



**US Army Corps
of Engineers®**

Buffalo District

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**NIAGARA FALLS STORAGE SITE
Formerly Utilized Sites Remedial Action Program**

**2016
ENVIRONMENTAL SURVEILLANCE
TECHNICAL MEMORANDUM**

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October 2017

Table of Contents

1.0	INTRODUCTION.....	1
1.1	Brief History of the Niagara Falls Storage Site.....	1
1.2	Overview of Environmental Surveillance Program	3
1.3	Regional Hydrogeology	3
1.3.1	Groundwater.....	3
1.3.2	Surface Water Drainage	4
2.0	SAMPLE COLLECTION AND ANALYSIS	5
2.1	Sampling Locations and Rationale.....	5
2.2	Sampling Parameters and Laboratory Analytical Methods.....	5
2.3	Sample Collection Techniques.....	6
2.3.1	Groundwater and Surface Water	7
2.3.2	Sediment.....	7
2.3.3	Radon Flux	7
2.3.4	Radon Gas	7
2.3.5	Gamma Emissions.....	8
3.0	REGULATORY GUIDELINES.....	9
3.1	Dose to the Public	9
3.2	Radioactive Constituents in Air	9
3.2.1	U.S. Department of Energy Order 458.1	9
3.2.2	U.S. Environmental Protection Agency Clean Air Act.....	9
3.3	Radioactive and Chemical Constituents in Groundwater.....	10
3.3.1	General Groundwater Quality	10
3.3.2	Federal Safe Drinking Water Act for Chemicals and Radionuclides.....	10
3.3.3	New York State Department of Environmental Conservation Groundwater Criteria for Chemicals and Radionuclides	11
3.4	Radioactive and Chemical Constituents in Sediment.....	11
3.4.1	Nuclear Regulatory Commission Dose-Based Screening Levels for Radionuclides	11
3.4.2	New York State Department of Environmental Conservation Unrestricted Use Recommended Soil Clean-up Objectives for Chemicals	11
3.4.3	U.S. Environmental Protection Agency Regional Screening Levels and Niagara Falls Storage Site Background Criteria for Metals	12
3.5	Radioactive and Chemical Constituents in Surface Water.....	12
4.0	ANALYTICAL DATA AND INTERPRETATION OF RESULTS.....	13
4.1	Air	13
4.1.1	External Gamma Radiation	13
4.1.2	Airborne Particulate Dose	14
4.1.3	Calculated Cumulative Dose	15
4.1.4	Radon Gas	15
4.1.5	Radon-222 Flux.....	15
4.2	Surface Water.....	16
4.2.1	Surface Water Field Measurements	16
4.2.2	Surface Water Radiological Findings.....	16
4.2.3	Surface Water Chemical Findings.....	17
4.3	Sediment.....	17
4.3.1	Sediment Radiological Findings	17

4.3.2	Sediment Chemical Findings.....	18
4.4	Groundwater.....	18
4.4.1	Groundwater Level Measurements.....	19
4.4.2	Groundwater Field Parameters	20
4.4.3	Groundwater Quality Parameters	20
4.4.4	Groundwater Radiological Findings.....	20
4.4.5	Groundwater Chemical Findings.....	22
4.4.6	Groundwater Trend Analysis	22
5.0	CONCLUSION	25
6.0	REFERENCES.....	26

List of Tables (following text)

- Table 1: Evolution of NFSS Environmental Surveillance Plan
- Table 2: 2016 ESP Groundwater Sampling NFSS
- Table 3: 2016 Surface Water and Sediment Sampling NFSS
- Table 4: 2016 External Gamma Radiation Dose Rates
- Table 5: 2016 Radon Gas Concentrations
- Table 6: 2016 Radon Flux Measurements
- Table 7: 2016 Surface Water Field Parameter Measurements
- Table 8: 2016 Results of Radionuclide Analysis of Surface Water
- Table 9: 2016 Results of PAH Analysis of Surface Water
- Table 10: 2016 Results of Metals Analysis of Surface Water
- Table 11: 2016 Results of Radionuclide Analysis of Sediment
- Table 12: 2016 Results of Metal Analysis of Sediment
- Table 13: 2016 Results of PAH Analysis of Sediment
- Table 14: 2016 Water Level Measurements
- Table 15: 2016 Groundwater Field Parameter Measurements
- Table 16: 2016 Groundwater Water Quality Data
- Table 17: 2016 Results of Radionuclide Analysis of Groundwater
- Table 18: 2016 Results of VOC Analysis of Groundwater

List of Figures

- Figure 1: Site Location NFSS
- Figure 2: Location of the IWCS within the NFSS Boundary
- Figure 3: Schematic of Conceptualized Hydrostratigraphy
- Figure 4: Locations of Radon Flux Measurements on the IWCS
- Figure 5: ESP Groundwater Monitoring Wells
- Figure 6: Location of RadTrack Detectors and OSLS
- Figure 7: Location of Surface Water and Sediment Sampling Locations
- Figure 8: External Gamma Radiation Dose Rates at NFSS Perimeter
- Figure 9: External Gamma Radiation Dose Rates at IWCS Perimeter
- Figure 10: Census Data
- Figure 11: Total Radium Concentrations in Sediment between 1997 and 2016
- Figure 12: Total Uranium Concentrations in Sediment between 1997 and 2016
- Figure 13: Seasonal High Potentiometric Surface Map (Lower Groundwater System)

- Figure 14: Seasonal High Potentiometric Surface Map (Upper Groundwater System)
- Figure 15: Seasonal Low Potentiometric Surface Map (Lower Groundwater System)
- Figure 16: Seasonal Low Potentiometric Surface Map (Upper Groundwater System)
- Figure 17: Total Uranium Concentrations in Upper Water Bearing Zone Wells in the Vicinity of the IWCS (1997–2016)
- Figure 18: Total Uranium Concentrations in Well OW11B and Newly Installed Balance of Plant Wells (2012–2016)
- Figure 19: Total Uranium Concentrations in Upper Water-Bearing Zone Monitoring Wells (1997–2016)
- Figure 20: Total Uranium Concentrations in Lower Water-Bearing Zone Monitoring Wells (2000–2016)

Attachment A: Mann-Kendall Test Results

Acronyms and Abbreviations

AEC	Atomic Energy Commission
ASTM	American Society for Testing and Materials
CAP88-PC	Clean Air Act Assessment Package – 1988 (U.S. EPA)
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
Corps of Engineers	United States Army Corps of Engineers
DOD	Department of Defense
DOE	United States Department of Energy
DOH	Department of Health
EPA	United States Environmental Protection Agency
ESP	environmental surveillance program
FUSRAP	Formerly Utilized Sites Remedial Action Program
IWCS	interim waste containment structure
KAPL	Knolls Atomic Power Laboratory
LOOW	Lake Ontario Ordnance Works
MCL	maximum contaminant level
MDA	minimum detectable activity
MED	Manhattan Engineer District
MEI	maximally exposed off-site individual
m	meters
m ³	cubic meter(s)
µg/g	micrograms per gram
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
NCRP	National Council on Radiation Protection and Measurements
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NFSS	Niagara Falls Storage Site
NTUs	nephelometric turbidity units
NRC	Nuclear Regulatory Commission
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
OSL	optically stimulated luminescence
OSLD	optically stimulated luminescence dosimeter
PAH	polycyclic aromatic hydrocarbon
pCi/g	picocuries per gram
pCi/L	picocuries per liter
Ra	radium
RCRA	Resource Conservation and Recovery Act
RSL	regional screening level
SCO	soil cleanup objective
SDWA	Safe Drinking Water Act
TDS	total dissolved solids
TED	total effective dose
U	lab qualifier—nondetect
U ₃ O ₈	triuranium octoxide
USACE	United States Army Corps of Engineers
VOC	volatile organic compound

Units of Measurement and Conversion Factors—Radioactivity

Parameter	Conventional Units	SI Units	Conversion Factor
Dose	millirem (mrem)	millisievert (mSv)	1 mrem = 0.01 mSv
Activity	picocurie (pCi)	becquerel (Bq)	1 pCi = 0.037 Bq

Units of Measurement and Conversion Factors—Mass, Length, Area, and Volume

Parameter	SI Units	English Units	Conversion Factor
Mass	gram (g)	ounce (oz)	1 g = 0.035 oz
	kilogram (kg)	pound (lb)	1 kg = 2.2046 lb
Length	centimeter (cm)	inch (in)	1 cm = 0.394 in
	meter (m)	foot (ft)	1 m = 3.281 ft
	kilometer (km)	mile (mi)	1 km = 0.621 mi
Area	hectare (ha)	acre	1 ha = 2.47 acres
Volume	milliliter (mL)	fluid ounce (fl. oz)	1 mL = 0.0338 fl. oz
	liter (L)	gallon (gal)	1 L = 0.264 gal
	cubic meter (m^3)	cubic yard (yd^3)	1 m^3 = 1.307 yd^3

EXECUTIVE SUMMARY

Purpose: This technical memorandum documents the scientific methods, criteria, data, and findings of the Environmental Surveillance Program (ESP) at the Niagara Falls Storage Site (NFSS). The U.S. Army Corps of Engineers Buffalo District is executing this program in support of its mission under the Formerly Utilized Sites Remedial Action Program (FUSRAP) to protect human health and the environment at the NFSS. The Buffalo District publishes this technical memorandum annually and posts it to the Corps website in the "Environmental Monitoring" section:
<http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/NiagaraFallsStorageSite.aspx>.

Site Description and Background: The NFSS is located at 1397 Pletcher Road in the Town of Lewiston, New York, 19 miles (30.6 km) north of Buffalo, New York. The NFSS is federally owned property that covers an area of 191 acres. The NFSS was originally part of a World War II explosives plant called the Lake Ontario Ordnance Works (LOOW), which was approximately 7,500 acres in size. Between 1944 and 1954, the Manhattan Engineer District (MED) and the Atomic Energy Commission (AEC) (a predecessor to the U.S. Department of Energy [DOE]) brought radioactive wastes and residues to a small portion of the LOOW. Throughout the 1970s, the AEC gradually consolidated its operations and sold excess property to the public. In the 1980s, the DOE constructed a ten-acre interim waste containment structure (IWCS) on the NFSS to contain the radioactive wastes and residues.

In October 1997, Congress transferred management of FUSRAP (which had been initiated in 1974) from the DOE to the Corps of Engineers. In addition to investigating and remediating site contaminants at the NFSS, the Corps of Engineers is responsible for maintaining the site and conducting the ESP. The environmental surveillance activities the DOE initiated in 1979 have since evolved; today the Corps of Engineers Buffalo District ensures that wastes buried within the IWCS and contaminated on-site soil and groundwater do not pose a risk to human health and the environment. The program includes monitoring air, water, and sediments for radiological and chemical parameters.

In December 2007 and April 2011, the Corps of Engineers completed the *Remedial Investigation Report for the NFSS* and *NFSS Remedial Investigation Report Addendum*, respectively (USACE 2007, USACE 2011). These defined the nature and extent of contaminants on the NFSS and assessed their potential long-term risks. Based on findings from these investigations and public input, the Corps of Engineers further enhanced the ESP.

Between 2012 and 2014, the Corps of Engineers investigated further to describe the soil contamination in detail and locate the source of elevated uranium in groundwater south and east of the IWCS. As part of these investigations, the Corps of Engineers worked to prevent possible off-site migration of contaminants through site utilities. The work included installing monitoring wells, collecting and analyzing soil and groundwater samples, sealing manholes and pipelines near the property boundary, excavating investigative trenches, and completing a geophysical survey. The Corps of Engineers presented results of these investigations in reports issued in August 2013 (U.S. Army Corps of Engineers [USACE], 2013a) and February 2015 (USACE 2015a).

In 2013, the Corps of Engineers implemented the following modifications to the ESP:

- The number of wells monitored semiannually increased from 39 to 54 (to include several wells installed in 2012); the analytical parameters were refined to include total uranium, radium-226, and volatile organic compounds (for a limited number of wells)
- The number of surface water and sediment locations sampled semiannually decreased from 11 to 9; the analytical parameters were refined to include total uranium, radium-226, polycyclic

aromatic hydrocarbons, and metals.

In 2014, the Corps of Engineers added well MW943 to the ESP, increasing the total number of wells monitored semiannually to 55. Well MW943 monitors the upper water-bearing zone south of the IWCS.

The Corps of Engineers made no changes to air monitoring and continues to measure radon-222 flux on the IWCS cap annually and radon-222 concentrations and gamma emissions at the IWCS perimeter and NFSS property boundary semiannually.

To evaluate environmental surveillance data, the Corps of Engineers uses the criteria, standards, and guidelines of the DOE, U.S. Environmental Protection Agency (EPA), Nuclear Regulatory Commission (NRC), and New York State Department of Environmental Conservation (NYSDEC) for comparison purposes.

Additional information about the site and the ESP is available on the Corps of Engineers Buffalo District website:

<http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/NiagaraFallsStorageSite.aspx>.

Key Findings: The 2016 environmental surveillance analytical results confirm that site controls continue to perform as designed; they are fully protective of human health and the environment.

Results of the 2016 surveillance program are consistent with previous years and show:

- Site radon-222 concentrations are below the DOE off-site limit of 3.0 picocuries/liter (pCi/L); radon-222 flux measurements taken on the IWCS are less than the DOE flux standard of 20 pCi/m²/s.
- The calculated dose to a receptor due to airborne particulates is below the EPA guideline of 10 millirem/year (excluding radon); the cumulative dose, which is calculated by adding the maximum external gamma dose to the maximum airborne particulate dose, is significantly less than the DOE limit of 100 millirem/year.
- Several metals in all sediment samples and several polycyclic aromatic hydrocarbons, predominantly in upstream sediment samples, exceed criteria.
- No detectable levels of chlorinated solvents in groundwater monitoring wells in the former acidification area; chloroform was detected slightly above criteria in one groundwater monitoring well located in the former acidification area.
- Total uranium concentrations in groundwater monitoring wells were fairly consistent with historical data.

The 2016 groundwater analytical data show that total uranium concentrations in 25 groundwater monitoring wells exceed the drinking water criterion for uranium (30 µg/L). The most elevated total uranium concentrations were detected in wells installed east and south of the IWCS in late 2012 as part of the Balance of Plant field investigation: MW953 (6,547 µg/L), located east and across the Central Drainage Ditch from the IWCS and immediately east of well OW11B; MW951 (3,069 µg/L), located south of the IWCS and east of former Building 409, and MW957 (3,410 µg/L) located south of the IWCS.

The former storage piles and residual contamination in and around former Building 409 are the likely source of uranium in wells south of the IWCS. The Corps of Engineers believes the source of uranium in wells east of the IWCS is the residual soil contamination from former operations in this area; they include a railroad bed, storage piles, and a decontamination pad used during construction of the IWCS. In addition, residual contamination in the sanitary sewer near manhole 6, which was removed in 2013 as part

of field investigative activities, may have contributed to groundwater contamination in this area (USACE 2015a).

A trend analysis of total uranium in groundwater shows:

- No increasing or decreasing trends in 46 wells.
- A decreasing trend in wells A42, A45, OW04B, OW06B, OW17B, OW18B, 302A, and MW935.
- A possible increasing trend in well MW934, MW949, and MW960, however, the available data for these wells are marginal for definitively determining a trend and as additional data are collected, the test's statistical power will increase.

It's important to note that ESP groundwater sampling results are compared to federal and state drinking water standards as a conservative basis for evaluation. Groundwater resources underlying the NFSS reflect the U.S. Environmental Protection Agency (EPA) Class IIIB criteria for nonpotable and limited beneficial use water (EPA 1986). To be a potable water source, groundwater at the NFSS would require expensive and energy intensive treatment by reverse osmosis (desalination). Since there's a replaceable surface water source via the Niagara River/Lake Ontario and groundwater south of the site (Lockport Formation), it's reasonable to assume that no municipality or service would find NFSS groundwater economically viable.

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (Corps of Engineers) is addressing the Niagara Falls Storage Site (NFSS) as part of the Formerly Utilized Sites Remedial Action Program (FUSRAP); this effort is subject to the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan. The site is located in the Town of Lewiston, New York, north of Buffalo (Figure 1).

The Corps of Engineers Buffalo District conducts the Environmental Surveillance Program (ESP); it performs site operations, maintenance, and monitoring to ensure protection of human health and the environment. These activities are ongoing across the site, including at the interim waste containment structure (IWCS). The IWCS contains radiologically contaminated materials from cleanup actions the U.S. Department of Energy (DOE) conducted more than 20 years ago. The ESP is the focus of this report.

1.1 Brief History of the Niagara Falls Storage Site

The NFSS represents a portion of the former Lake Ontario Ordnance Works (LOOW). The LOOW was used by the Corps of Engineers Manhattan Engineer District (MED) and U.S. Atomic Energy Commission (AEC) to store radioactive residues and other materials beginning in 1944. Nearly all the radioactive residues in the IWCS originated from uranium (U) processing activities conducted for MED and AEC at two locations: the Linde Air Products facility in Tonawanda, New York, and the Mallinckrodt Chemical Works refinery in St. Louis, Missouri. Other residues were generated from past processing activities at the Middlesex Sampling Plant in New Jersey.

The first materials sent to NFSS for storage were low-grade radioactive residues from processing pitchblende ore at the Linde Air Products facility. These residues came about as a result of processing ores with different uranium (U_3O_8) contents; they are categorized as follows:

- R-10 residues: from processing ore with 3.5 percent U_3O_8
- L-30 residues: from processing ore with 10 percent U_3O_8
- L-50 residues: from processing ore with 7 percent U_3O_8
- F-32 residues: from processing ore (unknown percent U_3O_8)

Beginning in 1949, highly radioactive residues from uranium processing at the Mallinckrodt Chemical Works—referred to as the K-65 residues—were shipped to NFSS in 208-liter (L) (55-gallon [gal]) drums for storage. The residues were generated from uranium ore containing 35 to 65 percent U_3O_8 . Between 1950 and 1952, the K-65 residues were transferred from the 208-L (55-gal) drums to a large concrete tower on site, referred to as Building 434. The residues remained there until the DOE transferred them to the IWCS in the 1980s.



Figure 1: Location of Niagara Falls Storage Site

The K-65 residues represent the main hazard in the IWCS. Uncontained, the high levels of radium-226 (Ra-226) in these residues would emit substantial external gamma radiation and release radon-222 (Rn-222) gas to air. Without controls, the doses from external gamma irradiation and inhalation of Rn-222 progeny could harm anyone nearby.

In addition to these residues, radioactive wastes from a number of other federal government programs were sent to NFSS decades ago for storage or disposal. These included radioactive wastes from the Knolls Atomic Power Laboratory (KAPL) and the University of Rochester. The KAPL processing wastes contained some residual plutonium and fission product radioactivity (cesium-137 and strontium-90). These materials were transferred to the Oak Ridge Burial Grounds during the late 1950s; most of the buildings where they were stored were later destroyed (EA 1998).

Based on an investigation of the former storage sites, the DOE concluded that all suspect areas had been remediated for unrestricted use, and that “although minor KAPL residuals remain, particularly cesium-137, they are less than a risk-based screening benchmark. Therefore, they do not pose an unacceptable risk and do not require further remediation” (DOE 2012).

From 1981 to 1991, the DOE performed a number of cleanup activities at the site and nearby areas known as vicinity properties. The DOE placed the radioactive materials generated by these activities in an engineered structure on the west side of the NFSS property, the IWCS (Figure 2).

Within the IWCS, the DOE placed the more highly contaminated residues (K-65, L-30, L-50, and F-32) in existing concrete structures that had been part of the freshwater treatment plant for the LOOW during the 1940s. It placed L-50 residues in Buildings 413 and 414, cylindrical structures made of reinforced concrete. They had been used as clarifier tanks at the treatment plant. The DOE placed the remaining residues in several bays of Building 411, which was also made of reinforced concrete. It had originally been designed to securely hold liquids.

The DOE placed contaminated soil and debris from its cleanup of the site and vicinity properties together with the R-10 residues within the IWCS and then compacted them to increase stability. Soils contaminated by the K-65 residues during interim storage, referred to as tower soils, were placed in the north end of Building 411. The DOE addressed the R-10 residues in the same manner as contaminated soil due to their similar radionuclide concentrations. It put additional contaminated soil and debris in the remaining areas of the IWCS so as to ensure the stability of the structure.

The IWCS was constructed by installing a clay dike and cutoff wall around the areas containing all the consolidated wastes. The wall was tied into the underlying clay formation. A multi-layered cap was placed over the contents after the cleanup actions were completed. These DOE actions are described in further detail in the Remedial Investigation Report (U.S. Army Corps of Engineers [USACE] 2007) and the references cited therein.

In September 1986, the DOE issued a Record of Decision under the National Environmental Policy Act to store the consolidated residues and other contaminated materials in the IWCS. The Record of Decision identified the IWCS as an acceptable long-term management solution for the residues once the existing interim cap was replaced with a long-term, multi-layered, engineered cap. The design service life of the clay dike and cutoff walls surrounding the IWCS and the natural glaciolacustrine clay beneath the IWCS is 200 to 1,000 years (Bechtel National, Inc. [BNI] 1986); the design service life of the interim IWCS cap is 25 to 50 years (BNI 1986).

In October 1997, Congress transferred overall responsibility for implementing FUSRAP from DOE to the Corps of Engineers and directed that FUSRAP remediation be done according to CERCLA. With this transfer, the Corps of Engineers assumed responsibility for the remedial action process at NFSS.

Since that time, the Corps of Engineers completed a number of studies of the NFSS, including the *Remedial Investigation Report for the Niagara Falls Storage Site* (USACE 2007), *NFSS Remedial Investigation Report Addendum* (USACE 2011), *Feasibility Study Report for the IWCS at the NFSS* (USACE 2015b), and the *Proposed Plan IWCS Operable Unit* (USACE 2015c).

1.2 Overview of Environmental Surveillance Program

The DOE initiated the ESP at the NFSS in 1979 before the construction of the IWCS, monitoring air, water, and external gamma radiation (and later streambed sediments) to ensure human health and environmental protection from radioactive residues and wastes later buried in the IWCS. In 1997, when responsibility for FUSRAP transferred to the Corps of Engineers, the Corps of Engineers Buffalo District continued to follow the DOE ESP, with some revisions over the years. The Corps of Engineers reports its findings annually in the form of this technical memorandum, which is posted to the NFSS website at <http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/NiagaraFallsStorageSite.aspx>.

The surveillance program is designed to achieve the following objectives:

- Ensure protection of human health and the environment
- Verify compliance with environmental regulatory standards
- Verify the IWCS is performing as designed

To meet these objectives, the Corps of Engineers monitors environmental media and regularly reassesses the adequacy of the program. If warranted, the Corps of Engineers makes necessary adjustments to the program. It has made several modifications to the surveillance program over time. These changes are identified on Table 1. Tables 2 and 3 show the ESP sampling schedule for groundwater and surface water/sediment, respectively, implemented in 2013. Sample locations and analytical parameters and methods are detailed in Section 2.0.

In addition to collecting and analyzing environmental samples, the ESP calculates the dose to off-site receptors from airborne emissions of site soils. To do this, the Corps of Engineers uses annual weather data collected at the Niagara Falls International Airport by the National Weather Service. The dose to off-site receptors based on gamma radiation measurements is also calculated and added to the airborne emissions dose to determine the cumulative dose to the public from the NFSS.

1.3 Regional Hydrogeology

1.3.1 Groundwater

Within 50 feet of the ground surface, the NFSS and surrounding vicinity are underlain by two water-bearing zones; these are separated by an aquitard, or confining unit. The two water-bearing zones, the upper water-bearing zone and the lower water-bearing zone, are detailed below.

The upper water-bearing zone is present in the surficial Brown Clay Unit. This is situated above the Gray Clay Unit (Figure 3). The Brown Clay Unit consists of a clayey silt and silty clay groundmass. It has occasional sand and gravel lenses. Coarse-grained deposits appear in places along the undulating contact between the Brown Clay Unit and the Gray Clay Unit.

The Corps of Engineers conducted a geostatistical analysis of these coarse-grained lenses to assess their continuity or whether they act as preferential migration pathways for contamination. Lithologic information from boring logs was spatially analyzed using semivariogram calculations and models.

The results suggest the sand lenses in the upper water-bearing zone are intermittent and vertically and horizontally discontinuous, vary considerably in thickness, color, texture, extent, and saturation, and are not horizontally continuous over distances greater than 4.57 to 6.1 meters (15 to 20 feet) and vertical distances of 1.22 to 1.83 meters (4 to 6 feet). As a result, the occurrence of groundwater varies across the site (i.e., proximate wells may have noticeably different water levels depending on the presence or absence of sand lenses). Regional groundwater flow in the upper water-bearing zone is to the northwest towards Lake Ontario.

Underlying the Brown Clay Unit is the Gray Clay Unit, which consists of glacio-lacustrine clay and acts as an aquitard that separates the upper water-bearing zone from the lower water-bearing zone and minimizes transport between the two zones (Figure 3). For purposes of classification, wells that terminate in the Gray Clay Unit are considered representative of the upper water-bearing zone.

The lower water-bearing zone consists of unconsolidated glacial sediments (Alluvial Sand and Gravel that overlie the upper, fractured portion of the Queenston Formation (Figure 3). It extends from the bottom of the Gray Clay Unit to the bottom of the weathered zone of the Queenston Formation. A regional groundwater divide (the Lockport Escarpment) is approximately two miles south of the NFSS. Regional groundwater flow north of the divide is toward the northwest, whereas groundwater flow south of the divide is toward the southwest.

The entire zone varies from 3.05 to 11.73 meters (10 feet to 38.5 feet) in thickness; it consists of the stratified sands and gravels of the Alluvial Sand and Gravel Unit, the dense silt and sands of the Red Silt Unit, and the weathered and fractured upper portions of the Queenston Formation in the upper 3.05 meters (10 feet) of the bedrock. The lower water-bearing zone has higher permeability and more lateral continuity than the upper water-bearing zone. The lower water-bearing zone generally shows a westerly to northwesterly flow.

1.3.2 Surface Water Drainage

Before site development, surface drainage from the NFSS entered Four Mile, Six Mile, and Twelve Mile Creeks. All of these flow northward to Lake Ontario. During the 1940s, drainage modifications routed surface water to a series of linear ditches that eventually coalesce into the Central Drainage Ditch north of the site.

The Central Drainage Ditch enters into Four Mile Creek approximately 3 miles northwest of the NFSS. The vegetation that grows in the on-site ditches during the summer months deters the ditches via evapotranspiration between rainfall events.

Groundwater elevations in wells near the ditches are notably lower throughout the summer and early fall; this is due to higher localized evapotranspiration. In other words, wetland vegetation in and along the ditches creates a significant moisture deficit in the surrounding soils. Low baseflow conditions in the site ditches between rainfall events also indicate that groundwater in the clayey soils doesn't significantly discharge into the ditches (i.e., surface drainage is the main contributor to flow).

2.0 SAMPLE COLLECTION AND ANALYSIS

2.1 Sampling Locations and Rationale

The purpose of the ESP is to ensure the protection of human health and the environment by monitoring the IWCS and other site media for release of hazardous constituents.

To monitor the integrity of the IWCS, the Corps of Engineers collects:

- Annual radon-222 flux data via 180 radon flux canisters placed on the IWCS protective cap at discrete grid intersections and at three off-site (background) locations, as shown on Figure 4.
- Semiannual groundwater samples from 45 monitoring wells, 14 wells screened in the lower water-bearing zone and 31 wells screened in the upper water-bearing zone, near the IWCS (two wells are sampled on a quarterly basis), as shown on Figure 5.
- Semiannual radon and external gamma radiation samples by placing Radtrak® detectors and optically stimulated luminescence dosimeters (OSLDs), respectively, at seven locations around the perimeter of the IWCS, as shown on Figure 6.

In addition, the Corps of Engineers collects:

- Semiannual groundwater samples from 11 monitoring wells, one well screened in the lower water-bearing zone and ten wells screened in the upper water-bearing zone, as shown on Figure 5 (note that well MW922 is sampled only if well MW921 is dry).
- Semiannual radon and external gamma radiation samples by placing Radtrak® detectors and OSLDs, respectively, at 16 locations within and around the perimeter of the site and at three off-site (background) locations, as shown on Figure 6.
- Semiannual surface water and sediment sampling from a total of nine locations shown on Figure 7 along the West Drainage Ditch, Central Drainage Ditch, and east (upstream) of the Central Drainage Ditch (one location is sampled on a quarterly basis).
 - SWSD009, SWSD021, and SWSD023 were selected as “upstream” locations because they are located at the site boundary where surface water flows on to NFSS from off site.
 - SWSD010, SWSD011, SWSD022, and SWSD025 are situated along the Central Drainage Ditch.
 - WDD2 and WDD3 are located along the West Drainage Ditch.
- Quarterly water level measurements in over 100 monitoring wells throughout the site to monitor the groundwater flow directions in the upper and lower water-bearing zones.

2.2 Sampling Parameters and Laboratory Analytical Methods

Environmental surveillance monitoring of air, water, and sediment includes the following analytes:

- The IWCS cap and off-site locations are monitored for radon-222 flux.
- The perimeter of the IWCS and the NFSS and off-site locations are monitored for radon concentrations and gamma emissions.
- Sediment is monitored for total uranium, radium-226, metals, and polycyclic aromatic hydrocarbons (PAHs).
- Surface water is monitored for total uranium, radium-226, metals, and PAHs; field measurements are recorded for dissolved oxygen, turbidity, pH, temperature, specific conductivity, and oxidation-reduction potential.
- Groundwater is monitored for total uranium, radium-226, volatile organic compounds (VOCs)

(limited to five wells), anions, and water quality parameters; field measurements are recorded for dissolved oxygen, turbidity, pH, temperature, specific conductivity, and oxidation-reduction potential.

The Corps of Engineers uses standard analytical methods approved and published by EPA and the American Society for Testing and Materials (ASTM) for chemical (i.e., all nonradiological) analyses. The laboratories conducting the radiological analyses adhere to EPA, National Urban Security Technology (formerly the Environmental Measurements Laboratory) and ASTM standard methods. Radiological and chemical laboratories are accredited through the Department of Defense (DOD) Environmental Laboratory Accredited Program. That accreditation is based on conformance to the DOD Quality Systems Manual for Environmental Laboratories. The laboratory analytical methods associated with sediment, surface water, and groundwater monitoring are presented in the following table:

Parameter	Analytical Method		
	Groundwater	Surface Water	Sediment
Volatile Organic Compounds	SW 846 8260 (select wells only)	---	---
Polycyclic Aromatic Hydrocarbons	---	SW 846 8270	SW 846 8270
Metals	---	SW 846 6010/6020/7470	SW 846 6010/7470
Total Uranium	ASTM D5174.97, Trace Uranium by Pulsed Laser Phosphorimetry	ASTM D5174.97 Trace Uranium by Pulsed Laser Phosphorimetry	HASL-300m, Iso-uranium
Radium-226	EPA 903.1	EPA 903.1	EPA 901.1m
Anions •Chloride •Fluoride •Nitrate/Nitrite •Ortho-phosphate •Sulfate	EPA 300.0	EPA 300.0	---
Water Quality •Alkalinity •Total Dissolved Solids	SM-2320B SM-2540C	---	---

--- Indicates that media is not analyzed for that parameter(s)

2.3 Sample Collection Techniques

All environmental surveillance activities at the NFSS are conducted in accordance with DOD Environmental Field Sampling Handbook (DOD 2013) and the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP). The UFP-QAPP provides procedures and guidance on implementing the national consensus standard (ANSI/ASQ E-4, *Quality Systems for Environmental Data*

and Technology Programs) for the collection and use of environmental data at federal facilities.

2.3.1 Groundwater and Surface Water

The Corps of Engineers collects groundwater samples using low-flow sampling techniques in accordance with EPA's Ground Water Issue Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures (EPA/540/S-95/504). Existing polyethylene tubing is used for each well during each sampling event and is replaced when necessary. The Corps of Engineers also measures groundwater levels and uses sample collection techniques in accordance with the Corps of Engineers' Manual 1110-2-1421, *Groundwater Hydrology*.

The Corps of Engineers collects surface water samples by using a peristaltic pump. This type of pump is needed because of the shallowness of the designated ditch locations. New polyethylene tubing is carefully placed below the water line to minimize disturbance of organic materials and sediments in the ditch.

If turbidity measurements for any groundwater or surface water sample exceed 50 nephelometric turbidity units (NTUs), the Corps of Engineers field filters the sample via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold. Both the filtered and unfiltered samples are sent to the laboratory for analysis.

2.3.2 Sediment

The Corps of Engineers collects sediment using a stainless steel posthole digger. This digger works well in areas where there are excess fibrous materials and roots from phragmites. A sample consists of several grab samples (5 to 10 centimeters [2 to 4 inches] in depth) near the center of the ditch below the water line. The cores are placed in a stainless steel pan and are composited into sample containers.

2.3.3 Radon Flux

The Corps of Engineers measures radon flux at the NFSS once a year between early to late summer. An effective means of trapping radon gas is activated charcoal. Metal canisters filled with activated charcoal and filter pads are placed on the ground in the morning and collected 24 hours later.

The activated charcoal in the canister adsorbs the radon gas emanating from the surface over which the canister is placed. The charcoal holds the radon, which subsequently decays until equilibrium between radon and its short-lived daughters is established (a minimum of 3 hours). The radon flux is calculated in the laboratory through gamma spectroscopy using the area of canister exposed to the radon flux and the time that exposure took place.

2.3.4 Radon Gas

The Corps of Engineers monitors radon gas concentrations using Landauer Radtrak® detectors placed around the IWCS and the NFSS. The Radtrak® detectors are placed on the fence at breathing height (1.7 meters [5.6 feet] above the ground) and replaced every six months.

The Radtrak® detector consists of a small piece of special plastic or film inside a small container. The film is a radiosensitive element that records alpha particle emissions (alpha tracks) from the natural radioactive decay of radon. Air diffuses through a filter covering a hole in the container; alpha particles from radon and its decay products strike the detector, causing alpha tracks on the film inside. At the end of the test, the container is sealed and returned to a laboratory for reading, i.e., the alpha tracks are

counted using computer-assisted image analysis equipment. The number of alpha tracks along with the deployment time period provides the basis for calculating the average radon concentration.

2.3.5 Gamma Emissions

External gamma radiation is monitored at the NFSS by Landauer optically stimulated luminescent detectors (OSLDs) placed around the IWCS and the NFSS at the same locations as the Radtrak® detectors, at breathing height (1.7 meters [5.6 feet] above the ground). Two OSLDs are placed at each location for quality control. The OSLDs are also replaced every six months.

Optically-stimulated luminescence technology is the newest advancement in passive radiation protection dosimetry; it improves on the best features of traditional film and thermo-luminescent dosimeter (TLD) technologies. The specific OSLDs used at NFSS consist of specially formulated aluminum oxide crystalline detector material; this is configured into a thin strip sandwiched within a multi-element filter pack. The filter pack is heat sealed with a laminated, light-tight paper wrapper, creating an integrated, self-contained packet that is radio-frequency sealed inside a tamper-proof plastic blister pack to eliminate possible mishandling, light leaking, or lost detection elements.

Radiation exposure is measured at the laboratory by stimulating the aluminum oxide crystalline detector material with selected frequencies of laser light; this causes it to luminesce in proportion to the amount of radiation exposure.

3.0 REGULATORY GUIDELINES

The criteria in federal statutes and federal and state regulations and guidelines relevant to activities at NFSS are compared to ESP analytical data. However, the standards and criteria provided herein are for comparative purposes only; applicable or relevant and appropriate requirements and media-specific cleanup goals will be evaluated independently and presented in future CERCLA decision documents that will be available for public comment. Details are provided in the following sections.

3.1 Dose to the Public

The annual public dose limit from sources of radiation (excluding radon) is 100 millirem (mrem) above background. This standard is used by the U.S. Army, the DOE, and the Nuclear Regulatory Commission (NRC). This limit is stated in Army Pamphlet 385-24 entitled “The Army Radiation Safety Program,” DOE Order 458.1 entitled “Radiation Protection of the Public and the Environment” (DOE 2011), and NRC 10 CFR Part 20 entitled “Standards for Protection Against Radiation.”

Doses from sampled media and external gamma can be combined and compared to the public annual dose limit of 100 mrem. For purposes of this document, the maximum off-site dose to a receptor is calculated from the total of the external gamma dose and the internal dose from airborne materials.

3.2 Radioactive Constituents in Air

3.2.1 U.S. Department of Energy Order 458.1

The DOE limits for radon concentrations in air from operations at DOE-owned and -operated facilities are presented in DOE Order 458.1. Based on the radioactive constituents in the wastes contained in the IWCS, it's unlikely that radon-220 would be emitted from the IWCS. This is because the radon-220 half-life is approximately 55.6 seconds; this isotope would decay before it permeated the IWCS cap. It is possible, however, that radon-222 with a half-life of 3.8 days could be emitted. The DOE limit for an annual average radon-222 concentration at the site boundary, not including background, is 3.0 picocuries/liter (pCi/L). To provide a conservative basis for comparison, on-site radon concentrations are evaluated against the site boundary limit of 3.0 pCi/L.

3.2.2 U.S. Environmental Protection Agency Clean Air Act

The EPA guidance action level for radon concentrations in indoor air (homes and buildings) is 4.0 pCi/L. Although this limit is specific to indoor air, it is a conservative basis for comparing the outdoor air results of the environmental surveillance. To compare further, the average radon level in U.S. homes is about 1.25 pCi/L, and the average outdoor value is 0.4 pCi/L (National Council on Radiation Protection and Measurements [NCRP] 2009).

Section 112 of the Clean Air Act authorized the EPA to promulgate the National Emission Standards for Hazardous Air Pollutants (NESHAPs), which are provided in 40 Code of Federal Regulations (CFR) Part 61. The 40 CFR Part 61, Subparts H and Q, apply to the NFSS; they are summarized below:

- 40 CFR 61.92, Subpart H, National Emission Standards for Emissions of Radionuclides Other Than Radon from DOE Facilities: emissions of radionuclides to the ambient air from DOE facilities shall not exceed amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem.
- 40 CFR 61.192, Subpart Q, National Emission Standards for Radon Emissions from DOE Facilities: no source at a DOE facility shall emit into the air more than 20 picocuries per square

meter per second ($\text{pCi}/(\text{meter}^2\text{-sec})$) ($1.9 \text{ pCi}/(\text{feet}^2\text{-sec})$) of radon-222 as an average for the entire source.

At the NFSS, the Corps of Engineers complies with 40 CFR 61.92, Subpart H, by running the EPA-approved CAP88-PC air dispersion model with site-specific input values, such as average radionuclide concentrations in soil and average annual wind speed data. Compliance with 40 CFR 61.192, Subpart Q, is verified by annual monitoring of the IWCS cap for radon-222 flux.

