LEE COUNTY CONSTRUCTION & DEMOLITION DEBRIS RECYCLING FACILITY

GROUNDWATER QUALITY TECHNICAL REPORT FIRST SEMINNUAL 2016 – FIRST SEMIANNUAL 2018

Conditions of Certification No. PA90-30H
Facility WACS ID No. 93715

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EXECUTIVE SUMMARY

The Lee County Solid Waste Division operates a Construction & Demolition Debris Recycling Facility (CDDRF) located at the Lee County Solid Waste Energy Recovery Facility (SWERF). A site location map (Figure 1) and a site plan with monitoring well locations (Figure 2) are presented in Attachment 1. Groundwater monitoring is conducted at the CDDRF in accordance with the Groundwater Monitoring Plan (GWMP) included in the permit application for the CDDRF dated March 31, 2010 and approved by the Florida Department of Environmental Protection (FDEP) in correspondence dated June 18, 2010. The CDDRF's GWMP is based on the Construction and Demolition Debris Recycling Facility Rules contained in 62-701.730, F.A.C. which cite Rule 62-701.510, F.A.C. for ground water monitoring design and reporting with the exceptions described in Rule 62-701.730(4)(b). The CDDRF's GWMP was the basis for the SWERF's GWMP revisions (dated August 2010 and approved by FDEP on October 19, 2010) so that the monitoring was consistent for all groundwater monitoring wells on the site. The approved CDDRF's GWMP is summarized below.

FDEP's October 19, 2010 correspondence specified that a technical report is required for the CDDRF every 2.5 years commencing in February 2011. In accordance with Rule 62-701.510(8)(b), F.A.C., this report summarizes and interprets the water quality and water level measurements collected from the CDDRF's approved groundwater monitoring (GWM) network from the First Semiannual 2016 through the First Semiannual 2018 sampling events. Throughout this report, the period from the First Semiannual 2016 through the First Semiannual 2018 sampling event is referred to as the "report period." This report conforms with the requirements of the permit and Chapter 62-701.510(8)(b) FAC. The following is a summary of the rule and the location of the associated information within this report:

- Tabular displays of any data which show that a monitoring parameter has been detected (Attachments 4 and 5), and graphical displays of any leachate key indicator parameter detected (Attachment 7), including hydrographs for all monitoring wells (Attachment 3).
- Trend analyses of any monitoring parameters consistently detected (Section 4.6 and Attachment 8).
- Comparisons among shallow, middle, and deep zone wells (Section 4.7).
- Comparisons between background water quality and the water quality in detection and compliance wells (Section 4.0).
- Correlations between related parameters such as Total Dissolved Solids and Specific Conductance (Section 4.8 and Attachment 9).
- Discussion of erratic or poorly correlated data (Section 4.9).
- An interpretation of the groundwater contour maps, including an evaluation of groundwater flow rates (Section 3.0).
- An evaluation of the adequacy of the water quality monitoring frequency and sampling locations based on site conditions (Section 3.0).

Class G-II water quality standards are defined as the FDEP Primary Drinking Water Standards (PDWS), Secondary Drinking Water Standards (SDWS), and the Chapter 62-777 Florida Administrative Code (FAC) Groundwater Cleanup Target Levels (GCTL).

The only confirmed analytical exceedances of primary and secondary groundwater standards observed at the CDDRF during the report period were Ammonia-Nitrogen, Total Dissolved Solids

(TDS), and Iron. Iron is naturally occurring in the sediments of Florida and was reported at similar concentrations in both the background wells and the down-gradient wells.

Groundwater potentiometric surface maps were prepared for each sampling event. The surficial/shallow aquifer at the facility generally shows a westerly flow direction; the sandstone/deep aquifer shows a southerly flow direction. The vertical placement of each well screen was based upon site specific conditions—including monitoring certain lithologic intervals and proper well construction—and intersecting the water table was deemed secondary. No modifications to the permit outlined monitoring networks—including well locations, sampling frequency, or the parameter lists—are recommended at this time.

1 PHYSICAL LOCATION AND GEOLOGICAL SETTING

1.1 SITE LOCATION

The SWERF is located approximately 2.5 miles east the intersection of Interstate-75 and State Road 82, on the north side of Buckingham Road in Lee County, Florida. The SWERF property is approximately 280 acres of which approximately 155 acres are covered by the site certification issued under the Power Plant Siting Act. Facilities within the approximately 155-acre certified portion of the SWERF property include the solid waste energy recovery plant, a transfer station, a waste tire storage facility, a horticultural waste processing facility, a recovered-materials processing facility, a construction and demolition debris recycling facility, a vehicle maintenance facility and fueling station, and associated infrastructure and stormwater control. The remainder of the 155-acre site is used as buffer and conservation areas. A map of the facility is provided in Attachment 1.

1.2 REGIONAL HYDROGEOLOGICAL SETTING

The SWERF is located on the Immokalee Rise in the Southwestern Flatwoods physiographic region characterized by level land with groundwater levels very close to the surface and pine forests drained by sluggish streams with swampland, lakes, and sloughs. The terrain of South Florida includes a series of terraces associated with shoreline transgression and regression during the Pleistocene glaciation events. The site is in a relatively flat section of the Talbot Terrace. The native vegetation is pine flatwoods with some wet prairie and cypress swamps (Brooks, 1981; McPherson, 1994).

1.3 SITE-SPECIFIC HYDROGEOLOGICAL SETTING

Groundwater quality at the Facility is monitored by a network of wells and piezometers completed in the surficial aquifer. The shallow surficial aquifer is separated from the deeper sandstone aquifer by the upper Hawthorn confining unit.

The geology of the facility is described in the November 2002 Supplemental Application for Power Plant Site Certification PA-90-30C (Malcolm Pirnie, 2002) and in the August 1992 Power Plant Siting Act Permit Application PA-90-30 (Malcolm Pirnie, 1992). Based on these site hydrogeological studies, there are three significant hydrologic strata beneath the facility including the shallow/water table aquifer, the Hawthorn confining unit, and the sandstone aquifer. The shallow surficial aquifer is separated from the deeper sandstone aquifer by the upper Hawthorn confining unit.

The shallow/water table aquifer is a brown to white fine sand to sandy-clayey silt extending from the ground surface to an elevation about 0 ft NGVD or 20 feet below the ground surface. The shallow aquifer (S) wells are screened in this unit.

The Hawthorn confining unit is a green to gray silty clay to silty sand that extends from the base of the water table aquifer to about -45 ft NGVD, ranging from 40 to 50 feet thick on-site but up to 75 feet thick regionally. The low permeability clay is a confining zone between the upper surficial aquifer and the lower sandstone aquifer. The confining unit minimizes flow between the two aquifers.

The sandstone aquifer is dense, gray, weathered (semi-consolidated) sandstone that begins at about 66 to 69 feet below the surface and continues to a thickness of about 50 feet. The sandstone aquifer (D) wells are screened in this unit.

2 SITE-SPECIFIC MONITORING PROGRAMS

The SWERF's shallow-surficial groundwater monitoring network includes background well MW-1S and detection wells MW-2S, WTE-3SR, MW-4S, MW-5S, and MW-6S. (Please note that the SWERF's GWMP references all of the MW well designations as WTE (example: MW-1S = WTE-1S). However, the MW designation is used in the WACS FDEP Database Valid Values Table and in the WACS database. We therefore have used the MW designation for wells 1S, 2S, 4S, 5S, and 6S throughout this report.) The CDDRF's groundwater monitoring network shares three wells from the SWERF's groundwater monitoring network. MW-2S is designated as the background well for the CDDRF while WTE-3SR and MW-4S are the CDDRF's designated detection wells.

Although not currently monitored for water quality under the SWERF's approved GWMP, six deep wells (MW-1D and detection wells MW-2D, WTE-3DR, MW-4D, MW-5D, and MW-6D) were previously installed to monitor the sandstone aquifer at the SWERF. In accordance with the Department's approval of the SWERF's GWMP (dated October 19, 2010), the sandstone aquifer monitoring wells are inspected and maintained and monitored for groundwater elevations on the same schedule as the shallow aquifer monitoring wells.

No surface water monitoring is required in the current Conditions of Certification or GWMPs.

In accordance with both of the approved GWMPs, groundwater samples are collected from the shallow/water-table aquifer GWM wells semiannually during February and August and analyzed for the parameters listed in Rule 62-701.730(4)(b), FAC. Water levels are measured from all 12 shallow and deep zone wells on the same semiannual schedule. A summary of the monitoring well network, including the area each well monitors and well designation is provided in Table 2-1.

Table 2-1 Monitoring Sites at the CDDRF

Testsite Name*	Testsite WACS ID	Designation	Aquifer	Facility
MW-1S	23402	Background	Shallow Surficial	SWERF
MW-2S	23404	Detection/Background	Shallow Surficial	SWERF / CDDRF
WTE-3SR	27415	Detection	Shallow Surficial	SWERF / CDDRF
MW-4S	23409	Detection	Shallow Surficial	SWERF / CDDRF
MW-5S	23411	Detection	Shallow Surficial	SWERF
MW-6S	23413	Detection	Shallow Surficial	SWERF
MW-1D	23403	Piezometer	Deeper Surficial	SWERF
MW-2D	23405	Piezometer	Deeper Surficial	SWERF
WTE-3DR	27416	Piezometer	Deeper Surficial	SWERF
MW-4D	23410	Piezometer	Deeper Surficial	SWERF
MW-5D	23412	Piezometer	Deeper Surficial	SWERF
MW-6D	23414	Piezometer	Deeper Surficial	SWERF

* Well testsite names match those given in the WACS FDEP Database Valid Values Table and WACS Database

3 WATER QUALITY MONITORING PROGRAM EVALUATION

3.1 REGULATORY REQUIREMENTS

This Groundwater Monitoring Technical Report summarizes groundwater quality monitoring data collected during the First Semiannual 2016 through the First Semiannual 2018 sampling events and conforms to the requirements outlined in Chapter 62-701.510(8)(b), FAC and the reporting requirements outlined in the SWERF's GWMP. This report was prepared by Jones Edmunds and is submitted on behalf of the Lee County Solid Waste Division (LCSWD). The dates of the five routine semiannual sampling events included in the report period are listed in Table 3-1.

Table 3-1 Summary of Sampling Events at the CDDRF during the Report Period

Sampling Event	Sampling Date
First Semiannual 2016 (16S1*)	February 8, 2016; March 21, 2016 (resample)
Second Semiannual 2016 (16S2*)	August 8, 2016
First Semiannual 2017 (17S1*)	February 6, 2017
Second Semiannual 2017 (17S2*)	August 21, 2017
First Semiannual 2018 (18S1*)	February 12, 2018

*Event identification code used on graphs

Groundwater samples are collected from the shallow aquifer CDDRF wells semiannually during February and August and analyzed for the parameters listed in Rule 62-701.730(4)(b), FAC. A summary of the 62-701.730(4)(b), FAC parameters is provided below in Table 3-2.

Table 3-2 Rule 62-701.730(4)(b), FAC Parameter List

Field Parameters	Laboratory Parameters
pH	Aluminum
Turbidity	Chlorides
Temperature	Nitrate
Specific Conductivity	Sulfate
Dissolved Oxygen	Total Dissolved Solids
Static Water Level (before purging)	Iron
Colors and Sheens (by observation)	Sodium
	Arsenic
	Cadmium
	Chromium
	Lead
	Mercury
	Total Ammonia-N
	Xylenes
	Those parameters listed in EPA Methods 601 and 602

3.2 ADEQUACY OF MONITORING WELL LOCATIONS

3.2.1 GROUNDWATER FLOW DIRECTION – HORIZONTAL WELL PLACEMENT

Groundwater contour maps, which were developed as required using the water level measurements collected during the semiannual monitoring events and previously submitted with the Water Quality Monitoring Reports for each semiannual monitoring event, are included in Attachment 2. The surficial/shallow aquifer at the facility generally shows a westerly flow; the sandstone/deep aquifer shows a southerly flow. Monitoring wells MW-2S (background well for the CDDRF) and MW-1S (background well for the SWRRF) serve as upgradient wells and are located on the northeast and southeast corners of the facility, respectively. Monitoring wells MW-5S and MW-6S are on the west side of the property. MW-4S and WTE-3SR are located approximately in the center of the property.

Chapter 62-701.730(4)(b)3 FAC states that the well spacing requirements of Chapter 62-701.510(3)(d)3 FAC do not apply to construction and demolition debris recycling facilities. Chapter 62-701.730(4)(b)3 FAC requires a minimum of one upgradient and two downgradient wells and Section B, Specific Condition I.H.2.c of the Facility's Conditions of Certification requires sampling of the shallow aquifer only. Shallow monitoring well MW-2S is upgradient of the CDDRF and shallow monitoring wells WTE-3SR and MW-4S are downgradient of the CDDRF. The current monitoring system is compliant with the applicable rules and the GWMPs. Based upon the groundwater flow direction, the monitoring wells are adequately positioned to detect potential groundwater contamination emanating from the facility.

Water quality sampling of the deep sandstone aquifer wells was discontinued in accordance with the Department's approval of the SWERF's GWMP revisions (dated August 2010 and approved by FDEP on October 19, 2010). Potential contamination from the CDDRF operations is monitored in the shallow aquifer wells only. Movement of potential contaminants from the shallow surficial aquifer to the deep sandstone aquifer is unlikely due to the presence of the Upper Hawthorne Confining Layer below the shallow surficial aquifer. The confining layer is approximately five feet thick across the site. The sandstone aquifer monitoring wells are inspected and maintained and monitored for groundwater elevations on the same schedule as the shallow aquifer monitoring wells.

3.2.2 GROUNDWATER ELEVATION COMPARED TO WELL SCREEN INTERVALS – VERTICAL WELL PLACEMENT

Hydrographs for the shallow/surficial and deep/sandstone aquifers are included in Attachment 3. Maximum groundwater elevations measured during the report period generally occurred during the First Semiannual 2016 and Second Semiannual 2017 events. The lowest groundwater elevations of the report period occurred during the First Semiannual 2017 event. Table 3-3 presents well construction information and recorded fluctuations of the potentiometric surface during the report period.

The potentiometric surface of the surficial aquifer varied from a low of 12.94 feet NGVD—measured in MW-6S during the First Semiannual 2017 sampling event—to a high of 21.71 feet NGVD—measured in MW-1S during the Second Semiannual 2017 sampling event. The maximum potentiometric surface fluctuation in any shallow zone well was 5.25 feet in monitoring well MW-2S.

The potentiometric surface of the sandstone aquifer varied from a low of 6.11 feet NGVD—measured in MW-1D during the First Semiannual 2017 sampling event—to a high of 19.97 feet NGVD—measured in MW-2D during the First Semiannual 2016 sampling event. The maximum potentiometric surface fluctuation in any deep zone well was 8.38 feet in monitoring well MW-1D.

The wells were constructed to ensure an adequate seal above the screen and sand pack; therefore, the screened intervals are sometimes submerged. The deep/sandstone aquifer wells were screened below the upper Hawthorn confining layer. The deep/sandstone aquifer well screens are always submerged because the water level elevation measured in the sandstone aquifer wells is above the elevation of the confining layer. The vertical positioning of the monitoring wells is appropriate based upon site-specific conditions to detect potential groundwater contamination emanating from the CDDRF.

Table 3-3 Monitoring Well Information and Groundwater Elevation Fluctuation During the Report Period

Well	Well Type	Top-of-Casing Elevation (feet NGVD)	Screened Interval Elevation (feet NGVD)		Groundwater Elevation (feet NGVD)	
			Bottom	Top	Maximum	Minimum
Shallow Wells in the Surficial Aquifer						
MW-1S	BG	21.91	11.9	6.9	21.71	16.70
MW-2S	DE	24.18	14.2	9.2	21.32	16.07
WTE-3SR	DE	23.98	12.81	7.81	20.18	15.01
MW-4S	DE	22.48	12.5	7.5	18.48	13.47
MW-5S	DE	23.81	10.9	5.9	20.74	15.89
MW-6S	DE	23.66	13.7	8.7	17.87	12.94
Deep Wells in the Sandstone Aquifer						
MW-1D	PZ	22.96	-62	-72	14.49	6.11
MW-2D	PZ	23.52	-63	-73	19.97	14.40
WTE-3DR	PZ	23.91	-50.19	-60.19	19.05	13.71
MW-4D	PZ	23.81	-65	-75	17.59	12.14
MW-5D	PZ	24.50	-63	-73	19.51	14.15
MW-6D	PZ	22.91	-65	-75	17.28	11.58

Notes:

1) Maximum and Minimum groundwater elevations shown above are from the continuous-round measurements collected before sampling during the semiannual compliance groundwater monitoring events.

2) Well Types: BG = Background Well, DE = Detection Well, PZ = Piezometer.

3.3 Adequacy of Monitoring Frequency

3.3.1 Average Horizontal Groundwater Velocity Calculations

An approximation of horizontal groundwater velocity at the CDDRF can be calculated using a modified form of Darcy's equation:

$$v_x = -(K_h/n)i$$

where: v_x = average horizontal groundwater velocity (feet/day)
K_h = horizontal hydraulic conductivity (feet/day)
i = hydraulic gradient (ratio)
n = effective porosity (percent – entered into the equation as a decimal)

3.3.2 Horizontal Hydraulic Conductivity

Malcolm Pirnie (2002) provides estimates of hydraulic conductivity (K_h) between 400 and 550 ft/day for the water table aquifer. This estimate is based on regional transmissivity (T) data compared to local aquifer thickness (b) using the K_h=T/b approximation. However, this method over-estimates the hydraulic conductivity since this site is in a location where the water table aquifer is relatively thin (about 20 feet) compared to the places where transmissivity data were collected. Malcolm Pirnie cites the Lee County Water Resources Management Project report (James Montgomery, 1988) as the source of the water table aquifer transmissivity for their estimation.

Descriptions of the water table aquifer from the on-site borings indicate that most of the saturated thickness of the aquifer is a "Sandy/clayey silt with limestone fragments (marl)." These sediments should not be able to sustain the hydraulic conductivities estimated by Pirnie. Literature values for similar materials range from 0.003 ft/day (silt and clayey sands from Fetter, 2001) to 2 ft/day (sandy loam from Schroeder, 1994). Jones Edmunds estimates that the hydraulic conductivity of the water table aquifer beneath the facility is between 2 and 20 feet/day based on lithology descriptions and slug tests conducted at similar sites in the area. We used a hydraulic conductivity of 50 feet/day in the flow rate calculations as a conservative estimate to adjust for uncertainty.

For the Sandstone aquifer, James Montgomery (1998) estimated a hydraulic conductivity of 30 ft/day, which appears to be a reasonable estimation.

3.3.3 Hydraulic Gradient

Hydraulic gradient is the slope of the groundwater potentiometric surface parallel to flow quantified as the unitless quotient of the rise divided by the run.

$$\text{Hydraulic Gradient } (i) = \frac{\text{(GWE in Upgradient Well) – (GWE in Downgradient Well)}}{\text{Distance between wells}}$$

For the purposes of horizontal groundwater velocity calculations, hydraulic gradients (i) for the shallow surficial aquifer at the SWERF were determined using groundwater elevation (GWE) differences and the distance between monitoring wells MW-2S and MW-4S and between MW-2S and MW-6S. The hydraulic gradients in the sandstone aquifer are measured between MW-2D and MW-1D and between MW-2D and MW-6D. The flow path between these wells is typically almost perpendicular to the groundwater contours and reflects groundwater flow from high to low areas of groundwater elevation across the site. The resultant gradients range from 0.001386 to 0.003191 in the shallow aquifer and from 0.001242 to 0.003633 in the sandstone aquifer.

3.3.4 Effective Porosity

Fetter (2001) describes effective porosity as the porosity available for fluid flow. The difference between total porosity and effective porosity only arises when the sediments become cemented and hydraulic dead-ends are produced. For unconsolidated sediments, effective porosity is the total porosity.

Using the soil porosity table in the HELP Model Users Guide (Schroeder, 1994), which is for determining groundwater flow rate based on the default soil, waste, and geosynthetic characteristics, the porosity of SM surficial aquifer sands is predicted to be approximately 45.3 percent while the poorly consolidated sand of the sandstone aquifer should sustain a porosity of 43.7 percent.

3.3.5 Groundwater Flow Velocity Calculation

The parameters for the horizontal groundwater flow velocity calculations are tabulated and provided in Attachment 3. The calculated average horizontal groundwater flow velocity for the shallow surficial aquifer over the report period was 74.51 feet/year or 37.25 feet/6 months. The calculated average horizontal groundwater flow velocity for the sandstone aquifer over the report period was 87.74 feet/year or 43.87 feet/6 months.

The current semiannual monitoring frequency for the surficial aquifer appears sufficient based on the calculated average horizontal groundwater velocity. Alternate sampling frequency or well spacing is not proposed at this time.

4 GROUNDWATER QUALITY

4.1 PARAMETERS REPORTED AT OR OUTSIDE FDEP PRIMARY AND SECONDARY DRINKING WATER STANDARDS

FDEP groundwater standards (Class G-II water quality standards) include the Primary Drinking Water Standards (PDWS), Secondary Drinking Water Standards (SDWS), and Chapter 62-777, FAC, Groundwater Cleanup Target Levels (GCTL). Table 4-1 provides a list of the parameters reported above the corresponding groundwater standard or GCTL (or, for pH, outside the standard range) in the CDDRF background and detection wells during the report period. These parameters and others routinely detected at the facility are discussed in Sections 4.3 through 4.8.

Table 4-1 Parameters At or Outside Applicable Groundwater Standards

Field and Indicator Parameters:	Ammonia-Nitrogen
	Total Dissolved Solids (TDS)
Metals:	Iron

4.2 TABULAR AND GRAPHICAL DISPLAYS

Attachment 4 summarizes the water quality data for the above-noted parameters and compares these data to the corresponding groundwater quality standards for the report period. Attachment 5 provides a summary table of parameters reported above the laboratory detection limit during the report period and Attachment 6 provides a summary table of all data reported during the report period. Attachment 7 provides report period graphs of field parameters and laboratory parameters consistently reported above the laboratory detection limits. Attachment 8 provides historical trend graphs for selected parameters and Attachment 9 provides scatter plots for related parameters.

4.3 FIELD AND INDICATOR PARAMETERS

The SDWS for pH ranges from 6.5 to 8.5 standard units (SU). The pH values in background well MW-2S ranged from 6.60 to 7.07 during the report period. Levels of pH in the two detection wells were similar to the pH values measured in the background well, ranging from 6.67 to 7.20 S.U. All pH values for the report period were within the pH SDWS range.

Conductivity in the background well ranged from 701 to 972 µmhos/cm during the report period. Conductivity values in the two detection wells were similar to those reported in the background well, ranging from 585 to 895 µmhos/cm.

Ammonia-Nitrogen concentrations in background well MW-2S ranged from below the laboratory detection limit (BDL) to 1.02 mg/L. Ammonia-Nitrogen concentrations in detection well WTE-3SR were comparable to background, ranging from 0.0723 to 1.05 mg/L during the report period. Ammonia-Nitrogen in detection well MW-4S was reported above the GCTL of 2.8 mg/L during both 2016 sampling events and during the First Semiannual 2017 sampling event. A concentration of 19 mg/L was reported in MW-4S during the First Semiannual 2016 sampling event. The well was resampled in March 2016 and the

Ammonia-Nitrogen concentration had decreased to 4.0 mg/L. Ammonia-Nitrogen concentrations were reported at 4.44 mg/L and 4.24 mg/L during the two subsequent sampling events before dropping to 1.07 mg/L (below the GCTL) during the Second Semiannual 2017 sampling event. The concentration decreased again during the First Semiannual 2018 sampling event to 0.48 mg/L, remaining below the GCTL of 2.8 mg/L.

Chloride concentrations in the background well ranged from 13.6 to 27.7 mg/L during the report period. Concentrations in the two detection wells were comparable to background, ranging from 7.51 to 23.5 mg/L during the report period. All Chloride concentrations reported during the report period were below the SDWS of 250 mg/L.

Sulfate concentrations in background well MW-2S ranged from 138 to 228 mg/L during the report period. Sulfate concentrations in the two detection wells were lower than background, ranging from 33.4 to 90.8 mg/L during the report period. All Sulfate concentrations reported during the report period were below the SDWS of 250 mg/L.

TDS concentrations in the background well were consistently above the SDWS of 500 mg/L during the report period, ranging from 568 to 778 mg/L. TDS concentrations in the two detection wells were slightly lower than background, ranging from 388 to 612 mg/L. TDS above the SDWS of 500 mg/L was reported once in detection well WTE-3SR and twice in detection well MW-4S during the report period. These results are within the normal range of natural background for TDS in the water table aquifer in Florida.

4.4 METALS

Low-level Aluminum was consistently reported in the background and detection wells during the First Semiannual 2017 sampling event. Concentrations were below the SDWS of 200 µg/L. Aluminum was BDL in all wells for all other sampling events during the report period.

Low-level Arsenic was reported once in background well MW-2S, once in detection well WTE-3SR, and twice in detection well MW-4S. Concentrations were above the laboratory detection limit but below the PDWS of PDWS of 10 µg/L and ranged from 2.2 to 3.1 µg/L.

Iron concentrations above the SDWS of 300 µg/L were reported in all wells during the report period. The Iron concentrations in background well MW-2S ranged from 323 to 4,260 µg/L. Iron concentrations in the detection wells were comparable to background, ranging from 50.1 to 3,860 µg/L. These results are within the normal range of natural background for Iron in the water table aquifer in Florida.

Sodium in the background well ranged from 13.9 to 22.8 mg/L. Sodium concentrations in detection wells were comparable to those reported in the background well, ranging from 5.33 to 11.8 mg/L. Sodium was not above the PDWS of 160 mg/L in any well during the report period.

4.5 VOCS

There were no VOCs reported above laboratory detection limits during the report period in either the background or detection wells.

4.6 Groundwater Quality Trends

Attachment 8 provides historical concentration trend graphs of selected parameters. The graphs including data from 2010/2011 to the end of the report period for MW-2S and MW-4S and from 2012 to the end of the report period for WTE-3SR. The discussions below are not necessarily based on the slope of the trend line on the graph but on an interpretive evaluation of the trends based on overall concentration ranges and data fluctuations over time. General trends in historical data (date ranges included on the trend graphs) include:

- Groundwater elevations show seasonal trending with higher elevations reported during the Second Semiannual events performed during the rainy season compared to the First Semiannual events each year as expected.
- Turbidity spiked in all three wells during the First Semiannual 2017 sampling event. This was likely due to extremely dry weather prior to and during the sampling event causing lower than normal water levels in the wells. Historical hydrographs indicate that the First Semiannual 2017 period was the driest on record during the past nine years.
- pH has remained relatively stable or decreased slightly in all wells.
- Nitrate-Nitrogen spiked to in MW-4S during the Second Semiannual 2015 sampling event from historical concentrations of <1.0 mg/L to 6.18 mg/L. This was followed by a spike in Ammonia-Nitrogen (19 mg/L) in detection well MW-4S during the First Semiannual 2016 sampling event. The well was resampled in March 2016 and the Ammonia-Nitrogen concentration had decreased to 4.0 mg/L. Ammonia-Nitrogen concentrations remained slightly elevated compared to historical values during the two subsequent sampling events before decreasing to concentrations within normal historical concentrations ranges during the Second Semiannual 2017 and First Semiannual 2018 sampling events. Ammonia-Nitrogen was also slightly elevated in MW-2S and WTE-3SR during the First Semiannual 2017 sampling event. This is probably associated with the extremely low water levels at that time.
- Conductivity values spiked in all wells across the site (including the SWRRF wells) during the First Semiannual 2015 sampling event. Concentrations have remained relatively stable but slightly elevated compared to historical values since that time.
- TDS spiked in MW-2S and WTE-3SR during the Second Semiannual 2016 sampling event. TDS has been gradually increasing in MW-2S. TDS remained relatively stable but slightly elevated in MW-4S following the 16S2 spike in concentration. MW-4S appears to exhibit some seasonal fluctuations in TDS.
- Sulfate is increasing in background well MW-2S. Concentrations have increased from 50 mg/L to almost 250 mg/L in the past nine years. Sulfate in WTE-3SR spiked in 2014 then returned to previous levels before increasing again in 2016. Concentrations have generally fluctuated between 30 and 80 mg/L. Sulfate in WTE-4S were decreasing until concentrations spiked during the Second Semiannual 2015 event and then again during the Second Semiannual 2017 sampling event.
- Chloride and Sodium have been decreasing in background well WTE-2S since 2015. Chloride and Sodium in the detection wells has remained relatively stable or decreased slightly.

- Occasional low-level detections of Arsenic have been reported in all three wells with no apparent trending.
- Iron appears to vary seasonally in MW-2S with higher concentrations in the wet season and lower concentrations in the dry season. Iron decreased abruptly in WTE-3SR during the First Semiannual 2016 sampling event before returning to historical levels. Iron in WTE-4S decreased significantly during the period between the First Semiannual 2015 and First Semiannual 2016 sampling events before spiking to a historical high during the Second Semiannual 2016 sampling event. Concentrations have been decreasing since that time.
- Single low-level detections of Aluminum (16.4 µg/L, 35.8 µg/L, and 34.3 µg/L) were reported in the background and both detection wells during the First Semiannual 2017 sampling event. This detection appears to be associated with a spike in Turbidity and low water levels in the wells due to extremely dry weather conditions.

4.7 Comparison of Shallow, Middle, and Deep Wells

All of the groundwater monitoring wells that require sampling are installed into the shallow surficial aquifer at similar depths. There are no well clusters for comparative analyses.

However, water levels monitored under the SWERFs GWMP show the water levels in the sandstone aquifer are typically more than a foot lower than the levels in the water table aquifer indicating a downward flow gradient.

4.8 Related Parameters

Attachment 9 provides scatterplots for related parameters at the CDDRF. Scatterplots are a graphical representation of the relationship between two variables (parameters) for the same group of individuals (wells). A linear regression analysis is applied to the data and a regression equation and correlation coefficient (R^2) are determined. The slope of the equation provides the linear relationship between the variables while the R^2 value provides information on the strength of that relationship (how close the data are to the predicted values) - the closer the R^2 value is to 1.0, the stronger that linear relationship is. For basic statistical analysis purposes, data with an R^2 value of less than 0.3 is considered to have no or only a very weak linear relationship while data with an R^2 value of greater than 0.7 is considered to have a strong linear relationship and R^2 values around 0.5 indicate a moderate linear relationship. Parameter groups of interest at the CDDRF include Ion Strength/ Dissolved Solids (Specific Conductance, Chloride, Sodium, and TDS), Metals (Arsenic, Iron, and Vanadium), and field parameters (pH, Turbidity, and Groundwater Elevation).

Specific Conductance is a measure of the ionic strength of dissolved ions in the water. Generally as Specific Conductance increases, there will be corresponding increases in TDS, Chlorides, and Sodium as well as other ions.

Scatterplots for the data indicate a moderately strong correlation between Conductivity and TDS (R^2=0.6273), a moderate correlation between Conductivity and Sulfate (R^2=0.5309), and a moderately strong correlation between TDS and Sulfate (R^2=0.7619). The average concentration ratio between Conductivity and TDS is approximately 70%. This value falls within the normal range of 55% to 75% for Florida groundwater with a Conductivity between 500 and 3000 µS/cm.

There is little to no correlation between Conductivity and Sodium (R^2=0.2366) or Chloride (R^2=0.0.0005) or between TDS and Sodium (R^2=0.2661) or Chloride (R^2=0.0.0069) although there is moderate correlation between Sodium and Chloride (R^2=0.5071).

Metals mobility in groundwater is a function of pH and/or oxidation-reduction potential (ORP). In general, cationic metal species are more soluble at an acidic pH while oxyanions become more soluble as pH increases. ORP is a measure of an aqueous system's capacity to either release or accept electrons from chemical reactions. A change in groundwater ORP influences the chemical species of the metal that can exist in the system and therefore the solubility of that metal.

No discernible relationships between pH values or GWE values and metals concentrations were noted although Iron concentrations appear to decrease with increasing pH as expected. There is also very little correlation between Turbidity and Iron or Arsenic concentrations while there is a strong correlation between Turbidity and Aluminum (R^2=0.8842) although there are only a few valid data points for determining the linear regression.

There is some positive correlation between Arsenic and Iron but it is not a strong correlation (R^2=0.3222).

Iron appears to vary seasonally with higher relative concentrations in the wet season when compared to the dry season. A comparison of the water level and the ground surface shows that the water table in the wet season typically encounters the soil horizons where Iron and Aluminum mobilization are inherent to natural soil development processes in Florida. Normal soil-forming processes are largely dependent on the mobilization (chelation) of Iron and Aluminum. This pattern appears to occur similarly in the background as well as in the detection wells at the CDDRF.

Ammonia-Nitrogen and Nitrate-Nitrogen show little or no correlation to pH or to each other.

4.9 ERRATIC AND POORLY CORRELATED DATA

As noted above, Sodium and Chloride do not correlate well with Conductivity or TDS.

Single low-level detections of Aluminum were reported in the background well and both detection wells during the First Semiannual 2017 sampling event. This detection appears to be associated with a spike in Turbidity and low water levels in the wells due to extremely dry weather conditions.

Low-level Arsenic was reported sporadically in all three wells during the report period.

5 CONCLUSIONS AND RECOMMENDATIONS

Well locations and screened intervals are compliant with the applicable rules for monitoring construction and demolition debris recycling facilities. The monitoring network has wells screened in the surficial aquifer, which is the most susceptible to possible contamination. Groundwater flow direction for the surficial aquifer converges in the west central part of the site. The calculated average linear velocity for the surficial aquifer is 74.51 of feet/year. Based on this information, the current locations and spacing of the CDDRF wells is adequate to detect water quality impacts to the surficial aquifer at the site and semiannual monitoring frequency is adequate to detect potential contaminants that might emanate from the CDDRF.

The only confirmed analytical exceedances of primary and secondary groundwater standards observed at the CDDRF during the report period were Ammonia-Nitrogen, Total Dissolved Solids (TDS), and Iron.

The TDS and Iron concentrations are consistent with those naturally occurring in the Florida groundwater and were reported in both the background wells and the down-gradient wells.

Sulfate is increasing in background well MW-2S but the concentration is currently below the SDWS of 250 mg/L.

Based on the above observations, Jones Edmunds concludes that the existing groundwater monitoring plan is appropriate to monitor the facility. No revisions to the monitoring network are proposed.

6 REFERENCES

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ATTACHMENT 1

SITE MAPS

Figure 1

Location Map

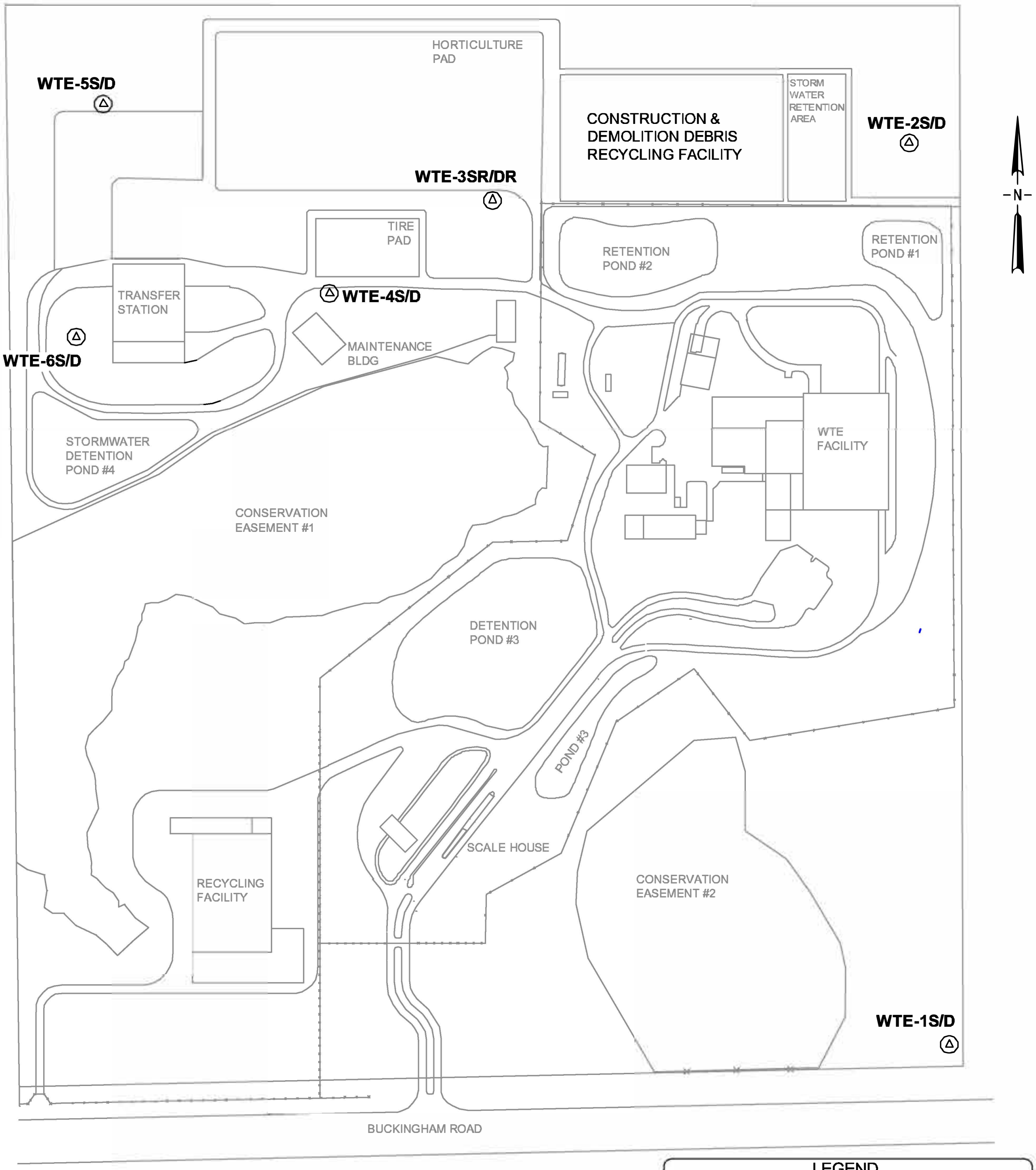
LEE COUNTY CONSTRUCTION & DEMOLITION DEBRIS RECYCLING FACILITY

JonesEdmunds

For Informational Purposes Only P:\JCarnow\Elizabeth Kennelley\Recycling Facility.mxd JCarnow 7/26/2018

SHALLOW (WATER TABLE) WELLS			
WELL	TOC ELEVATION	LATITUDE	LONGITUDE
WTE-1S	21.91 FT	26° 37' 41"	81° 45' 36"
WTE-2S	24.18 FT	26° 38' 03"	81° 45' 37"
WTE-3SR	23.98 FT	26° 38' 1.62"	81° 45' 46.08"
WTE-4S	22.48 FT	26° 37' 58"	81° 45' 51"
WTE-5S	23.81 FT	26° 38' 03"	81° 45' 59"
WTE-6S	23.66 FT	26° 37' 57"	81° 45' 59"

SANDSTONE AQUIFER WELLS			
WELL	TOC ELEVATION	LATITUDE	LONGITUDE
WTE-1D	22.96 FT	26° 37' 41"	81° 45' 36"
WTE-2D	23.52 FT	26° 38' 03"	81° 45' 37"
WTE-3DR	23.91 FT	26° 38' 1.62"	81° 45' 46.14"
WTE-4D	23.81 FT	26° 37' 58"	81° 45' 51"
WTE-5D	24.50 FT	26° 38' 03"	81° 45' 59"
WTE-6D	22.91 FT	26° 37' 57"	81° 45' 59"



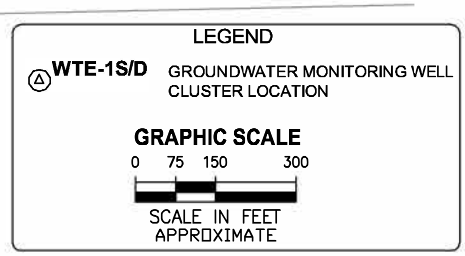


FIGURE 2: SITE MAP WITH MONITORING WELL LOCATIONS
SOLID WASTE ENERGY RECOVERY FACILITY
LEE COUNTY SOLID WASTE DIVISION

JONES EDMUNDS

ATTACHMENT 2

GROUNDWATER CONTOUR MAPS

WELL	GW ELEVATION
WTE-1S	21.67
WTE-2S	21.32
WTE-3SR	20.18
WTE-4S	18.48
WTE-5S	20.74
WTE-6S	17.84

GRAPHIC SCALE

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SCALE IN FEET
1"=400'

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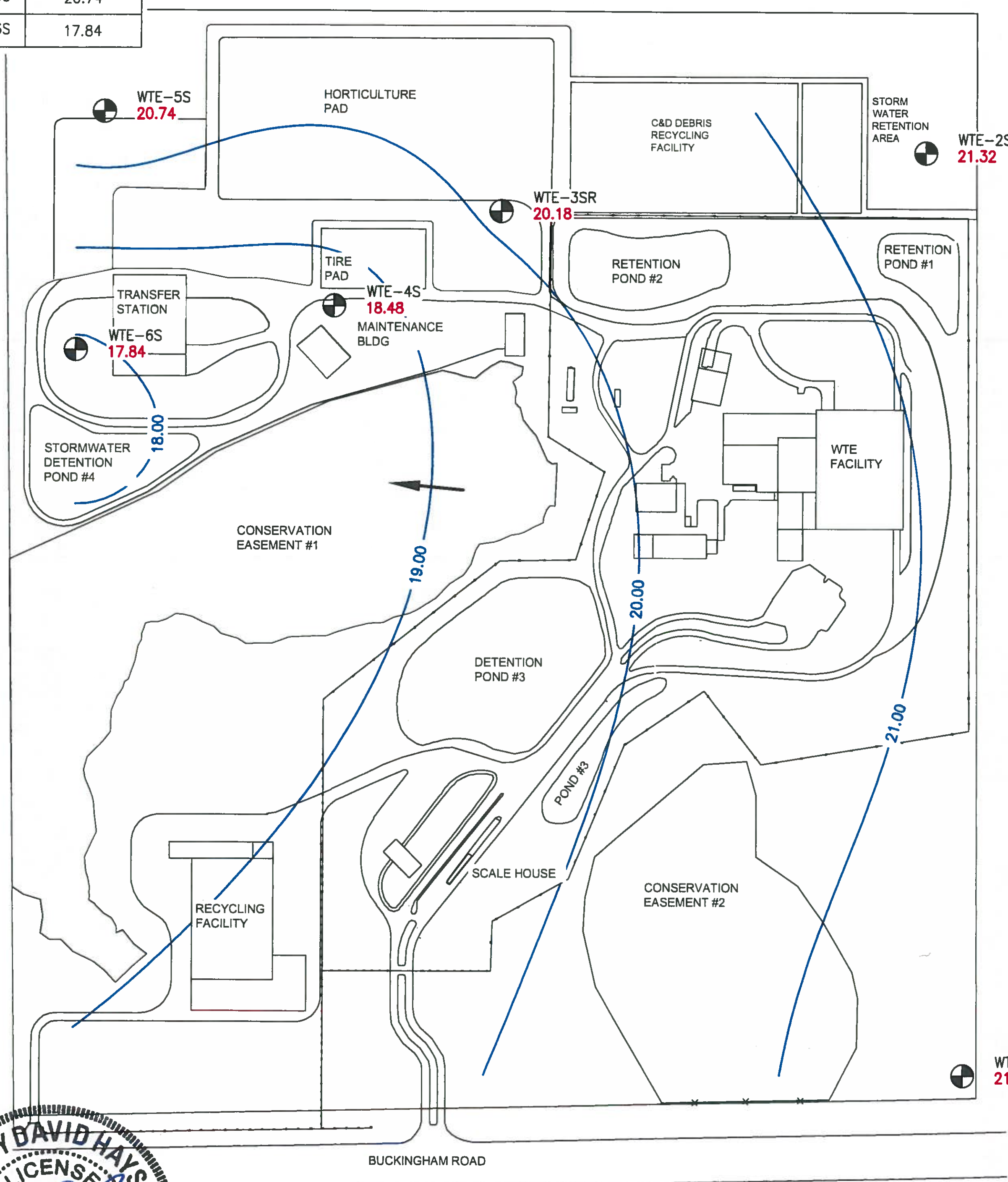

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4/28/16

LEGEND

WTE-1S 21.67	GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION
16.00	GROUNDWATER CONTOUR AT 1.00 FOOT INTERVALS
→	GROUNDWATER FLOW DIRECTION

LEE COUNTY WTE LANDFILL GROUNDWATER CONTOUR MAP OF THE SHALLOW SURFICIAL ZONE

FEBRUARY 8, 2016

JONES EDMUNDS

PLOTTED: 4/8/2016 10:03 AM BRIAN THOMAS 12345-005-01
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PLOTTED: 4/8/2016 10:03 AM BRIAN THOMAS 12345-005-01

