-477R.	5.52	11.88		6.36 (88)	Found 1/2" rebar @ SW 23 5th & SW 217 Ave
TP.			4.91	6.97	
	4.94	11.91			
TP.			5.21	6.70	
	4.94	11.64			
TP.			4.64	7.00	
	4.16	11.16			
TP.			4.86	6.30	
	4.75	11.05			
BM L31NW06			4.81	6.24	Set. 5/8" rebar & alum disk L31NW06 on well pad.
		RK			
BM. L31NW06	4.64	10.88			
TP.			4.59	6.29	
	4.76	11.05			
TP.			4.09	6.96	



39 SCADA FB#12 1-25-17

LEVEL RUN Cont'd.

HTA	+	HI.	−	Elev	Remarks
	4.59	11.55			
TP.			4.90	6.65	
	5.15	11.80			
TP.			4.89	6.91	
	4.84	11.75			
BM J477R			5.40	6.35	(6.34)

FOR WELL L31NW06

BM L31NW06	4.72	10.96		6.24	
WELL PVC 3"			1.24	9.72	✓
WELL PAD			4.74	6.22	
GRD. SHOT			4.7'	6.3'	
BM			4.72	6.24	

Sec. 5 Twp 15S Rge 38E Ebanks Kett

Bench Run to Establish Elev. For BM "L31NW02 2017" at Well Site Homestead Airport

STA	+	H.I.	−	Elev	Remarks
BM MB44				6.81	FND. Good
	4.38	11.19			
TP			3.95	7.24	
	4.30	11.54			
BM L31NW02 2017			4.50	7.04	BM on SE corner. Well GW 3 N/D
	4.38	11.42			
TP			4.18	7.24	
	3.94	11.18			
MB 44			4.37	6.81	
For Wells				L31NW02	
BM L31NW02 2017	4.40	11.44		7.04	
GW 1 (South)			0.88	10.56	
GW 3 (Middle)			0.71	10.73	
GW 2 (North)			0.99	10.45	
GW 1 PAD			4.47	6.97	
GW 1 GD.			4.5	6.9 ✓	
GW 3 PAD			4.41	7.03	
GW 3 GD			4.4	7.0 ✓	
GW 2 PAD			4.47	6.97	
GW 2 GD.			4.6	6.8 ✓	
BM L31NW02			4.40	7.04	

RK
3/29/17 SEC. 21 TWP 57 RGE 38 Elanks Kell

Bench Run to Establish Elev. FOR SITE BM L31NW03 2017. @ Well Site. Establish REF. Elev FOR Wells @ L31NW03.

N: 25° 27' 17.3"
W: 80° 32' 23.8"

DIGITAL LEVEL FILE: L31NW03
LINE 1

PT	DESC	ELEV	ADJ	BM
1	P532	—	—	6.67
8	TBM	7.814	7.82	—
1/15	P532	6.658	—	6.67

Δ = -0.012 BS = 3260.56 FS = 3292.25

FOR Wells

TBM Pt#8 3.94 11.76 7.82 Ironrod

BM L31NW03 2017 4.866 6.894 SET SEND ALUM DISK GW1 PAD.

GW 1 REF.	~~1.333~~	~~10.53~~
GW 1 PAD	4.67	6.89
GW 1 GD.	4.9	6.86
GW 2 REF.	~~1.50~~	~~10.26~~
GW 2 PAD	5.04	6.72
GW 2 GD	5.1	6.66
GW 3 REF	~~1.639~~	~~10.12~~
GW 3 PAD	5.32	6.44
GW 3 GD	5.3	6.46
BM L31NW03	4.866	6.894
TBM Pt#8	3.94	7.82

Note: Well Head modified after Survey See pg. 44

SCADA FB # 12 3-15-17 44

Sec. 21 TWP 57 RGE 38 Elanks Hudson

Re-Shoot Elev. FOR Wells @ L31NW03 (Contractor modify well heads) See this book pg. 41

STA	+	H.I.	−	Elev	Remarks
BM L31NW03 2017	4.71	11.60		6.89	STAMPED ALUM DISK.
L31NW03 GW1			0.92	10.68	
GW2			1.19	10.41	
GW3			1.33	10.27	
BM			4.71	6.89 ✓	

Project Information		Coordinate System	
Name:		Name:	Default
Size:		Datum:	WGS 1984
Modified:	2/15/2012 8:48:57 AM (UTC:-7)	Zone:	Default
Time zone:	Mountain Standard Time	Geoid:	
Reference number:		Vertical datum:	
Description:			

Level Report

Imported file: L31NW03.DAT
Instrument: DiNi
Standard error per kilometer of double leveling: 0.00230 ft
Standard error per turn/station setup: 0.00000 ft
Creation option: Delta elevations
Description usage: Feature codes

Run - 1 Raw Observations

Raw Misclosure: -0.01200 ft
Σ BS Distances: 3260.560 ft
Σ FS Distances: 3292.240 ft
Run Length: 6552.800 ft
Reduction: Adjusted Values

Create	Point ID	BS	IS	FS	Δ Elevation	Raw Elevation	Correction	Adj. Elevation	Type	Distance	Description
☑	1	☑ 4.13700 ft			0.00000 ft	6.670 ft	0.00000 ft	6.670 ft	Benchmark	245.280 ft	P532 3
☐	2			☑ 4.16500 ft	-0.02800 ft	6.642 ft	0.00096 ft	6.643 ft	Computed	258.990 ft	3
	2	☑ 4.05900 ft								262.270 ft	3
☐	3			☑ 4.04000 ft	0.01900 ft	6.661 ft	0.00204 ft	6.663 ft	Computed	270.500 ft	3
	3	☑ 4.31400 ft								264.240 ft	3
☐	4			☑ 4.15700 ft	0.15700 ft	6.818 ft	0.00308 ft	6.821 ft	Computed	259.580 ft	3
	4	☑ 4.44500 ft								255.740 ft	3
☐	5			☑ 4.65800 ft	-0.21300 ft	6.605 ft	0.00413 ft	6.609 ft	Computed	269.850 ft	3
	5	☑ 4.11000 ft								237.830 ft	3
☐	6			☑ 4.27400 ft	-0.16400 ft	6.441 ft	0.00509 ft	6.446 ft	Computed	266.270 ft	3
		☑ 4.43400								196.550	

	6	ft								ft	3
☐	7			✓ 4.30300 ft	0.13100 ft	6.572 ft	0.00569 ft	6.578 ft	Computed	203.480 ft	3
	7	✓ 4.83400 ft								141.470 ft	3
☐	8			✓ 3.59100 ft	1.24300 ft	7.815 ft	0.00601 ft	7.821 ft	Computed	146.420 ft	TBM 3
	8	✓ 3.49100 ft								145.370 ft	TBM 3
☐	9			✓ 4.73400 ft	-1.24300 ft	6.572 ft	0.00632 ft	6.578 ft	Computed	142.520 ft	3
	9	✓ 4.11200 ft								202.330 ft	3
☐	10			✓ 4.22900 ft	-0.11700 ft	6.455 ft	0.00693 ft	6.462 ft	Computed	197.570 ft	3
	10	✓ 4.42500 ft								255.350 ft	3
☐	11			✓ 4.29800 ft	0.12700 ft	6.582 ft	0.00790 ft	6.590 ft	Computed	250.950 ft	3
	11	✓ 4.74500 ft								269.090 ft	3
☐	12			✓ 4.56500 ft	0.18000 ft	6.762 ft	0.00894 ft	6.771 ft	Computed	255.220 ft	3
	12	✓ 4.05900 ft								257.780 ft	3
☐	13			✓ 4.20600 ft	-0.14700 ft	6.615 ft	0.00997 ft	6.625 ft	Computed	262.370 ft	3
	13	✓ 4.26000 ft								267.980 ft	3
☐	14			✓ 4.29600 ft	-0.03600 ft	6.579 ft	0.01103 ft	6.590 ft	Computed	263.020 ft	3
	14	✓ 4.71600 ft								259.280 ft	3
	1			✓ 4.63700 ft	0.07900 ft	6.658 ft	0.01200 ft	6.670 ft	Benchmark	245.500 ft	P532 3

Run - 1 (N1) Reduced Observations

Observation	Status	Raw Δ Elevation	Correction	Final Δ Elevation	Setups	Length	Σ BS Readings	Σ FS Readings	Std. Error
1-1 (E1)	Enabled	-0.01200 ft	0.01200 ft	0.00000 ft	14	6552.800 ft	60.14100 ft	60.15300 ft	0.04643 ft

Run - 1 (N1) Reduced Coordinates

Point ID	Status	Elevation
1	Enabled	6.67000 ft

Project Information		Coordinate System	
Name:		Name:	Default
Size:		Datum:	WGS 1984
Modified:	2/15/2012 8:48:57 AM (UTC:-7)	Zone:	Default
Time zone:	Mountain Standard Time	Geoid:	
Reference number:		Vertical datum:	
Description:			

Level Report

Imported file: C111W11.DAT
Instrument: DiNi
Standard error per kilometer of double leveling: 0.00230 ft
Standard error per turn/station setup: 0.00000 ft
Creation option: Delta elevations
Description usage: Feature codes

Run - 1 Raw Observations

Raw Misclosure: 0.00100 ft
Σ BS Distances: 814.080 ft
Σ FS Distances: 813.390 ft
Run Length: 1627.470 ft
Reduction: Adjusted Values

Create	Point ID	BS	IS	FS	Δ Elevation	Raw Elevation	Correction	Adj. Elevation	Type	Distance	Description
☑	1	☑ 5.10300 ft			0.00000 ft	5.230 ft	0.00000 ft	5.230 ft	Benchmark	136.880 ft	J500 3
☐	2			☑ 4.92200 ft	0.18100 ft	5.411 ft	-0.00015 ft	5.411 ft	Computed	134.190 ft	3
	2	☑ 5.30200 ft								198.200 ft	3
☐	3			☑ 4.99200 ft	0.31000 ft	5.721 ft	-0.00047 ft	5.721 ft	Computed	188.350 ft	3
	3	☑ 4.55700 ft								60.530 ft	3
☐	4			☑ 5.68700 ft	-1.13000 ft	4.591 ft	-0.00049 ft	4.591 ft	Computed	47.440 ft	3
	4	☑ 5.72700 ft								47.380 ft	3
☐	5			☑ 5.28500 ft	0.44200 ft	5.033 ft	-0.00051 ft	5.032 ft	Computed	47.970 ft	BM 3
	5	☑ 5.25700 ft								48.000 ft	BM 3
☐	6			☑ 4.56900 ft	0.68800 ft	5.721 ft	-0.00053 ft	5.720 ft	Computed	60.500 ft	3
		☑ 5.03900								188.940	