3.3 Radioactive and Chemical Constituents in Groundwater

3.3.1 General Groundwater Quality

Shallow groundwater resources at the NFSS demonstrate uniformly poor groundwater quality and availability in the region. Regional studies and studies conducted near the site (La Sala, 1968, Wehran 1977, and Acres American 1981) conclude that local groundwater quality is poor because of high mineralization. Additionally, local studies indicate that the low permeability of the upper water-bearing zone doesn't provide sustainable production quantities to standard wells for water supply use (Wehran 1977 and Acres American, 1981). On-site permeability testing at the NFSS confirms the low permeability.

In 1988, the DOE conducted a well survey; it found eight wells within three miles (4.8 km) of the site. They are used mainly for irrigation; none are drinking water wells (DOE 1994).

In 2007, the Niagara County Department of Health (DOH) updated its well inventory to include nine potable wells (two were a sole source for drinking water), eight nonpotable wells, 20 abandoned wells, and 77 idle wells within the survey area. Based on the DOE report and the recent Niagara County DOH inventory, groundwater isn't the main source of drinking water; however, the New York State Department of Environmental Conservation (NYSDEC) Class GA groundwater standards are conservatively used to compare to ESP groundwater analytical results. Groundwater at the NFSS and surrounding area, in both the upper and lower water-bearing zones, consistently (and naturally) exceeds sodium and sulfate Class GA standards; it exhibits over 1,000 milligrams/Liter (mg/L) total dissolved solids and commonly over 250 mg/L of chloride. By definition, these levels indicate that the natural condition of groundwater in the NFSS area is saline and qualifies for the GSA groundwater classification (Title 6 New York Codes, Rules and Regulations (6 NYCRR) Part 701.16).

3.3.2 Federal Safe Drinking Water Act for Chemicals and Radionuclides

The Safe Drinking Water Act (SDWA) is the primary federal law that applies to operating a public water system and developing drinking water quality standards [*EPA Drinking Water Regulations and Health Advisories* (EPA 1996)]. The regulations in 40 CFR Part 141 (National Primary Drinking Water Regulations) set maximum permissible levels, known as maximum contaminant levels (MCLs), for organic, inorganic, radionuclide (including uranium and combined radium), and microbial contaminants in drinking water.

The established (promulgated) MCL for combined concentrations of radium-226 and radium-228 is 5 pCi/L . The MCL for total uranium is 30 micrograms per liter ($\mu\text{g/L}$).

3.3.3 New York State Department of Environmental Conservation Groundwater Criteria for Chemicals and Radionuclides

Aside from adopting the federal SDWA standards, the NYSDEC has promulgated its own standards; they are presented in 6 NYCRR Parts 700–705, "Water Quality Regulations for Surface and Groundwater" (NYSDEC 1996). The New York State (NYS) limit for radium-226 in groundwater is 3 pCi/L.

Also, the New York State DOH, per 10 NYCRR Part 5, Subpart 5-1, established an MCL of 30 µg/L for uranium in drinking water that applies to community water systems but doesn't apply to groundwater at the site. Since this limit is identical to the federal criteria, the analytical results discussed in Section 4.0 only reference NYS criteria.

3.4 Radioactive and Chemical Constituents in Sediment

Results of the ESP sediment analyses are compared to federal and state guidelines and standards and site-specific background screening levels. Details are provided in the following sections.

3.4.1 Nuclear Regulatory Commission Dose-Based Screening Levels for Radionuclides

Sediment analytical results for uranium-234, uranium-235, and uranium-238 are compared to surface soil screening levels (or dose-based screening levels) presented in NRC document NUREG-1757 (NRC 2006). This document provides guidance on compliance with radiological criteria for NRC license termination in accordance with 10 CFR 20, Subpart E. Based on these surface soil screening values, the radiological dose to a member of the public using the site for any purpose, including farming, is limited to 25 mrem/year. The use of these dose-based screening levels is more than protective to human health because actual exposures to sediment would be much lower than the conservative and chronic exposure assumed in developing these screening values. These screening values do not include background concentrations.

Sediment analytical results for radium-226 are compared to 5 pCi/g above background. The 5 pCi/g above background value is presented in 10 Code of Federal Regulations (CFR) Part 40, Appendix A, Criterion 6(6), which stipulates that:

“The design requirements in this criterion for longevity and control of radon releases apply to any portion of a licensed and/or disposal site unless such portion contains a concentration of radium in land, averaged over areas of 100 square meters (100 meters squared is equivalent to 1,076 feet squared), which, as a result of byproduct material, does not exceed the background level by more than: (i) 5 picocuries per gram (pCi/g) of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over the first 15 centimeters (cm) below the surface...”

3.4.2 New York State Department of Environmental Conservation Unrestricted Use Recommended Soil Clean-up Objectives for Chemicals

New York State regulatory criteria found in 6 NYCRR Part 375, Unrestricted Use Soil Cleanup Objectives (SCOs), are compared to sediment analytical data for PAHs. When appropriate, Restricted Use (Residential or Industrial) SCOS are also cited for comparison to results. Unrestricted Use SCOs from 6NYCRR 375 for certain PAH constituents are based on a survey of soil background concentrations performed in New York State. It should be noted that sediment background concentrations would differ from soil background in many instances.

3.4.3 U.S. Environmental Protection Agency Regional Screening Levels and Niagara Falls Storage Site Background Criteria for Metals

For some of the more common metals, such as aluminum, calcium, and sodium, among others, there are no NYSDEC SCOs. Therefore, the analytical data for these metals are compared to EPA Regional Screening Levels (RSLs) for soil (June 2016) (residential receptor). In the event that an NFSS background screening level found in Table 13-1 of the *NFSS Remedial Investigation Report Addendum* (USACE 2011) is greater than its corresponding RSL, the background screening level is selected for comparison. As noted in Section 3.4.2, sediment background concentrations presented in the *NFSS Remedial Investigation Report* (USACE 2007) would differ from soil background in many instances.

3.5 Radioactive and Chemical Constituents in Surface Water

The results from surface water samples collected from site drainage ditches are compared to NYSDEC standards presented in 6 NYCRR Part 703, Surface Water and Groundwater Quality Standards for Class B water aquatic life. The NYSDEC Class B water classification is conservatively used because the on-site Central Drainage and West Drainage Ditches discharge into Four Mile Creek, which New York State classifies as a Class B or C water source, depending on its location. If a standard for Class B water isn't available in 6 NYCRR Part 703 for a specific parameter, the corresponding standard for groundwater or Class A water is used, as appropriate.

The NYSDEC standard (both groundwater and Class A drinking water) for radium-226 is 3 pCi/L. The NYSDOH drinking water standard for uranium is 30 µg/L.

Surface water collected in the drainage ditches at the site isn't a source of drinking water, so the ESP analytical results are conservatively compared to the NYS standards for radionuclides; they apply to public water systems that provide drinking water to communities and to standards for Class A surface water, which is also considered a source of drinking water.

4.0 ANALYTICAL DATA AND INTERPRETATION OF RESULTS

This section presents the 2016 ESP analytical results for groundwater, surface water, sediment, airborne particulate, radon, and gamma radiation. It's important to note that results for radioactive constituents may be expressed as negative numbers. Negative numbers can occur when the average background activity of the laboratory counting instrument exceeds the measured sample activity; background activity is subtracted from the measured sample activity to calculate the result. Also, when results fall below the laboratory's minimum detectable activity (MDA), they are interpreted as having unknown values between zero and the MDA; these are referred to herein as nondetects.

4.1 Air

To establish the annual dose to the public from radiological sources in air, the Corps of Engineers determines doses at specific off-site receptors by combining (1) the calculated external gamma radiation doses based on gamma radiation dose measurements taken at the NFSS perimeter and (2) modeled doses from airborne particulate releases using soil data from the Remedial Investigation and later field investigations and annual average wind speed.

4.1.1 External Gamma Radiation

OSLDs measure gamma radiation doses at the NFSS but these measurements also include natural sources of background radiation, such as cosmic radiation and terrestrial radiation.¹ To measure background gamma radiation near the NFSS, OSLDs are placed at several background locations including Lewiston Porter High School, Balmer Road, and the Lewiston Water Pollution Control Center. At the NFSS, the OSLDs are placed along the property boundary and perimeter of the IWCS (Figure 6). Two OSLDs are placed at each monitoring location as a quality control check and to provide data if an OSLD is lost or a result is rejected. The OSLDs are replaced semi-annually. During the second half of 2016, one badge from location 11 and another from location 18 were damaged during analysis.

Following receipt of the laboratory analytical data, the Corps of Engineers calculates a time-weighted or normalized annual dose that accounts for exposure periods having different integration times (a different number of measurement days). Negative net values, when they occur, are retained for calculation purposes. The 2016 results, including both raw data and net data corrected for background, are presented in Table 4. The net dose rate at each OSLD location is used to calculate the annual gamma radiation dose at each of the four property boundary or perimeter fences. The table below shows the OSLD locations for each perimeter fence, as well as the calculated average annual net dose at each location.

Direction	OSLD Locations	Calculated Average Net Dose Rate (mrem/year) ^a
Eastern Perimeter ^b	45, 50, 55, 60	2.26
Western Perimeter ^c	8, 10, 11, 13, 15, 29, 36	2.53
Northern Perimeter	1, 11, 12, 60, 65, 122	0.49
Southern Perimeter	7, 28, 29, 45	4.43

^aNet dose rates (corrected for background) for each perimeter are summed and divided by the total number of observations (e.g., 14 for the western perimeter).

^bPerimeter closest to worker receptor

^cPerimeter closest to residential receptor

¹ In the United States, the annual average per capita cosmic and terrestrial radiation doses are 34 millirem per year and 22 millirem per year, respectively (NCRP Report 160)

As indicated in the table above, the calculated average net dose rates at the NFSS perimeter fences range from 0.49 to 4.43 mrem/year, which are well below the allowable public dose limit of 100 mrem/year above background (see Section 3.1). Since the average net dose rates at the perimeter fences are nominal, the hypothetical dose to the nearest worker and residential receptors would be even less when exposure time and distance are considered. For example, the dose received by a hypothetical industrial worker standing at the eastern perimeter fence over the period of one year is 0.52 mrem/year. Calculation details are as follows:

- The worker stands at the fence for 2,000 hours (8 hours per day, 5 days a week, 50 weeks per year); note that distance is ignored here because the worker would not be at the fence all the time
- 2,000 hours out of a possible 8,760 hours in a year (24 hours in a day, 365 days in a year) represents a fraction of 0.23 (2,000/8,760 hours)
- An industrial worker standing at the eastern perimeter fence where the calculated net dose is 2.26 mrem/year receives a dose of 0.52 mrem/year (2.26 mrem/year multiplied by 0.23)

Trend graphs depicting external gamma dose rates at the NFSS and IWCS perimeters from 1998 thru 2016 are presented on Figures 8 and 9, respectively.

4.1.2 Airborne Particulate Dose

To determine the dose from airborne particulates potentially released from NFSS during 2016, the Corps of Engineers calculates airborne particulate release rates using site soil data (from the Remedial Investigation initiated in 1999 through field investigations conducted in 2014) and weather data collected at the Niagara Falls International Airport in 2016.

Contributions from radon gas, which isn't a particulate, aren't considered in this calculation. The total airborne particulate release rate is input into the EPA's CAP88-PC (Version 4.0) computer model to calculate:

- Doses from airborne particulates to individuals of several population age groups in the nearest residence, school, farm, and commercial/industrial facility, as measured from a central location on site; doses are then corrected for occupancy at an assumed rate, and the individual receiving the higher of these calculated doses is identified as the maximally exposed off-site individual (MEI) for airborne particulate dose
- Airborne particulate collective dose to the population within 50 miles (80 km) of the site using population data for the United States and Canada from Landscan 2013 Global Population Data from Oak Ridge National Laboratory (Figure 10)

The first calculation indicates that the annual airborne particulate dose to the MEI, a resident, 914 meters (2,999 feet) south-southwest of the site, in 2016, was 0.000088 mrem. Consistent with results from previous years, this value is well below the 10 mrem per year standard, individual dose, specified in 40 CFR, Part 61.92, Subpart H.

The second calculation indicates that the annual airborne particulate collective dose to the population within 80 km (50 miles) of the site in 2016 was 0.00184 person-rem. This compares to an annual background dose to the same population of 5,425,000 person-rem. Details of the calculations, including methodology, are presented in the Corps of Engineers' "FUSRAP CY2016 NESHAP Annual Report for Niagara Falls Storage Site (NFSS), Lewiston, New York" (USACE 2017).

4.1.3 Calculated Cumulative Dose

As a conservative measure, the cumulative dose to the MEI, which is calculated by adding the maximum airborne particulate dose to the maximum external gamma dose, is compared to the 100 mrem per year dose limit (excluding radon). The maximum external dose is conservatively estimated to be the dose at the western perimeter fence (i.e., a resident is assumed to stand at the fence 24 hours a day for 365 days). Based on 2016 data, the cumulative annual dose is 2.53 mrem (0.000088 mrem + 2.53 mrem), which is significantly less than the DOE limit of 100 mrem per year² (excluding radon) and the U.S. average per capita background dose of approximately 620 mrem per year (NCRP 2009).

4.1.4 Radon Gas

Radon monitoring at NFSS is performed at a height that represents the human breathing zone (1.7 meters or 5.6 feet above ground level). Radon concentration diminishes significantly as distance from the ground increases and mixing with ambient air takes place.

Based on the radioactive constituents in the wastes contained in the IWCS, it's unlikely that the IWCS would emit radon-220; however, it's possible that it would emit radon-222. The Corps of Engineers uses Radtrak® detectors to conduct air surveillance to determine the concentration of radon gas at NFSS. These Radtrak® detectors measure alpha particle emissions from both isotopes of radon (radon-220 and radon-222) and collect passive, integrated data throughout the period of exposure. Because radon-220 isn't a contaminant of concern at NFSS (due to the relatively low concentrations of radium-228 and the short half-life of radon-220), all concentrations are conservatively assumed to be radon-222. Results of semiannual monitoring for 2016 are presented in Table 5. The corresponding surveillance locations are shown on Figure 6.

Consistent with results from previous years, all site radon-222 results from the 2016 ESP were well below the DOE off-site limit of 3.0 pCi/L above background. Results presented are without background subtracted and ranged from nondetect (less than 0.2 pCi/L) to 0.5 pCi/L. The results from the background locations were all nondetect (less than 0.2 pCi/L). Including nondetects, the site average is 0.2 pCi/L and the background average is 0.4 pCi/L (due to higher laboratory detection limits), which are less than and equal to, respectively, the average outdoor value of 0.4 pCi/L (EPA 1993).

4.1.5 Radon-222 Flux

Measurement of radon-222 flux provides an indication of the rate of radon-222 emission from a surface. Radon-222 flux is measured with activated charcoal canisters placed on a grid spaced 15 meters (49.2 feet) on center across the surface of the IWCS for a 24-hour exposure period. Sample locations are shown on Figure 4.

Measured results in 2016 for radon flux, presented on Table 6, ranged from nondetect to 0.1734 pCi/m²/s, with an average result (of detects and nondetects) of 0.0537 pCi/m²/s. Average background flux rate was 0.0425 pCi/m²/s. As in previous years, these results are well below the 20 pCi/m²/s standard specified in 40 CFR Part 61, Subpart Q, comparable to background, and demonstrate the effectiveness of the IWCS containment to mitigate the release of radon-222.

² The U.S. per capita dose from background radiation has been increased to 620 mrem/person due mainly to increased use of nuclear medical imaging.

4.2 Surface Water

In 2016, all surface water samples were collected semiannually (2nd and 4th quarters) from nine designated locations. Location SWSD025 also is sampled during 1st and 3rd quarters and during significant rain events (by an automatic sampler). Sample locations are presented in Figure 7.

A summary of the surface water sample collection effort is as follows:

- 2nd quarter samples were collected on April 6 and April 7, 2016
- 4th quarter samples were collected on October 3, 2016
- 1st and 3rd quarter samples were also collected from SWSD025 on February 10 and August 18, 2016, respectively; nine additional sampling events occurred at SWSD025 between February and November 2016 during significant rain events
- Analytical parameters included radium-226, total uranium, PAHs, and metals (samples collected during significant rain events were analyzed for radium-226 and total uranium only)

All surface water samples are measured for turbidity prior to submission to the laboratory for analysis. If turbidity measurements are greater than 50 NTUs, the sample is field filtered, and both the filtered and unfiltered samples are submitted to the laboratory for analysis (applies to radionuclides and metals only). Otherwise, only an unfiltered sample is collected and analyzed.

Details of the findings are presented in the following sections.

4.2.1 Surface Water Field Measurements

Before sampling, the Corps of Engineers measures field parameters at each surface water sampling location using a calibrated water quality meter. Field parameters include temperature, pH, specific conductance, oxidation-reduction potential, turbidity, and dissolved oxygen. The results are summarized on Table 7.

4.2.2 Surface Water Radiological Findings

In general, the 2016 analytical results for radionuclides in surface water, which are presented on Table 8, were:

- Below NYS Class B surface water criteria (or if not available, Class A or drinking water criteria)
- Comparable to past results

Details are presented in the following sections.

Radium-226

Radium-226 was not detected in 32 of 36 surface water samples collected in 2016, which included seven filtered and two field duplicate samples. Among the 4 detections, the concentrations were well below the state drinking water limit of 3 pCi/L, with concentrations ranging from 0.319 pCi/L to 1.12 pCi/L, collected at SWSD021 and SWSD023, respectively.

Total Uranium

Uranium was detected in all 37 surface water samples collected in 2016, which included seven filtered

and two field duplicate samples. Concentrations ranged from 0.303 µg/L at WDD3 to 16.9 µg/L at SWSD025. No samples exhibited concentrations greater than the state drinking water limit of 30 µg/L.

4.2.3 Surface Water Chemical Findings

The 2016 analytical results for chemicals in surface water are presented on Tables 9 and 10 and are summarized below.

PAHs

No PAHs were detected in the surface water samples collected in 2016.

Metals

Several metals, including aluminum, antimony, iron, magnesium, manganese, selenium, and sodium, exceeded NYSDEC surface water criteria; however, the data was comparable to past results.

4.3 Sediment

In accordance with the 2016 analytical schedule, the Corps of Engineers collected sediment samples from eight locations in the 2nd and 4th quarters (i.e., semiannually) and one location (SWSD025) in all four quarters (i.e., quarterly). Sampling locations are presented on Figure 7.

A summary of the sediment sample collection effort for 2016 is as follows:

- 2nd quarter samples were collected on April 6 and 7, 2016
- 4th quarter samples were collected on October 3 and 4, 2016
- Location SWSD025 was also sampled on February 10 and August 18, 2016 (1st and 3rd quarters)
- Analytical parameters include radionuclides (radium-226, uranium-234, uranium-235, and uranium-238), metals, and PAHs

Details of the findings are presented in the following sections.

4.3.1 Sediment Radiological Findings

The 2016 analytical results for radionuclides in sediment are presented on Table 11. In general, the results were:

- Below criteria
- Comparable to past results

Radium-226

The 2016 analytical results for the 22 sediment samples (including two field duplicate samples) analyzed for radium-226 were below 5 pCi/g. They exhibited activity levels ranging from 1.00 pCi/g (SWSD023) to 2.39 pCi/g (SWSD022). These results are fairly consistent with historical data, as shown on the graph on Figure 11, which presents radium-226 concentrations in sediment between 1997 and 2016.

Uranium

The 2016 analytical results for uranium isotopes, uranium-234, uranium-235 and uranium-238, in

sediment showed detections in the majority of samples collected. Among the detections, the isotopic activity levels ranged from 0.09 pCi/g to 3.20 pCi/g. All of the isotopic uranium data are well below their respective criteria and most are consistent with historical data. A graphical representation of the analytical data is shown on Figure 12.

4.3.2 Sediment Chemical Findings

The 2016 analytical results for chemicals in sediment are presented on Tables 12 and 13 and are summarized below.

Metals

Several metals, including copper, lead, manganese, mercury, nickel, and zinc, were detected in sediment at concentrations that exceed their respective NYS Unrestricted Use SCOs; however, all but manganese were below their respective NYS Residential Restricted Use SCOs. In addition, calcium, total chromium, magnesium, potassium, sodium, and thallium exceeded the greater value between the EPA RSL or NFSS Remedial Investigation background screening level. These values are used for comparison in the absence of NYS SCOs. The analytical data are shown on Table 12.

PAHs

Several PAHs were detected in the sediment samples collected in 2016; the highest concentrations were found at sampling point SWSD023, along the southern property boundary near a parking area owned by Modern Landfill, Inc. The analytical results for most of the detected PAHs are below their respective NYS Unrestricted Use SCOs, except for those in samples collected at SWSD023 and one PAH in samples collected at SWSD009 and SWSD022 in October 2016. The analytical findings for PAHs in sediment are shown on Table 13.

4.4 Groundwater

There are 55 monitoring wells in the groundwater monitoring program; they are sampled semiannually. Two of these wells, OW04A and OW04B, are also sampled quarterly. Occasionally, additional or replacement wells are sampled when the program wells are dry or will not yield acceptable sample quantity. The 2016 sampling locations are presented on Figure 5. Water levels are measured on a quarterly basis in over 100 wells.

Highlights of the groundwater sample collection effort in 2016 are as follows:

- The semiannual sampling took place between April 4 and 14 (2nd quarter) and September 28 and October 5 (4th quarter); wells OW04A and OW04B were also sampled on February 8 and August 18, 2016.
- Groundwater samples were collected from 55 monitoring wells in the 2nd quarter event; well MW921 replaced MW922 and well MW423 replaced MW947 due to a lack of water in the program wells.
- Groundwater samples were collected from 47 monitoring wells in the 4th quarter event; wells 505, MW921, MW944, MW945, MW946, MW947, MW952, MW954, OW07B, OW11B, and OW12B were dry; wells 808A, MW922, and MW423 were sampled as replacements.
- Water level measurements were recorded from over 100 wells.
- Groundwater samples were analyzed for radium-226, total uranium, VOCs (five wells only), and water quality parameters (such as alkalinity and total dissolved solids).

For comparative purposes, the NYSDEC Class GA (groundwater, which is considered potable) water quality standards (hereafter referred to as NYSDEC drinking water standards) were used. It's noted that groundwater at the NFSS isn't a source of drinking water and is naturally a Class GSA saline water.

Details of the findings are presented in the following sections.

4.4.1 Groundwater Level Measurements

In 2016, the Corps of Engineers measured groundwater levels in 117 wells using an electronic depth-to-water meter. Potentiometric data were recorded from 74 wells in the upper water-bearing zone and 43 wells in the lower water-bearing zone (including six bedrock wells). Water level measurements are presented on Table 14. Figures 13 through 16 show the piezometric surfaces in the upper and lower units during seasonally high and low groundwater conditions.

The UWBZ exists in a fine-grained glacial till that was derived from ice advancement through a proglacial lake, where beach ridges were modified into discontinuous sand lenses within the clayey ground mass. The clayey sediments exhibit capillary characteristics that cause non-uniform saturation and desaturation of the UWBZ during seasonal periods. This variability (texture and saturation) can produce groundwater levels that are significantly different in proximal wells. Consequently, the UWBZ potentiometric surface maps represent generalized trends in groundwater elevations, especially in areas where well levels show local variability. The potentiometric contours heavily weigh elevation data that are hydraulically similar to proximal wells, whereas localized anomalous data are omitted in the contouring (see circled wells on Figures 13 through 16). For example, water levels in MW947 can be nearly 15 feet lower than nine nearby wells, so MW947 levels are omitted in the contouring. These omissions are not seasonally consistent and thus professional judgment, coupled with site knowledge, is used in the water-level contouring of the UWBZ. Site knowledge (or soft data) includes trends in ponded water, the presence of burial areas and utilities, vegetation coverage, and drainage characteristics that can affect the UWBZ hydrology.

The screened intervals for wells completed in the upper water-bearing zone range from 0.92 to 8.4 meters (3.02 to 27.6 feet) below ground surface; the screened intervals for wells completed in the lower water-bearing zone range from 6.8 to 31.9 meters (22.4 to 104.5 feet) below ground surface.

In the upper water-bearing zone, the depth to water ranged from 0.26 to 6.71 meters (0.85 to 22.02 feet) below ground surface during 2016. The quarterly water level fluctuations in the upper water-bearing zone averaged 0.75 meters (2.46 feet) and showed high and low elevations on April 6, 2016, and September 28, 2016, respectively.

In the lower groundwater system, the depth to water ranged from 0.80 to 4.73 meters (2.64 to 15.51 feet) below ground surface during 2016. Quarterly water level fluctuations in the lower groundwater system averaged 0.31 meters (1.03 feet) and showed high and low elevations also on April 6, 2016, and September 28, 2016, respectively. The lower groundwater system exhibits artesian conditions due to the overlying clay aquitard that confines the zone.

The high-water elevations in the upper system ranged from 91.86 to 97.31 meters (301.38 to 319.25 feet) above mean sea level, whereas the low-water condition ranged from 90.68 to 96.71 meters (297.51 to 317.30 feet). The high-water elevation in the lower system ranged from 93.85 to 96.52 meters (307.90 to 316.68 feet) above mean sea level, whereas the low-water condition ranged from 92.35 to 95.13 meters (302.99 to 312.11 feet).

Water level data indicate that the upper water-bearing zone responds more rapidly to the recharge and

discharge seasons (wet and dry periods) than the lower confined groundwater system due to the intervening glacio-lacustrine clay aquitard. The two water-bearing zones demonstrate hydraulic separation through independent water level responses seen in the data (i.e., the range and timing of fluctuations).

The high-stress (dry) summer conditions significantly lower water levels throughout the upper water-bearing zone, whereas the lower water-bearing zone is much less reactive to seasonal variations due to the aquitard. Vertical gradients calculated using water levels obtained from monitoring well pairs indicate vertical groundwater flow normally occurs from the upper zone to the lower zone (or downward) in the midwinter through early summer period, when evapotranspiration is less robust. From midsummer to late fall, when evapotranspiration is more robust, vertical gradients in 24 percent of the well pairs become upward due to water level declines in the upper water-bearing zone. This is most pronounced near the Central Drainage Ditch east of the IWCS; in other areas of the site, the downward gradient becomes weaker for that period. This seasonal saturation of the soils and vertical flow variation mitigates the potential transport of contaminants from the upper zone into the lower zone.

4.4.2 Groundwater Field Parameters

Before sampling, the Corps of Engineers measures field parameters at each well using a calibrated water quality meter. Field parameters include temperature, pH, specific conductance, oxidation-reduction potential, turbidity, and dissolved oxygen. The results are summarized on Table 15.

4.4.3 Groundwater Quality Parameters

At the NFSS, water quality in the upper water-bearing zone is indicative of low recharge to a hydraulically slow flow system; this produces poor-quality (near-saline) groundwater with high total dissolved solids derived from calcium/magnesium sulfates. Water quality in the lower water-bearing zone is poor due to high total dissolved solids. It's likely that the lower groundwater system receives recharge along the base of the Niagara Escarpment, situated approximately 3.2 kilometers (2 miles) south of the site (DOE 1994) and, to a lesser extent, via downward flow from the upper unit during spring recharge. Table 16 presents water quality parameter data for 2016.

Analytical results for sulfate were consistently above the NYS Class GA groundwater quality standards, while chloride and fluoride exceeded the NYS standards in only a couple of samples.

Sampling of wells during the Remedial Investigation confirms that groundwater in the area is naturally saline and of poor quality because of high mineralization (see La Sala 1968; Wehran 1977; Acres American 1981). Groundwater at the NFSS isn't used as a public drinking water supply; it's definable as a Class GSA water, although the comparison to the drinking water standards continues to be used as a conservative basis for evaluating the results of groundwater analysis.

4.4.4 Groundwater Radiological Findings

The 2016 analytical results for radium-226 and total uranium in groundwater are presented on Table 17 and discussed in detail below.

Radium

Radium-226 was not detected in 87 of the 113 samples collected in 2016. Among the 26 detections, radium-226 concentrations were below the NYS drinking water standard of 3 pCi/L; they ranged from 0.114 pCi/L to 0.915 pCi/L. The highest activity level was detected in well OW06A, which is screened in the lower water-bearing zone and is situated south of the IWCS.

The range of radium-226 concentrations differentiated by upper and lower water-bearing zones over the last two years is presented in the following table:

**Radium-226 Findings
2014 and 2015**

Groundwater Zone Monitored	Concentration Range	
	2015	2016
Upper water-bearing zone	Nondetect—0.788 pCi/L	Nondetect—0.852 pCi/L
Lower water-bearing zone	Nondetect—0.705 pCi/L	Nondetect—0.915 pCi/L

Total Uranium

The 2016 groundwater analytical data showed that total uranium concentrations in 24 groundwater monitoring wells exceeded the uranium drinking water criterion (30 µg/L). The most elevated total uranium concentrations continue to be detected in wells installed in late 2012 east and south of the IWCS as part of the Balance of Plant field investigation. The two wells with the highest total uranium concentrations are MW953 (6,547 µg/L), located east and across the Central Drainage Ditch from the IWCS and immediately east of well OW11B, and MW957 (3,410 µg/L), located south of the IWCS. The table below shows analytical data from 2015 and 2016.

**Total Uranium Findings
2015 and 2016**

Groundwater Zone Monitored	Concentration Range	
	2015	2016
Upper water-bearing zone	5.69—4,523 µg/L	5.10—6,547 µg/L
Lower water-bearing zone	0.13—10.4 µg/L	0.06—11.7 µg/L

The Corps of Engineers believes the source of uranium in wells east of and across the Central Drainage Ditch from the IWCS is residual soil contamination from former operations in this area; these included a railroad bed, storage piles, and a decontamination pad used during construction of the IWCS. In addition, residual contamination in the sanitary sewer near manhole 6, which was removed in 2013 as part of the field investigation, may have contributed to groundwater contamination in this area. The Corps of Engineers believes the source of the uranium in wells south of the IWCS is the former storage piles and possibly residual contamination in and around former Building 409. The latest analytical data, as well as historical data, for the wells in these areas are depicted on Figures 17 and 18. Figures 19 and 20 include analytical data for all wells in the upper and lower water-bearing zones, respectively.

As previously reported, declining to dynamic steady-state (i.e., annually fluctuating about a mean) uranium trends in the majority of wells surrounding the IWCS indicate attenuating legacy sources (i.e., surface stored wastes) that impacted soil and groundwater before and during IWCS construction. Analysis of trends for total uranium in groundwater is discussed in more detail in Section 4.4.6.

4.4.5 Groundwater Chemical Findings

Analysis of VOCs in groundwater is limited to the former Acidification Area in the north-central portion of the site; they're monitored by wells 411A, MW934, MW947, MW948, and MW949. These wells were selected to monitor potential migration of the chlorinated solvent plume (i.e., tetrachloroethylene [PCE] and its degradation products). Although not part of the ESP, well MW423 was sampled as a substitute for well MW947, which had an insufficient volume of water to sample. Among the wells sampled, only MW949 monitors the lower water-bearing zone; all of the other wells monitor the upper water-bearing zone.

Results from the 2016 analysis showed no detections of chlorinated solvent compounds. However, several VOCs, primarily laboratory contaminants (e.g., acetone, methylene chloride, and chloroform), were detected in several wells at concentrations below state drinking water standards, with one exception: chloroform was found in well MW934 at a concentration of 7.7 µg/L, which exceeds the NYS drinking water standard of 7 µg/L. The analytical results are presented in Table 18.

Chloroform concentrations in well MW934 have fluctuated over the years (i.e., since 2009 when the well was installed), ranging from 3.61 µg/L (2009) to 1,400 µg/L (2012). Although chloroform can be a laboratory contaminant, laboratory contamination isn't likely the source of chloroform detected in well MW934 due to its persistence and sometimes elevated level. Chloroform can be a degradation product of carbon tetrachloride, a highly volatile solvent that doesn't easily bind to soil and may leach into groundwater; there it can hydrolyze into chloroform. However, carbon tetrachloride has not been detected in any soil or water samples collected at the site. Therefore, the source of chloroform in well MW934 remains unknown.

4.4.6 Groundwater Trend Analysis

Total uranium groundwater concentrations in monitoring wells over the course of the Corps of Engineers' ESP (1997 through 2016) are evaluated by the Mann-Kendall test to identify the presence of a statistically significant trend using ProUCL 5.1 software (USEPA 2015). The Mann-Kendall test, described in the Corps of Engineers' Manual *Environmental Quality—Environmental Statistics* (USACE 2013b), is an accepted method for identifying the presence of a significant trend at surveillance wells.

The results of the total uranium groundwater concentration trend evaluation (spring and fall data from 1997 to 2016) are presented in Attachment A and summarized in the following two tables: the first table presents wells with sample sizes greater than 10, and the second table presents wells with sample sizes less than or equal to 10.

As shown by the results in the tables, no increasing or decreasing trends in total uranium concentrations were identified in 46 of 57 wells analyzed for trending. Decreasing trends in total uranium concentrations were identified at wells A42, A45, 302A, MW935, OW04B, OW06B, OW17B, and OW18B. Increasing trends were identified at wells MW934, MW949, and MW960; however, the available sample sizes, 14, 9, and 9, respectively, are marginal for definitively determining a trend. The test's statistical power is limited by the sample size of data collected from the wells but as additional data is collected through the surveillance program, the statistical power of the test increases.

WELLS WITH SAMPLE SIZES GREATER THAN 10

Well	Sample Size (n)	Resulting Trend
OW03B	14	No trend
<i>OW04B</i>	<i>45</i>	<i>Decreasing</i>
OW05B	14	No trend
<i>OW06B</i>	<i>31</i>	<i>Decreasing</i>
OW07B	20	No trend
OW11B	26	No trend
OW12B	12	No trend
OW13B	23	No trend
OW15B	30	No trend
<i>OW17B</i>	<i>29</i>	<i>Decreasing</i>
<i>OW18B</i>	<i>17</i>	<i>Decreasing</i>
BH49	14	No trend
BH49A	19	No trend
<i>A42</i>	<i>29</i>	<i>Decreasing</i>
<i>A45</i>	<i>30</i>	<i>Decreasing</i>
A50	30	No trend
A55	14	No trend
505	17	No trend
<i>302A</i>	<i>28</i>	<i>Decreasing</i>
411A	15	No trend
OW03A	14	No trend
OW04A	32	No trend
OW05A	15	No trend
OW06A	15	No trend
OW07A	15	No trend
OW11A	14	No trend
OW12A	13	No trend
OW13A	15	No trend
OW15A	14	No trend
OW17A	14	No trend
MW862	15	No trend
MW863	15	No trend
<i>MW934</i>	<i>14</i>	<i>Increasing¹</i>
<i>MW935</i>	<i>14</i>	<i>Decreasing</i>

¹ Total uranium concentrations ranged from 19.6 µg/L to 36.7 µg/l

WELLS WITH SAMPLE SIZES LESS THAN OR EQUAL TO 10

Well	Sample Size (n)	Resulting Trend
808A	6	No trend
A43	10	No trend
MW423	7	No trend
MW921	8	No trend
MW922	7	No trend
MW938	9	No trend
MW943	6	No trend
MW944	5	No trend
MW945	6	No trend
MW946	6	No trend
MW948	8	No trend
MW949	9	<i>Increasing</i>¹
MW950	10	No trend
MW951	10	No trend
MW952	8	No trend
MW953	9	No trend
MW954	8	No trend
MW955	9	No trend
MW956	9	No trend
MW957	9	No trend
MW958	9	No trend
MW959	9	No trend
MW960	9	<i>Increasing</i>²

¹ Total uranium concentrations ranged from 0.289 µg/L to 4.44 µg/L

² Total uranium concentrations ranged from 1,010 µg/L to 1,204 µg/L

Radium-226 concentrations (pCi/L) in groundwater were not evaluated for trending in this memorandum. Radium-226 groundwater concentrations over the course of the Corps of Engineers ESP (1997 through 2016) are predominantly less than the laboratory detection limit, precluding the accurate assessment of trends. The test loses significant statistical power if most of the data are censored.

5.0 CONCLUSION

The objective of the ESP is to monitor the air, groundwater, surface water, and sediment for the release of contaminants to ensure the protection of human health and the environment. To achieve this objective, the Corps of Engineers:

- Calculates the annual cumulative dose to the nearest receptor from NFSS sources based on (1) measured total external gamma radiation and (2) modeled airborne particulate dose using Remedial Investigation soil data and annual meteorological data
- Measures radon gas concentrations at several locations around the property boundary and radon flux on top of the IWCS
- Analyzes surface water and sediment samples for radionuclides, metals, and PAHs
- Analyzes groundwater samples for radionuclides (and VOCs in a limited area of the site)

The results of the 2016 ESP show that the IWCS is continuing to perform as designed and is fully protective of human health and the environment. The data indicate that most contaminant concentrations are below regulatory standards and criteria. Based on 2016 data, contaminants that exceed criteria (used for comparison purposes only) include:

- Metals at multiple locations and PAHs at a few locations in sediment
- Total uranium at multiple locations in groundwater
- A slight exceedance of chloroform at one location in groundwater

The 2016 groundwater analytical data show that total uranium concentrations in 25 groundwater monitoring wells exceed the drinking water criterion for uranium ($30 \mu\text{g/L}$). The most elevated total uranium concentrations were detected in wells installed east and south of the IWCS in late 2012 as part of the Balance of Plant field investigation: MW953 ($6,547 \mu\text{g/L}$), located east and across the Central Drainage Ditch from the IWCS and immediately east of well OW11B; MW951 ($3,069 \mu\text{g/L}$), located south of the IWCS and east of former Building 409, and MW957 ($3,410 \mu\text{g/L}$) located south of the IWCS.

The Corps of Engineers believes the source of uranium in wells east of the IWCS is residual soil contamination from former operations in this area, which included a railroad bed, storage piles, and a decontamination pad used during construction of the IWCS. In addition, residual contamination in the sanitary sewer near manhole 6, which has been removed and the sewer line plugged, may have contributed to groundwater contamination in this area. The Corps of Engineers believes the former storage piles and residual contamination from former Building 409 are the source of the uranium in wells south of the IWCS (USACE 2015a).

The results of the trend analysis for total uranium in groundwater showed no increasing or decreasing trends in total uranium concentrations in 46 of 57 wells analyzed for trending. Decreasing trends in total uranium concentrations were identified at wells A42, A45, 302A, MW935, OW04B, OW06B, OW17B, and OW18B. Possible increasing trends were identified at wells MW934, MW949, and MW960; however, the available sample sizes, 9, 9, and 14, respectively, are marginal for definitively determining a trend. The test's statistical power is limited by the sample size of data collected from the wells but as additional data is collected through the surveillance program, the statistical power of the test increases.