WELL	GW ELEVATION
WTE-1D	14.31
WTE-2D	19.97
WTE-3DR	19.05
WTE-4D	17.57
WTE-5D	19.45
WTE-6D	17.28

GRAPHIC SCALE

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SCALE IN FEET
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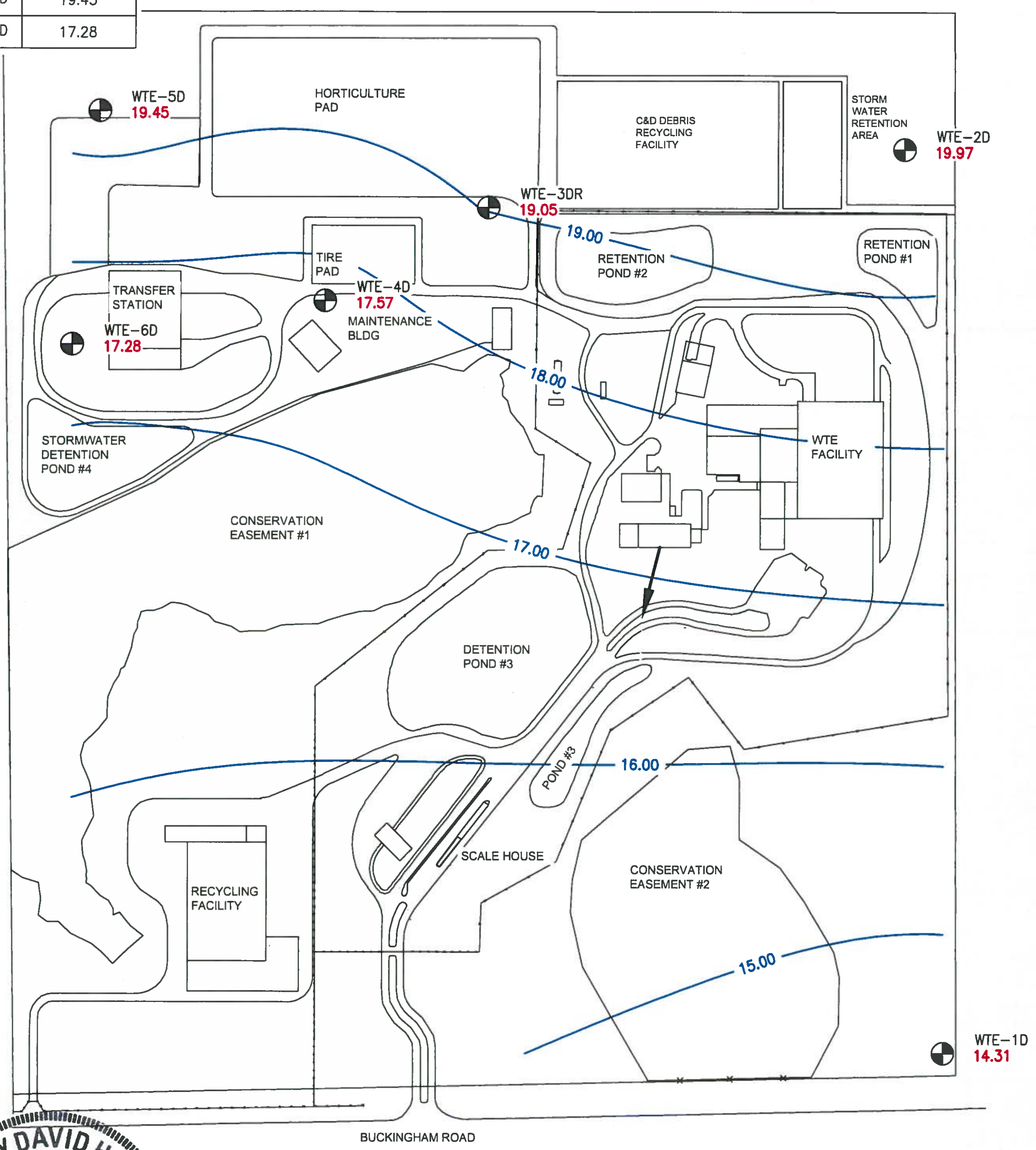

\\JEACAD\GWM\JONES EDMUNDS\LEE COUNTY\WTE PLANT\GWM 2016\16S1\LEE WTE_16S1_DEEP.DWG

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4/28/16

LEE COUNTY WTE LANDFILL GROUNDWATER CONTOUR MAP OF THE DEEP SURFICIAL ZONE FEBRUARY 8, 2016

LEGEND

WTE-1D 14.31	GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION
16.00	GROUNDWATER CONTOUR AT 1.00 FOOT INTERVALS
→	GROUNDWATER FLOW DIRECTION

JONES EDMUNDS

SAVED: 4/8/2016 10:03 AM BTHOMAS

WELL	GW ELEVATION
WTE-1S	21.68
WTE-2S	21.14
WTE-3SR	20.17
WTE-4S	18.47
WTE-5S	20.73
WTE-6S	17.87

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SCALE IN FEET
1" = 400'

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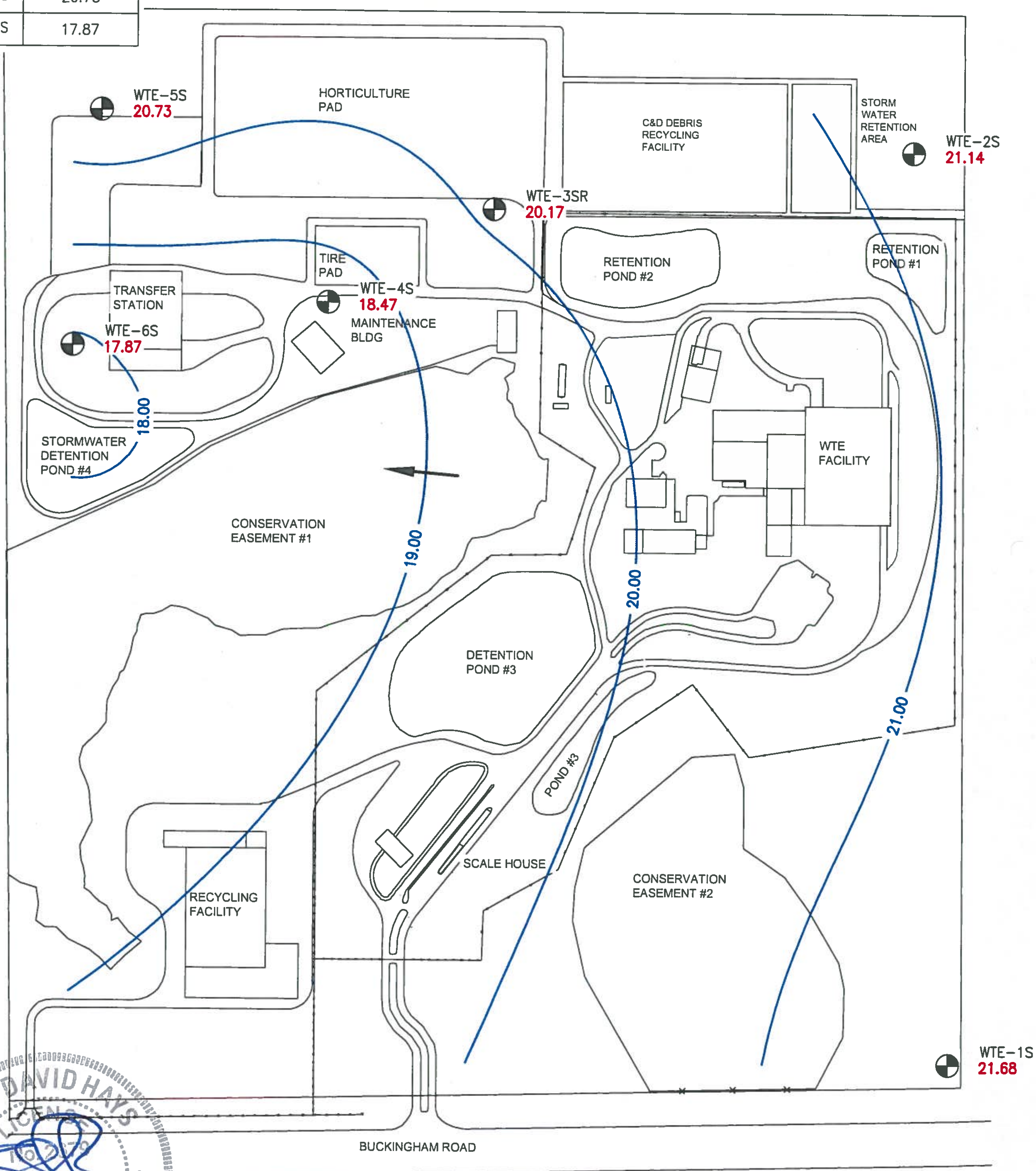

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LEGEND

WTE-1S 21.68	GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION
16.00	GROUNDWATER CONTOUR AT 1.00 FOOT INTERVALS
→	GROUNDWATER FLOW DIRECTION

LEE COUNTY WTE LANDFILL GROUNDWATER CONTOUR MAP OF THE SHALLOW SURFICIAL ZONE AUGUST 8, 2016

JONES EDMUNDS

PLOTTED: 9/27/2016 04:13 PM BRIAN THOMAS 12345-005-01

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WELL	GW ELEVATION
WTE-1D	14.35
WTE-2D	19.87
WTE-3DR	18.99
WTE-4D	17.54
WTE-5D	19.43
WTE-6D	16.32

GRAPHIC SCALE

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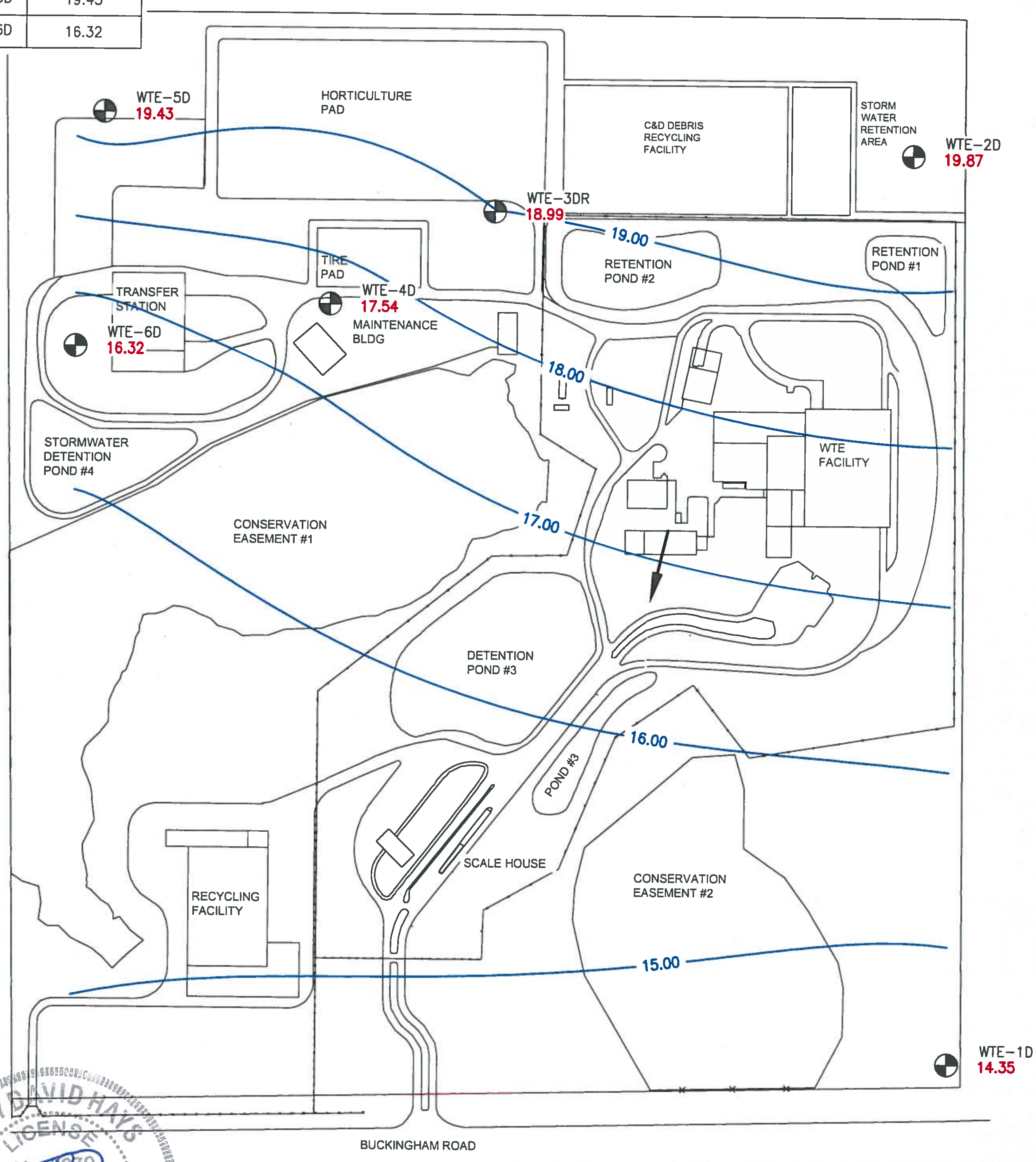

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10/3/16

LEE COUNTY WTE LANDFILL
GROUNDWATER CONTOUR MAP
OF THE DEEP SURFICIAL ZONE
AUGUST 8, 2016

LEGEND

WTE-1D 14.35 — GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION

16.00 — GROUNDWATER CONTOUR AT 1.00 FOOT INTERVALS

→ GROUNDWATER FLOW DIRECTION

JONES EDMUNDS

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WELL	GW ELEVATION
WTE-1S	16.70
WTE-2S	16.07
WTE-3SR	15.01
WTE-4S	13.47
WTE-5S	15.89
WTE-6S	12.94

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SCALE IN FEET
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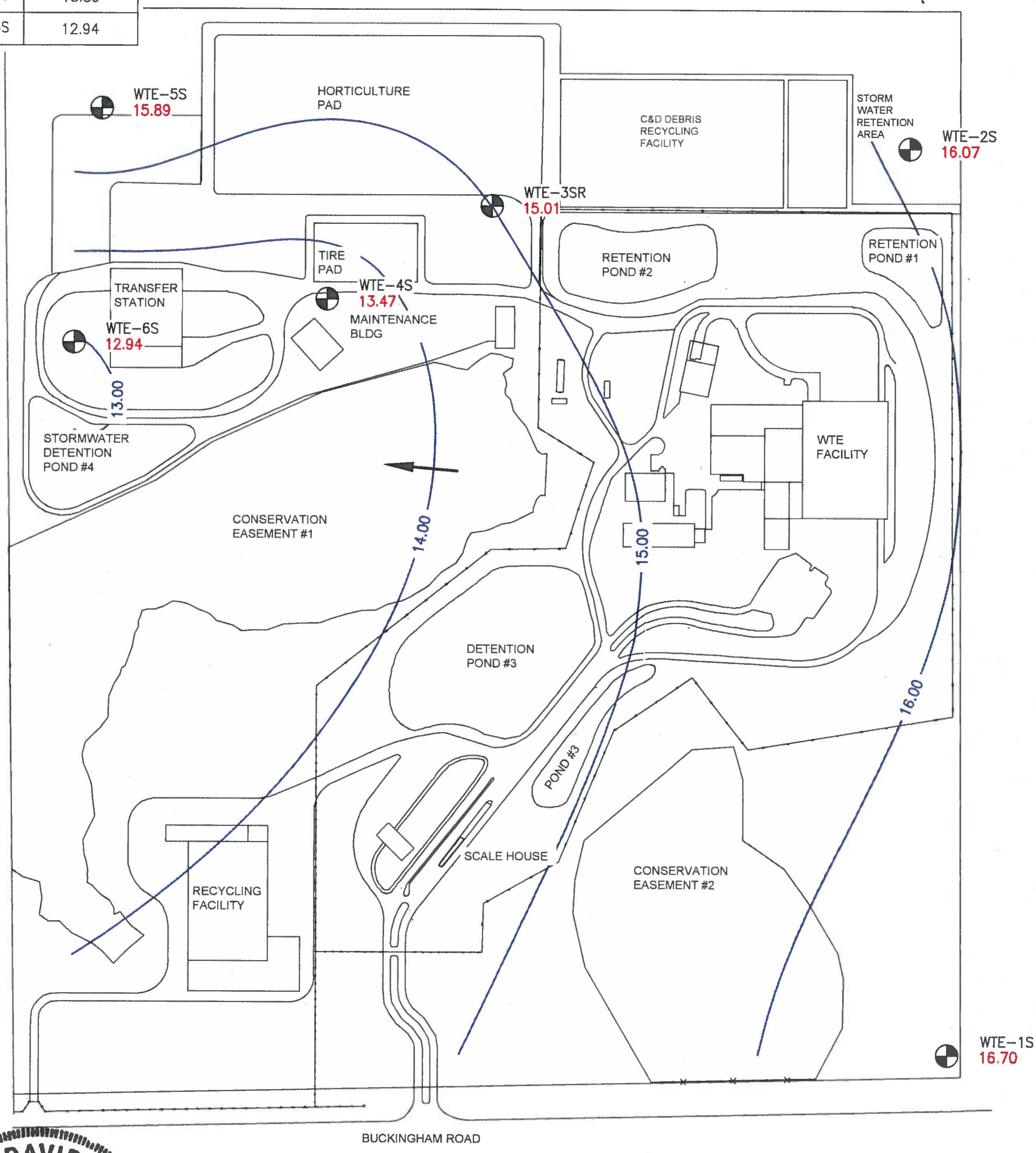

LEGEND

WTE-1S / 16.70	GROUNDWATER MONITORING WELL / GROUNDWATER ELEVATION
16.00	GROUNDWATER CONTOUR AT 1.00 FOOT INTERVALS
→	GROUNDWATER FLOW DIRECTION

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LEE COUNTY WTE LANDFILL
GROUNDWATER CONTOUR MAP
OF THE SHALLOW SURFICIAL ZONE
FEBRUARY 6, 2017

JONES EDMUNDS

WELL	GW ELEVATION
WTE-1D	6.11
WTE-2D	14.40
WTE-3DR	13.71
WTE-4D	12.14
WTE-5D	14.15
WTE-6D	11.58

GRAPHIC SCALE
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SCALE IN FEET
1"=400'

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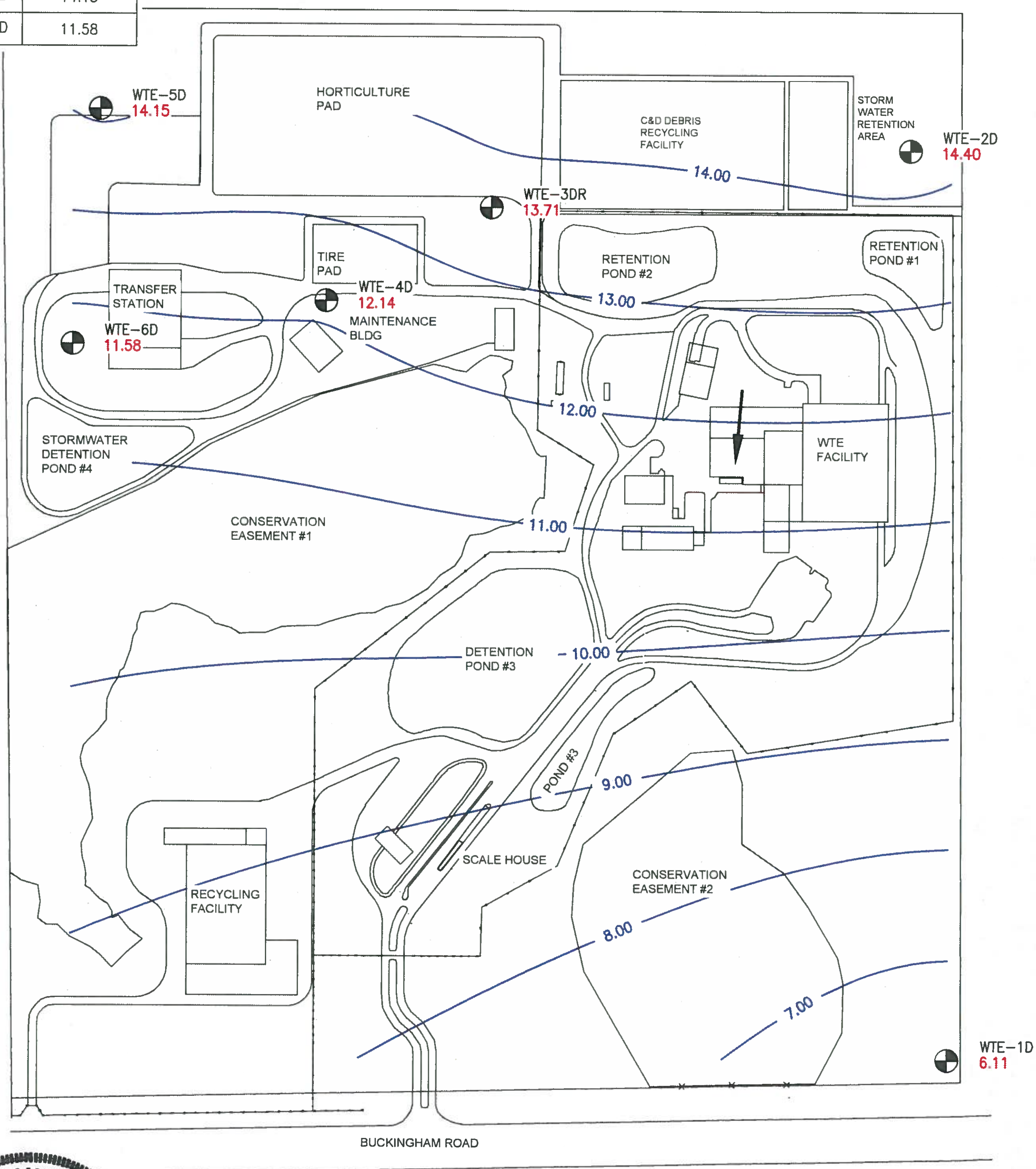

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LEE COUNTY WTE LANDFILL GROUNDWATER CONTOUR MAP OF THE DEEP SURFICIAL ZONE

FEBRUARY 6, 2017

LEGEND

WTE-2D 14.40	GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION
14.00	GROUNDWATER CONTOUR AT 1.00 FOOT INTERVALS
	GROUNDWATER FLOW DIRECTION

JONES EDMUNDS

PLOTTED: 10/18/2017 04:00 PM PATRICK KARDISH 12345-005-01

WELL	GW ELEVATION
WTE-1S	21.71
WTE-2S	21.15
WTE-3SR	20.12
WTE-4S	18.46
WTE-5S	20.74
WTE-6S	17.81

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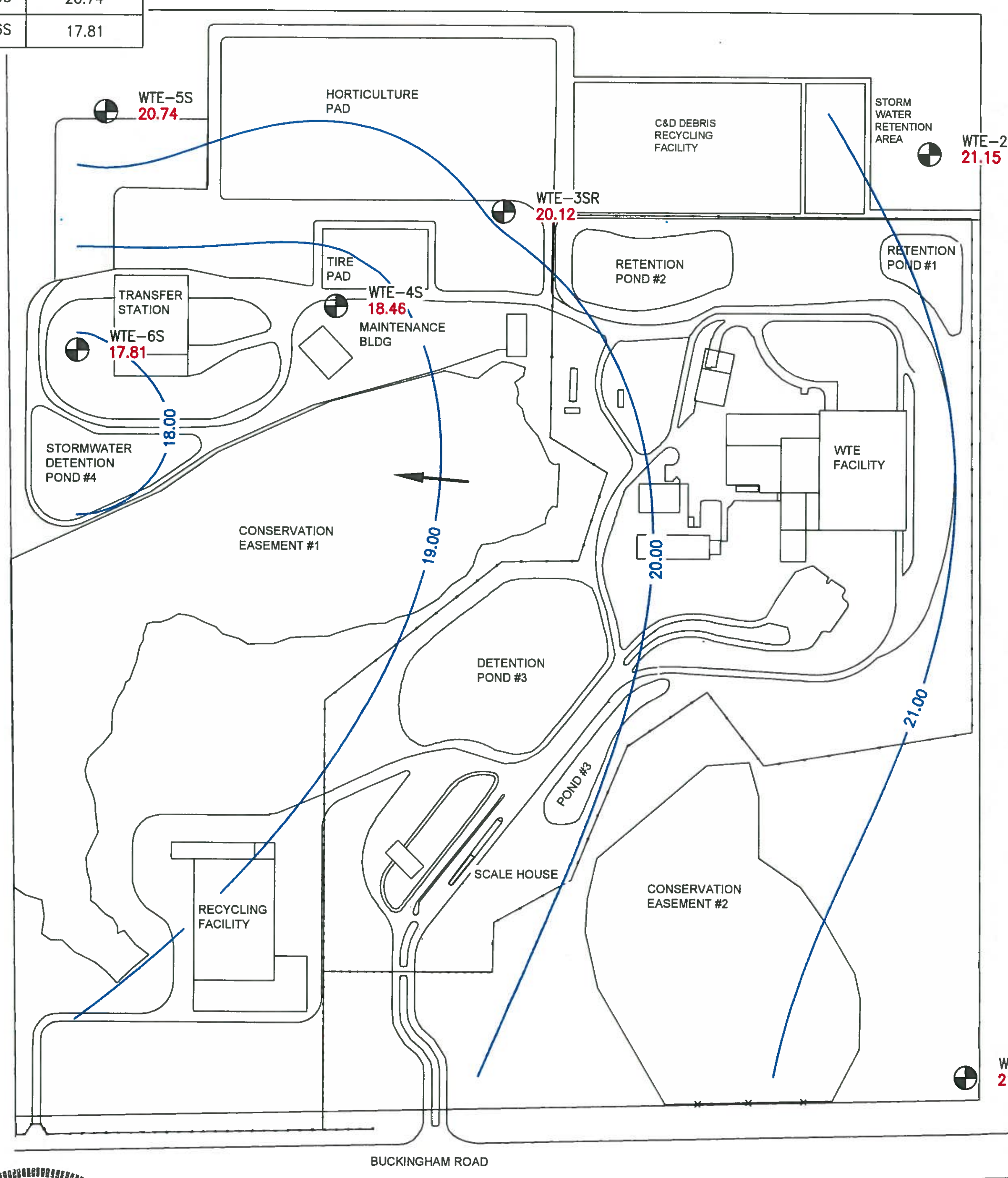

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10/19/17

LEE COUNTY WTE LANDFILL
GROUNDWATER CONTOUR MAP
OF THE SHALLOW SURFICIAL ZONE
AUGUST 21, 2017

LEGEND

WTE-1S 21.71	GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION
19.00	GROUNDWATER CONTOUR AT 1.00 FOOT INTERVALS
→	GROUNDWATER FLOW DIRECTION

JONES EDMUNDS

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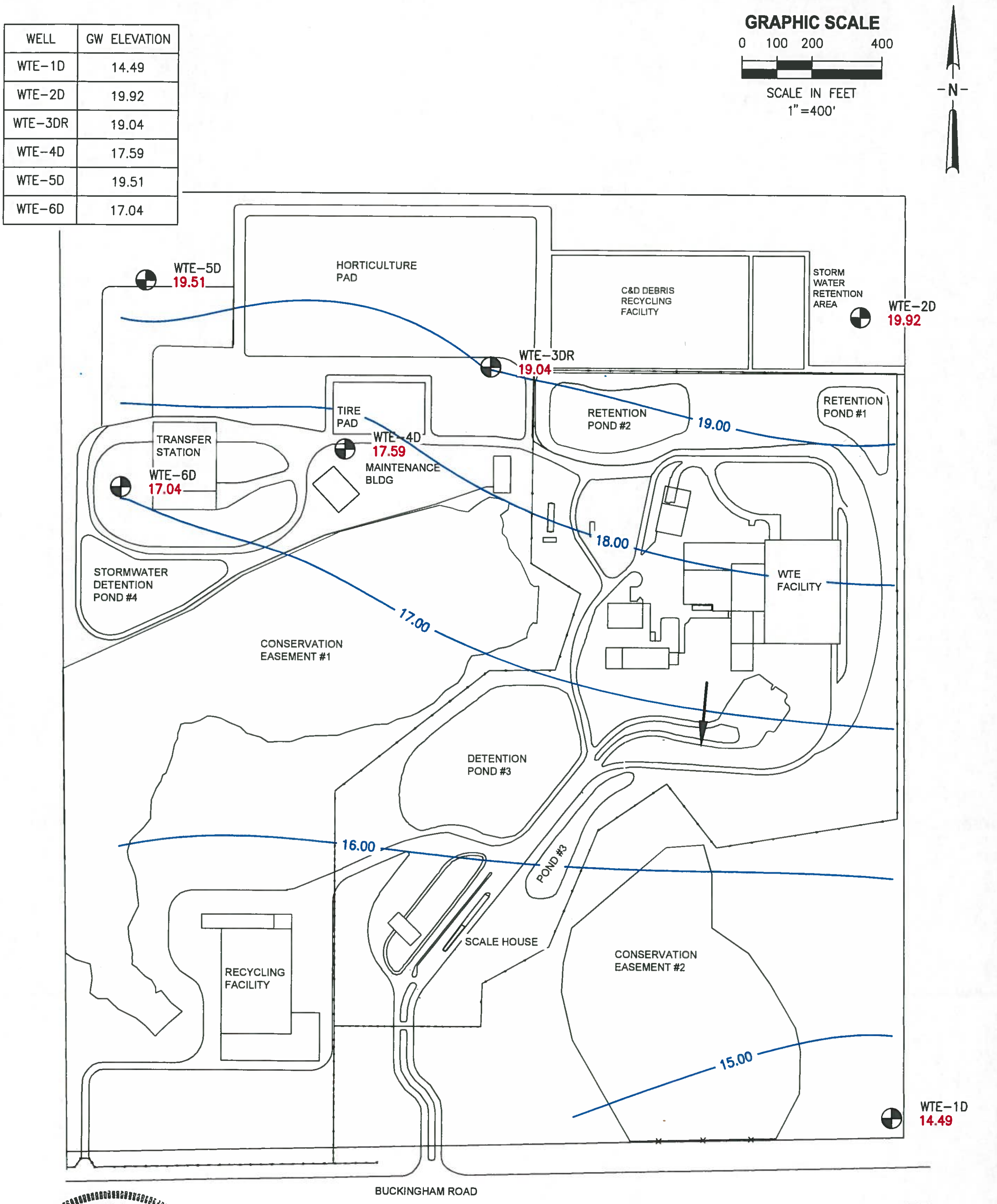
WELL	GW ELEVATION
WTE-1D	14.49
WTE-2D	19.92
WTE-3DR	19.04
WTE-4D	17.59
WTE-5D	19.51
WTE-6D	17.04



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LEE COUNTY WTE LANDFILL GROUNDWATER CONTOUR MAP OF THE DEEP SURFICIAL ZONE AUGUST 21, 2017

LEGEND

WTE-2D 19.92	GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION
15.00	GROUNDWATER CONTOUR AT 1.00 FOOT INTERVALS
→	GROUNDWATER FLOW DIRECTION

JONES EDMUNDS

PLOTTED: 3/30/2018 03:26 PM PATRICK KARDISH 12345-005-01

WELL	GW ELEVATION
WTE-1S	18.18
WTE-2S	17.57
WTE-3SR	16.60
WTE-4S	15.08
WTE-5S	17.50
WTE-6S	14.57

GRAPHIC SCALE
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SCALE IN FEET
1"=400'

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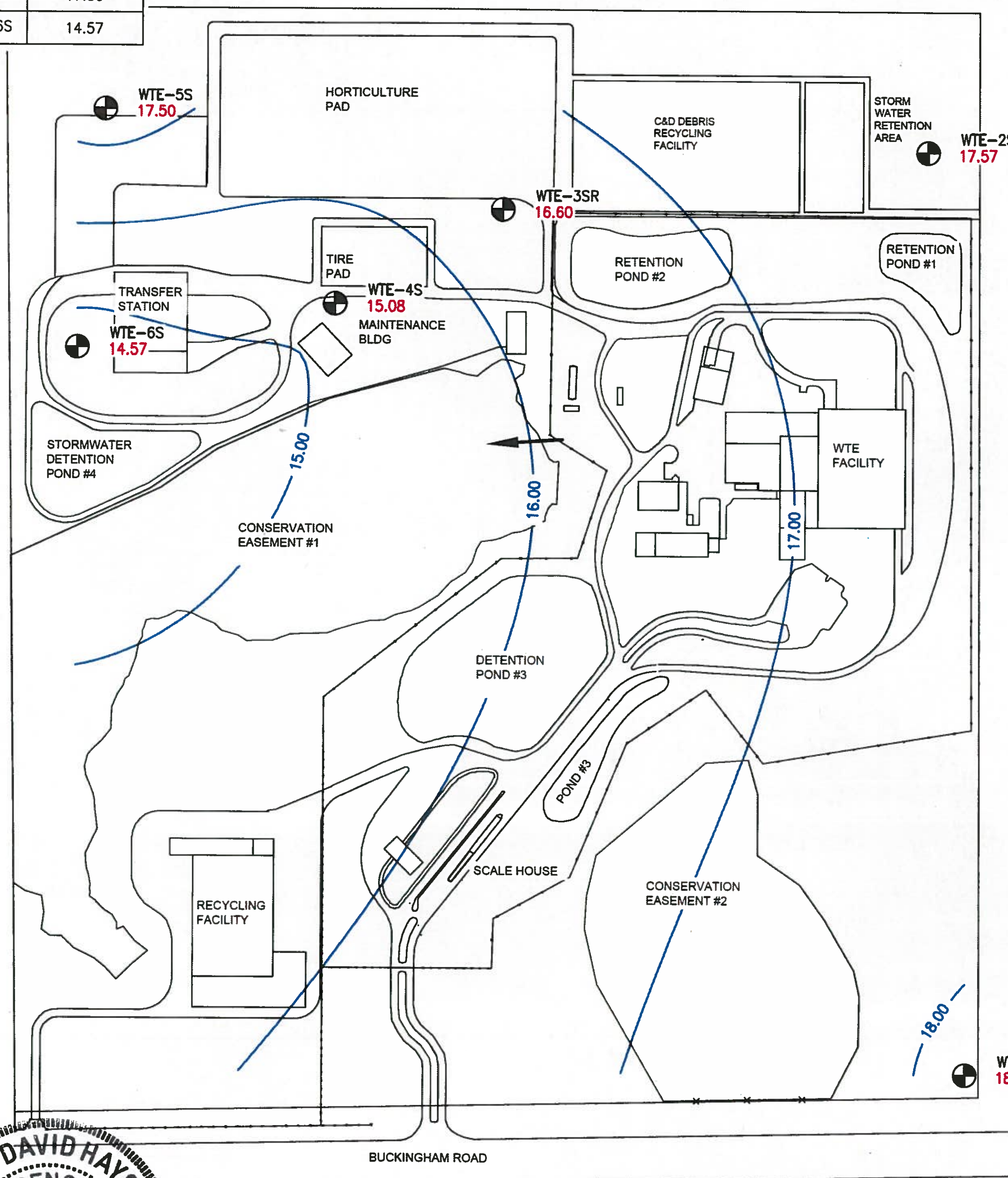

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4/2/18

LEE COUNTY WTE LANDFILL GROUNDWATER CONTOUR MAP OF THE SHALLOW SURFICIAL ZONE
FEBRUARY 12, 2018

LEGEND

WTE-1S 18.18	GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION
16.00	GROUNDWATER CONTOUR AT 1.00 FOOT INTERVALS
→	GROUNDWATER FLOW DIRECTION

JONES EDMUNDS

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WELL	GW ELEVATION
WTE-1D	8.66
WTE-2D	16.02
WTE-3DR	15.33
WTE-4D	13.76
WTE-5D	15.76
WTE-6D	13.08

GRAPHIC SCALE

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SCALE IN FEET
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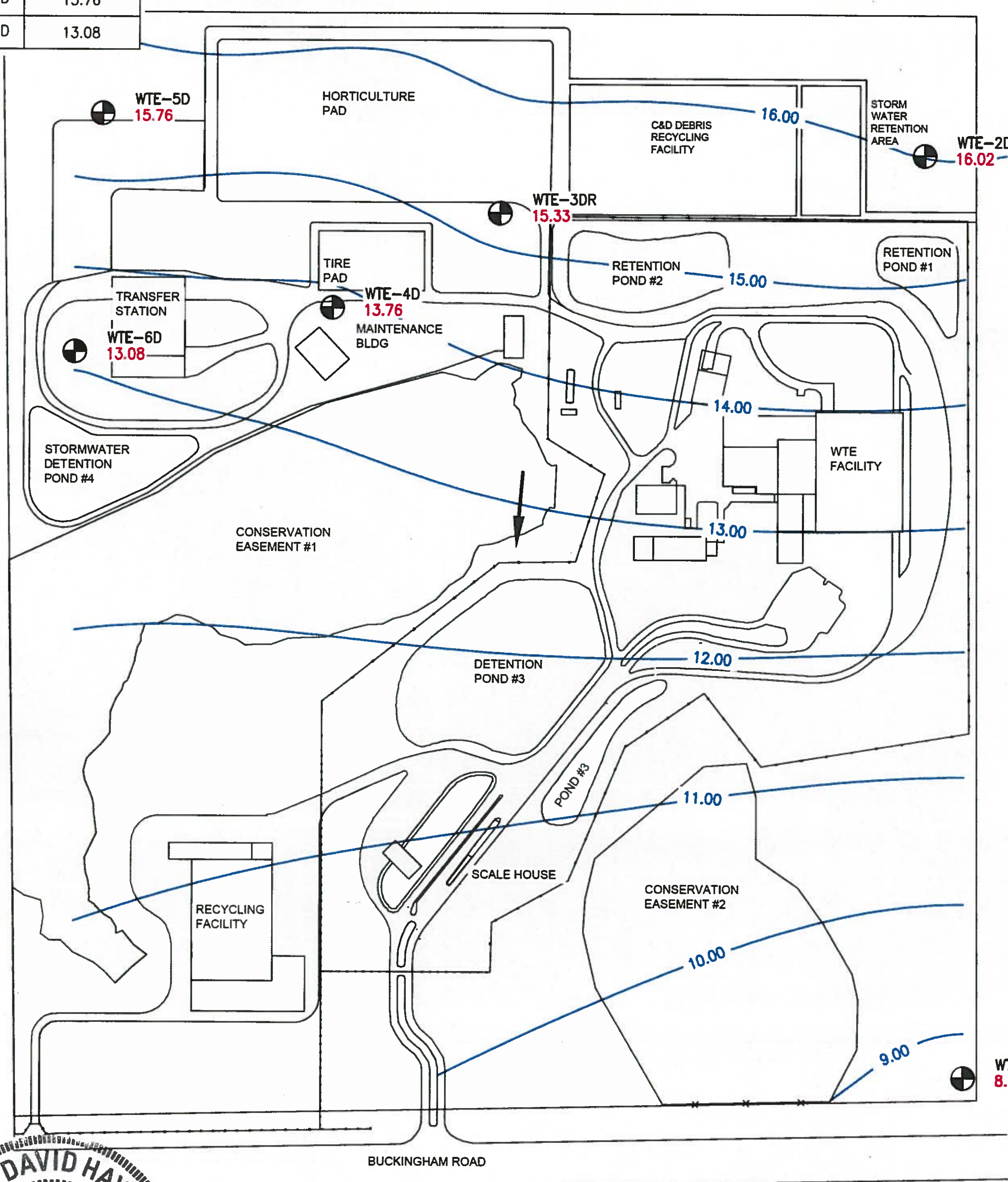

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PROFESSIONAL GEOLOGIST

4/20/18

LEE COUNTY WTE LANDFILL GROUNDWATER CONTOUR MAP OF THE DEEP SURFICIAL ZONE FEBRUARY 12, 2018

LEGEND

WTE-2D 13.76	GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION
14.00	GROUNDWATER CONTOUR AT 1.00 FOOT INTERVALS
→	GROUNDWATER FLOW DIRECTION

JONES EDMUNDS

ATTACHMENT 3

GROUNDWATER VELOCITY CALCUALTIONS
AND HYDROGRAPHS

LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER VELOCITY CALCULATIONS

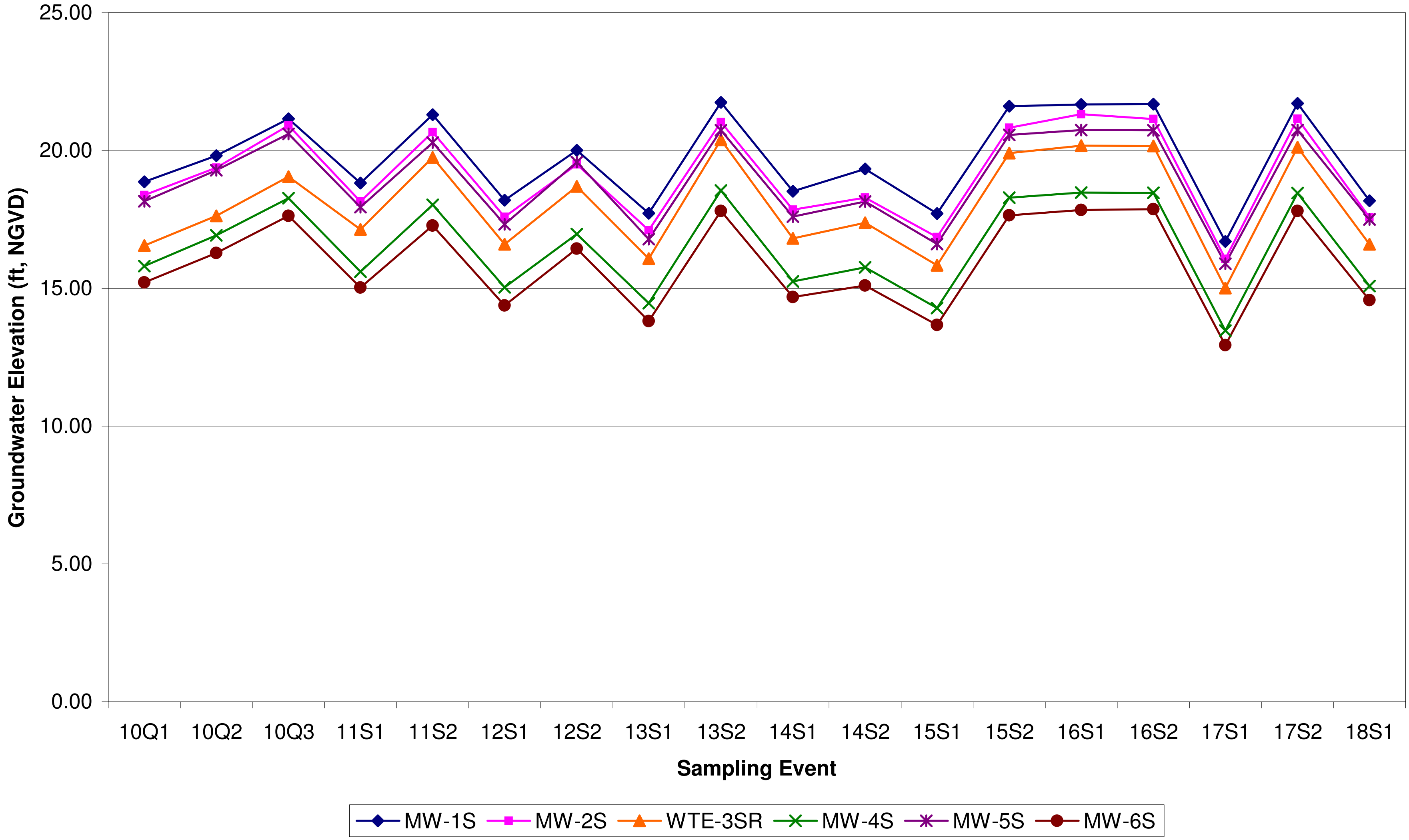
Calculated Groundwater Velocity – Shallow Aquifer (S Wells)

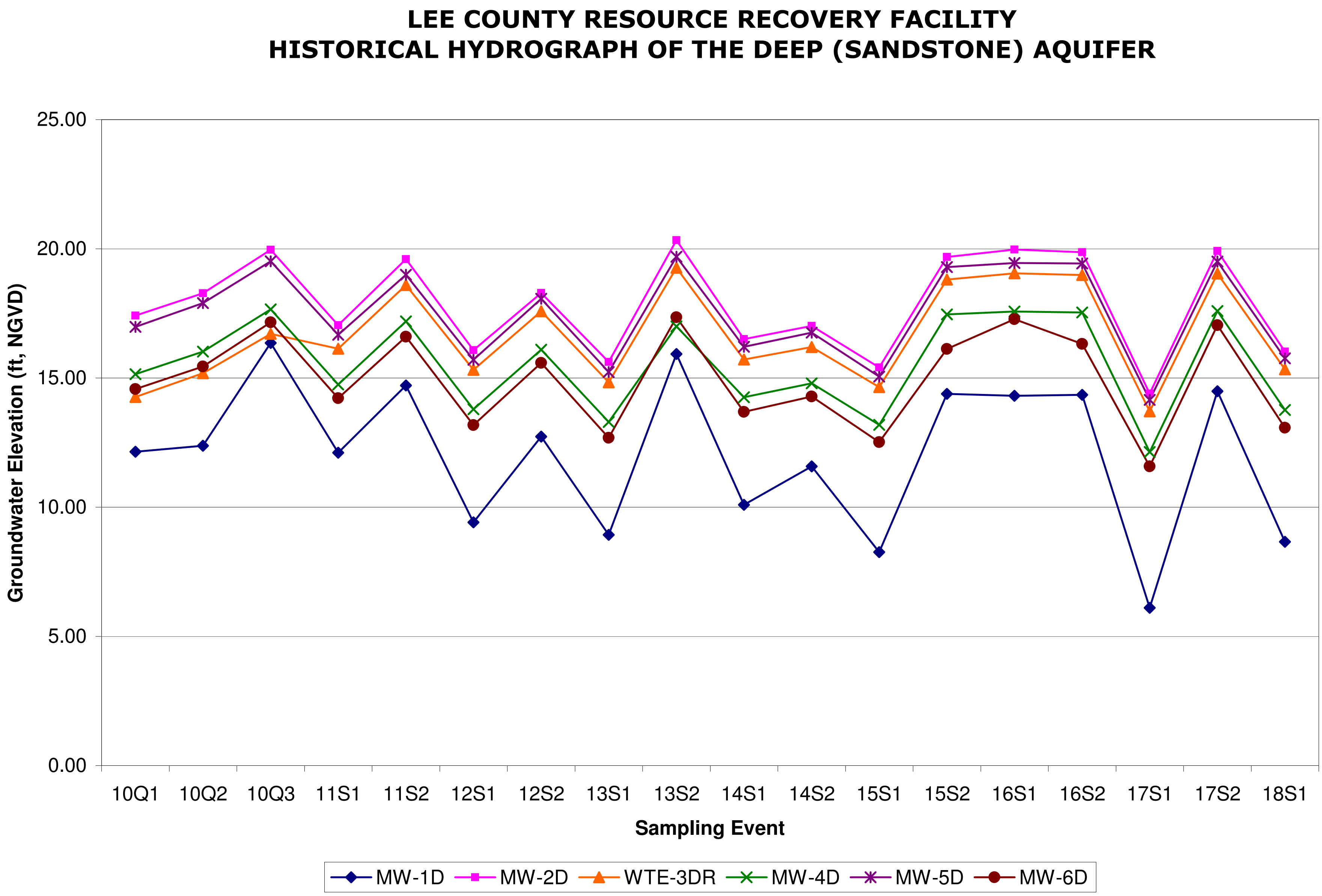
Wells Used to Calculate Gradient	Sampling Event	Up-gradient Elevation (ft)	Down-gradient Elevation (ft)	Distance Between Wells (ft)	*i* Gradient (ft/ft)	*K* (ft/day)	*n* Porosity	Horizontal Velocity (ft/yr)
WTE-2S to WTE-4S	16S1	23.32	18.48	1517	0.003191	50	0.453	128.54
	16S2	21.14	18.47	1517	0.001760	50	0.453	70.91
	17S1	16.07	13.47	1517	0.001714	50	0.453	69.05
	17S2	21.15	18.46	1517	0.001773	50	0.453	71.44
	18S1	17.57	15.08	1517	0.001641	50	0.453	66.13
WTE-2S to WTE-6S	16S1	23.32	17.84	2165	0.002531	50	0.453	101.97
	16S2	21.14	17.87	2165	0.001510	50	0.453	60.85
	17S1	16.07	12.94	2165	0.001446	50	0.453	58.24
	17S2	21.15	17.81	2165	0.001543	50	0.453	62.15
	18S1	17.57	14.57	2165	0.001386	50	0.453	55.82
							Average Groundwater Velocity (ft/yr)	**74.51**