	6	ft								ft	3
☐	7			✔ 5.41300 ft	-0.37400 ft	5.347 ft	-0.00085 ft	5.346 ft	Computed	197.440 ft	3
	7	✔ 4.91200 ft								134.150 ft	3
	1			✔ 5.02800 ft	-0.11600 ft	5.231 ft	-0.00100 ft	5.230 ft ⚠	Benchmark	137.500 ft	J500 3

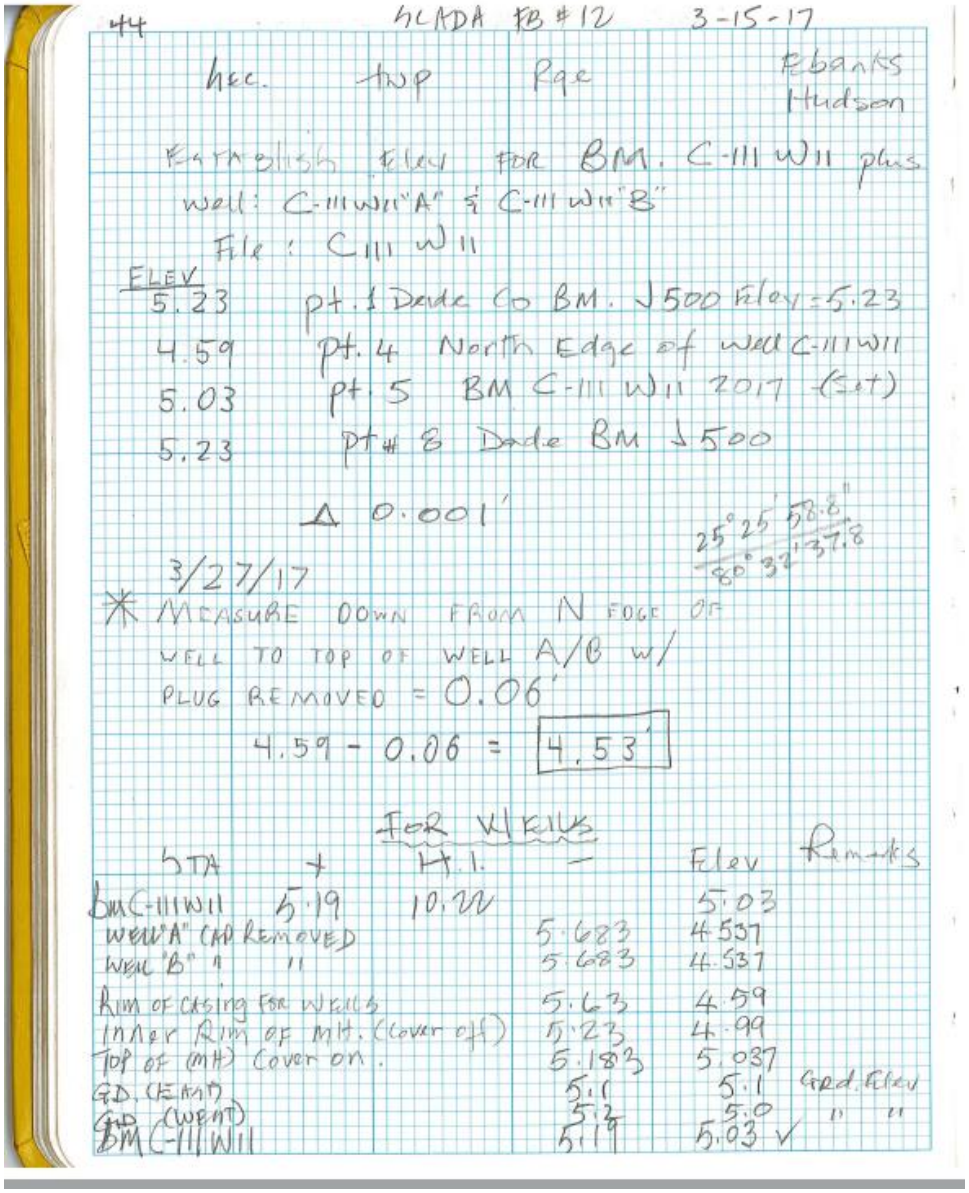
Run - 1 (N2) Reduced Observations

Observation	Status	Raw Δ Elevation	Correction	Final Δ Elevation	Setups	Length	Σ BS Readings	Σ FS Readings	Std. Error
1-1 (E2)	Enabled	0.00100 ft	-0.00100 ft	0.00000 ft	7	1627.470 ft	35.89700 ft	35.89600 ft	0.01805 ft

Run - 1 (N2) Reduced Coordinates

Point ID	Status	Elevation
1	Enabled	5.23000 ft

Date: 3/29/2017 7:41:21 AM	Project:	Trimble Business Center



44 SCADA FB # 12 3-15-17

Sec. Twp Rge

EBanks
Hudson

Re-Run Elev FOR BM. C-111 W11 plus well: C-111 W11 "A" & C-111 W11 "B"

File : C111 W11

ELEV	
5.23	pt. 1 Dade Co BM. J500 Elev = 5.23
4.59	pt. 4 North Edge of well C-111 W11
5.03	pt. 5 BM C-111 W11 2017 (Set)
5.23	pt # 8 Dade BM J500

Δ 0.001'

25° 25' 58.8"
80° 32' 37.8"

3/27/17

* MEASURE DOWN FROM N EDGE OF WELL TO TOP OF WELL A/B W/ PLUG REMOVED = 0.06'

4.59 - 0.06 = 4.53'

FOR WELLS

STA	+	H.I.	−	Elev	Remarks
BM C-111 W11	5.19	10.22		5.03	
WELL "A" CAP REMOVED			5.683	4.537	
WELL "B" " "			5.683	4.537	
Rim of casing for Wells			5.63	4.59	
Inner Rim of MH. (cover off)			5.23	4.99	
Top of (MH) Cover on.			5.183	5.037	
GD. (CEMT)			5.1	5.1	Good Elev
GD (WENT)			5.2	5.0	" "
BM C-111 W11			5.19	5.03 ✓	

APPENDIX D
COMPLETE WATER QUALITY DATA (5/18/2017 SAMPLING EVENT)