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TABLES

Acronyms and Abbreviations (in Tables)

BKGD	background
CY	calendar year
DO	dissolved oxygen
DOE	Department of Energy
°F	degrees Fahrenheit.
IWCS	Interim Waste Containment Structure
J	data estimated
LWBZ	lower water bearing zone
MDA	method detection activity
MDL	method detection limit
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mrem	millirem
mrem/yr	millirem per year
mS/cm	millisiemens per centimeter
mV	millivolts
NA	not applicable
NFSS	Niagara Falls Storage Site
NTU	nephelometric turbidity units
NYCRR	New York Codes, Rules, and Regulations
NYS	New York State
NYSDOH	New York State Department of Health
ORP	oxidation-reduction potential
OSL	optically stimulated luminescence
OSLD	optically stimulated luminescence dosimeter
pCi	picocurie
pCi/g	picocuries per gram
pCi/L	picocuries per liter
pCi/m ² /s	picocuries per meters-squared per second
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
R	data rejected
RI	remedial investigation
RSL	regional screening level
SDWA	Safe Drinking Water Act
Spec. Cond.	Specific conductance
TDS	total dissolved solids
TLD	thermo luminescent dosimeter
U	not detected
µg/kg	microgram per kilogram
UWBZ	upper water bearing zone
VOC	volatile organic compound
µg/L	micrograms per liter

Table 1: Evolution of NFSS Environmental Surveillance Plan¹

White background: annual sampling frequency
 Blue background: quarterly measurement frequency
 Yellow background: semi-annual sampling frequency

Parameter	1997	2000	2003	2008	2009	2010 (fall) (spring 2010 same as 2009)	2013 (fall) (spring same as 2010)
Radon Flux (Radon-222 emissions)	-----	180 monitoring locations	183 monitoring locations	183 monitoring locations	183 monitoring locations	183 monitoring locations	183 monitoring locations
OSLs (external gamma dose)	18 locations 1 duplicate location	20 locations 1 duplicate location	20 locations 1 duplicate location	20 locations 1 duplicate location	26 locations 1 duplicate location	26 locations 1 duplicate location	26 locations 1 duplicate location
Radon-222, -220	18 locations 1 duplicate location	20 locations 1 duplicate location	20 locations 1 duplicate location	20 locations 1 duplicate location	26 locations 1 duplicate location	26 locations 1 duplicate location	26 locations 1 duplicate location
Groundwater level measurements	66 wells	66 wells	91 wells	91 wells	91 wells	101 wells	101 wells
Groundwater Sampling	8 wells: BO2W20S, A45, A50, OW04B, OW06B, OW07B, OW15B, OW17B	8 wells (same)	8 wells (same)	18 wells: The 10 groundwater wells added to the ESP include: OW18B, 313, 505, 302A, A42, BH49A, OW04A, OW11B, 415A, and 201A NOTE: OW13B replaced OW07B in 2004	18 wells (same)	Spring 2010 - Same as 2009 Fall 2010 – 39 wells (wells OW04A/4B are sampled quarterly; all others are sampled semi- annually)	54 wells: (wells listed on Table 2)
	<u>Field Parameters:</u> Dissolved oxygen, redox potential, turbidity, temperature, specific conductivity, pH <u>Water quality</u> <u>analytes:</u> calcium, magnesium, potassium, sodium alkalinity, bicarbonate, carbonate, chloride, nitrate-nitrogen, nitrite-nitrogen, phosphate, sulfate, Total Dissolved Solids, sulfate	<u>Field Parameters:</u> Same	<u>Field Parameters:</u> Same	<u>Field Parameters:</u> Same	<u>Field Parameters:</u> Same	<u>Field Parameters:</u> Same	<u>Field Parameters:</u> Same
	<u>Water quality</u> <u>analytes:</u> Same	<u>Water quality</u> <u>analytes:</u> Same	<u>Water quality</u> <u>analytes:</u> Same	<u>Water quality</u> <u>analytes:</u> alkalinity(calium carbonate) and total dissolved solids <u>Anions:</u> chloride, fluoride, nitrate, nitrite, ortho- phosphate, sulfate	<u>Water quality</u> <u>analytes:</u> Same	<u>Water quality</u> <u>analytes:</u> Same	<u>Water quality</u> <u>analytes:</u> Same
	<u>Radionuclides:</u> Total uranium, radium, thorium	<u>Radionuclides:</u> Same	<u>Radionuclides:</u> Same	<u>Radionuclides:</u> Same (except analysis for Iso Uranium only for wells OW18B, 313, 505, 302A, A42, BH49A, OW04A, OW11B, and 415A and no radionuclide analysis for well 201A) Also added thorium- 228	<u>Radionuclides:</u> Same	<u>Radionuclides:</u> Iso-uranium, Iso-thorium, Radium-226, -228 Strontium-90, Technetium-99, Cesium-137, Iso-plutonium, Tritium	<u>Radionuclides:</u> Total Uranium Radium-226
	<u>Metals:</u> Copper, lead, vanadium	<u>Metals:</u> Same	<u>Metals:</u> Same	<u>Metals:</u> Target analyte list, boron, and lithium <u>Volatile Organic</u> <u>Compounds (VOCs):</u> Only wells 415A and 201A	<u>Metals:</u> Same	<u>Metals:</u> Same	<u>Metals:</u> Same
					<u>VOCs:</u> same	<u>VOCs:</u> Only wells 415A, 411A, 201A, MW934, MW948, MW949, MW950	<u>VOCs:</u> Same

Table 1 Continued: Evolution of NFSS Environmental Surveillance Plan

Parameter	1997	2000	2003	2008	2009	2010	2013
Surface water:	<p>SWSD009, SWSD010, SWSD011, SWSD021, SWSD022</p> <p><u>Field Parameters:</u> Dissolved oxygen, redox potential, turbidity, temperature, specific conductivity, pH</p> <p><u>Radionuclides:</u> total uranium radium-226, -228 thorium-230, -232</p>	<p>Same 5 locations</p> <p><u>Field Parameters:</u> Same</p> <p><u>Radionuclides:</u> Uranium-234, -235, -238 radium-226, -228 thorium-230, -232</p>	<p>Same 5 locations</p> <p><u>Field Parameters:</u> Same</p> <p><u>Radionuclides:</u> Same</p>	<p>Same 5 locations plus 5 additional locations: SWSD023, SWSD024, WDD1, WDD2, WDD3,</p> <p><u>Field Parameters:</u> Same</p> <p><u>Radionuclides:</u> Uranium-234, -235, -238 radium-226, -228 thorium-228 (new), -230, -232</p> <p><u>Metals:</u> TAL metals, lithium, boron</p> <p><u>Organics:</u> Polychlorinated Biphenyls (PCBs), pesticides, VOCs, Polycyclic Aromatic Hydrocarbons (PAHs)</p>	<p>Same 10 locations</p> <p><u>Field Parameters:</u> Same</p> <p><u>Radionuclides:</u> Same</p> <p><u>Metals:</u> same</p> <p><u>Organics:</u> same</p>	<p>Spring 2010 - Same 10 locations as 2009 Fall 2010: 11 locations (Added location SWSD025)</p> <p><u>Field Parameters:</u> Same</p> <p><u>Radionuclides:</u> Iso-uranium, Iso-thorium, Radium-226, -228 Strontium-90, Technetium-99, Cesium-137, Iso-plutonium, Tritium</p> <p><u>Metals:</u> same</p> <p><u>Organics:</u> same</p>	<p>9 locations (removed SWSD024 and WDD1)</p> <p><u>Field Parameters:</u> Same</p> <p><u>Radionuclides:</u> Total Uranium Radium-226</p> <p><u>Metals:</u> same</p> <p><u>Organics:</u> PAHs only</p>
Sediment:	<p>SWSD011, SWSD021, SWSD010, SWSD022, SWSD009</p> <p><u>Radionuclides:</u> total uranium radium-226, -228 thorium-230, -232</p>	<p>Same 5 locations</p> <p><u>Radionuclides:</u> Uranium-234, -235, -238 radium-226, -228 thorium-230, -232</p>	<p>Same 5 locations</p> <p><u>Radionuclides:</u> Same</p>	<p>Same 5 locations plus 5 additional locations: WDD1, WDD2, WDD3, SWSD023, SWSD024</p> <p><u>Radionuclides:</u> Uranium-234, -235, -238 radium-226, -228 thorium-228 (new), -230, -232</p> <p><u>Metals:</u> TAL metals, lithium, boron</p> <p><u>Organics:</u> PCBs, pesticides, VOCs, PAHs</p>	<p>Same 10 locations</p> <p><u>Radionuclides:</u> Same</p> <p><u>Metals:</u> same</p> <p><u>Organics:</u> same</p>	<p>Spring 2010 - Same as 2009 Fall 2010:</p> <p><u>Radionuclides:</u> Iso-uranium, Iso-thorium, Radium-226, -228 Strontium-90, Technetium-99, Cesium-137, Iso-plutonium, Tritium</p> <p><u>Metals:</u> same</p> <p><u>Organics:</u> same</p>	<p>9 locations (removed SWSD024 and WDD1)</p> <p><u>Radionuclides:</u> Total Uranium Radium-226</p> <p><u>Metals:</u> same</p> <p><u>Organics:</u> PAHs only</p>

¹ There were no changes in the Environmental Surveillance Program from 2014 through the present.

Table 2
2016 ESP
Groundwater Sampling
Niagara Falls Storage Site

Well Location	UWBZ or LWBZ	Well	Purpose	*Laboratory Analytical Parameters						**Field Parameters
				Total Uranium	Radium -226	VOCs	Alkalinity	TDS	Anions	
A45	UWBZ	N (IWCS)	X	X			X	X	X	X
OW04A ¹	LWBZ	N (IWCS)	X	X			X	X	X	X
OW04B ¹	UWBZ	N (IWCS)	X	X			X	X	X	X
BH49A	UWBZ	N (IWCS)	X	X			X	X	X	X
BH49	LWBZ	N (IWCS)	X	X			X	X	X	X
OW05A	LWBZ	N (IWCS)	X	X			X	X	X	X
OW05B	UWBZ	N (IWCS)	X	X			X	X	X	X
A50	UWBZ	E (IWCS)	X	X			X	X	X	X
MW862	UWBZ	E (IWCS)	X	X			X	X	X	X
MW863	LWBZ	E (IWCS)	X	X			X	X	X	X
OW11A	LWBZ	E (IWCS)	X	X			X	X	X	X
OW11B	UWBZ	E (IWCS)	X	X			X	X	X	X
OW12A	LWBZ	E (IWCS)	X	X			X	X	X	X
OW12B	UWBZ	E (IWCS)	X	X			X	X	X	X
OW06A	LWBZ	S (IWCS)	X	X			X	X	X	X
OW06B	UWBZ	S (IWCS)	X	X			X	X	X	X
OW13A	LWBZ	S (IWCS)	X	X			X	X	X	X
OW13B	UWBZ	S (IWCS)	X	X			X	X	X	X
OW07A	LWBZ	S (IWCS)	X	X			X	X	X	X
OW07B	UWBZ	S (IWCS)	X	X			X	X	X	X
OW03A	LWBZ	W (IWCS)	X	X			X	X	X	X
OW03B	UWBZ	W (IWCS)	X	X			X	X	X	X
OW15A	LWBZ	W (IWCS)	X	X			X	X	X	X
OW15B	UWBZ	W (IWCS)	X	X			X	X	X	X
A42	UWBZ	W (IWCS)	X	X			X	X	X	X
OW17A	LWBZ	W (IWCS)	X	X			X	X	X	X
OW17B	UWBZ	W (IWCS)	X	X			X	X	X	X
OW18B	UWBZ	W (IWCS)	X	X			X	X	X	X
A55	LWBZ	W (IWCS)	X	X			X	X	X	X
A43	UWBZ	W (IWCS)	X	X			X	X	X	X
505	UWBZ	EU 1	X	X			X	X	X	X
MW934	UWBZ	EU 4	X	X	X		X	X	X	X
411A	UWBZ	EU 4	X	X	X		X	X	X	X
302A	UWBZ	EU 8	X	X			X	X	X	X
MW921 or MW922 ²	UWBZ	NW (off-site)	X	X			X	X	X	X
MW 935	UWBZ	NW (IWCS)	X	X			X	X	X	X
MW938	UWBZ	NW (IWCS)	X	X			X	X	X	X
MW-943	UWBZ	S (IWCS)	X	X			X	X	X	X
MW-944	UWBZ	EU 1	X	X			X	X	X	X
MW-945	UWBZ	EU 1	X	X			X	X	X	X
MW-946	UWBZ	EU 1	X	X			X	X	X	X
MW-947 ³	UWBZ	EU 4	X	X	X		X	X	X	X
MW-948	UWBZ	EU 4	X	X	X		X	X	X	X
MW-949	LWBZ	EU 4	X	X	X		X	X	X	X
MW-950	UWBZ	S (IWCS)	X	X			X	X	X	X
MW-951	UWBZ	S (IWCS)	X	X			X	X	X	X
MW-952	UWBZ	E (IWCS)	X	X			X	X	X	X
MW-953	UWBZ	E (IWCS)	X	X			X	X	X	X
MW-954	UWBZ	E (IWCS)	X	X			X	X	X	X
MW-955	UWBZ	E (IWCS)	X	X			X	X	X	X
MW-956	UWBZ	S (IWCS)	X	X			X	X	X	X
MW-957	UWBZ	S (IWCS)	X	X			X	X	X	X
MW-958	UWBZ	S (IWCS)	X	X			X	X	X	X
MW-959	UWBZ	S (IWCS)	X	X			X	X	X	X
MW-960	UWBZ	S (IWCS)	X	X			X	X	X	X
Field Duplicate	-	-	X	X			X	X	X	X

***Laboratory Analytical Parameters**

VOC - Volatile Organic Compounds

TDS - Total Dissolved Solids

Anions:

Chloride

Fluoride

Nitrate

Nitrite

Phosphate

Sulfate

****Field Parameters:**

pH

Temperature

Specific conductivity

Oxidation-Reduction Potential

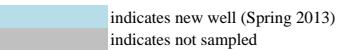
Dissolved oxygen

Turbidity

(If the turbidity reading for a sample is 50 NTUs or greater, the sample will be filtered in the field and both filtered and unfiltered samples at that location will be submitted to the lab for analysis.)

UWBZ - upper water bearing zone

LWBZ - lower water-bearing zone

 indicates new well (Spring 2013)
 indicates not sampled

¹ These wells are sampled quarterly

² MW921 or MW922 is sampled based on availability of water within these wells

³ MW422 or MW423 is substituted for MW947 when well MW947 is dry.

Table 3
2016 ESP
Surface Water and Sediment Sampling
Niagara Falls Storage Site

*Laboratory Analytical Parameters					**Field Parameters
Sample Location	Total Uranium	Radium -226	Metals	PAHs	
SWSD009	X	X	X	X	X
SWSD010	X	X	X	X	X
SWSD011	X	X	X	X	X
SWSD021	X	X	X	X	X
SWSD022	X	X	X	X	X
SWSD023	X	X	X	X	X
SWSD025 ¹	X	X	X	X	X
WDD2	X	X	X	X	X
WDD3	X	X	X	X	X
Field Duplicate	X	X	X	X	X

***Laboratory Analytical Parameters:**

PAH - Polyaromatic Hydrocarbons

¹ Sampled quarterly

****Field Parameters:**

pH

Temperature

Specific conductivity

Oxidation-Reduction Potential

Dissolved oxygen

Turbidity

(If the turbidity reading for a sample is 50 NTUs or greater, the sample will be filtered in the field and both filtered and unfiltered samples at that location will be submitted to the lab for analysis.)

Table 4
2016 External Gamma Radiation Dose Rates
Niagara Falls Storage Site

Monitoring Location	Monitoring Station	Gross OSL ^a Data ^b (mrem) 12/16/15 - 06/30/16 ^c	Gross OSL ^a Data ^b (mrem) 06/30/2016 - 12/21/16 ^c	Normalized Gross OSL Data ^d (mrem/yr)	CY2016 Net OSL ^e Data (mrem/yr)
NFSS Perimeter	1	14.0	13.0	26.6	3.9
	1	9.0	13.0	21.6	-1.0
	7	13.0	12.0	24.6	2.0
	7	12.0	16.0	27.5	4.9
	11	5.0	11.0	15.7	-6.9
	11*	7.0	-	17.7	-4.9
	12	13.0	15.0	27.5	4.9
	12	12.0	11.0	22.6	0.0
	13	13.0	16.0	28.5	5.9
	13	10.0	19.0	28.5	5.9
	15	12.0	12.0	23.6	1.0
	15	14.0	17.0	30.5	7.9
	28	14.0	14.0	27.5	4.9
	28	18.0	17.0	34.4	11.8
	29	13.0	17.0	29.5	6.9
	29	12.0	15.0	26.6	3.9
	32	10.0	15.0	24.6	2.0
	32	10.0	14.0	23.6	1.0
	36	13.0	16.0	28.5	5.9
	36	13.0	18.0	30.5	7.9
	45	10.0	13.0	22.6	0.0
	45	12.0	12.0	23.6	1.0
	50	17.0	15.0	31.5	8.9
	50	18.0	15.0	32.5	9.8
	55	9.0	10.0	18.7	-3.9
	55	12.0	12.0	12.0	-10.6
IWCS Perimeter	60	13.0	12.0	12.0	-10.6
	60	13.0	11.0	11.0	-11.6
	65	13.0	11.0	23.6	1.0
	65	13.0	14.0	26.6	3.9
	122	13.0	11.0	23.6	1.0
	122	12.0	12.0	23.6	1.0
	123	13.0	13.0	25.6	3.0
	123	9.0	14.0	22.6	0.0
	8	12.0	10.0	21.6	-1.0
	8	8.0	10.0	17.7	-4.9
	10	12.0	14.0	25.6	3.0
	10	12.0	16.0	27.5	4.9
Background ^f	18*	9.0	-	18.7	-3.9
	18	9.0	10.0	18.7	-3.9
	21	10.0	12.0	21.6	-1.0
	21	9.0	10.0	18.7	-3.9
	23	8.0	10.0	17.7	-4.9
	23	6.0	9.0	14.8	-7.9
	24	13.0	11.0	23.6	1.0
	24	12.0	10.0	21.6	-1.0
	40	8.0	10.0	17.7	-4.9
	40	9.0	9.0	17.7	-4.9
Average Background		9.8	13.2	22.6	

a OSL - Optically Stimulated Luminescence dosimeters

b All data reported from the vendor are gross results in mrem per monitoring period.

c Exposure period date format mm/dd/yy

d Gross data for each period are normalized to a daily dose rate, averaged, and then normalized for the length of the year (365 days)

e Net data are corrected by subtracting the average normalized background value

f Background Locations: 105-Lewiston-Porter School, 116-Balmer Road and 120-Lewiston Water Pollution Control Center

* Dosimeter damaged during second half of 2016 monitoring period. Secondary badge result used in calculation for missing badge.

Table 5
2016 Radon Gas Concentrations^a

Monitoring Location ^b	Station	Average Daily Concentration (pCi/L)			Average Daily Concentration (pCi/L)		
		12/16/2015 - 06/30/16 ^c			6/30/16 - 12/21/16 ^c		
NFSS Perimeter	1	< 0.2	±	0.02	< 0.4	±	-
	7	< 0.2	±	0.02	< 0.4	±	-
	11	< 0.2	±	0.02	< 0.4	±	-
	12	0.2	±	0.02	< 0.4	±	-
	12 (dup ^d)	< 0.2	±	0.02	< 0.4	±	-
	13	0.2	±	0.02	0.5	±	0.1
	15	< 0.2	±	0.02	< 0.4	±	-
	28	0.2	±	0.02	< 0.4	±	-
	29	< 0.2	±	0.02	< 0.4	±	-
	36	0.2	±	0.02	< 0.4	±	-
	45	< 0.2	±	0.02	< 0.4	±	-
	50	< 0.2	±	0.02	< 0.4	±	-
	55	< 0.2	±	0.02	< 0.4	±	-
	60	< 0.2	±	0.02	< 0.4	±	-
	65	< 0.2	±	0.02	< 0.4	±	-
IWCS Perimeter	122	< 0.2	±	0.02	< 0.4	±	-
	123	< 0.2	±	0.02	< 0.4	±	-
	8	< 0.2	±	0.02	< 0.4	±	-
	10	< 0.2	±	0.02	< 0.4	±	-
	18	0.3	±	0.03	< 0.4	±	-
	21	< 0.2	±	0.02	< 0.4	±	-
	23	0.2	±	0.02	< 0.4	±	-
Background	24	< 0.2	±	0.02	< 0.4	±	-
	40	< 0.2	±	0.02	< 0.4	±	-
	105	< 0.2	±	0.02	< 0.4	±	-
	116	< 0.2	±	0.02	< 0.4	±	-
	120	< 0.2	±	0.02	< 0.4	±	-

- a. Radon gas concentrations were measured with RadTrak® (first half of the year) and RadTrak2® (second half of the year) detectors.
These detectors measure the combined concentration of radon-220 and radon-222 in air.
- b. Monitoring locations are shown on Figure 6.
- c. Detectors were installed (start date) and removed (end date) on the dates listed.
- d. A quality control duplicate is collected at the same time and location and is analyzed by the same method for evaluating precision in sampling and analysis.

Note: DOE off-site limit for radon-222 concentration is 3 pCi/L above background.

(<0.X) Indicates detection limit is reported. Actual result is less than this value.

1 pCi = 0.037 becquerel

Table 6
2016 Radon Flux Monitoring Results^a
Niagara Falls Storage Site

NFSS Sample ID	Qualifie	Radon-222 Flux			NFSS Sample ID	Qualifie	Radon-222 Flux			
		(pCi/m ² /s)		MDA			(pCi/m ² /s)		MDA	
1		0.0963	±	0.0148	0.0439	51	U	0.0631	± 0.0172	0.0675
2		0.0579	±	0.0105	0.0113	52		0.0611	± 0.0232	0.0860
3		0.0710	±	0.0130	0.0216	53		0.0497	± 0.0105	0.0286
4		0.0409	±	0.0081	0.0113	54		0.1734	± 0.0228	0.0210
5		0.1107	±	0.0163	0.0216	55	U	0.0713	± 0.0352	0.1199
6		0.0631	±	0.0113	0.0201	56		0.0530	± 0.0097	0.0151
7		0.0391	±	0.0079	0.0210	57		0.0412	± 0.0093	0.0226
8		0.0516	±	0.0123	0.0429	58		0.0272	± 0.0089	0.0301
9		0.0688	±	0.0121	0.0286	59	U	0.0822	± 0.0330	0.1477
10		0.0786	±	0.0201	0.0265	60		0.0500	± 0.0096	0.0318
10-DUP ^b	U	0.0574	±	0.0323	0.1197	60-DUP ^b		0.0626	± 0.0118	0.0151
11		0.0899	±	0.0122	0.0097	61		0.0624	± 0.0104	0.0109
12		0.0613	±	0.0132	0.0234	62	U	0.0362	± 0.0271	0.0998
13		0.0479	±	0.0089	0.0106	63	U	0.0296	± 0.0115	0.0509
14		0.0484	±	0.0098	0.0310	64		0.0334	± 0.0084	0.0211
15		0.0515	±	0.0116	0.0463	65	U	0.0617	± 0.0321	0.1169
16		0.0757	±	0.0122	0.0301	66		0.0615	± 0.0115	0.0385
17	U	-0.0011	±	0.0336	0.1110	67		0.0624	± 0.0110	0.0226
18		0.0258	±	0.0060	0.0116	68		0.0305	± 0.0077	0.0121
19		0.0599	±	0.0121	0.0221	69	U	0.1534	± 0.0423	0.1163
20		0.0407	±	0.0087	0.0206	70		0.0465	± 0.0099	0.0118
20-DUP ^b		0.0578	±	0.0118	0.0381	70-DUP ^b		0.0352	± 0.0082	0.0328
21		0.0618	±	0.0094	0.0098	71		0.0686	± 0.0124	0.0225
22		0.0759	±	0.0127	0.0340	72		0.0388	± 0.0097	0.0109
23		0.1024	±	0.0234	0.0957	73	U	0.0436	± 0.0403	0.1175
24		0.0580	±	0.0094	0.0098	74		0.0459	± 0.0120	0.0228
25		0.0595	±	0.0115	0.0317	75	U	0.0000	± 0.0076	0.0567
26		0.0596	±	0.0111	0.0108	76	U	0.0070	± 0.0295	0.1094
27	U	0.0376	±	0.0260	0.0906	77		0.0358	± 0.0078	0.0152
28	U	0.0308	±	0.0236	0.0906	78	U	0.0423	± 0.0211	0.0656
29		0.0495	±	0.0090	0.0283	79		0.0277	± 0.0090	0.0333
30		0.0667	±	0.0127	0.0292	80	U	0.0395	± 0.0303	0.0873
30-DUP ^b		0.0911	±	0.0144	0.0223	80-DUP ^b	U	0.0349	± 0.0298	0.1134
31		0.0583	±	0.0123	0.0346	81	U	0.0298	± 0.0116	0.0616
32		0.0446	±	0.0095	0.0329	82		0.0375	± 0.0081	0.0110
33	U	0.0211	±	0.0140	0.0626	83	U	0.0613	± 0.0239	0.0876
34		0.0539	±	0.0176	0.0821	84		0.0322	± 0.0074	0.0119
35		0.0474	±	0.0085	0.0118	85		0.0550	± 0.0115	0.0164
36		0.0498	±	0.0110	0.0240	86		0.0420	± 0.0102	0.0212
37		0.0606	±	0.0112	0.0283	87		0.0274	± 0.0075	0.0319
38	U	0.0231	±	0.0221	0.0866	88		0.0459	± 0.0100	0.0227
39		0.0637	±	0.0101	0.0150	89	U	0.0064	± 0.0141	0.0555
40		0.0345	±	0.0110	0.0429	90	U	0.0175	± 0.0365	0.1390
40-DUP ^b		0.0468	±	0.0106	0.0162	90-DUP ^b	J	0.1372	± 0.0273	0.0158
41		0.1312	±	0.0265	0.1002	91		0.0589	± 0.0111	0.0373
42		0.0563	±	0.0095	0.0099	92	U	0.0536	± 0.0208	0.0660
43		0.0497	±	0.0093	0.0209	93	U	0.0111	± 0.0113	0.0449
44	U	0.0615	±	0.0317	0.0961	94		0.0321	± 0.0066	0.0120
45	U	0.0000	±	0.0500	0.0500	95		0.0412	± 0.0099	0.0165
46		0.0754	±	0.0112	0.0100	96		0.0377	± 0.0084	0.0110
47	U	0.0203	±	0.0184	0.0527	97		0.0392	± 0.0101	0.0176
48		0.0617	±	0.0179	0.0235	98	U	0.0124	± 0.0173	0.0596
49	U	0.0252	±	0.0190	0.0516	99		0.0217	± 0.0072	0.0127
50		0.0619	±	0.0128	0.0227	100	U	0.0385	± 0.0340	0.1132
50-DUP ^b		0.0454	±	0.0116	0.0484	100-DUP ^b	U	-0.0425	± 0.0456	0.1184

Table 6 (cont.)
2016 Radon Flux Monitoring Results^a
Niagara Falls Storage Site

NFSS Sample ID	Qualifie	Radon-222 Flux			NFSS Sample ID	Qualifie	Radon-222 Flux				
		(pCi/m ² /s)		MDA			(pCi/m ² /s)		MDA		
101	U	0.0561	±	0.0212	0.0652	151		0.0347	± 0.0098	0.0247	
102		0.0449	±	0.0108	0.0247	152		0.0450	± 0.0108	0.0231	
103		0.0454	±	0.0118	0.0326	153	U	0.0407	± 0.0297	0.1237	
104	U	0.0547	±	0.0178	0.0722	154		0.0902	± 0.0177	0.0329	
105		0.0458	±	0.0127	0.0270	155	U	0.0368	± 0.0368	0.0801	
106		0.0768	±	0.0258	0.0457	156	U	-0.0111	± 0.0372	0.1058	
107		0.0425	±	0.0100	0.0139	157		0.0338	± 0.0075	0.0130	
108		0.0996	±	0.0196	0.0591	158		0.0627	± 0.0137	0.0402	
109		0.0445	±	0.0116	0.0247	159		0.0477	± 0.0104	0.0133	
110		0.1081	±	0.0314	0.0419	160	U	0.0688	± 0.0345	0.1391	
110-DUP ^b		0.1447	±	0.0316	0.0418	160-DUP ^b	U	0.1145	± 0.0358	0.0834	
111	U	0.0441	±	0.0172	0.0619	161		0.0380	± 0.0099	0.0320	
112		0.0731	±	0.0150	0.0191	162	U	-0.0023	± 0.0140	0.0497	
113		0.0411	±	0.0098	0.0128	163		0.0569	± 0.0133	0.0300	
114	U	0.0404	±	0.0239	0.0689	164		0.1046	± 0.0190	0.0252	
115		0.0423	±	0.0104	0.0191	165	U	0.0123	± 0.0125	0.0562	
116		0.0911	±	0.0180	0.0366	166		0.0504	± 0.0193	0.0634	
117	U	-0.0299	±	0.0443	0.0957	167	U	-0.0015	± 0.0148	0.0493	
118		0.0251	±	0.0089	0.0309	168		0.1298	± 0.0212	0.0181	
119	U	0.0368	±	0.0217	0.0621	169	U	0.0153	± 0.0137	0.0407	
120	U	0.0000	±	0.0571	0.0571	170		0.1180	± 0.0274	0.0864	
120-DUP ^b	U	0.0363	±	0.0175	0.0430	170-DUP ^b		0.0962	± 0.0281	0.0972	
121	U	0.0020	±	0.0052	0.0615	171		0.0950	± 0.0152	0.0167	
122		0.0587	±	0.0125	0.0190	172		0.0568	± 0.0141	0.0455	
123	U	0.0438	±	0.0310	0.1222	173		0.0440	± 0.0104	0.0234	
124	U	0.0396	±	0.0193	0.0629	174		0.0343	± 0.0084	0.0131	
125		0.1024	±	0.0200	0.0680	175	U	0.0471	± 0.0158	0.0479	
126		0.0907	±	0.0179	0.0245	176		0.0324	± 0.0087	0.0121	
127		0.0962	±	0.0248	0.0415	177	U	-0.0032	± 0.0216	0.1121	
128		0.0675	±	0.0135	0.0285	178	U	0.0000	± 0.0572	0.0572	
129		0.0664	±	0.0152	0.0466	179		0.0668	± 0.0138	0.0128	
130		0.0760	±	0.0145	0.0127	180		0.0482	± 0.0111	0.0135	
130-DUP ^b		0.0800	±	0.0173	0.0386	180-DUP ^b		0.0693	± 0.0128	0.0135	
131		0.1202	±	0.0316	0.0868	181 ^c	U	0.0475	± 0.0148	0.0537	
132		0.0799	±	0.0147	0.0175	182 ^c		0.0800	± 0.0156	0.0283	
133		0.0520	±	0.0115	0.0263	183 ^c	U	0.0000	± 0.1520	0.1520	
134		0.0838	±	0.0220	0.0416	Average background	0.04250 (pCi/m ² /s)			IWCS Average ^e High ^f Low	
135		0.0503	±	0.0116	0.0263		(pCi/m ² /s)				
136		0.0389	±	0.0142	0.0566		Value (pCi/m ² /s)				
137		0.0754	±	0.0149	0.0245		0.0537				
138		0.1139	±	0.0297	0.0414		(pCi/m ² /s)				
139		0.0353	±	0.0089	0.0138		0.1734				
140		0.0486	±	0.0132	0.0262		(pCi/m ² /s)				
140-DUP ^b		0.0573	±	0.0133	0.0189		-0.0425				
141		0.0594	±	0.0238	0.1053		(pCi/m ² /s)				
142		0.0485	±	0.0119	0.0469		181-Lewiston-Porter Central School				
143		0.0955	±	0.0156	0.0245		182-Lewiston Water Pollution Control Center				
144		0.1088	±	0.0175	0.0229		183-Balmer Rd. (CWM Secondary Gate)				
145	U	-0.0096	±	0.0348	0.1148						
146		0.0645	±	0.0119	0.0287						
147		0.0576	±	0.0140	0.0474						
148		0.0795	±	0.0161	0.0487						
149	U	0.1239	±	0.0374	0.0954						
150		0.0440	±	0.0093	0.0166						
150-DUP ^b		0.0451	±	0.0099	0.0109						

NOTE: The EPA Standard for Radon-222 Flux is 20 pCi/m²/sec

a. Radon-222 flux was performed on July 19-20, 2016

b. Every 10th canister is counted twice as a quality control (QC) duplicate to evaluate analytical precision.

c. Background:

181-Lewiston-Porter Central School

182-Lewiston Water Pollution Control Center

183-Balmer Rd. (CWM Secondary Gate)

d. Data Qualifier: U - no analyte was detected (Non-Detect).

J - indicates an estimated value when relative percent difference > 30% and Z-score > 1.96 between the primary finding and duplicate (-DUP).

e. Average of all values (detects and Un-detects)

f. Highest detectable finding.

Table 7
2016 Surface water Field Parameter Measurements
Niagara Falls Storage Site

Page 1 of 1

SURFACE WATER

Surface Water	Date	Temperature (°F ^a)	pH	ORP ^f (mV ^g)	Spec. Cond. ^b (mS/cm ^c)	Turbidity (NTU ^h)	DO ^d (mg/L ^e)
SWSD025 ¹	02/11/2016	34.3	7.32	140	1.44	3.8	8.92
SWSD009 ⁴	04/06/2016	43.1	8.36	153	1.92	91.6	-
SWSD010	04/07/2016	44.3	7.51	289	1.33	45.1	6.56
SWSD011	04/07/2016	42.0	7.62	302	0.96	7.0	8.50
SWSD021 ⁴	04/07/2016	43.7	7.92	196	0.83	56.5	9.07
SWSD022	04/07/2016	43.6	7.55	325	1.10	28.1	9.28
SWSD023 ⁴	04/06/2016	43.2	6.90	118	0.99	88.7	-
SWSD025 ¹	04/07/2016	43.1	7.61	297	1.07	18.2	7.03
WDD2	04/07/2016	43.4	7.48	230	0.77	36.9	9.80
WDD3	04/07/2016	43.3	7.48	299	0.75	31.3	7.46
SWSD025 ^{2,3,4}	02/24/2016	58.8	6.08	202	0.40	176.0	9.45
SWSD025 ^{2,3}	04/26/2016	63.4	6.75	191.0	1.30	3.1	6.84
SWSD025 ^{2,3}	06/05/2016	68.6	6.89	219.0	1.38	2.7	3.36
SWSD025 ^{2,3,4}	08/13/2016	79.3	7.34	54.0	0.75	71.0	3.00
SWSD025 ^{2,3}	08/31/2016	68.9	7.27	171.0	1.23	1.0	6.84
SWSD025 ^{2,3}	09/10/2016	69.7	7.56	183.0	1.30	0.6	6.56
SWSD025 ^{2,3}	09/26/2016	61.8	8.15	104.0	1.18	0.9	6.90
SWSD025 ^{2,3}	10/13/2016	68.8	7.29	265.0	1.28	5.3	6.07
SWSD025 ^{2,3}	11/03/2016	67.3	6.62	242.0	0.75	15.1	6.67
SWSD025 ¹	08/18/2016	71.9	7.03	-70.0	1.34	128.0	2.65
SWSD009 ⁴	10/3/2016	66.5	8.47				
SWSD010	10/3/2016	61.6	7.35	72.0	1.23	12.5	2.43
SWSD011	10/3/2016	61.5	7.27	166.0	1.30	9.7	5.35
SWSD021 ⁵	10/3/2016	Location Dry - No Water Sample or Water Quality Measurements Taken					
SWSD022	10/3/2016	62.3	7.47	81.0	1.23	10.8	5.13
SWSD023 ⁴	10/3/2016	68.4	6.29	172.0	1.58	215.0	8.33
SWSD025 ¹	10/3/2016	61.4	7.49	103.0	1.23	4.1	4.85
WDD2	10/3/2016	62.7	7.53	222.0	2.02	4.2	8.67
WDD3	10/3/2016	61.9	7.63	181.0	2.05	4.0	6.95

a. °F - Degrees Fahrenheit.

b. Spec. Cond. - Specific conductance.

c. mS/cm - milliSiemens/centimeter.

d. DO - Dissolved oxygen.

e. mg/L - milligrams per liter.

f. ORP - Oxidation-Reduction potential.

g. mV - milliVolts.

h. NTU - Nephelometric turbidity units.

NA - Not Applicable

*Parameter not taken/meter malfunction

¹ NYSDOH requested sampling location for quarterly sampling.

² Rain Event -sample taken by autosampler.

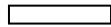
³Water quality parameters taken after the sample has been retrieved.

⁴Primary sample will have an accompanying filtered sample (-F).

⁵Location was dry (no water to sample).