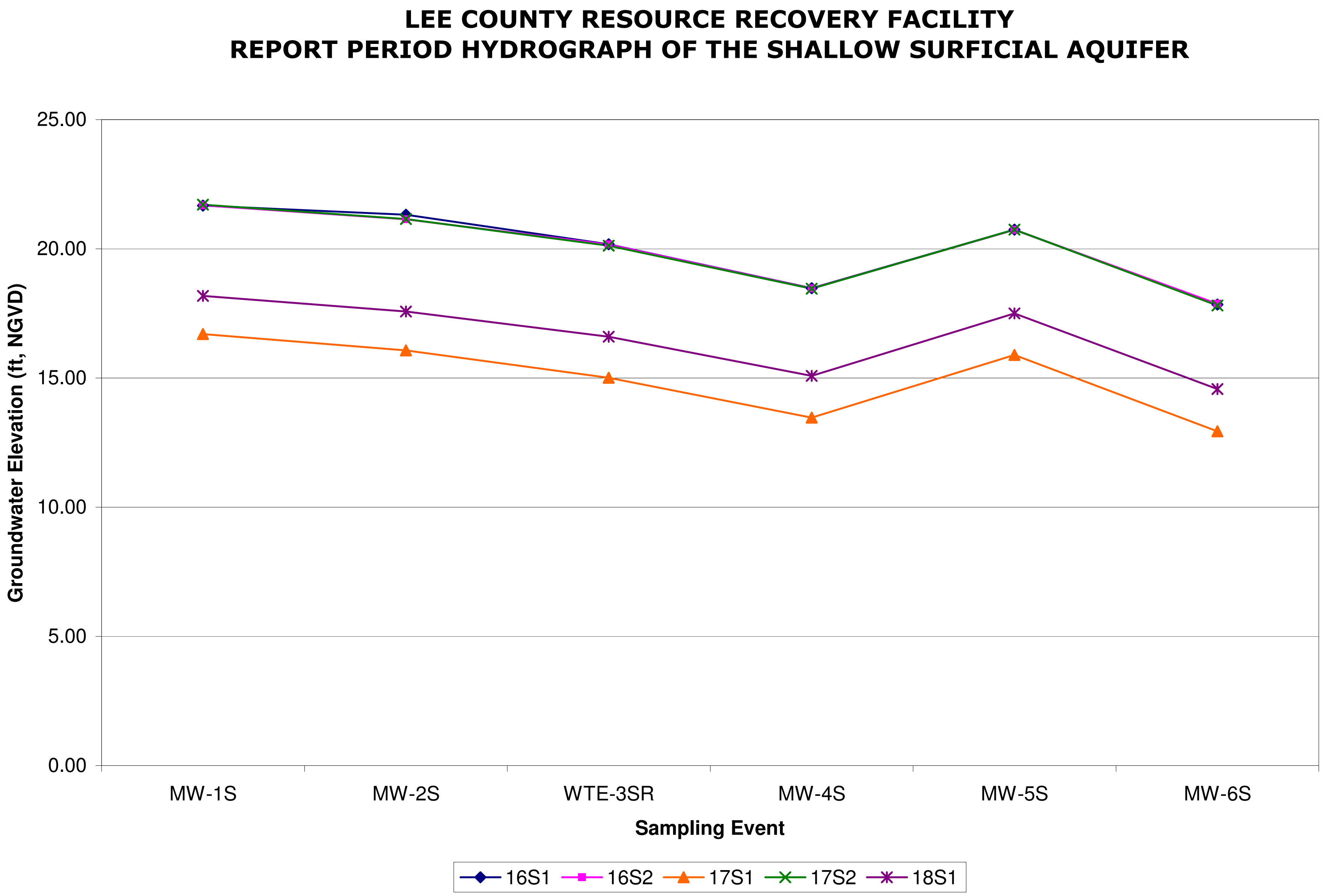
Calculated Groundwater Velocity – Sandstone Aquifer (D Wells)

Wells Used to Calculate Gradient	Sampling Event	Up-gradient Elevation (ft)	Down-gradient Elevation (ft)	Distance Between Wells (ft)	*i* Gradient (ft/ft)	*K* (ft/day)	*n* Porosity	Horizontal Velocity (ft/yr)
WTE-2D to WTE-1D	16S1	19.97	14.31	2282	0.002480	50	0.437	103.58
	16S2	19.87	14.35	2282	0.002419	50	0.437	101.02
	17S1	14.40	6.11	2282	0.003633	50	0.437	151.71
	17S2	19.92	14.49	2282	0.002379	50	0.437	99.37
	18S1	16.02	8.66	2282	0.003225	50	0.437	134.69
WTE-2D to WTE-6D	16S1	19.97	17.28	2165	0.001242	50	0.437	51.89
	16S2	19.87	16.32	2165	0.001640	50	0.437	68.48
	17S1	14.40	11.58	2165	0.001303	50	0.437	54.40
	17S2	19.92	17.04	2165	0.001330	50	0.437	55.55
	18S1	16.02	13.08	2165	0.001358	50	0.437	56.71
							Average Groundwater Velocity (ft/yr)	**87.74**

LEE COUNTY RESOURCE RECOVERY FACILITY
HISTORICAL HYDROGRAPH OF THE SHALLOW SURFICIAL AQUIFER

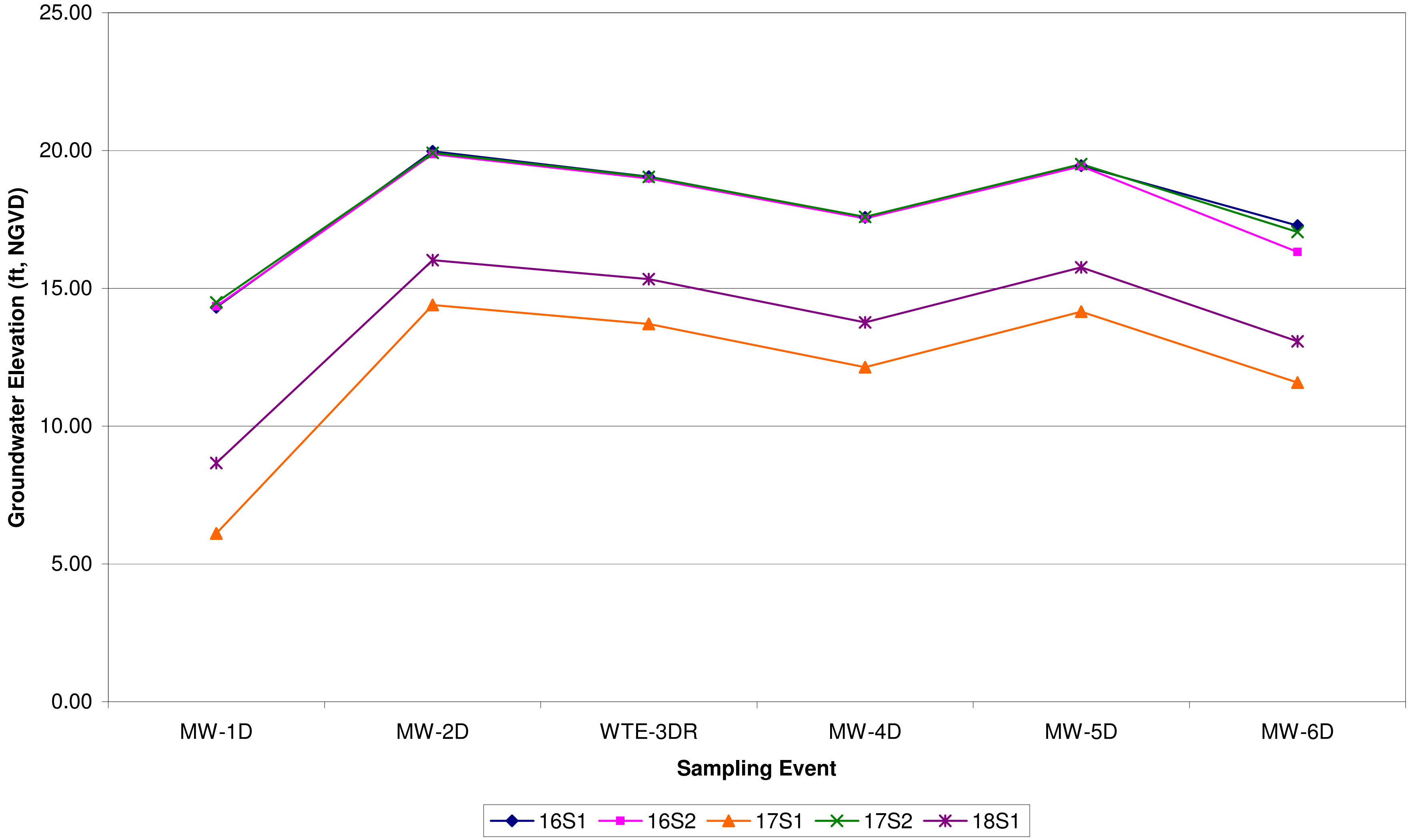



LEE COUNTY RESOURCE RECOVERY FACILITY
HISTORICAL HYDROGRAPH OF THE DEEP (SANDSTONE) AQUIFER
Groundwater Elevation (ft, NGVD)
25.00
20.00
15.00
10.00
5.00
0.00
10Q1
10Q2
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-1D
MW-2D
WTE-3DR
MW-4D
MW-5D
MW-6D



LEE COUNTY RESOURCE RECOVERY FACILITY
REPORT PERIOD HYDROGRAPH OF THE SHALLOW SURFICIAL AQUIFER
25.00
20.00
15.00
10.00
5.00
0.00
Groundwater Elevation (ft, NGVD)
MW-1S
MW-2S
WTE-3SR
MW-4S
MW-5S
MW-6S
Sampling Event
16S1
16S2
17S1
17S2
18S1

LEE COUNTY RESOURCE RECOVERY FACILITY
REPORT PERIOD HYDROGRAPH OF THE DEEP (SANDSTONE) AQUIFER



ATTACHMENT 4

GROUNDWATER PARAMETERS REPORTED AT OR OUTSIDE GROUNDWATER STANDARDS DURING THE REPORT PERIOD

ANALYSIS RESULTS COMPARED TO GROUNDWATER STANDARDS AND/OR GUIDANCE CONCENTRATIONS

LEE COUNTY RESOURCE RECOVERY FACILITY

FEBRUARY 2016 THROUGH FEBRUARY 2018

PARAMETER		AMMONIA NITROGEN	TOTAL DISSOLVED SOLIDS	IRON
STANDARD		2.8 mg/L***	500 mg/L**	300 µg/L**
UNITS		mg/L	mg/L	µg/L
BACKGROUND				
MW-2S	02/08/2016	-	636	461
MW-2S	08/08/2016	-	778	4260
MW-2S	02/06/2017	-	568	323
MW-2S	08/21/2017	-	620	3950
MW-2S	02/12/2018	-	686	2440
DETECTION				
WTE-3SR	02/08/2016	-	-	341
WTE-3SR	08/08/2016	-	612	2530
WTE-3SR	02/06/2017	-	-	3860
WTE-3SR	08/21/2017	-	-	3230
WTE-3SR	02/12/2018	-	-	2838
MW-4S	02/08/2016	19	-	-
MW-4S	03/21/2016	4.0	NM	NM
MW-4S	08/08/2016	4.44	550	3610
MW-4S	02/06/2017	4.24	-	2090
MW-4S	08/21/2017	-	508	1330
MW-4S	02/12/2018	-	-	1131

LEGEND

*	=Primary Drinking Water Standard
**	=Secondary Drinking Water Standard
***	=Chapter 62-777 Groundwater Cleanup Target Levels (GCTL)
@	=Analysis Result is at Groundwater Standard or GCTL
-	=Analysis Result is not at or outside Groundwater Standard or GCTL
NS	=Not Sampled
NM	=Not Measured

Note:

This table displays analysis results which were reported at or outside Groundwater Standards or GCTL.
Analysis results notated with "@" indicate that the analysis result was reported at the Groundwater Standard or GCTL.
Analysis results which were reported above the laboratory detection limit (reporting limit), but not at or above the Groundwater Standard or GCTL concentration are not displayed in this table.

ATTACHMENT 5

GROUNDWATER PARAMETERS REPORTED ABOVE THE LABORATORY DETECTION LIMIT

PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT

LEE COUNTY RESOURCE RECOVERY FACILITY

FEBRUARY 2016 THROUGH FEBRUARY 2018

PARAMETER		CONDUCTIVITY (FIELD)	DEPTH TO WATER FROM MEASURE PT	DISSOLVED OXYGEN (FIELD)	GROUND-WATER ELEVATION	pH (FIELD)	TEMPERATURE (FIELD)	TURBIDITY (FIELD)	AMMONIA NITROGEN	CHLORIDE	NITRATE NITROGEN	SULFATE	TOTAL DISSOLVED SOLIDS	ALUMINUM	ARSENIC
STANDARD		(1)	(1)	(1)	(1)	6.5-8.5 S.U.**	(1)	(1)	2.8 mg/L***	250 mg/L**	10 mg/L*	250 mg/L**	500 mg/L**	200 µg/L**	10 µg/L*
UNITS		uS/cm	ft	ppm	ft, NGVD	S.U.	deg C	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L
BACKGROUND															
MW-2S	02/08/2016	923	2.86	0.79	21.32	7.07	18.4	1.27	<0.01	27.7	0.129	138	636	<10	<1
MW-2S	08/08/2016	807	3.04	0.81	21.14	6.98	26.2	6.44	0.502	18.6	<0.01	215	778	<10	<1
MW-2S	02/06/2017	701	8.11	1.24	16.07	7.07	21.6	6.01	1.02	17.4	0.0398	165	568	16.4	<1
MW-2S	08/21/2017	947	3.03	0.39	21.15	6.60	24.4	5.38	0.15	17.5	<0.01	185	620	<10	2.2
MW-2S	02/12/2018	972	6.61	2.10	17.57	6.68	22.4	1.58	<0.01	13.6	0.037	228	686	<10	<1
DETECTION															
WTE-3SR	02/08/2016	700	3.80	0.49	20.18	7.20	20.5	0.63	0.0723	18.4	0.0483	56.7	452	<10	<1
WTE-3SR	08/08/2016	659	3.81	0.66	20.17	7.10	29.4	5.19	0.347	13.9	0.0209	77.7	612	<10	<1
WTE-3SR	02/06/2017	634	8.97	1.06	15.01	7.00	25.8	27.9	1.05	18	<0.01	61.4	448	35.8	3.1
WTE-3SR	08/21/2017	706	3.86	0.19	20.12	6.81	27.9	5.72	0.554	18.6	<0.01	33.5	408	<10	<1
WTE-3SR	02/12/2018	685	7.38	0.36	16.60	6.90	25.8	4.37	0.36	23.5	<0.01	57.6	388	<10	<1
MW-4S	02/08/2016	895	4.00	0.61	18.48	7.01	21.9	0.47	19	7.51	0.0292	79.9	484	<10	<1
MW-4S	03/21/2016	748	6.03	0.40	16.45	6.87	24.8	0.91	4.0	-	-	-	-	-	-
MW-4S	08/08/2016	650	4.01	0.59	18.47	7.02	30.0	2.57	4.44	9.56	<0.01	46	550	<10	2.6
MW-4S	02/06/2017	585	9.01	1.03	13.47	6.89	27.3	24.0	4.24	11.5	0.432	33.4	438	34.3	2.4
MW-4S	08/21/2017	830	4.02	0.23	18.46	6.67	29.3	3.88	1.07	9.66	0.0252	90.8	508	<10	<1
MW-4S	02/12/2018	723	7.40	0.27	15.08	6.76	28.0	2.71	0.48	10.8	0.077	36.2	432	<10	<1

LEGEND

*	=Primary Drinking Water Standard	I	= Value is between the Method Detection Level (MDL) and the Reporting Detection Level (RDL)
**	=Secondary Drinking Water Standard	J	= Estimated value
***	=Chapter 62-777 - Groundwater Cleanup Target Level (GCTL)	V	= Analyte found in associated method blank
(1)	=No Standard	Q	= Estimated value; analyte analyzed after acceptable holding time
-	=Not Analyzed		

PARAMETERS AT OR ABOVE THE LABORATORY DETECTION LIMIT
LEE COUNTY RESOURCE RECOVERY FACILITY
FEBRUARY 2016 THROUGH FEBRUARY 2018

PARAMETER		IRON	SODIUM
STANDARD		300 µg/L**	160 mg/L*
UNITS		µg/L	mg/L
BACKGROUND			
MW-2S	02/08/2016	461	22.8
MW-2S	08/08/2016	4260	19.6
MW-2S	02/06/2017	323	15.5
MW-2S	08/21/2017	3950	19.8
MW-2S	02/12/2018	2440	13.9
DETECTION			
WTE-3SR	02/08/2016	341	11.2
WTE-3SR	08/08/2016	2530	11.8
WTE-3SR	02/06/2017	3860	10.7
WTE-3SR	08/21/2017	3230	9.55
WTE-3SR	02/12/2018	2838	10.2
MW-4S	02/08/2016	50.1	5.33
MW-4S	03/21/2016	-	-
MW-4S	08/08/2016	3610	6.4
MW-4S	02/06/2017	2090	7.04
MW-4S	08/21/2017	1330	8.27
MW-4S	02/12/2018	1131	8.30

LEGEND

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***	=Chapter 62-777 - Groundwater Cleanup Target Level (GCTL)	V	= Analyte found in associated method blank
(1)	=No Standard	Q	= Estimated value; analyte analyzed after acceptable holding time
-	=Not Analyzed		

ATTACHMENT 6

GROUNDWATER ALL DATA TABLE
FOR THE REPORT PERIOD

ALL DATA
LEE COUNTY RESOURCE RECOVERY FACILITY
FEBRUARY 2016 THROUGH FEBRUARY 2018

PARAMETER		CONDUC-TIVITY (FIELD)	DEPTH TO WATER FROM MEASURE PT	DISSOLVED OXYGEN (FIELD)	GROUND-WATER ELEVATION	pH (FIELD)	TEMPER-ATURE (FIELD)	TURBIDITY (FIELD)	AMMONIA NITROGEN	CHLORIDE	NITRATE NITROGEN	SULFATE	TOTAL DISSOLVED SOLIDS	ALUMINUM	ARSENIC
STANDARD		(1)	(1)	(1)	(1)	6.5-8.5 S.U.**	(1)	(1)	2.8 mg/L***	250 mg/L**	10 mg/L*	250 mg/L**	500 mg/L**	200 µg/L**	10 µg/L*
UNITS		uS/cm	ft	ppm	ft, NGVD	S.U.	deg C	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L
BACKGROUND															
MW-2S	02/08/2016	923	2.86	0.79	21.32	7.07	18.4	1.27	<0.01	27.7	0.129	138	636	<10	<1
MW-2S	08/08/2016	807	3.04	0.81	21.14	6.98	26.2	6.44	0.502	18.6	<0.01	215	778	<10	<1
MW-2S	02/06/2017	701	8.11	1.24	16.07	7.07	21.6	6.01	1.02	17.4	0.0398	165	568	16.4	<1
MW-2S	08/21/2017	947	3.03	0.39	21.15	6.60	24.4	5.38	0.15	17.5	<0.01	185	620	<10	2.2
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DETECTION															
WTE-3SR	02/08/2016	700	3.80	0.49	20.18	7.20	20.5	0.63	0.0723	18.4	0.0483	56.7	452	<10	<1
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MW-4S	02/08/2016	895	4.00	0.61	18.48	7.01	21.9	0.47	19	7.51	0.0292	79.9	484	<10	<1
MW-4S	03/21/2016	748	6.03	0.40	16.45	6.87	24.8	0.91	4.0	-	-	-	-	-	-
MW-4S	08/08/2016	650	4.01	0.59	18.47	7.02	30.0	2.57	4.44	9.56	<0.01	46	550	<10	2.6
MW-4S	02/06/2017	585	9.01	1.03	13.47	6.89	27.3	24.0	4.24	11.5	0.432	33.4	438	34.3	2.4
MW-4S	08/21/2017	830	4.02	0.23	18.46	6.67	29.3	3.88	1.07	9.66	0.0252	90.8	508	<10	<1
MW-4S	02/12/2018	723	7.40	0.27	15.08	6.76	28.0	2.71	0.48	10.8	0.077	36.2	432	<10	<1

LEGEND

*	=Primary Drinking Water Standard	I	= Value is between the Method Detection Level (MDL) and the Reporting Detection Level (RDL)
**	=Secondary Drinking Water Standard	J	= Estimated value
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(1)	=No Standard	Q	= Estimated value; analyte analyzed after acceptable holding time
-	=Not Analyzed		

ALL DATA

LEE COUNTY RESOURCE RECOVERY FACILITY

FEBRUARY 2016 THROUGH FEBRUARY 2018

PARAMETER		CADMIUM	CHROMIUM	IRON	LEAD	MERCURY	SODIUM	1,1,1-TRICHLORO-ETHANE	1,1,2,2-TETRA-CHLORO-ETHANE	1,1,2-TRICHLORO-ETHANE	1,1-DICHLORO-ETHANE	1,1-DICHLORO-ETHENE	1,2-DICHLORO-BENZENE	1,2-DICHLORO-ETHANE	1,2-DICHLORO-PROPANE
STANDARD		5 µg/L*	100 µg/L*	300 µg/L**	15 µg/L*	2 µg/L*	160 mg/L*	200 µg/L*	0.2 µg/L***	5 µg/L*	70 µg/L***	7 µg/L*	600 µg/L*	3 µg/L*	5 µg/L*
UNITS		µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BACKGROUND															
MW-2S	02/08/2016	<0.2	<1	461	<1	<0.02	22.8	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
MW-2S	08/08/2016	<0.2	<1	4260	<1	<0.02	19.6	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
MW-2S	02/06/2017	<0.2	<1	323	<1	<0.02	15.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
MW-2S	08/21/2017	<0.2	<1	3950	<1	<0.02	19.8	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
MW-2S	02/12/2018	<0.2	<1	2440	<1	<0.02	13.9	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
DETECTION															
WTE-3SR	02/08/2016	<0.2	<1	341	<1	<0.02	11.2	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
WTE-3SR	08/08/2016	<0.2	<1	2530	<1	<0.02	11.8	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
WTE-3SR	02/06/2017	<0.2	<1	3860	<1	<0.02	10.7	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
WTE-3SR	08/21/2017	<0.2	<1	3230	<1	<0.02	9.55	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
WTE-3SR	02/12/2018	<0.2	<1	2838	<1	<0.02	10.2	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
MW-4S	02/08/2016	<0.2	<1	50.1	<1	<0.02	5.33	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
MW-4S	03/21/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4S	08/08/2016	<0.2	<1	3610	<1	<0.02	6.4	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
MW-4S	02/06/2017	<0.2	<1	2090	<1	<0.02	7.04	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
MW-4S	08/21/2017	<0.2	<1	1330	<1	<0.02	8.27	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2
MW-4S	02/12/2018	<0.2	<1	1131	<1	<0.02	8.30	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2

LEGEND

*	=Primary Drinking Water Standard	I	= Value is between the Method Detection Level (MDL) and the Reporting Detection Level (RDL)
**	=Secondary Drinking Water Standard	J	= Estimated value
***	=Chapter 62-777 - Groundwater Cleanup Target Level (GCTL)	V	= Analyte found in associated method blank
(1)	=No Standard	Q	= Estimated value; analyte analyzed after acceptable holding time
-	=Not Analyzed		

ALL DATA

LEE COUNTY RESOURCE RECOVERY FACILITY

FEBRUARY 2016 THROUGH FEBRUARY 2018

PARAMETER		1,3-DICHLORO-BENZENE	1,4-DICHLORO-BENZENE	2-CHLORO-ETHYL-VINYL ETHER	BENZENE	BROMO-DICHLORO-METHANE	BROMOFORM	BROMO-METHANE (METHYL BROMIDE)	CARBON TETRA-CHLORIDE	CHLORO-BENZENE	CHLORO-ETHANE	CHLORO-FORM	CHLORO-METHANE (METHYL CHLORIDE)	CIS-1,3-DICHLORO-PROPENE	DIBROMO-CHLORO-METHANE
STANDARD		210 µg/L***	75 µg/L*	1 µg/L***	1 µg/L*	0.6 µg/L***	4.4 µg/L***	9.8 µg/L***	3 µg/L*	100 µg/L*	12 µg/L***	70 µg/L***	2.7 µg/L***	0.4 µg/L***	0.4 µg/L***
UNITS		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BACKGROUND															
MW-2S	02/08/2016	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
MW-2S	08/08/2016	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
MW-2S	02/06/2017	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
MW-2S	08/21/2017	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
MW-2S	02/12/2018	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
DETECTION															
WTE-3SR	02/08/2016	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
WTE-3SR	08/08/2016	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
WTE-3SR	02/06/2017	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
WTE-3SR	08/21/2017	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
WTE-3SR	02/12/2018	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
MW-4S	02/08/2016	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
MW-4S	03/21/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4S	08/08/2016	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
MW-4S	02/06/2017	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
MW-4S	08/21/2017	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4
MW-4S	02/12/2018	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.4

LEGEND

*	=Primary Drinking Water Standard	I	= Value is between the Method Detection Level (MDL) and the Reporting Detection Level (RDL)
**	=Secondary Drinking Water Standard	J	= Estimated value
***	=Chapter 62-777 - Groundwater Cleanup Target Level (GCTL)	V	= Analyte found in associated method blank
(1)	=No Standard	Q	= Estimated value; analyte analyzed after acceptable holding time
-	=Not Analyzed		

ALL DATA
LEE COUNTY RESOURCE RECOVERY FACILITY
FEBRUARY 2016 THROUGH FEBRUARY 2018

PARAMETER		DICHLORO-DIFLUORO-METHANE	DICHLORO-METHANE	ETHYL-BENZENE	TETRA-CHLORO-ETHENE	TOLUENE	TRANS-1,2-DICHLORO-ETHENE	TRANS-1,3-DICHLORO-PROPENE	TRICHLORO-ETHENE	TRICHLORO-FLUORO-METHANE	VINYL CHLORIDE	XYLENES
STANDARD		1400 µg/L***	5 µg/L*	30 µg/L**	3 µg/L*	40 µg/L**	100 µg/L*	0.4 µg/L***	3 µg/L*	2100 µg/L***	1 µg/L*	20 µg/L**
UNITS		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BACKGROUND												
MW-2S	02/08/2016	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
MW-2S	08/08/2016	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
MW-2S	02/06/2017	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-2S	08/21/2017	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-2S	02/12/2018	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DETECTION												
WTE-3SR	02/08/2016	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
WTE-3SR	08/08/2016	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
WTE-3SR	02/06/2017	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WTE-3SR	08/21/2017	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
WTE-3SR	02/12/2018	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-4S	02/08/2016	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
MW-4S	03/21/2016	-	-	-	-	-	-	-	-	-	-	-
MW-4S	08/08/2016	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
MW-4S	02/06/2017	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-4S	08/21/2017	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-4S	02/12/2018	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

LEGEND

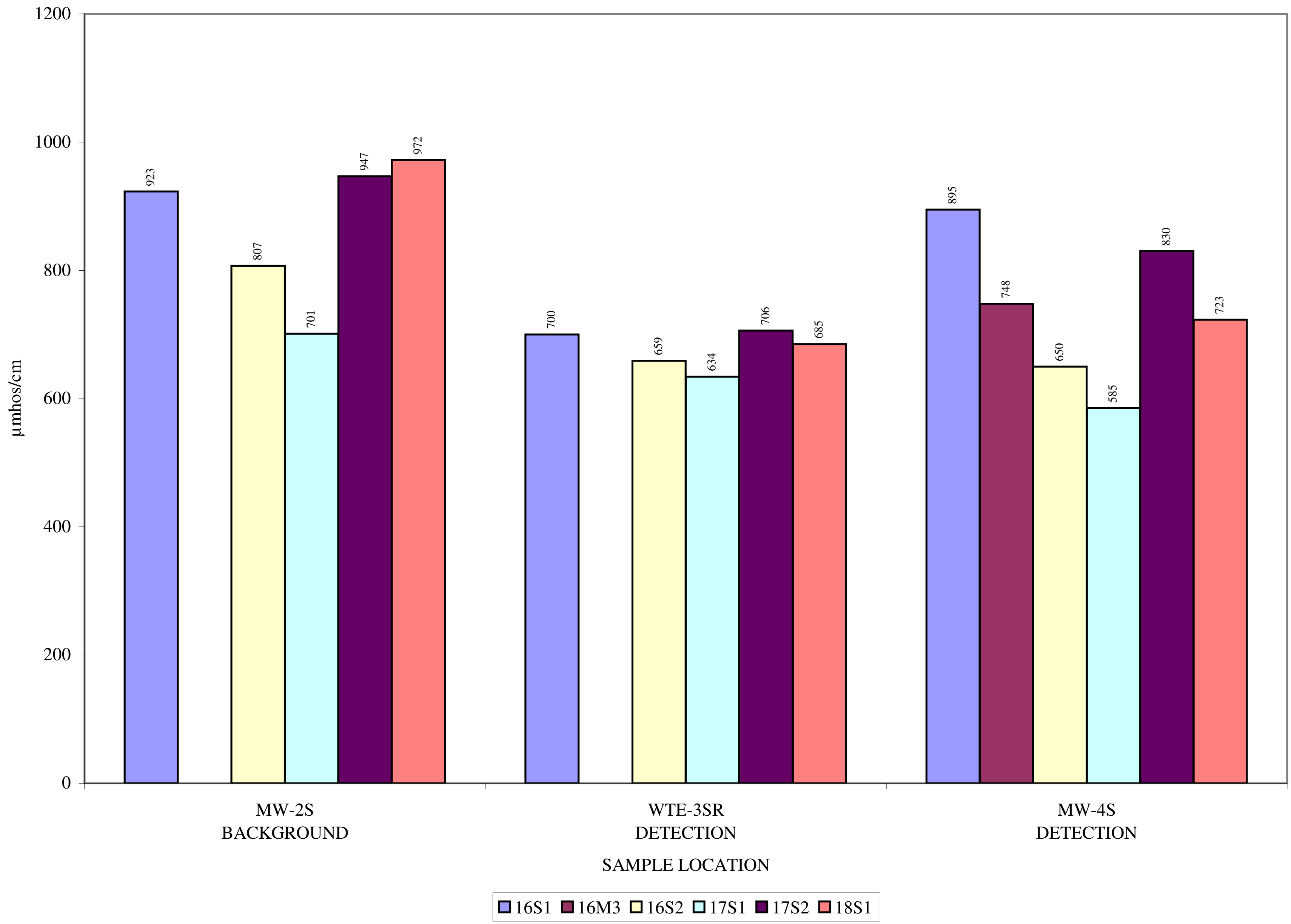
*	=Primary Drinking Water Standard	I	= Value is between the Method Detection Level (MDL) and the Reporting Detection Level (RDL)
**	=Secondary Drinking Water Standard	J	= Estimated value
***	=Chapter 62-777 - Groundwater Cleanup Target Level (GCTL)	V	= Analyte found in associated method blank
(1)	=No Standard	Q	= Estimated value; analyte analyzed after acceptable holding time
-	=Not Analyzed		

ATTACHMENT 7

GROUNDWATER CHEMISTRY GRAPHS
FOR THE REPORT PERIOD

CONDUCTIVITY (FIELD)

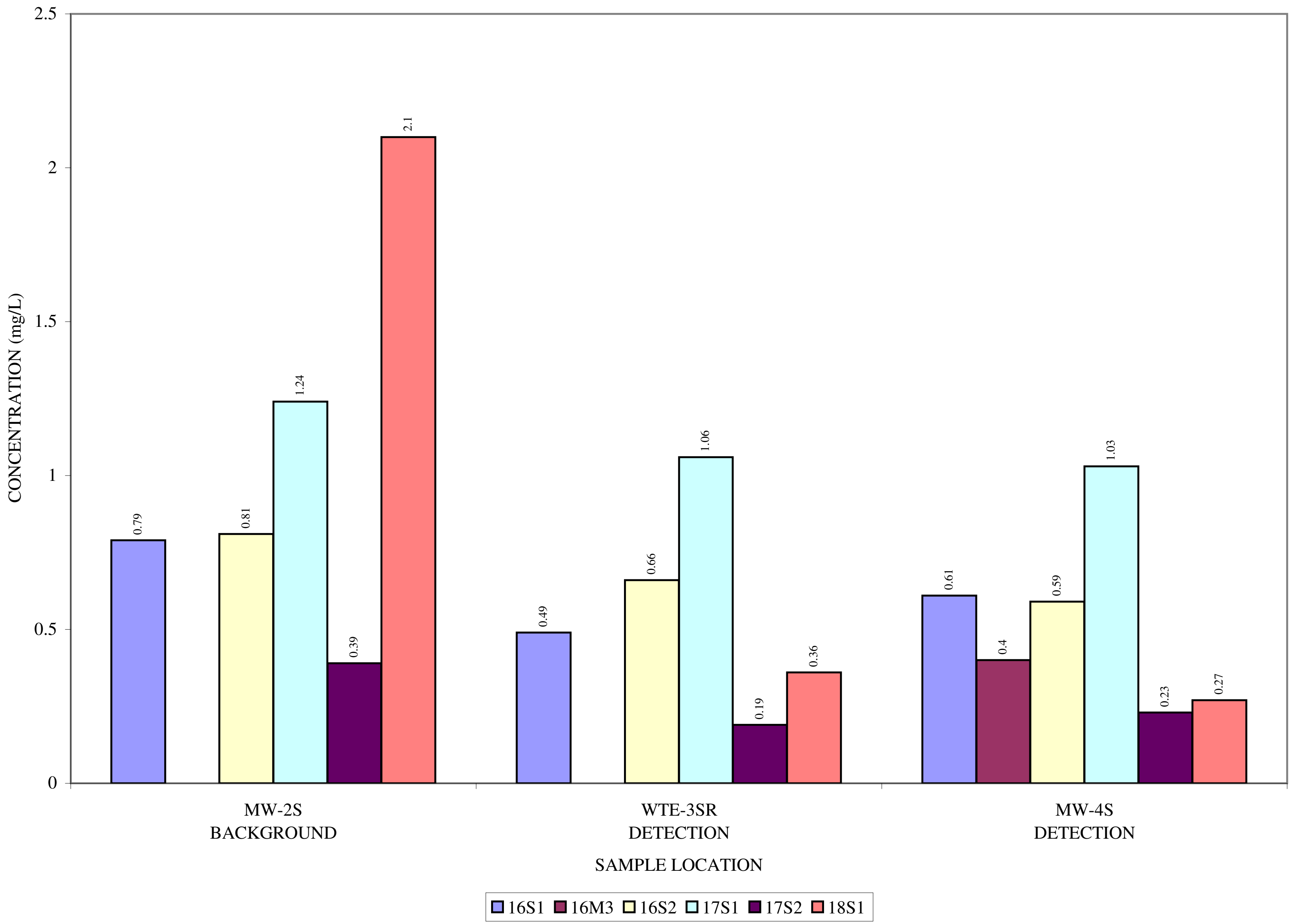
LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH



0 = BELOW LABORATORY DETECTION LIMIT

DISSOLVED OXYGEN (FIELD)

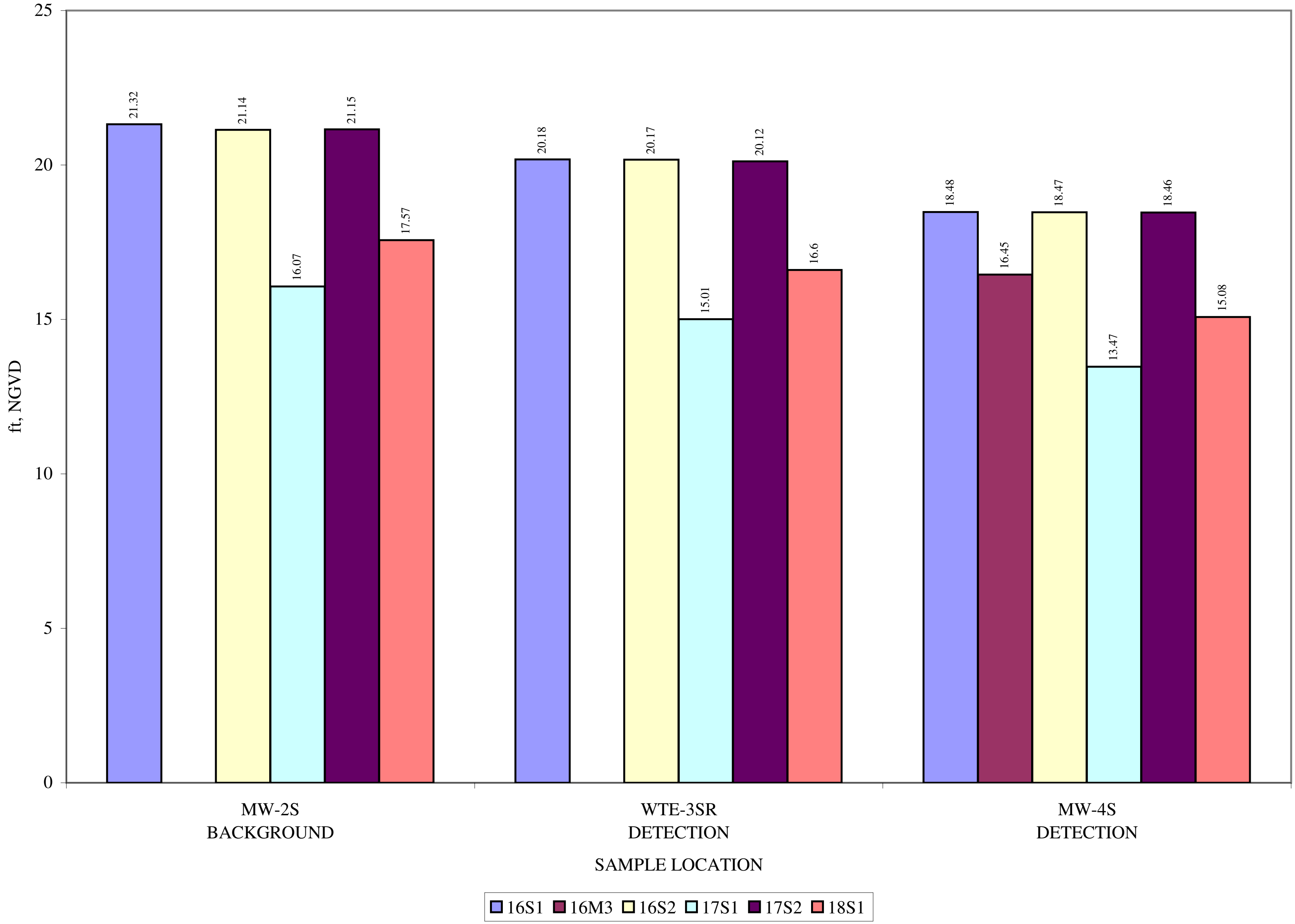
LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH



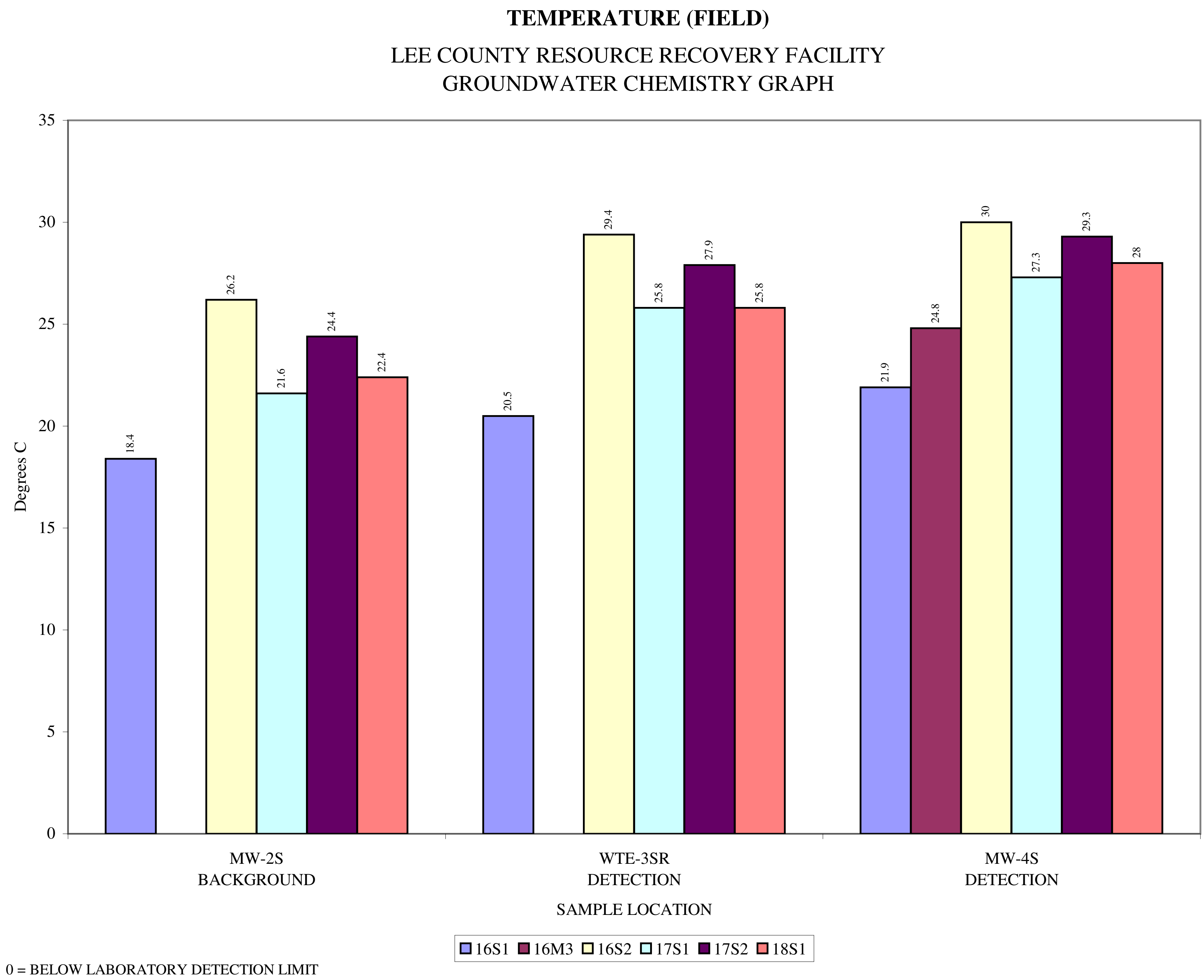
0 = BELOW LABORATORY DETECTION LIMIT

GROUNDWATER ELEVATION

LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH

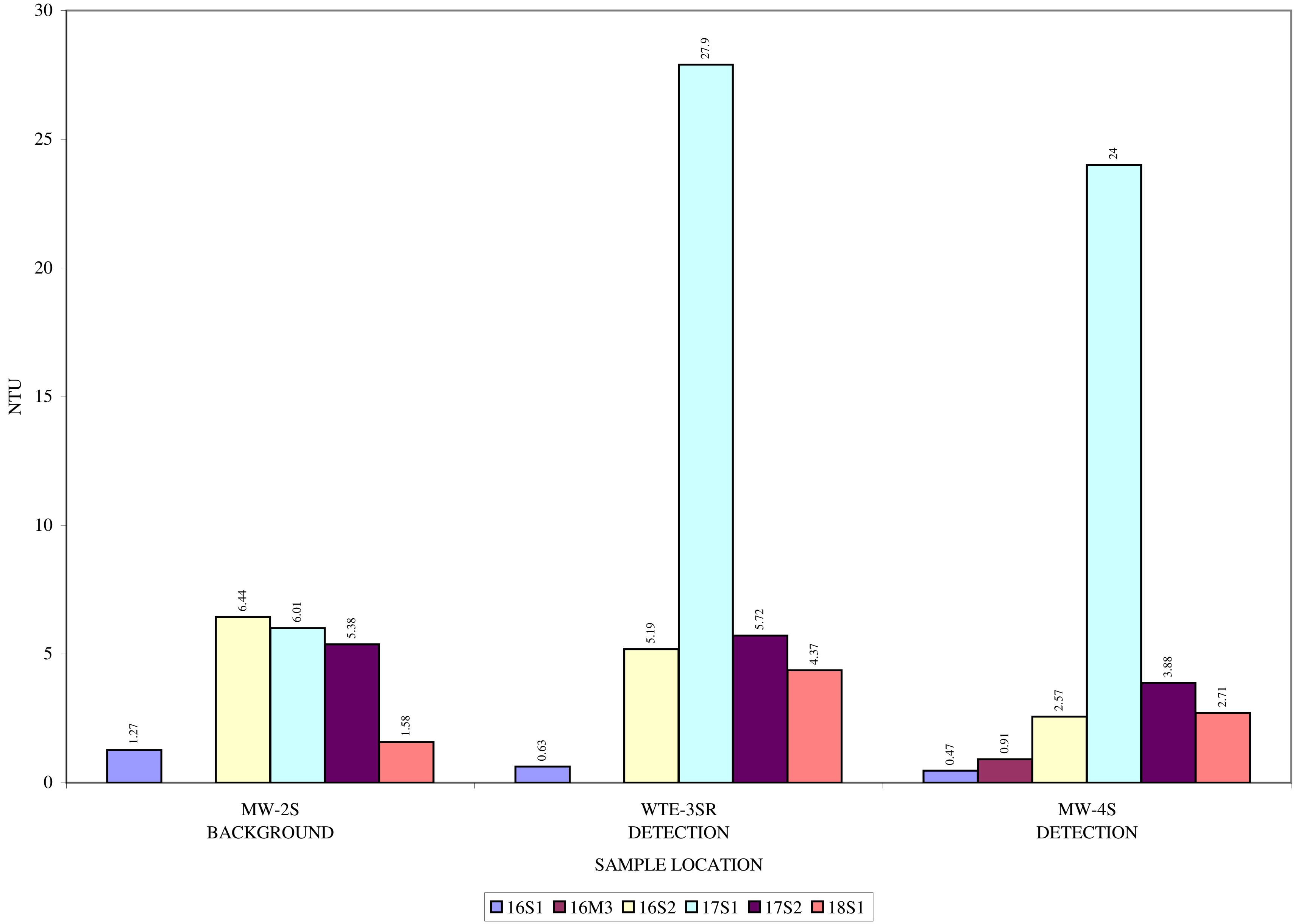


0 = BELOW LABORATORY DETECTION LIMIT


TEMPERATURE (FIELD)
LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH
Degrees C
35
30
25
20
15
10
5
0
18.4
26.2
21.6
24.4
22.4
20.5
29.4
25.8
27.9
25.8
21.9
24.8
30
27.3
29.3
28
MW-2S
BACKGROUND
WTE-3SR
DETECTION
MW-4S
DETECTION
SAMPLE LOCATION
16S1
16M3
16S2
17S1
17S2
18S1
0 = BELOW LABORATORY DETECTION LIMIT