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW3	0.2	0.2	0.8	EPA 8260C	1,1,1,2-Tetrachloroethane	µg/L
L31NW02-GW1	0.2	0.2	0.8	EPA 8260C	1,1,1,2-Tetrachloroethane	µg/L
L31NW02-GW2	0.2	0.2	0.8	EPA 8260C	1,1,1,2-Tetrachloroethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,1,1-Trichloroethane	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,1,1-Trichloroethane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,1,1-Trichloroethane	µg/L
L31NW02-GW3	0.2	0.2	0.8	EPA 8260C	1,1,2,2-Tetrachloroethane	µg/L
L31NW02-GW1	0.2	0.2	0.8	EPA 8260C	1,1,2,2-Tetrachloroethane	µg/L
L31NW02-GW2	0.2	0.2	0.8	EPA 8260C	1,1,2,2-Tetrachloroethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,1,2-Trichloroethane	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,1,2-Trichloroethane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,1,2-Trichloroethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,1-Dichloroethane	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,1-Dichloroethane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,1-Dichloroethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,1-Dichloroethene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,1-Dichloroethene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,1-Dichloroethene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,1-Dichloropropene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,1-Dichloropropene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,1-Dichloropropene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,2,3-Trichloropropane	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,2,3-Trichloropropane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,2,3-Trichloropropane	µg/L
L31NW02-GW1	0.99	0.99	6	EPA 8270	1,2,4-Trichlorobenzene	µg/L
L31NW02-GW2	1.1	1.1	6.9	EPA 8270	1,2,4-Trichlorobenzene	µg/L
L31NW02-GW3	0.83	0.83	5	EPA 8270	1,2,4-Trichlorobenzene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,2,4-Trimethylbenzene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,2,4-Trimethylbenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,2,4-Trimethylbenzene	µg/L
L31NW02-GW1	0.81	0.81	6	EPA 8270	1,2-Dichlorobenzene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,2-Dichlorobenzene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,2-Dichlorobenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,2-Dichlorobenzene	µg/L
L31NW02-GW2	0.94	0.94	6.9	EPA 8270	1,2-Dichlorobenzene	µg/L
L31NW02-GW3	0.68	0.68	5	EPA 8270	1,2-Dichlorobenzene	µg/L
L31NW02-GW3	1	1	4	EPA 8260C	1,2-Dichloroethane	µg/L
L31NW02-GW1	1	1	4	EPA 8260C	1,2-Dichloroethane	µg/L
L31NW02-GW2	1	1	4	EPA 8260C	1,2-Dichloroethane	µg/L
L31NW02-GW3	99.47			EPA 8260C	1,2-Dichloroethane-d4	%
L31NW02-GW1	99.33			EPA 8260C	1,2-Dichloroethane-d4	%
L31NW02-GW2	100			EPA 8260C	1,2-Dichloroethane-d4	%
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,2-Dichloropropane	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,2-Dichloropropane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,2-Dichloropropane	µg/L
L31NW02-GW1	0.39	0.39	6	EPA 8270	1,2-Dinitrobenzene	µg/L
L31NW02-GW2	0.45	0.45	6.9	EPA 8270	1,2-Dinitrobenzene	µg/L
L31NW02-GW3	0.33	0.33	5	EPA 8270	1,2-Dinitrobenzene	µg/L
L31NW02-GW2	0.46	0.46	6.9	EPA 8270	1,2-Diphenylhydrazine	µg/L
L31NW02-GW3	0.33	0.33	5	EPA 8270	1,2-Diphenylhydrazine	µg/L
L31NW02-GW1	0.39	0.39	6	EPA 8270	1,2-Diphenylhydrazine	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,3,5-Trimethylbenzene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,3,5-Trimethylbenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,3,5-Trimethylbenzene	µg/L
L31NW02-GW3	0.2	0.2	0.8	EPA 8260C	1,3-Dichlorobenzene	µg/L
L31NW02-GW1	0.91	0.91	6	EPA 8270	1,3-Dichlorobenzene	µg/L
L31NW02-GW1	0.2	0.2	0.8	EPA 8260C	1,3-Dichlorobenzene	µg/L
L31NW02-GW2	0.2	0.2	0.8	EPA 8260C	1,3-Dichlorobenzene	µg/L
L31NW02-GW2	1	1	6.9	EPA 8270	1,3-Dichlorobenzene	µg/L
L31NW02-GW3	0.76	0.76	5	EPA 8270	1,3-Dichlorobenzene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,3-Dichloropropane	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,3-Dichloropropane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,3-Dichloropropane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1,4-Dichlorobenzene	µg/L
L31NW02-GW1	0.92	0.92	6	EPA 8270	1,4-Dichlorobenzene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1,4-Dichlorobenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1,4-Dichlorobenzene	µg/L
L31NW02-GW2	1.1	1.1	6.9	EPA 8270	1,4-Dichlorobenzene	µg/L
L31NW02-GW3	0.77	0.77	5	EPA 8270	1,4-Dichlorobenzene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	1-Methyl-2-ethylbenzene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	1-Methyl-2-ethylbenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	1-Methyl-2-ethylbenzene	µg/L
L31NW02-GW1	1.2	1.2	6	EPA 8270	1-Methylnaphthalene	µg/L
L31NW02-GW2	1.4	1.4	6.9	EPA 8270	1-Methylnaphthalene	µg/L
L31NW02-GW3	1	1	5	EPA 8270	1-Methylnaphthalene	µg/L
L31NW02-GW1	0.87	0.87	6	EPA 8270	2,2'-Dichloroisopropyl Ether	µg/L
L31NW02-GW2	1	1	6.9	EPA 8270	2,2'-Dichloroisopropyl Ether	µg/L
L31NW02-GW3	0.73	0.73	5	EPA 8270	2,2'-Dichloroisopropyl Ether	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	2,2-Dichloropropane	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	2,2-Dichloropropane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	2,2-Dichloropropane	µg/L
L31NW02-GW1	4.6	4.6	6	EPA 8270	2,3,4,6-Tetrachlorophenol	µg/L
L31NW02-GW3	3.9	3.9	5	EPA 8270	2,3,4,6-Tetrachlorophenol	µg/L
L31NW02-GW2	5.3	5.3	6.9	EPA 8270	2,3,4,6-Tetrachlorophenol	µg/L
L31NW02-GW1	0.62	0.62	6	EPA 8270	2,3,5,6-Tetrachlorophenol	µg/L
L31NW02-GW3	0.52	0.52	5	EPA 8270	2,3,5,6-Tetrachlorophenol	µg/L
L31NW02-GW2	0.72	0.72	6.9	EPA 8270	2,3,5,6-Tetrachlorophenol	µg/L
L31NW02-GW1	0.043	0.043	0.19	EPA 8151	2,4,5-T	µg/L
L31NW02-GW2	0.041	0.041	0.18	EPA 8151	2,4,5-T	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW3	0.044	0.044	0.2	EPA 8151	2,4,5-T	µg/L
L31NW02-GW1	0.05	0.05	0.19	EPA 8151	2,4,5-TP (Silvex)	µg/L
L31NW02-GW2	0.048	0.048	0.18	EPA 8151	2,4,5-TP (Silvex)	µg/L
L31NW02-GW3	0.051	0.051	0.2	EPA 8151	2,4,5-TP (Silvex)	µg/L
L31NW02-GW1	0.62	0.62	4.8	EPA 8270	2,4,5-Trichlorophenol	µg/L
L31NW02-GW3	0.52	0.52	4	EPA 8270	2,4,5-Trichlorophenol	µg/L
L31NW02-GW2	0.72	0.72	5.5	EPA 8270	2,4,5-Trichlorophenol	µg/L
L31NW02-GW1	49			EPA 8270	2,4,6-Tribromophenol	%
L31NW02-GW2	63			EPA 8270	2,4,6-Tribromophenol	%
L31NW02-GW3	61			EPA 8270	2,4,6-Tribromophenol	%
L31NW02-GW1	0.82	0.82	2.4	EPA 8270	2,4,6-Trichlorophenol	µg/L
L31NW02-GW3	0.69	0.69	2	EPA 8270	2,4,6-Trichlorophenol	µg/L
L31NW02-GW2	0.95	0.95	2.8	EPA 8270	2,4,6-Trichlorophenol	µg/L
L31NW02-GW1	0.23	0.23	0.96	EPA 8151	2,4-D	µg/L
L31NW02-GW2	0.22	0.22	0.91	EPA 8151	2,4-D	µg/L
L31NW02-GW3	0.23	0.23	0.97	EPA 8151	2,4-D	µg/L
L31NW02-GW1	0.52	0.52	1.9	EPA 8151	2,4-DB	µg/L
L31NW02-GW2	0.49	0.49	1.8	EPA 8151	2,4-DB	µg/L
L31NW02-GW3	0.53	0.53	2	EPA 8151	2,4-DB	µg/L
L31NW02-GW1	0.67	0.67	2.4	EPA 8270	2,4-Dichlorophenol	µg/L
L31NW02-GW3	0.56	0.56	2	EPA 8270	2,4-Dichlorophenol	µg/L
L31NW02-GW2	0.77	0.77	2.8	EPA 8270	2,4-Dichlorophenol	µg/L
L31NW02-GW1	93			EPA 8151	2,4-Dichlorophenylacetic Acid	%
L31NW02-GW2	94			EPA 8151	2,4-Dichlorophenylacetic Acid	%
L31NW02-GW3	91			EPA 8151	2,4-Dichlorophenylacetic Acid	%
L31NW02-GW1	1.9	1.9	6	EPA 8270	2,4-Dimethyl Phenol	µg/L
L31NW02-GW3	1.6	1.6	5	EPA 8270	2,4-Dimethyl Phenol	µg/L
L31NW02-GW2	2.2	2.2	6.9	EPA 8270	2,4-Dimethyl Phenol	µg/L
L31NW02-GW1	1.9	1.9	23.9	EPA 8270	2,4-Dinitrophenol	µg/L
L31NW02-GW3	1.6	1.6	20	EPA 8270	2,4-Dinitrophenol	µg/L
L31NW02-GW2	2.2	2.2	27.6	EPA 8270	2,4-Dinitrophenol	µg/L
L31NW02-GW1	0.63	0.63	2.4	EPA 8270	2,4-Dinitrotoluene	µg/L
L31NW02-GW3	0.53	0.53	2	EPA 8270	2,4-Dinitrotoluene	µg/L
L31NW02-GW2	0.73	0.73	2.8	EPA 8270	2,4-Dinitrotoluene	µg/L
L31NW02-GW1	1.5	1.5	2.4	EPA 8270	2,6-Dinitrotoluene	µg/L
L31NW02-GW3	1.2	1.2	2	EPA 8270	2,6-Dinitrotoluene	µg/L
L31NW02-GW2	1.7	1.7	2.8	EPA 8270	2,6-Dinitrotoluene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	2-Chloroethylvinylether	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	2-Chloroethylvinylether	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	2-Chloroethylvinylether	µg/L
L31NW02-GW1	0.96	0.96	6	EPA 8270	2-Chloronaphthalene	µg/L
L31NW02-GW3	0.8	0.8	5	EPA 8270	2-Chloronaphthalene	µg/L
L31NW02-GW2	1.1	1.1	6.9	EPA 8270	2-Chloronaphthalene	µg/L
L31NW02-GW1	0.81	0.81	6	EPA 8270	2-Chlorophenol	µg/L
L31NW02-GW3	0.68	0.68	5	EPA 8270	2-Chlorophenol	µg/L
L31NW02-GW2	0.94	0.94	6.9	EPA 8270	2-Chlorophenol	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW3	0.5	0.5	2	EPA 8260C	2-Chlorotoluene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	2-Chlorotoluene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	2-Chlorotoluene	µg/L
L31NW02-GW1	53			EPA 8270	2-Fluorobiphenyl	%
L31NW02-GW2	58			EPA 8270	2-Fluorobiphenyl	%
L31NW02-GW3	57			EPA 8270	2-Fluorobiphenyl	%
L31NW02-GW1	21			EPA 8270	2-Fluorophenol	%
L31NW02-GW2	27			EPA 8270	2-Fluorophenol	%
L31NW02-GW3	18			EPA 8270	2-Fluorophenol	%
L31NW02-GW1	1.6	1.6	23.9	EPA 8270	2-Methyl-4,6-dinitrophenol	µg/L
L31NW02-GW3	1.3	1.3	20	EPA 8270	2-Methyl-4,6-dinitrophenol	µg/L
L31NW02-GW2	1.8	1.8	27.6	EPA 8270	2-Methyl-4,6-dinitrophenol	µg/L
L31NW02-GW1	1.2	1.2	6	EPA 8270	2-Methylnaphthalene	µg/L
L31NW02-GW3	0.99	0.99	5	EPA 8270	2-Methylnaphthalene	µg/L
L31NW02-GW2	1.4	1.4	6.9	EPA 8270	2-Methylnaphthalene	µg/L
L31NW02-GW1	0.87	0.87	6	EPA 8270	2-Methylphenol	µg/L
L31NW02-GW3	0.73	0.73	5	EPA 8270	2-Methylphenol	µg/L
L31NW02-GW2	1	1	6.9	EPA 8270	2-Methylphenol	µg/L
L31NW02-GW1	0.72	0.72	6	EPA 8270	2-Nitroaniline	µg/L
L31NW02-GW3	0.6	0.6	5	EPA 8270	2-Nitroaniline	µg/L
L31NW02-GW2	0.83	0.83	6.9	EPA 8270	2-Nitroaniline	µg/L
L31NW02-GW1	0.97	0.97	6	EPA 8270	2-Nitrophenol	µg/L
L31NW02-GW3	0.81	0.81	5	EPA 8270	2-Nitrophenol	µg/L
L31NW02-GW2	1.1	1.1	6.9	EPA 8270	2-Nitrophenol	µg/L
L31NW02-GW1	0.79	0.79	11.9	EPA 8270	3&4-Methylphenol	µg/L
L31NW02-GW2	0.91	0.91	13.8	EPA 8270	3&4-Methylphenol	µg/L
L31NW02-GW3	0.66	0.66	10	EPA 8270	3&4-Methylphenol	µg/L
L31NW02-GW1	0.82	0.82	11.9	EPA 8270	3,3'-Dichlorobenzidine	µg/L
L31NW02-GW2	0.95	0.95	13.8	EPA 8270	3,3'-Dichlorobenzidine	µg/L
L31NW02-GW3	0.69	0.69	10	EPA 8270	3,3'-Dichlorobenzidine	µg/L
L31NW02-GW1	0.45	0.45	2	EPA 531.1	3-Hydroxycarbofuran	µg/L
L31NW02-GW2	0.45	0.45	2	EPA 531.1	3-Hydroxycarbofuran	µg/L
L31NW02-GW3	0.45	0.45	2	EPA 531.1	3-Hydroxycarbofuran	µg/L
L31NW02-GW1	1.2	1.2	6	EPA 8270	3-Nitroaniline	µg/L
L31NW02-GW2	1.4	1.4	6.9	EPA 8270	3-Nitroaniline	µg/L
L31NW02-GW3	0.99	0.99	5	EPA 8270	3-Nitroaniline	µg/L
L31NW02-GW1	0.0085	0.0085	0.0096	EPA 8081	4,4'-DDD	µg/L
L31NW02-GW3	0.0088	0.0088	0.0099	EPA 8081	4,4'-DDD	µg/L
L31NW02-GW2	0.0094	0.0094	0.011	EPA 8081	4,4'-DDD	µg/L
L31NW02-GW1	0.0048	0.0048	0.0096	EPA 8081	4,4'-DDE	µg/L
L31NW02-GW3	0.0049	0.0049	0.0099	EPA 8081	4,4'-DDE	µg/L
L31NW02-GW2	0.0053	0.0053	0.011	EPA 8081	4,4'-DDE	µg/L
L31NW02-GW1	0.0048	0.0048	0.0096	EPA 8081	4,4'-DDT	µg/L
L31NW02-GW3	0.0049	0.0049	0.0099	EPA 8081	4,4'-DDT	µg/L
L31NW02-GW2	0.0053	0.0053	0.011	EPA 8081	4,4'-DDT	µg/L
L31NW02-GW3	93.27			EPA 8260C	4-Bromofluorobenzene	%