TABLE 8
SURFACE WATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD009	SWSD009	SWSD009	SWSD010	SWSD010
Field Sample Identifier :			SWSD009	SWSD009-D	SWSD009	SWSD010	SWSD010
Sample Type :			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/06/16	04/06/16	10/03/16	04/07/16	10/03/16
Parameter	Units	Criteria ¹		Field Duplicate			
RADIOMNUCLIDES							
RADIUM-226	PCi/L	3	0.35 U	-0.281 U	0.736	-0.14 U	0 U
TOTAL URANIUM	UG/L	30	6.86	6.77	2.06	12.3	3.37
RADIOMNUCLIDES (FILTERED)							
RADIUM-226	PCi/L	3	-0.057 U	Not Analyzed	0.166 U	Not Analyzed	Not Analyzed
TOTAL URANIUM	UG/L	30	6.82	Not Analyzed	2.01	Not Analyzed	Not Analyzed



Concentration Exceeds Criteria

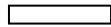
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 8
SURFACE WATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD011	SWSD011	SWSD011	SWSD021	SWSD022
Field Sample Identifier :			SWSD011	SWSD011	SWSD011-D	SWSD021	SWSD022
Sample Type :			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	10/03/16	10/03/16	04/07/16	04/07/16
Parameter	Units	Criteria ¹			Field Duplicate		
RADIATION							
RADIUM-226	PCi/L	3	-0.068 U	0.178 U	-0.055 U	0.319 U	0.141 U
TOTAL URANIUM	UG/L	30	15.6	3.39	3.25	13.4	16.8
RADIATION (FILTERED)							
RADIUM-226	PCi/L	3	Not Analyzed	Not Analyzed	Not Analyzed	-0.139 U	Not Analyzed
TOTAL URANIUM	UG/L	30	Not Analyzed	Not Analyzed	Not Analyzed	13.8	Not Analyzed



Concentration Exceeds Criteria

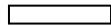
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 8
SURFACE WATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Field Sample Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025-R
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/03/16	04/06/16	10/03/16	02/10/16	02/24/16
Parameter	Units	Criteria ¹					
RADIATION							
RADIUM-226	PCi/L	3	-0.059 U	1.12	0 U	0.175 U	0 U
TOTAL URANIUM	UG/L	30	3.15	7.46	2.12	12.8	7.08
RADIATION (FILTERED)							
RADIUM-226	PCi/L	3	Not Analyzed	0.0589 U	-0.057 U	Not Analyzed	0.0594 U
TOTAL URANIUM	UG/L	30	Not Analyzed	7.67	1.82	Not Analyzed	7.12



Concentration Exceeds Criteria

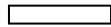
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 8
SURFACE WATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD025	SWSD025	SWSD025	SWSD025	SWSD025
Field Sample Identifier :			SWSD025	SWSD025-R	SWSD025-R	SWSD025-R	SWSD025
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	04/26/16	06/05/16	08/13/16	08/18/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.0769 U	0.182 U	0 U	0 U	0 U
TOTAL URANIUM	UG/L	30	16.9	8.5	2.35	4.68	9.1
RADIUM-226	PCi/L	3	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.267 U	Not Anaylzed
TOTAL URANIUM	UG/L	30	Not Anaylzed	Not Anaylzed	Not Anaylzed	4.44	Not Anaylzed



Concentration Exceeds Criteria

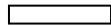
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters) . 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 8
SURFACE WATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD025	SWSD025	SWSD025	SWSD025	SWSD025
Field Sample Identifier :			SWSD025-R	SWSD025-R	SWSD025-R	SWSD025	SWSD025-R
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			08/31/16	09/10/16	09/26/16	10/03/16	10/13/16
Parameter	Units	Criteria ¹					
RADIATION							
RADIUM-226	PCi/L	3	0.279 U	-0.14 U	0 U	-0.189 U	0.198 U
TOTAL URANIUM	UG/L	30	7.15	3.24	2.45	2.86	3.72
RADIATION (FILTERED)							
RADIUM-226	PCi/L	3	Not Analyzed				
TOTAL URANIUM	UG/L	30	Not Analyzed				



Concentration Exceeds Criteria

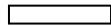
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 8
SURFACE WATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD025	WDD2	WDD2	WDD3	WDD3
Field Sample Identifier :			SWSD025-R	WDD2	WDD2	WDD3	WDD3
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			11/03/16	04/07/16	10/03/16	04/07/16	10/03/16
Parameter	Units	Criteria ¹					
RADIATION							
RADIUM-226	PCi/L	3	0 U	-0.057 U	0 U	0.52 U	-0.086 U
TOTAL URANIUM	UG/L	30	1.96	2.64	0.351	3.08	0.303
RADIATION (FILTERED)							
RADIUM-226	PCi/L	3	Not Analyzed				
TOTAL URANIUM	UG/L	30	Not Analyzed				



Concentration Exceeds Criteria

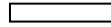
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 9
SURFACE WATER ANALYTICAL RESULTS - PAHs
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD009	SWSD009	SWSD010	SWSD010	SWSD011
Field Sample Identifier :			SWSD009	SWSD009	SWSD010	SWSD010	SWSD011
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/06/16	10/03/16	04/06/16	10/03/16	04/07/16
Parameter	Units	Criteria ¹					
SEMI-VOLATILE ORGANIC ANALYSES							
2-METHYLNAPHTHALENE	UG/L	4.7	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
ACENAPHTHENE	UG/L	5.3	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
ACENAPHTHYLENE	UG/L	50	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
ANTHRACENE	UG/L	3.8	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
BENZO(A)ANTHRACENE	UG/L	0.03	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
BENZO(A)PYRENE	UG/L	0.0012	0.52 U	2.4 U	0.5 U	2.4 U	0.5 U
BENZO(B)FLUORANTHENE	UG/L	0.002	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
BENZO(G,H,I)PERYLENE	UG/L	50	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
BENZO(K)FLUORANTHENE	UG/L	0.002	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
CHRYSENE	UG/L	0.002	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
DIBENZ(A,H)ANTHRACENE	UG/L	50	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
FLUORANTHENE	UG/L	50	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
FLUORENE	UG/L	0.54	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
INDENO(1,2,3-C,D)PYRENE	UG/L	0.002	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
NAPHTHALENE	UG/L	13	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
PHENANTHRENE	UG/L	5	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U
PYRENE	UG/L	4.6	0.52 U	0.94 U	0.5 U	0.94 U	0.5 U



Concentration Exceeds Criteria

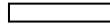
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 9
SURFACE WATER ANALYTICAL RESULTS - PAHs
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD011	SWSD021	SWSD022	SWSD022	SWSD023
Field Sample Identifier :			SWSD011	SWSD021	SWSD022	SWSD022	SWSD023
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/03/16	04/07/16	04/07/16	10/03/16	04/06/16
Parameter	Units	Criteria ¹					
SEMI-VOLATILE ORGANIC ANALYSES							
2-METHYLNAPHTHALENE	UG/L	4.7	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
ACENAPHTHENE	UG/L	5.3	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
ACENAPHTHYLENE	UG/L	50	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
ANTHRACENE	UG/L	3.8	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
BENZO(A)ANTHRACENE	UG/L	0.03	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
BENZO(A)PYRENE	UG/L	0.0012	2.3 U	0.5 U	0.5 U	2.4 U	0.55 U
BENZO(B)FLUORANTHENE	UG/L	0.002	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
BENZO(G,H,I)PERYLENE	UG/L	50	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
BENZO(K)FLUORANTHENE	UG/L	0.002	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
CHRYSENE	UG/L	0.002	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
DIBENZ(A,H)ANTHRACENE	UG/L	50	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
FLUORANTHENE	UG/L	50	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
FLUORENE	UG/L	0.54	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
INDENO(1,2,3-C,D)PYRENE	UG/L	0.002	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
NAPHTHALENE	UG/L	13	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
PHENANTHRENE	UG/L	5	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U
PYRENE	UG/L	4.6	0.93 U	0.5 U	0.5 U	0.95 U	0.55 U



Concentration Exceeds Criteria

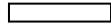
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 9
SURFACE WATER ANALYTICAL RESULTS - PAHs
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD023	SWSD025	SWSD025	SWSD025	SWSD025
Field Sample Identifier :			SWSD023	SWSD025	SWSD025	SWSD025	SWSD025
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/03/16	02/10/16	04/07/16	08/18/16	10/03/16
Parameter	Units	Criteria ¹					
SEMI-VOLATILE ORGANIC ANALYSES							
2-METHYLNAPHTHALENE	UG/L	4.7	0.94 U	0.5 U	0.5 U	1 U	0.94 U
ACENAPHTHENE	UG/L	5.3	0.94 U	0.5 U	0.5 U	1 U	0.94 U
ACENAPHTHYLENE	UG/L	50	0.94 U	0.5 U	0.5 U	1 U	0.94 U
ANTHRACENE	UG/L	3.8	0.94 U	0.5 U	0.5 U	1 U	0.94 U
BENZO(A)ANTHRACENE	UG/L	0.03	0.94 U	0.5 U	0.5 U	1 U	0.94 U
BENZO(A)PYRENE	UG/L	0.0012	2.4 U	0.5 U	0.5 U	2.5 U	2.4 U
BENZO(B)FLUORANTHENE	UG/L	0.002	0.94 U	0.5 U	0.5 U	1 U	0.94 U
BENZO(G,H,I)PERYLENE	UG/L	50	0.94 U	0.5 U	0.5 U	1 U	0.94 U
BENZO(K)FLUORANTHENE	UG/L	0.002	0.94 U	0.5 U	0.5 U	1 U	0.94 U
CHRYSENE	UG/L	0.002	0.94 U	0.5 U	0.5 U	1 U	0.94 U
DIBENZ(A,H)ANTHRACENE	UG/L	50	0.94 U	0.5 U	0.5 U	1 U	0.94 U
FLUORANTHENE	UG/L	50	0.94 U	0.5 U	0.5 U	1 U	0.94 U
FLUORENE	UG/L	0.54	0.94 U	0.5 U	0.5 U	1 U	0.94 U
INDENO(1,2,3-C,D)PYRENE	UG/L	0.002	0.94 U	0.5 U	0.5 U	1 U	0.94 U
NAPHTHALENE	UG/L	13	0.94 U	0.5 U	0.5 U	1 U	0.94 U
PHENANTHRENE	UG/L	5	0.94 U	0.5 U	0.5 U	1 U	0.94 U
PYRENE	UG/L	4.6	0.94 U	0.5 U	0.5 U	1 U	0.94 U



Concentration Exceeds Criteria

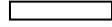
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 9
SURFACE WATER ANALYTICAL RESULTS - PAHs
NIAGARA FALLS STORAGE SITE

Location Identifier :			WDD2	WDD2	WDD3	WDD3
Field Sample Identifier :			WDD2	WDD2	WDD3	WDD3
Sample Type :			Surface Water	Surface Water	Surface Water	Surface Water
Sample Depth Interval (ft) :			-	-	-	-
Date of Sample :			04/07/16	10/03/16	04/07/16	10/03/16
Parameter	Units	Criteria ¹				
SEMI-VOLATILE ORGANIC ANALYSES						
2-METHYLNAPHTHALENE	UG/L	4.7	0.5 U	0.93 U	0.5 U	0.93 U
ACENAPHTHENE	UG/L	5.3	0.5 U	0.93 U	0.5 U	0.93 U
ACENAPHTHYLENE	UG/L	50	0.5 U	0.93 U	0.5 U	0.93 U
ANTHRACENE	UG/L	3.8	0.5 U	0.93 U	0.5 U	0.93 U
BENZO(A)ANTHRACENE	UG/L	0.03	0.5 U	0.93 U	0.5 U	0.93 U
BENZO(A)PYRENE	UG/L	0.0012	0.5 U	2.3 U	0.5 U	2.3 U
BENZO(B)FLUORANTHENE	UG/L	0.002	0.5 U	0.93 U	0.5 U	0.93 U
BENZO(G,H,I)PERYLENE	UG/L	50	0.5 U	0.93 U	0.5 U	0.93 U
BENZO(K)FLUORANTHENE	UG/L	0.002	0.5 U	0.93 U	0.5 U	0.93 U
CHRYSENE	UG/L	0.002	0.5 U	0.93 U	0.5 U	0.93 U
DIBENZ(A,H)ANTHRACENE	UG/L	50	0.5 U	0.93 U	0.5 U	0.93 U
FLUORANTHENE	UG/L	50	0.5 U	0.93 U	0.5 U	0.93 U
FLUORENE	UG/L	0.54	0.5 U	0.93 U	0.5 U	0.93 U
INDENO(1,2,3-C,D)PYRENE	UG/L	0.002	0.5 U	0.93 U	0.5 U	0.93 U
NAPHTHALENE	UG/L	13	0.5 U	0.93 U	0.5 U	0.93 U
PHENANTHRENE	UG/L	5	0.5 U	0.93 U	0.5 U	0.93 U
PYRENE	UG/L	4.6	0.5 U	0.93 U	0.5 U	0.93 U



Concentration Exceeds Criteria

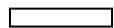
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD009	SWSD009	SWSD009	SWSD010	SWSD010
Field Sample Identifier :			SWSD009	SWSD009-D	SWSD009	SWSD010	SWSD010
Sample Type :			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/06/16	04/06/16	10/03/16	04/07/16	10/03/16
Parameter	Units	Criteria ¹		Field Duplicate			
METALS							
ALUMINUM	UG/L	100	240 J	100 J	750	150	280
ANTIMONY	UG/L	3	5.6	6.3	4.4	3	2.3
ARSENIC	UG/L	150	2.1	1.9	2.5	1 J	1.3
BARIUM	UG/L	1000	62	60	210	57	140
BERYLLIUM	UG/L	1100	0.54 J	0.5 U	0.11 U	0.5 U	0.11 U
BORON	UG/L	10000	230 J	230 J	230	520	1,200
CADMIUM	UG/L	5	0.7 J	0.5 U	0.12 J	0.5 U	0.061 J
CALCIUM	UG/L	-	120,000	120,000	67,000	110,000	87,000
CHROMIUM, TOTAL	UG/L	50	2.2 J	1.9 J	1.3	7.8 J	1.2
COBALT	UG/L	5	1.2 J	0.63 J	0.81 J	0.39 J	0.36 J
COPPER	UG/L	200	12	11	9 J	6.8	3.8 U
IRON	UG/L	300	430 J	240 J	1,100	320	610
LEAD	UG/L	25	0.96 J	2.5 J	5.8	0.95 J	1.3
LITHIUM	UG/L	-	35 J	39 J	36	21 J	28
MAGNESIUM	UG/L	35000	46,000	47,000	29,000	37,000	30,000
MANGANESE	UG/L	300	62	60	190	23	94
MERCURY	UG/L	0.7	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
MOLYBDENUM	UG/L	-	11	8.5	8.8	4.8 J	7.3
NICKEL	UG/L	100	7.3 J	7 J	5.2	5.4 J	3.7



Concentration Exceeds Criteria

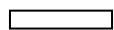
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD009	SWSD009	SWSD009	SWSD010	SWSD010
Field Sample Identifier :			SWSD009	SWSD009-D	SWSD009	SWSD010	SWSD010
Sample Type :			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/06/16	04/06/16	10/03/16	04/07/16	10/03/16
Parameter	Units	Criteria ¹		Field Duplicate			
METALS							
POTASSIUM	UG/L	-	11,000	11,000	13,000	6,800	11,000
SELENIUM	UG/L	10	3.6 J	2.2 J	3	2.5 U	2.1
SILVER	UG/L	50	0.5 U	0.5 U	0.02 U	0.5 U	0.02 U
SODIUM	UG/L	20000	170,000	170,000	96,000	96,000	100,000
THALLIUM	UG/L	8	0.44 J	0.5 U	0.026 U	0.5 U	0.026 U
VANADIUM	UG/L	14	2.2 J	1.4 J	3.2	1.3 J	1.6
ZINC	UG/L	2000	19 J	18 J	51	16 J	15
METALS (FILTERED)							
ALUMINUM	UG/L	100	12 J	Not Anaylzed	18 U	Not Anaylzed	Not Anaylzed
ANTIMONY	UG/L	3	5.7	Not Anaylzed	4.4	Not Anaylzed	Not Anaylzed
ARSENIC	UG/L	150	2.4	Not Anaylzed	1.5	Not Anaylzed	Not Anaylzed
BARIUM	UG/L	1000	60	Not Anaylzed	110	Not Anaylzed	Not Anaylzed
BERYLLIUM	UG/L	1100	0.5 U	Not Anaylzed	0.11 U	Not Anaylzed	Not Anaylzed
BORON	UG/L	10000	180 J	Not Anaylzed	240	Not Anaylzed	Not Anaylzed
CADMIUM	UG/L	5	0.32 J	Not Anaylzed	0.041 J	Not Anaylzed	Not Anaylzed
CALCIUM	UG/L	-	130,000	Not Anaylzed	67,000	Not Anaylzed	Not Anaylzed
CHROMIUM, TOTAL	UG/L	50	3.3 J	Not Anaylzed	0.39 J	Not Anaylzed	Not Anaylzed
COBALT	UG/L	5	0.58 J	Not Anaylzed	0.54 J	Not Anaylzed	Not Anaylzed
COPPER	UG/L	200	10	Not Anaylzed	4.6 J	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

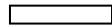
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
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NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD009	SWSD009	SWSD009	SWSD010	SWSD010
Field Sample Identifier :			SWSD009	SWSD009-D	SWSD009	SWSD010	SWSD010
Sample Type :			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/06/16	04/06/16	10/03/16	04/07/16	10/03/16
Parameter	Units	Criteria ¹		Field Duplicate			
METALS (FILTERED)							
IRON	UG/L	300	120 U	Not Anaylzed	13 J	Not Anaylzed	Not Anaylzed
LEAD	UG/L	25	0.33 J	Not Anaylzed	0.24 J	Not Anaylzed	Not Anaylzed
LITHIUM	UG/L	-	36 J	Not Anaylzed	38	Not Anaylzed	Not Anaylzed
MAGNESIUM	UG/L	35000	46,000	Not Anaylzed	30,000	Not Anaylzed	Not Anaylzed
MANGANESE	UG/L	300	18	Not Anaylzed	110	Not Anaylzed	Not Anaylzed
MERCURY	UG/L	7.00E-04	0.1 U	Not Anaylzed	0.1 U	Not Anaylzed	Not Anaylzed
MOLYBDENUM	UG/L	-	7.4	Not Anaylzed	8.6	Not Anaylzed	Not Anaylzed
NICKEL	UG/L	100	7.8 J	Not Anaylzed	3.6	Not Anaylzed	Not Anaylzed
POTASSIUM	UG/L	-	9,500	Not Anaylzed	13,000	Not Anaylzed	Not Anaylzed
SELENIUM	UG/L	4.6	5	Not Anaylzed	2	Not Anaylzed	Not Anaylzed
SILVER	UG/L	50	0.5 U	Not Anaylzed	0.11 J	Not Anaylzed	Not Anaylzed
SODIUM	UG/L	20000	190,000	Not Anaylzed	99,000	Not Anaylzed	Not Anaylzed
THALLIUM	UG/L	8	0.5 U	Not Anaylzed	0.027 J	Not Anaylzed	Not Anaylzed
VANADIUM	UG/L	14	1.6 J	Not Anaylzed	1.7	Not Anaylzed	Not Anaylzed
ZINC	UG/L	2000	18 J	Not Anaylzed	8.6 J	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

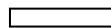
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters) . 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
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NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD011	SWSD011	SWSD011	SWSD021	SWSD022
Field Sample Identifier :			SWSD011	SWSD011	SWSD011-D	SWSD021	SWSD022
Sample Type :			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	10/03/16	10/03/16	04/07/16	04/07/16
Parameter	Units	Criteria ¹			Field Duplicate		
METALS							
ALUMINUM	UG/L	100	140	160	210	360	190
ANTIMONY	UG/L	3	1.3 J	0.71 J	0.76 J	0.42 J	2.1 J
ARSENIC	UG/L	150	0.74 J	1.5	1.4	0.78 J	1 U
BARIUM	UG/L	1000	59	71	76	65	59
BERYLLIUM	UG/L	1100	0.5 U	0.11 U	0.11 U	0.5 U	0.5 U
BORON	UG/L	10000	360 J	810	780	57 J	360 J
CADMIUM	UG/L	5	0.5 U	0.045 J	0.04 U	0.5 U	0.5 U
CALCIUM	UG/L	-	100,000	100,000	110,000	97,000	100,000
CHROMIUM, TOTAL	UG/L	50	7 J	1.1	1.3	12	11
COBALT	UG/L	5	0.34 J	0.34 J	0.38 J	0.4 J	0.36 J
COPPER	UG/L	200	4.5 J	3.8 U	3.8 U	5 J	5.6
IRON	UG/L	300	300	1,600	1,500	470	340
LEAD	UG/L	25	1.1	0.35 J	0.38 J	0.32 J	0.52 J
LITHIUM	UG/L	-	13 J	26	27	16 J	17 J
MAGNESIUM	UG/L	35000	32,000	31,000	32,000	42,000	35,000
MANGANESE	UG/L	300	25	260	230	16	25
MERCURY	UG/L	0.7	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
MOLYBDENUM	UG/L	-	3.1 J	3.3	3.5	2.6 J	3.8 J
NICKEL	UG/L	100	4.2 J	2.7	2.6	3.3 J	4.4 J



Concentration Exceeds Criteria

(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
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NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD011	SWSD011	SWSD011	SWSD021	SWSD022
Field Sample Identifier :			SWSD011	SWSD011	SWSD011-D	SWSD021	SWSD022
Sample Type :			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	10/03/16	10/03/16	04/07/16	04/07/16
Parameter	Units	Criteria ¹			Field Duplicate		
METALS							
POTASSIUM	UG/L	-	4,600	8,400	8,800	3,700	5,600
SELENIUM	UG/L	10	2.5 U	2.7	3.4	2 J	2.5 U
SILVER	UG/L	50	0.5 U	0.02 U	0.051 J	0.5 U	0.5 U
SODIUM	UG/L	20000	40,000	98,000	100,000	22,000	69,000
THALLIUM	UG/L	8	0.5 U	0.026 U	0.026 U	0.5 U	0.5 U
VANADIUM	UG/L	14	1.2 J	0.96 J	1 J	1.3 J	0.96 J
ZINC	UG/L	2000	12 J	14 J	28 J	4.7 J	10 J
METALS (FILTERED)							
ALUMINUM	UG/L	100	Not Anaylzed	Not Anaylzed	Not Anaylzed	6 J	Not Anaylzed
ANTIMONY	UG/L	3	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.68 J	Not Anaylzed
ARSENIC	UG/L	150	Not Anaylzed	Not Anaylzed	Not Anaylzed	1 U	Not Anaylzed
BARIUM	UG/L	1000	Not Anaylzed	Not Anaylzed	Not Anaylzed	61	Not Anaylzed
BERYLLIUM	UG/L	1100	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.5 U	Not Anaylzed
BORON	UG/L	10000	Not Anaylzed	Not Anaylzed	Not Anaylzed	53 J	Not Anaylzed
CADMIUM	UG/L	5	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.5 U	Not Anaylzed
CALCIUM	UG/L	-	Not Anaylzed	Not Anaylzed	Not Anaylzed	94,000	Not Anaylzed
CHROMIUM, TOTAL	UG/L	50	Not Anaylzed	Not Anaylzed	Not Anaylzed	14	Not Anaylzed
COBALT	UG/L	5	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.29 J	Not Anaylzed
COPPER	UG/L	200	Not Anaylzed	Not Anaylzed	Not Anaylzed	4 J	Not Anaylzed

Concentration Exceeds Criteria

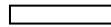
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

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TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD011	SWSD011	SWSD011	SWSD021	SWSD022
Field Sample Identifier :			SWSD011	SWSD011	SWSD011-D	SWSD021	SWSD022
Sample Type :			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	10/03/16	10/03/16	04/07/16	04/07/16
Parameter	Units	Criteria ¹			Field Duplicate		
METALS (FILTERED)							
IRON	UG/L	300	Not Anaylzed	Not Anaylzed	Not Anaylzed	51 J	Not Anaylzed
LEAD	UG/L	25	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.5 U	Not Anaylzed
LITHIUM	UG/L	-	Not Anaylzed	Not Anaylzed	Not Anaylzed	16 J	Not Anaylzed
MAGNESIUM	UG/L	35000	Not Anaylzed	Not Anaylzed	Not Anaylzed	43,000	Not Anaylzed
MANGANESE	UG/L	300	Not Anaylzed	Not Anaylzed	Not Anaylzed	9.8	Not Anaylzed
MERCURY	UG/L	7.00E-04	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.1 U	Not Anaylzed
MOLYBDENUM	UG/L	-	Not Anaylzed	Not Anaylzed	Not Anaylzed	2.4 J	Not Anaylzed
NICKEL	UG/L	100	Not Anaylzed	Not Anaylzed	Not Anaylzed	3.7 J	Not Anaylzed
POTASSIUM	UG/L	-	Not Anaylzed	Not Anaylzed	Not Anaylzed	3,500	Not Anaylzed
SELENIUM	UG/L	4.6	Not Anaylzed	Not Anaylzed	Not Anaylzed	2.5 U	Not Anaylzed
SILVER	UG/L	50	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.5 U	Not Anaylzed
SODIUM	UG/L	20000	Not Anaylzed	Not Anaylzed	Not Anaylzed	24,000	Not Anaylzed
THALLIUM	UG/L	8	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.5 U	Not Anaylzed
VANADIUM	UG/L	14	Not Anaylzed	Not Anaylzed	Not Anaylzed	1.2 J	Not Anaylzed
ZINC	UG/L	2000	Not Anaylzed	Not Anaylzed	Not Anaylzed	2.5 J	Not Anaylzed



Concentration Exceeds Criteria

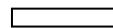
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters) . 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

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TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Field Sample Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/03/16	04/06/16	10/03/16	02/10/16	04/07/16
Parameter	Units	Criteria ¹					
METALS							
ALUMINUM	UG/L	100	180	140	900	110 J	130
ANTIMONY	UG/L	3	1.1	1.3 J	1.7	0.7 J	1.7 J
ARSENIC	UG/L	150	1.2	1 U	1.6	1.3 J	0.74 J
BARIUM	UG/L	1000	100	45	71	79	63
BERYLLIUM	UG/L	1100	0.11 U	0.5 U	0.11 U	0.5 U	0.5 U
BORON	UG/L	10000	2,000	150 J	200	410 J	340 J
CADMIUM	UG/L	5	0.04 J	0.5 U	0.12 J	0.5 U	0.5 U
CALCIUM	UG/L	-	87,000	110,000	150,000	140,000	110,000
CHROMIUM, TOTAL	UG/L	50	1.2	2 J	1.4	5.6 J	9 J
COBALT	UG/L	5	0.34 J	0.34 J	0.55 J	0.39 J	0.34 J
COPPER	UG/L	200	3.8 U	7.4	8.6 J	6.1	5.4
IRON	UG/L	300	990	340	1,500	320	280
LEAD	UG/L	25	0.58 J	1.7	5	0.3 J	0.5 J
LITHIUM	UG/L	-	25	12 J	27	17 J	16 J
MAGNESIUM	UG/L	35000	29,000	31,000	38,000	36,000	34,000
MANGANESE	UG/L	300	190	25	210	42	23
MERCURY	UG/L	0.7	0.1 U				
MOLYBDENUM	UG/L	-	4.6	3.3 J	6.1	5.2	3.4 J
NICKEL	UG/L	100	2.6	4.9 J	3.4	5.6 J	4.7 J



Concentration Exceeds Criteria

(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

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NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Field Sample Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/03/16	04/06/16	10/03/16	02/10/16	04/07/16
Parameter	Units	Criteria ¹					
METALS							
POTASSIUM	UG/L	-	8,900	3,700	8,300	6,500 J	5,400
SELENIUM	UG/L	10	2.2	2.5 U	0.99 J	3.4 J	2.5 U
SILVER	UG/L	50	0.02 U	0.5 U	0.033 J	0.3 J	0.5 U
SODIUM	UG/L	20000	96,000	58,000	110,000	110,000	58,000
THALLIUM	UG/L	8	0.026 U	0.5 U	0.026 U	0.5 U	0.5 U
VANADIUM	UG/L	14	1.1	1.2 J	2.9	0.56 J	1.1 J
ZINC	UG/L	2000	9.4 J	18 J	30	7.4 J	8.8 J
METALS (FILTERED)							
ALUMINUM	UG/L	100	Not Anaylzed	12 J	18 U	Not Anaylzed	Not Anaylzed
ANTIMONY	UG/L	3	Not Anaylzed	1.5 J	1.5	Not Anaylzed	Not Anaylzed
ARSENIC	UG/L	150	Not Anaylzed	0.83 J	0.86 J	Not Anaylzed	Not Anaylzed
BARIUM	UG/L	1000	Not Anaylzed	43	60	Not Anaylzed	Not Anaylzed
BERYLLIUM	UG/L	1100	Not Anaylzed	0.5 U	0.11 U	Not Anaylzed	Not Anaylzed
BORON	UG/L	10000	Not Anaylzed	140 J	180	Not Anaylzed	Not Anaylzed
CADMIUM	UG/L	5	Not Anaylzed	0.5 U	0.04 U	Not Anaylzed	Not Anaylzed
CALCIUM	UG/L	-	Not Anaylzed	100,000	140,000	Not Anaylzed	Not Anaylzed
CHROMIUM, TOTAL	UG/L	50	Not Anaylzed	3.3 J	0.27 J	Not Anaylzed	Not Anaylzed
COBALT	UG/L	5	Not Anaylzed	0.29 J	0.3 J	Not Anaylzed	Not Anaylzed
COPPER	UG/L	200	Not Anaylzed	5 J	6.4 J	Not Anaylzed	Not Anaylzed

 Concentration Exceeds Criteria

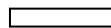
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TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Field Sample Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/03/16	04/06/16	10/03/16	02/10/16	04/07/16
Parameter	Units	Criteria ¹					
METALS (FILTERED)							
IRON	UG/L	300	Not Anaylzed	86 J	34	Not Anaylzed	Not Anaylzed
LEAD	UG/L	25	Not Anaylzed	0.5 U	0.14 J	Not Anaylzed	Not Anaylzed
LITHIUM	UG/L	-	Not Anaylzed	9.7 J	23	Not Anaylzed	Not Anaylzed
MAGNESIUM	UG/L	35000	Not Anaylzed	28,000	36,000	Not Anaylzed	Not Anaylzed
MANGANESE	UG/L	300	Not Anaylzed	21	170	Not Anaylzed	Not Anaylzed
MERCURY	UG/L	7.00E-04	Not Anaylzed	0.1 U	Not Anaylzed	Not Anaylzed	Not Anaylzed
MOLYBDENUM	UG/L	-	Not Anaylzed	2.5 J	6.3	Not Anaylzed	Not Anaylzed
NICKEL	UG/L	100	Not Anaylzed	4.1 J	2.2	Not Anaylzed	Not Anaylzed
POTASSIUM	UG/L	-	Not Anaylzed	3,500	7,200	Not Anaylzed	Not Anaylzed
SELENIUM	UG/L	4.6	Not Anaylzed	2.5 U	1.2	Not Anaylzed	Not Anaylzed
SILVER	UG/L	50	Not Anaylzed	0.5 U	0.02 U	Not Anaylzed	Not Anaylzed
SODIUM	UG/L	20000	Not Anaylzed	57,000	110,000	Not Anaylzed	Not Anaylzed
THALLIUM	UG/L	8	Not Anaylzed	0.16 U	0.026 U	Not Anaylzed	Not Anaylzed
VANADIUM	UG/L	14	Not Anaylzed	1.6 J	0.72 J	Not Anaylzed	Not Anaylzed
ZINC	UG/L	2000	Not Anaylzed	11 J	11	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

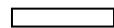
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters) . 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

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NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Field Sample Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			08/18/16	10/03/16	04/07/16	10/03/16	04/07/16
Parameter	Units	Criteria ¹					
METALS							
ALUMINUM	UG/L	100	50	94 J	990	18 U	440
ANTIMONY	UG/L	3	1.1 J	0.89 J	0.46 J	0.4 J	0.41 J
ARSENIC	UG/L	150	3	1.5	0.63 J	1.7	0.65 J
BARIUM	UG/L	1000	93	91	37	23	35
BERYLLIUM	UG/L	1100	0.11 U	0.11 U	0.5 U	0.11 U	0.5 U
BORON	UG/L	10000	470	2,000	82 J	300	72 J
CADMIUM	UG/L	5	0.1	0.04 U	0.5 U	0.086 J	0.5 U
CALCIUM	UG/L	-	120,000	92,000	72,000	160,000	71,000
CHROMIUM, TOTAL	UG/L	50	1.2	0.93 J	2.5 J	0.29 J	2.2 J
COBALT	UG/L	5	0.2	0.26 J	0.5 J	0.82 J	0.38 J
COPPER	UG/L	200	3.8 U	3.8 U	5.8	11	5.1
IRON	UG/L	300	1,500	1,000	990	100	560
LEAD	UG/L	25	0.2	0.41 J	0.9 J	0.3 J	0.82 J
LITHIUM	UG/L	-	26	26	9.3 J	5.7 J	8.3 J
MAGNESIUM	UG/L	35000	33,000	30,000	24,000	55,000	24,000
MANGANESE	UG/L	300	1,100	200	20	6.5	17
MERCURY	UG/L	0.7	0.1 U	0.1 U	0.061 J	0.1 U	0.1 U
MOLYBDENUM	UG/L	-	14	3.8	1.6 J	7.6	1.4 J
NICKEL	UG/L	100	3.4	2.1	4.1 J	3.3	3.7 J



Concentration Exceeds Criteria

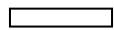
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

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TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Field Sample Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			08/18/16	10/03/16	04/07/16	10/03/16	04/07/16
Parameter	Units	Criteria ¹					
METALS							
POTASSIUM	UG/L	-	9,500	9,200	12,000	170,000	12,000
SELENIUM	UG/L	10	3.7	2.7	2.5 U	0.58 J	2.5 U
SILVER	UG/L	50	0.02 U	0.02 U	0.5 U	0.02 U	0.5 U
SODIUM	UG/L	20000	94,000	100,000	34,000	20,000	32,000
THALLIUM	UG/L	8	0.019 U	0.026 U	0.5 U	0.026 U	0.5 U
VANADIUM	UG/L	14	2.3	0.84 J	1.9 J	1	1.4 J
ZINC	UG/L	2000	4	8.9 J	34 J	110	32 J
METALS (FILTERED)							
ALUMINUM	UG/L	100	18 U	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
ANTIMONY	UG/L	3	Not Anaylzed				
ARSENIC	UG/L	150	2.7	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
BARIUM	UG/L	1000	84	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
BERYLLIUM	UG/L	1100	0.11 U	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
BORON	UG/L	10000	450	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
CADMIUM	UG/L	5	0.1	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
CALCIUM	UG/L	-	130,000	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
CHROMIUM, TOTAL	UG/L	50	1.1	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
COBALT	UG/L	5	0.2	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
COPPER	UG/L	200	3.8 U	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

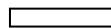
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Field Sample Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Sample Type :			Surface Water				
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			08/18/16	10/03/16	04/07/16	10/03/16	04/07/16
Parameter	Units	Criteria ¹					
METALS (FILTERED)							
IRON	UG/L	300	440	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
LEAD	UG/L	25	0.2	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
LITHIUM	UG/L	-	24	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
MAGNESIUM	UG/L	35000	31,000	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
MANGANESE	UG/L	300	1,100	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
MERCURY	UG/L	7.00E-04	0.1 U	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
MOLYBDENUM	UG/L	-	13	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
NICKEL	UG/L	100	3.2	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
POTASSIUM	UG/L	-	8,900	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
SELENIUM	UG/L	4.6	3.1	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
SILVER	UG/L	50	Not Anaylzed				
SODIUM	UG/L	20000	93,000	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
THALLIUM	UG/L	8	0.026 U	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
VANADIUM	UG/L	14	1.6	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
ZINC	UG/L	2000	12	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

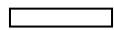
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters) . 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :		WDD3	
Field Sample Identifier :		WDD3	
Sample Type :		Surface Water	
Sample Depth Interval (ft) :		-	
Date of Sample :		10/03/16	
Parameter	Units	Criteria ¹	
METALS			
ALUMINUM	UG/L	100	19 J
ANTIMONY	UG/L	3	0.39 J
ARSENIC	UG/L	150	1.9
BARIUM	UG/L	1000	25
BERYLLIUM	UG/L	1100	0.11 U
BORON	UG/L	10000	300
CADMIUM	UG/L	5	0.11 J
CALCIUM	UG/L	-	160,000
CHROMIUM, TOTAL	UG/L	50	0.29 J
COBALT	UG/L	5	0.79 J
COPPER	UG/L	200	12
IRON	UG/L	300	120
LEAD	UG/L	25	0.35 J
LITHIUM	UG/L	-	5.9 J
MAGNESIUM	UG/L	35000	56,000
MANGANESE	UG/L	300	6.8
MERCURY	UG/L	0.7	0.1 U
MOLYBDENUM	UG/L	-	7.6
NICKEL	UG/L	100	3.4



Concentration Exceeds Criteria

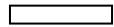
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :		WDD3	
Field Sample Identifier :		WDD3	
Sample Type :		Surface Water	
Sample Depth Interval (ft) :		-	
Date of Sample :		10/03/16	
Parameter	Units	Criteria ¹	
METALS			
POTASSIUM	UG/L	-	180,000
SELENIUM	UG/L	10	0.47 U
SILVER	UG/L	50	0.02 U
SODIUM	UG/L	20000	19,000
THALLIUM	UG/L	8	0.026 U
VANADIUM	UG/L	14	1.1
ZINC	UG/L	2000	120
METALS (FILTERED)			
ALUMINUM	UG/L	100	Not Anaylzed
ANTIMONY	UG/L	3	Not Anaylzed
ARSENIC	UG/L	150	Not Anaylzed
BARIUM	UG/L	1000	Not Anaylzed
BERYLLIUM	UG/L	1100	Not Anaylzed
BORON	UG/L	10000	Not Anaylzed
CADMIUM	UG/L	5	Not Anaylzed
CALCIUM	UG/L	-	Not Anaylzed
CHROMIUM, TOTAL	UG/L	50	Not Anaylzed
COBALT	UG/L	5	Not Anaylzed
COPPER	UG/L	200	Not Anaylzed



Concentration Exceeds Criteria

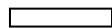
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
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NOTE: The detection limits shown are MDL.

TABLE 10
SURFACE WATER ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :		WDD3	
Field Sample Identifier :		WDD3	
Sample Type :		Surface Water	
Sample Depth Interval (ft) :		-	
Date of Sample :		10/03/16	
Parameter	Units	Criteria ¹	
METALS (FILTERED)			
IRON	UG/L	300	Not Analyzed
LEAD	UG/L	25	Not Analyzed
LITHIUM	UG/L	-	Not Analyzed
MAGNESIUM	UG/L	35000	Not Analyzed
MANGANESE	UG/L	300	Not Analyzed
MERCURY	UG/L	7.00E-04	Not Analyzed
MOLYBDENUM	UG/L	-	Not Analyzed
NICKEL	UG/L	100	Not Analyzed
POTASSIUM	UG/L	-	Not Analyzed
SELENIUM	UG/L	4.6	Not Analyzed
SILVER	UG/L	50	Not Analyzed
SODIUM	UG/L	20000	Not Analyzed
THALLIUM	UG/L	8	Not Analyzed
VANADIUM	UG/L	14	Not Analyzed
ZINC	UG/L	2000	Not Analyzed



Concentration Exceeds Criteria

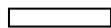
(1) - TOGS 1.1.1 (June 1998) Class B surface water criteria (default to Groundwater or Class A standard if Class B is not provided). Sum of Radium-226 and Radium-228 (sum total of 5 pCi/l); Thorium (15 pCi/l for alpha emitters) . 10 NYCRR Part 5, Subpart 5-1 (NYSDOH); Total Uranium (30 ug/L or 27 pCi/L) total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, and H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
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NOTE: The detection limits shown are MDL.