TURBIDITY (FIELD)

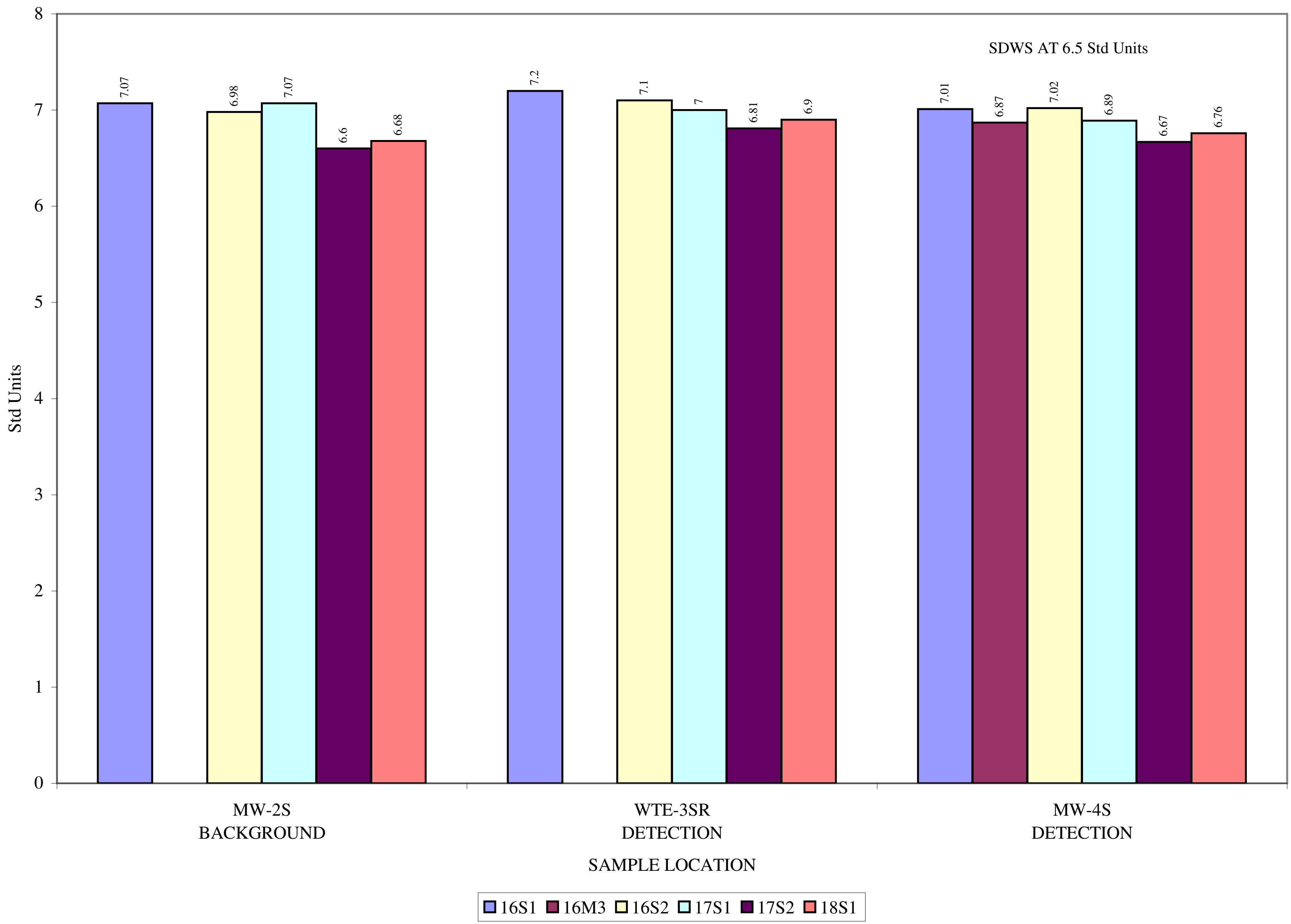
LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH



0 = BELOW LABORATORY DETECTION LIMIT

pH (FIELD)

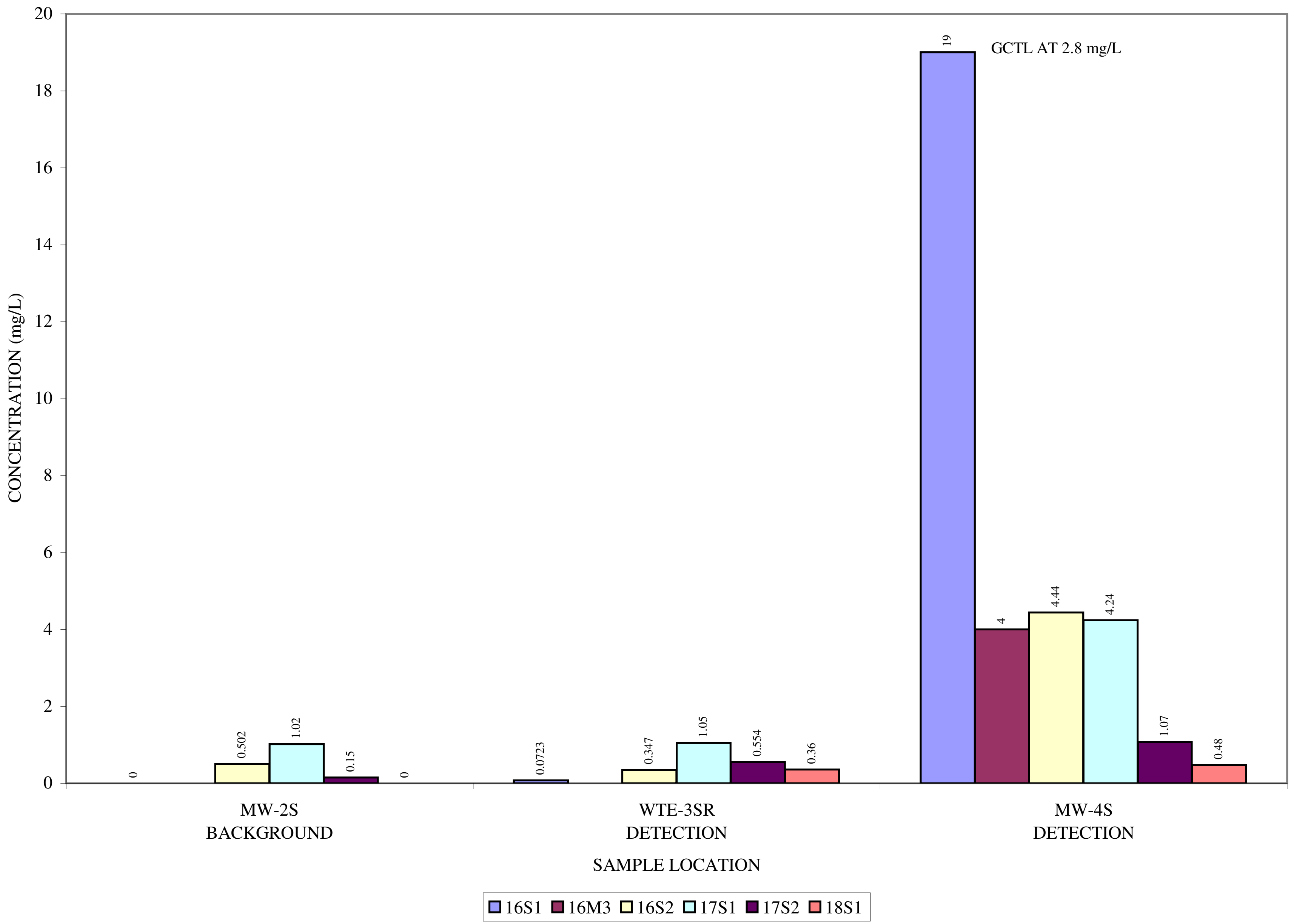
LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH



0 = BELOW LABORATORY DETECTION LIMIT

AMMONIA NITROGEN

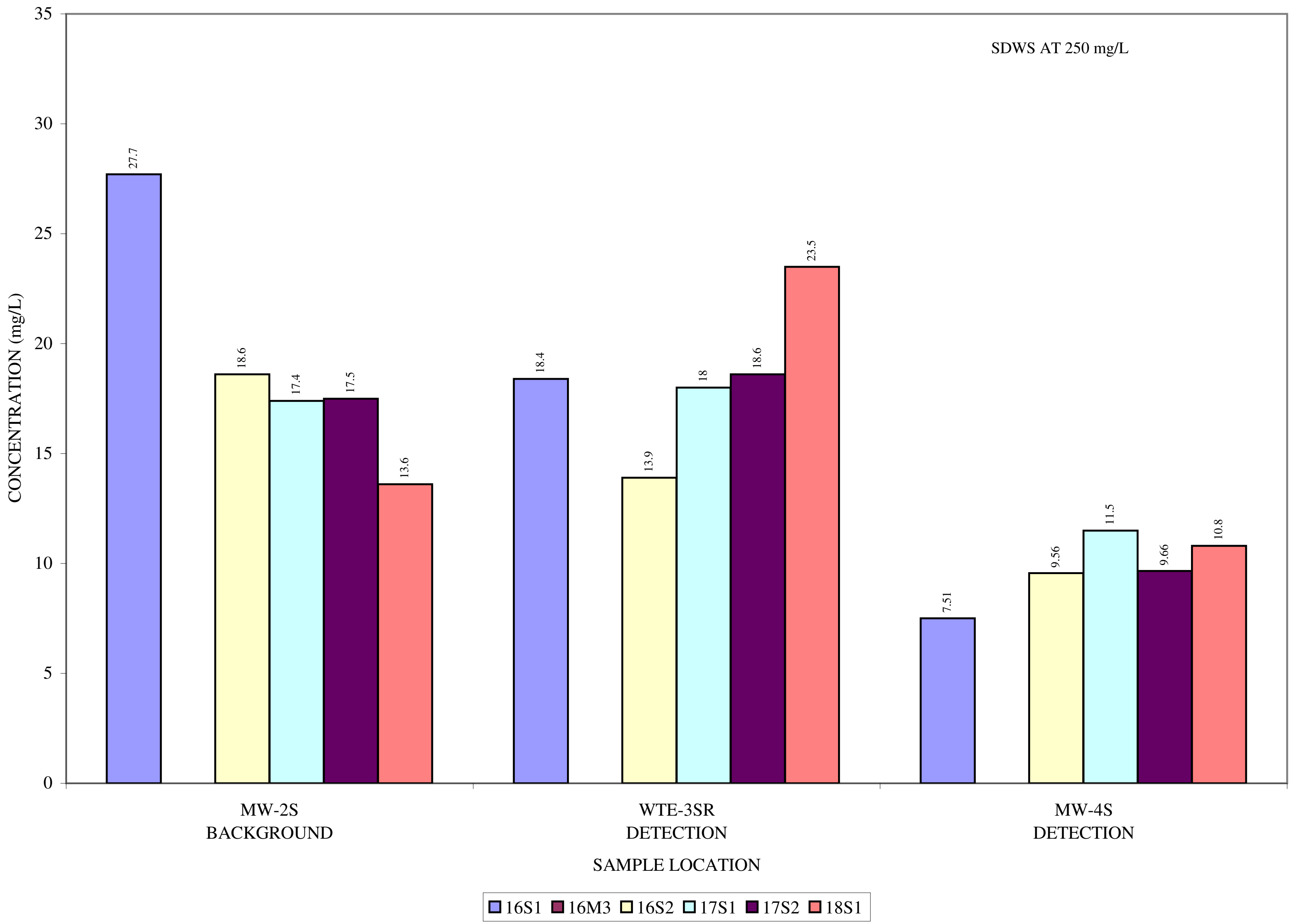
LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH



0 = BELOW LABORATORY DETECTION LIMIT

CHLORIDE

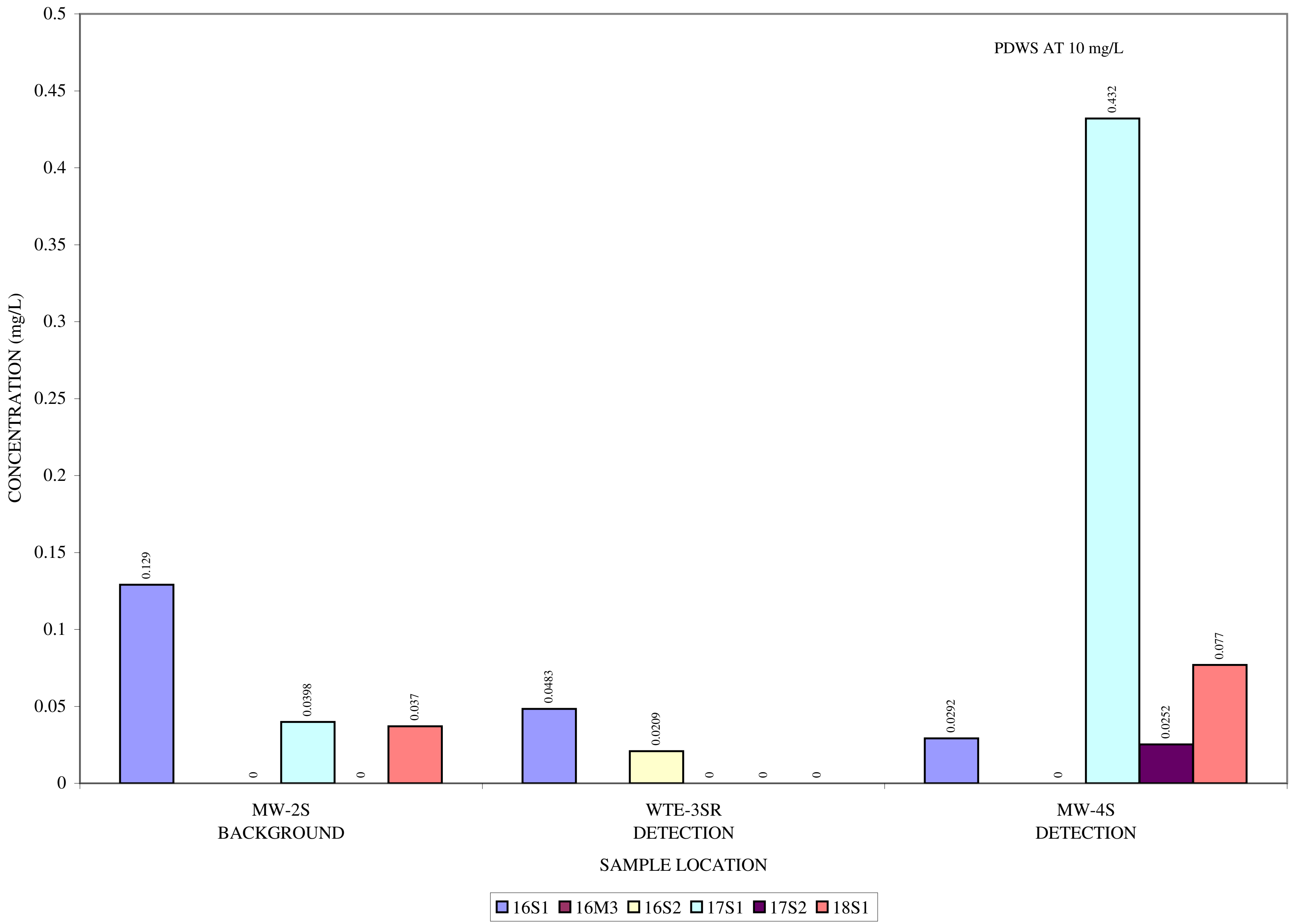
LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH



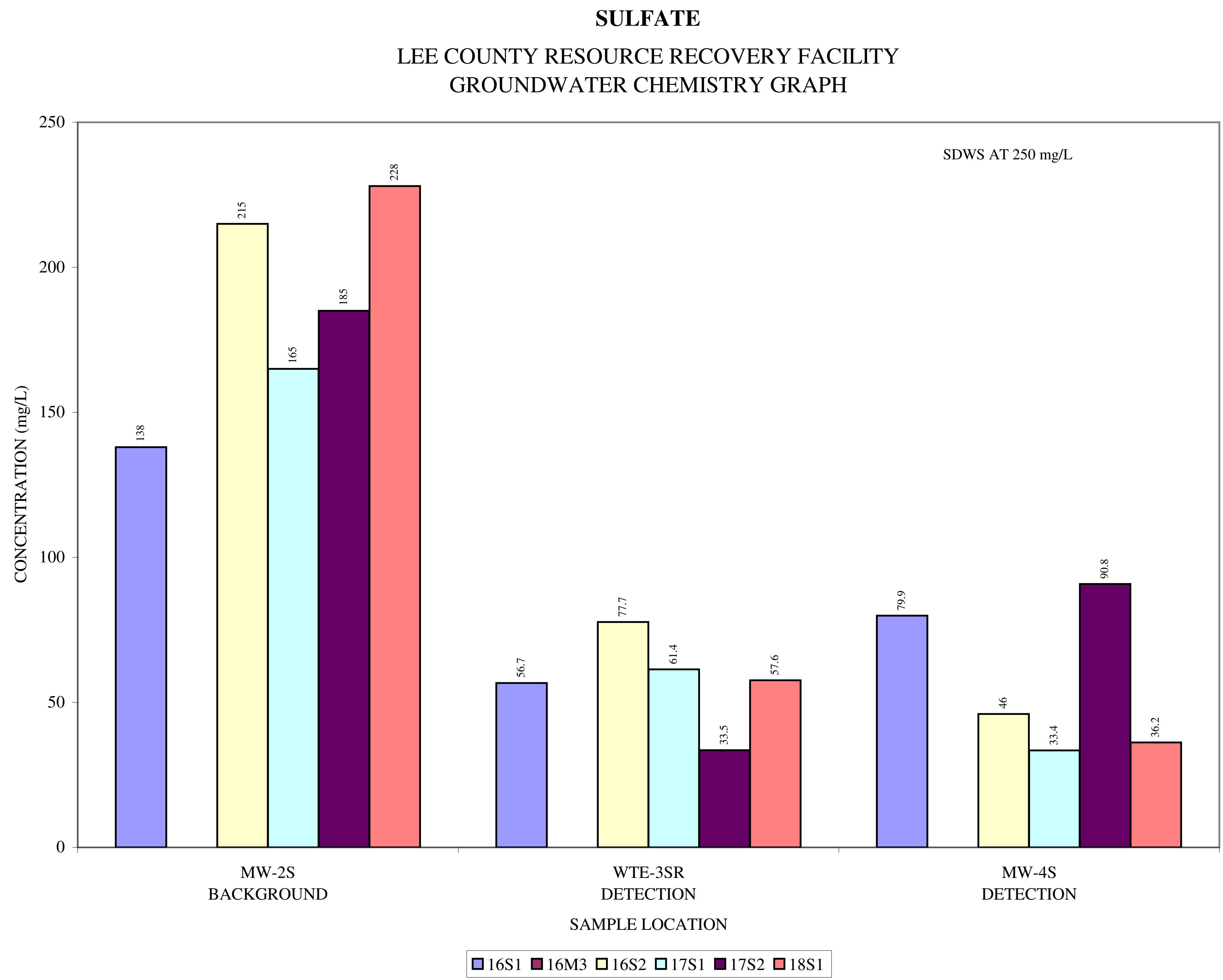
0 = BELOW LABORATORY DETECTION LIMIT

NITRATE NITROGEN

LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH



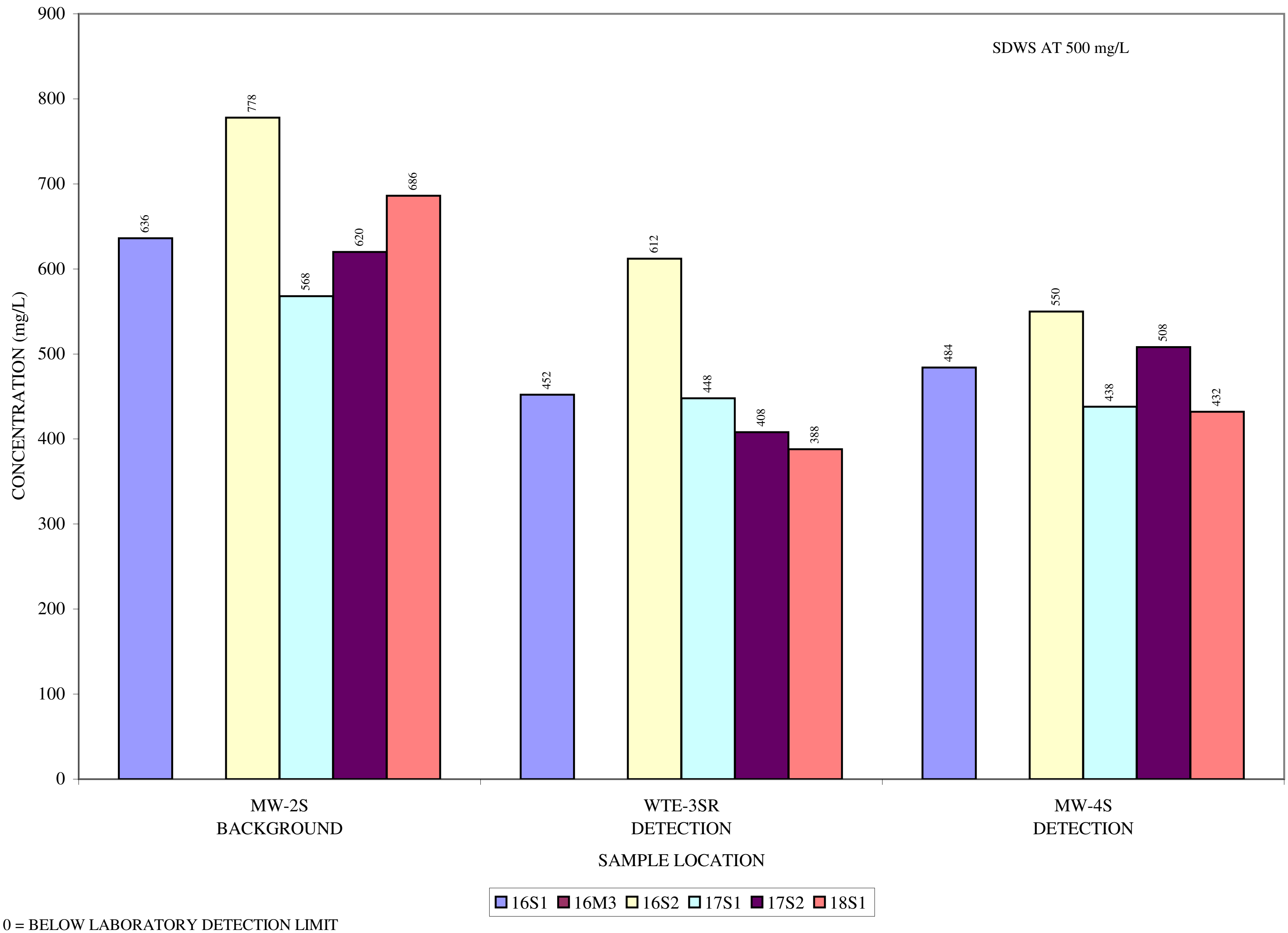
0 = BELOW LABORATORY DETECTION LIMIT



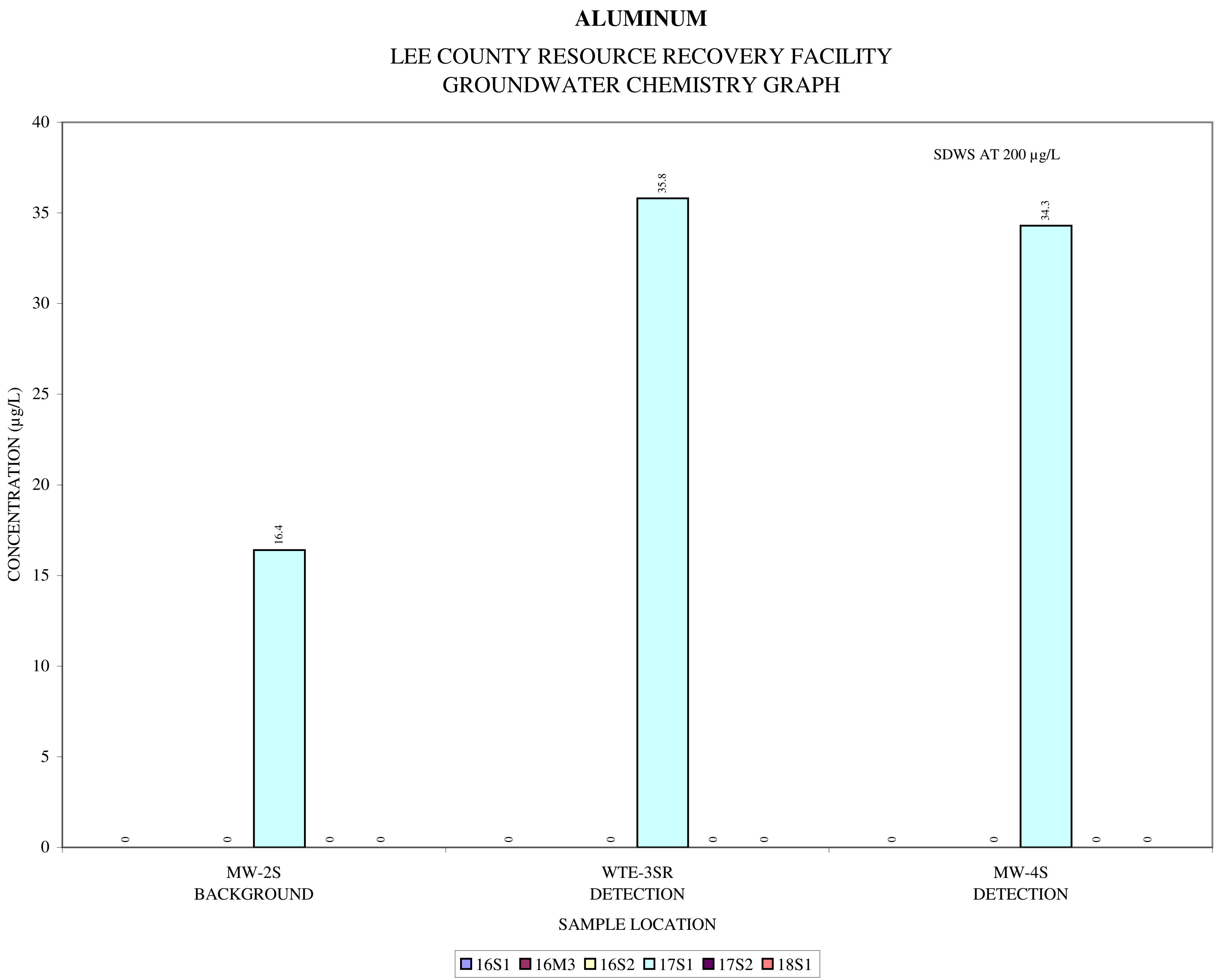
0 = BELOW LABORATORY DETECTION LIMIT

TOTAL DISSOLVED SOLIDS

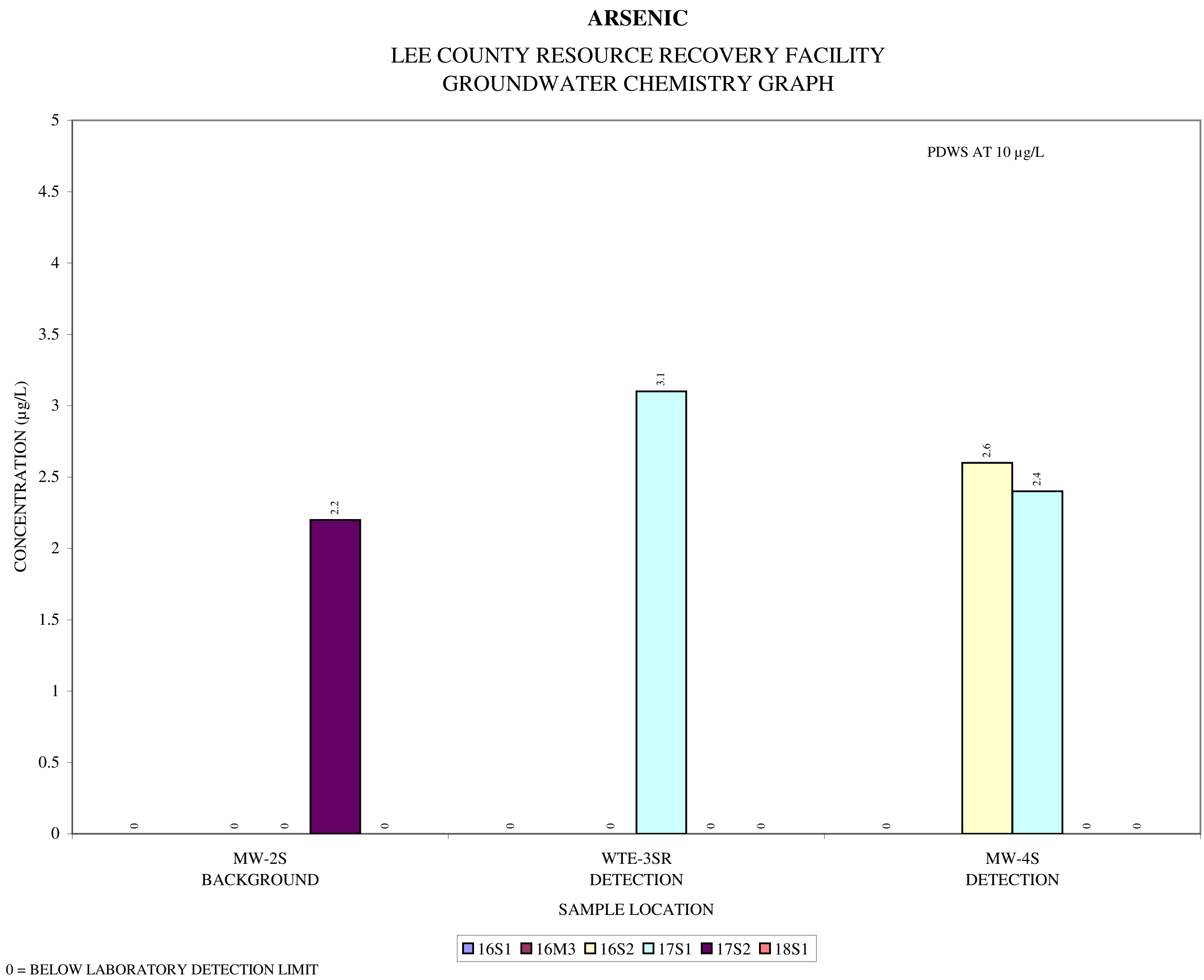
LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH



0 = BELOW LABORATORY DETECTION LIMIT

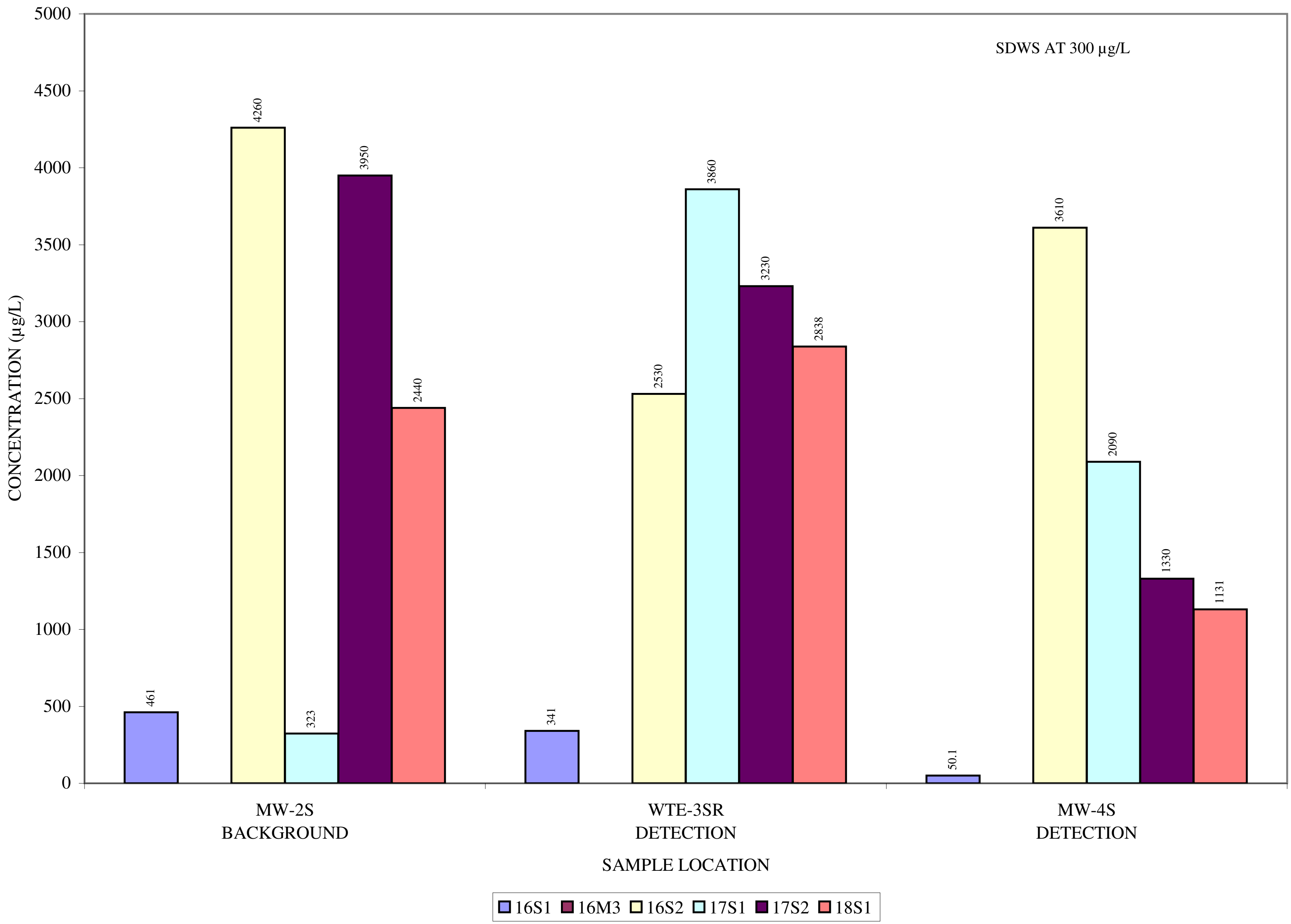


0 = BELOW LABORATORY DETECTION LIMIT


ARSENIC
LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH
PDWS AT 10 µg/L
CONCENTRATION (µg/L)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
0
0
2.2
0
0
0
3.1
0
0
0
2.6
2.4
0
0
MW-2S
BACKGROUND
WTE-3SR
DETECTION
MW-4S
DETECTION
SAMPLE LOCATION
16S1
16M3
16S2
17S1
17S2
18S1
0 = BELOW LABORATORY DETECTION LIMIT

IRON

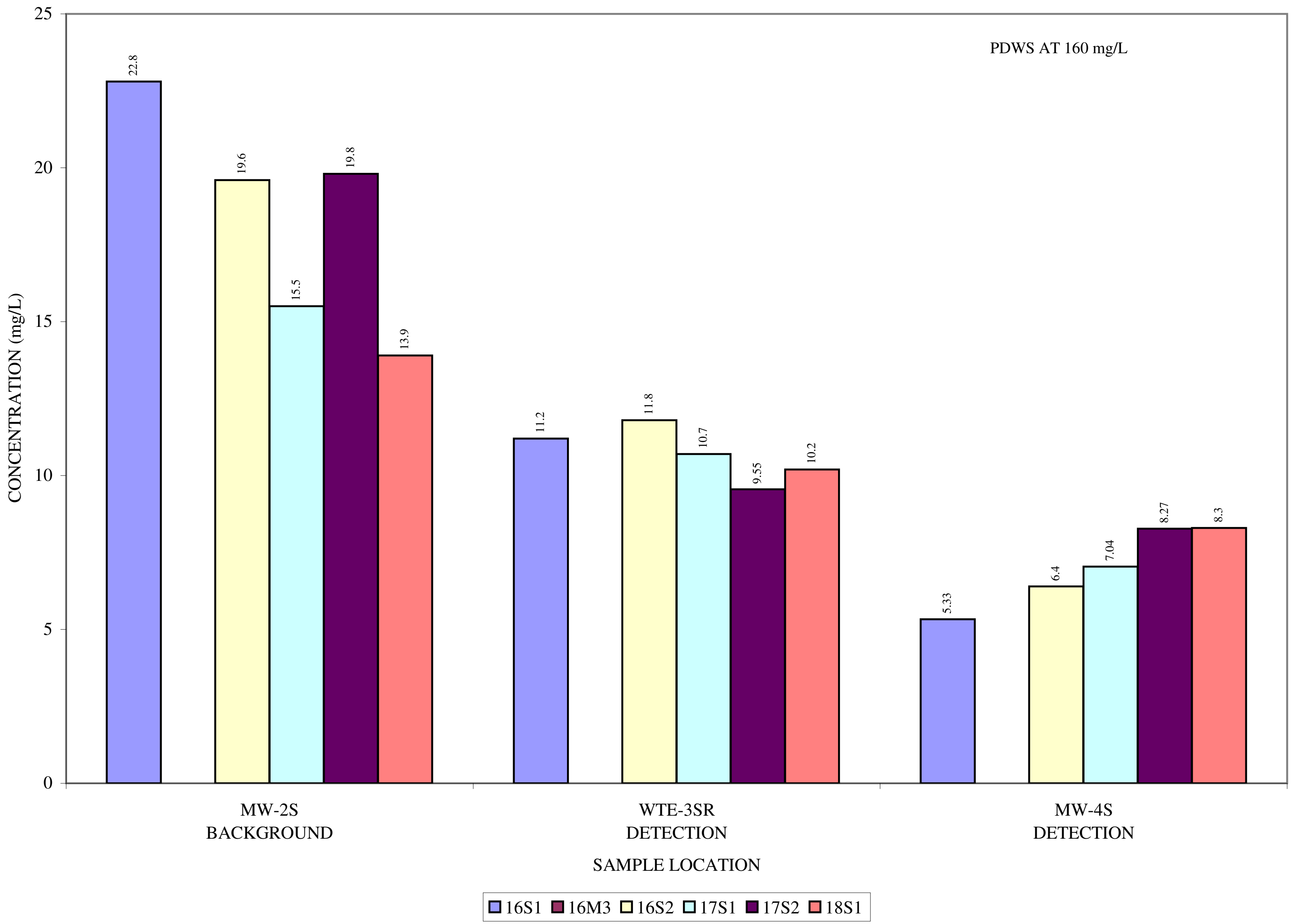
LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH