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW1	93.27			EPA 8260C	4-Bromofluorobenzene	%
L31NW02-GW2	94.87			EPA 8260C	4-Bromofluorobenzene	%
L31NW02-GW1	0.8	0.8	6	EPA 8270	4-Bromophenyl Phenyl Ether	µg/L
L31NW02-GW2	0.92	0.92	6.9	EPA 8270	4-Bromophenyl Phenyl Ether	µg/L
L31NW02-GW3	0.67	0.67	5	EPA 8270	4-Bromophenyl Phenyl Ether	µg/L
L31NW02-GW1	0.74	0.74	23.9	EPA 8270	4-Chloro-3-methyl Phenol	µg/L
L31NW02-GW2	0.86	0.86	27.6	EPA 8270	4-Chloro-3-methyl Phenol	µg/L
L31NW02-GW3	0.62	0.62	20	EPA 8270	4-Chloro-3-methyl Phenol	µg/L
L31NW02-GW1	1.4	1.4	6	EPA 8270	4-Chloroaniline	µg/L
L31NW02-GW2	1.7	1.7	6.9	EPA 8270	4-Chloroaniline	µg/L
L31NW02-GW3	1.2	1.2	5	EPA 8270	4-Chloroaniline	µg/L
L31NW02-GW1	0.75	0.75	6	EPA 8270	4-Chlorophenyl Phenyl Ether	µg/L
L31NW02-GW2	0.87	0.87	6.9	EPA 8270	4-Chlorophenyl Phenyl Ether	µg/L
L31NW02-GW3	0.63	0.63	5	EPA 8270	4-Chlorophenyl Phenyl Ether	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	4-Chlorotoluene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	4-Chlorotoluene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	4-Chlorotoluene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	4-Isopropyltoluene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	4-Isopropyltoluene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	4-Isopropyltoluene	µg/L
L31NW02-GW1	0.82	0.82	4.8	EPA 8270	4-Nitroaniline	µg/L
L31NW02-GW2	0.95	0.95	5.5	EPA 8270	4-Nitroaniline	µg/L
L31NW02-GW3	0.69	0.69	4	EPA 8270	4-Nitroaniline	µg/L
L31NW02-GW1	1.3	1.3	23.9	EPA 8270	4-Nitrophenol	µg/L
L31NW02-GW2	1.5	1.5	27.6	EPA 8270	4-Nitrophenol	µg/L
L31NW02-GW3	1.1	1.1	20	EPA 8270	4-Nitrophenol	µg/L
L31NW02-GW1	1	1	6	EPA 8270	Acenaphthene	µg/L
L31NW02-GW2	1.2	1.2	6.9	EPA 8270	Acenaphthene	µg/L
L31NW02-GW3	0.86	0.86	5	EPA 8270	Acenaphthene	µg/L
L31NW02-GW1	1.1	1.1	6	EPA 8270	Acenaphthylene	µg/L
L31NW02-GW2	1.3	1.3	6.9	EPA 8270	Acenaphthylene	µg/L
L31NW02-GW3	0.95	0.95	5	EPA 8270	Acenaphthylene	µg/L
L31NW02-GW1	0.64	0.64	2	EPA 531.1	Aldicarb	µg/L
L31NW02-GW2	0.64	0.64	2	EPA 531.1	Aldicarb	µg/L
L31NW02-GW3	0.64	0.64	2	EPA 531.1	Aldicarb	µg/L
L31NW02-GW1	0.37	0.37	2	EPA 531.1	Aldicarb Sulfone	µg/L
L31NW02-GW2	0.37	0.37	2	EPA 531.1	Aldicarb Sulfone	µg/L
L31NW02-GW3	0.37	0.37	2	EPA 531.1	Aldicarb Sulfone	µg/L
L31NW02-GW1	0.59	0.59	2	EPA 531.1	Aldicarb Sulfoxide	µg/L
L31NW02-GW2	0.59	0.59	2	EPA 531.1	Aldicarb Sulfoxide	µg/L
L31NW02-GW3	0.59	0.59	2	EPA 531.1	Aldicarb Sulfoxide	µg/L
L31NW02-GW1	0.0014	0.0014	0.0096	EPA 8081	Aldrin	µg/L
L31NW02-GW3	0.0015	0.0015	0.0099	EPA 8081	Aldrin	µg/L
L31NW02-GW2	0.0016	0.0016	0.011	EPA 8081	Aldrin	µg/L
L31NW02-GW1	0.002	0.002	0.0096	EPA 8081	alpha-BHC	µg/L
L31NW02-GW3	0.0021	0.0021	0.0099	EPA 8081	alpha-BHC	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW2	0.0022	0.0022	0.011	EPA 8081	alpha-BHC	µg/L
L31NW02-GW3	12	10	40	EPA 200.7	Aluminum	µg/L
L31NW02-GW1	15	10	40	EPA 200.7	Aluminum	µg/L
L31NW02-GW2	15	10	40	EPA 200.7	Aluminum	µg/L
L31NW02-GW3	0.14	0.01	0.04	EPA 350.1	Ammonia Nitrogen	mg/L
L31NW02-GW1	0.1	0.01	0.04	EPA 350.1	Ammonia Nitrogen	mg/L
L31NW02-GW2	0.1	0.01	0.04	EPA 350.1	Ammonia Nitrogen	mg/L
L31NW02-GW1	2.4	2.4	6	EPA 8270	Aniline	µg/L
L31NW02-GW2	2.7	2.7	6.9	EPA 8270	Aniline	µg/L
L31NW02-GW3	2	2	5	EPA 8270	Aniline	µg/L
L31NW02-GW1	0.72	0.72	6	EPA 8270	Anthracene	µg/L
L31NW02-GW2	0.83	0.83	6.9	EPA 8270	Anthracene	µg/L
L31NW02-GW3	0.6	0.6	5	EPA 8270	Anthracene	µg/L
L31NW02-GW3	6	6	10	EPA 200.7	Arsenic	µg/L
L31NW02-GW1	6	6	10	EPA 200.7	Arsenic	µg/L
L31NW02-GW2	6	6	10	EPA 200.7	Arsenic	µg/L
L31NW02-GW3	0.73	0.73	1.6	EPA 8141	Atrazine	µg/L
L31NW02-GW1	0.67	0.67	1.5	EPA 8141	Atrazine	µg/L
L31NW02-GW2	0.68	0.68	1.5	EPA 8141	Atrazine	µg/L
L31NW02-GW3	0.29	0.29	0.54	EPA 8141	Azinphos Methyl	µg/L
L31NW02-GW1	0.27	0.27	0.49	EPA 8141	Azinphos Methyl	µg/L
L31NW02-GW2	0.27	0.27	0.5	EPA 8141	Azinphos Methyl	µg/L
L31NW02-GW3	18.3	0.5	2	EPA 200.7	Barium	µg/L
L31NW02-GW1	14.6	0.5	2	EPA 200.7	Barium	µg/L
L31NW02-GW2	16.6	0.5	2	EPA 200.7	Barium	µg/L
L31NW02-GW1	119			EPA 531.1	BDMC	%
L31NW02-GW2	133			EPA 531.1	BDMC	%
L31NW02-GW3	142			EPA 531.1	BDMC	%
L31NW02-GW3	0.2	0.2	0.8	EPA 8260C	Benzene	µg/L
L31NW02-GW1	0.2	0.2	0.8	EPA 8260C	Benzene	µg/L
L31NW02-GW2	0.2	0.2	0.8	EPA 8260C	Benzene	µg/L
L31NW02-GW1	0.92	0.92	29.9	EPA 8270	Benzidine	µg/L
L31NW02-GW2	1.1	1.1	34.5	EPA 8270	Benzidine	µg/L
L31NW02-GW3	0.77	0.77	25.1	EPA 8270	Benzidine	µg/L
L31NW02-GW1	0.75	0.75	6	EPA 8270	Benzo(a)anthracene	µg/L
L31NW02-GW2	0.87	0.87	6.9	EPA 8270	Benzo(a)anthracene	µg/L
L31NW02-GW3	0.63	0.63	5	EPA 8270	Benzo(a)anthracene	µg/L
L31NW02-GW1	0.69	0.69	1.2	EPA 8270	Benzo(a)pyrene	µg/L
L31NW02-GW2	0.8	0.8	1.4	EPA 8270	Benzo(a)pyrene	µg/L
L31NW02-GW3	0.58	0.58	1	EPA 8270	Benzo(a)pyrene	µg/L
L31NW02-GW1	0.74	0.74	2.4	EPA 8270	Benzo(b)fluoranthene	µg/L
L31NW02-GW2	0.86	0.86	2.8	EPA 8270	Benzo(b)fluoranthene	µg/L
L31NW02-GW3	0.62	0.62	2	EPA 8270	Benzo(b)fluoranthene	µg/L
L31NW02-GW1	0.81	0.81	6	EPA 8270	Benzo(g,h,i)perylene	µg/L
L31NW02-GW2	0.94	0.94	6.9	EPA 8270	Benzo(g,h,i)perylene	µg/L
L31NW02-GW3	0.68	0.68	5	EPA 8270	Benzo(g,h,i)perylene	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW1	0.61	0.61	4.8	EPA 8270	Benzo(k)fluoranthene	µg/L
L31NW02-GW2	0.7	0.7	5.5	EPA 8270	Benzo(k)fluoranthene	µg/L
L31NW02-GW3	0.51	0.51	4	EPA 8270	Benzo(k)fluoranthene	µg/L
L31NW02-GW1	0.75	0.75	6	EPA 8270	Benzyl Alcohol	µg/L
L31NW02-GW2	0.87	0.87	6.9	EPA 8270	Benzyl Alcohol	µg/L
L31NW02-GW3	0.63	0.63	5	EPA 8270	Benzyl Alcohol	µg/L
L31NW02-GW1	0.0077	0.0077	0.0096	EPA 8081	beta-BHC	µg/L
L31NW02-GW3	0.0079	0.0079	0.0099	EPA 8081	beta-BHC	µg/L
L31NW02-GW2	0.0085	0.0085	0.011	EPA 8081	beta-BHC	µg/L
L31NW02-GW3	3	3	5	EPA 8270	bis(2-chloroethoxy)methane	µg/L
L31NW02-GW1	3.5	3.5	6	EPA 8270	bis(2-chloroethoxy)methane	µg/L
L31NW02-GW2	4.1	4.1	6.9	EPA 8270	bis(2-chloroethoxy)methane	µg/L
L31NW02-GW3	0.75	0.75	4	EPA 8270	bis(2-chloroethyl)ether	µg/L
L31NW02-GW1	0.9	0.9	4.8	EPA 8270	bis(2-chloroethyl)ether	µg/L
L31NW02-GW2	1	1	5.5	EPA 8270	bis(2-chloroethyl)ether	µg/L
L31NW02-GW3	0.8	0.8	5	EPA 8270	bis(2-Ethylhexyl)phthalate	µg/L
L31NW02-GW1	0.96	0.96	6	EPA 8270	bis(2-Ethylhexyl)phthalate	µg/L
L31NW02-GW2	1.1	1.1	6.9	EPA 8270	bis(2-Ethylhexyl)phthalate	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Bromobenzene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Bromobenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Bromobenzene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Bromochloromethane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Bromochloromethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Bromochloromethane	µg/L
L31NW02-GW1	0.3	0.3	1.2	EPA 8260C	Bromodichloromethane	µg/L
L31NW02-GW2	0.3	0.3	1.2	EPA 8260C	Bromodichloromethane	µg/L
L31NW02-GW3	0.3	0.3	1.2	EPA 8260C	Bromodichloromethane	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Bromoform	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Bromoform	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Bromoform	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Bromomethane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Bromomethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Bromomethane	µg/L