TABLE 11
SEDIMENT ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD009	SWSD009	SWSD009	SWSD010	SWSD010
Field Sample Identifier :			SWSD009	SWSD009-D	SWSD009	SWSD010	SWSD010
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	04/07/16	10/03/16	04/07/16	10/04/16
Parameter	Units	Criteria ¹		Field Duplicate			
RADIATION							
RADIUM-226	PCI/G	5	1.112	1.466	1.223	1.102	1.422
URANIUM-234	PCI/G	13	1.21	1.56	1.27	2.36	2.28
URANIUM-235	PCI/G	8	0.237	0.149	0.193 J	0.266	0.245 J
URANIUM-238	PCI/G	14	1.28	1	1.18	2	2.25
TOTAL URANIUM	PCI/G	-	2.727	2.709	2.643	4.626	4.775



Concentration Exceeds Criteria

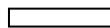
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives for VOCs, Pesticides, PCBs, PAHs and Metals. USDOE Order 458.1 (June 2011) - Ra-226 and Ra-228 (sum total of 5 pCi/g), Thorium isotopes (sum total of 5 pCi/g) total dose not to exceed 25 mrem/yr for remaining radionuclides (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3, and U).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 11
SEDIMENT ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD011	SWSD011	SWSD021	SWSD021	SWSD022
Field Sample Identifier :			SWSD011	SWSD011	SWSD021	SWSD021	SWSD022
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	10/04/16	04/07/16	10/04/16	04/07/16
Parameter	Units	Criteria ¹					
RADIATION							
RADIUM-226	PCI/G	5	1.627	1.508	1.489	1.27	2.388
URANIUM-234	PCI/G	13	2.12	2.25	1.04	1.17	1.95
URANIUM-235	PCI/G	8	0.125	0.048 U	0.127	0.117 J	0.153
URANIUM-238	PCI/G	14	2.22	1.98	1.27	1.26	1.66
TOTAL URANIUM	PCI/G	-	4.465	4.23	2.437	2.547	3.763



Concentration Exceeds Criteria

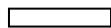
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives for VOCs, Pesticides, PCBs, PAHs and Metals. USDOE Order 458.1 (June 2011) - Ra-226 and Ra-228 (sum total of 5 pCi/g), Thorium isotopes (sum total of 5 pCi/g) total dose not to exceed 25 mrem/yr for remaining radionuclides (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3, and U).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 11
SEDIMENT ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Field Sample Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/04/16	04/07/16	10/04/16	02/10/16	04/07/16
Parameter	Units	Criteria ¹					
RADIATION							
RADIUM-226	PCI/G	5	1.636	1.099	1.003	2.264	1.658
URANIUM-234	PCI/G	13	2.24	1.16	1.09	2.08	2.97
URANIUM-235	PCI/G	8	0.315 J	0.094	0.073 U	0.233	0.345
URANIUM-238	PCI/G	14	2.16	1.2	1.03	1.84	2.42
TOTAL URANIUM	PCI/G	-	4.715	2.454	2.12	4.153	5.735



Concentration Exceeds Criteria

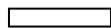
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives for VOCs, Pesticides, PCBs, PAHs and Metals. USDOE Order 458.1 (June 2011) - Ra-226 and Ra-228 (sum total of 5 pCi/g), Thorium isotopes (sum total of 5 pCi/g) total dose not to exceed 25 mrem/yr for remaining radionuclides (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3, and U).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 11
SEDIMENT ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD025	SWSD025	SWSD025	WDD2	WDD2
Field Sample Identifier :			SWSD025	SWSD025	SWSD025-D	WDD2	WDD2
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			08/18/16	10/04/16	10/04/16	04/07/16	10/04/16
Parameter	Units	Criteria ¹			Field Duplicate		
RADIATION							
RADIUM-226	PCI/G	5	1.858	1.415	1.685	1.072	1.425
URANIUM-234	PCI/G	13	1.83	3.2	2.77	1	1.03
URANIUM-235	PCI/G	8	0.127 J	0.153 J	0.16 J	0.187	0.085 U
URANIUM-238	PCI/G	14	1.73	2.61	2.44	0.846	1.4
TOTAL URANIUM	PCI/G	-	3.687	5.963	5.37	2.033	2.43



Concentration Exceeds Criteria

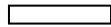
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives for VOCs, Pesticides, PCBs, PAHs and Metals. USDOE Order 458.1 (June 2011) - Ra-226 and Ra-228 (sum total of 5 pCi/g), Thorium isotopes (sum total of 5 pCi/g) total dose not to exceed 25 mrem/yr for remaining radionuclides (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3, and U).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 11
SEDIMENT ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			WDD3	WDD3
Field Sample Identifier :			WDD3	WDD3
Sample Type :			Sediment	Sediment
Sample Depth Interval (ft) :			-	-
Date of Sample :			04/07/16	10/04/16
Parameter	Units	Criteria¹		
RADIONUCLIDES				
RADIUM-226	PCI/G	5	1.592	1.383
URANIUM-234	PCI/G	13	1.29	0.737
URANIUM-235	PCI/G	8	0.162	R
URANIUM-238	PCI/G	14	1.04	1.25
TOTAL URANIUM	PCI/G	-	2.492	1.987



Concentration Exceeds Criteria

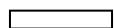
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives for VOCs, Pesticides, PCBs, PAHs and Metals. USDOE Order 458.1 (June 2011) - Ra-226 and Ra-228 (sum total of 5 pCi/g), Thorium isotopes (sum total of 5 pCi/g) total dose not to exceed 25 mrem/yr for remaining radionuclides (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3, and U).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD009	SWSD009	SWSD009	SWSD010	SWSD010
Field Sample Identifier :			SWSD009	SWSD009-D	SWSD009	SWSD010	SWSD010
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	04/07/16	10/03/16	04/07/16	10/04/16
Parameter	Units	Criteria ¹		Field Duplicate			
METALS							
ALUMINUM	MG/KG	77000	16,000	16,000	18,000	29,000	30,000
ANTIMONY	MG/KG	NS	7.9	7.2	8.1	12	11
ARSENIC	MG/KG	13	5	4.4	4.1	4.8	5.6
BARIUM	MG/KG	350	100	84	110	160	150
BERYLLIUM	MG/KG	7.2	0.75	0.68	0.88	1.3	1.3
BORON	MG/KG	16000	35	34	38	31	30
CADMIUM	MG/KG	2.5	0.96	0.94	1	0.29 J	0.52
CALCIUM	MG/KG	58900	48,000	46,000	51,000	47,000	46,000
CHROMIUM, TOTAL	MG/KG	25.8	74	51 J	57	54	60
COBALT	MG/KG	36.7	8.2	7.6	8.6	12	12
COPPER	MG/KG	50	110	94	110	110	120
IRON	MG/KG	55000	22,000	21,000	24,000	39,000	34,000
LEAD	MG/KG	63	34	32	40	15	32
LITHIUM	MG/KG	160	25	26	25	38	37
MAGNESIUM	MG/KG	14800	12,000	11,000	13,000	15,000	14,000
MANGANESE	MG/KG	1600	720	630	630	790	620
MERCURY	MG/KG	0.18	0.14	0.13	0.17	0.05	0.067
MOLYBDENUM	MG/KG	390	1.3	1.3	1.5	0.2 J	0.94
NICKEL	MG/KG	30	26	25	25	36	34



Concentration Exceeds Criteria

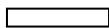
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives, Resident Soil RSL (6/2016) and RI Background Screening Levels (12/2007).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD009	SWSD009	SWSD009	SWSD010	SWSD010
Field Sample Identifier :			SWSD009	SWSD009-D	SWSD009	SWSD010	SWSD010
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	04/07/16	10/03/16	04/07/16	10/04/16
Parameter	Units	Criteria ¹		Field Duplicate			
METALS							
POTASSIUM	MG/KG	2860	4,100	3,700	4,300	7,700	7,100
SELENIUM	MG/KG	3.9	1.8 U	1.8 U	1.8 U	2.2 U	2.3 U
SILVER	MG/KG	2	0.11 J	0.3 U	0.3 U	0.37 U	0.39 U
SODIUM	MG/KG	331	470	420	440	460	500
THALLIUM	MG/KG	0.78	1.2 UJ	1.2 UJ	1.2 U	1.5 UJ	1.6 U
VANADIUM	MG/KG	390	32	29	35	48	47
ZINC	MG/KG	109	210	190	240	110	160



Concentration Exceeds Criteria

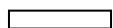
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives, Resident Soil RSL (6/2016) and RI Background Screening Levels (12/2007).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD011	SWSD011	SWSD021	SWSD021	SWSD022
Field Sample Identifier :			SWSD011	SWSD011	SWSD021	SWSD021	SWSD022
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	10/04/16	04/07/16	10/04/16	04/07/16
Parameter	Units	Criteria ¹					
METALS							
ALUMINUM	MG/KG	77000	27,000	25,000	25,000	26,000	24,000
ANTIMONY	MG/KG	NS	11	11	11	10	12
ARSENIC	MG/KG	13	5.9	5.7	5	4.8	7
BARIUM	MG/KG	350	140	120	110	130	140
BERYLLIUM	MG/KG	7.2	2	1.1	1	1.2	2.2
BORON	MG/KG	16000	30	31	23	21	24
CADMIUM	MG/KG	2.5	1.5	0.61	0.17 J	0.13 J	1.6
CALCIUM	MG/KG	58900	100,000	46,000	44,000	46,000	42,000
CHROMIUM, TOTAL	MG/KG	25.8	60	58	46	51	38
COBALT	MG/KG	36.7	12	11	11	11	13
COPPER	MG/KG	50	110	110	90	91	98
IRON	MG/KG	55000	33,000	29,000	34,000	38,000	36,000
LEAD	MG/KG	63	29	30	7.4	7.7	18
LITHIUM	MG/KG	160	40	32	39	35	33
MAGNESIUM	MG/KG	14800	14,000	12,000	14,000	13,000	12,000
MANGANESE	MG/KG	1600	2,100	860	810	670	1,500
MERCURY	MG/KG	0.18	0.13	0.13	0.022	0.028	0.1
MOLYBDENUM	MG/KG	390	1.1	1.7	0.26 U	0.95	0.1 J
NICKEL	MG/KG	30	35	30	33	30	34



Concentration Exceeds Criteria

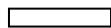
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives, Resident Soil RSL (6/2016) and RI Background Screening Levels (12/2007).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD011	SWSD011	SWSD021	SWSD021	SWSD022
Field Sample Identifier :			SWSD011	SWSD011	SWSD021	SWSD021	SWSD022
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	10/04/16	04/07/16	10/04/16	04/07/16
Parameter	Units	Criteria ¹					
METALS							
POTASSIUM	MG/KG	2860	7,400	5,800	6,800	6,800	6,200
SELENIUM	MG/KG	3.9	2.1 U	2.3 U	1.6 U	1.4 U	1.6 U
SILVER	MG/KG	2	1.2 J	0.38 U	0.26 U	0.23 U	1.9
SODIUM	MG/KG	331	630	430	320	250	280
THALLIUM	MG/KG	0.78	1.4 UJ	1.5 U	1 UJ	0.92 U	1.1 UJ
VANADIUM	MG/KG	390	43	41	42	41	42
ZINC	MG/KG	109	260	290	65	61	110



Concentration Exceeds Criteria

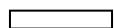
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives, Resident Soil RSL (6/2016) and RI Background Screening Levels (12/2007).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Field Sample Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/04/16	04/07/16	10/04/16	02/10/16	04/07/16
Parameter	Units	Criteria ¹					
METALS							
ALUMINUM	MG/KG	77000	33,000	11,000	8,500	33,000	33,000
ANTIMONY	MG/KG	NS	13	14	15	13	14
ARSENIC	MG/KG	13	9.1	5.1	9.5	7.7	8.1
BARIUM	MG/KG	350	180	76	69	170	180
BERYLLIUM	MG/KG	7.2	1.4	0.47	0.43	1.3	1.4
BORON	MG/KG	16000	41	17	14 J	36	46
CADMIUM	MG/KG	2.5	0.98	0.8	0.86	0.69	0.89
CALCIUM	MG/KG	58900	28,000	86,000	76,000	41,000	30,000
CHROMIUM, TOTAL	MG/KG	25.8	72	24	19	50	72
COBALT	MG/KG	36.7	14	14	16	14	15
COPPER	MG/KG	50	150	120	130	1.9 U	160
IRON	MG/KG	55000	36,000	17,000	16,000	37,000	38,000
LEAD	MG/KG	63	52	61	70	37	50
LITHIUM	MG/KG	160	42	21	13	42	48
MAGNESIUM	MG/KG	14800	16,000	33,000	33,000	17,000	17,000
MANGANESE	MG/KG	1600	600	580	490	940	770
MERCURY	MG/KG	0.18	0.17	0.18	0.22	0.25	0.16
MOLYBDENUM	MG/KG	390	5.3	2.9	3.1	1.7 J	3.2
NICKEL	MG/KG	30	39	20	17	43	45



Concentration Exceeds Criteria

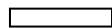
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives, Resident Soil RSL (6/2016) and RI Background Screening Levels (12/2007).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Field Sample Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/04/16	04/07/16	10/04/16	02/10/16	04/07/16
Parameter	Units	Criteria ¹					
METALS							
POTASSIUM	MG/KG	2860	8,300	2,700	2,200	7,600	9,000
SELENIUM	MG/KG	3.9	2.9 U	2 U	1.8 U	2.8 UJ	2.7 U
SILVER	MG/KG	2	0.49 U	0.35 J	0.32 J	0.17 J	0.27 J
SODIUM	MG/KG	331	570	370	340	490	570
THALLIUM	MG/KG	0.78	2 U	1.3 UJ	1.2 U	3.1 J	1.8 UJ
VANADIUM	MG/KG	390	55	21	16	62	57
ZINC	MG/KG	109	290	710	1,300	230	310



Concentration Exceeds Criteria

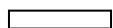
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives, Resident Soil RSL (6/2016) and RI Background Screening Levels (12/2007).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Field Sample Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			08/18/16	10/04/16	04/07/16	10/04/16	04/07/16
Parameter	Units	Criteria ¹					
METALS							
ALUMINUM	MG/KG	77000	22,000	30,000	17,000	20,000	20,000
ANTIMONY	MG/KG	NS	9	13	8.1	7.9	8.7
ARSENIC	MG/KG	13	5.3	8.9	4.4	4	4.4
BARIUM	MG/KG	350	140	160 J	92	110	140
BERYLLIUM	MG/KG	7.2	1	1.5	1.2	1.3	0.82
BORON	MG/KG	16000	33	43 J	17	22	23
CADMIUM	MG/KG	2.5	0.51 J	1	0.64	0.72	0.17 J
CALCIUM	MG/KG	58900	23,000	37,000	35,000	35,000	46,000
CHROMIUM, TOTAL	MG/KG	25.8	42	64	25	23	26
COBALT	MG/KG	36.7	9.7	14	8.5	8.5	9.1
COPPER	MG/KG	50	98	150	73	87	84
IRON	MG/KG	55000	27,000	39,000	28,000	26,000	31,000
LEAD	MG/KG	63	23	39	5.9	8.4	5.5 J
LITHIUM	MG/KG	160	28	38	25	25	27
MAGNESIUM	MG/KG	14800	9,600	15,000	9,500	9,600	12,000
MANGANESE	MG/KG	1600	1,000	1,000	1,100	1,300	1,100
MERCURY	MG/KG	0.18	0.097	0.11	0.021	0.026	0.02
MOLYBDENUM	MG/KG	390	1.2 J	2.8	0.51	0.79	0.91
NICKEL	MG/KG	30	27	40	21	22	24



Concentration Exceeds Criteria

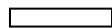
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives, Resident Soil RSL (6/2016) and RI Background Screening Levels (12/2007).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Field Sample Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			08/18/16	10/04/16	04/07/16	10/04/16	04/07/16
Parameter	Units	Criteria ¹					
METALS							
POTASSIUM	MG/KG	2860	6,100	8,800	4,700	5,800	5,900
SELENIUM	MG/KG	3.9	3.9 U	4 U	1.4 U	2 U	1.7 U
SILVER	MG/KG	2	0.65 U	0.66 U	0.8 J	0.25 J	0.29 U
SODIUM	MG/KG	331	560	610	190	210	320
THALLIUM	MG/KG	0.78	2.6 U	2.6 U	0.96 UJ	1.3 U	1.2 UJ
VANADIUM	MG/KG	390	38	55	28	31	34
ZINC	MG/KG	109	180 J	290	89	110	86



Concentration Exceeds Criteria

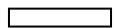
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives, Resident Soil RSL (6/2016) and RI Background Screening Levels (12/2007).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :		WDD3	
Field Sample Identifier :		WDD3	
Sample Type :		Sediment	
Sample Depth Interval (ft) :		-	
Date of Sample :		10/04/16	
Parameter	Units	Criteria ¹	
METALS			
ALUMINUM	MG/KG	77000	20,000
ANTIMONY	MG/KG	NS	7.5
ARSENIC	MG/KG	13	2.5
BARIUM	MG/KG	350	110
BERYLLIUM	MG/KG	7.2	1.1
BORON	MG/KG	16000	23
CADMIUM	MG/KG	2.5	0.44
CALCIUM	MG/KG	58900	36,000
CHROMIUM, TOTAL	MG/KG	25.8	24
COBALT	MG/KG	36.7	8.2
COPPER	MG/KG	50	75
IRON	MG/KG	55000	23,000
LEAD	MG/KG	63	6.5
LITHIUM	MG/KG	160	27
MAGNESIUM	MG/KG	14800	9,500
MANGANESE	MG/KG	1600	1,000
MERCURY	MG/KG	0.18	0.028
MOLYBDENUM	MG/KG	390	0.62
NICKEL	MG/KG	30	22



Concentration Exceeds Criteria

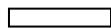
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives, Resident Soil RSL (6/2016) and RI Background Screening Levels (12/2007).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - METALS
NIAGARA FALLS STORAGE SITE

Location Identifier :		WDD3	
Field Sample Identifier :		WDD3	
Sample Type :		Sediment	
Sample Depth Interval (ft) :		-	
Date of Sample :		10/04/16	
Parameter	Units	Criteria ¹	
METALS			
POTASSIUM	MG/KG	2860	6,300
SELENIUM	MG/KG	3.9	1.8 U
SILVER	MG/KG	2	0.18 J
SODIUM	MG/KG	331	250
THALLIUM	MG/KG	0.78	1.2 U
VANADIUM	MG/KG	390	33
ZINC	MG/KG	109	100



Concentration Exceeds Criteria

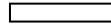
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives, Resident Soil RSL (6/2016) and RI Background Screening Levels (12/2007).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 13
SEDIMENT ANALYTICAL RESULTS - PAHs
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD009	SWSD009	SWSD009	SWSD010	SWSD010
Field Sample Identifier :			SWSD009	SWSD009-D	SWSD009	SWSD010	SWSD010
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	04/07/16	10/03/16	04/07/16	10/04/16
Parameter	Units	Criteria ¹		Field Duplicate			
SEMI-VOLATILE ORGANIC ANALYSES							
2-METHYLNAPHTHALENE	UG/KG	-	34 J	36 J	89 U	36 U	40 U
ACENAPHTHENE	UG/KG	20000	30 J	36 J	52 J	36 U	40 U
ACENAPHTHYLENE	UG/KG	100000	25 J	42 J	89 U	40 J	40 U
ANTHRACENE	UG/KG	100000	66 J	90 J	860	47 J	40 U
BENZO(A)ANTHRACENE	UG/KG	1000	230 J	270 J	350 J	89 J	31 J
BENZO(A)PYRENE	UG/KG	1000	260 J	330	410 J	120 J	31 J
BENZO(B)FLUORANTHENE	UG/KG	1000	340	380	860	180 J	55 J
BENZO(G,H,I)PERYLENE	UG/KG	100000	220 J	250 J	210 J	130 J	40 U
BENZO(K)FLUORANTHENE	UG/KG	800	120 J	170 J	860	57 J	81 U
CHRYSENE	UG/KG	1000	270 J	320 J	380 J	120 J	40 J
DIBENZ(A,H)ANTHRACENE	UG/KG	330	52 J	76 J	180 U	73 U	81 U
FLUORANTHENE	UG/KG	100000	490	440	650 J	130 J	48 J
FLUORENE	UG/KG	30000	39 J	51 J	89 U	36 U	40 U
INDENO(1,2,3-C,D)PYRENE	UG/KG	500	170 J	210 J	190 J	110 J	81 U
NAPHTHALENE	UG/KG	12000	38 J	58 J	36 J	36 U	40 U
PHENANTHRENE	UG/KG	100000	200 J	200 J	290 J	58 J	23 J
PYRENE	UG/KG	100000	600	480	600 J	170 J	47 J



Concentration Exceeds Criteria

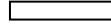
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives for VOCs, Pesticides, PCBs, PAHs and Metals. USDOE Order 458.1 (June 2011) - Ra-226 and Ra-228 (sum total of 5 pCi/g), Thorium isotopes (sum total of 5 pCi/g) total dose not to exceed 25 mrem/yr for remaining radionuclides (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3, and U).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 13
SEDIMENT ANALYTICAL RESULTS - PAHs
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD011	SWSD011	SWSD021	SWSD021	SWSD022
Field Sample Identifier :			SWSD011	SWSD011	SWSD021	SWSD021	SWSD022
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	10/04/16	04/07/16	10/04/16	04/07/16
Parameter	Units	Criteria ¹					
SEMI-VOLATILE ORGANIC ANALYSES							
2-METHYLNAPHTHALENE	UG/KG	-	20 J	38 U	27 U	23 U	27 U
ACENAPHTHENE	UG/KG	20000	40 U	38 U	27 U	23 U	27 U
ACENAPHTHYLENE	UG/KG	100000	42 J	38 U	27 U	23 U	13 J
ANTHRACENE	UG/KG	100000	55 J	38 U	16 J	23 U	27 U
BENZO(A)ANTHRACENE	UG/KG	1000	130 J	91 J	30 J	23 U	27 U
BENZO(A)PYRENE	UG/KG	1000	170 J	110 J	29 J	23 U	47 J
BENZO(B)FLUORANTHENE	UG/KG	1000	230 J	360	36 J	23 U	60 J
BENZO(G,H,I)PERYLENE	UG/KG	100000	170 J	65 J	27 U	23 U	52 J
BENZO(K)FLUORANTHENE	UG/KG	800	130 J	360	53 U	46 U	53 U
CHRYSENE	UG/KG	1000	140 J	120 J	32 J	23 U	41 J
DIBENZ(A,H)ANTHRACENE	UG/KG	330	80 U	75 U	53 U	46 U	53 U
FLUORANTHENE	UG/KG	100000	140 J	120 J	38 J	23 U	36 J
FLUORENE	UG/KG	30000	25 J	38 U	27 U	23 U	27 U
INDENO(1,2,3-C,D)PYRENE	UG/KG	500	150 J	55 J	53 U	46 U	54 J
NAPHTHALENE	UG/KG	12000	18 J	38 U	27 U	23 U	27 U
PHENANTHRENE	UG/KG	100000	67 J	50 J	22 J	23 U	21 J
PYRENE	UG/KG	100000	190 J	130 J	42 J	23 U	45 J



Concentration Exceeds Criteria

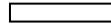
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives for VOCs, Pesticides, PCBs, PAHs and Metals. USDOE Order 458.1 (June 2011) - Ra-226 and Ra-228 (sum total of 5 pCi/g), Thorium isotopes (sum total of 5 pCi/g) total dose not to exceed 25 mrem/yr for remaining radionuclides (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3, and U).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 13
SEDIMENT ANALYTICAL RESULTS - PAHs
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Field Sample Identifier :			SWSD022	SWSD023	SWSD023	SWSD025	SWSD025
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/04/16	04/07/16	10/04/16	02/10/16	04/07/16
Parameter	Units	Criteria ¹					
SEMI-VOLATILE ORGANIC ANALYSES							
2-METHYLNAPHTHALENE	UG/KG	-	100 U	160 J	450 U	52 U	24 J
ACENAPHTHENE	UG/KG	20000	100 U	78 J	450 U	52 U	48 U
ACENAPHTHYLENE	UG/KG	100000	49 J	150 J	450 U	52 U	69 J
ANTHRACENE	UG/KG	100000	55 J	300 J	450 J	52 U	94 J
BENZO(A)ANTHRACENE	UG/KG	1000	230 J	750	1,400 J	54 J	180 J
BENZO(A)PYRENE	UG/KG	1000	340 J	760	1,200 J	62 J	240 J
BENZO(B)FLUORANTHENE	UG/KG	1000	980	1,100	4,300	84 J	360 J
BENZO(G,H,I)PERYLENE	UG/KG	100000	240 J	650	4,300	50 J	270 J
BENZO(K)FLUORANTHENE	UG/KG	800	980	310 J	4,300	100 U	110 J
CHRYSENE	UG/KG	1000	300 J	920	2,300 J	41 J	210 J
DIBENZ(A,H)ANTHRACENE	UG/KG	330	210 U	170 J	890 U	100 U	96 U
FLUORANTHENE	UG/KG	100000	380 J	1,600	2,700 J	74 J	210 J
FLUORENE	UG/KG	30000	100 U	140 J	320 J	52 U	33 J
INDENO(1,2,3-C,D)PYRENE	UG/KG	500	200 J	84 J	4,300	42 J	240 J
NAPHTHALENE	UG/KG	12000	100 U	140 J	450 U	52 U	25 J
PHENANTHRENE	UG/KG	100000	160 J	300 J	760 J	33 J	94 J
PYRENE	UG/KG	100000	370 J	1,600	4,300	78 J	250 J



Concentration Exceeds Criteria

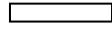
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives for VOCs, Pesticides, PCBs, PAHs and Metals. USDOE Order 458.1 (June 2011) - Ra-226 and Ra-228 (sum total of 5 pCi/g), Thorium isotopes (sum total of 5 pCi/g) total dose not to exceed 25 mrem/yr for remaining radionuclides (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3, and U).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 13
SEDIMENT ANALYTICAL RESULTS - PAHs
NIAGARA FALLS STORAGE SITE

Location Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Field Sample Identifier :			SWSD025	SWSD025	WDD2	WDD2	WDD3
Sample Type :			Sediment	Sediment	Sediment	Sediment	Sediment
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			08/18/16	10/04/16	04/07/16	10/04/16	04/07/16
Parameter	Units	Criteria ¹					
SEMI-VOLATILE ORGANIC ANALYSES							
2-METHYLNAPHTHALENE	UG/KG	-	66 U	68 U	25 U	67 U	31 U
ACENAPHTHENE	UG/KG	20000	66 U	68 U	25 U	67 U	31 U
ACENAPHTHYLENE	UG/KG	100000	30 J	68 U	25 U	67 U	31 U
ANTHRACENE	UG/KG	100000	66 U	68 U	25 U	67 U	31 U
BENZO(A)ANTHRACENE	UG/KG	1000	66 U	68 J	25 U	67 U	31 U
BENZO(A)PYRENE	UG/KG	1000	60 J	71 J	25 U	67 U	31 U
BENZO(B)FLUORANTHENE	UG/KG	1000	91	110 J	25 U	67 U	31 U
BENZO(G,H,I)PERYLENE	UG/KG	100000	59 J	66 J	25 U	67 U	31 U
BENZO(K)FLUORANTHENE	UG/KG	800	130 U	140 U	51 U	130 U	63 U
CHRYSENE	UG/KG	1000	66 U	58 J	25 U	67 U	31 U
DIBENZ(A,H)ANTHRACENE	UG/KG	330	130 U	140 U	51 U	130 U	63 U
FLUORANTHENE	UG/KG	100000	88 J	92 J	25 U	67 U	31 U
FLUORENE	UG/KG	30000	66 U	68 U	25 U	67 U	31 U
INDENO(1,2,3-C,D)PYRENE	UG/KG	500	42 J	43 J	51 U	130 U	63 U
NAPHTHALENE	UG/KG	12000	66 U	68 U	25 U	67 U	31 U
PHENANTHRENE	UG/KG	100000	42 J	37 J	25 U	67 U	31 U
PYRENE	UG/KG	100000	84 J	99 J	16 J	67 U	21 J



Concentration Exceeds Criteria

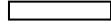
(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives for VOCs, Pesticides, PCBs, PAHs and Metals. USDOE Order 458.1 (June 2011) - Ra-226 and Ra-228 (sum total of 5 pCi/g), Thorium isotopes (sum total of 5 pCi/g) total dose not to exceed 25 mrem/yr for remaining radionuclides (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3, and U).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 13
SEDIMENT ANALYTICAL RESULTS - PAHs
NIAGARA FALLS STORAGE SITE

Location Identifier :		WDD3	
Field Sample Identifier :		WDD3	
Sample Type :		Sediment	
Sample Depth Interval (ft) :		-	
Date of Sample :		10/04/16	
Parameter	Units	Criteria ¹	
SEMI-VOLATILE ORGANIC ANALYSES			
2-METHYLNAPHTHALENE	UG/KG	-	32 U
ACENAPHTHENE	UG/KG	20000	32 U
ACENAPHTHYLENE	UG/KG	100000	32 U
ANTHRACENE	UG/KG	100000	32 U
BENZO(A)ANTHRACENE	UG/KG	1000	32 U
BENZO(A)PYRENE	UG/KG	1000	32 U
BENZO(B)FLUORANTHENE	UG/KG	1000	32 U
BENZO(G,H,I)PERYLENE	UG/KG	100000	32 U
BENZO(K)FLUORANTHENE	UG/KG	800	64 U
CHRYSENE	UG/KG	1000	32 U
DIBENZ(A,H)ANTHRACENE	UG/KG	330	64 U
FLUORANTHENE	UG/KG	100000	32 U
FLUORENE	UG/KG	30000	32 U
INDENO(1,2,3-C,D)PYRENE	UG/KG	500	64 U
NAPHTHALENE	UG/KG	12000	32 U
PHENANTHRENE	UG/KG	100000	32 U
PYRENE	UG/KG	100000	32 U



Concentration Exceeds Criteria

(1) - 6 NYCRR Part 375, NYS Unrestricted Use Soil Cleanup Objectives for VOCs, Pesticides, PCBs, PAHs and Metals. USDOE Order 458.1 (June 2011) - Ra-226 and Ra-228 (sum total of 5 pCi/g), Thorium isotopes (sum total of 5 pCi/g) total dose not to exceed 25 mrem/yr for remaining radionuclides (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3, and U).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 14
2016 GROUNDWATER LEVELS

Well No.	Reference Elevation (ft)	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
		Depth to Water (ft)	Groundwater Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)
UPPER WATER BEARING ZONE WELLS									
505	317.80	15.74	302.06	4.60	313.20	19.94	297.86	20.08	297.72
201A	321.47	4.16	317.31	4.10	317.37	8.84	312.63	10.35	311.12
203A	321.87	4.37	317.50	4.35	317.52	9.84	312.03	11.25	310.62
213A	321.37	7.34	314.03	5.38	315.99	12.71	308.66	14.44	306.93
215A	320.26	9.70	310.56	7.75	312.51	12.66	307.60	12.71	307.55
302A	320.53	4.32	316.21	4.00	316.53	11.36	309.17	13.00	307.53
303A	321.83	4.29	317.54	3.25	318.58	9.32	312.51	10.25	311.58
404A	323.73	8.65	315.08	7.20	316.53	13.57	310.16	15.45	308.28
411A	322.05	4.33	317.72	3.75	318.30	16.67	305.38	17.82	304.23
415A	321.27	7.76	313.51	3.15	318.12	11.45	309.82	13.06	308.21
603A	320.57	2.13	318.44	2.00	318.57	11.74	308.83	14.48	306.09
606A	321.49	3.60	317.89	3.10	318.39	11.03	310.46	11.90	309.59
808A	319.27	5.40	313.87	2.45	316.82	13.53	305.74	15.54	303.73
810A	318.44	11.06	307.38	4.70	313.74	16.33	302.11	16.40	302.04
816A	320.62	0.85	319.77	1.55	319.07	2.70	317.92	3.32	317.30
A42	319.70	4.72	314.98	4.78	314.92	7.47	312.23	9.19	310.51
A43	320.50	4.94	315.56	4.82	315.68	8.25	312.25	8.18	312.32
A45	321.70	7.77	313.93	7.98	313.72	9.53	312.17	9.83	311.87
A50	321.30	8.95	312.35	8.58	312.72	10.64	310.66	11.72	309.58
A51	321.20	6.54	314.66	5.88	315.32	7.09	314.11	9.50	311.70
A52	321.10	5.30	315.80	5.51	315.59	8.24	312.86	8.16	312.94
B02W2OS	322.00	3.10	318.90	2.75	319.25	7.47	314.53	10.38	311.62
BH49A	320.65	1.48	319.17	2.06	318.59	9.69	310.96	10.74	309.91
MW313	320.88	4.79	316.09	3.75	317.13	12.47	308.41	14.99	305.89
MW314	318.94	18.87	300.07	12.45	306.49	18.85	300.09	20.42	298.52
MW422	321.36	dry	dry	dry	dry	dry	dry	dry	dry
MW423	322.39	14.59	307.80	4.95	317.44	12.95	309.44	14.95	307.44
MW424	320.93	3.11	317.82	2.80	318.13	14.07	306.86	16.95	303.98
MW860	320.06	5.80	314.26	4.80	315.26	6.69	313.37	8.69	311.37
MW862	319.62	4.79	314.83	3.81	315.81	5.10	314.52	7.13	312.49
MW921	319.88	13.29	306.59	5.80	314.08	18.21	301.67	18.24	301.64
MW922	318.56	5.45	313.11	3.15	315.41	12.60	305.96	13.94	304.62
MW923	319.53	20.73	298.80	5.23	314.30	20.06	299.47	22.02	297.51
MW930	323.16	7.86	315.30	4.35	318.81	12.51	310.65	13.80	309.36
MW934	322.20	5.78	316.42	3.55	318.65	16.07	306.13	18.07	304.13
MW935	319.33	4.15	315.18	3.56	315.77	8.38	310.95	9.22	310.11
MW936	320.64	2.70	317.94	2.26	318.38	8.33	312.31	9.01	311.63
MW938	319.54	3.94	315.60	3.55	315.99	10.87	308.67	12.88	306.66
MW941	318.98	2.86	316.12	2.60	316.38	6.92	312.06	7.47	311.51
MW943	321.60	2.84	318.76	2.53	319.07	7.61	313.99	9.90	311.70
MW944	318.64	6.65	311.99	4.20	314.44	16.37	302.27	15.49	303.15
MW945	320.24	15.94	304.30	5.45	314.79	17.48	302.76	17.51	302.73
MW946	319.65	15.00	304.65	4.20	315.45	14.34	305.31	15.21	304.44
MW947	322.53	21.12	301.41	21.15	301.38	21.04	301.49	21.09	301.44
MW948	321.04	11.11	309.93	3.05	317.99	11.75	309.29	13.98	307.06
MW950	322.03	3.56	318.47	3.26	318.77	9.24	312.79	11.21	310.82
MW951	320.84	4.05	316.79	3.70	317.14	6.58	314.26	7.44	313.40
MW952	320.16	3.81	316.35	3.35	316.81	10.24	309.92	11.62	308.54
MW953	319.94	4.96	314.98	3.35	316.59	10.90	309.04	12.83	307.11
MW954	319.85	3.70	316.15	3.45	316.40	11.59	308.26	14.90	304.95
MW955	320.09	3.71	316.38	3.34	316.76	12.39	307.70	11.25	308.84
MW956	323.13	7.29	315.84	5.65	317.48	10.18	312.95	11.43	311.70
MW957	324.48	7.03	317.45	5.58	318.90	8.68	315.80	10.78	313.70
MW958	319.77	3.83	315.94	3.24	316.53	4.01	315.76	6.43	313.34
MW959	320.56	3.72	316.84	3.41	317.15	8.84	311.72	9.96	310.60
MW960	321.02	4.19	316.83	3.36	317.66	5.93	315.09	7.54	313.48
OW01B	321.49	3.22	318.27	2.82	318.67	7.52	313.97	7.88	313.61
OW02B	321.55	2.96	318.59	2.83	318.72	5.50	316.05	7.02	314.53
OW02B	321.55	2.96	318.59	2.83	318.72	5.50	316.05	7.02	314.53
OW04B	320.17	2.95	317.22	3.05	317.12	4.09	316.08	5.34	314.83
OW05B	319.68	3.22	316.46	2.89	316.79	11.33	308.35	14.11	305.57
OW06B	322.28	4.12	318.16	3.80	318.48	5.89	316.39	7.70	314.58
OW07B	319.69	3.65	316.04	3.25	316.44	8.91	310.78	10.06	309.63
OW08B	318.97	3.41	315.56	2.45	316.52	12.23	306.74	12.57	306.40
OW09B	318.82	2.56	316.26	2.05	316.77	12.63	306.19	14.80	304.02
OW10B	320.13	2.67	317.46	2.10	318.03	9.52	310.61	10.74	309.39
OW11B	319.09	2.38	316.71	1.90	317.19	11.74	307.35	14.19	304.90
OW12B	319.09	5.24	313.85	3.25	315.84	13.59	305.50	13.61	305.48
OW13B	321.09	2.35	318.74	2.19	318.90	10.09	311.00	11.59	309.50
OW14B	320.73	2.90	317.83	2.31	318.42	9.85	310.88	10.35	310.38
OW15B	320.12	2.95	317.17	2.69	317.43	11.40	308.72	11.62	308.50
OW16B	320.06	2.56	317.50	2.17	317.89	7.59	312.47	8.16	311.90
OW17B	320.29	2.00	318.29	1.93	318.36	7.71	312.58	8.01	312.28
OW18B	320.76	3.21	317.55	2.90	317.86	6.98	313.78	8.40	312.36

TABLE 14
2016 GROUNDWATER LEVELS

Well No.	Reference Elevation (ft)	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
		Depth to Water (ft)	Groundwater Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)
LOWER WATER BEARING ZONE WELLS									
A23A	321.90	11.20	310.70	10.15	311.75	10.75	311.15	12.64	309.26
A54	320.70	9.45	311.25	8.41	312.29	9.21	311.49	11.07	309.63
A55	320.60	9.13	311.47	8.11	312.49	8.94	311.66	10.77	309.83
A56	322.30	13.10	309.20	11.50	310.80	12.38	309.92	14.35	307.95
A57	321.40	12.55	308.85	11.52	309.88	12.66	308.74	14.66	306.74
B02W19D	319.90	7.15	312.75	6.21	313.69	6.51	313.39	8.33	311.57
B02W20D	322.00	3.80	318.20	7.95	314.05	8.29	313.71	10.08	311.92
BH12	320.85	8.98	311.87	8.02	312.83	8.30	312.55	10.02	310.83
BH15	320.16	8.70	311.46	7.75	312.41	7.93	312.23	9.77	310.39
BH48	322.04	10.12	311.92	9.00	313.04	9.59	312.45	11.31	310.73
BH49	320.23	11.10	309.13	9.90	310.33	10.74	309.49	12.71	307.52
BH5	321.32	11.51	309.81	10.35	310.97	11.15	310.17	13.20	308.12
BH50	319.25	11.01	308.24	8.75	310.50	12.06	307.19	14.96	304.29
BH51	321.24	9.75	311.49	8.65	312.59	9.15	312.09	11.15	310.09
BH57	322.84	10.40	312.44	9.55	313.29	9.59	313.25	11.45	311.39
BH59	321.45	9.84	311.61	8.80	312.65	9.58	311.87	11.37	310.08
BH60	322.32	8.86	313.46	8.00	314.32	8.40	313.92	10.21	312.11
BH61	318.50	12.91	305.59	10.60	307.90	13.02	305.48	15.51	302.99
BH62	318.60	12.22	306.38	10.65	307.95	11.48	307.12	13.76	304.84
BH63	323.01	10.27	312.74	9.35	313.66	9.81	313.20	11.80	311.21
BH64	319.32	2.85	316.47	2.64	316.68	9.64	309.68	10.62	308.70
BH70	321.29	10.25	311.04	9.24	312.05	9.60	311.69	11.70	309.59
MW228	320.85	5.04	315.81	4.25	316.60	8.74	312.11	10.34	310.51
MW229	320.61	8.79	311.82	7.90	312.71	8.30	312.31	10.07	310.54
MW861	319.92	10.04	309.88	8.90	311.02	9.61	310.31	11.54	308.38
MW863	319.61	8.41	311.20	7.46	312.15	8.07	311.54	9.81	309.80
MW949	320.96	11.04	309.92	9.40	311.56	10.82	310.14	13.14	307.82
OW02A	321.50	11.61	309.89	10.40	311.10	11.16	310.34	13.13	308.37
OW03A	321.67	11.10	310.57	10.02	311.65	11.02	310.65	12.91	308.76
OW04A	320.52	10.40	310.12	9.19	311.33	10.01	310.51	11.95	308.57
OW05A	319.59	9.52	310.07	8.30	311.29	9.25	310.34	11.29	308.30
OW06A	322.34	10.79	311.55	9.69	312.65	10.59	311.75	12.59	309.75
OW07A	319.77	8.19	311.58	7.15	312.62	7.98	311.79	9.81	309.96
OW08A	318.91	6.15	312.76	7.10	311.81	7.85	311.06	9.78	309.13
OW09A	318.66	7.36	311.30	6.31	312.35	7.01	311.65	8.84	309.82
OW10A	320.01	8.34	311.67	7.40	312.61	8.18	311.83	10.18	309.83
OW11A	319.05	7.03	312.02	6.15	312.90	6.80	312.25	8.54	310.51
OW12A	320.42	8.56	311.86	7.55	312.87	8.23	312.19	10.01	310.41
OW13A	321.54	10.02	311.52	8.89	312.65	9.90	311.64	11.90	309.64
OW14A	320.52	10.85	309.67	9.61	310.91	10.42	310.10	12.42	308.10
OW15A	320.30	11.00	309.30	9.90	310.40	10.50	309.80	12.50	307.80
OW16A	320.63	10.37	310.26	9.26	311.37	9.90	310.73	11.88	308.75
OW17A	320.31	9.29	311.02	8.30	312.01	9.09	311.22	10.99	309.32
OW18A	321.09	9.26	311.83	8.20	312.89	9.10	311.99	11.01	310.08