0 = BELOW LABORATORY DETECTION LIMIT

SODIUM

LEE COUNTY RESOURCE RECOVERY FACILITY
GROUNDWATER CHEMISTRY GRAPH

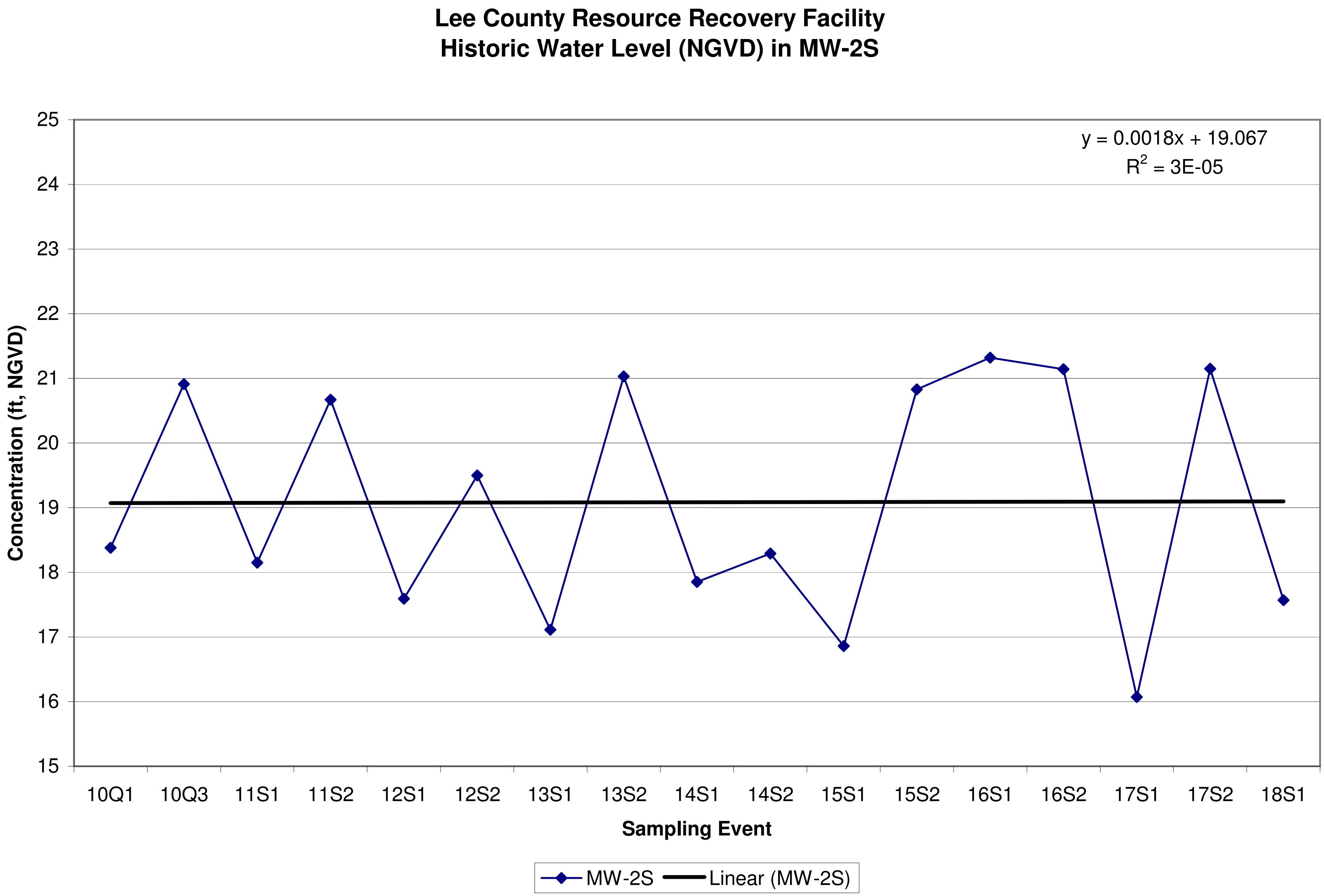


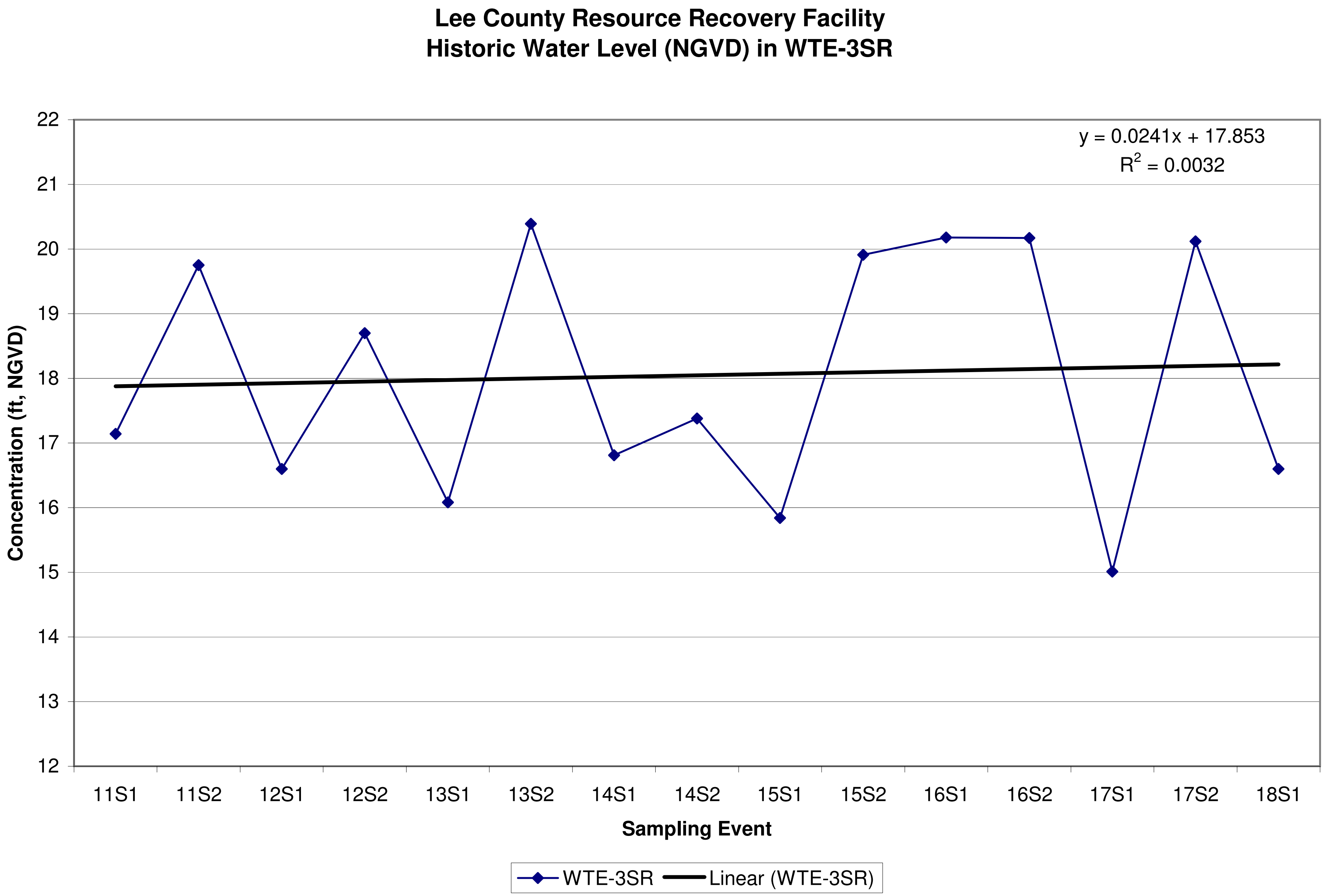
0 = BELOW LABORATORY DETECTION LIMIT

ATTACHMENT 8

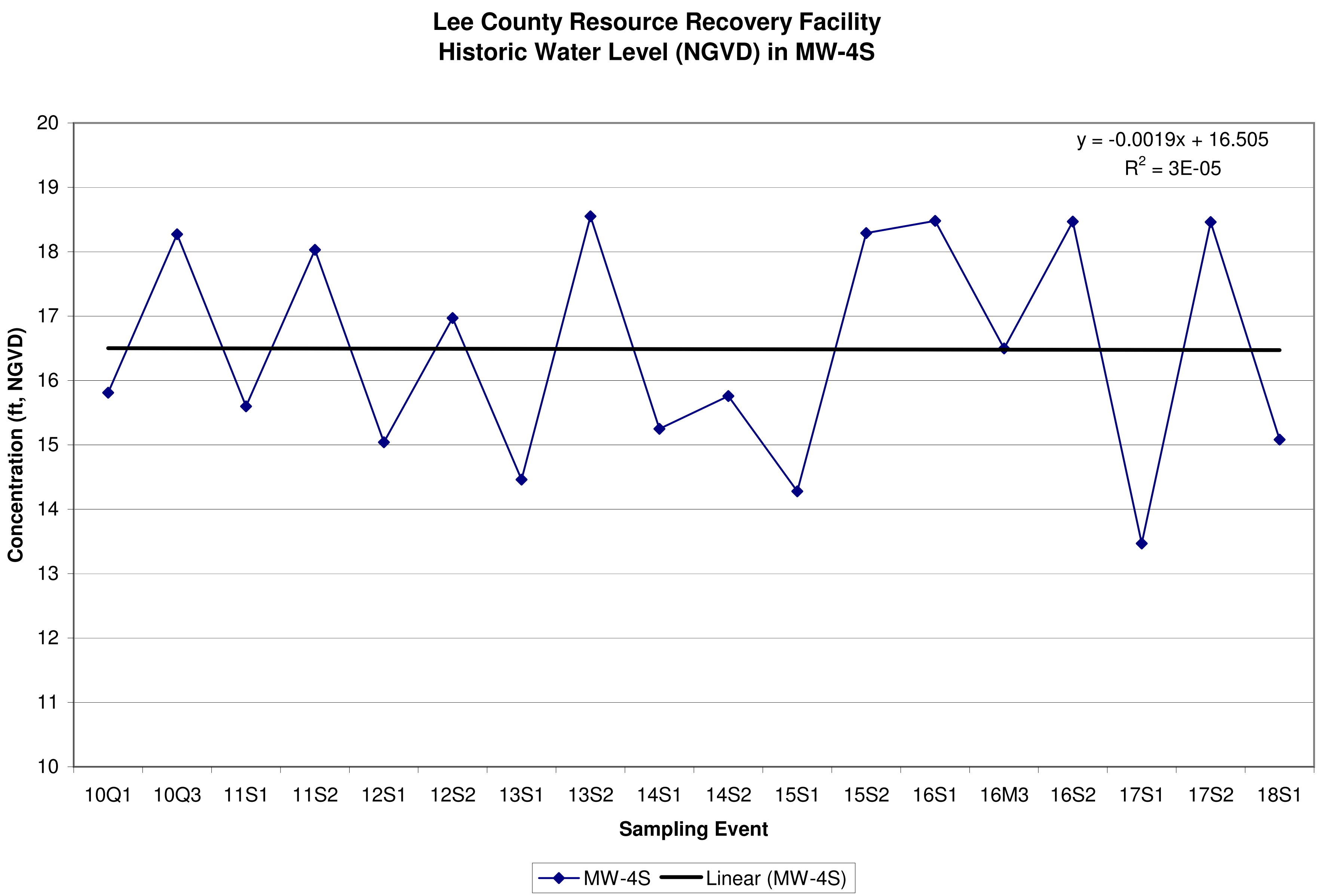
GROUNDWATER HISTORICAL TREND GRAPHS

Historical Groundwater Elevation Data

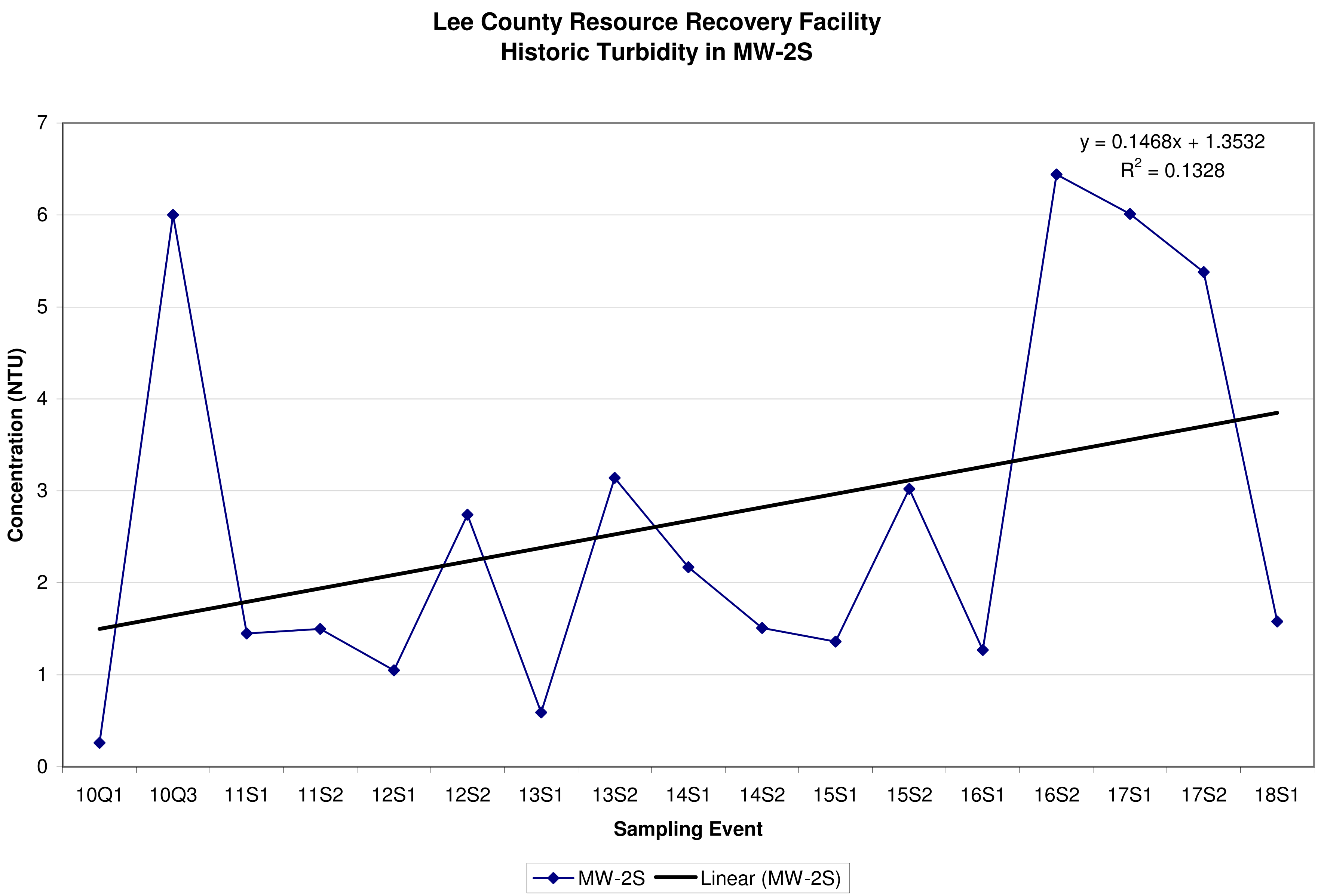

Lee County Resource Recovery Facility
Historic Water Level (NGVD) in MW-2S
y = 0.0018x + 19.067
R^2 = 3E-05
25
24
23
22
21
20
19
18
17
16
15
Concentration (ft, NGVD)
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)

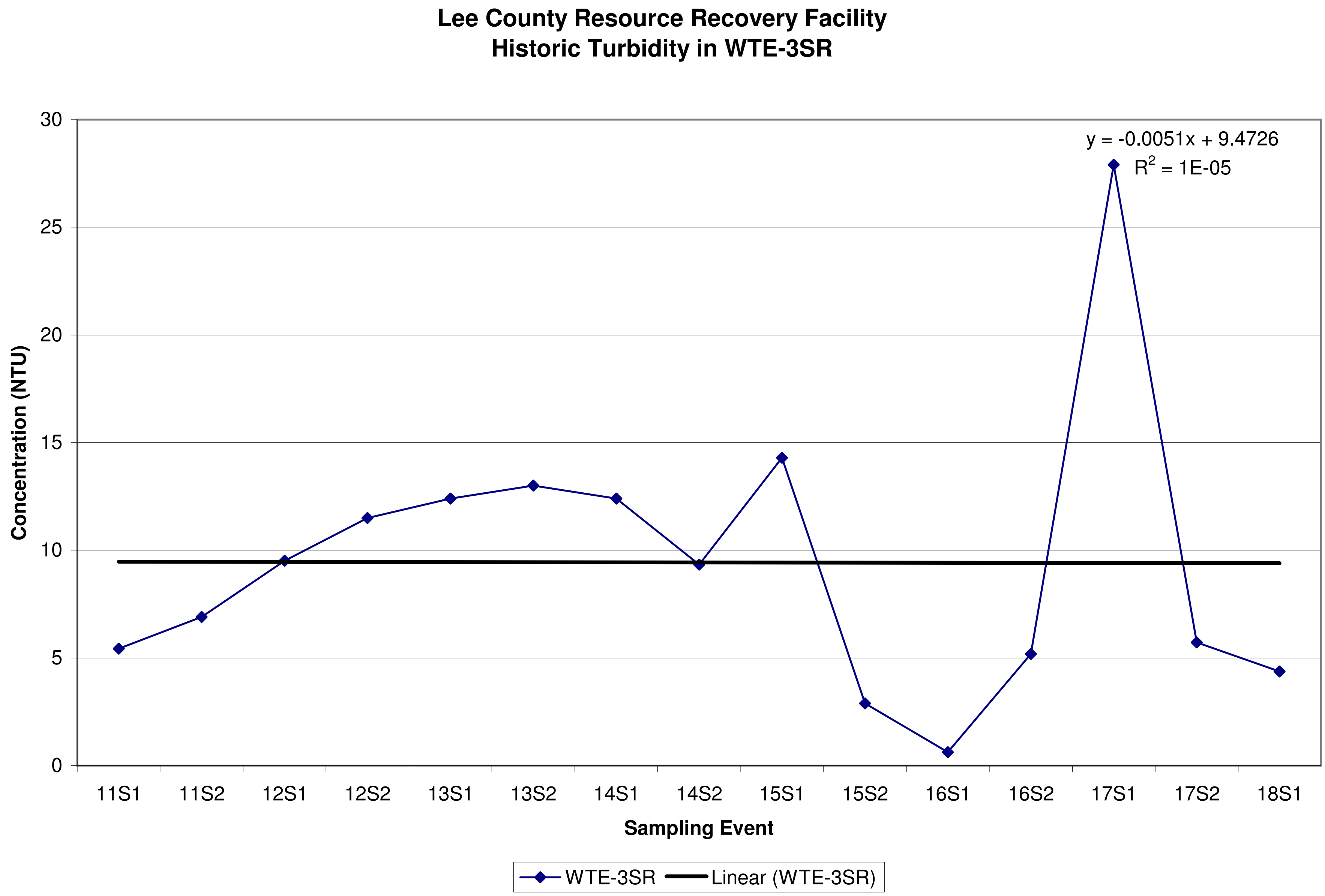


Lee County Resource Recovery Facility
Historic Water Level (NGVD) in WTE-3SR
y = 0.0241x + 17.853
R^2 = 0.0032
22
21
20
19
18
17
16
15
14
13
12
Concentration (ft, NGVD)
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
WTE-3SR
Linear (WTE-3SR)

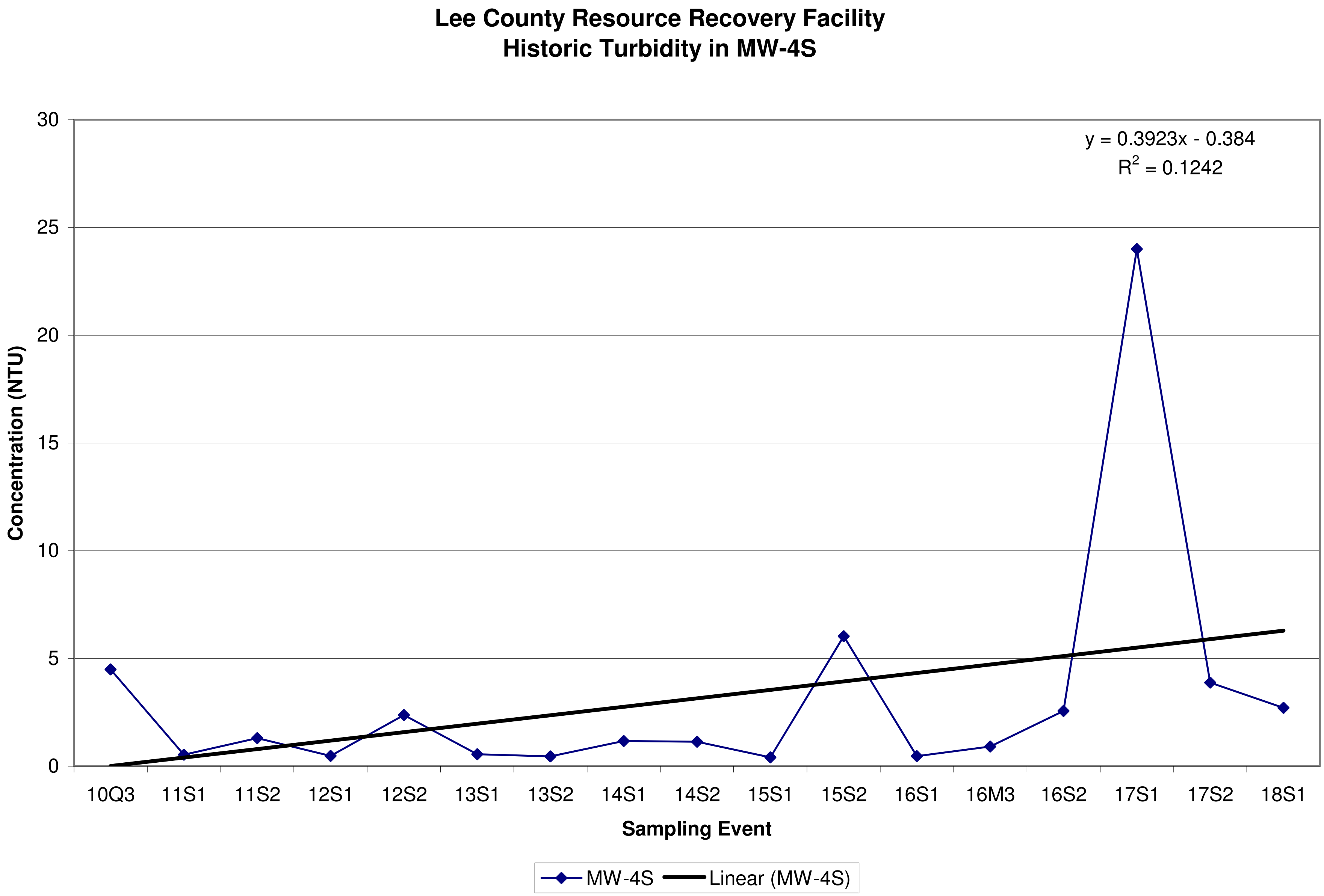

Lee County Resource Recovery Facility
Historic Water Level (NGVD) in MW-4S
y = -0.0019x + 16.505
R2 = 3E-05
Concentration (ft, NGVD)
20
19
18
17
16
15
14
13
12
11
10
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16M3
16S2
17S1
17S2
18S1
Sampling Event
MW-4S
Linear (MW-4S)

Historical Turbidity Data


Lee County Resource Recovery Facility
Historic Turbidity in MW-2S
y = 0.1468x + 1.3532
R2 = 0.1328
Concentration (NTU)
0
1
2
3
4
5
6
7
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)



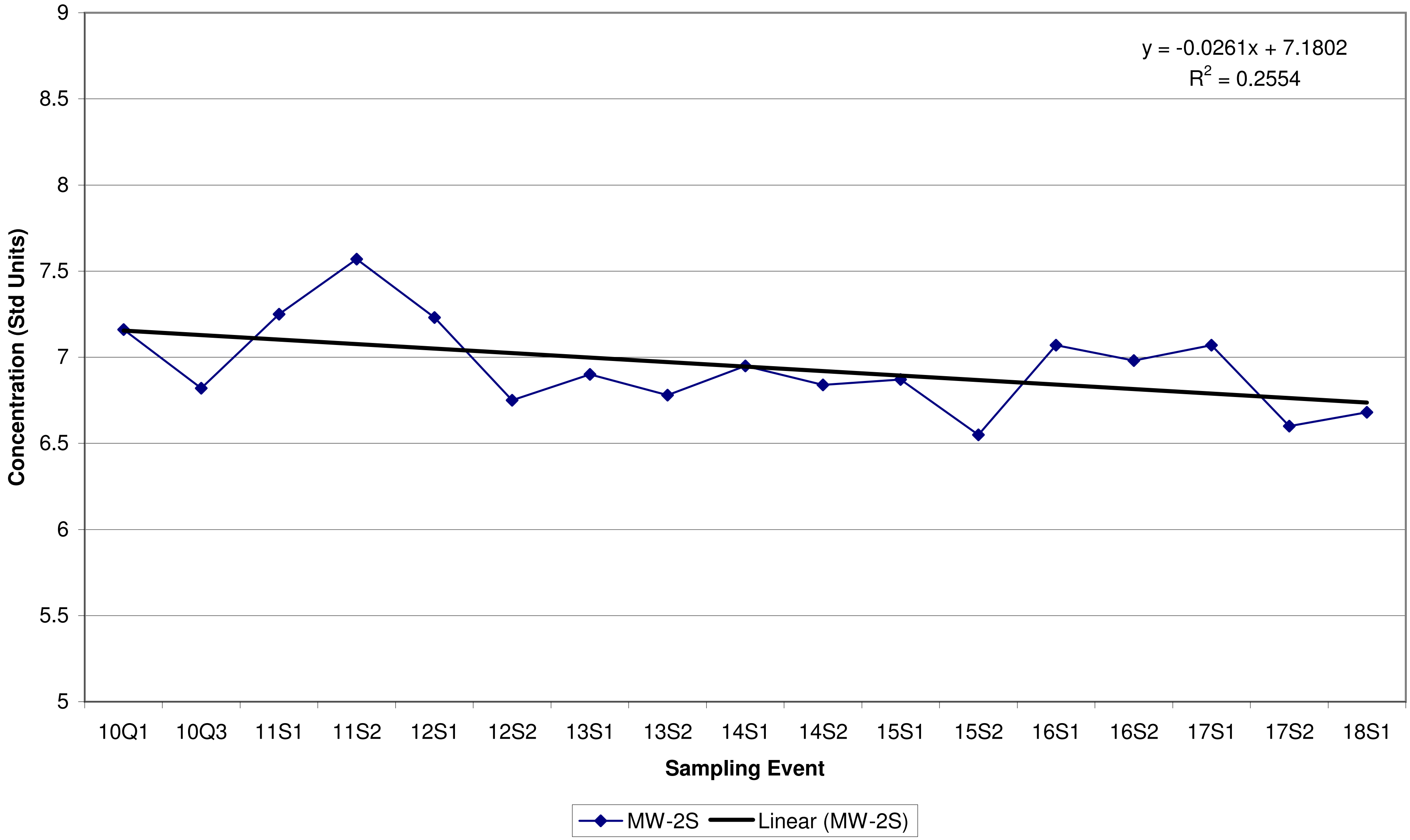
Lee County Resource Recovery Facility
Historic Turbidity in WTE-3SR
y = -0.0051x + 9.4726
R^2 = 1E-05
Concentration (NTU)
30
25
20
15
10
5
0
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
WTE-3SR
Linear (WTE-3SR)



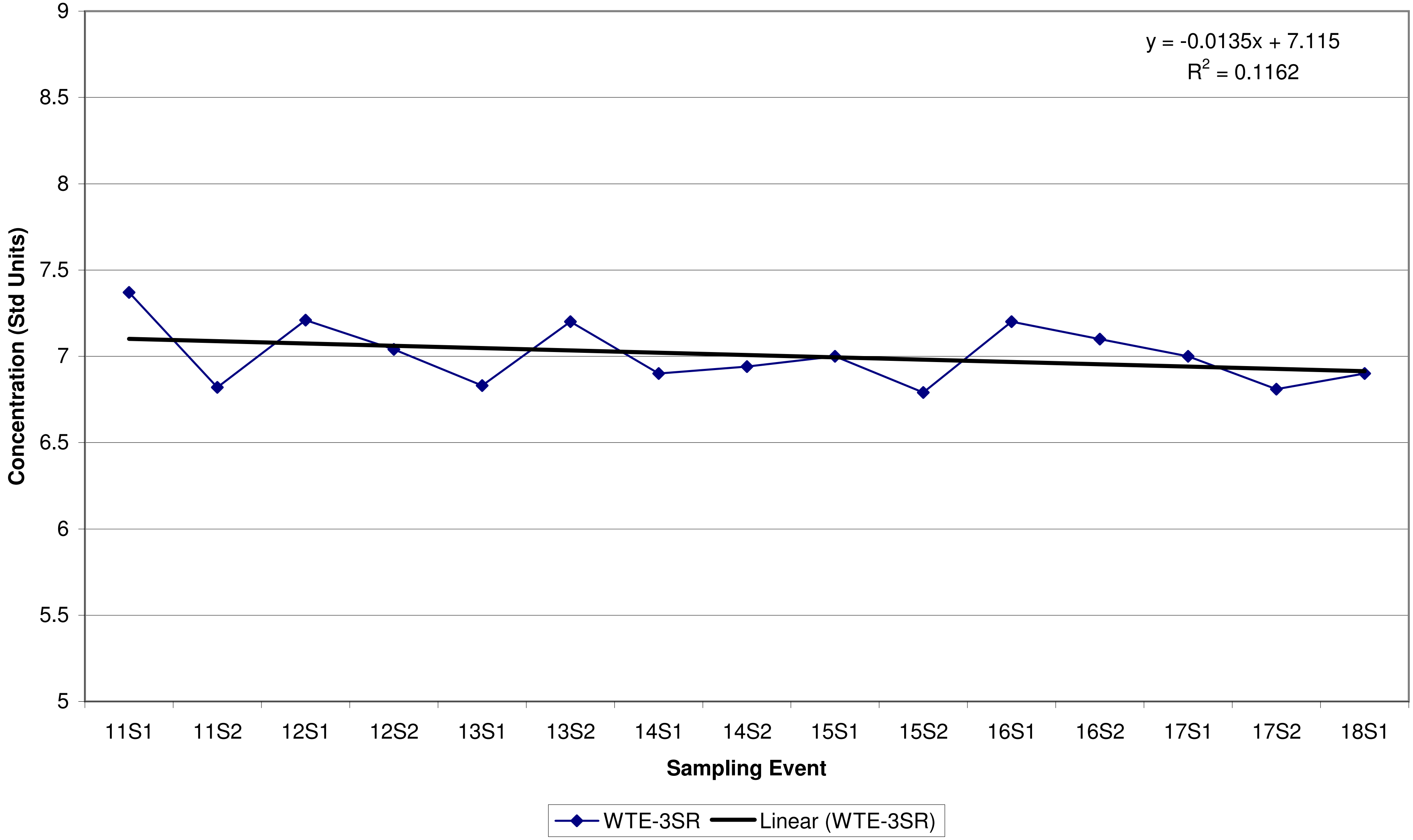
Lee County Resource Recovery Facility
Historic Turbidity in MW-4S
y = 0.3923x - 0.384
R2 = 0.1242
Concentration (NTU)
30
25
20
15
10
5
0
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16M3
16S2
17S1
17S2
18S1
Sampling Event
MW-4S
Linear (MW-4S)

Historical pH Data

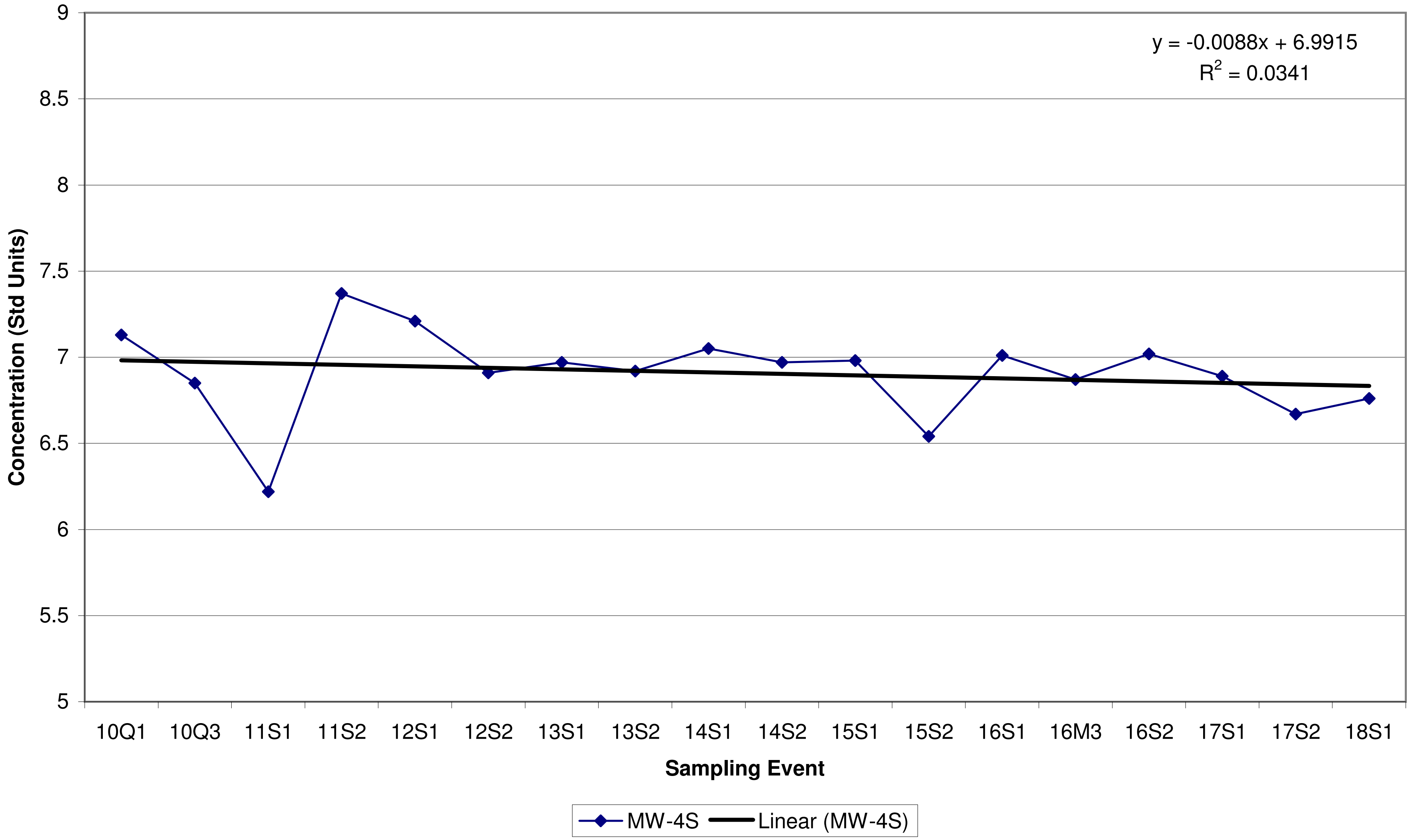
Lee County Resource Recovery Facility
Historic pH in MW-2S



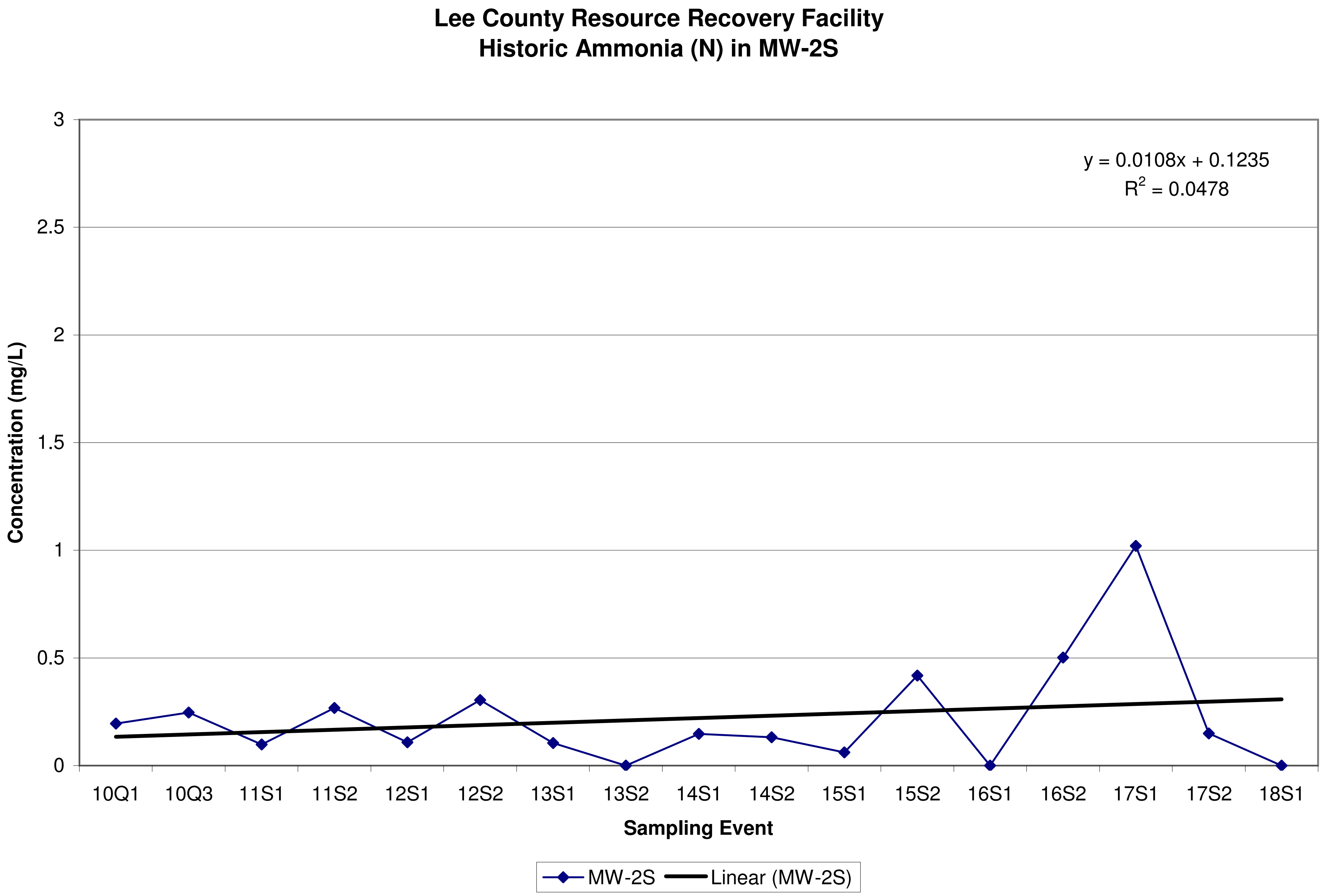
Lee County Resource Recovery Facility
Historic pH in WTE-3SR



Lee County Resource Recovery Facility
Historic pH in MW-4S

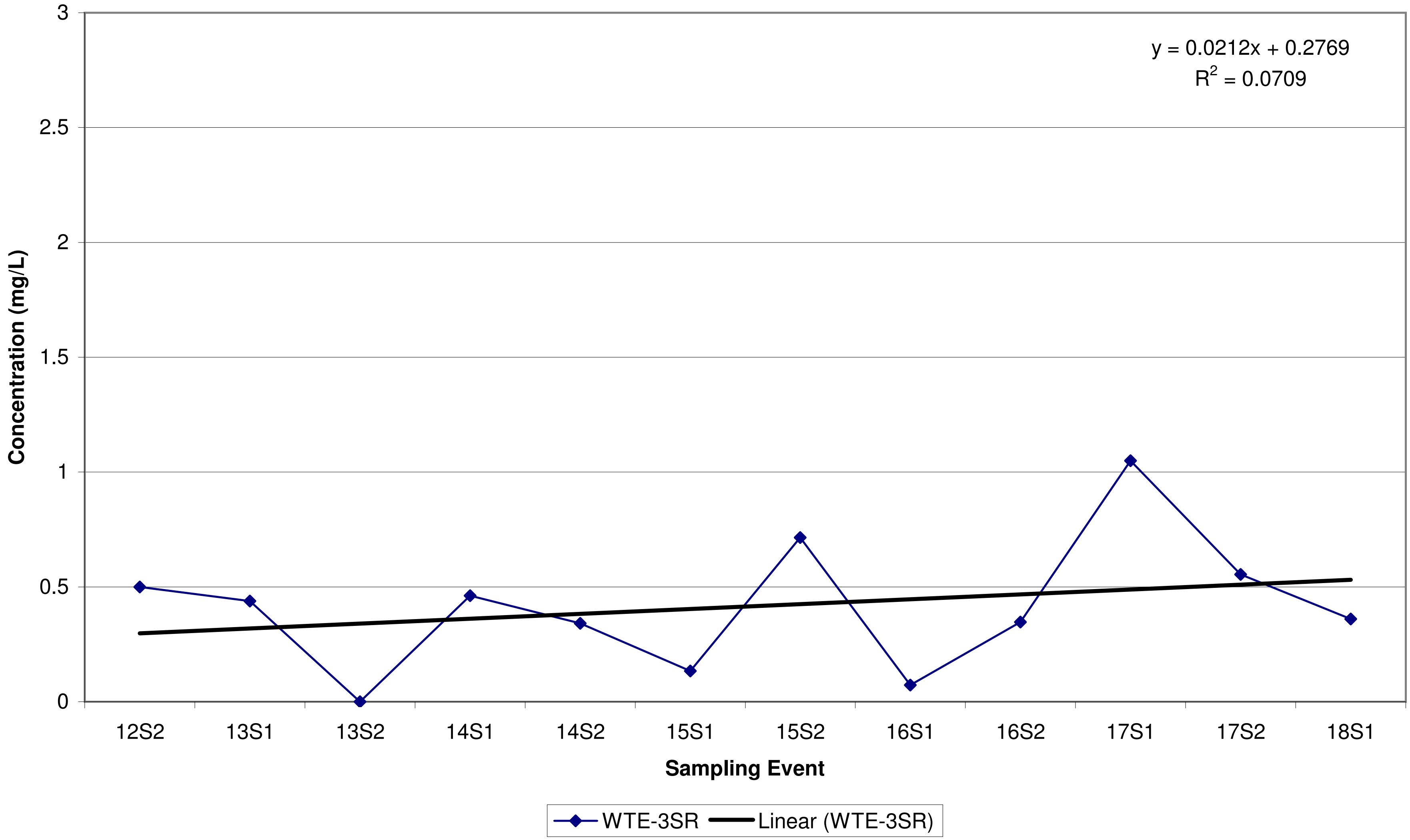


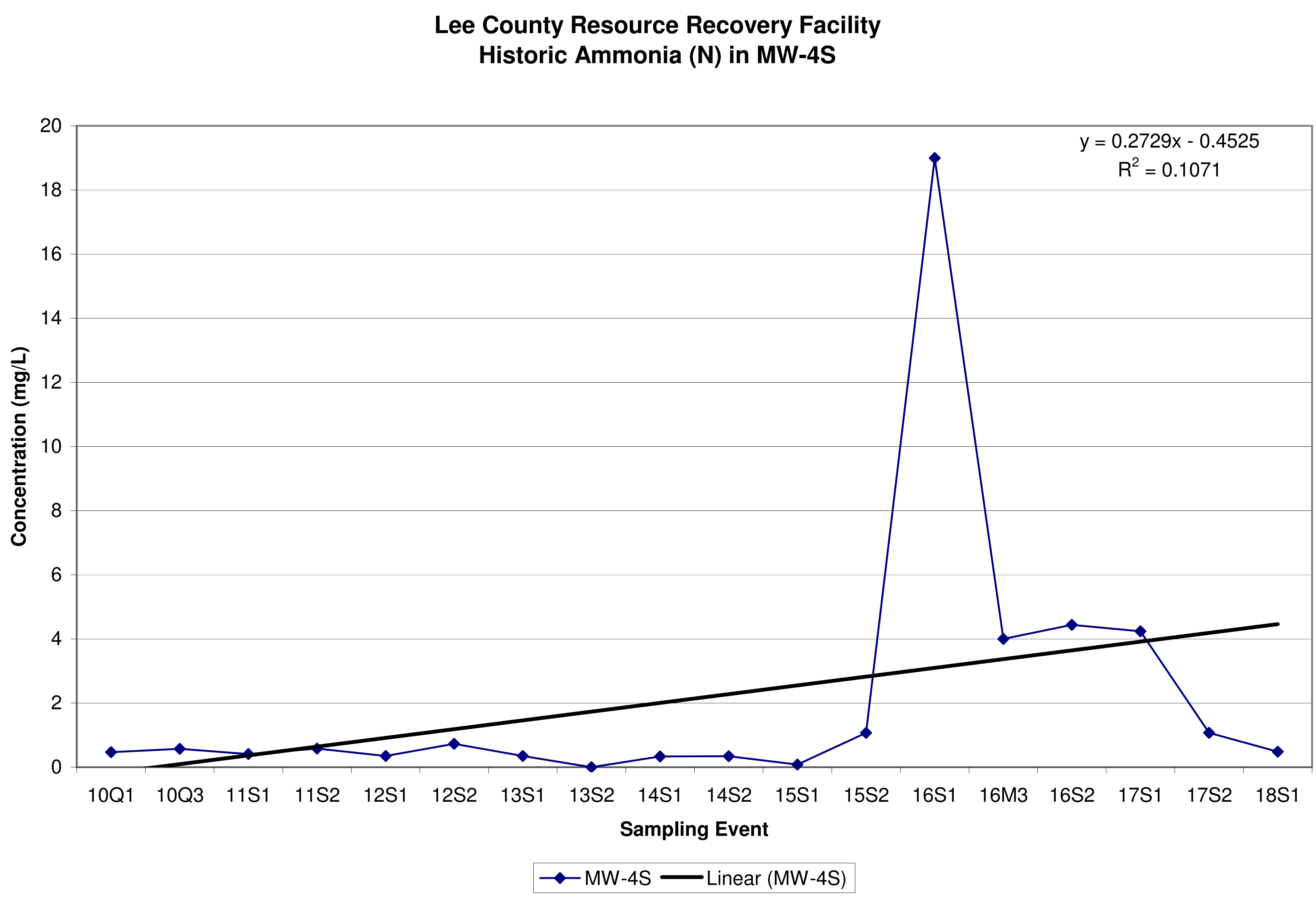
Historical Ammonia-Nitrogen Data



Lee County Resource Recovery Facility
Historic Ammonia (N) in MW-2S
y = 0.0108x + 0.1235
R2 = 0.0478
Concentration (mg/L)
3
2.5
2
1.5
1
0.5
0
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)

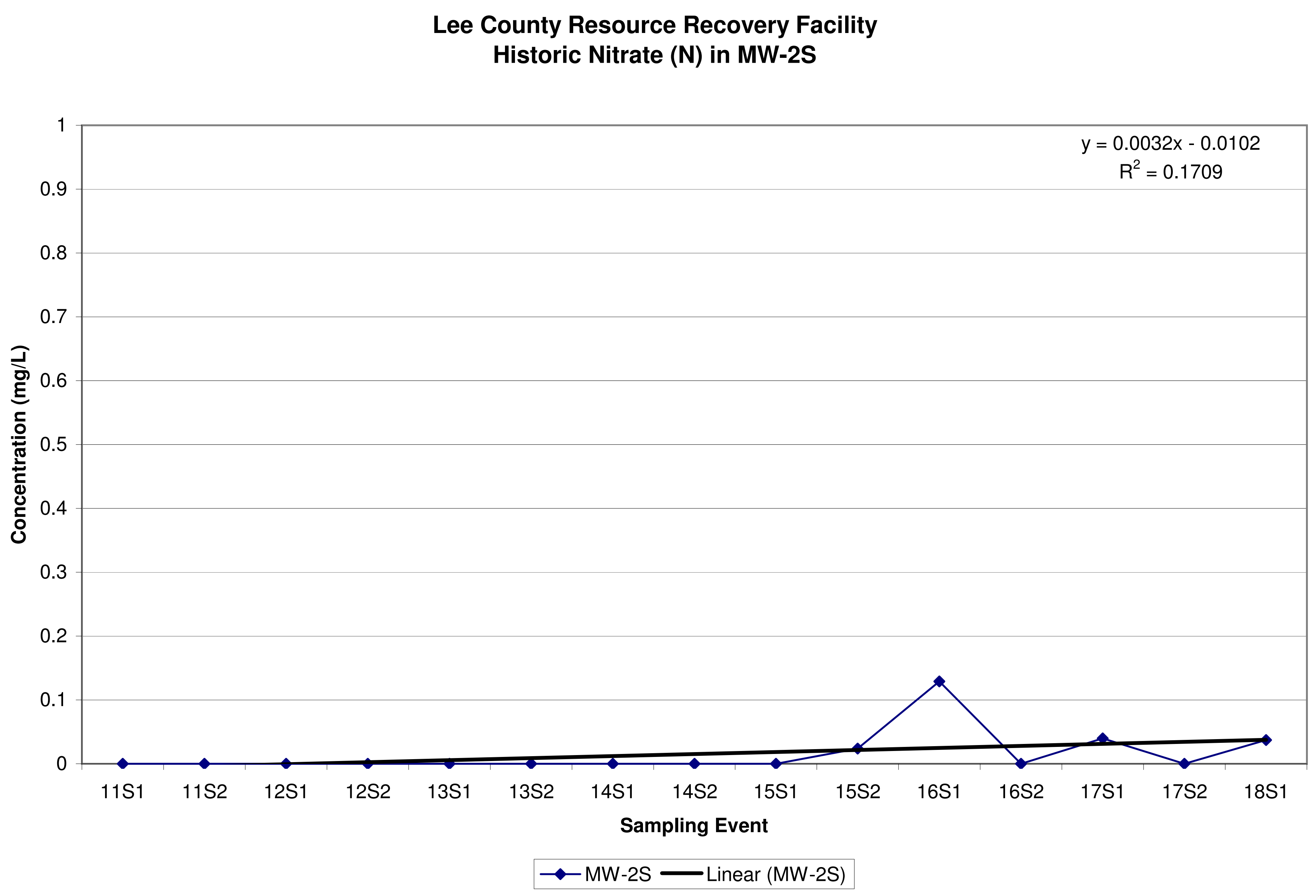
Lee County Resource Recovery Facility
Historic Ammonia (N) in WTE-3SR





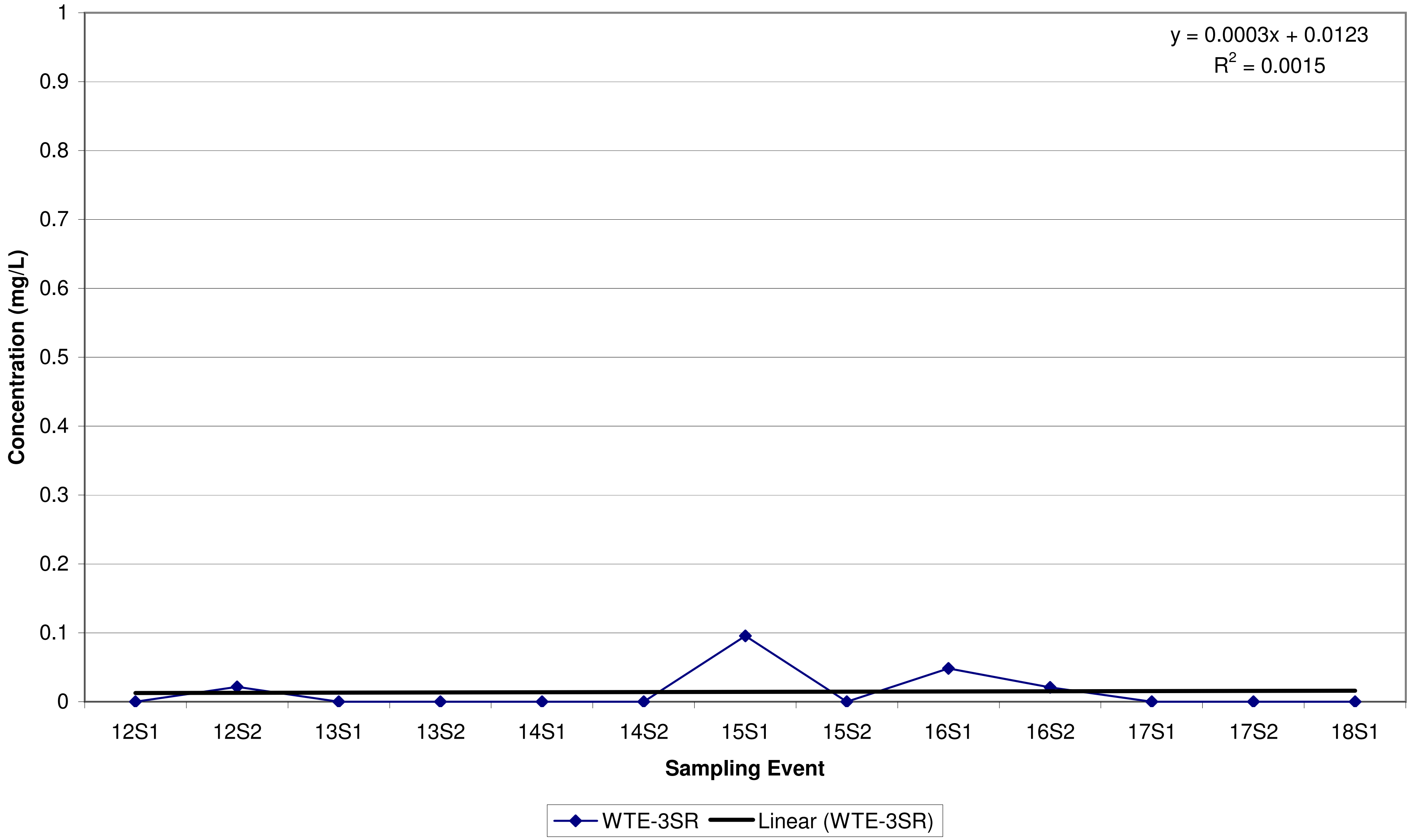
Lee County Resource Recovery Facility
Historic Ammonia (N) in MW-4S
y = 0.2729x - 0.4525
R2 = 0.1071
Concentration (mg/L)
20
18
16
14
12
10
8
6
4
2
0
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16M3
16S2
17S1
17S2
18S1
Sampling Event
MW-4S
Linear (MW-4S)