L31NW02-GW3	0.72	0.72	5	EPA 8270	Butyl Benzyl Phthalate	µg/L
L31NW02-GW1	0.86	0.86	6	EPA 8270	Butyl Benzyl Phthalate	µg/L
L31NW02-GW2	0.99	0.99	6.9	EPA 8270	Butyl Benzyl Phthalate	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 200.7	Cadmium	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 200.7	Cadmium	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 200.7	Cadmium	µg/L
L31NW02-GW3	70.1	0.5	2	EPA 200.7	Calcium	mg/L
L31NW02-GW1	69.1	0.5	2	EPA 200.7	Calcium	mg/L
L31NW02-GW2	66	0.5	2	EPA 200.7	Calcium	mg/L
L31NW02-GW3	1.3	1.3	5	EPA 8270	Caprolactam	µg/L
L31NW02-GW1	1.5	1.5	6	EPA 8270	Caprolactam	µg/L
L31NW02-GW2	1.7	1.7	6.9	EPA 8270	Caprolactam	µg/L
L31NW02-GW1	0.27	0.27	2	EPA 531.1	Carbaryl	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW2	0.27	0.27	2	EPA 531.1	Carbaryl	µg/L
L31NW02-GW3	0.27	0.27	2	EPA 531.1	Carbaryl	µg/L
L31NW02-GW3	0.47	0.47	5	EPA 8270	Carbazole	µg/L
L31NW02-GW1	0.56	0.56	6	EPA 8270	Carbazole	µg/L
L31NW02-GW2	0.65	0.65	6.9	EPA 8270	Carbazole	µg/L
L31NW02-GW1	0.32	0.32	2	EPA 531.1	Carbofuran	µg/L
L31NW02-GW2	0.32	0.32	2	EPA 531.1	Carbofuran	µg/L
L31NW02-GW3	0.32	0.32	2	EPA 531.1	Carbofuran	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Carbon Tetrachloride	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Carbon Tetrachloride	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Carbon Tetrachloride	µg/L
L31NW02-GW1	0.17	0.17	0.48	EPA 8081	Chlordane	µg/L
L31NW02-GW3	0.17	0.17	0.49	EPA 8081	Chlordane	µg/L
L31NW02-GW2	0.19	0.19	0.53	EPA 8081	Chlordane	µg/L
L31NW02-GW3	48	1	15	EPA 325.2	Chloride	mg/L
L31NW02-GW1	50	1	15	EPA 325.2	Chloride	mg/L
L31NW02-GW2	50	1	15	EPA 325.2	Chloride	mg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Chlorobenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Chlorobenzene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Chlorobenzene	µg/L
L31NW02-GW1	0.3	0.3	1.2	EPA 8260C	Chlorodibromomethane	µg/L
L31NW02-GW2	0.3	0.3	1.2	EPA 8260C	Chlorodibromomethane	µg/L
L31NW02-GW3	0.3	0.3	1.2	EPA 8260C	Chlorodibromomethane	µg/L
L31NW02-GW1	1	1	4	EPA 8260C	Chloroethane	µg/L
L31NW02-GW2	1	1	4	EPA 8260C	Chloroethane	µg/L
L31NW02-GW3	1	1	4	EPA 8260C	Chloroethane	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Chloroform	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Chloroform	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Chloroform	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Chloromethane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Chloromethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Chloromethane	µg/L
L31NW02-GW3	0.26	0.26	0.54	EPA 8141	Chlorpyrifos	µg/L
L31NW02-GW1	0.24	0.24	0.49	EPA 8141	Chlorpyrifos	µg/L
L31NW02-GW2	0.24	0.24	0.5	EPA 8141	Chlorpyrifos	µg/L
L31NW02-GW3	0.7	0.7	2.8	EPA 200.7	Chromium	µg/L
L31NW02-GW1	0.7	0.7	2.8	EPA 200.7	Chromium	µg/L
L31NW02-GW2	0.7	0.7	2.8	EPA 200.7	Chromium	µg/L
L31NW02-GW3	6	6	24	EPA 7196A	Chromium, Hexavalent	µg/L
L31NW02-GW1	6	6	24	EPA 7196A	Chromium, Hexavalent	µg/L
L31NW02-GW2	6	6	24	EPA 7196A	Chromium, Hexavalent	µg/L
L31NW02-GW3	0.37	0.37	5	EPA 8270	Chrysene	µg/L
L31NW02-GW1	0.44	0.44	6	EPA 8270	Chrysene	µg/L
L31NW02-GW2	0.51	0.51	6.9	EPA 8270	Chrysene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	cis-1,2-Dichloroethene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	cis-1,2-Dichloroethene	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW3	0.5	0.5	2	EPA 8260C	cis-1,2-Dichloroethene	µg/L
L31NW02-GW1	0.3	0.3	1.2	EPA 8260C	cis-1,3-Dichloropropene	µg/L
L31NW02-GW2	0.3	0.3	1.2	EPA 8260C	cis-1,3-Dichloropropene	µg/L
L31NW02-GW3	0.3	0.3	1.2	EPA 8260C	cis-1,3-Dichloropropene	µg/L
L31NW02-GW2	35	5		EPA 110.2	Color (Apparent)	PCU
L31NW02-GW3	30	5		EPA 110.2	Color (Apparent)	PCU
L31NW02-GW1	38	5		EPA 110.2	Color (Apparent)	PCU
L31NW02-GW3	0.7	0.7	2.8	EPA 200.7	Copper	µg/L
L31NW02-GW1	0.7	0.7	2.8	EPA 200.7	Copper	µg/L
L31NW02-GW2	0.7	0.7	2.8	EPA 200.7	Copper	µg/L
L31NW02-GW3	0.28	0.28	0.54	EPA 8141	Coumaphos	µg/L
L31NW02-GW1	0.26	0.26	0.49	EPA 8141	Coumaphos	µg/L
L31NW02-GW2	0.26	0.26	0.5	EPA 8141	Coumaphos	µg/L
L31NW02-GW1	0.002	0.002	0.01	EPA 335.4	Cyanide	mg/l
L31NW02-GW2	0.002	0.002	0.01	EPA 335.4	Cyanide	mg/l
L31NW02-GW3	0.002	0.002	0.01	EPA 335.4	Cyanide	mg/l
L31NW02-GW1	0.44	0.44	0.93	EPA 8151	Dalapon	µg/L
L31NW02-GW2	0.42	0.42	0.88	EPA 8151	Dalapon	µg/L
L31NW02-GW3	0.45	0.45	0.94	EPA 8151	Dalapon	µg/L
L31NW02-GW1	60			EPA 8081	Decachlorobiphenyl	%
L31NW02-GW3	59			EPA 8081	Decachlorobiphenyl	%
L31NW02-GW2	60			EPA 8081	Decachlorobiphenyl	%
L31NW02-GW1	0.0046	0.0046	0.0096	EPA 8081	delta-BHC	µg/L
L31NW02-GW3	0.0047	0.0047	0.0099	EPA 8081	delta-BHC	µg/L
L31NW02-GW2	0.0051	0.0051	0.011	EPA 8081	delta-BHC	µg/L
L31NW02-GW3	0.28	0.28	0.54	EPA 8141	Diazinon	µg/L
L31NW02-GW1	0.26	0.26	0.49	EPA 8141	Diazinon	µg/L
L31NW02-GW2	0.26	0.26	0.5	EPA 8141	Diazinon	µg/L
L31NW02-GW3	0.65	0.65	2	EPA 8270	Dibenzo(a,h)anthracene	µg/L
L31NW02-GW1	0.78	0.78	2.4	EPA 8270	Dibenzo(a,h)anthracene	µg/L
L31NW02-GW2	0.9	0.9	2.8	EPA 8270	Dibenzo(a,h)anthracene	µg/L
L31NW02-GW3	0.67	0.67	5	EPA 8270	Dibenzofuran	µg/L
L31NW02-GW1	0.8	0.8	6	EPA 8270	Dibenzofuran	µg/L
L31NW02-GW2	0.92	0.92	6.9	EPA 8270	Dibenzofuran	µg/L
L31NW02-GW1	98.53			EPA 8260C	Dibromofluoromethane	%
L31NW02-GW2	98.93			EPA 8260C	Dibromofluoromethane	%
L31NW02-GW3	97.4			EPA 8260C	Dibromofluoromethane	%
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Dibromomethane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Dibromomethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Dibromomethane	µg/L
L31NW02-GW1	0.031	0.031	0.096	EPA 8151	Dicamba	µg/L
L31NW02-GW2	0.029	0.029	0.091	EPA 8151	Dicamba	µg/L
L31NW02-GW3	0.031	0.031	0.097	EPA 8151	Dicamba	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Dichlorodifluoromethane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Dichlorodifluoromethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Dichlorodifluoromethane	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Dichloromethane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Dichloromethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Dichloromethane	µg/L
L31NW02-GW3	0.21	0.21	0.54	EPA 8141	Dichlorvos	µg/L
L31NW02-GW1	0.2	0.2	0.49	EPA 8141	Dichlorvos	µg/L
L31NW02-GW2	0.2	0.2	0.5	EPA 8141	Dichlorvos	µg/L
L31NW02-GW1	0.0019	0.0019	0.0096	EPA 8081	Dieldrin	µg/L
L31NW02-GW3	0.002	0.002	0.0099	EPA 8081	Dieldrin	µg/L
L31NW02-GW2	0.0021	0.0021	0.011	EPA 8081	Dieldrin	µg/L
L31NW02-GW3	0.51	0.51	5	EPA 8270	Diethyl Phthalate	µg/L
L31NW02-GW1	0.61	0.61	6	EPA 8270	Diethyl Phthalate	µg/L
L31NW02-GW2	0.7	0.7	6.9	EPA 8270	Diethyl Phthalate	µg/L
L31NW02-GW3	0.26	0.26	0.54	EPA 8141	Dimethoate	µg/L
L31NW02-GW1	0.24	0.24	0.49	EPA 8141	Dimethoate	µg/L
L31NW02-GW2	0.24	0.24	0.5	EPA 8141	Dimethoate	µg/L
L31NW02-GW3	0.64	0.64	5	EPA 8270	Dimethyl Phthalate	µg/L
L31NW02-GW1	0.76	0.76	6	EPA 8270	Dimethyl Phthalate	µg/L
L31NW02-GW2	0.88	0.88	6.9	EPA 8270	Dimethyl Phthalate	µg/L
L31NW02-GW3	0.41	0.41	5	EPA 8270	Di-n-butyl Phthalate	µg/L
L31NW02-GW1	0.49	0.49	6	EPA 8270	Di-n-butyl Phthalate	µg/L