NOTES:

OW01A has been decommissioned

Table 15
2016 Groundwater Field Parameter Measurements
Niagara Falls Storage Site

Page 1 of 2

Well ID	Date	Temperature (°F ^a)	pH	ORP ^f (mV ^g)	Spec. Cond. ^b (mS/cm ^c)	Turbidity (NTU ^d)	DO ^d (mg/L ^e)	Volume Purged (Liters ^j)	Discharge milliter PM ⁱ
OW04A ¹	02/08/16	52.1	8.20	178	1.36	3.1	4.29	6.3	210
OW04B ¹	02/08/16	50.8	6.99	237	1.80	1.0	1.80	10.2	291
505	04/06/16	46.4	7.00	-20	6.34	0.0	3.79	6.6	150
302A	04/08/16	41.9	6.94	172	4.65	36.1	2.95	3.9	130
411A	04/12/16	47.4	7.1	74	2.86	12.5	1.75	3.8	125
A42	04/14/16	53.7	6.75	177	1.25	0.0	0.87	5.0	146
A43	04/14/16	49.50	7.02	152	2.23	0.0	1.20	5.8	165
A45	04/13/16	48.3	6.77	32	2.16	0.0	1.51	5.7	190
A50	04/12/16	53.6	7.41	97	1.86	0.0	4.40	4.5	112
A55	04/13/16	54.6	12.53	-300	7.22	-*	6.20	4.5	150
BH49	04/11/16	52.9	9.01	-206	0.81	0.0	3.39	4.8	159
BH49A	04/11/16	48.9	8.01	179	1.60	0.0	3.33	4.5	148
MW862	04/12/16	47.2	7.57	213	1.74	0.0	1.73	2.9	84
MW863	04/12/16	50.8	7.58	229	1.23	0.0	9.54	4.4	97
MW921	04/06/16	45.0	6.60	326	4.49	0.0	4.80	3.3	110
MW934	04/12/16	43.7	6.76	228	4.00	0.0	3.09	3.6	120
MW935	04/07/16	44.5	7.30	138	2.43	0.0	5.61	3.4	113
MW938	04/08/16	43.1	7.01	17	3.59	0.7	4.28	5.7	190
MW943	04/13/16	52.6	7.78	165	2.04	30.0	2.55	3.1	104
MW944	04/07/16	48.3	6.71	241	1.29	0.0	6.50	3.3	108
MW945	04/07/16	45.8	7.30	6	2.84	0.6	3.15	3.9	130
MW946	04/06/16	40.4	7.81	182	7.70	3.0	7.08	3.6	118
MW947 ²	<i>-Insufficient volume see substitute well MW423</i>								
MW423 ^(Sub for MW947)	04/12/16	46.9	7.18	-71	1.56	0.0	1.89	3.0	100
MW948	04/11/16	47.3	7.12	297	4.12	0.8	5.39	3.0	100
MW949	04/11/16	47.9	7.88	259	2.89	0.8	2.99	3.4	112
MW950	04/13/16	47.9	7.05	266	3.36	0.0	1.89	4.5	150
MW951	04/13/16	47.9	6.84	197	1.97	5.2	0.88	5.3	175
MW952	04/07/16	44.5	7.81	162	2.16	3.0	4.41	4.0	130
MW953	04/07/16	47.2	6.90	174	1.88	0.0	5.15	3.9	130
MW954	04/07/16	48.5	7.13	160	2.63	0.3	8.00	3.2	107
MW955	04/07/16	45.9	7.89	147	1.74	0.0	3.14	4.8	140
MW956	04/13/16	51.8	7.06	121	2.34	0.0	2.09	5.0	150
MW957	04/13/16	49.7	6.97	171	2.30	0.0	3.89	4.3	129
MW958	04/07/16	45.1	7.20	217	1.35	0.0	5.99	3.8	153
MW959	04/14/16	45.8	7.19	252	2.14	0.0	1.89	3.7	122
MW960	04/14/16	49.1	7.11	170	1.54	0.0	7.33	5.3	150
OW03A	04/08/16	48.6	7.32	124	2.15	4.6	3.14	4.8	120
OW03B	04/08/16	44.3	7.64	135	1.90	2.1	3.39	4.1	165
OW04A	04/12/16	49.3	8.70	187	1.30	0.0	2.25	6.8	195
OW04B	04/12/16	49.5	7.07	129	1.82	0.0	0.92	7.5	300
OW05A	04/12/16	51.4	7.55	-158	1.39	0.9	0.92	3.6	120
OW05B	04/12/16	47.1	7.55	214	1.62	14.0	3.47	4.5	180
OW06A	04/13/16	55.0	7.40	-112	1.83	0.0	0.90	4.5	137
OW06B	04/13/16	52.1	8.06	190	1.80	0.0	0.80	3.5	117
OW07A	04/07/16	49.2	7.86	-35	2.14	0.0	2.14	5.0	165
OW07B	04/07/16	47.6	7.20	222	2.02	5.5	3.32	5.9	195
OW11A	04/11/16	48.1	8.39	216	1.42	1.9	1.50	4.4	147
OW11B	04/11/16	46.2	7.70	229	1.50	0.9	3.67	4.4	145
OW12A	04/07/16	48.7	7.55	-86	1.81	0.0	0.45	4.1	164
OW12B	04/07/16	45.6	7.42	239	1.07	0.0	5.32	4.3	171
OW13A	04/07/16	45.4	7.90	85	2.82	0.0	3.87	5.1	160
OW13B	04/07/16	51.2	7.10	-130	2.14	1.3	0.70	3.5	117
OW15A	04/06/16	49.7	7.48	-54	2.41	6.1	1.49	4.3	171
OW15B	04/06/16	43.5	7.28	212	1.40	10.6	2.57	4.1	165
OW17A	04/06/16	45.6	7.66	-130	2.91	4.6	1.17	3.9	130
OW17B	04/06/16	43.4	7.85	174	1.43	6.9	1.75	4.7	189
OW18B	04/13/16	51.6	7.83	76	1.94	0.0	4.68	4.4	145
OW04A ¹	08/18/16	60.5	8.09	-74	1.40	0.0	1.34	6.8	225
OW04B ¹	08/18/16	64.1	7.07	17	1.66	3.1	0.34	10.5	350

Table 15
2016 Groundwater Field Parameter Measurements
Niagara Falls Storage Site

Page 2 of 2

Well ID	Date	Temperature (°F ^a)	pH	ORP ^f (mV ^g)	Spec. Cond. ^b (mS/cm ^c)	Turbidity (NTU ^d)	DO ^e (mg/L ^e)	Volume Purged (Liters ^j)	Discharge milliter PM ⁱ
505 ²	09/29/16	-Insufficient volume see substitute well MW922.							
302A	09/29/16	58.1	7.19	-75	6.47	8.6	0.50	3.6	120
411A	09/29/16	58.2	7.00	-9	4.53	24.5	1.25	3.0	100
A42	10/05/16	59.7	6.75	-123	1.54	0.0	0.59	6.3	208
A43	09/28/16	63.0	6.54	-31	2.26	4.2	1.02	5.1	126
A45	09/30/16	56.4	6.62	-142	2.24	0.0	1.63	12.0	300
A50	10/04/16	62.9	7.50	135	1.90	0.0	0.63	2.9	95
A55	10/05/16	56.2	13.93	-221	7.06	0.0	0.51	3.3	94
BH49	09/30/16	60.0	8.15	-217	1.12	0.2	0.57	2.7	90
BH49A	09/30/16	60.5	7.06	-30	1.79	0.3	0.72	3.0	100
MW862	09/30/16	60.4	6.82	186	1.98	0.0	0.97	3.6	120
MW863	09/30/16	57.9	7.53	190	2.10	0.0	1.76	3.1	103
MW921 ²	09/28/16	-Insufficient volume see substitute well MW922.							
MW922⁴	09/28/16	65.9	6.92	65	4.61	31.5	1.07	4.2	140
MW934	09/29/16	57.5	6.93	202	4.01	23.3	1.29	3.0	100
MW935	09/28/16	69.3	7.17	144	2.55	0.0	1.43	3.9	129
MW938	09/30/16	56.4	7.02	-16	3.78	2.0	1.02	3.9	129
MW943	10/05/16	68.2	6.82	17	2.08	0.2	1.28	4.5	127
MW944²	09/28/16	-Insufficient volume see substitute well MW922.							
MW945²	09/28/16	-Insufficient volume see substitute well MW922.							
MW946²	09/28/16	-Insufficient volume see substitute well 808A							
808A (Sub for MW946)	09/28/16	61.1	7.09	8	5.62	0.0	0.60	2.9	97
MW947²	09/30/16	-Insufficient volume see substitute well MW423							
MW423 (Sub for MW947)	09/30/16	57.5	7.10	148	1.55	10.2	2.16	3.8	125
MW948	09/29/16	58.4	6.92	210	4.32	10.3	1.56	2.8	80
MW949	09/29/16	57.7	7.90	-107	2.97	3.9	1.33	3.0	100
MW950	10/05/16	65.9	7.85	85	3.82	0.0	5.12	6.2	176
MW951	10/05/16	67.3	6.79	-73	1.91	31.8	1.55	3.7	122
MW952²	10/06/16	'-Insufficient volume, no substitute well							
MW953 ³	10/05/16	66.1	6.79	-27	1.84	70.6	1.44	1.9	123
MW954	09/28/16	'-Insufficient volume, no substitute well							
MW955	09/28/16	69.0	6.93	78	1.80	17.0	0.95	3.3	110
MW956	10/05/16	60.6	6.77	-30	2.44	6.0	0.89	3.6	119
MW957	09/30/16	64.9	6.73	40	2.56	8.0	0.62	2.7	90
MW958	10/05/16	73.6	6.91	55	1.24	27.8	2.45	4.2	140
MW959	10/05/16	65.8	6.86	-10	2.13	16.3	1.73	4.2	140
MW960	10/05/16	62.4	6.67	-107	1.73	6.2	0.61	2.9	97
OW03A	09/30/16	57.9	7.28	-14	2.17	0.0	0.40	1.9	63
OW03B	09/30/16	61.7	7.30	-11	1.94	0.5	0.75	2.9	97
OW04A	10/04/16	59.9	8.27	-35	1.41	0.0	0.85	2.6	104
OW04B	10/04/16	63.4	7.01	43	1.92	0.0	1.05	10.0	286
OW05A	10/05/16	59.9	7.75	-91	1.24	10.5	2.04	6.1	174
OW05B	10/05/16	62.3	6.81	88	1.66	2.2	2.00	4.3	143
OW06A	09/29/16	58.6	7.58	-146	2.08	7.3	3.37	4.0	114
OW06B	09/29/16	59.1	6.96	-110	2.09	5.5	2.94	3.0	100
OW07A	09/29/16	58.0	7.74	-93	2.25	0.0	4.05	4.8	106
OW07B	09/28/16	69.9	6.98	193	1.91	29.3	2.39	4.2	120
OW11A	10/05/16	64.1	7.83	-79	1.51	5.5	0.51	6.6	164
OW11B²	10/05/16	'-Insufficient volume, no substitute well							
OW12A	10/04/16	57.4	7.31	-104	2.04	0.0	2.17	3.9	128
OW12B²	10/04/16	'-Insufficient volume,5 no substitute well							
OW13A	09/30/16	61.2	7.15	-142	2.07	0.0	0.84	4.2	140
OW13B	09/30/16	65.0	6.85	6	2.78	27.8	1.68	4.2	140
OW15A	09/29/16	56.4	7.61	-73	2.37	0.0	0.30	3.0	100
OW15B	09/29/16	60.3	7.29	-48	1.99	12.3	0.23	3.0	100
OW17A	09/29/16	61.7	4.93	287	0.07	7.6	0.98	3.0	100
OW17B	09/29/16	59.6	7.34	184	1.46	0.0	0.31	2.7	90
OW18B	09/29/16	60.1	7.31	131	2.00	0.1	0.68	2.7	90

a. °F - Degrees Fahrenheit.

b. Spec. Cond. - Specific conductance.

c. mS/cm - millisiemens/centimeter.

d. DO - Dissolved oxygen.

e. mg/L - milligrams per liter.

f. ORP - Oxidation-Reduction potential.

g. mV - milliVolts.

h. NTU - Nephelometric turbidity units.

i. 1-Liter = 0.26 gallons

j. Milliter PM = milliliter per minute

(1000ml = 1.0 liter) -averaged rate

NA - Not Applicable

*Parameter not taken/meter malfunction

¹ Quarterly sampling.

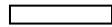
² Insufficient well volume and/or dry.

³ Grab sample.

⁴ Substitute well for wells: 505, MW921, MW944 and MW945

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			201A	302A	302A	411A	411A
Field Sample Identifier :			201A	302A	302A	411A	411A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/13/16	04/11/16	09/29/16	04/12/16	09/29/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	470	480	510 UJ	750 J	520 UJ
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	20 U	20 U	4.534 U	20 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	20 U	20 U	4.534 U	20 U
ALKALINITY, TOTAL	MG/L	500	470 J	480	510 J	750 J	520 J
BROMIDE	MG/L	2	0.2 U	0.24 J	1.2	0.25	0.66
CHLORIDE (AS CL)	MG/L	250	5.4	91	300 J	22	70 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,100	1,700	6,800	2,200	4,700
FLUORIDE	MG/L	1.5	0.3 J	0.64	0.23 J	0.52	0.67 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.11 U	0.12 J	0.43 J	0.11 U	0.09 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.03 U	0.2 J	0.03 U	0.05 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.68	0.01 U	0.01 U	0.2 U	0.01 U
SULFATE	MG/L	250	310	730	3,600	1,000	2,500



Concentration Exceeds Criteria

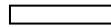
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			415A	505	808A	A42	A42
Field Sample Identifier :			415A	505	808A	A42	A42
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/13/16	04/06/16	09/28/16	04/14/16	10/05/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	620 J	210	640 J	440	410
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U				
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U				
ALKALINITY, TOTAL	MG/L	500	620 J	210	640 J	440 J	410
BROMIDE	MG/L	2	0.2 U	0.04 U	2.8	0.082	0.35
CHLORIDE (AS CL)	MG/L	250	120	220	230	4.5	34 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	2,500	5,600	5,600	1,000	1,100
FLUORIDE	MG/L	1.5	4.6	0.04 U	0.43 J	0.038 J	0.26 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.11 U	0.41	0.15 U	0.021 U	0.56
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.006 U	0.15 U	0.006 U	0.15 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.2 U	0.01 U	0.13	0.18 J	0.01 U
SULFATE	MG/L	250	820	3,300	2,900	260	350



Concentration Exceeds Criteria

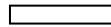
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			A43	A43	A45	A45	A50
Field Sample Identifier :			A43	A43	A45	A45	A50
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/14/16	09/28/16	04/13/16	09/30/16	04/12/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	580	570 J	450 J	460 J	450 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U				
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U				
ALKALINITY, TOTAL	MG/L	500	580 J	570 J	450 J	460	450 J
BROMIDE	MG/L	2	0.61	0.55	0.26	0.26	0.39
CHLORIDE (AS CL)	MG/L	250	29	28	57	54	22
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,800	1,800	1,700	1,800	1,300
FLUORIDE	MG/L	1.5	0.32 J	0.39 J	0.18 J	0.25 U	0.37 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.11 U	0.15 U	0.11 U	0.15 U	0.11 U
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.15 U	0.03 U	0.15 U	0.03 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.2 UJ	0.044	0.2 U	0.01 U	0.2 U
SULFATE	MG/L	250	580	660	630	730	580



Concentration Exceeds Criteria

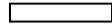
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			A50	A55	A55	BH49	BH49
Field Sample Identifier :			A50	A55	A55	BH49	BH49
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/04/16	04/13/16	10/05/16	04/11/16	09/30/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	450 J	4.534 U	4.534 U	32	51 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	43	4.534 U	20 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	930	4.534 U	20 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	450	970 J	4.534 U	48	51
BROMIDE	MG/L	2	0.48	0.59	0.54	0.27	0.22 J
CHLORIDE (AS CL)	MG/L	250	25	61	64 J	26	30 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,500	2,600	2,500	670	740
FLUORIDE	MG/L	1.5	0.2 J	0.2 U	0.25 U	0.21 J	0.41 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.15 U	0.11 U	0.15 U	0.46	0.75
NITROGEN, NITRITE (AS N)	MG/L	1	0.15 U	0.03 U	0.15 U	0.03 U	0.15 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U	0.2 U	0.01 U	0.01 U	0.088 J
SULFATE	MG/L	250	590	840	860	2,600	390



Concentration Exceeds Criteria

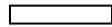
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			BH49A	BH49A	MW313	MW423	MW423
Field Sample Identifier :			BH49A	BH49A	MW313	MW423	MW423
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/11/16	09/30/16	04/11/16	04/12/16	09/30/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	390	380 J	630	660 J	640 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	20 U	4.534 U	20 U	4.534 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	20 U	4.534 U	20 U	4.534 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	390	380	630	660 J	640
BROMIDE	MG/L	2	0.3	0.26	0.54	0.28	0.23 J
CHLORIDE (AS CL)	MG/L	250	37	48 J	44 J	9.9	12 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,200	1,300	4,600	1,000	1,000
FLUORIDE	MG/L	1.5	0.36 J	0.35 J	0.21 J	0.43 J	0.46 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.12 J	0.15 U	0.11 J	0.18 J	0.15 U
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.15 U	0.03 U	0.03 U	0.15 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U	0.01 U	0.01 U	0.2 U	0.01 U
SULFATE	MG/L	250	570	520	3,000	250	250



Concentration Exceeds Criteria

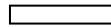
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW862	MW862	MW863	MW863	MW921
Field Sample Identifier :			MW862	MW862	MW863	MW863	MW921
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	09/30/16	04/12/16	09/30/16	04/06/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	640 J	630 J	240 J	230 J	560
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U				
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U				
ALKALINITY, TOTAL	MG/L	500	640 J	630	240 J	230	560
BROMIDE	MG/L	2	0.56	0.49	0.51	0.47	2.3
CHLORIDE (AS CL)	MG/L	250	76	69 J	32	35 J	170
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,400	1,500	1,600	1,700	3,500
FLUORIDE	MG/L	1.5	0.29 J	0.36 J	0.28 J	0.5 J	0.13
NITROGEN, NITRATE (AS N)	MG/L	10	0.11 U	0.21 J	0.33	0.26	0.16
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.18 J	0.03 U	0.15 U	0.006 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.2 U	0.14 J	0.2 U	0.01 U	0.01 U
SULFATE	MG/L	250	400	400	960	930	2,000



Concentration Exceeds Criteria

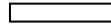
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW922	MW922	MW934	MW934	MW935
Field Sample Identifier :			MW922	MW922	MW934	MW934	MW935
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/11/16	09/28/16	04/12/16	09/29/16	04/07/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	410	400 J	680 J	610 UJ	430
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	20 U	4.534 U	4.534 U	20 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	20 U	4.534 U	4.534 U	20 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	410	400 J	680 J	610 J	430
BROMIDE	MG/L	2	0.44	0.46	0.58	0.59	0.2 U
CHLORIDE (AS CL)	MG/L	250	36 J	36	56	42 J	13 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	4,800	4,900	3,400	3,400	1,700
FLUORIDE	MG/L	1.5	0.33 J	0.58	0.46 J	0.61 J	0.42 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.13 J	0.42	0.11 U	0.13 J	0.11 U
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.15 U	0.03 U	0.2 J	0.03 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U	0.06	0.2 U	0.01 U	0.01 U
SULFATE	MG/L	250	3,300	2,800	1,900	1,800	890



Concentration Exceeds Criteria

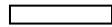
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW935	MW938	MW938	MW943	MW943
Field Sample Identifier :			MW935	MW938	MW938	MW943	MW943
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			09/28/16	04/11/16	09/30/16	04/13/16	10/05/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	570 J	680	740 J	450	430
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	20 U	4.534 U	4.534 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	20 U	4.534 U	4.534 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	570 J	680	740	450 J	430
BROMIDE	MG/L	2	0.29	0.5	0.3	0.35	0.38
CHLORIDE (AS CL)	MG/L	250	25	43 J	32 J	65	64 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	2,400	3,500	3,100	1,700	1,700
FLUORIDE	MG/L	1.5	0.41 J	0.3 J	0.2 J	0.5 J	0.72
NITROGEN, NITRATE (AS N)	MG/L	10	3.9	0.11 U	0.15 U	0.11 U	0.52
NITROGEN, NITRITE (AS N)	MG/L	1	0.15 U	0.03 U	0.24 J	0.03 U	0.25
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.087	0.01 U	0.01 U	0.2 U	0.01 U
SULFATE	MG/L	250	1,100	2,000	1,500	620	670



Concentration Exceeds Criteria

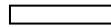
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW944	MW945	MW946	MW948	MW948
Field Sample Identifier :			MW944	MW945	MW946	MW948	MW948
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	04/07/16	04/06/16	04/11/16	09/29/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	580	560	110	570	580 UJ
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	4.534 U	4.534 U	20 U	20 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	4.534 U	4.534 U	20 U	20 U
ALKALINITY, TOTAL	MG/L	500	580	560	110	570	580 J
BROMIDE	MG/L	2	0.2 U	1.5	0.04 U	0.83	0.77
CHLORIDE (AS CL)	MG/L	250	5.7 J	110	290	87	82 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	900	1,900	7,300	4,000	4,500
FLUORIDE	MG/L	1.5	0.2 U	0.3 J	0.04 U	0.42 J	0.65 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.14 J	0.21 J	0.14	0.11 U	0.082 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.03 U	0.006 U	0.03 U	0.05 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U				
SULFATE	MG/L	250	240	800	4,300	2,500	2,200



Concentration Exceeds Criteria

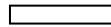
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW949	MW949	MW950	MW950	MW951
Field Sample Identifier :			MW949	MW949	MW950	MW950	MW951
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/11/16	09/29/16	04/13/16	10/05/16	04/13/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	93	120 UJ	530	500	540 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	20 U	4.534 U	4.534 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	20 U	4.534 U	4.534 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	93	120 J	530 J	500	540 J
BROMIDE	MG/L	2	0.92	0.85	0.57	0.6	0.28
CHLORIDE (AS CL)	MG/L	250	93	80 J	54	57 J	66
DISSOLVED SOLIDS, TOTAL	MG/L	1000	2,500	2,600	3,100	4,000	1,500
FLUORIDE	MG/L	1.5	0.3 J	0.42 J	0.42 J	0.52	0.36 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.26	0.075 U	0.11 U	0.15 U	0.11 U
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.05 U	0.03 U	0.28	0.03 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U	0.01 U	0.2 U	0.01 U	0.2 U
SULFATE	MG/L	250	1,700	1,500	1,500	2,200	420



Concentration Exceeds Criteria

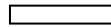
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW951	MW951	MW951	MW952	MW953
Field Sample Identifier :			MW951	MW951	MW951	MW952	MW953
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/13/16	10/05/16	10/05/16	04/07/16	04/07/16
Parameter	Units	Criteria ¹	Field Duplicate		Field Duplicate		
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	550	530	530	390	420
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	4.534 U	4.534 U	4.534 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	4.534 U	4.534 U	4.534 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	550 J	530	530	390	420
BROMIDE	MG/L	2	0.26	0.23 J	0.22 J	0.28	0.2 U
CHLORIDE (AS CL)	MG/L	250	71	68 J	69 J	48 J	18 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,500	1,600	1,500	1,700	1,500
FLUORIDE	MG/L	1.5	0.36 J	0.54	0.58	0.32 J	0.36 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.11 U	0.15 U	0.084 J	0.11 U	0.19 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.15 U	0.15 U	0.03 U	0.03 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.2 U	0.01 U	0.01 U	0.01 U	0.01 U
SULFATE	MG/L	250	430	480	480	880	710



Concentration Exceeds Criteria

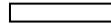
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW953	MW954	MW955	MW955	MW956
Field Sample Identifier :			MW953	MW954	MW955	MW955	MW956
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/05/16	04/07/16	04/07/16	09/28/16	04/13/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	390 J	470	430	420 J	540 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U				
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U				
ALKALINITY, TOTAL	MG/L	500	390	470	430	420 J	540 J
BROMIDE	MG/L	2	0.15 U	0.2 U	0.2 U	0.24 J	0.51
CHLORIDE (AS CL)	MG/L	250	24 J	39 J	23 J	24	42 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,600	2,300	1,300	1,500	1,800
FLUORIDE	MG/L	1.5	0.48 J	0.35 J	0.31 J	0.42 J	0.38 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.15 U	0.37	0.22 J	0.15 U	0.11 U
NITROGEN, NITRITE (AS N)	MG/L	1	0.15 U	0.03 U	0.03 U	0.15 U	0.03 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.032	0.01 U	0.01 U	0.048	0.2 U
SULFATE	MG/L	250	610	1,200	610	540	720



Concentration Exceeds Criteria

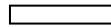
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW956	MW957	MW957	MW958	MW958
Field Sample Identifier :			MW956	MW957	MW957	MW958	MW958
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/05/16	04/13/16	09/30/16	04/07/16	10/05/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	550	580 J	580 J	620	4.534 U
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U				
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U				
ALKALINITY, TOTAL	MG/L	500	550	580 J	580	620	4.534 U
BROMIDE	MG/L	2	0.46	0.39	0.43	0.2 U	0.16 J
CHLORIDE (AS CL)	MG/L	250	43 J	16 J	25	37 J	40 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,700	1,800	2,200	820	1,600
FLUORIDE	MG/L	1.5	0.57	0.52	0.49 J	0.33 J	0.95
NITROGEN, NITRATE (AS N)	MG/L	10	0.11 J	0.15 J	0.5	0.11 U	1,100 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.28	0.03 U	0.15 U	0.03 U	0.64
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U	0.2 U	0.01 U	0.01 U	0.01 U
SULFATE	MG/L	250	820	730	920	230	1,700



Concentration Exceeds Criteria

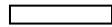
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

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NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW959	MW959	MW960	MW960	OW03A
Field Sample Identifier :			MW959	MW959	MW960	MW960	OW03A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/14/16	10/05/16	04/14/16	10/05/16	04/11/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	530	520	520	520	510
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	4.534 U	4.534 U	4.534 U	20 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	4.534 U	4.534 U	4.534 U	20 U
ALKALINITY, TOTAL	MG/L	500	530 J	520	520 J	520	510
BROMIDE	MG/L	2	0.35	0.34	0.2 U	0.15 U	0.35
CHLORIDE (AS CL)	MG/L	250	49	44 J	40	46 J	28
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,800	2,000	1,200	1,300	1,500
FLUORIDE	MG/L	1.5	0.43 J	0.6	0.31 J	0.21 J	0.31 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.11 U	0.15 U	0.11 U	0.15 U	0.28
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.27	0.03 U	0.15 U	0.03 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.2 UJ	0.01 U	0.2 UJ	0.01 U	0.01 U
SULFATE	MG/L	250	560	670	240	330	720



Concentration Exceeds Criteria

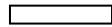
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW03A	OW03B	OW03B	OW04A	OW04A
Field Sample Identifier :			OW03A	OW03B	OW03B	OW04A	OW04A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			09/30/16	04/11/16	09/30/16	02/08/16	04/12/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	480 J	510	480 J	180	170 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	20 U	4.534 U	4.534 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	20 U	4.534 U	4.534 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	480	510	480	180	170 J
BROMIDE	MG/L	2	0.3	0.27	0.23 J	0.46	0.4
CHLORIDE (AS CL)	MG/L	250	34 J	27	36 J	30	30
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,600	1,400	1,400	990	950
FLUORIDE	MG/L	1.5	0.51	0.36 J	0.56	0.22	0.25 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.091 J	0.16 J	0.16 J	0.14	0.47
NITROGEN, NITRITE (AS N)	MG/L	1	0.17 J	0.03 U	0.18 J	0.006 U	0.03 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.017 J	0.01 U	0.01 U	0.04 U	0.2 U
SULFATE	MG/L	250	680	620	550	460	520



Concentration Exceeds Criteria

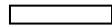
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW04A	OW04A	OW04B	OW04B	OW04B
Field Sample Identifier :			OW04A	OW04A	OW04B	OW04B	OW04B
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			08/18/16	10/04/16	02/08/16	04/12/16	04/12/16
Parameter	Units	Criteria ¹					Field Duplicate
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	150 J	170 J	340	340 J	340 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	34	4.534 U	4.534 U	4.534 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U				
ALKALINITY, TOTAL	MG/L	500	180	170	340	340 J	340 J
BROMIDE	MG/L	2	0.49	0.39	0.094	0.2 U	0.2 U
CHLORIDE (AS CL)	MG/L	250	33 J	34	98	99	97
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,000	1,100	1,300	1,300	1,300
FLUORIDE	MG/L	1.5	0.27 J	0.25 U	0.33	0.48 J	0.48 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.24 J	0.13 J	0.32	0.11 U	0.11 U
NITROGEN, NITRITE (AS N)	MG/L	1	0.15 U	0.15 U	0.006 U	0.03 U	0.03 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.78	0.01 U	0.04 U	0.2 U	0.2 U
SULFATE	MG/L	250	490	460	540	560	550



Concentration Exceeds Criteria

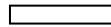
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW04B	OW04B	OW04B	OW05A	OW05A
Field Sample Identifier :			OW04B	OW04B	OW04B	OW05A	OW05A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			08/18/16	10/04/16	10/04/16	04/12/16	10/05/16
Parameter	Units	Criteria ¹			Field Duplicate		
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	350 J	330 J	340 J	260 J	260
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	4.534 U	4.534 U	4.534 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	4.534 U	4.534 U	4.534 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	350	330	340	270 J	260
BROMIDE	MG/L	2	0.16 J	0.15 U	0.15 U	0.49	0.61
CHLORIDE (AS CL)	MG/L	250	82	75	76	39	47 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,500	1,400	1,500	960	1,000
FLUORIDE	MG/L	1.5	0.34 J	0.69	0.68	0.33 J	0.54
NITROGEN, NITRATE (AS N)	MG/L	10	0.15 U	0.15 U	0.12 J	0.11 U	0.1 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.15 U	0.15 U	0.15 U	0.03 U	0.15 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	1.9 J	0.01 U	0.01 U	0.2 U	0.01 U
SULFATE	MG/L	250	540	500	510	450	420



Concentration Exceeds Criteria

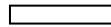
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW05B	OW05B	OW06A	OW06A	OW06B
Field Sample Identifier :			OW05B	OW05B	OW06A	OW06A	OW06B
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	10/05/16	04/13/16	09/29/16	04/13/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	390 J	400	240 J	230 UJ	550
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	4.534 U	4.534 U	20 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	4.534 U	4.534 U	20 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	390 J	400	240 J	230 J	550 J
BROMIDE	MG/L	2	0.2 U	0.18 J	0.5	0.4	0.38
CHLORIDE (AS CL)	MG/L	250	15	17 J	36 J	37	57
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,200	1,300	1,700	1,600	1,400
FLUORIDE	MG/L	1.5	0.32 J	1.3	0.36 J	0.42 J	0.34 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.14 J	0.087 J	0.11 U	0.075 U	0.14 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.15 U	0.03 U	0.05 U	0.03 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.2 U	0.42	0.2 U	0.01 U	0.2 U
SULFATE	MG/L	250	570	520	760	830	390



Concentration Exceeds Criteria

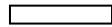
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW06B	OW07A	OW07A	OW07B	OW07B
Field Sample Identifier :			OW06B	OW07A	OW07A	OW07B	OW07B
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			09/29/16	04/07/16	09/29/16	04/07/16	09/28/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	520 UJ	470	170 UJ	200	430 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	20 U	4.534 U	20 U	4.534 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	20 U	4.534 U	20 U	4.534 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	520 J	470	170 J	200	430 J
BROMIDE	MG/L	2	0.28	0.73	0.72	0.28	0.3
CHLORIDE (AS CL)	MG/L	250	56 J	46 J	47 J	20 J	20
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,400	1,700	1,700	1,500	1,600
FLUORIDE	MG/L	1.5	0.51 J	0.26 J	0.39 J	0.3 J	0.49 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.075 U	0.13 J	0.13 J	0.11 U	0.12 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.05 U	0.03 U	0.05 U	0.03 U	0.15 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U	0.01 U	0.01 U	0.01 U	0.068
SULFATE	MG/L	250	440	1,000	920	800	690



Concentration Exceeds Criteria

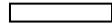
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW11A	OW11A	OW11B	OW12A	OW12A
Field Sample Identifier :			OW11A	OW11A	OW11B	OW12A	OW12A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/11/16	10/05/16	04/11/16	04/07/16	10/04/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	240 J	260	360	220	200 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	4.534 U	20 U	4.534 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	4.534 U	20 U	4.534 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	250 J	260	360	220	200
BROMIDE	MG/L	2	0.36	0.41	0.2 U	0.41	0.34
CHLORIDE (AS CL)	MG/L	250	26	29 J	22	24 J	26
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,100	1,300	1,200	1,300	1,500
FLUORIDE	MG/L	1.5	0.25 J	0.38 J	0.33 J	0.29 J	0.46 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.29 J	0.15 U	0.11 U	0.11 U	0.12 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.15 U	0.03 U	0.03 U	0.15 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.2 U	0.01 U	0.01 U	0.01 U	0.01 U
SULFATE	MG/L	250	540	570	560	790	730



Concentration Exceeds Criteria

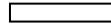
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW12B	OW13A	OW13A	OW13B	OW13B
Field Sample Identifier :			OW12B	OW13A	OW13A	OW13B	OW13B
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	04/07/16	09/30/16	04/07/16	09/30/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	290	430	200 J	420	520 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U				
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U				
ALKALINITY, TOTAL	MG/L	500	290	430	200	420	520
BROMIDE	MG/L	2	0.2 U	0.59	0.51	0.4	0.37
CHLORIDE (AS CL)	MG/L	250	14 J	44 J	47 J	45	39
DISSOLVED SOLIDS, TOTAL	MG/L	1000	700	1,700	1,800	2,500	2,500
FLUORIDE	MG/L	1.5	0.45 J	0.32 J	0.49 J	0.29 J	0.25 U
NITROGEN, NITRATE (AS N)	MG/L	10	0.25	0.11 U	0.14 J	0.29	0.13 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.03 U	0.03 U	0.15 U	0.03 U	0.19 J
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U				
SULFATE	MG/L	250	300	990	910	1,500	1,200



Concentration Exceeds Criteria

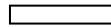
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW15A	OW15A	OW15A	OW15B	OW15B
Field Sample Identifier :			OW15A	OW15A	OW15A	OW15B	OW15B
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/06/16	04/06/16	09/29/16	04/06/16	09/29/16
Parameter	Units	Criteria ¹		Field Duplicate			
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	930 J	43 J	96 UJ	780	560 UJ
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	64 J	20 U	4.534 U	20 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	4.534 U	20 U	4.534 U	20 U
ALKALINITY, TOTAL	MG/L	500	930 J	110 J	96 J	780	560 J
BROMIDE	MG/L	2	0.81	0.79	0.76	0.057	0.16 J
CHLORIDE (AS CL)	MG/L	250	66	65	65 J	3.2	12
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,900	1,900	3,800	870	1,400
FLUORIDE	MG/L	1.5	0.38	0.39	0.48 J	0.37	0.53 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.14	0.021 U	0.14 J	0.078	0.61 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.006 U	0.006 U	0.05 U	0.006 U	0.05 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
SULFATE	MG/L	250	1,100	1,200	1,100	360	490



Concentration Exceeds Criteria

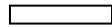
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW17A	OW17A	OW17B	OW17B	OW18B
Field Sample Identifier :			OW17A	OW17A	OW17B	OW17B	OW18B
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/06/16	09/29/16	04/06/16	09/29/16	04/13/16
Parameter	Units	Criteria ¹					
MISCELLANEOUS							
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	120	140 UJ	570	420 UJ	530 J
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	4.534 U	20 U	4.534 U	20 U	4.534 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	4.534 U	20 U	4.534 U	20 U	4.534 U
ALKALINITY, TOTAL	MG/L	500	120	140 J	570	420 J	530 J
BROMIDE	MG/L	2	0.44	0.46	0.14	0.15 J	0.2 U
CHLORIDE (AS CL)	MG/L	250	35	38	9.1	9.4	15 J
DISSOLVED SOLIDS, TOTAL	MG/L	1000	2,100	2,000	980	1,100	1,400
FLUORIDE	MG/L	1.5	0.43	0.39 J	0.29	0.44 J	0.38 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.083	0.16 J	0.12	0.19 J	0.19 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.006 U	0.05 U	0.006 U	0.05 U	0.03 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U	0.01 U	0.01 U	0.01 U	0.2 U
SULFATE	MG/L	250	1,400	1,200	430	370	510



Concentration Exceeds Criteria

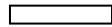
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 16
GROUNDWATER ANALYTICAL RESULTS - WATER QUALITY PARAMETERS
NIAGARA FALLS STORAGE SITE

Location Identifier :		OW18B	
Field Sample Identifier :		OW18B	
Sample Type :		Groundwater	
Sample Depth Interval (ft) :		-	
Date of Sample :		09/29/16	
Parameter	Units	Criteria ¹	
MISCELLANEOUS			
ALKALINITY, BICARBONATE (As CaCO ₃)	MG/L	-	540 UJ
ALKALINITY, CARBONATE (As CaCO ₃)	MG/L	-	20 U
ALKALINITY, HYDROXIDE (AS CACO ₃)	MG/L	-	20 U
ALKALINITY, TOTAL	MG/L	500	540 J
BROMIDE	MG/L	2	0.19 J
CHLORIDE (AS CL)	MG/L	250	17
DISSOLVED SOLIDS, TOTAL	MG/L	1000	1,500
FLUORIDE	MG/L	1.5	0.54 J
NITROGEN, NITRATE (AS N)	MG/L	10	0.15 J
NITROGEN, NITRITE (AS N)	MG/L	1	0.05 U
PHOSPHORUS, TOTAL ORTHOPHOSPHATE (AS PO ₄)	MG/L	-	0.01 U
SULFATE	MG/L	250	600