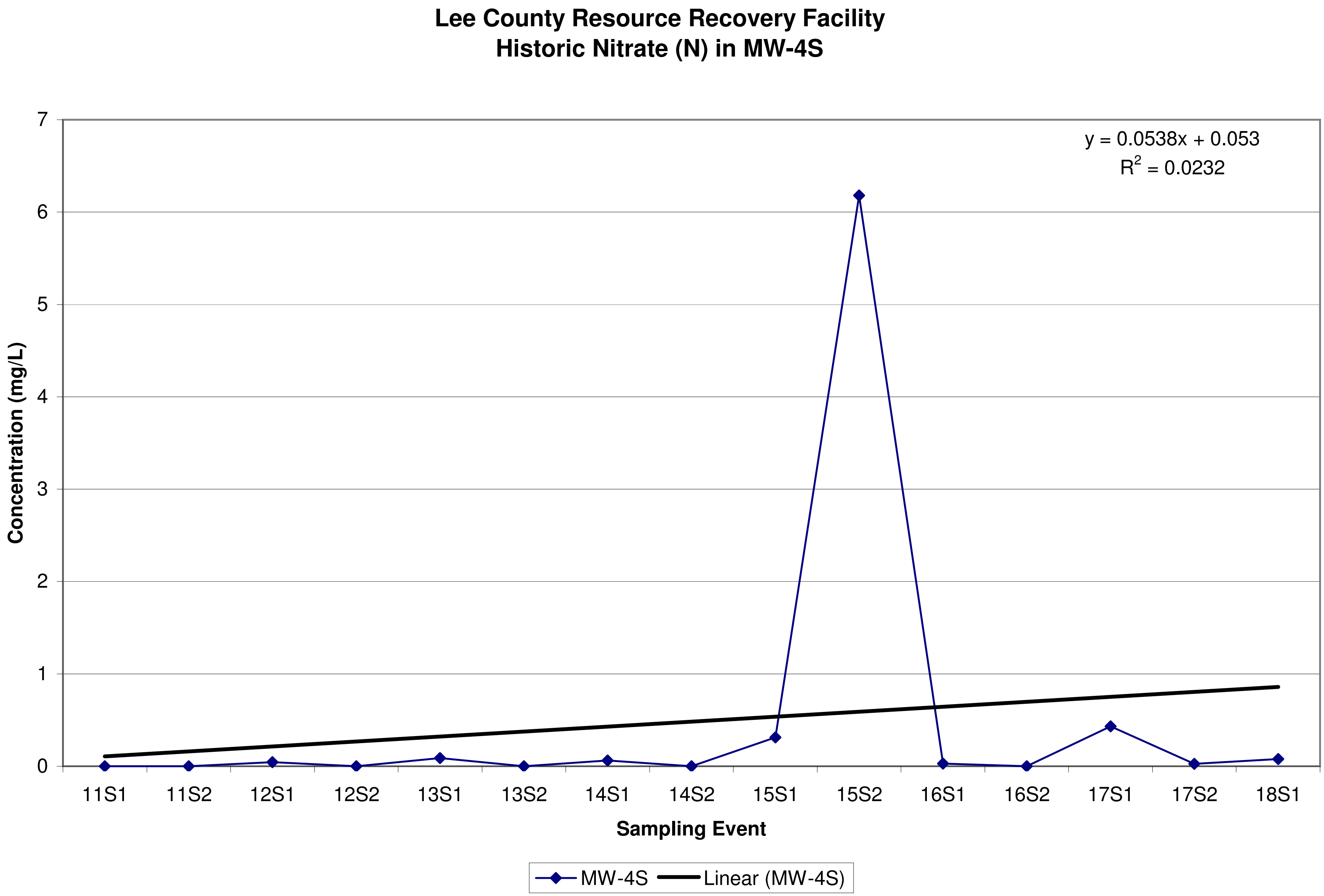
Historical Nitrate-Nitrogen Data



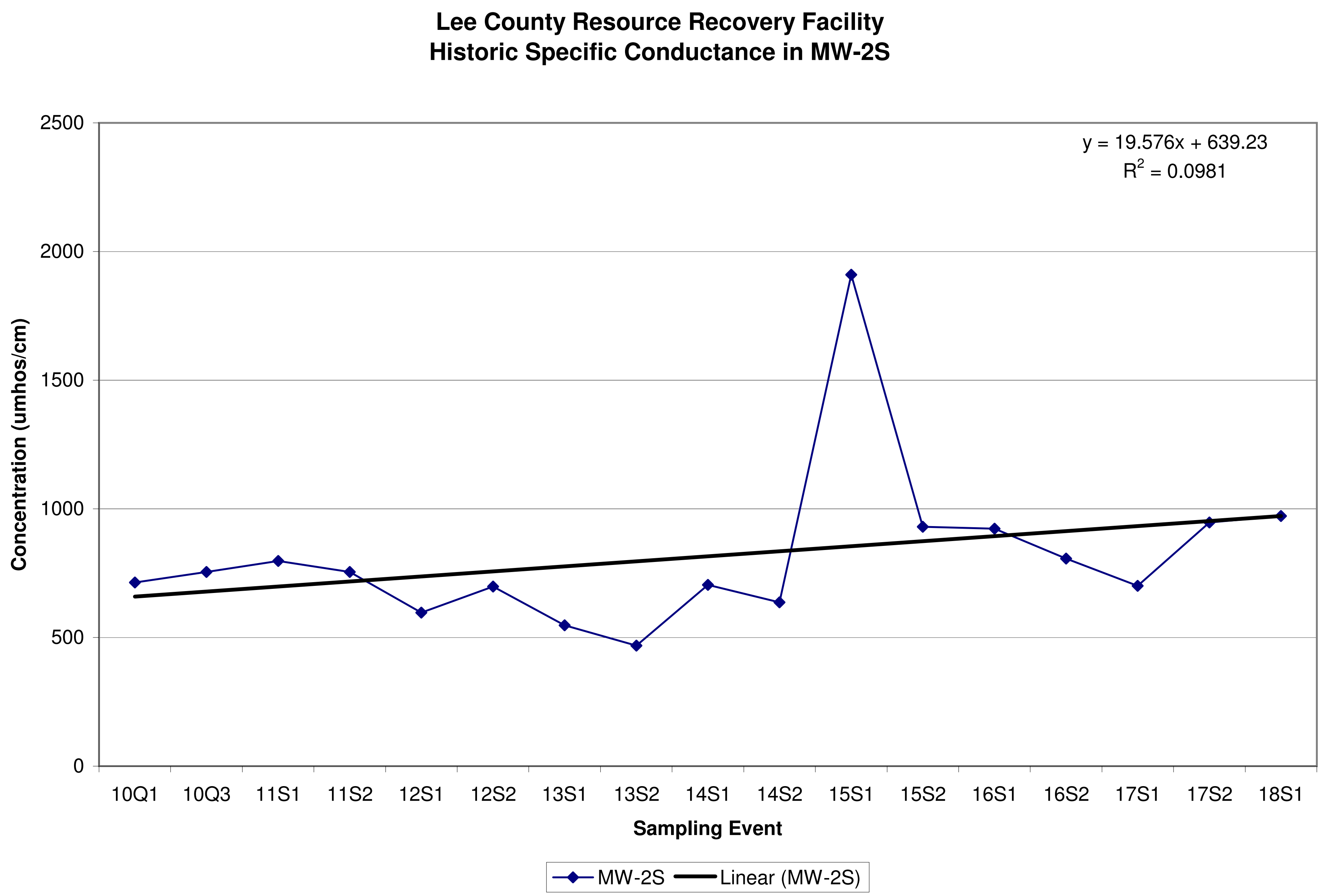
Lee County Resource Recovery Facility
Historic Nitrate (N) in MW-2S
y = 0.0032x - 0.0102
R2 = 0.1709
Concentration (mg/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)

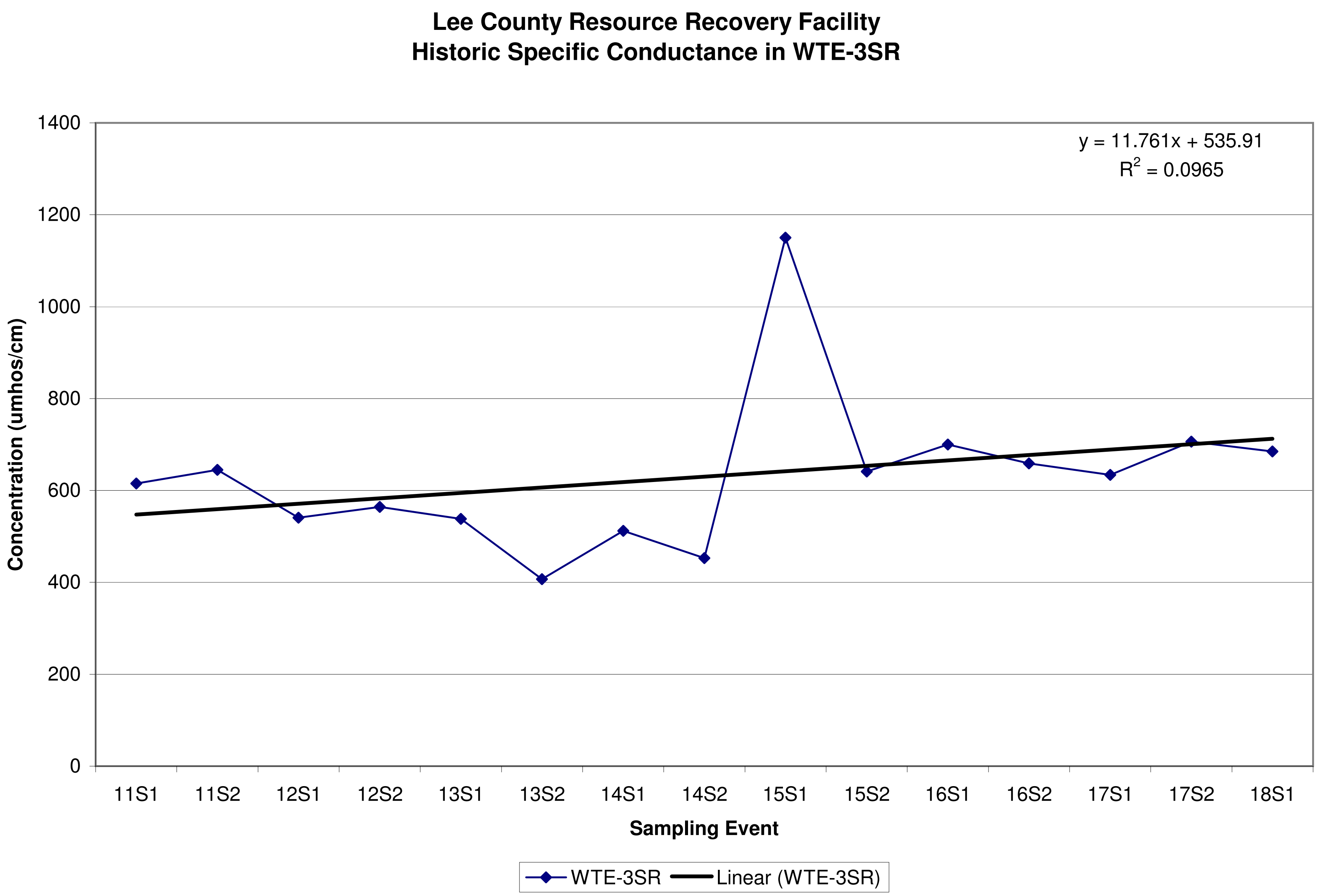
Lee County Resource Recovery Facility
Historic Nitrate (N) in WTE-3SR

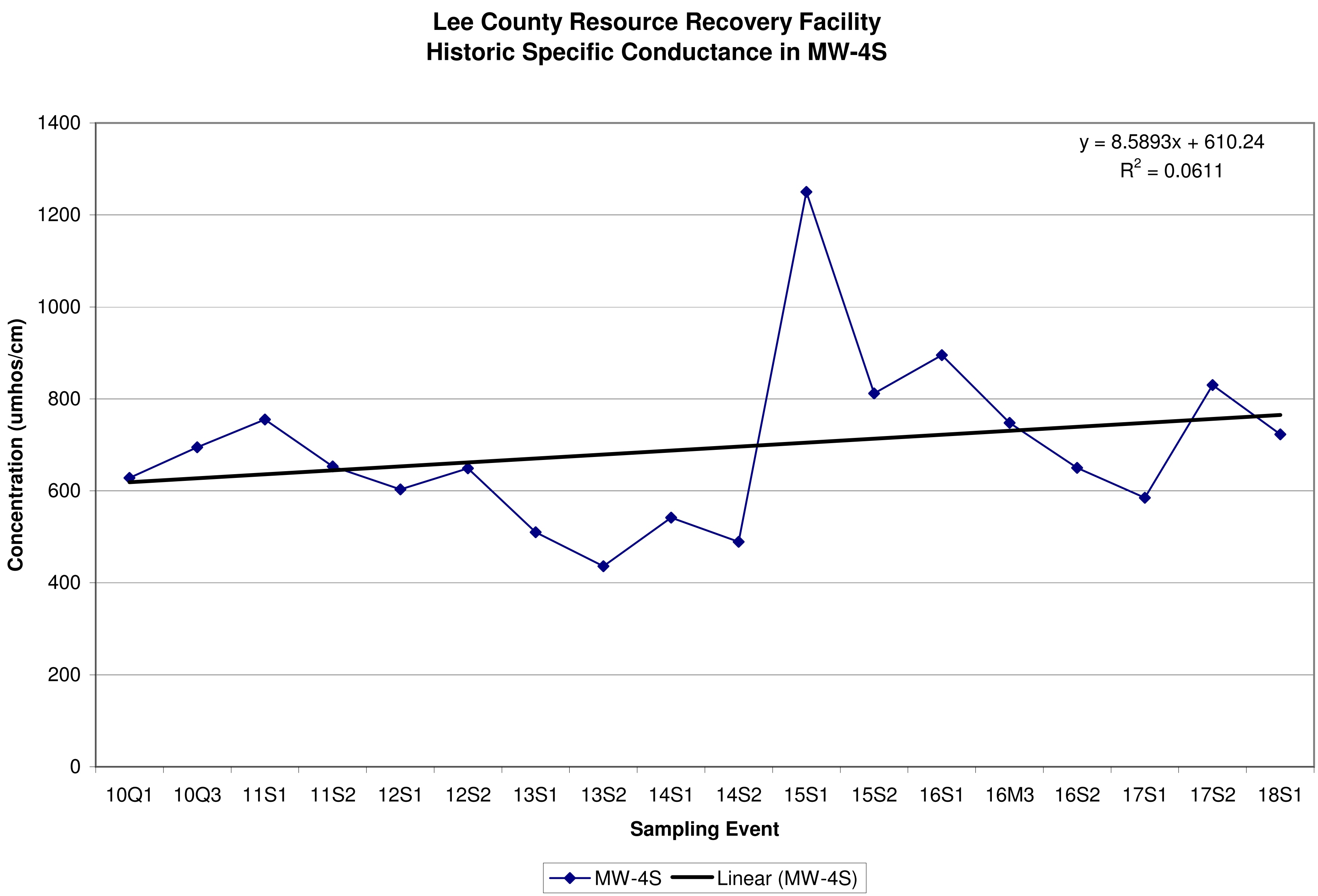



Lee County Resource Recovery Facility
Historic Nitrate (N) in MW-4S
y = 0.0538x + 0.053
R2 = 0.0232
Concentration (mg/L)
0
1
2
3
4
5
6
7
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-4S
Linear (MW-4S)

Historical Specific Conductance Data

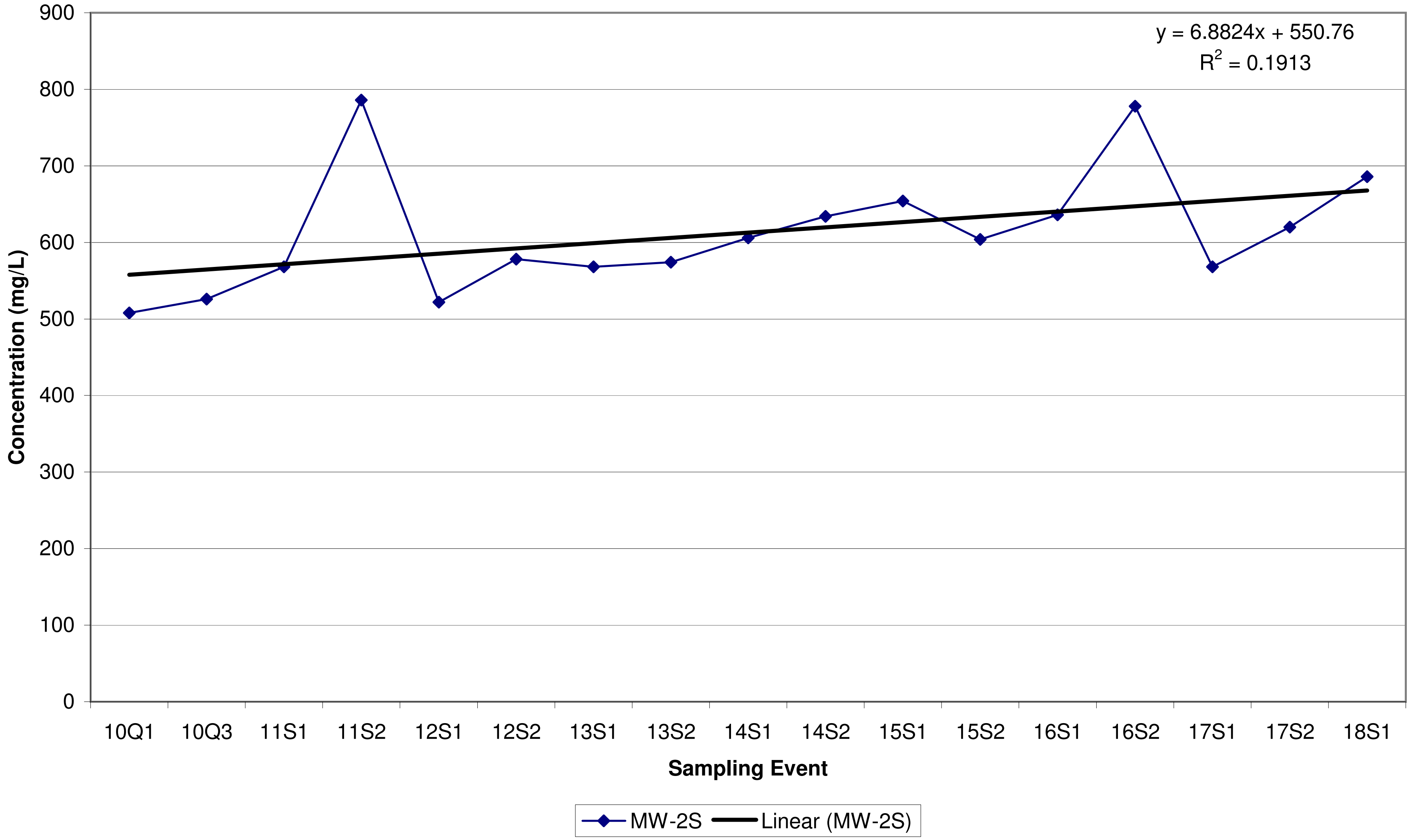

Lee County Resource Recovery Facility
Historic Specific Conductance in MW-2S
y = 19.576x + 639.23
R2 = 0.0981
2500
2000
1500
1000
500
0
Concentration (umhos/cm)
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)

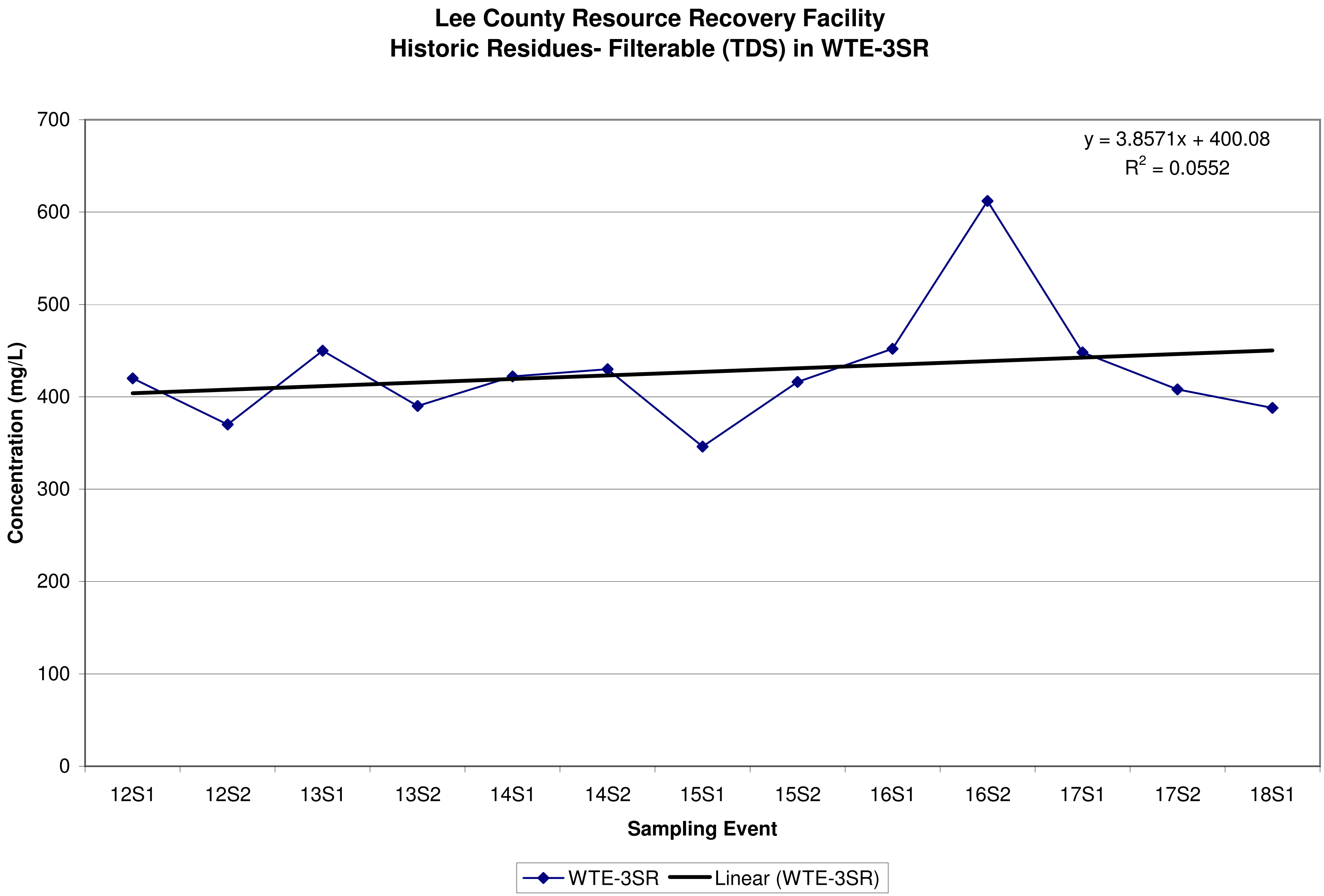

Lee County Resource Recovery Facility
Historic Specific Conductance in WTE-3SR
y = 11.761x + 535.91
R2 = 0.0965
1400
1200
1000
800
600
400
200
0
Concentration (umhos/cm)
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
WTE-3SR
Linear (WTE-3SR)


Lee County Resource Recovery Facility
Historic Specific Conductance in MW-4S
y = 8.5893x + 610.24
R^2 = 0.0611
1400
1200
1000
800
600
400
200
0
Concentration (umhos/cm)
10Q1 10Q3 11S1 11S2 12S1 12S2 13S1 13S2 14S1 14S2 15S1 15S2 16S1 16M3 16S2 17S1 17S2 18S1
Sampling Event
MW-4S
Linear (MW-4S)

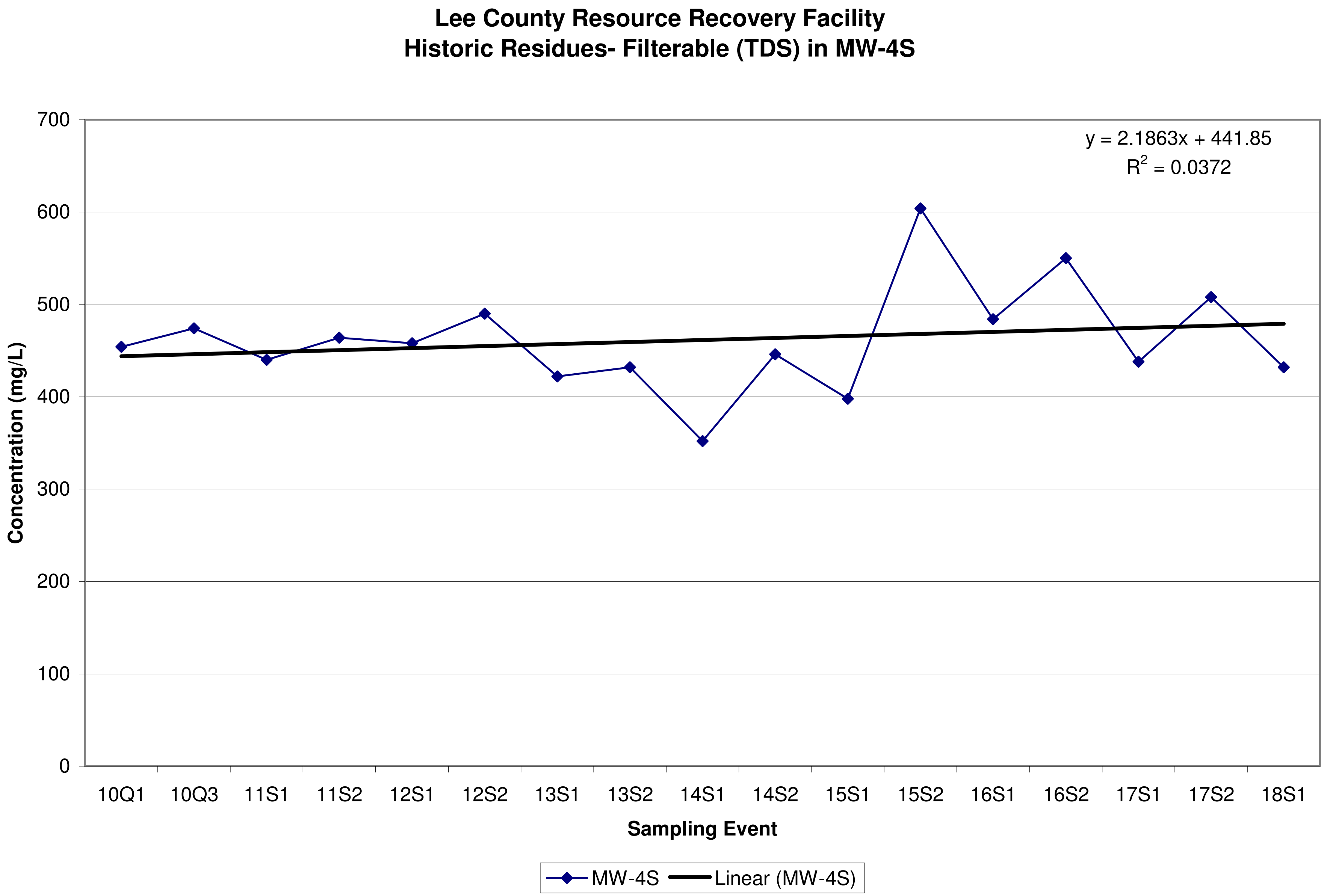
Historical Total Dissolved Solids Data

Lee County Resource Recovery Facility
Historic Residues- Filterable (TDS) in MW-2S

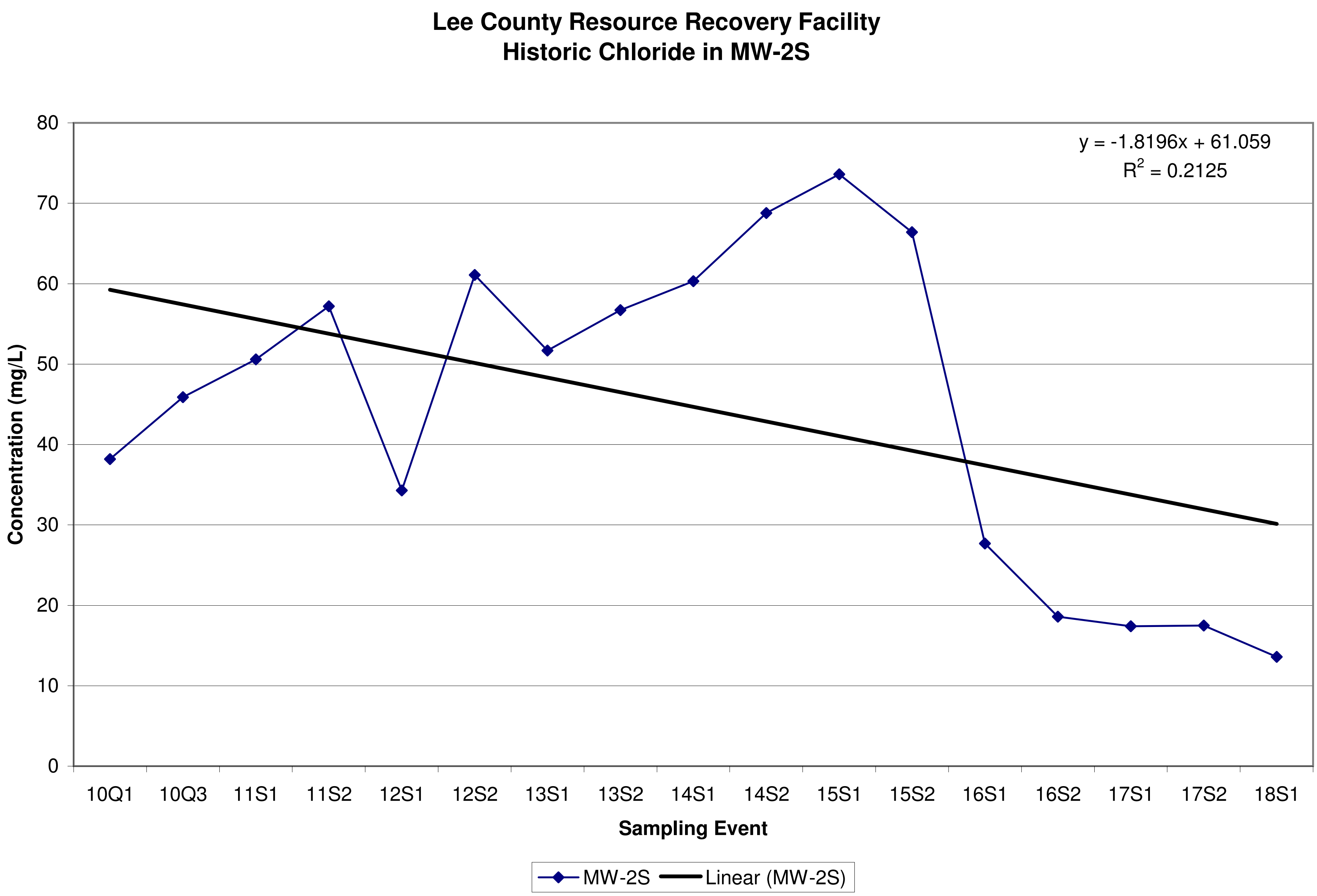


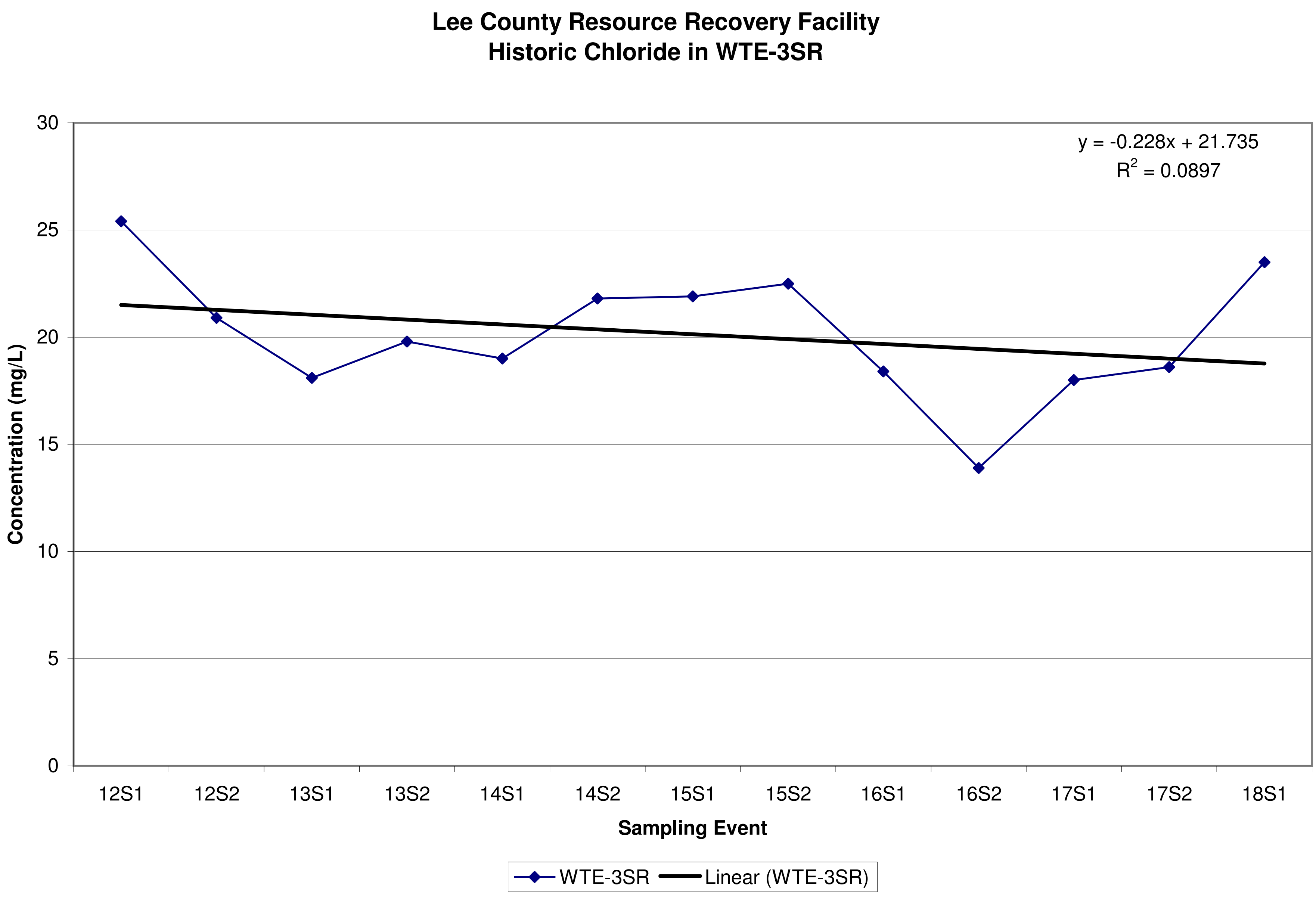


Lee County Resource Recovery Facility
Historic Residues- Filterable (TDS) in WTE-3SR
y = 3.8571x + 400.08
R2 = 0.0552
Concentration (mg/L)
700
600
500
400
300
200
100
0
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
WTE-3SR
Linear (WTE-3SR)

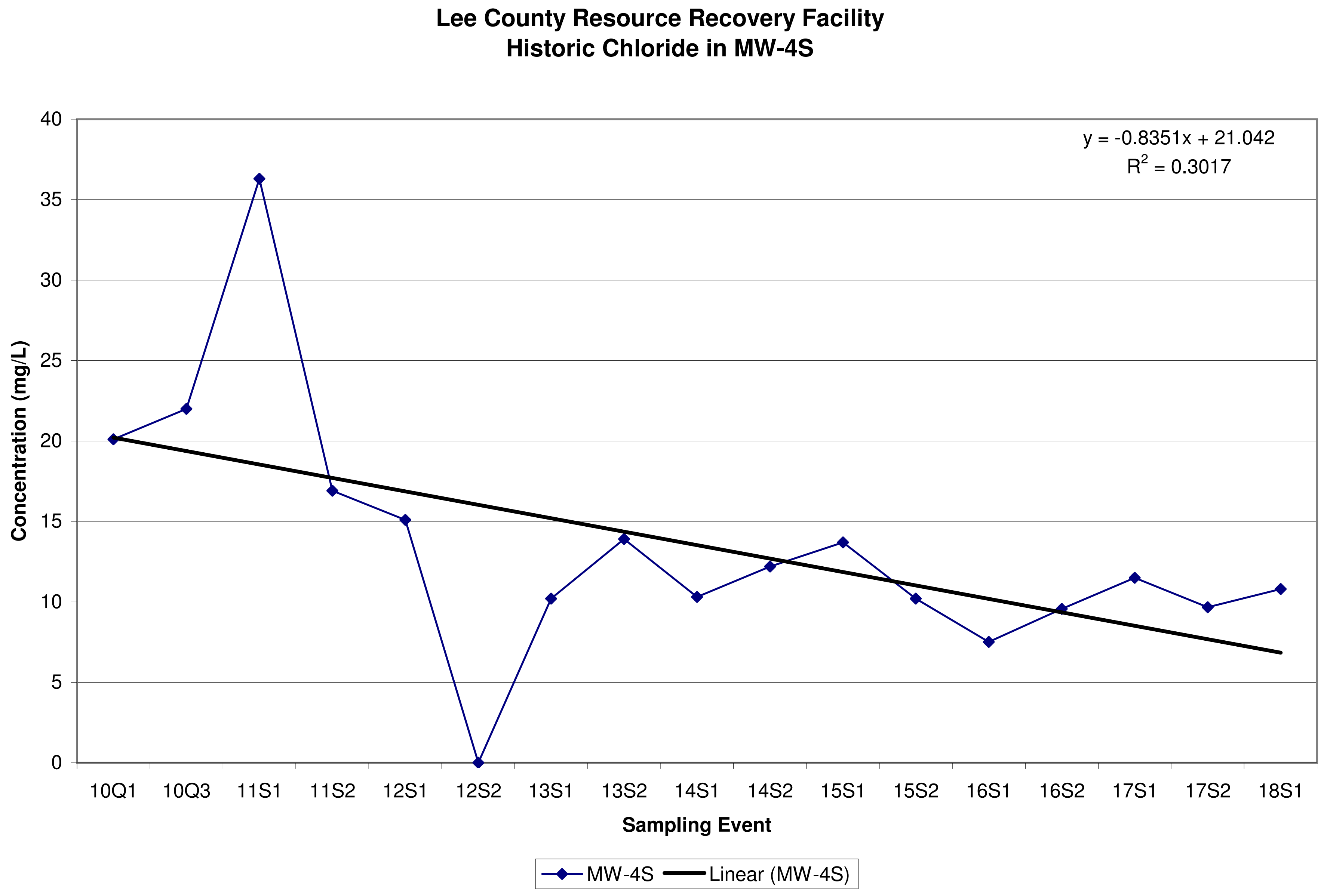

Lee County Resource Recovery Facility
Historic Residues- Filterable (TDS) in MW-4S
y = 2.1863x + 441.85
R2 = 0.0372
700
600
500
400
300
200
100
0
Concentration (mg/L)
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-4S
Linear (MW-4S)

Historical Chloride Data

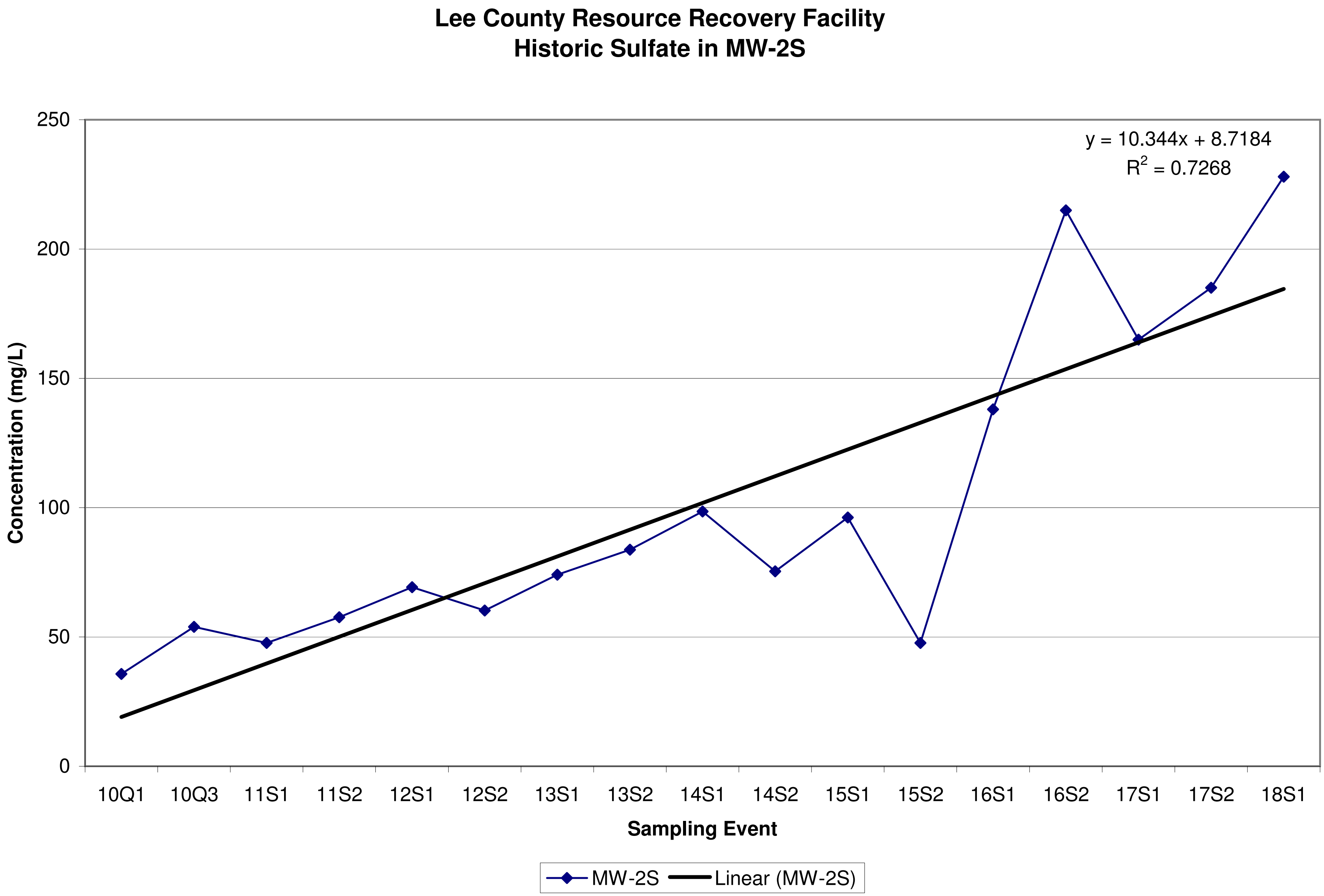

Lee County Resource Recovery Facility
Historic Chloride in MW-2S
y = -1.8196x + 61.059
R2 = 0.2125
Concentration (mg/L)
80
70
60
50
40
30
20
10
0
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)



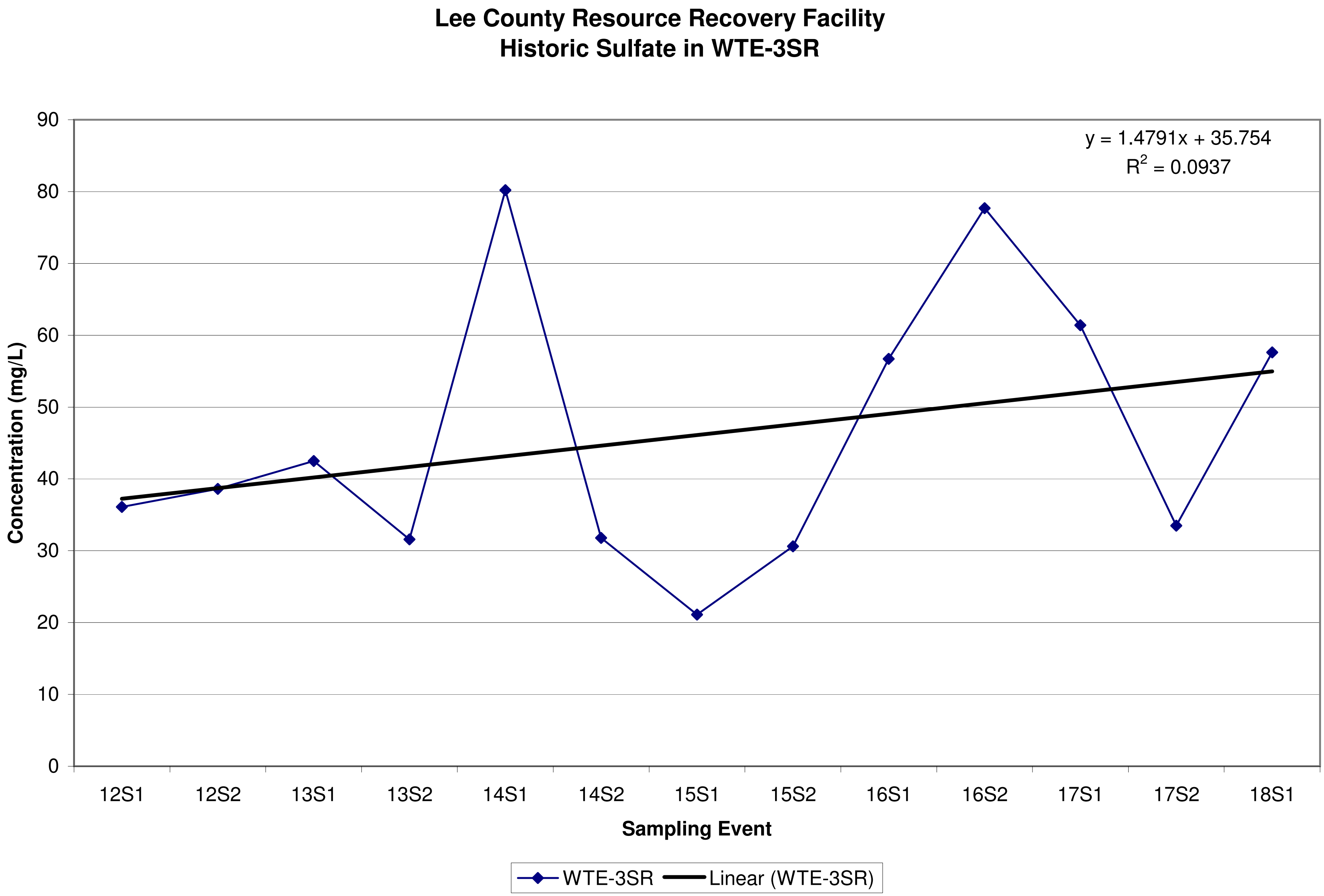
Lee County Resource Recovery Facility
Historic Chloride in WTE-3SR
y = -0.228x + 21.735
R2 = 0.0897
30
25
20
15
10
5
0
Concentration (mg/L)
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
WTE-3SR
Linear (WTE-3SR)