L31NW02-GW2	0.57	0.57	6.9	EPA 8270	Di-n-butyl Phthalate	µg/L
L31NW02-GW3	0.9	0.9	5	EPA 8270	Di-n-octyl Phthalate	µg/L
L31NW02-GW1	1.1	1.1	6	EPA 8270	Di-n-octyl Phthalate	µg/L
L31NW02-GW2	1.2	1.2	6.9	EPA 8270	Di-n-octyl Phthalate	µg/L
L31NW02-GW1	0.058	0.058	0.19	EPA 8151	Dinoseb	µg/L
L31NW02-GW2	0.055	0.055	0.18	EPA 8151	Dinoseb	µg/L
L31NW02-GW3	0.059	0.059	0.2	EPA 8151	Dinoseb	µg/L
L31NW02-GW1	0.09			FT1500	Dissolved Oxygen (Field)	mg/L
L31NW02-GW3	0.12			FT1500	Dissolved Oxygen (Field)	mg/L
L31NW02-GW2	0.1			FT1500	Dissolved Oxygen (Field)	mg/L
L31NW02-GW3	1.5			FT1500	Dissolved Oxygen Saturation (Field)	% Sat.
L31NW02-GW1	1.2			FT1500	Dissolved Oxygen Saturation (Field)	% Sat.
L31NW02-GW2	1.3			FT1500	Dissolved Oxygen Saturation (Field)	% Sat.
L31NW02-GW3	0.27	0.27	0.54	EPA 8141	Disulfoton	µg/L
L31NW02-GW1	0.25	0.25	0.49	EPA 8141	Disulfoton	µg/L
L31NW02-GW2	0.26	0.26	0.5	EPA 8141	Disulfoton	µg/L
L31NW02-GW1	0.0049	0.0049	0.0096	EPA 8081	Endosulfan I	µg/L
L31NW02-GW3	0.005	0.005	0.0099	EPA 8081	Endosulfan I	µg/L
L31NW02-GW2	0.0054	0.0054	0.011	EPA 8081	Endosulfan I	µg/L
L31NW02-GW1	0.0038	0.0038	0.0096	EPA 8081	Endosulfan II	µg/L
L31NW02-GW2	0.0042	0.0042	0.011	EPA 8081	Endosulfan II	µg/L
L31NW02-GW3	0.004	0.004	0.0099	EPA 8081	Endosulfan II	µg/L
L31NW02-GW1	0.0059	0.0059	0.096	EPA 8081	Endosulfan Sulfate	µg/L
L31NW02-GW3	0.0061	0.0061	0.099	EPA 8081	Endosulfan Sulfate	µg/L
L31NW02-GW2	0.0066	0.0066	0.11	EPA 8081	Endosulfan Sulfate	µg/L
L31NW02-GW1	0.0041	0.0041	0.0096	EPA 8081	Endrin	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW2	0.0046	0.0046	0.011	EPA 8081	Endrin	µg/L
L31NW02-GW3	0.0042	0.0042	0.0099	EPA 8081	Endrin	µg/L
L31NW02-GW1	0.0035	0.0035	0.096	EPA 8081	Endrin Aldehyde	µg/L
L31NW02-GW3	0.0036	0.0036	0.099	EPA 8081	Endrin Aldehyde	µg/L
L31NW02-GW2	0.0038	0.0038	0.11	EPA 8081	Endrin Aldehyde	µg/L
L31NW02-GW1	0.0048	0.0048	0.0096	EPA 8081	Endrin Ketone	µg/L
L31NW02-GW2	0.0053	0.0053	0.011	EPA 8081	Endrin Ketone	µg/L
L31NW02-GW3	0.0049	0.0049	0.0099	EPA 8081	Endrin Ketone	µg/L
L31NW02-GW3	0.29	0.29	0.54	EPA 8141	Ethion	µg/L
L31NW02-GW1	0.27	0.27	0.49	EPA 8141	Ethion	µg/L
L31NW02-GW2	0.27	0.27	0.5	EPA 8141	Ethion	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Ethylbenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Ethylbenzene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Ethylbenzene	µg/L
L31NW02-GW3	0.31	0.31	0.54	EPA 8141	Famphur	µg/L
L31NW02-GW1	0.29	0.29	0.49	EPA 8141	Famphur	µg/L
L31NW02-GW2	0.29	0.29	0.5	EPA 8141	Famphur	µg/L
L31NW02-GW1	0	1		SM 9222D	Fecal Coliform (MF)	cfu/100 mL
L31NW02-GW2	0	1		SM 9222D	Fecal Coliform (MF)	cfu/100 mL
L31NW02-GW3	0	1		SM 9222D	Fecal Coliform (MF)	cfu/100 mL
L31NW02-GW3	0.54	0.54	5	EPA 8270	Fluoranthene	µg/L
L31NW02-GW1	0.64	0.64	6	EPA 8270	Fluoranthene	µg/L
L31NW02-GW2	0.75	0.75	6.9	EPA 8270	Fluoranthene	µg/L
L31NW02-GW3	0.56	0.56	5	EPA 8270	Fluorene	µg/L
L31NW02-GW1	0.67	0.67	6	EPA 8270	Fluorene	µg/L
L31NW02-GW2	0.77	0.77	6.9	EPA 8270	Fluorene	µg/L
L31NW02-GW1	0.2	0.034	0.05	EPA 300	Fluoride	mg/L
L31NW02-GW2	0.19	0.034	0.05	EPA 300	Fluoride	mg/L
L31NW02-GW3	0.17	0.034	0.05	EPA 300	Fluoride	mg/L
L31NW02-GW1	0.0021	0.0021	0.0096	EPA 8081	gamma-BHC (Lindane)	µg/L
L31NW02-GW2	0.0023	0.0023	0.011	EPA 8081	gamma-BHC (Lindane)	µg/L
L31NW02-GW3	0.0022	0.0022	0.0099	EPA 8081	gamma-BHC (Lindane)	µg/L
L31NW02-GW1	4.2	4.2	6	EPA 547	Glyphosate	µg/L
L31NW02-GW2	4.2	4.2	6	EPA 547	Glyphosate	µg/L
L31NW02-GW3	4.2	4.2	6	EPA 547	Glyphosate	µg/L
L31NW02-GW3	204	1	4	SM 2340B	Hardness, Carbonate	mg/L
L31NW02-GW1	204	1	4	SM 2340B	Hardness, Carbonate	mg/L
L31NW02-GW2	194	1	4	SM 2340B	Hardness, Carbonate	mg/L
L31NW02-GW1	0.0059	0.0059	0.0096	EPA 8081	Heptachlor	µg/L
L31NW02-GW2	0.0066	0.0066	0.011	EPA 8081	Heptachlor	µg/L
L31NW02-GW3	0.0061	0.0061	0.0099	EPA 8081	Heptachlor	µg/L
L31NW02-GW1	0.005	0.005	0.0096	EPA 8081	Heptachlor Epoxide	µg/L
L31NW02-GW2	0.0055	0.0055	0.011	EPA 8081	Heptachlor Epoxide	µg/L
L31NW02-GW3	0.0051	0.0051	0.0099	EPA 8081	Heptachlor Epoxide	µg/L
L31NW02-GW3	0.8	0.8	1	EPA 8270	Hexachlorobenzene	µg/L
L31NW02-GW1	0.96	0.96	1.2	EPA 8270	Hexachlorobenzene	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW2	1.1	1.1	1.4	EPA 8270	Hexachlorobenzene	µg/L
L31NW02-GW3	1.1	1.1	2	EPA 8270	Hexachlorobutadiene	µg/L
L31NW02-GW1	1.3	1.3	2.4	EPA 8270	Hexachlorobutadiene	µg/L
L31NW02-GW2	1.5	1.5	2.8	EPA 8270	Hexachlorobutadiene	µg/L
L31NW02-GW3	1.3	1.3	5	EPA 8270	Hexachlorocyclopentadiene	µg/L
L31NW02-GW1	1.5	1.5	6	EPA 8270	Hexachlorocyclopentadiene	µg/L
L31NW02-GW2	1.8	1.8	6.9	EPA 8270	Hexachlorocyclopentadiene	µg/L
L31NW02-GW3	0.71	0.71	5	EPA 8270	Hexachloroethane	µg/L
L31NW02-GW1	0.85	0.85	6	EPA 8270	Hexachloroethane	µg/L
L31NW02-GW2	0.98	0.98	6.9	EPA 8270	Hexachloroethane	µg/L
L31NW02-GW3	0.73	0.73	2	EPA 8270	Indeno(1,2,3-cd)pyrene	µg/L
L31NW02-GW1	0.87	0.87	2.4	EPA 8270	Indeno(1,2,3-cd)pyrene	µg/L
L31NW02-GW2	1	1	2.8	EPA 8270	Indeno(1,2,3-cd)pyrene	µg/L
L31NW02-GW3	473	5	20	EPA 200.7	Iron	µg/L
L31NW02-GW1	1130	5	20	EPA 200.7	Iron	µg/L
L31NW02-GW2	636	5	20	EPA 200.7	Iron	µg/L
L31NW02-GW3	0.73	0.73	5	EPA 8270	Isophorone	µg/L
L31NW02-GW1	0.87	0.87	6	EPA 8270	Isophorone	µg/L
L31NW02-GW2	1	1	6.9	EPA 8270	Isophorone	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Isopropylbenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Isopropylbenzene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Isopropylbenzene	µg/L
L31NW02-GW3	3	3	12	EPA 200.7	Lead	µg/L
L31NW02-GW1	3	3	12	EPA 200.7	Lead	µg/L
L31NW02-GW2	3	3	12	EPA 200.7	Lead	µg/L
L31NW02-GW3	7.06	0.05	0.2	EPA 200.7	Magnesium	mg/L
L31NW02-GW1	7.52	0.05	0.2	EPA 200.7	Magnesium	mg/L
L31NW02-GW2	7.2	0.05	0.2	EPA 200.7	Magnesium	mg/L
L31NW02-GW3	0.29	0.29	0.54	EPA 8141	Malathion	µg/L
L31NW02-GW1	0.27	0.27	0.49	EPA 8141	Malathion	µg/L
L31NW02-GW2	0.27	0.27	0.5	EPA 8141	Malathion	µg/L
L31NW02-GW3	8.3	0.5	2	EPA 200.7	Manganese	µg/L
L31NW02-GW1	8.5	0.5	2	EPA 200.7	Manganese	µg/L
L31NW02-GW2	7	0.5	2	EPA 200.7	Manganese	µg/L
L31NW02-GW3	0.3	0.3	8	EPA 8270	m-Dinitrobenzene	µg/L
L31NW02-GW1	0.35	0.35	9.6	EPA 8270	m-Dinitrobenzene	µg/L
L31NW02-GW2	0.41	0.41	11	EPA 8270	m-Dinitrobenzene	µg/L
L31NW02-GW3	0.003	0.003	0.005	EPA 245.7	Mercury	µg/L
L31NW02-GW1	0.003	0.003	0.005	EPA 245.7	Mercury	µg/L
L31NW02-GW2	0.003	0.003	0.005	EPA 245.7	Mercury	µg/L
L31NW02-GW1	0.55	0.55	2	EPA 531.1	Methiocarb	µg/L
L31NW02-GW2	0.55	0.55	2	EPA 531.1	Methiocarb	µg/L
L31NW02-GW3	0.55	0.55	2	EPA 531.1	Methiocarb	µg/L
L31NW02-GW1	0.57	0.57	2	EPA 531.1	Methomyl	µg/L
L31NW02-GW2	0.57	0.57	2	EPA 531.1	Methomyl	µg/L
L31NW02-GW3	0.57	0.57	2	EPA 531.1	Methomyl	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW1	0.0092	0.0092	0.0096	EPA 8081	Methoxychlor	µg/L
L31NW02-GW2	0.01	0.01	0.011	EPA 8081	Methoxychlor	µg/L
L31NW02-GW3	0.0095	0.0095	0.0099	EPA 8081	Methoxychlor	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Methyl-t-butyl Ether (MTBE)	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Methyl-t-butyl Ether (MTBE)	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Methyl-t-butyl Ether (MTBE)	µg/L
L31NW02-GW3	0.78	0.78	5	EPA 8270	Naphthalene	µg/L
L31NW02-GW1	0.93	0.93	6	EPA 8270	Naphthalene	µg/L