Concentration Exceeds Criteria

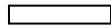
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			302A	302A	411A	411A	505
Field Sample Identifier :			302A	302A	411A	411A	505
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/08/16	09/29/16	04/12/16	09/29/16	04/06/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.802	0.531 U	0 U	0.167 U	0.278 U
TOTAL URANIUM	UG/L	30	64	88.1	21.9	7.45	41.3
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

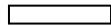
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			808A	A42	A42	A43	A43
Field Sample Identifier :			808A	A42	A42	A43	A43
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			09/28/16	04/14/16	10/05/16	04/14/16	09/28/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.0628 U	0.0626 U	0.183 U	0.109 U	0.0581 U
TOTAL URANIUM	UG/L	30	42.2	49.5	46.7	43.9	38.9
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

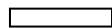
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			A45	A45	A50	A50	A55
Field Sample Identifier :			A45	A45	A50	A50	A55
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/13/16	09/30/16	04/12/16	10/04/16	04/13/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	-0.123 U	0.373 U	0.0624 U	0.37	0.218 U
TOTAL URANIUM	UG/L	30	37	29.1	16.7	18.4	0.121 J
RADIUM-226	PCi/L	3	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.314 J
TOTAL URANIUM	UG/L	30	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	0.134 J



Concentration Exceeds Criteria

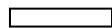
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			A55	BH49	BH49	BH49A	BH49A
Field Sample Identifier :			A55	BH49	BH49	BH49A	BH49A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/05/16	04/11/16	09/30/16	04/11/16	09/30/16
Parameter	Units	Criteria ¹					
RADIOMUNCLIDES							
RADIUM-226	PCi/L	3	0.678	0.304 U	0.328 U	0 U	0.116 U
TOTAL URANIUM	UG/L	30	0.059 J	0.443	0.505	17.3	16.8
RADIOMUNCLIDES (FILTERED)							
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

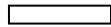
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW313	MW423	MW423	MW862	MW862
Field Sample Identifier :			MW313	MW423	MW423	MW862	MW862
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/08/16	04/12/16	09/30/16	04/12/16	09/30/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.2 U	0.287 U	0.697 J	0.346 U	0.0674 U
TOTAL URANIUM	UG/L	30	58.8	11.9	12.4	24.7	23.9
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

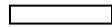
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW863	MW863	MW921	MW921	MW922
Field Sample Identifier :			MW863	MW863	MW921	MW921	MW922
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	09/30/16	04/06/16	04/06/16	09/28/16
Parameter	Units	Criteria ¹				Field Duplicate	
RADIUM-226	PCi/L	3	0.198 U	0.469 J	0.0822 U	0.499 U	0.189 U
TOTAL URANIUM	UG/L	30	3.77	3.58	30.3	30.2	30.6
RADIUM-226	PCi/L	3	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
TOTAL URANIUM	UG/L	30	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

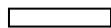
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
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NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW934	MW934	MW935	MW935	MW938
Field Sample Identifier :			MW934	MW934	MW935	MW935	MW938
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	09/29/16	04/07/16	09/28/16	04/08/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.303 U	0 U	0.171 U	-0.059 U	-0.024 U
TOTAL URANIUM	UG/L	30	33	35.3	21.6	23.1	28.1
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

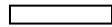
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
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NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW938	MW943	MW943	MW944	MW945
Field Sample Identifier :			MW938	MW943	MW943	MW944	MW945
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			09/30/16	04/14/16	10/05/16	04/07/16	04/07/16
Parameter	Units	Criteria ¹					
RADIATION							
RADIUM-226	PCi/L	3	0.285 U	0.162 U	0 U	0.852	0.0906 U
TOTAL URANIUM	UG/L	30	23.3	24.3	20.1	5.1	11.6
RADIATION (FILTERED)							
RADIUM-226	PCi/L	3	Not Analyzed				
TOTAL URANIUM	UG/L	30	Not Analyzed				



Concentration Exceeds Criteria

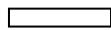
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW946	MW948	MW948	MW949	MW949
Field Sample Identifier :			MW946	MW948	MW948	MW949	MW949
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/06/16	04/11/16	09/29/16	04/11/16	09/29/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.522 U	0.54 J	0 U	0.247 U	0.3 U
TOTAL URANIUM	UG/L	30	37.2	26.6	29.7	2.25	2.04
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

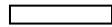
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW950	MW950	MW951	MW951	MW951
Field Sample Identifier :			MW950	MW950	MW951	MW951	MW951
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/13/16	10/05/16	04/13/16	04/13/16	10/05/16
Parameter	Units	Criteria ¹				Field Duplicate	
RADIUM-226	PCi/L	3	0.219 U	0.161 U	0 U	0.0658 U	0.337 U
TOTAL URANIUM	UG/L	30	34.9	36.9	3,069	3,145	3,130
RADIUM-226	PCi/L	3	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
TOTAL URANIUM	UG/L	30	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

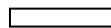
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW951	MW952	MW953	MW953	MW954
Field Sample Identifier :			MW951	MW952	MW953	MW953	MW954
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/05/16	04/07/16	04/04/16	10/05/16	04/07/16
Parameter	Units	Criteria ¹	Field Duplicate				
RADIUM-226	PCi/L	3	-0.074 U	-0.06 U	0.0575 U	-0.075 U	-0.06 U
TOTAL URANIUM	UG/L	30	3,006	204	6,547	2,671	724
RADIUM-226	PCi/L	3	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
TOTAL URANIUM	UG/L	30	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

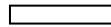
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW955	MW955	MW956	MW956	MW957
Field Sample Identifier :			MW955	MW955	MW956	MW956	MW957
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/07/16	09/28/16	04/13/16	10/05/16	04/13/16
Parameter	Units	Criteria ¹					
RADIONUCLIDES							
RADIUM-226	PCi/L	3	0.064 U	0.291 U	0.465 J	0.159 U	0.235 U
TOTAL URANIUM	UG/L	30	26.1	20.3	65.5	54.2	3,410
RADIONUCLIDES (FILTERED)							
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

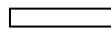
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW957	MW958	MW958	MW959	MW959
Field Sample Identifier :			MW957	MW958	MW958	MW959	MW959
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			09/30/16	04/07/16	10/05/16	04/14/16	10/05/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	-0.062 U	0.421 U	-0.174 U	0.114 U	0.328 U
TOTAL URANIUM	UG/L	30	2,260	198	225	180	72.9
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

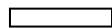
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW960	MW960	OW03A	OW03A	OW03B
Field Sample Identifier :			MW960	MW960	OW03A	OW03A	OW03B
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/14/16	10/05/16	04/08/16	09/30/16	04/08/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.508	0.338 U	0.26 U	0.0556 U	-0.022 U
TOTAL URANIUM	UG/L	30	1,204	1,124	11.7	11.7	16.1
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

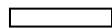
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW03B	OW04A	OW04A	OW04A	OW04A
Field Sample Identifier :			OW03B	OW04A	OW04A	OW04A	OW04A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			09/30/16	02/08/16	04/12/16	08/18/16	10/04/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.109 U	0 U	0 U	0.093 U	0 U
TOTAL URANIUM	UG/L	30	16.4	2.26	2.24	2.45	2.61
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

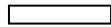
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW04B	OW04B	OW04B	OW04B	OW04B
Field Sample Identifier :			OW04B	OW04B	OW04B	OW04B	OW04B
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			02/08/16	04/12/16	04/12/16	08/18/16	10/04/16
Parameter	Units	Criteria ¹			Field Duplicate		
RADIUM-226	PCi/L	3	0.128 U	0.313 U	-0.059 U	-0.036 U	0.0714 U
TOTAL URANIUM	UG/L	30	50.6	50.2	50.3	44.5	38.5
RADIUM-226	PCi/L	3	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
TOTAL URANIUM	UG/L	30	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

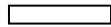
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW04B	OW05A	OW05A	OW05B	OW05B
Field Sample Identifier :			OW04B	OW05A	OW05A	OW05B	OW05B
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			10/04/16	04/12/16	10/05/16	04/12/16	10/05/16
Parameter	Units	Criteria ¹	Field Duplicate				
RADIUM-226	PCi/L	3	0 U	0.114 U	0.329 U	0.502 J	0.0883 U
TOTAL URANIUM	UG/L	30	42.9	1.91	1.68	15.5	13.2
RADIUM-226	PCi/L	3	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed
TOTAL URANIUM	UG/L	30	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

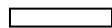
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW06A	OW06A	OW06B	OW06B	OW07A
Field Sample Identifier :			OW06A	OW06A	OW06B	OW06B	OW07A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/13/16	09/29/16	04/13/16	09/29/16	04/07/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.0573 U	0.915	0.115 U	-0.064 U	-0.059 U
TOTAL URANIUM	UG/L	30	1.77	1.35	20.7	16.3	1.66
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

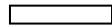
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW07A	OW07B	OW07B	OW11A	OW11A
Field Sample Identifier :			OW07A	OW07B	OW07B	OW11A	OW11A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			09/29/16	04/07/16	09/28/16	04/11/16	10/05/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.242 U	-0.096 U	-0.061 U	0.474 U	0.259 U
TOTAL URANIUM	UG/L	30	1.54	21.6	18.1	1.9	1.88
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

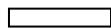
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW11B	OW12A	OW12A	OW12B	OW13A
Field Sample Identifier :			OW11B	OW12A	OW12A	OW12B	OW13A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/11/16	04/07/16	10/04/16	04/07/16	04/07/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.0674 U	-0.018 U	0.351 U	0.0726 U	0.243 U
TOTAL URANIUM	UG/L	30	382	3.88	3.6	62.8	2.41
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

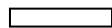
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW13A	OW13B	OW13B	OW15A	OW15A
Field Sample Identifier :			OW13A	OW13B	OW13B	OW15A	OW15A
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			09/30/16	04/07/16	09/30/16	04/06/16	09/29/16
Parameter	Units	Criteria ¹					
RADIUM-226	PCi/L	3	0.219 U	0.13 U	-0.176 U	0.174 U	0.384
TOTAL URANIUM	UG/L	30	2.45	27.8	33.3	0.412	0.274
RADIUM-226	PCi/L	3	Not Anaylzed				
TOTAL URANIUM	UG/L	30	Not Anaylzed				



Concentration Exceeds Criteria

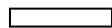
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW15B	OW15B	OW17A	OW17A	OW17B
Field Sample Identifier :			OW15B	OW15B	OW17A	OW17A	OW17B
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/06/16	09/29/16	04/06/16	09/29/16	04/06/16
Parameter	Units	Criteria ¹					
RADIATION							
RADIUM-226	PCi/L	3	-0.057 U	0.419	-0.067 U	0.17 U	0.285 U
TOTAL URANIUM	UG/L	30	12.6	12.7	0.867	1.1	5.48
RADIATION (FILTERED)							
RADIUM-226	PCi/L	3	Not Analyzed				
TOTAL URANIUM	UG/L	30	Not Analyzed				



Concentration Exceeds Criteria

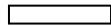
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 17
GROUNDWATER ANALYTICAL RESULTS - RADIONUCLIDES
NIAGARA FALLS STORAGE SITE

Location Identifier :			OW17B	OW18B	OW18B
Field Sample Identifier :			OW17B	OW18B	OW18B
Sample Type :			Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-
Date of Sample :			09/29/16	04/13/16	09/29/16
Parameter	Units	Criteria ¹			
RADIUM-226	PCi/L	3	0 U	0.424 U	0.0566 U
TOTAL URANIUM	UG/L	30	6.62	11.2	13.4
RADIUM-226	PCi/L	3	Not Anaylzed	Not Anaylzed	Not Anaylzed
TOTAL URANIUM	UG/L	30	Not Anaylzed	Not Anaylzed	Not Anaylzed



Concentration Exceeds Criteria

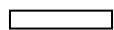
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

If turbidity measurements exceed 50 nephelometric turbidity units (NTUs) for any groundwater or surface water sample, the sample is field filtered via a disposable 0.45 micron in-line filter to remove solids and reduce the turbidity readings to below the 50 NTU threshold and then the filtered and unfiltered samples are analyzed.
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			411A	411A	411A	MW423	MW423
Field Sample Identifier :			411A	411A	411A	MW423	MW423
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	04/12/16	09/29/16	04/12/16	09/30/16
Parameter	Units	Criteria ¹	Field Duplicate				
VOLATILE ORGANIC ANALYSES							
1,1,1,2-TETRACHLOROETHANE	UG/L	5	0.6 U	0.6 U	0.43 U	0.6 U	0.6 U
1,1,2,2-TETRACHLOROETHANE	UG/L	5	0.6 U	0.6 U	0.45 U	0.6 U	0.6 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L	5	0.6 U	0.6 U	0.48 U	0.6 U	0.6 U
1,1,2-TRICHLOROETHANE	UG/L	1	0.6 U	0.6 U	0.49 U	0.6 U	0.6 U
1,1-DICHLOROETHANE	UG/L	5	0.6 U	0.6 U	0.74 U	0.6 U	1 U
1,1-DICHLOROETHENE	UG/L	5	0.6 U	0.6 U	0.48 U	0.6 U	0.6 U
1,1-DICHLOROPROPENE	UG/L	5	0.6 U	0.6 U	0.46 U	0.6 U	0.6 U
1,2,3-TRICHLOROBENZENE	UG/L	5	0.6 U	0.6 U	0.48 U	0.6 U	0.6 U
1,2,3-TRICHLOROPROPANE	UG/L	0.04	1 U	1 U	0.31 U	1 U	0.6 U
1,2,4-TRICHLOROBENZENE	UG/L	5	0.6 U	0.6 U	0.41 U	0.6 U	0.6 U
1,2,4-TRIMETHYLBENZENE	UG/L	5	0.6 U	0.6 U	0.43 U	0.6 U	0.6 U
1,2-DIBROMO-3-CHLOROPROPANE	UG/L	0.04	1 U	1 U	1 U	1 U	2 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L	0.006	0.6 U	0.6 U	0.54 U	0.6 U	0.6 U
1,2-DICHLOROBENZENE	UG/L	3	0.6 U	0.6 U	0.4 U	0.6 U	0.6 U
1,2-DICHLOROETHANE	UG/L	0.6	0.6 U	0.6 U	0.28 U	0.6 U	0.6 U
1,2-DICHLOROPROPANE	UG/L	1	0.6 U	0.6 U	0.42 U	0.6 U	0.6 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L	5	0.6 U	0.6 U	0.49 U	0.6 U	0.6 U
1,3-DICHLOROBENZENE	UG/L	3	0.6 U	0.6 U	0.47 U	0.6 U	0.6 U
1,3-DICHLOROPROPANE	UG/L	5	0.6 U	0.6 U	0.35 U	0.6 U	0.6 U



Concentration Exceeds Criteria

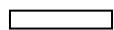
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			411A	411A	411A	MW423	MW423
Field Sample Identifier :			411A	411A	411A	MW423	MW423
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	04/12/16	09/29/16	04/12/16	09/30/16
Parameter	Units	Criteria ¹	Field Duplicate				
VOLATILE ORGANIC ANALYSES							
1,4-DICHLOROBENZENE	UG/L	3	0.6 U	0.6 U	0.48 U	0.6 U	0.6 U
2,2-DICHLOROPROPANE	UG/L	5	0.6 U	0.6 U	0.86 U	0.6 U	1 U
2-CHLOROTOLUENE	UG/L	-	0.6 U	0.6 U	0.49 U	0.6 U	0.6 U
2-HEXANONE	UG/L	50	0.6 U	0.6 U	0.64 U	0.6 U	1 U
4-CHLOROTOLUENE	UG/L	-	1 U	1 U	0.42 U	1 U	0.6 U
ACETONE	UG/L	50	3.5 J	4.4 J	1.8 J	4.9 J	1.4 J
BENZENE	UG/L	1	0.6 U	0.6 U	0.38 U	0.6 U	0.6 U
BROMOBENZENE	UG/L	-	0.6 U	0.6 U	0.48 U	0.6 U	0.6 U
BROMOCHLOROMETHANE	UG/L	5	0.6 U	0.6 U	0.5 U	0.6 U	0.6 U
BROMODICHLOROMETHANE	UG/L	50	0.6 U	0.6 U	0.33 U	0.6 U	0.6 U
BROMOFORM	UG/L	50	0.6 U	0.6 U	0.25 U	0.6 U	0.6 U
BROMOMETHANE	UG/L	5	4 U	4 U	0.77 U	4 U	1 U
CARBON DISULFIDE	UG/L	60	0.6 U	0.6 U	0.54 U	0.6 U	0.6 U
CARBON TETRACHLORIDE	UG/L	5	0.6 U	0.6 U	0.39 U	0.6 U	0.6 U
CHLOROBENZENE	UG/L	5	0.6 U	0.6 U	0.47 U	0.6 U	0.6 U
CHLOROETHANE	UG/L	5	1 U	1 U	0.68 U	1 U	1 U
CHLOROFORM	UG/L	7	0.6 U	0.6 U	0.46 U	0.6 U	0.6 U
CHLOROMETHANE	UG/L	5	0.6 U	0.6 U	0.37 U	0.6 U	0.6 U
CIS-1,2-DICHLOROETHYLENE	UG/L	5	0.6 U	0.6 U	0.44 U	0.6 U	0.6 U



Concentration Exceeds Criteria

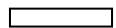
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			411A	411A	411A	MW423	MW423
Field Sample Identifier :			411A	411A	411A	MW423	MW423
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	04/12/16	09/29/16	04/12/16	09/30/16
Parameter	Units	Criteria ¹	Field Duplicate				
VOLATILE ORGANIC ANALYSES							
CIS-1,3-DICHLOROPROPENE	UG/L	0.4	0.6 U	0.6 U	0.26 U	0.6 U	0.6 U
DIBROMOCHLOROMETHANE	UG/L	50	0.6 U	0.6 U	0.27 UJ	0.6 U	0.6 UJ
DIBROMOMETHANE	UG/L	5	0.6 U	0.6 U	0.5 U	0.6 U	0.6 U
DICHLORODIFLUOROMETHANE	UG/L	5	0.6 U	0.6 U	0.46 U	0.6 U	0.6 U
ETHYLBENZENE	UG/L	5	0.6 U	0.6 U	0.43 U	0.6 U	0.6 U
HEXACHLOROBUTADIENE	UG/L	0.5	1 U	1 U	0.94 U	1 U	1 U
ISOPROPYLBENZENE (CUMENE)	UG/L	5	0.6 U	0.6 U	0.45 U	0.6 U	0.6 U
M+P-XYLENE	UG/L	5	1.2 U	1.2 U	0.9 U	1.2 U	1.2 U
METHYL ETHYL KETONE (2-BUTANONE)	UG/L	50	5 U	5 U	2.3 U	5 U	5 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L	-	0.6 U	0.6 U	0.34 U	0.6 U	0.6 U
METHYLENE CHLORIDE	UG/L	5	0.6 U	0.6 U	0.27 U	0.6 U	0.6 U
NAPHTHALENE	UG/L	10	0.6 U	0.6 U	0.32 U	0.6 U	0.6 U
N-BUTYLBENZENE	UG/L	5	0.6 U	0.6 U	0.5 U	0.6 U	0.6 U
N-PROPYLBENZENE	UG/L	5	0.6 U	0.6 U	0.42 U	0.6 U	0.6 U
O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L	5	0.6 U	0.6 U	0.42 U	0.6 U	0.6 U
P-CYMENE (P-ISOPROPYLtolUENE)	UG/L	5	0.6 U	0.6 U	0.4 U	0.6 U	0.6 U
SEC-BUTYLBENZENE	UG/L	5	0.6 U	0.6 U	0.38 U	0.6 U	0.6 U
STYRENE	UG/L	5	0.6 U	0.6 U	0.3 U	0.6 U	0.6 U
T-BUTYLBENZENE	UG/L	5	0.6 U	0.6 U	0.37 U	0.6 U	0.6 U



Concentration Exceeds Criteria

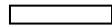
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			411A	411A	411A	MW423	MW423
Field Sample Identifier :			411A	411A	411A	MW423	MW423
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	04/12/16	09/29/16	04/12/16	09/30/16
Parameter	Units	Criteria ¹	Field Duplicate				
VOLATILE ORGANIC ANALYSES							
TERT-BUTYL METHYL ETHER	UG/L	10	0.6 U	0.6 U	0.5 U	0.6 U	0.6 U
TETRACHLOROETHYLENE(PCE)	UG/L	5	0.6 U	0.6 U	0.56 U	0.6 U	0.6 U
TOLUENE	UG/L	5	0.6 U	0.6 U	0.5 U	0.6 U	0.6 U
TOTAL 1,2-DICHLOROETHENE	UG/L	5	1.2 U	1.2 U	0.75 U	1.2 U	1 U
TRANS-1,2-DICHLOROETHENE	UG/L	5	0.6 U	0.6 U	0.32 U	0.6 U	0.6 U
TRANS-1,3-DICHLOROPROPENE	UG/L	0.4	0.6 U	0.6 U	0.5 UJ	0.6 U	0.6 UJ
TRICHLOROETHANE	UG/L	5	0.6 U	0.6 U	0.58 U	0.6 U	0.6 U
TRICHLOROETHYLENE (TCE)	UG/L	5	0.6 U	0.6 U	0.48 U	0.6 U	0.6 U
TRICHLOROFUOROMETHANE	UG/L	5	0.6 U	0.6 U	0.55 U	0.6 U	0.6 U
VINYL CHLORIDE	UG/L	2	0.6 U	0.6 U	0.52 U	0.6 U	0.6 U
XYLEMES, TOTAL	UG/L	-	1.8 U	1.8 U	1.3 U	1.8 U	1.8 U



Concentration Exceeds Criteria

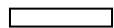
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW934	MW934	MW948	MW948	MW949
Field Sample Identifier :			MW934	MW934	MW948	MW948	MW949
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	09/29/16	04/11/16	09/29/16	04/11/16
Parameter	Units	Criteria ¹					
VOLATILE ORGANIC ANALYSES							
1,1,1,2-TETRACHLOROETHANE	UG/L	5	0.6 U	0.43 U	0.6 U	0.43 U	0.6 U
1,1,2,2-TETRACHLOROETHANE	UG/L	5	0.6 U	0.45 U	0.6 U	0.45 U	0.6 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L	5	0.6 U	0.48 U	0.6 U	0.48 U	0.6 U
1,1,2-TRICHLOROETHANE	UG/L	1	0.6 U	0.49 U	0.6 U	0.49 U	0.6 U
1,1-DICHLOROETHANE	UG/L	5	0.6 U	0.74 U	0.6 U	0.74 U	0.6 U
1,1-DICHLOROETHENE	UG/L	5	0.6 U	0.48 U	0.6 U	0.48 U	0.6 U
1,1-DICHLOROPROPENE	UG/L	5	0.6 U	0.46 U	0.6 U	0.46 U	0.6 U
1,2,3-TRICHLOROBENZENE	UG/L	5	0.6 U	0.48 U	0.6 U	0.48 U	0.6 U
1,2,3-TRICHLOROPROPANE	UG/L	0.04	1 U	0.31 U	1 U	0.31 U	1 U
1,2,4-TRICHLOROBENZENE	UG/L	5	0.6 U	0.41 U	0.6 U	0.41 U	0.6 U
1,2,4-TRIMETHYLBENZENE	UG/L	5	0.6 U	0.43 U	0.6 U	0.43 U	0.6 U
1,2-DIBROMO-3-CHLOROPROPANE	UG/L	0.04	1 U	1 UJ	1 U	1 UJ	1 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L	0.006	0.6 U	0.54 U	0.6 U	0.54 U	0.6 U
1,2-DICHLOROBENZENE	UG/L	3	0.6 U	0.4 U	0.6 U	0.4 U	0.6 U
1,2-DICHLOROETHANE	UG/L	0.6	0.6 U	0.28 U	0.6 U	0.28 U	0.6 U
1,2-DICHLOROPROPANE	UG/L	1	0.6 U	0.42 U	0.6 U	0.42 U	0.6 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L	5	0.6 U	0.49 U	0.6 U	0.49 U	0.6 U
1,3-DICHLOROBENZENE	UG/L	3	0.6 U	0.47 U	0.6 U	0.47 U	0.6 U
1,3-DICHLOROPROPANE	UG/L	5	0.6 U	0.35 U	0.6 U	0.35 U	0.6 U



Concentration Exceeds Criteria

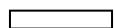
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW934	MW934	MW948	MW948	MW949
Field Sample Identifier :			MW934	MW934	MW948	MW948	MW949
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	09/29/16	04/11/16	09/29/16	04/11/16
Parameter	Units	Criteria ¹					
VOLATILE ORGANIC ANALYSES							
1,4-DICHLOROBENZENE	UG/L	3	0.6 U	0.48 U	0.6 U	0.48 U	0.6 U
2,2-DICHLOROPROPANE	UG/L	5	0.6 U	0.86 U	0.6 U	0.86 U	0.6 U
2-CHLOROTOLUENE	UG/L	-	0.6 U	0.49 U	0.6 U	0.49 U	0.6 U
2-HEXANONE	UG/L	50	0.6 U	0.64 U	0.6 U	0.64 U	0.6 U
4-CHLOROTOLUENE	UG/L	-	1 U	0.42 U	1 U	0.42 U	1 U
ACETONE	UG/L	50	4.6 J	2.1 J	5.7 J	2 J	8 J
BENZENE	UG/L	1	0.6 U	0.38 U	0.6 U	0.38 U	0.6 U
BROMOBENZENE	UG/L	-	0.6 U	0.48 U	0.6 U	0.48 U	0.6 U
BROMOCHLOROMETHANE	UG/L	5	0.6 U	0.5 U	0.6 U	0.5 U	0.6 U
BROMODICHLOROMETHANE	UG/L	50	0.6 U	0.33 U	0.6 U	0.33 U	0.6 U
BROMOFORM	UG/L	50	0.6 U	0.25 U	0.6 U	0.25 U	0.6 U
BROMOMETHANE	UG/L	5	4 U	0.77 UJ	4 U	0.77 U	4 U
CARBON DISULFIDE	UG/L	60	0.6 U	0.54 U	0.6 U	0.54 U	0.6 U
CARBON TETRACHLORIDE	UG/L	5	0.6 U	0.39 U	0.6 U	0.39 U	0.6 U
CHLOROBENZENE	UG/L	5	0.6 U	0.47 U	0.6 U	0.47 U	0.6 U
CHLOROETHANE	UG/L	5	1 U	0.68 U	1 U	0.68 U	1 U
CHLOROFORM	UG/L	7	7.7	1.6	0.6 U	0.46 U	0.6 U
CHLOROMETHANE	UG/L	5	0.6 U	0.37 U	0.66 J	0.37 U	0.68 J
CIS-1,2-DICHLOROETHYLENE	UG/L	5	0.6 U	0.44 U	0.6 U	0.44 U	0.6 U



Concentration Exceeds Criteria

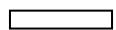
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

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TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW934	MW934	MW948	MW948	MW949
Field Sample Identifier :			MW934	MW934	MW948	MW948	MW949
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	09/29/16	04/11/16	09/29/16	04/11/16
Parameter	Units	Criteria ¹					
VOLATILE ORGANIC ANALYSES							
CIS-1,3-DICHLOROPROPENE	UG/L	0.4	0.6 U	0.26 U	0.6 U	0.26 U	0.6 U
DIBROMOCHLOROMETHANE	UG/L	50	0.6 U	0.27 U	0.6 U	0.27 U	0.6 U
DIBROMOMETHANE	UG/L	5	0.6 U	0.5 U	0.6 U	0.5 U	0.6 U
DICHLORODIFLUOROMETHANE	UG/L	5	0.6 U	0.46 U	0.6 U	0.46 U	0.6 U
ETHYLBENZENE	UG/L	5	0.6 U	0.43 U	0.6 U	0.43 U	0.6 U
HEXACHLOROBUTADIENE	UG/L	0.5	1 U	0.94 U	1 U	0.94 U	1 U
ISOPROPYLBENZENE (CUMENE)	UG/L	5	0.6 U	0.45 U	0.6 U	0.45 U	0.6 U
M+P-XYLENE	UG/L	5	1.2 U	0.9 U	1.2 U	0.9 U	1.2 U
METHYL ETHYL KETONE (2-BUTANONE)	UG/L	50	5 U	2.3 U	5 U	2.3 U	5 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L	-	0.6 U	0.34 U	0.6 U	0.34 U	0.6 U
METHYLENE CHLORIDE	UG/L	5	0.6 U	0.47 J	0.6 U	0.27 U	0.6 U
NAPHTHALENE	UG/L	10	0.6 U	0.32 U	0.6 U	0.32 U	0.6 U
N-BUTYLBENZENE	UG/L	5	0.6 U	0.5 U	0.6 U	0.5 U	0.6 U
N-PROPYLBENZENE	UG/L	5	0.6 U	0.42 U	0.6 U	0.42 U	0.6 U
O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L	5	0.6 U	0.42 U	0.6 U	0.42 U	0.6 U
P-CYMENE (P-ISOPROPYL TOLUENE)	UG/L	5	0.6 U	0.4 U	0.6 U	0.4 U	0.6 U
SEC-BUTYLBENZENE	UG/L	5	0.6 U	0.38 U	0.6 U	0.38 U	0.6 U
STYRENE	UG/L	5	0.6 U	0.3 U	0.6 U	0.3 U	0.6 U
T-BUTYLBENZENE	UG/L	5	0.6 U	0.37 U	0.6 U	0.37 U	0.6 U



Concentration Exceeds Criteria

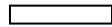
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW934	MW934	MW948	MW948	MW949
Field Sample Identifier :			MW934	MW934	MW948	MW948	MW949
Sample Type :			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-	-	-	-
Date of Sample :			04/12/16	09/29/16	04/11/16	09/29/16	04/11/16
Parameter	Units	Criteria ¹					
VOLATILE ORGANIC ANALYSES							
TERT-BUTYL METHYL ETHER	UG/L	10	0.6 U	0.5 U	0.6 U	0.5 U	0.6 U
TETRACHLOROETHYLENE(PCE)	UG/L	5	0.6 U	0.56 U	0.6 U	0.56 U	0.6 U
TOLUENE	UG/L	5	0.6 U	0.5 U	0.6 U	0.5 U	0.6 U
TOTAL 1,2-DICHLOROETHENE	UG/L	5	1.2 U	0.75 U	1.2 U	0.75 U	1.2 U
TRANS-1,2-DICHLOROETHENE	UG/L	5	0.6 U	0.32 U	0.6 U	0.32 U	0.6 U
TRANS-1,3-DICHLOROPROPENE	UG/L	0.4	0.6 U	0.5 U	0.6 U	0.5 U	0.6 U
TRICHLOROETHANE	UG/L	5	0.6 U	0.58 U	0.6 U	0.58 U	0.6 U
TRICHLOROETHYLENE (TCE)	UG/L	5	0.6 U	0.48 U	0.6 U	0.48 U	0.6 U
TRICHLOROFUOROMETHANE	UG/L	5	0.6 U	0.55 U	0.6 U	0.55 U	0.6 U
VINYL CHLORIDE	UG/L	2	0.6 U	0.52 U	0.6 U	0.52 U	0.6 U
XYLEMES, TOTAL	UG/L	-	1.8 U	1.3 U	1.8 U	1.3 U	1.8 U



Concentration Exceeds Criteria

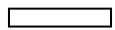
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW949	MW949
Field Sample Identifier :			MW949	MW949
Sample Type :			Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-
Date of Sample :			09/29/16	09/29/16
Parameter	Units	Criteria ¹	Field Duplicate	
VOLATILE ORGANIC ANALYSES				
1,1,1,2-TETRACHLOROETHANE	UG/L	5	0.43 U	0.43 U
1,1,2,2-TETRACHLOROETHANE	UG/L	5	0.45 U	0.45 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	UG/L	5	0.48 U	0.48 U
1,1,2-TRICHLOROETHANE	UG/L	1	0.49 U	0.49 U
1,1-DICHLOROETHANE	UG/L	5	0.74 U	0.74 U
1,1-DICHLOROETHENE	UG/L	5	0.48 U	0.48 U
1,1-DICHLOROPROPENE	UG/L	5	0.46 U	0.46 U
1,2,3-TRICHLOROBENZENE	UG/L	5	0.48 U	0.48 U
1,2,3-TRICHLOROPROPANE	UG/L	0.04	0.31 U	0.31 U
1,2,4-TRICHLOROBENZENE	UG/L	5	0.41 U	0.41 U
1,2,4-TRIMETHYLBENZENE	UG/L	5	0.43 U	0.43 U
1,2-DIBROMO-3-CHLOROPROPANE	UG/L	0.04	1 U	1 UJ
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	UG/L	0.006	0.54 U	0.54 U
1,2-DICHLOROBENZENE	UG/L	3	0.4 U	0.4 U
1,2-DICHLOROETHANE	UG/L	0.6	0.28 U	0.28 U
1,2-DICHLOROPROPANE	UG/L	1	0.42 U	0.42 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	UG/L	5	0.49 U	0.49 U
1,3-DICHLOROBENZENE	UG/L	3	0.47 U	0.47 U
1,3-DICHLOROPROPANE	UG/L	5	0.35 U	0.35 U



Concentration Exceeds Criteria

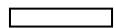
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW949	MW949
Field Sample Identifier :			MW949	MW949
Sample Type :			Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-
Date of Sample :			09/29/16	09/29/16
Parameter	Units	Criteria ¹	Field Duplicate	
VOLATILE ORGANIC ANALYSES				
1,4-DICHLOROBENZENE	UG/L	3	0.48 U	0.48 U
2,2-DICHLOROPROPANE	UG/L	5	0.86 U	0.86 U
2-CHLOROTOLUENE	UG/L	-	0.49 U	0.49 U
2-HEXANONE	UG/L	50	0.64 U	0.64 U
4-CHLOROTOLUENE	UG/L	-	0.42 U	0.42 U
ACETONE	UG/L	50	2.3 J	3.9 J
BENZENE	UG/L	1	0.38 U	0.38 U
BROMOBENZENE	UG/L	-	0.48 U	0.48 U
BROMOCHLOROMETHANE	UG/L	5	0.5 U	0.5 U
BROMODICHLOROMETHANE	UG/L	50	0.33 U	0.33 U
BROMOFORM	UG/L	50	0.25 U	0.25 U
BROMOMETHANE	UG/L	5	0.77 U	0.77 UJ
CARBON DISULFIDE	UG/L	60	0.54 U	0.54 U
CARBON TETRACHLORIDE	UG/L	5	0.39 U	0.39 U
CHLOROBENZENE	UG/L	5	0.47 U	0.47 U
CHLOROETHANE	UG/L	5	0.68 U	0.68 U
CHLOROFORM	UG/L	7	0.46 U	0.46 U
CHLOROMETHANE	UG/L	5	0.37 U	0.49 J
CIS-1,2-DICHLOROETHYLENE	UG/L	5	0.44 U	0.44 U



Concentration Exceeds Criteria

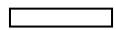
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

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NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW949	MW949
Field Sample Identifier :			MW949	MW949
Sample Type :			Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-
Date of Sample :			09/29/16	09/29/16
Parameter	Units	Criteria ¹	Field Duplicate	
VOLATILE ORGANIC ANALYSES				
CIS-1,3-DICHLOROPROPENE	UG/L	0.4	0.26 U	0.26 U
DIBROMOCHLOROMETHANE	UG/L	50	0.27 U	0.27 U
DIBROMOMETHANE	UG/L	5	0.5 U	0.5 U
DICHLORODIFLUOROMETHANE	UG/L	5	0.46 U	0.46 U
ETHYLBENZENE	UG/L	5	0.43 U	0.43 U
HEXACHLOROBUTADIENE	UG/L	0.5	0.94 U	0.94 U
ISOPROPYLBENZENE (CUMENE)	UG/L	5	0.45 U	0.45 U
M+P-XYLENE	UG/L	5	0.9 U	0.9 U
METHYL ETHYL KETONE (2-BUTANONE)	UG/L	50	2.3 U	2.3 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	UG/L	-	0.34 U	0.34 U
METHYLENE CHLORIDE	UG/L	5	0.27 U	0.27 U
NAPHTHALENE	UG/L	10	0.32 U	0.32 U
N-BUTYLBENZENE	UG/L	5	0.5 U	0.5 U
N-PROPYLBENZENE	UG/L	5	0.42 U	0.42 U
O-XYLENE (1,2-DIMETHYLBENZENE)	UG/L	5	0.42 U	0.42 U
P-CYMENE (P-ISOPROPYLtolUENE)	UG/L	5	0.4 U	0.4 U
SEC-BUTYLBENZENE	UG/L	5	0.38 U	0.38 U
STYRENE	UG/L	5	0.3 U	0.3 U
T-BUTYLBENZENE	UG/L	5	0.37 U	0.37 U



Concentration Exceeds Criteria

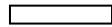
(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

TABLE 18
GROUNDWATER ANALYTICAL RESULTS - VOLATILES
NIAGARA FALLS STORAGE SITE

Location Identifier :			MW949	MW949
Field Sample Identifier :			MW949	MW949
Sample Type :			Groundwater	Groundwater
Sample Depth Interval (ft) :			-	-
Date of Sample :			09/29/16	09/29/16
Parameter	Units	Criteria ¹	Field Duplicate	
VOLATILE ORGANIC ANALYSES				
TERT-BUTYL METHYL ETHER	UG/L	10	0.5 U	0.5 U
TETRACHLOROETHYLENE(PCE)	UG/L	5	0.56 U	0.56 U
TOLUENE	UG/L	5	0.5 U	0.5 U
TOTAL 1,2-DICHLOROETHENE	UG/L	5	0.75 U	0.75 U
TRANS-1,2-DICHLOROETHENE	UG/L	5	0.32 U	0.32 U
TRANS-1,3-DICHLOROPROPENE	UG/L	0.4	0.5 U	0.5 U
TRICHLOROETHANE	UG/L	5	0.58 U	0.58 U
TRICHLOROETHYLENE (TCE)	UG/L	5	0.48 U	0.48 U
TRICHLOROFUOROMETHANE	UG/L	5	0.55 U	0.55 U
VINYL CHLORIDE	UG/L	2	0.52 U	0.52 U
XYLEMES, TOTAL	UG/L	-	1.3 U	1.3 U



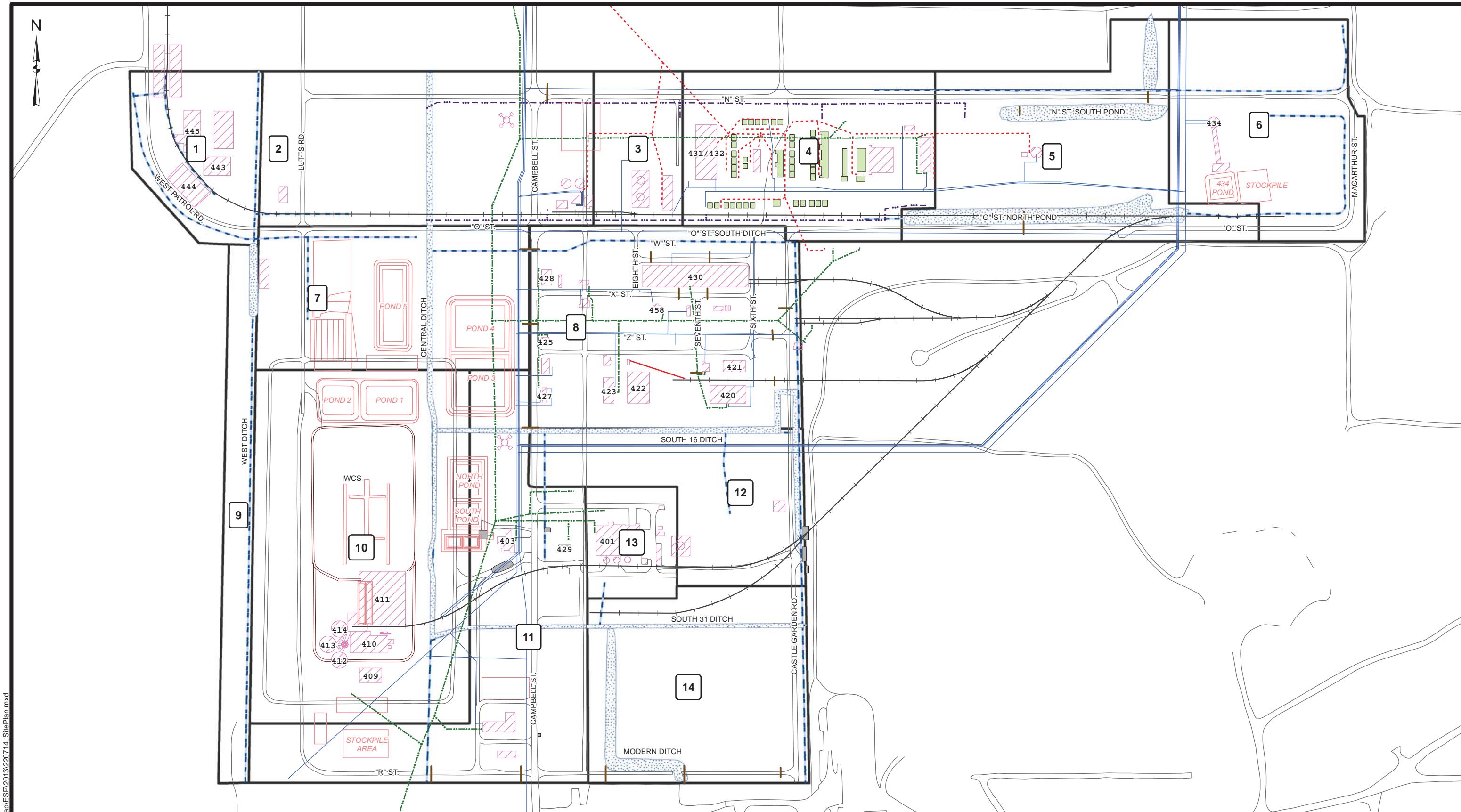
Concentration Exceeds Criteria

(1) - TOGS 1.1.1 (June 1998) for chemicals (VOCs, metals), Ra-226 and Ra-228 (5 pCi/l), Thorium (sum total of 15 pCi/l). 10 NYCRR Part 5, Subpart 5-1 (NYSDOH) for Arsenic, Total Uranium (30 ug/L or 27 pCi/L) beta emitters total dose not to exceed 4 mrem/yr (Sr-90, Tc-99, Cs-137, Pu-238, Pu-239/240, H-3).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: The detection limits shown are MDL.