Lee County Resource Recovery Facility
Historic Chloride in MW-4S
y = -0.8351x + 21.042
R^2 = 0.3017
Concentration (mg/L)
40
35
30
25
20
15
10
5
0
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-4S
Linear (MW-4S)

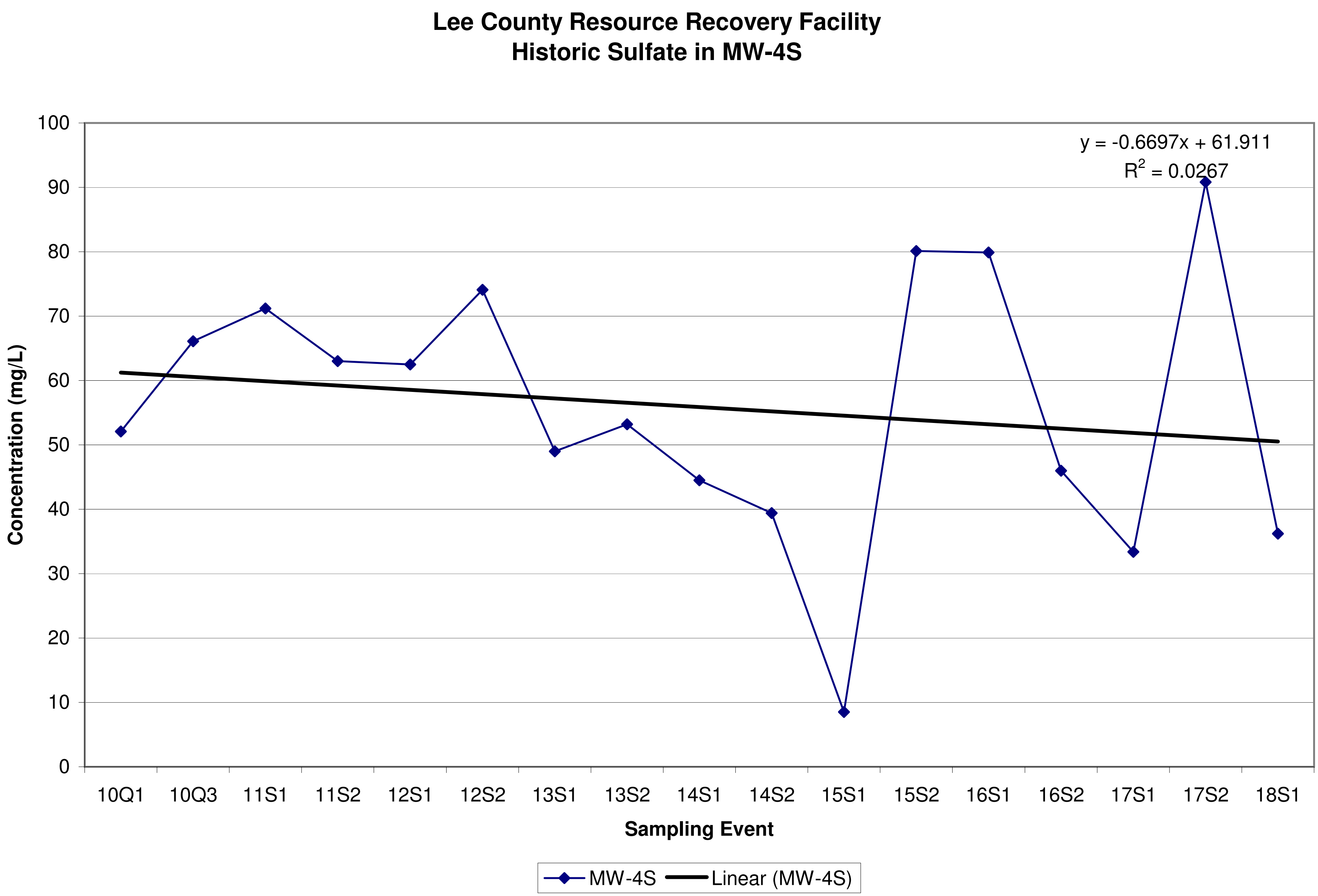
Historical Sulfate Data



Lee County Resource Recovery Facility
Historic Sulfate in MW-2S
y = 10.344x + 8.7184
R^2 = 0.7268
250
200
150
100
50
0
Concentration (mg/L)
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)

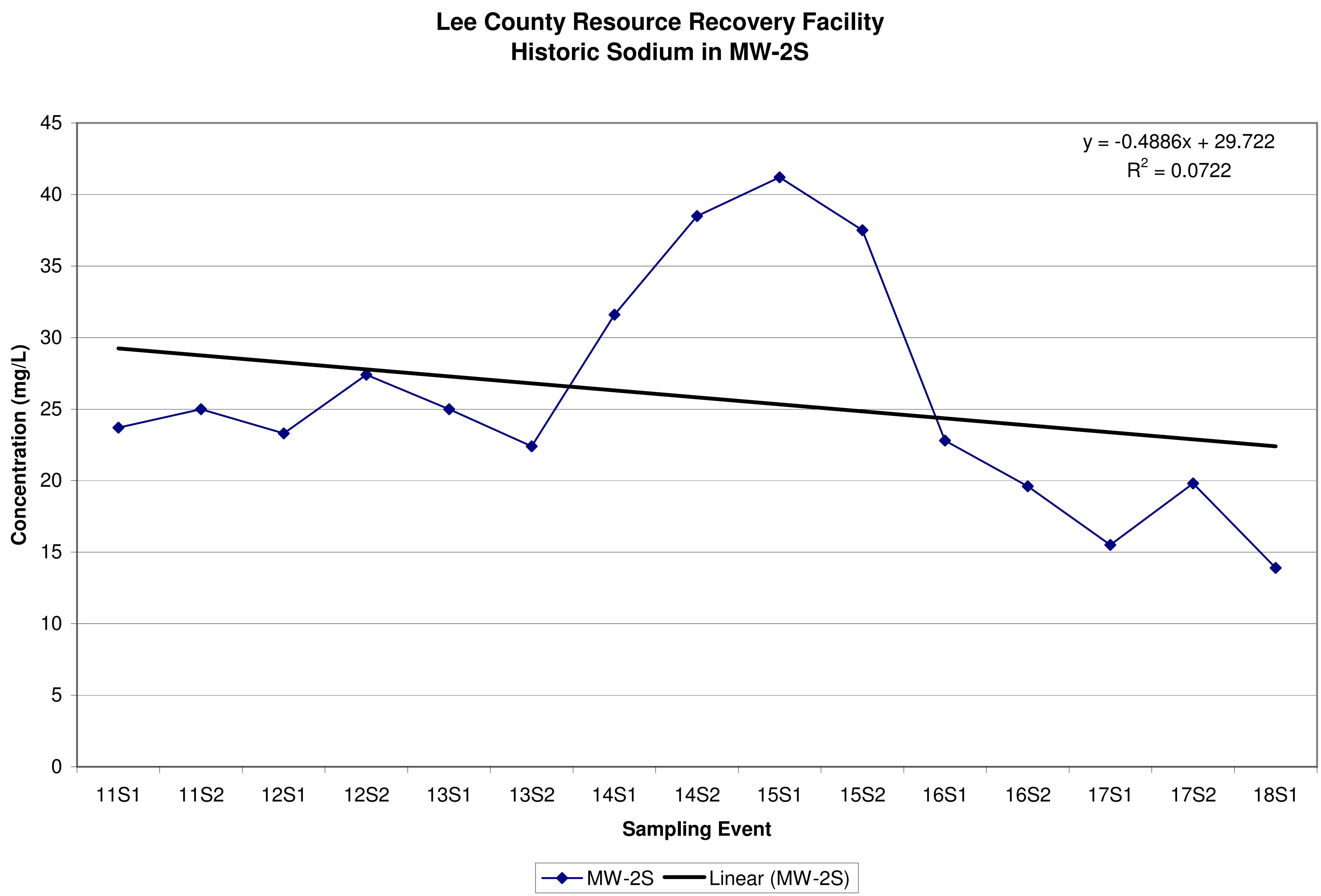


Lee County Resource Recovery Facility
Historic Sulfate in WTE-3SR
y = 1.4791x + 35.754
R^2 = 0.0937
Concentration (mg/L)
0
10
20
30
40
50
60
70
80
90
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
WTE-3SR
Linear (WTE-3SR)

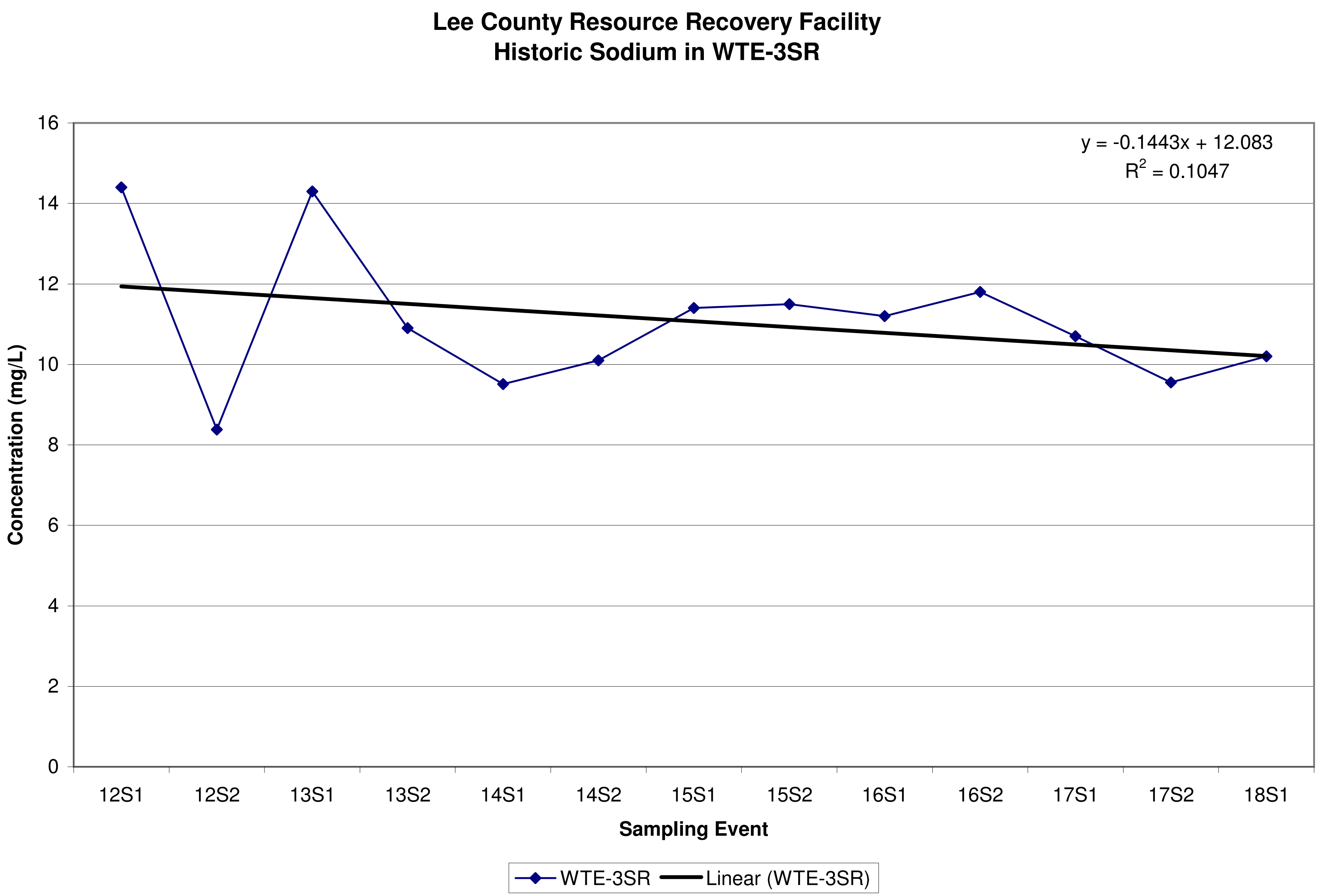


Lee County Resource Recovery Facility
Historic Sulfate in MW-4S
y = -0.6697x + 61.911
R2 = 0.0267
Concentration (mg/L)
100
90
80
70
60
50
40
30
20
10
0
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-4S
Linear (MW-4S)

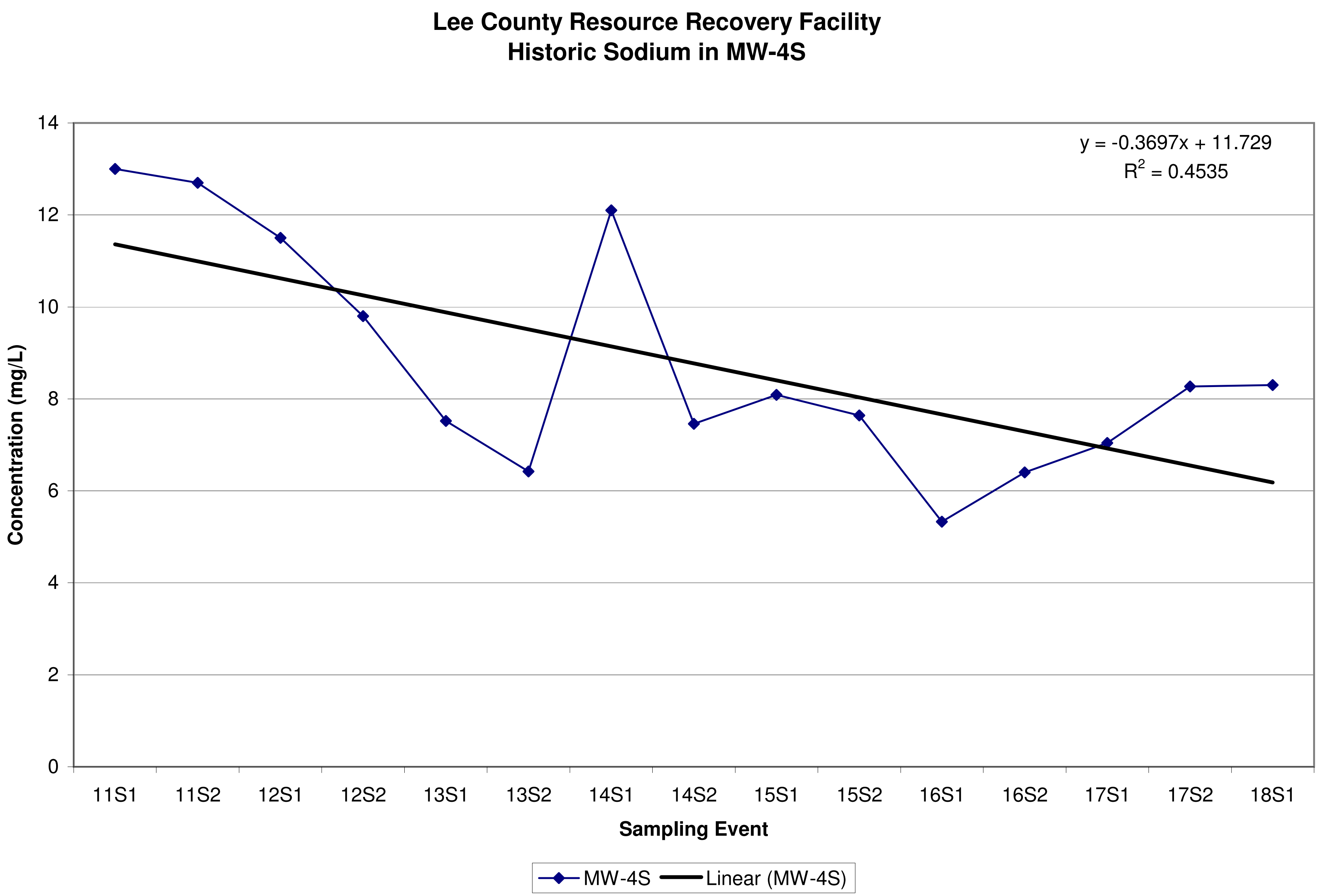
Historical Sodium Data



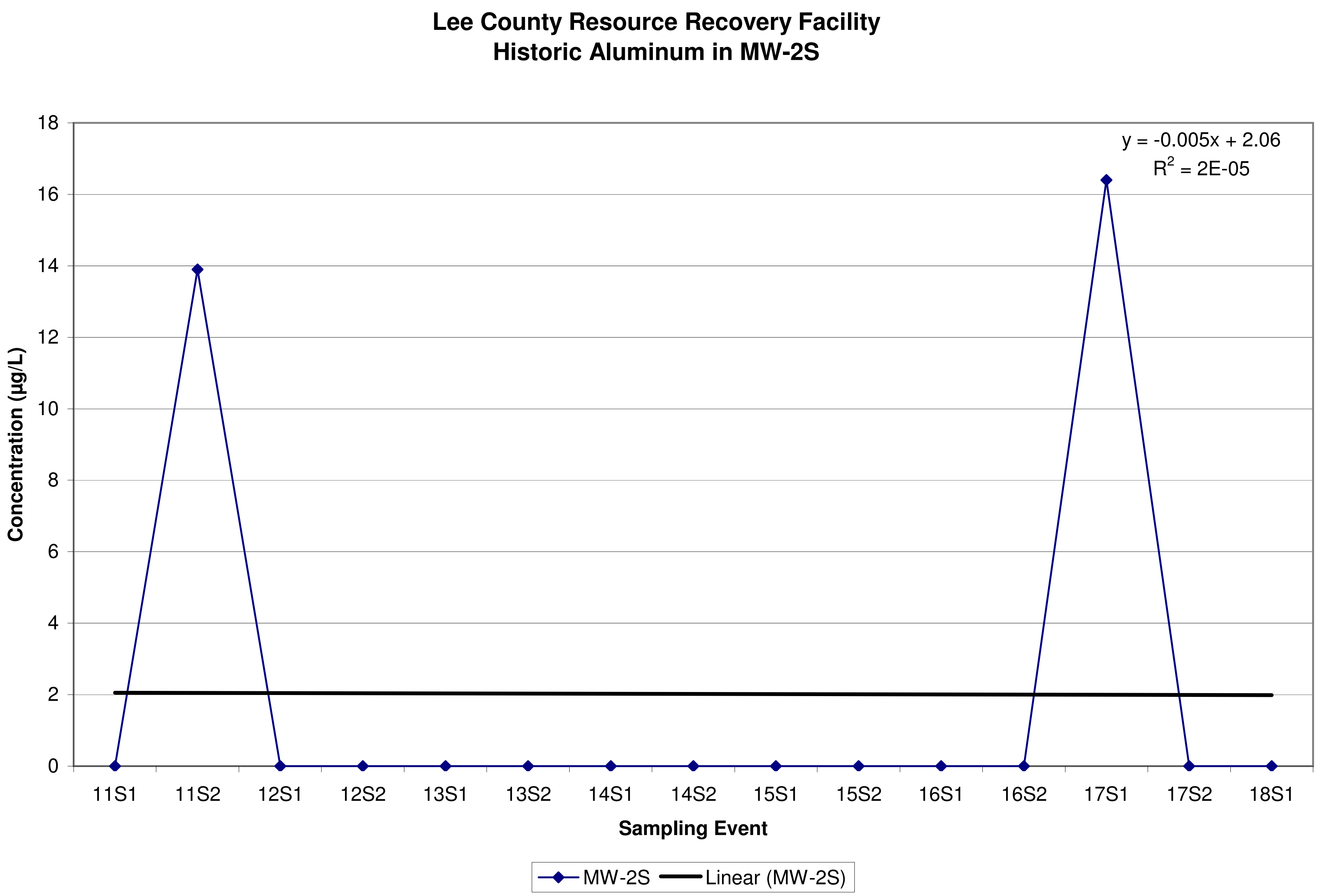
Lee County Resource Recovery Facility
Historic Sodium in MW-2S
y = -0.4886x + 29.722
R2 = 0.0722
Concentration (mg/L)
45
40
35
30
25
20
15
10
5
0
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)

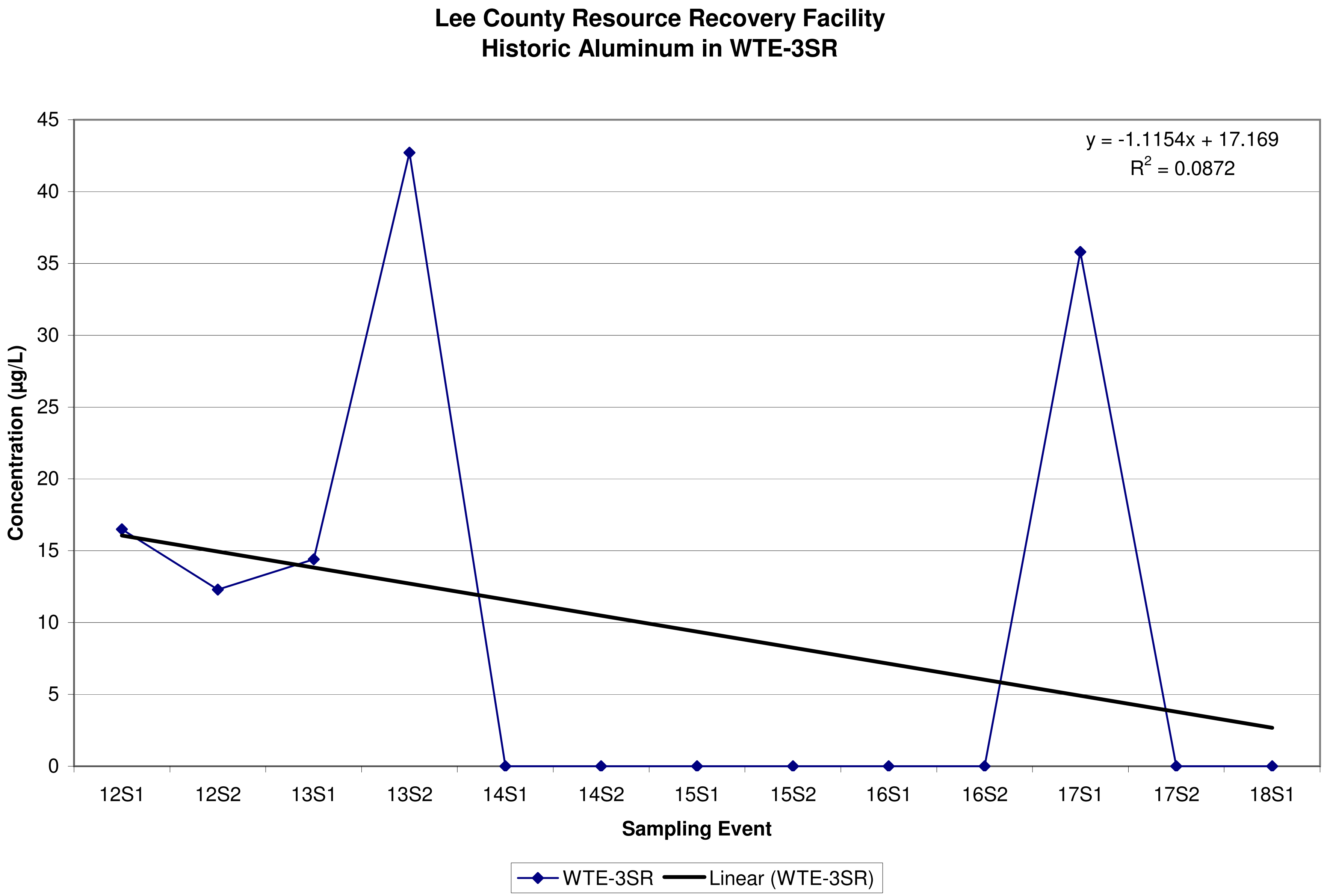


Lee County Resource Recovery Facility
Historic Sodium in WTE-3SR
y = -0.1443x + 12.083
R2 = 0.1047
Concentration (mg/L)
16
14
12
10
8
6
4
2
0
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
WTE-3SR
Linear (WTE-3SR)

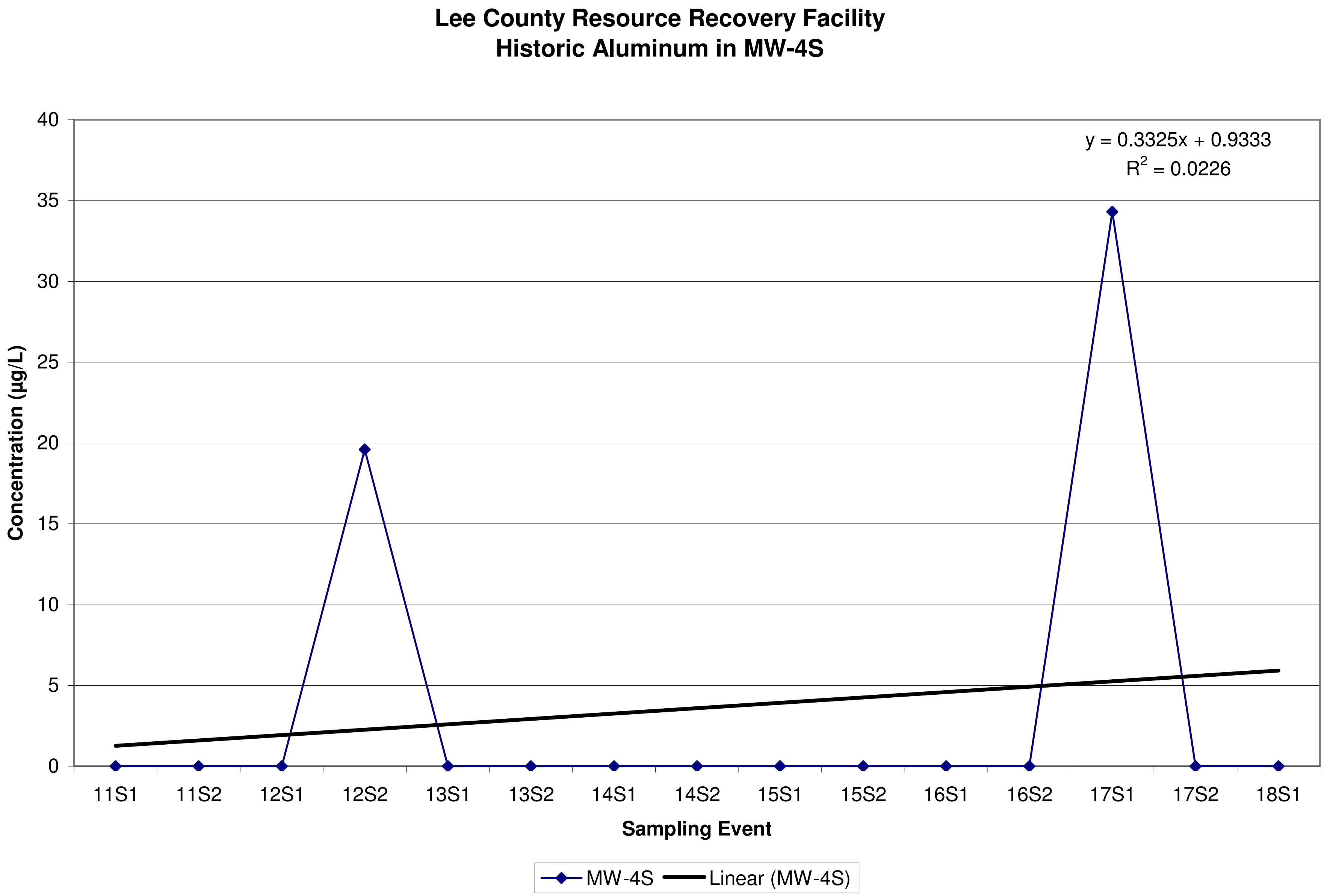

Lee County Resource Recovery Facility
Historic Sodium in MW-4S
y = -0.3697x + 11.729
R^2 = 0.4535
Concentration (mg/L)
0
2
4
6
8
10
12
14
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-4S
Linear (MW-4S)

Historical Aluminum Data


Lee County Resource Recovery Facility
Historic Aluminum in MW-2S
y = -0.005x + 2.06
R2 = 2E-05
Concentration (µg/L)
0
2
4
6
8
10
12
14
16
18
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)

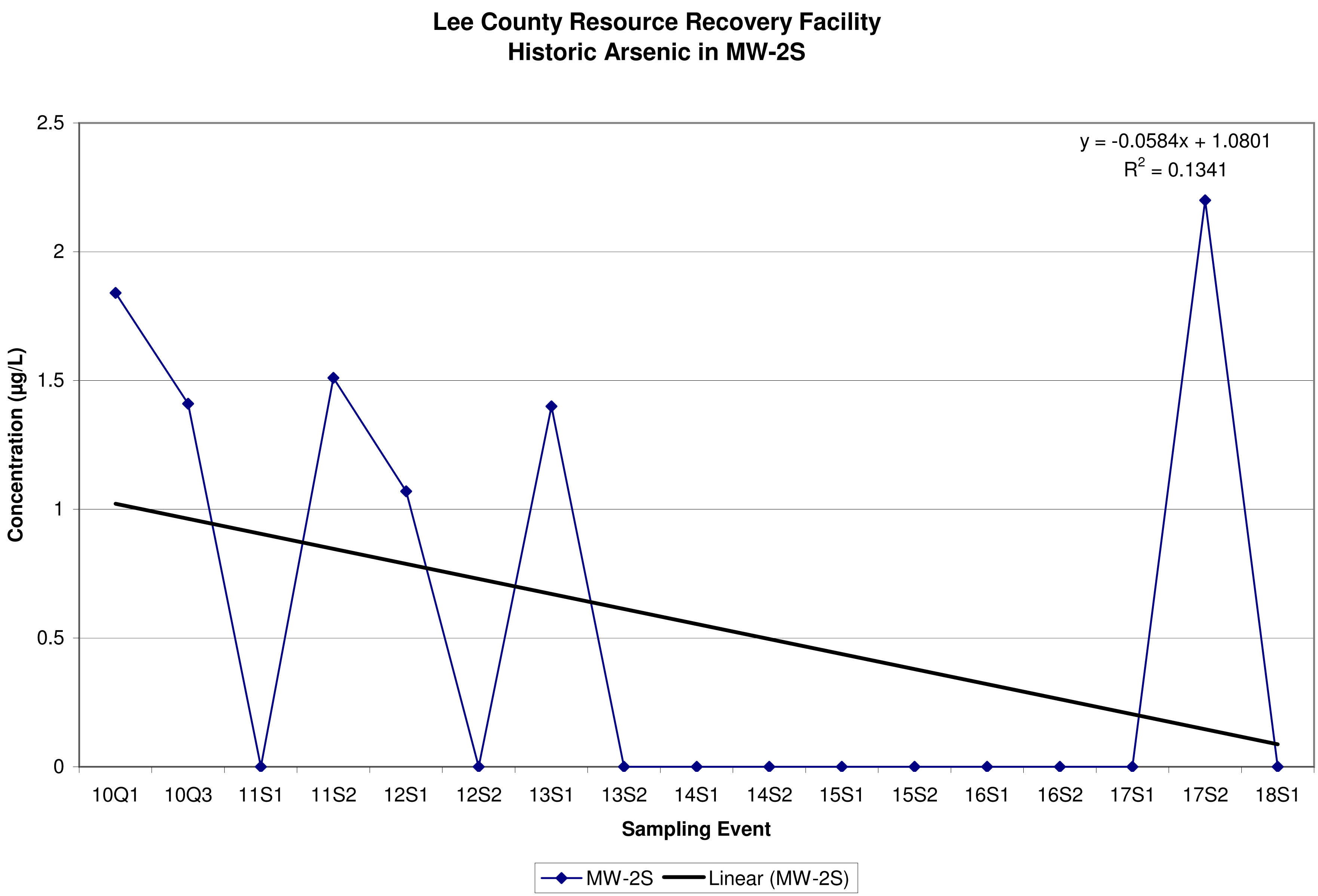


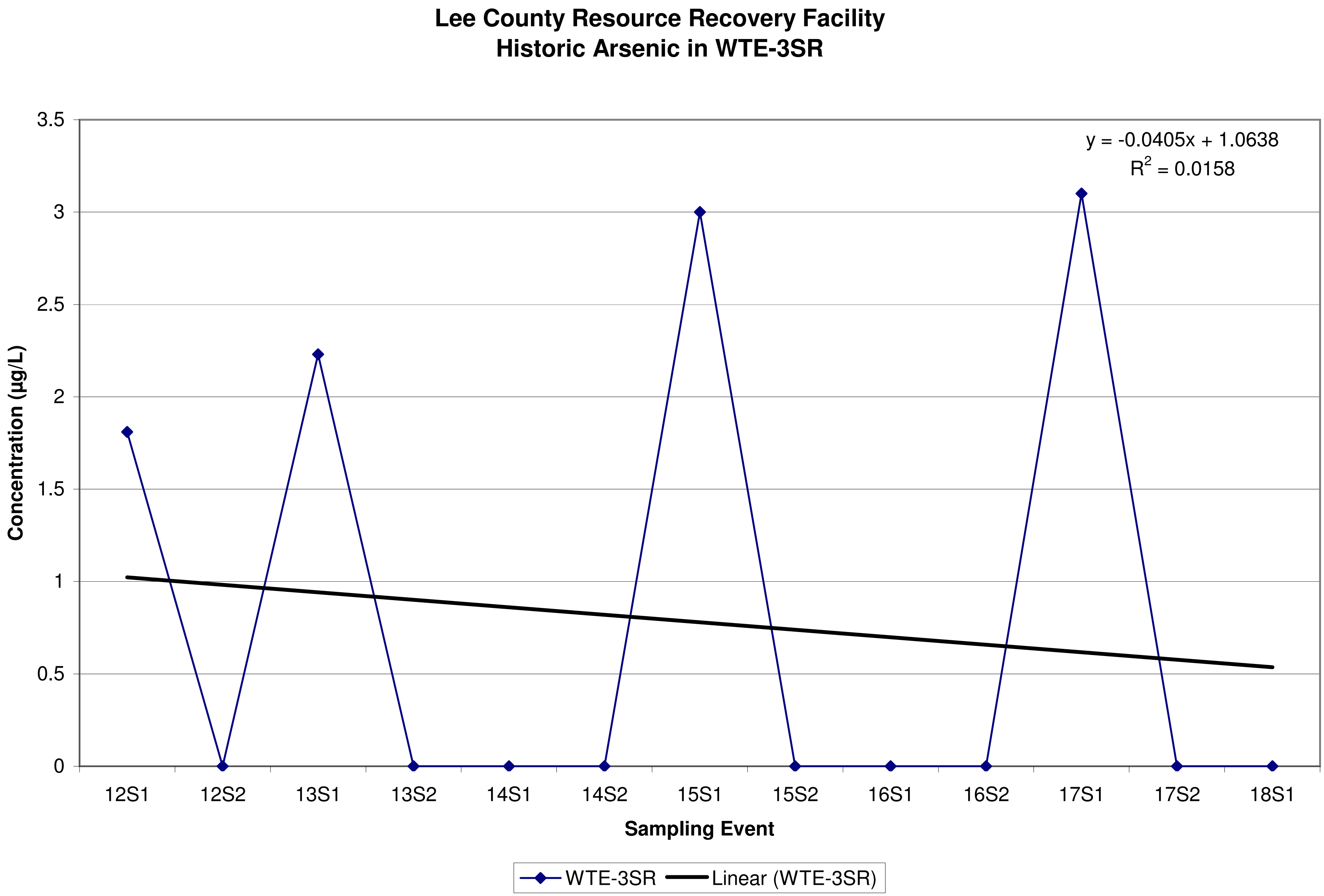
Lee County Resource Recovery Facility
Historic Aluminum in WTE-3SR
y = -1.1154x + 17.169
R2 = 0.0872
Concentration (µg/L)
45
40
35
30
25
20
15
10
5
0
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
WTE-3SR
Linear (WTE-3SR)



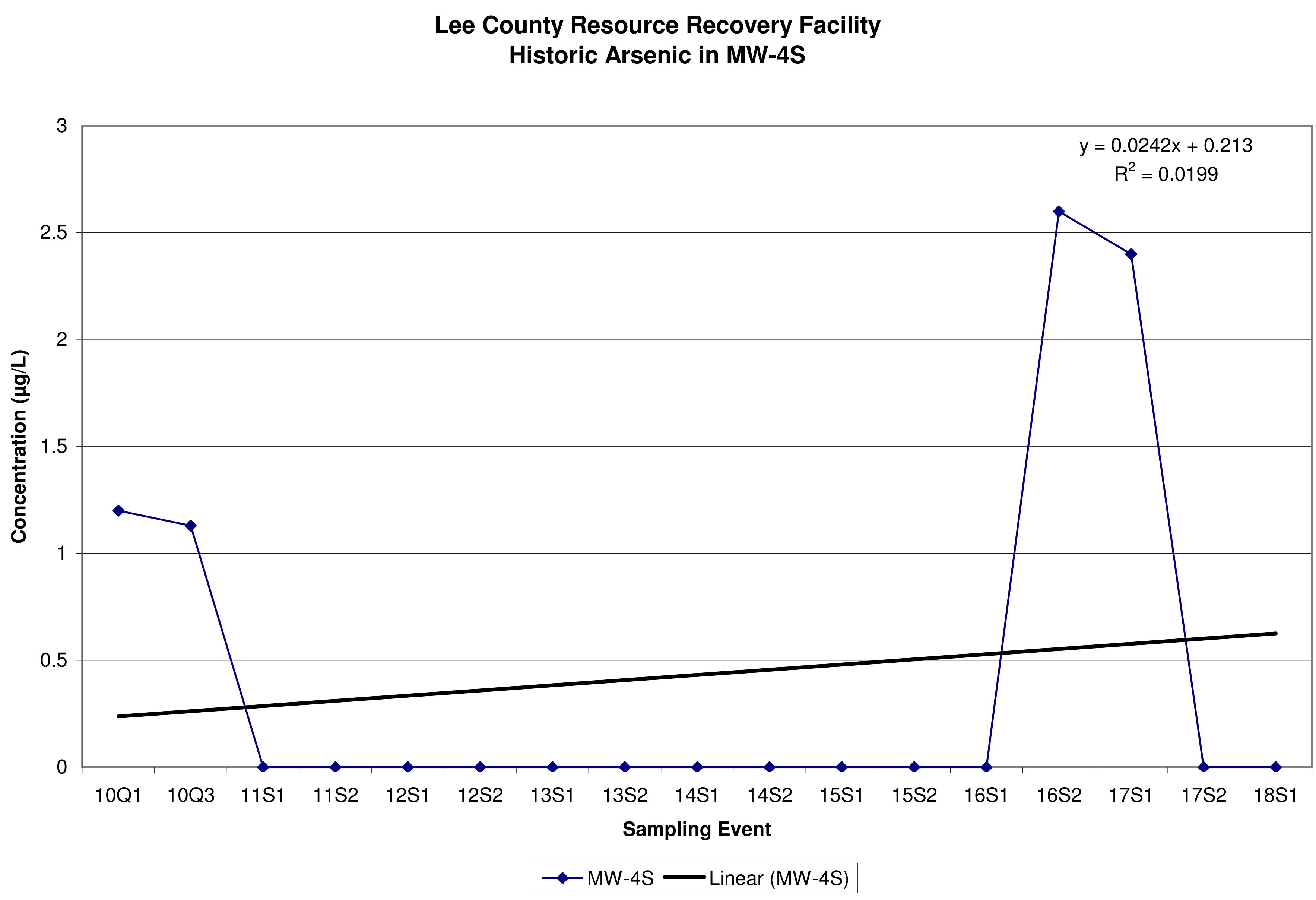
Lee County Resource Recovery Facility
Historic Aluminum in MW-4S
y = 0.3325x + 0.9333
R2 = 0.0226
Concentration (µg/L)
40
35
30
25
20
15
10
5
0
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-4S
Linear (MW-4S)

Historical Arsenic Data


Lee County Resource Recovery Facility
Historic Arsenic in MW-2S
y = -0.0584x + 1.0801
R^2 = 0.1341
Concentration (µg/L)
2.5
2
1.5
1
0.5
0
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)

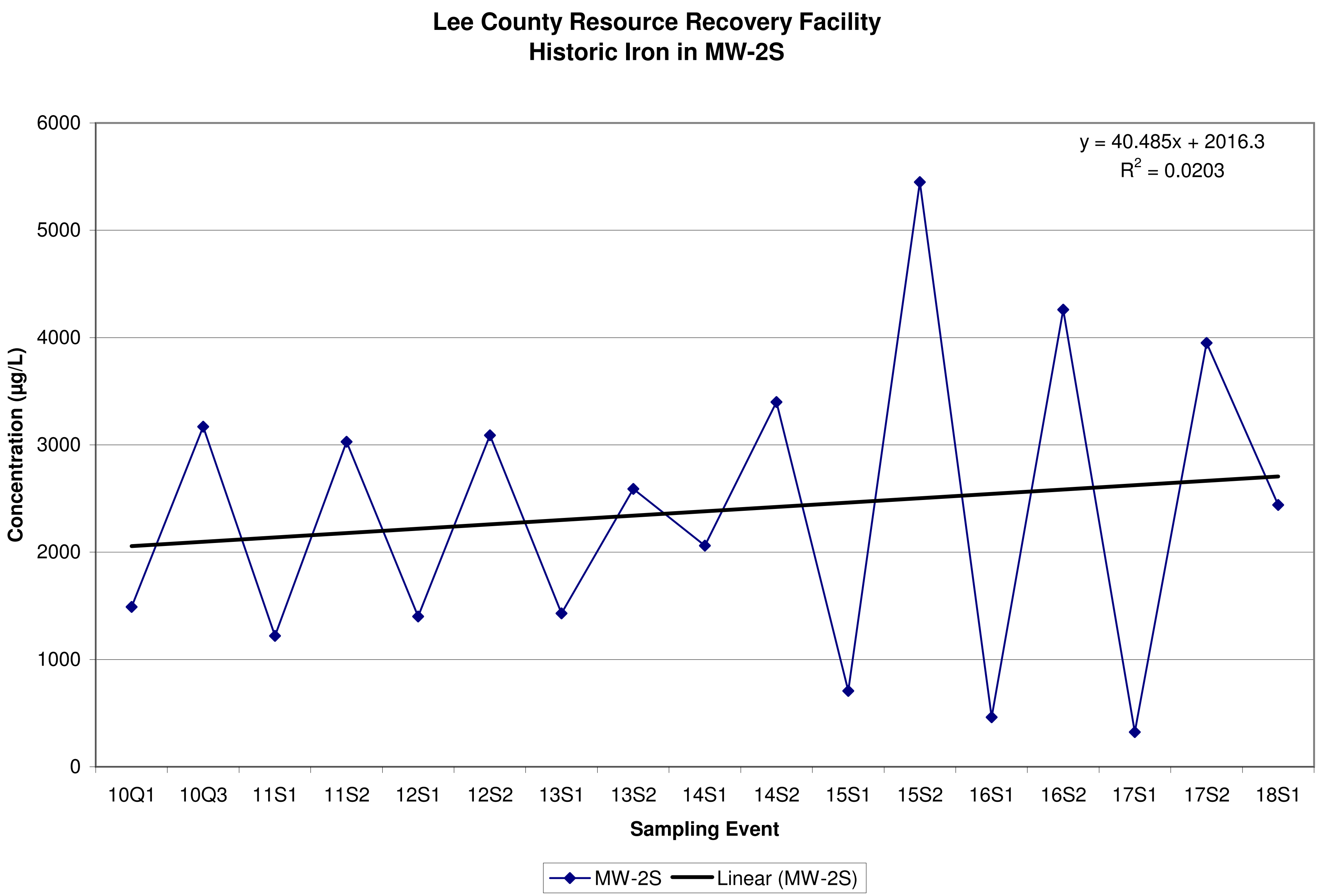


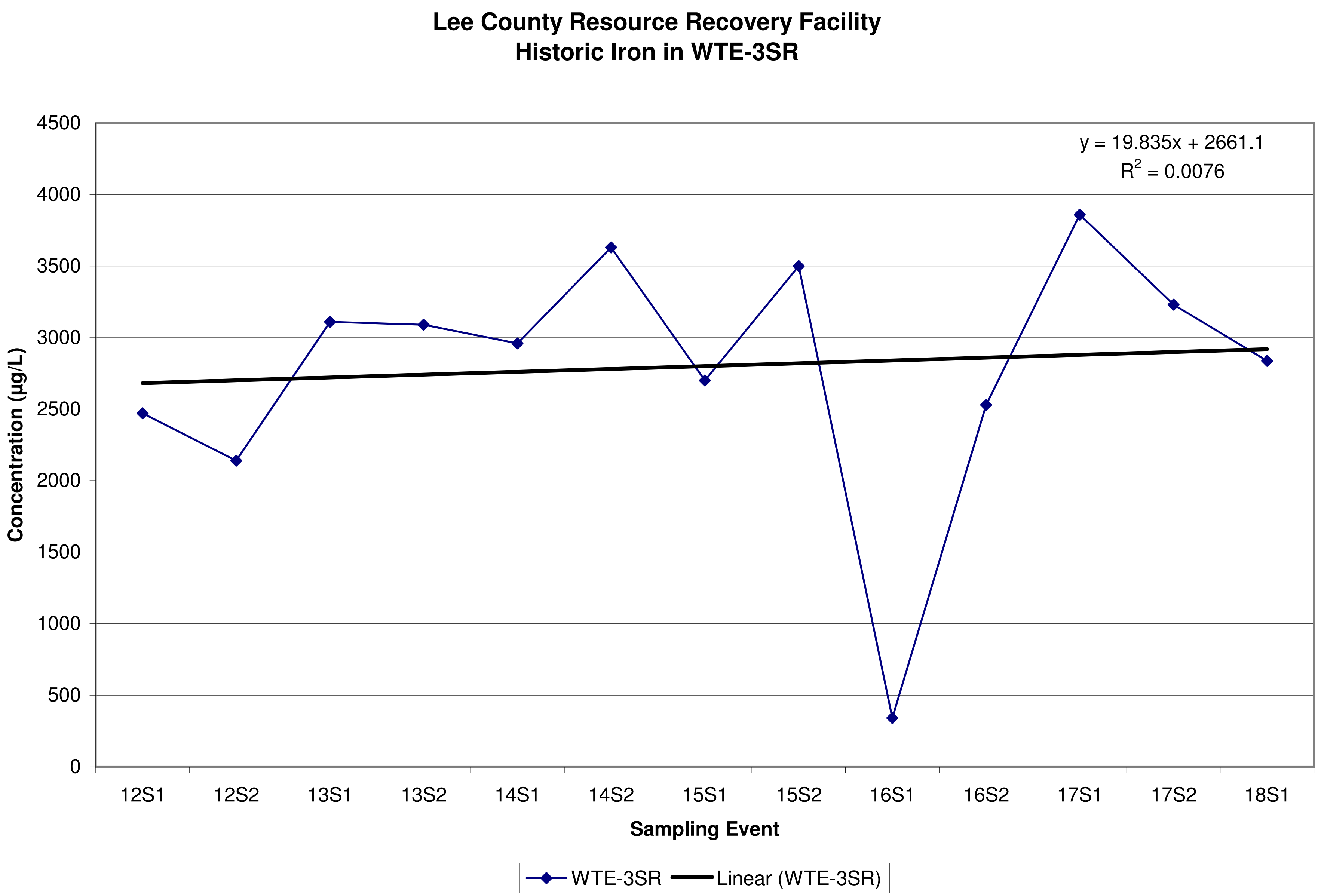
Lee County Resource Recovery Facility
Historic Arsenic in WTE-3SR
y = -0.0405x + 1.0638
R2 = 0.0158
Concentration (µg/L)
3.5
3
2.5
2
1.5
1
0.5
0
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
WTE-3SR
Linear (WTE-3SR)