L31NW02-GW2	1.1	1.1	6.9	EPA 8270	Naphthalene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	n-Butylbenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	n-Butylbenzene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	n-Butylbenzene	µg/L
L31NW02-GW3	2	2	8	EPA 200.7	Nickel	µg/L
L31NW02-GW1	2	2	8	EPA 200.7	Nickel	µg/L
L31NW02-GW2	2	2	8	EPA 200.7	Nickel	µg/L
L31NW02-GW3	0.03	0.01	0.04	EPA 353.2	Nitrate/Nitrite (NO_x)	mg/L
L31NW02-GW1	0.01	0.01	0.04	EPA 353.2	Nitrate/Nitrite (NO_x)	mg/L
L31NW02-GW2	0.01	0.01	0.04	EPA 353.2	Nitrate/Nitrite (NO_x)	mg/L
L31NW02-GW3	1.1	1.1	4	EPA 8270	Nitrobenzene	µg/L
L31NW02-GW1	1.3	1.3	4.8	EPA 8270	Nitrobenzene	µg/L
L31NW02-GW2	1.5	1.5	5.5	EPA 8270	Nitrobenzene	µg/L
L31NW02-GW1	40			EPA 8270	Nitrobenzene-d5	%
L31NW02-GW2	45			EPA 8270	Nitrobenzene-d5	%
L31NW02-GW3	43			EPA 8270	Nitrobenzene-d5	%
L31NW02-GW3	0.97	0.97	2	EPA 8270	n-Nitroso-dimethylamine	µg/L
L31NW02-GW1	1.2	1.2	2.4	EPA 8270	n-Nitroso-dimethylamine	µg/L
L31NW02-GW2	1.3	1.3	2.8	EPA 8270	n-Nitroso-dimethylamine	µg/L
L31NW02-GW3	0.94	0.94	4	EPA 8270	n-Nitroso-di-n-propylamine	µg/L
L31NW02-GW1	1.1	1.1	4.8	EPA 8270	n-Nitroso-di-n-propylamine	µg/L
L31NW02-GW2	1.3	1.3	5.5	EPA 8270	n-Nitroso-di-n-propylamine	µg/L
L31NW02-GW3	0.5	0.5	5	EPA 8270	n-Nitrosodiphenylamine	µg/L
L31NW02-GW1	0.6	0.6	6	EPA 8270	n-Nitrosodiphenylamine	µg/L
L31NW02-GW2	0.69	0.69	6.9	EPA 8270	n-Nitrosodiphenylamine	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	n-Propylbenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	n-Propylbenzene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	n-Propylbenzene	µg/L
L31NW02-GW1	0.55	0.55	2	EPA 531.1	Oxamyl	µg/L
L31NW02-GW2	0.55	0.55	2	EPA 531.1	Oxamyl	µg/L
L31NW02-GW3	0.55	0.55	2	EPA 531.1	Oxamyl	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	o-Xylene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	o-Xylene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	o-Xylene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	p & m-Xylene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	p & m-Xylene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	p & m-Xylene	µg/L
L31NW02-GW3	0.51	0.51	1.1	EPA 8141	Parathion	µg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW1	0.47	0.47	0.99	EPA 8141	Parathion	µg/L
L31NW02-GW2	0.47	0.47	1	EPA 8141	Parathion	µg/L
L31NW02-GW3	0.29	0.29	0.54	EPA 8141	Parathion Methyl	µg/L
L31NW02-GW1	0.26	0.26	0.49	EPA 8141	Parathion Methyl	µg/L
L31NW02-GW2	0.27	0.27	0.5	EPA 8141	Parathion Methyl	µg/L
L31NW02-GW1	0.017	0.017	0.029	EPA 8151	Pentachlorophenol (PCP)	µg/L
L31NW02-GW3	0.66	0.66	20	EPA 8270	Pentachlorophenol (PCP)	µg/L
L31NW02-GW1	0.79	0.79	23.9	EPA 8270	Pentachlorophenol (PCP)	µg/L
L31NW02-GW2	0.91	0.91	27.6	EPA 8270	Pentachlorophenol (PCP)	µg/L
L31NW02-GW2	0.016	0.016	0.028	EPA 8151	Pentachlorophenol (PCP)	µg/L
L31NW02-GW3	0.018	0.018	0.029	EPA 8151	Pentachlorophenol (PCP)	µg/L
L31NW02-GW1	6.93			FT1100	pH (Field)	None
L31NW02-GW3	6.94			FT1100	pH (Field)	None
L31NW02-GW2	6.94			FT1100	pH (Field)	None
L31NW02-GW3	7.1				pH (Lab)	None
L31NW02-GW1	7.2				pH (Lab)	None
L31NW02-GW2	7.1				pH (Lab)	None
L31NW02-GW3	0.52	0.52	5	EPA 8270	Phenanthrene	µg/L
L31NW02-GW1	0.62	0.62	6	EPA 8270	Phenanthrene	µg/L
L31NW02-GW2	0.72	0.72	6.9	EPA 8270	Phenanthrene	µg/L
L31NW02-GW3	0.54	0.54	5	EPA 8270	Phenol	µg/L
L31NW02-GW1	0.64	0.64	6	EPA 8270	Phenol	µg/L
L31NW02-GW2	0.75	0.75	6.9	EPA 8270	Phenol	µg/L
L31NW02-GW1	14			EPA 8270	Phenol-d6	%
L31NW02-GW2	18			EPA 8270	Phenol-d6	%
L31NW02-GW3	12			EPA 8270	Phenol-d6	%
L31NW02-GW3	4	4	16	EPA 420.2	Phenols	µg/L
L31NW02-GW1	4	4	16	EPA 420.2	Phenols	µg/L
L31NW02-GW2	4	4	16	EPA 420.2	Phenols	µg/L
L31NW02-GW3	0.45	0.45	1.1	EPA 8141	Phorate	µg/L
L31NW02-GW1	0.41	0.41	0.99	EPA 8141	Phorate	µg/L
L31NW02-GW2	0.42	0.42	1	EPA 8141	Phorate	µg/L
L31NW02-GW3	0.24	0.24	0.54	EPA 8141	Phosdrin	µg/L
L31NW02-GW1	0.22	0.22	0.49	EPA 8141	Phosdrin	µg/L
L31NW02-GW2	0.22	0.22	0.5	EPA 8141	Phosdrin	µg/L
L31NW02-GW3	0.29	0.29	0.54	EPA 8141	Phosmet	µg/L
L31NW02-GW1	0.27	0.27	0.49	EPA 8141	Phosmet	µg/L
L31NW02-GW2	0.27	0.27	0.5	EPA 8141	Phosmet	µg/L
L31NW02-GW3	0.004	0.002	0.008	EPA 365.1	Phosphorus, Total (TPO_4-P)	mg/L
L31NW02-GW1	0.007	0.002	0.008	EPA 365.1	Phosphorus, Total (TPO_4-P)	mg/L
L31NW02-GW2	0.005	0.002	0.008	EPA 365.1	Phosphorus, Total (TPO_4-P)	mg/L
L31NW02-GW1	0.019	0.019	0.096	EPA 8151	Picloram	µg/L
L31NW02-GW2	0.018	0.018	0.092	EPA 8151	Picloram	µg/L
L31NW02-GW3	0.02	0.02	0.098	EPA 8151	Picloram	µg/L
L31NW02-GW3	3.1	0.4	1.6	EPA 200.7	Potassium	mg/L
L31NW02-GW1	3.7	0.4	1.6	EPA 200.7	Potassium	mg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW2	3.5	0.4	1.6	EPA 200.7	Potassium	mg/L
L31NW02-GW3	0.68	0.68	5	EPA 8270	Pyrene	µg/L
L31NW02-GW1	0.81	0.81	6	EPA 8270	Pyrene	µg/L
L31NW02-GW2	0.94	0.94	6.9	EPA 8270	Pyrene	µg/L
L31NW02-GW3	1.5	1.5	5	EPA 8270	Pyridine	µg/L
L31NW02-GW1	1.8	1.8	6	EPA 8270	Pyridine	µg/L
L31NW02-GW2	2.1	2.1	6.9	EPA 8270	Pyridine	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	sec-Butylbenzene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	sec-Butylbenzene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	sec-Butylbenzene	µg/L
L31NW02-GW3	8	8	32	EPA 200.7	Selenium	µg/L
L31NW02-GW1	8	8	32	EPA 200.7	Selenium	µg/L
L31NW02-GW2	8	8	32	EPA 200.7	Selenium	µg/L
L31NW02-GW3	0.9	0.5	2	EPA 200.7	Silver	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 200.7	Silver	µg/L
L31NW02-GW2	0.8	0.5	2	EPA 200.7	Silver	µg/L
L31NW02-GW3	33.8	0.5	2	EPA 200.7	Sodium	mg/L
L31NW02-GW1	33.1	0.5	2	EPA 200.7	Sodium	mg/L
L31NW02-GW2	32.6	0.5	2	EPA 200.7	Sodium	mg/L
L31NW02-GW3	554.7			FT1200	Specific Conductivity (Field)	µmhos/cm
L31NW02-GW1	548.1			FT1200	Specific Conductivity (Field)	µmhos/cm
L31NW02-GW2	550.7			FT1200	Specific Conductivity (Field)	µmhos/cm
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Styrene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Styrene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Styrene	µg/L
L31NW02-GW1	26.67			FT1400	Temperature (Field)	°C
L31NW02-GW3	27.6			FT1400	Temperature (Field)	°C
L31NW02-GW2	28.13			FT1400	Temperature (Field)	°C
L31NW02-GW1	63			EPA 8270	Terphenyl-d14	%
L31NW02-GW2	67			EPA 8270	Terphenyl-d14	%
L31NW02-GW3	58			EPA 8270	Terphenyl-d14	%
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Tetrachloroethene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Tetrachloroethene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Tetrachloroethene	µg/L
L31NW02-GW1	95			EPA 8081	Tetrachloro-m-xylene (TCMX)	%
L31NW02-GW3	88			EPA 8081	Tetrachloro-m-xylene (TCMX)	%
L31NW02-GW2	82			EPA 8081	Tetrachloro-m-xylene (TCMX)	%
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Toluene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Toluene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Toluene	µg/L
L31NW02-GW1	96.6			EPA 8260C	Toluene-d8	%
L31NW02-GW2	96.87			EPA 8260C	Toluene-d8	%
L31NW02-GW3	96.73			EPA 8260C	Toluene-d8	%
L31NW02-GW1	0	1		SM 9222B	Total Coliform (MF)	cfu/100 mL
L31NW02-GW3	0	1		SM 9222B	Total Coliform (MF)	cfu/100 mL
L31NW02-GW3	327	2.5	20	EPA 160.1	Total Dissolved Solids	mg/L

Station ID	Value	Detection Limit	PQL	Analysis Method	Parameter Name	Units
L31NW02-GW1	323	2.5	20	EPA 160.1	Total Dissolved Solids	mg/L
L31NW02-GW2	319	2.5	20	EPA 160.1	Total Dissolved Solids	mg/L
L31NW02-GW3	0.68	0.08	0.32	EPA 351.2	Total Kjeldahl Nitrogen	mg/L
L31NW02-GW1	0.61	0.08	0.32	EPA 351.2	Total Kjeldahl Nitrogen	mg/L
L31NW02-GW2	0.68	0.08	0.32	EPA 351.2	Total Kjeldahl Nitrogen	mg/L
L31NW02-GW1	8.2	0.5	1	SM 5310B	Total Organic Carbon	mg/L
L31NW02-GW2	8.9	0.5	1	SM 5310B	Total Organic Carbon	mg/L
L31NW02-GW3	8.3	0.5	1	SM 5310B	Total Organic Carbon	mg/L
L31NW02-GW1	0.24	0.24	0.48	EPA 8081	Toxaphene	µg/L
L31NW02-GW2	0.27	0.27	0.53	EPA 8081	Toxaphene	µg/L
L31NW02-GW3	0.25	0.25	0.49	EPA 8081	Toxaphene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	trans-1,2-Dichloroethene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	trans-1,2-Dichloroethene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	trans-1,2-Dichloroethene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	trans-1,3-Dichloropropene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	trans-1,3-Dichloropropene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	trans-1,3-Dichloropropene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Trichloroethene	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Trichloroethene	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Trichloroethene	µg/L
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Trichlorofluoromethane	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Trichlorofluoromethane	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Trichlorofluoromethane	µg/L
L31NW02-GW3	40			EPA 8141	Triphenyl Phosphate	%
L31NW02-GW1	119			EPA 8141	Triphenyl Phosphate	%
L31NW02-GW2	84			EPA 8141	Triphenyl Phosphate	%
L31NW02-GW1	0.23	0.23	0.49	EPA 8141	Trithion	µg/L
L31NW02-GW3	0.25	0.25	0.54	EPA 8141	Trithion	µg/L
L31NW02-GW2	0.23	0.23	0.5	EPA 8141	Trithion	µg/L
L31NW02-GW3	0.5	0.1	0.4	EPA 180.1	Turbidity	NTU
L31NW02-GW1	1.6	0.1	0.4	EPA 180.1	Turbidity	NTU
L31NW02-GW2	0.7	0.1	0.4	EPA 180.1	Turbidity	NTU
L31NW02-GW1	1.45			FT1600	Turbidity (Field)	NTU
L31NW02-GW3	1.1			FT1600	Turbidity (Field)	NTU
L31NW02-GW2	1.01			FT1600	Turbidity (Field)	NTU
L31NW02-GW1	0.5	0.5	2	EPA 8260C	Vinyl Chloride	µg/L
L31NW02-GW2	0.5	0.5	2	EPA 8260C	Vinyl Chloride	µg/L
L31NW02-GW3	0.5	0.5	2	EPA 8260C	Vinyl Chloride	µg/L
L31NW02-GW3	13	4	16	EPA 200.7	Zinc	µg/L
L31NW02-GW1	14	4	16	EPA 200.7	Zinc	µg/L
L31NW02-GW2	13	4	16	EPA 200.7	Zinc	µg/L

°C = degrees Celsius; µg/L = micrograms per liter; µmhos/cm = micromhos per centimeter; cfu/100 mL = colony-forming units per 100 milliliters; EPA = U.S. Environmental Protection Agency; mg/L = milligrams per liter; NTU = nephelometric turbidity unit; PQL = practical quantitation limit.