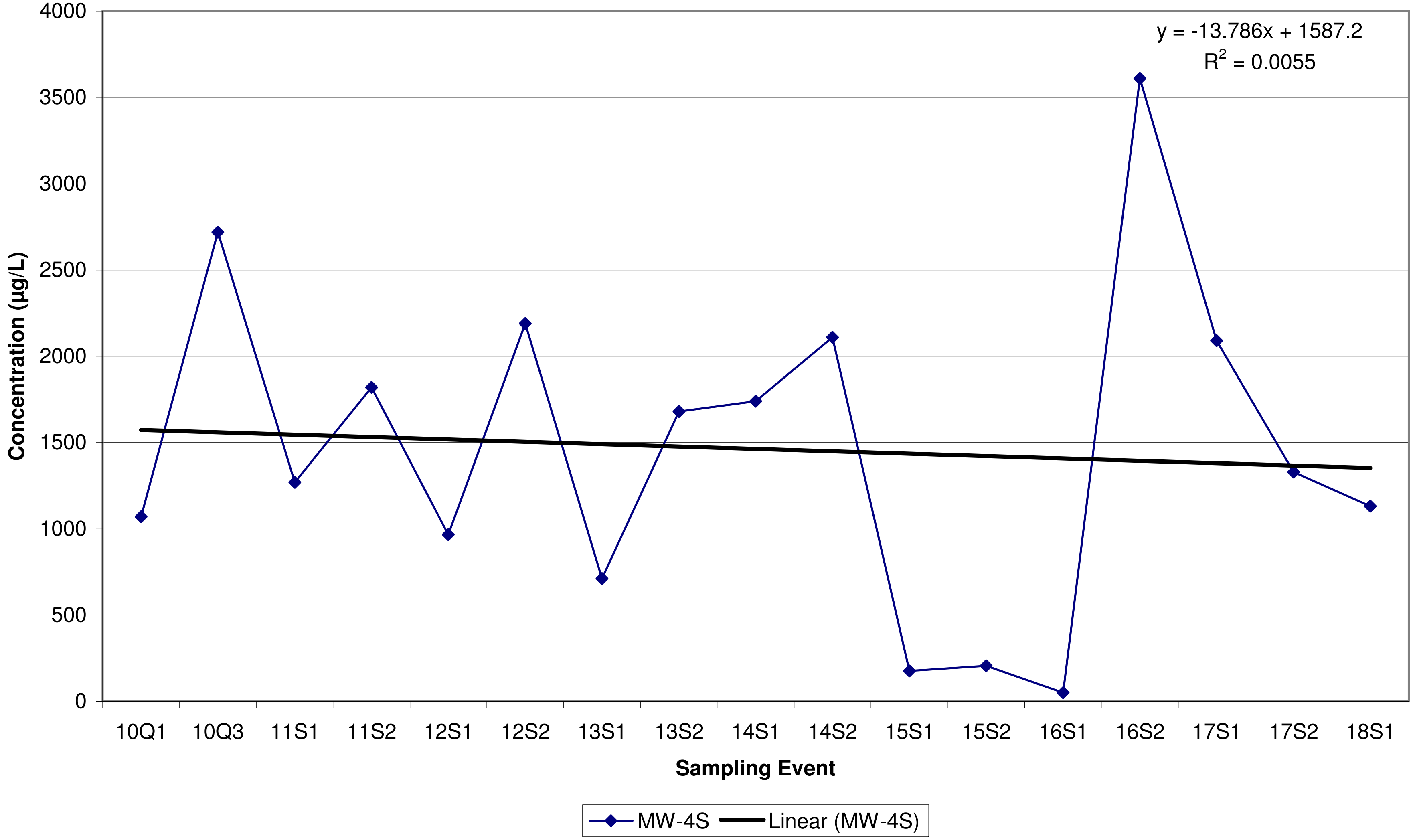
Lee County Resource Recovery Facility
Historic Arsenic in MW-4S
y = 0.0242x + 0.213
R^2 = 0.0199
Concentration (µg/L)
3
2.5
2
1.5
1
0.5
0
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-4S
Linear (MW-4S)

Historical Iron Data


Lee County Resource Recovery Facility
Historic Iron in MW-2S
y = 40.485x + 2016.3
R^2 = 0.0203
Concentration (µg/L)
6000
5000
4000
3000
2000
1000
0
10Q1
10Q3
11S1
11S2
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
MW-2S
Linear (MW-2S)

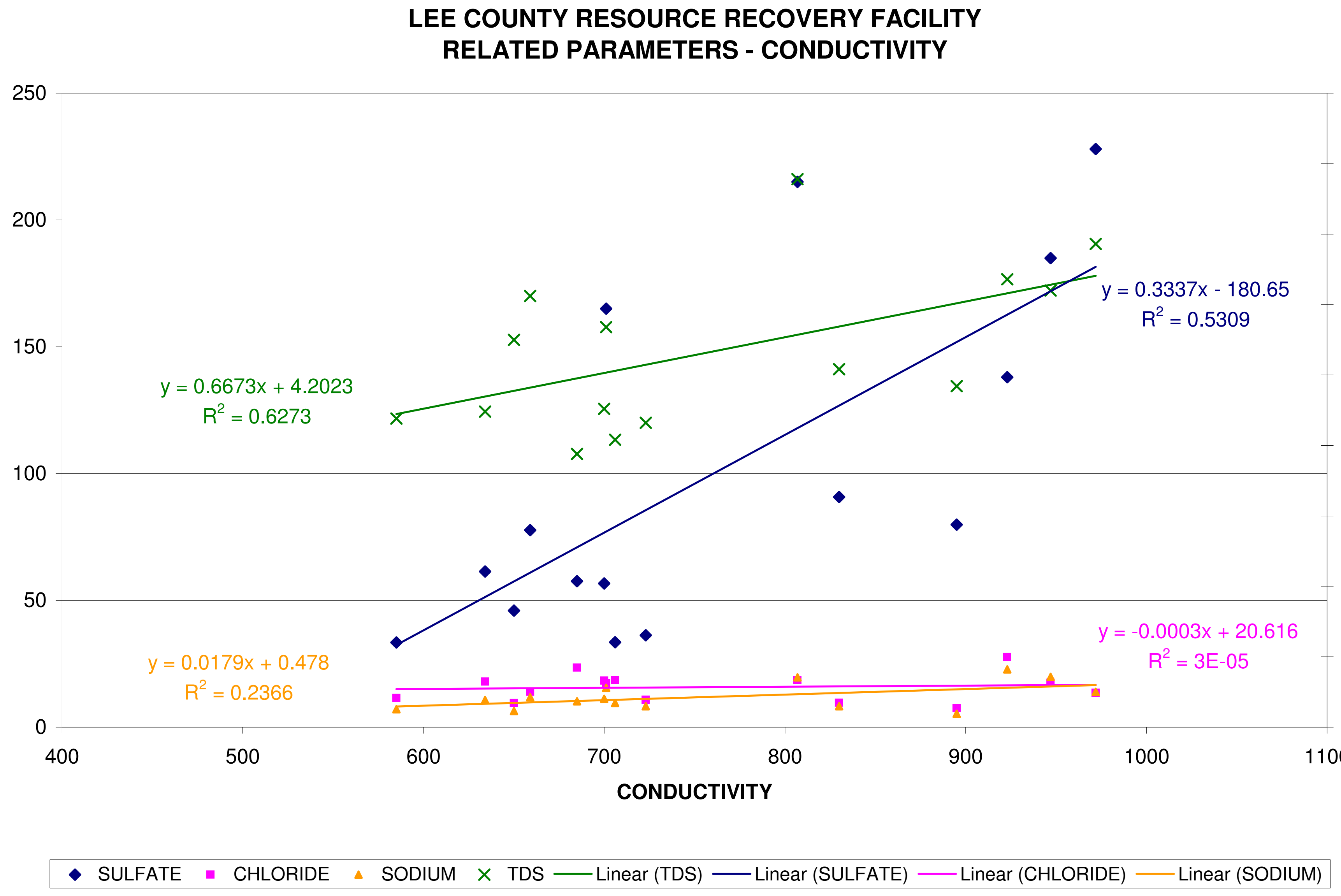

Lee County Resource Recovery Facility
Historic Iron in WTE-3SR
y = 19.835x + 2661.1
R^2 = 0.0076
Concentration (µg/L)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
12S1
12S2
13S1
13S2
14S1
14S2
15S1
15S2
16S1
16S2
17S1
17S2
18S1
Sampling Event
WTE-3SR
Linear (WTE-3SR)

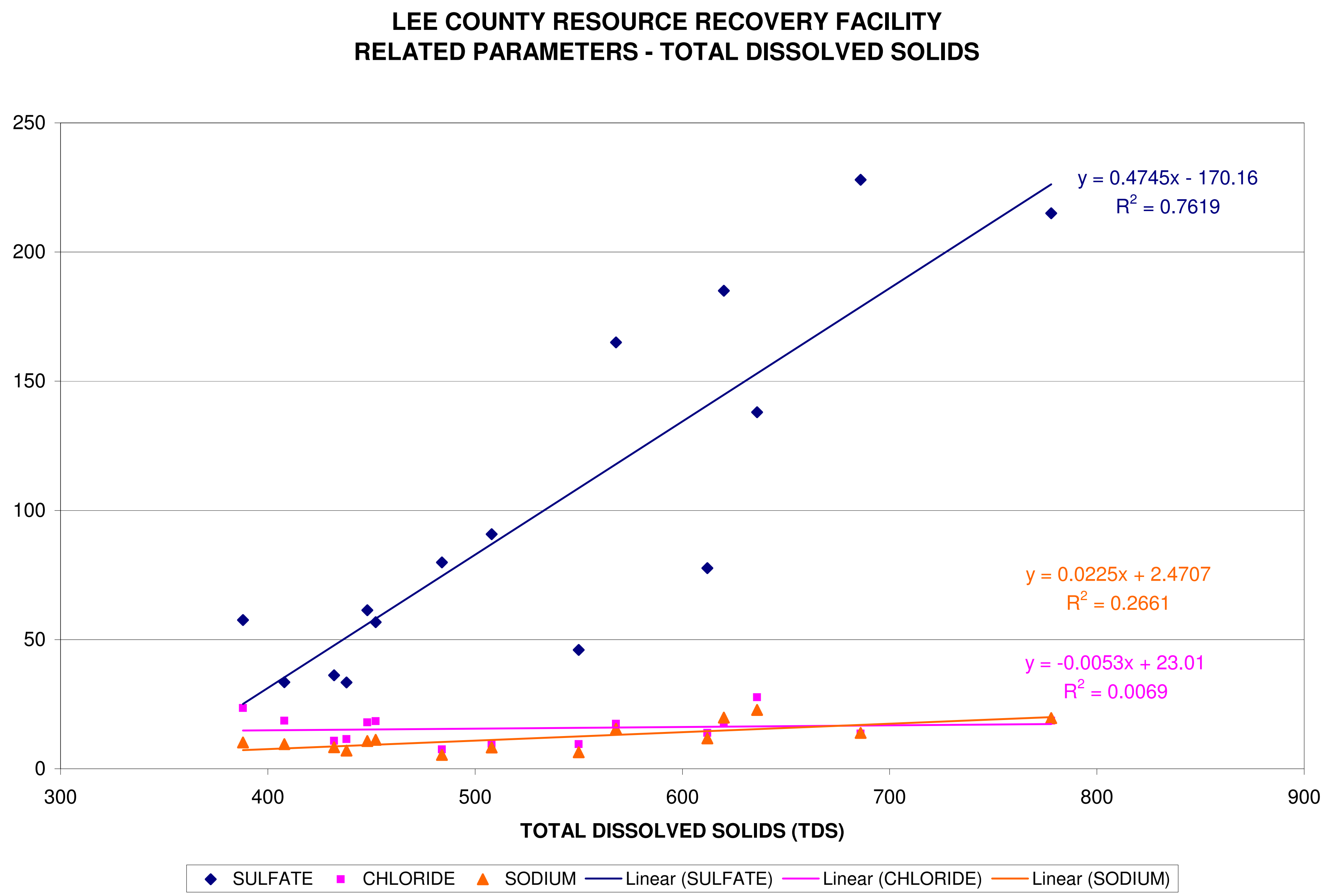
Lee County Resource Recovery Facility
Historic Iron in MW-4S



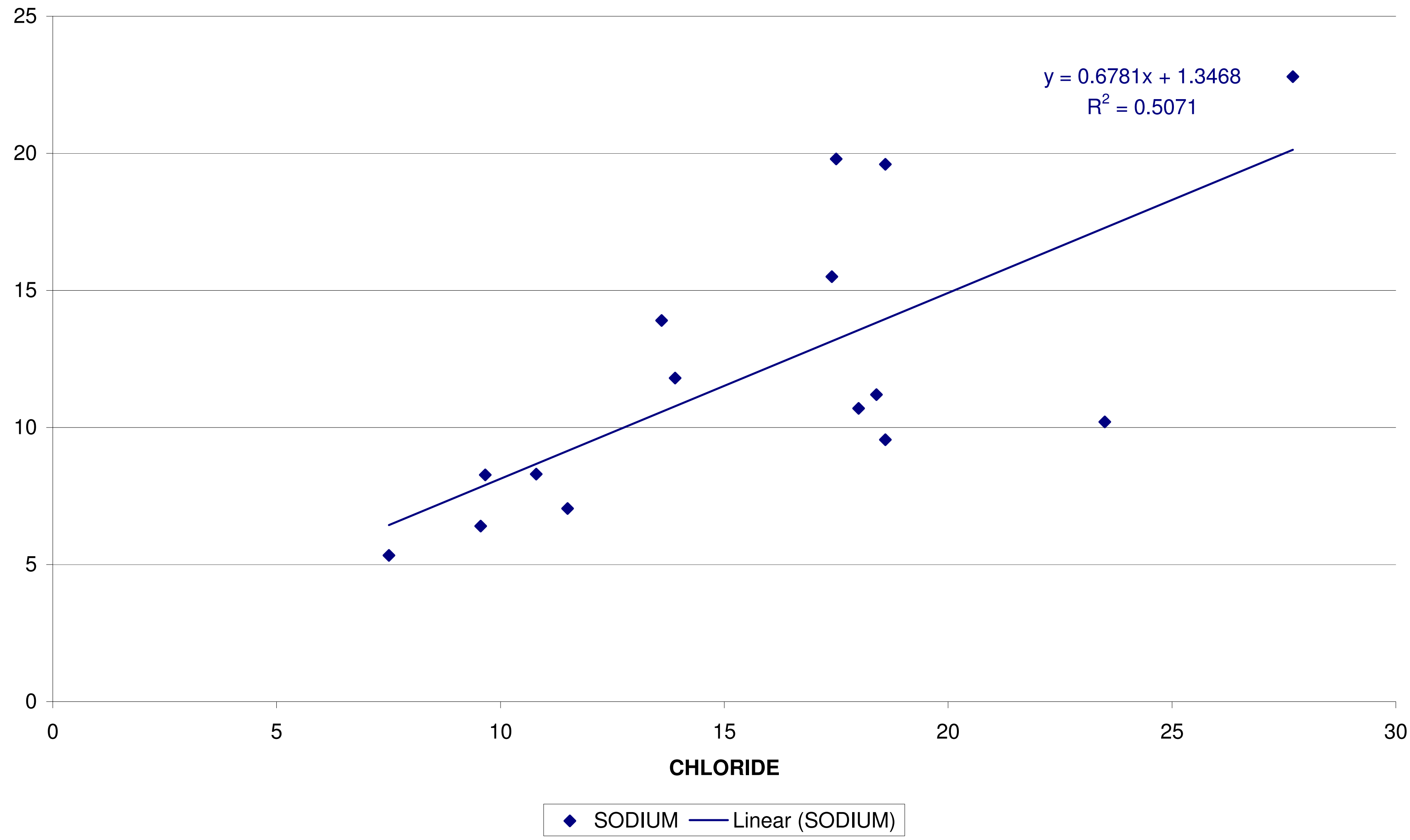
ATTACHMENT 9

SCATTER PLOTS OF RELATED PARAMETERS

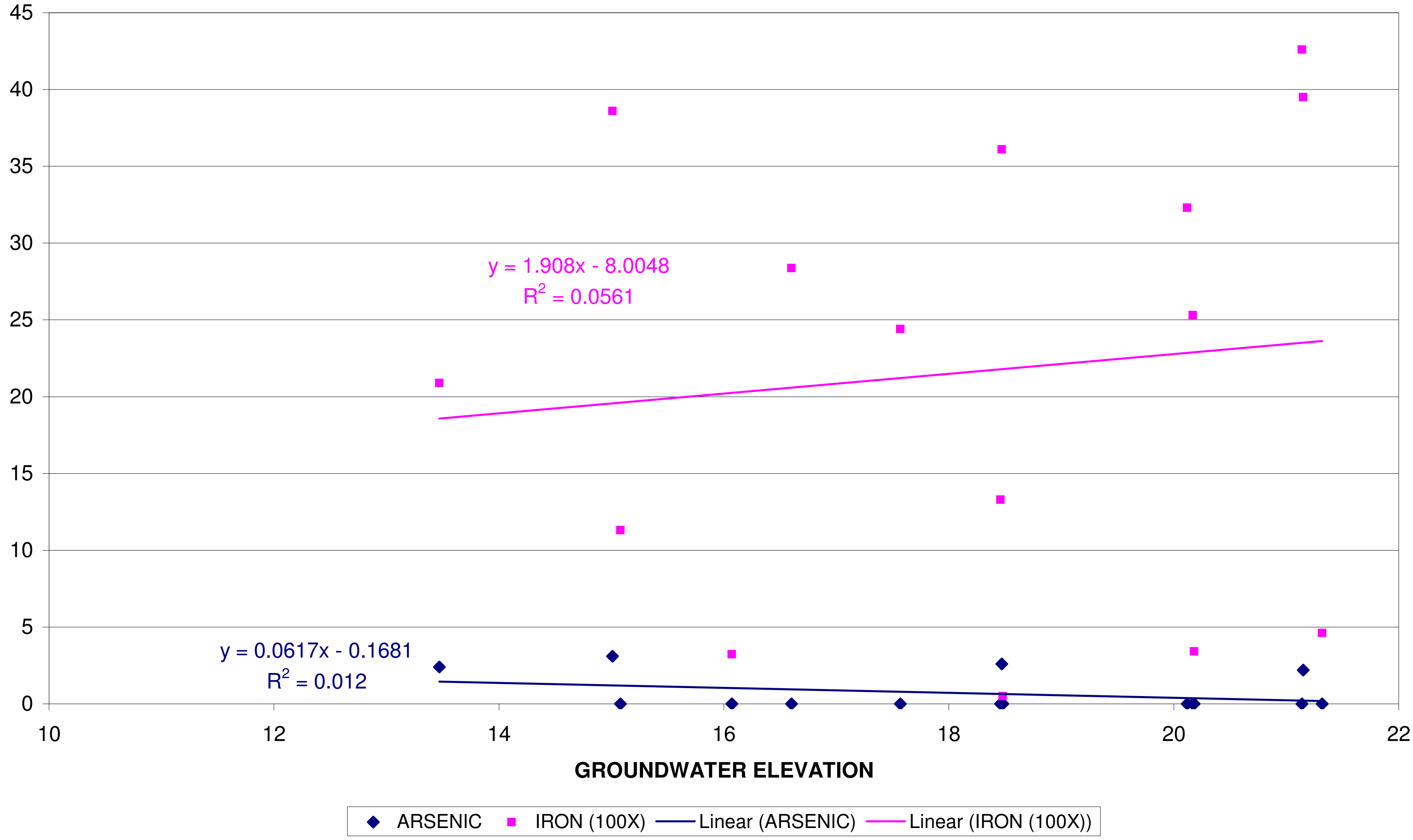

LEE COUNTY RESOURCE RECOVERY FACILITY
RELATED PARAMETERS - CONDUCTIVITY
y = 0.6673x + 4.2023
R^2 = 0.6273
y = 0.3337x - 180.65
R^2 = 0.5309
y = -0.0003x + 20.616
R^2 = 3E-05
y = 0.0179x + 0.478
R^2 = 0.2366
250
200
150
100
50
0
900
800
700
600
500
400
300
200
100
0
400
500
600
700
800
900
1000
1100
CONDUCTIVITY
SULFATE
CHLORIDE
SODIUM
TDS
Linear (TDS)
Linear (SULFATE)
Linear (CHLORIDE)
Linear (SODIUM)


LEE COUNTY RESOURCE RECOVERY FACILITY
RELATED PARAMETERS - TOTAL DISSOLVED SOLIDS
y = 0.4745x - 170.16
R2 = 0.7619
y = 0.0225x + 2.4707
R2 = 0.2661
y = -0.0053x + 23.01
R2 = 0.0069
250
200
150
100
50
0
300
400
500
600
700
800
900
TOTAL DISSOLVED SOLIDS (TDS)
SULFATE
CHLORIDE
SODIUM
Linear (SULFATE)
Linear (CHLORIDE)
Linear (SODIUM)

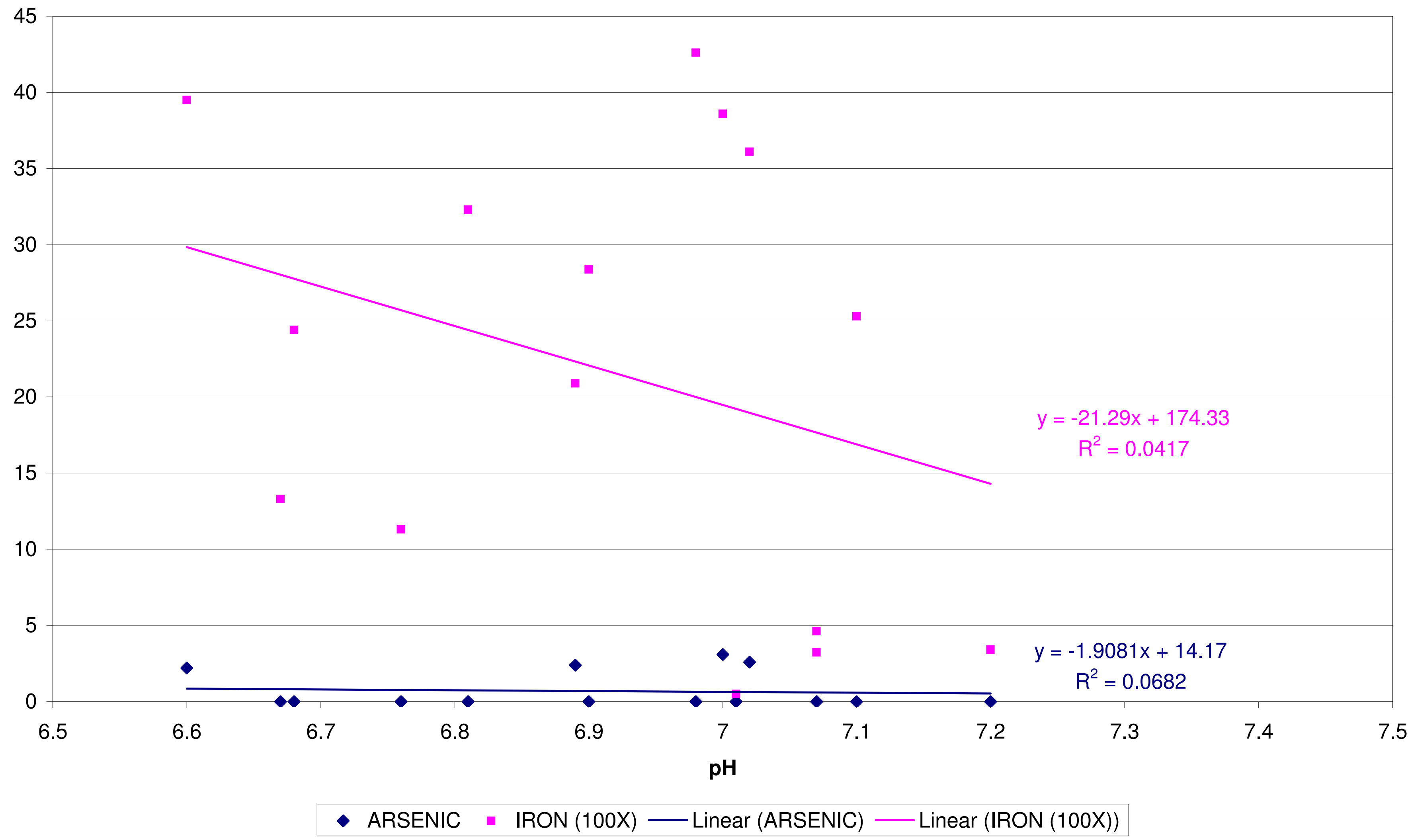
LEE COUNTY RESOURCE RECOVERY FACILITY
RELATED PARAMETERS - SODIUM AND CHLORIDE

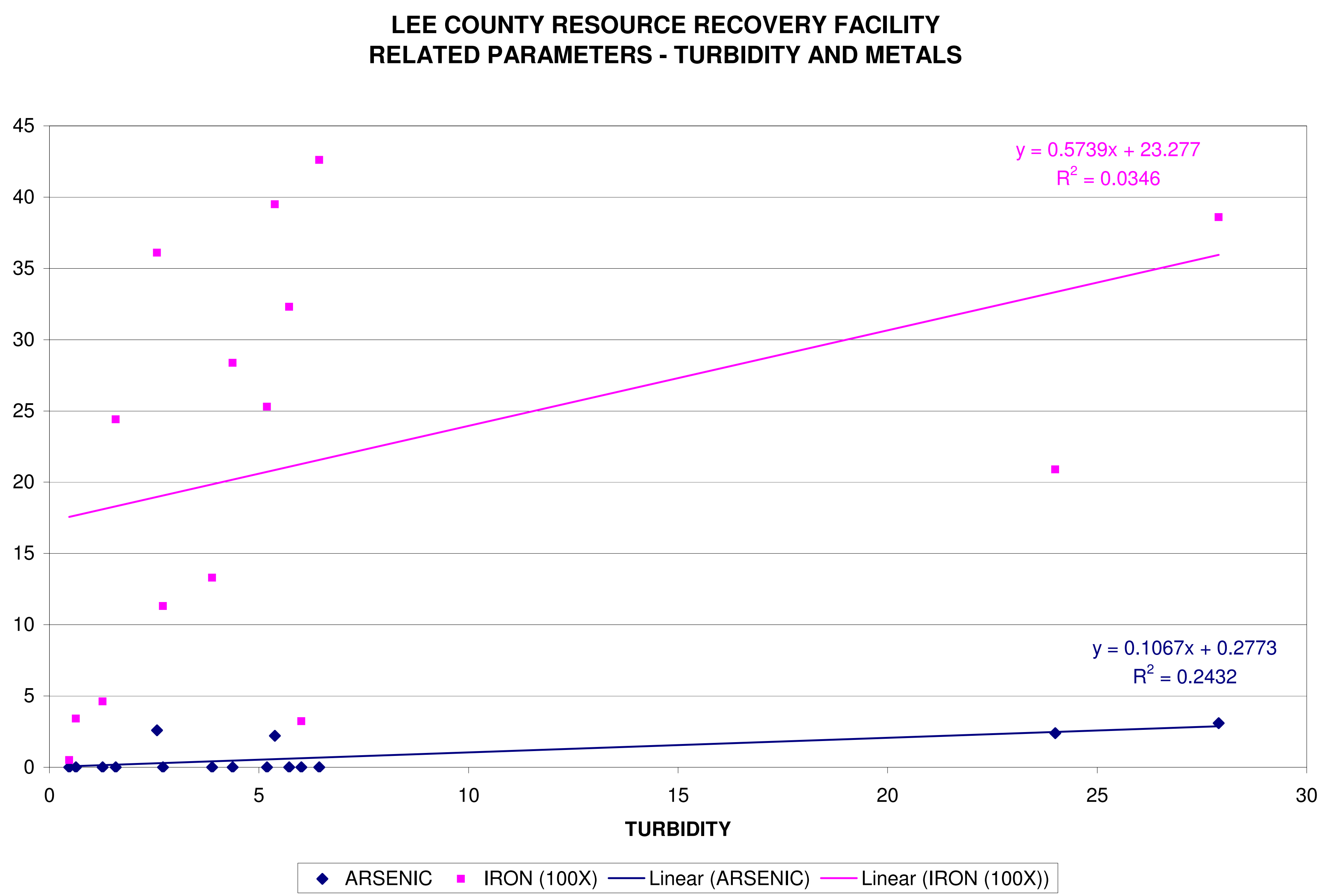


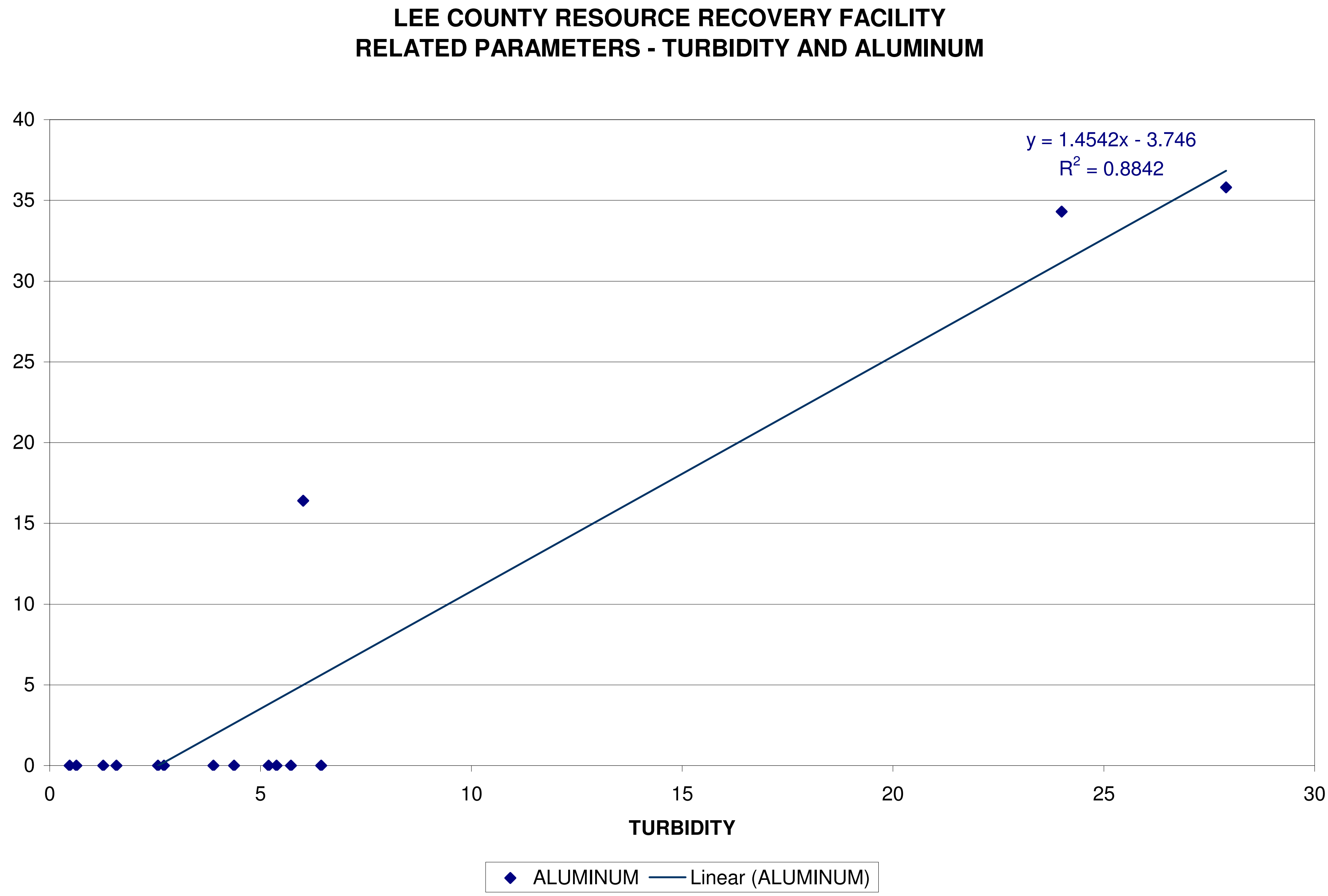
LEE COUNTY RESOURCE RECOVERY FACILITY
RELATED PARAMETERS - GWE AND METALS



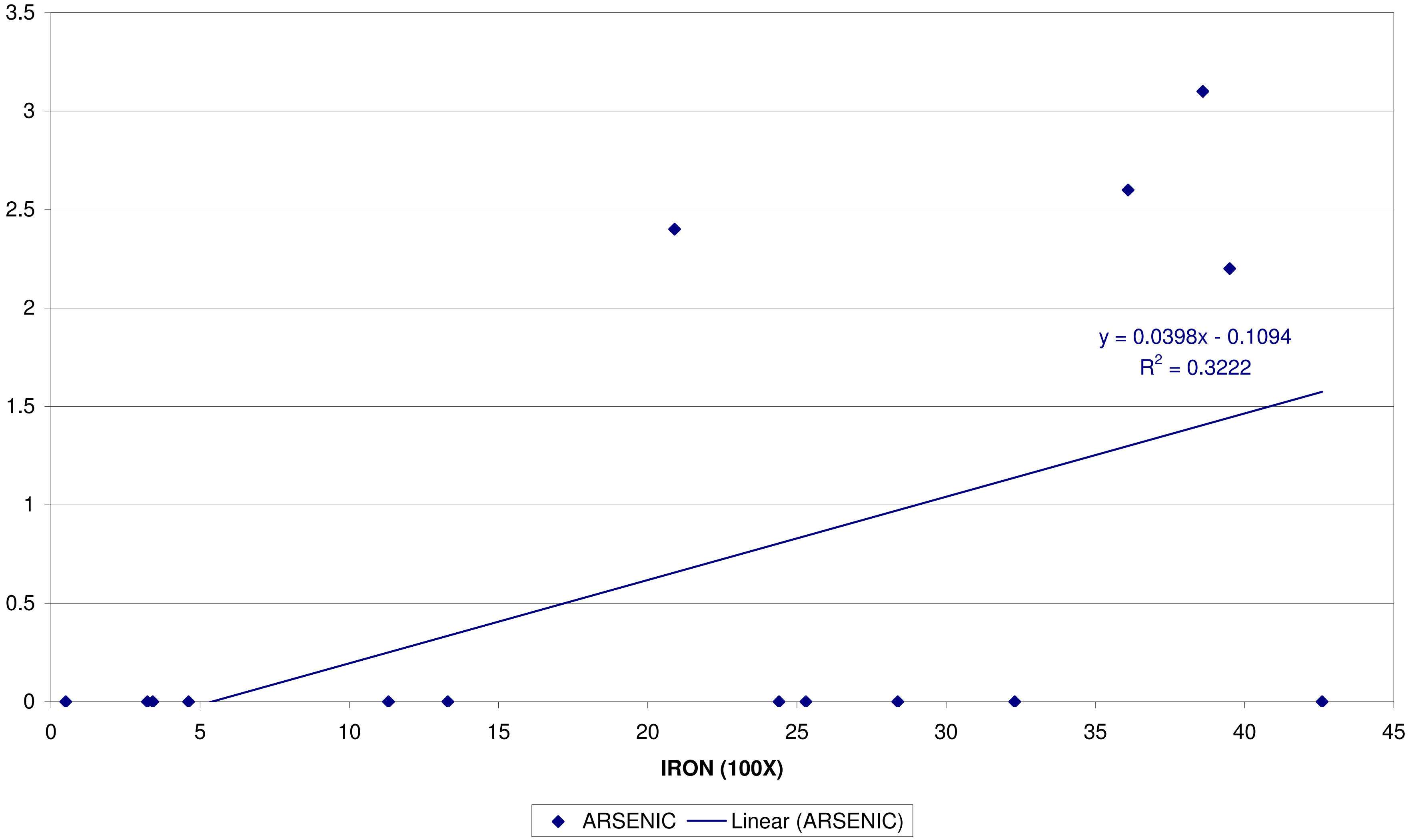
LEE COUNTY RESOURCE RECOVERY FACILITY
RELATED PARAMETERS - pH AND METALS

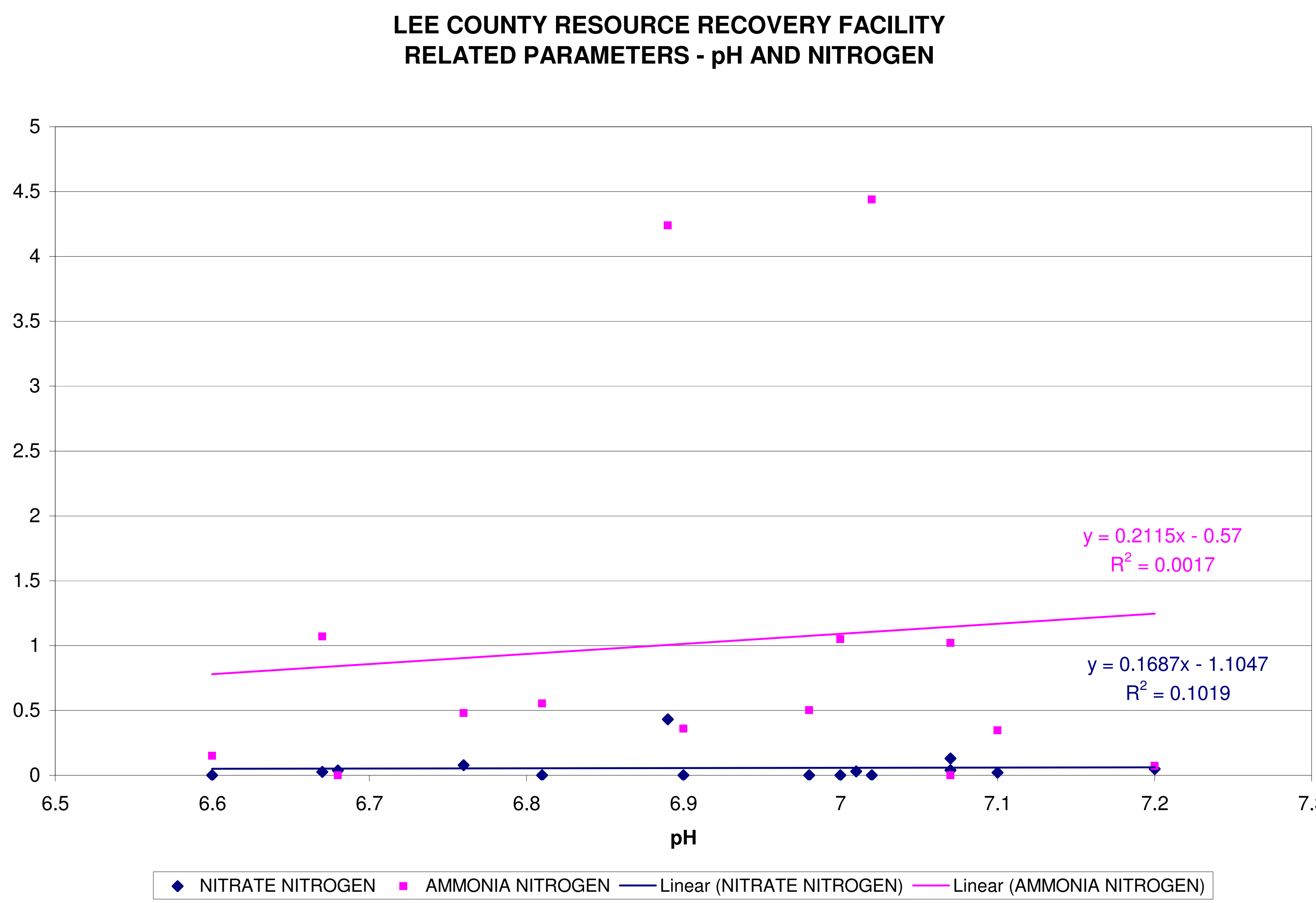



LEE COUNTY RESOURCE RECOVERY FACILITY
RELATED PARAMETERS - TURBIDITY AND METALS
y = 0.5739x + 23.277
R2 = 0.0346
y = 0.1067x + 0.2773
R2 = 0.2432
0
5
10
15
20
25
30
35
40
45
0
5
10
15
20
25
30
TURBIDITY
ARSENIC
IRON (100X)
Linear (ARSENIC)
Linear (IRON (100X))

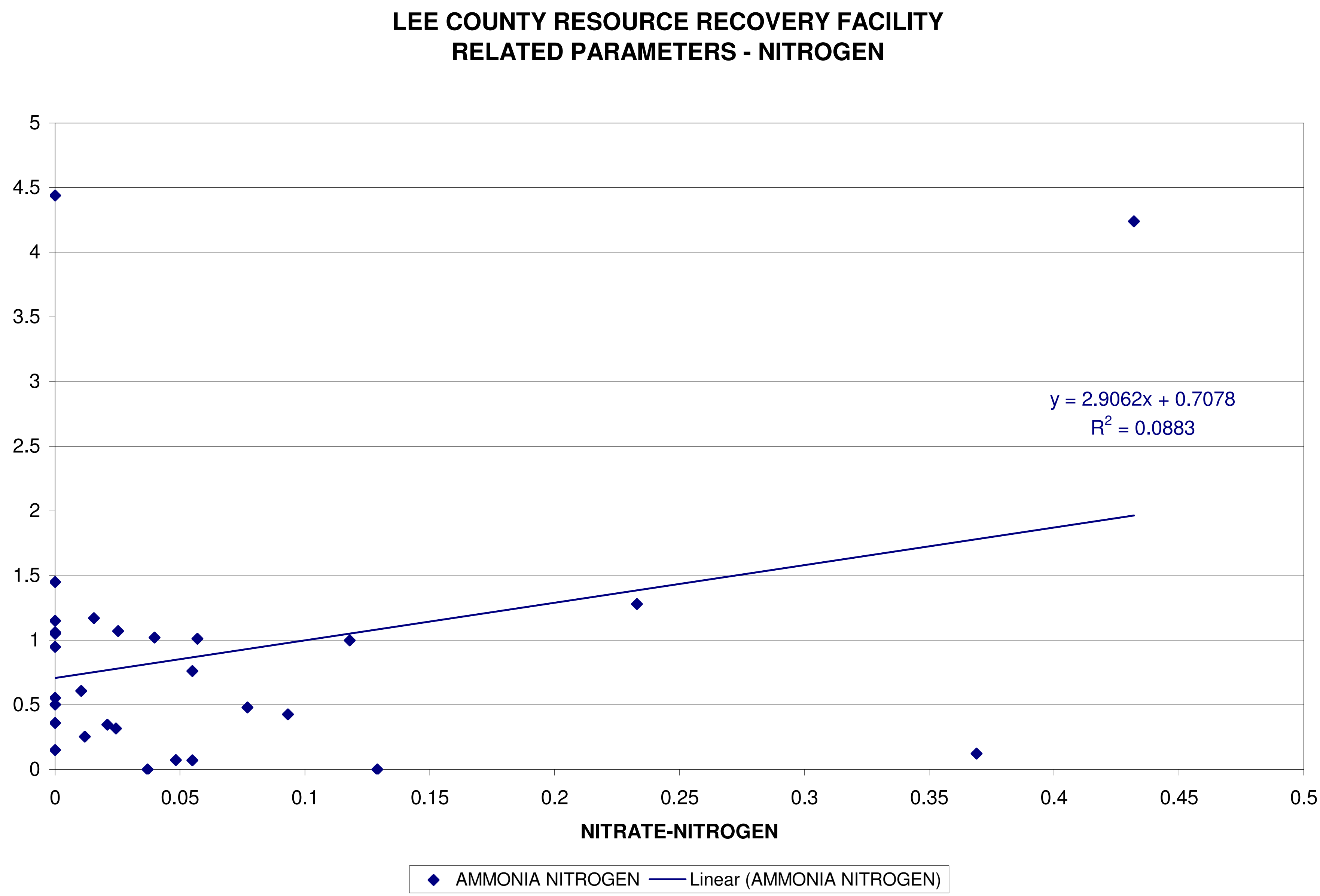

LEE COUNTY RESOURCE RECOVERY FACILITY
RELATED PARAMETERS - TURBIDITY AND ALUMINUM
y = 1.4542x - 3.746
R^2 = 0.8842
0
5
10
15
20
25
30
35
40
TURBIDITY
ALUMINUM
Linear (ALUMINUM)

LEE COUNTY RESOURCE RECOVERY FACILITY
RELATED PARAMETERS - ARSENIC AND IRON





LEE COUNTY RESOURCE RECOVERY FACILITY
RELATED PARAMETERS - pH AND NITROGEN
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
6.5
6.6
6.7
6.8
6.9
7
7.1
7.2
7.3
pH
y = 0.2115x - 0.57
R2 = 0.0017
y = 0.1687x - 1.1047
R2 = 0.1019
NITRATE NITROGEN
AMMONIA NITROGEN
Linear (NITRATE NITROGEN)
Linear (AMMONIA NITROGEN)



LEE COUNTY RESOURCE RECOVERY FACILITY
RELATED PARAMETERS - NITROGEN
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
y = 2.9062x + 0.7078
R2 = 0.0883
NITRATE-NITROGEN
AMMONIA NITROGEN
Linear (AMMONIA NITROGEN)