FIGURES

**Legend**

- Ephemeral Ditches
- IWCS Cutoff Wall
- Former Remedial Structures
- NFSS Site Roads
- Railroads
- EU Boundaries
- Surface Water Features
- Structure (Active)
- Structure (Abandoned Above Grade)
- Former Structure
- Water Line
- Culvert
- Fuel Line
- Acid Sewer

Sanitary Sewer

Storm Sewer

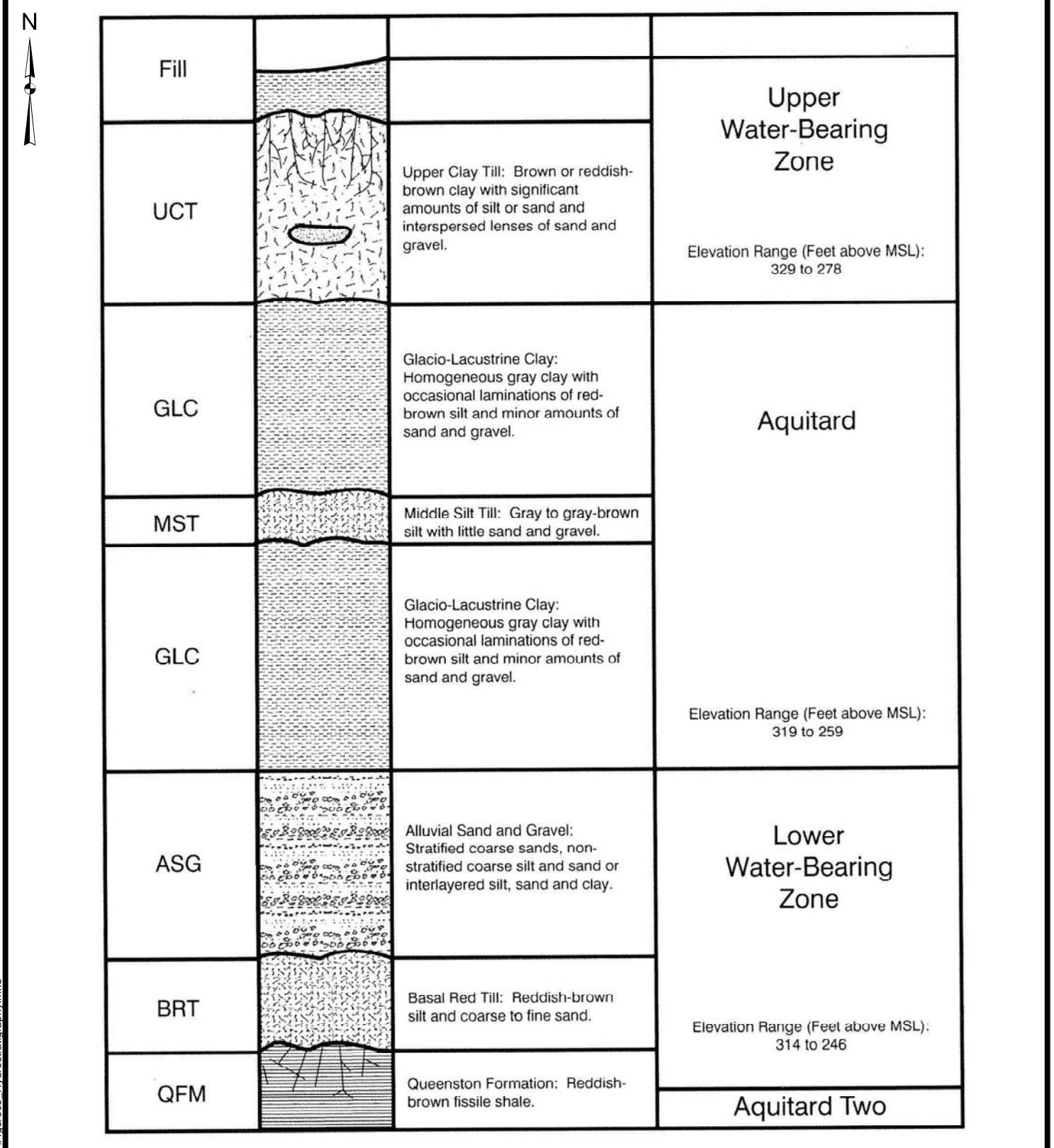
Fuel Line

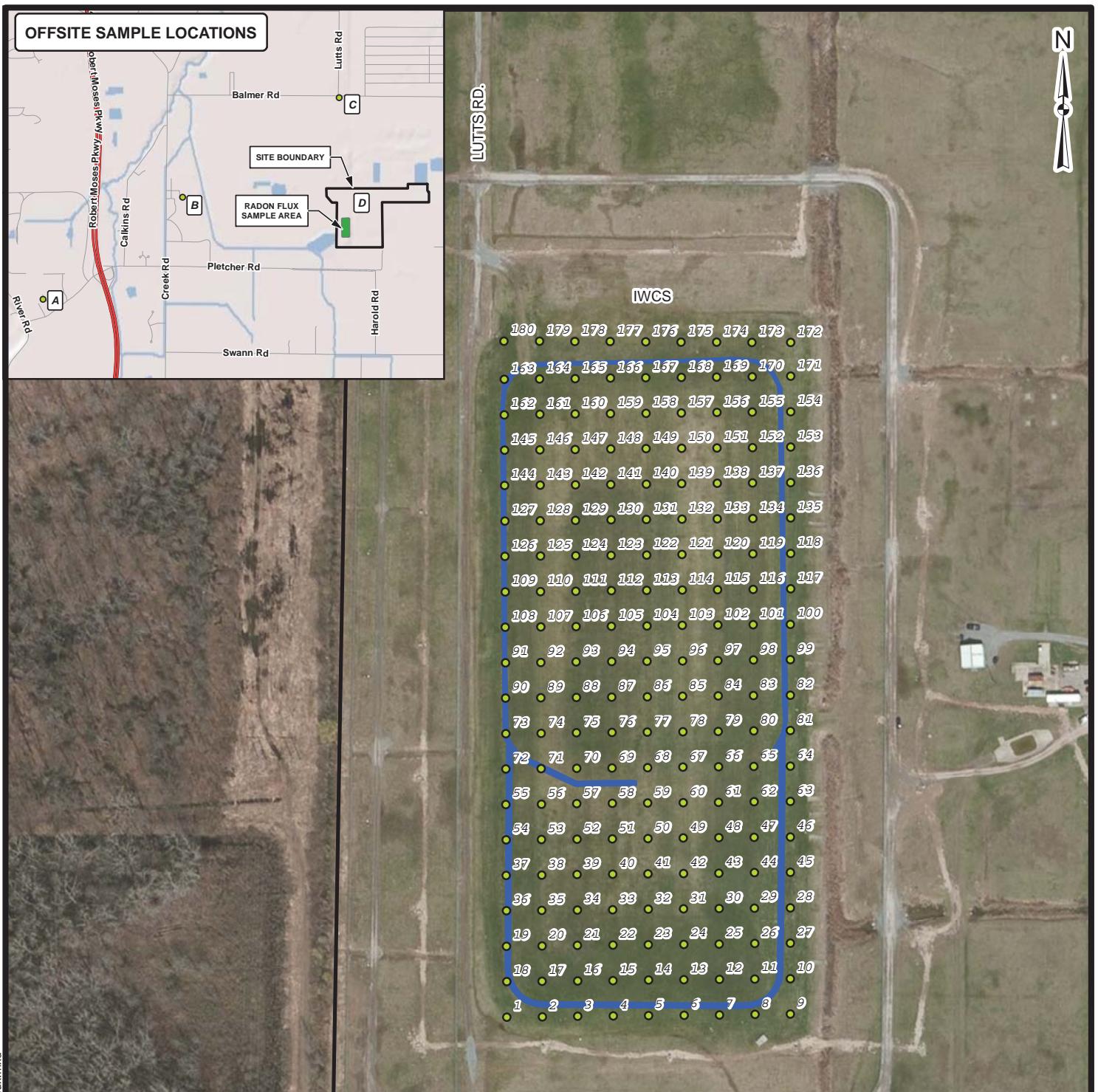


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US Army Corps of Engineers
BUFFALO, NY
Buffalo District

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SITE PLANNIAGARA FALLS STORAGE SITE
LEWISTON, NEW YORK**FIGURE 2**





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LOCATIONS OF RADON FLUX MEASUREMENTS ON THE IWCS

Name: 220714_ESPRadonFlux.mxd
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Time Saved: 9:52:36 AM

NIAGARA FALLS STORAGE SITE
LEWISTON, NEW YORK

FIGURE 4



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Legend

- ◆ Monitoring Well (Sampled Bi-Annually)
- NFSS Site Boundary
- ◆ Monitoring Well (Sampled Quarterly)
- ◆ Secondary Monitoring Well
- ◆ Tertiary Monitoring Well

Notes:

- 1) If MW921 is dry, MW922 shall be sampled.
- 2) If MW946 is dry, 808A shall be sampled.
- 3) If MW947 is dry, MW422 shall be sampled, but if both MW947 and MW422 are dry, MW423 shall be sampled.

0 175 350 700
Feet



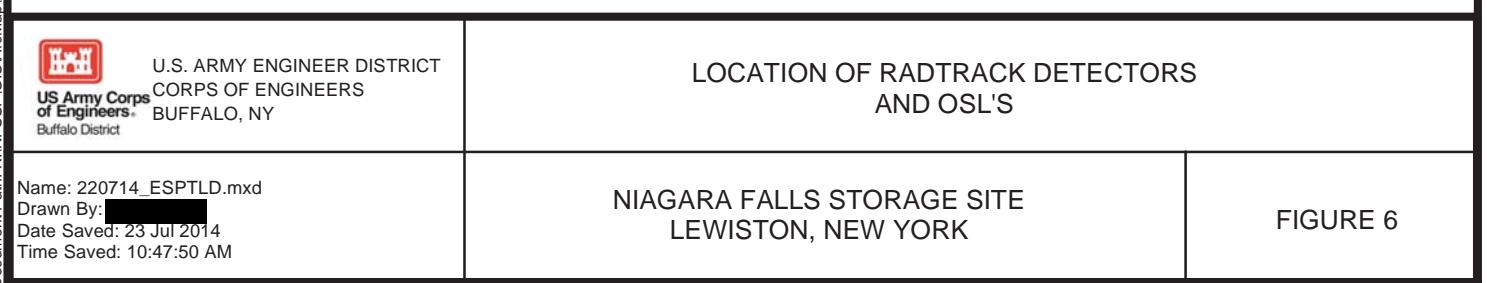
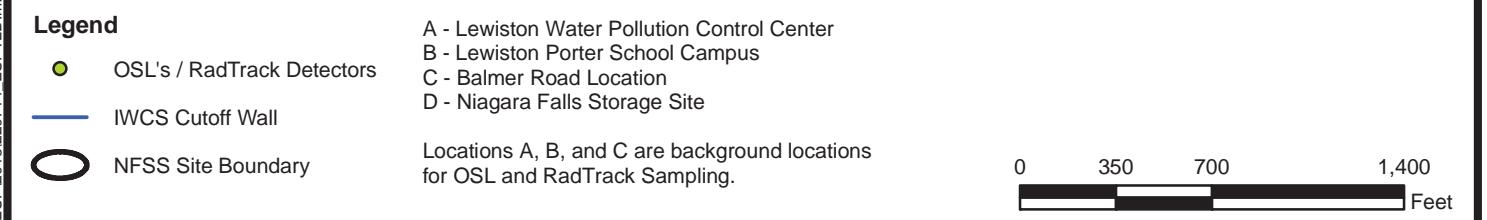
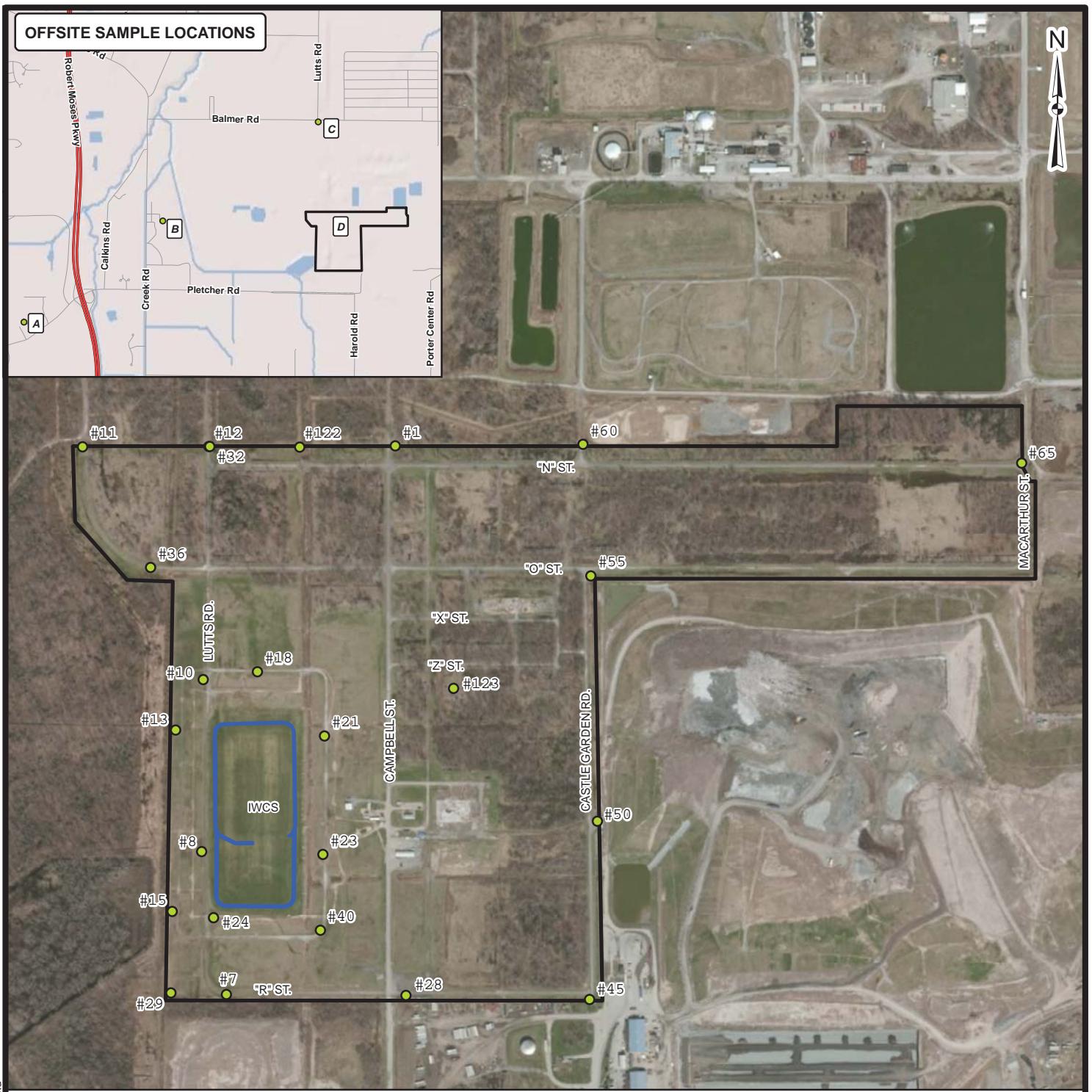
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of Engineers: BUFFALO, NY
Buffalo District

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MONITORING WELL LOCATION MAP

NIAGARA FALLS STORAGE SITE
LEWISTON, NEW YORK

FIGURE 5





Document Path: K:\NFSS\GIS\MapSampling\Locations\130321_SWaterSed_Aerial.mxd

Legend

▲ Surface Water/Sediment Sample Location

O NFSS Site Boundary

0 175 350 700
Feet



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Buffalo District

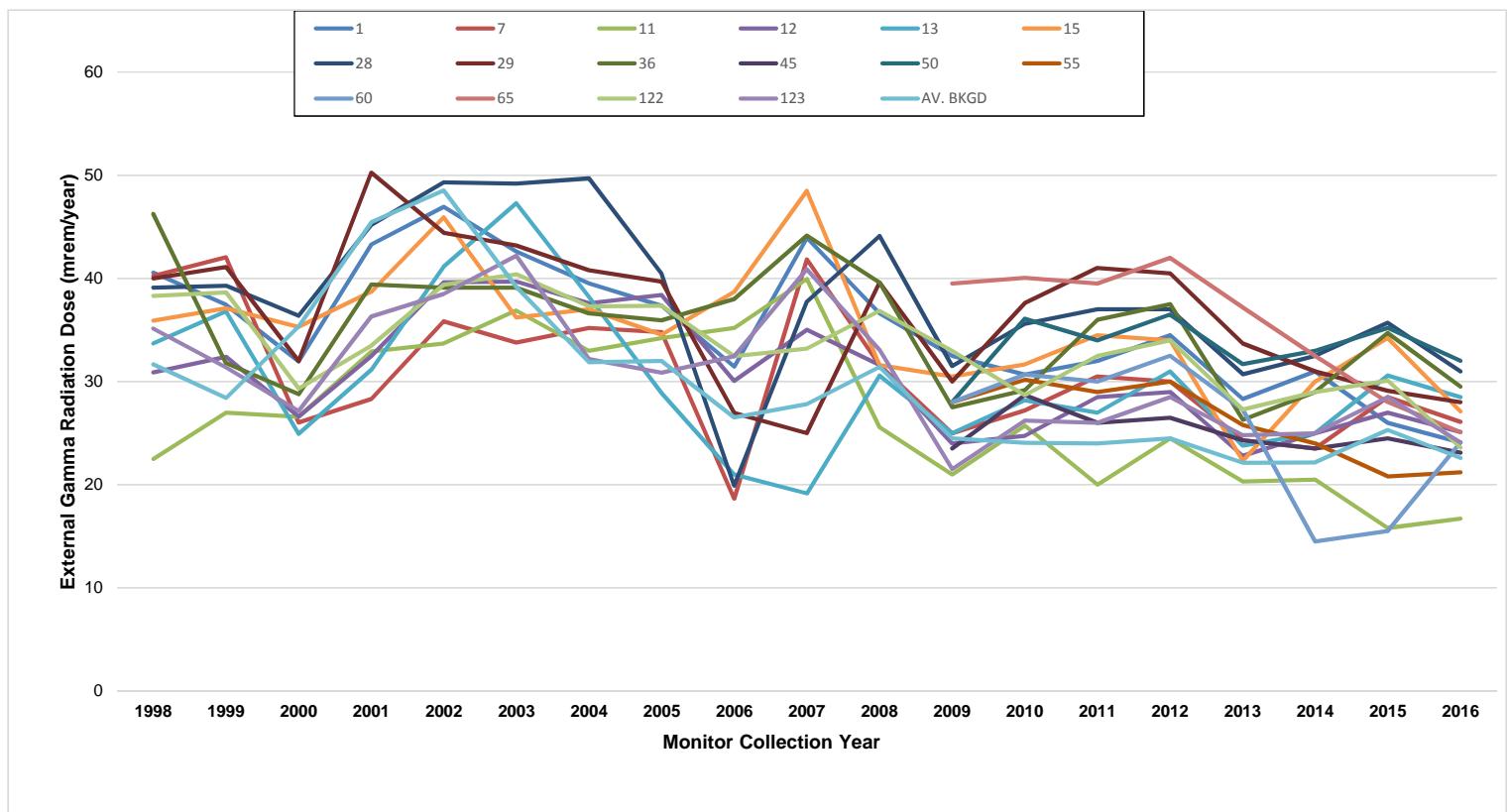
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SURFACE WATER/SEDIMENT SAMPLING LOCATION MAP

NIAGARA FALLS STORAGE SITE
LEWISTON, NEW YORK

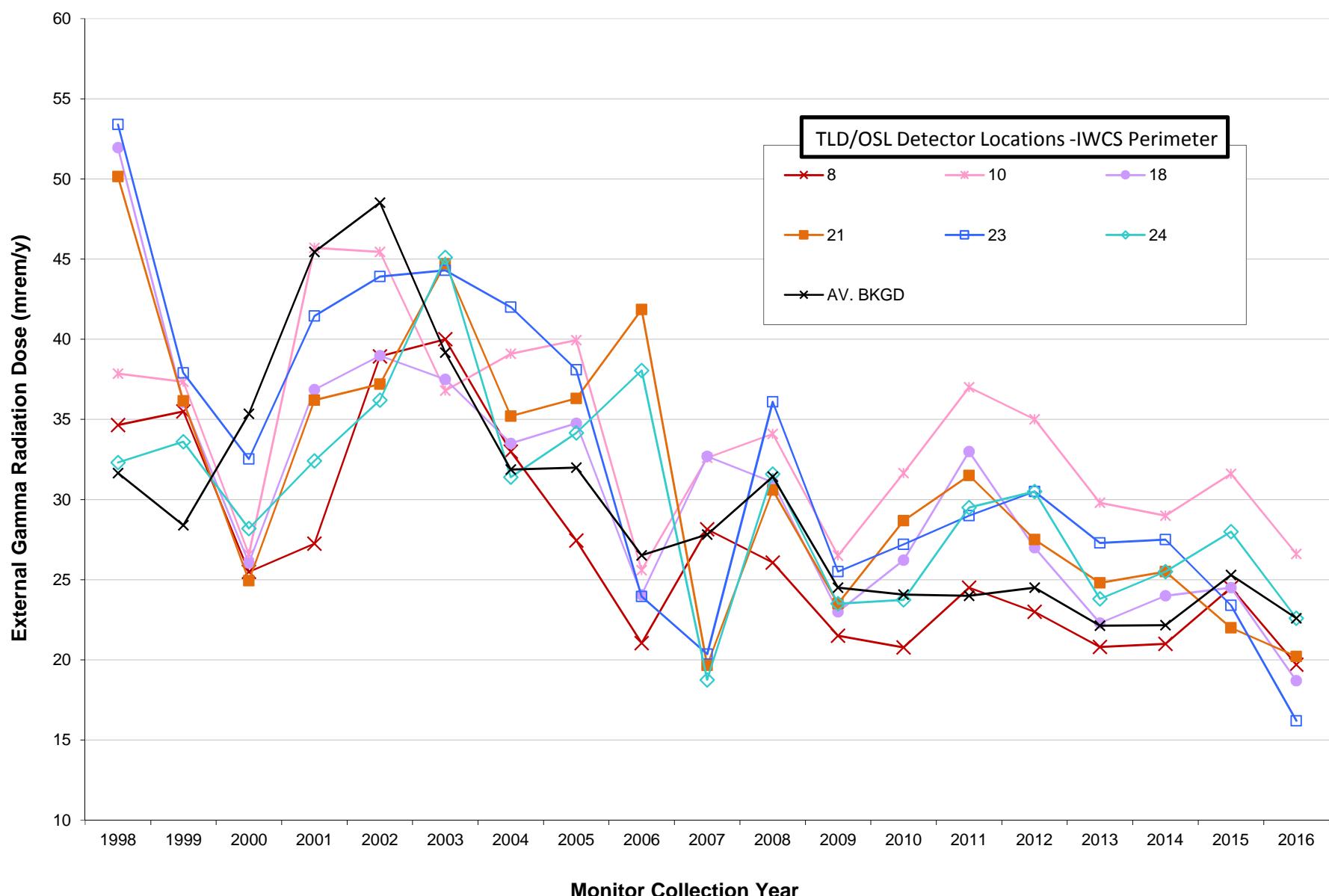
FIGURE 7

FIGURE 8
External Gamma Radiation Dose Rates at NFSS Perimeter

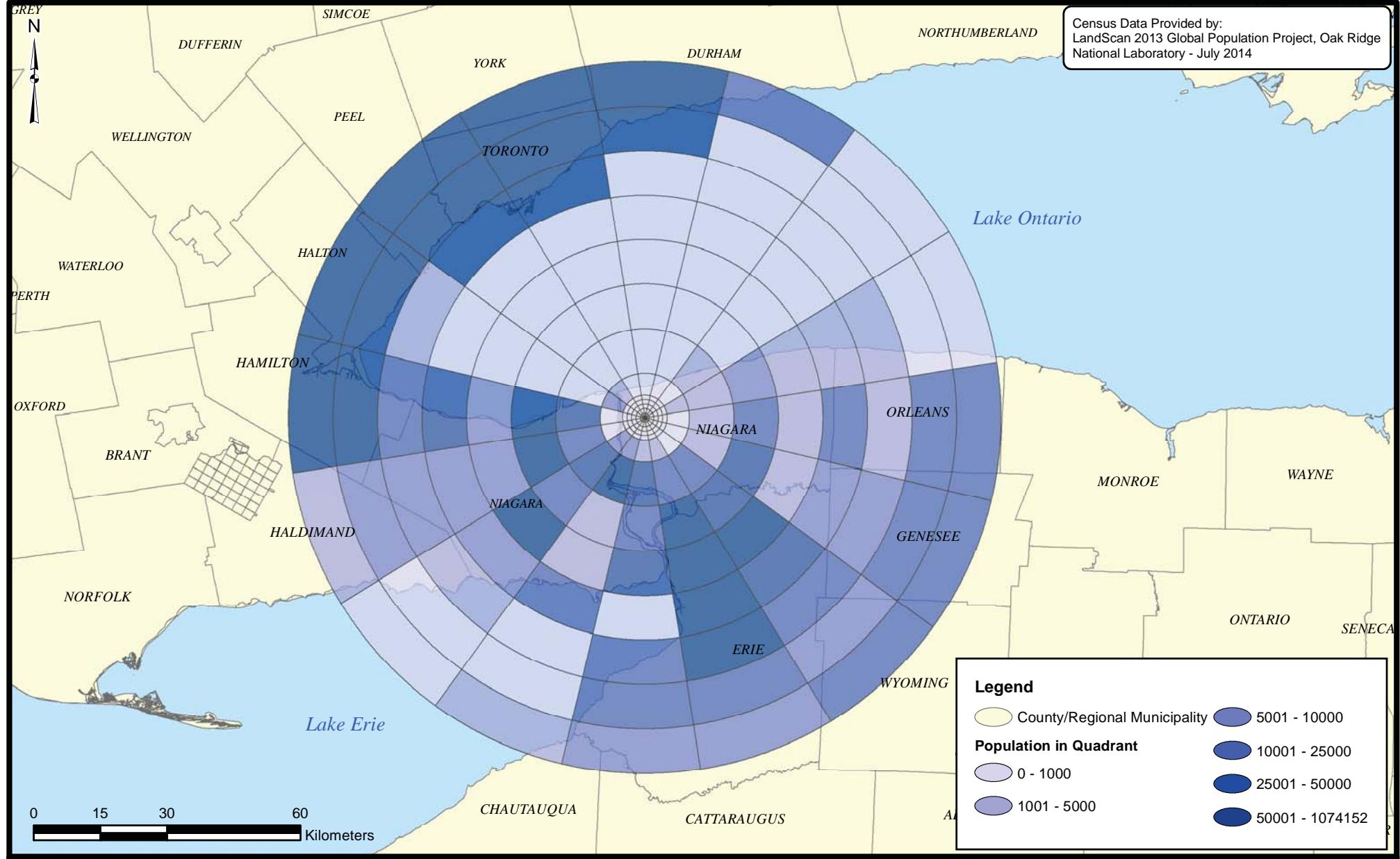


*USDOE limit for external gamma radiation is 100 mrem/year above background but the value for each detector location includes background.

FIGURE 9
EXTERNAL GAMMA RADIATION DOSE RATES AT IWCS PERIMETER



*The United States Department of Energy (USDOE) limit for external gamma radiation is 100 mrem/year above background but the value shown for each detector location includes background.



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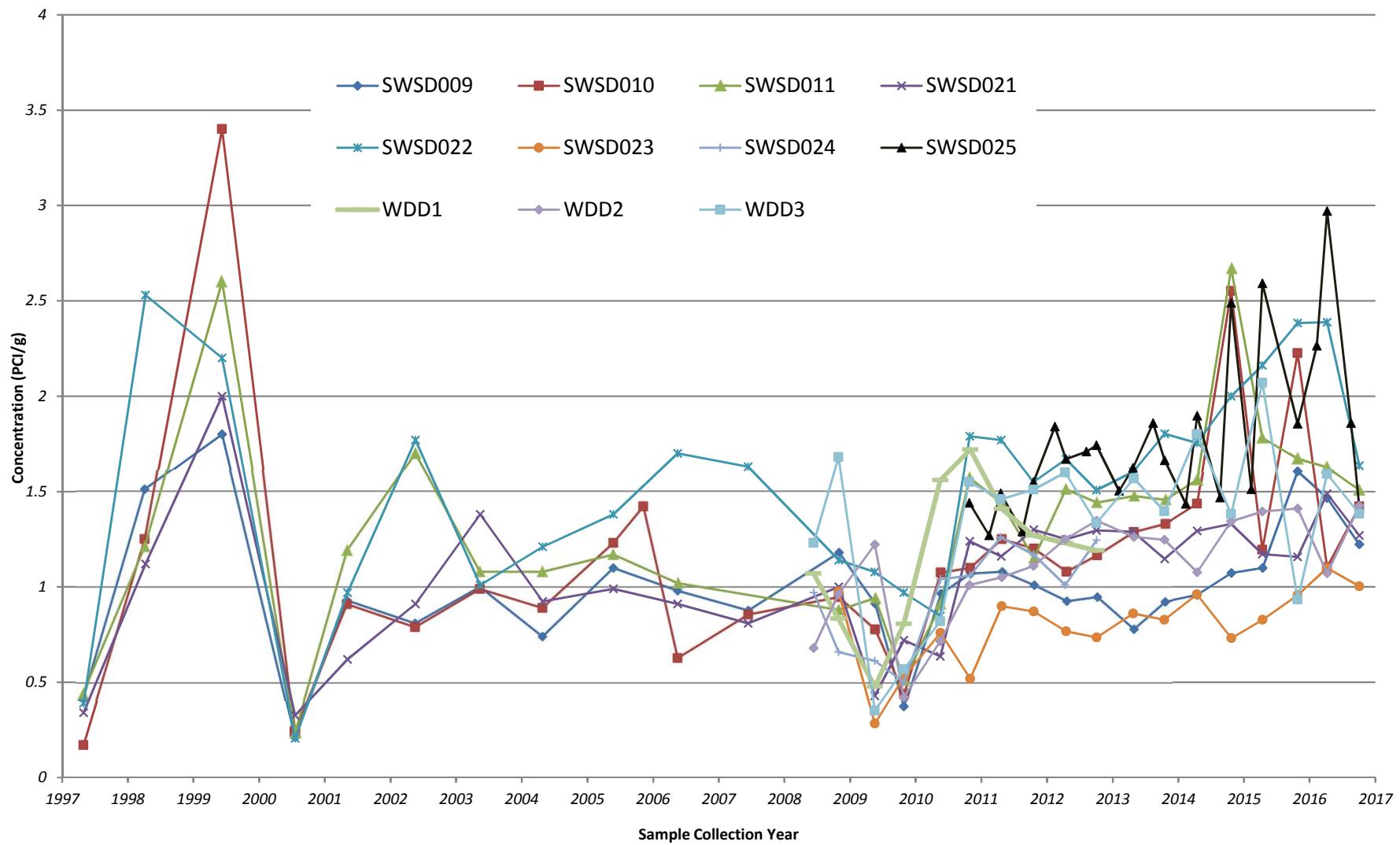
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CENSUS DATA

NIAGARA FALLS STORAGE SITE
LEWISTON, NEW YORK

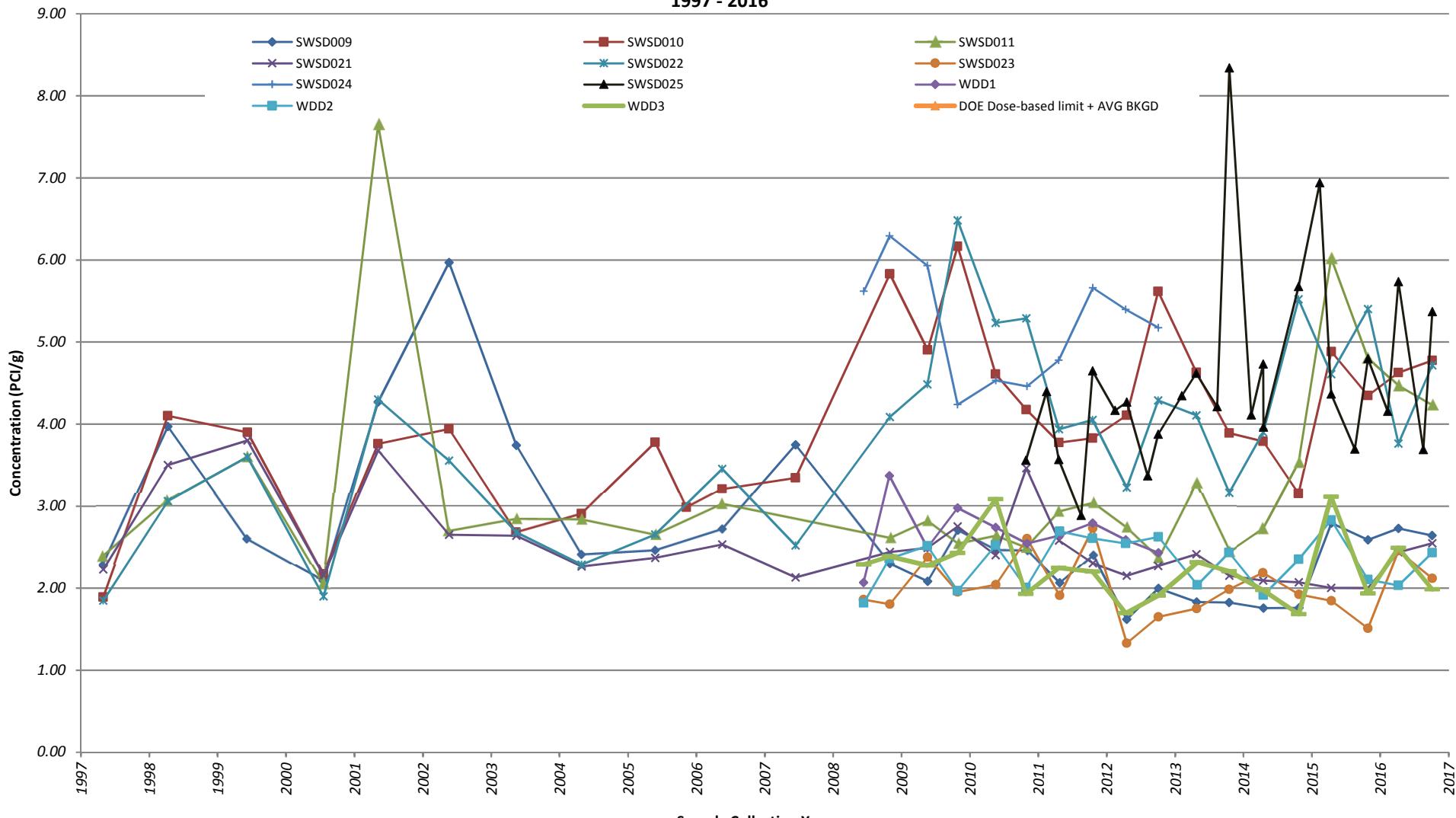
FIGURE 10

FIGURE 11
RADIUM-226 CONCENTRATIONS IN SEDIMENT
1997 - 2016

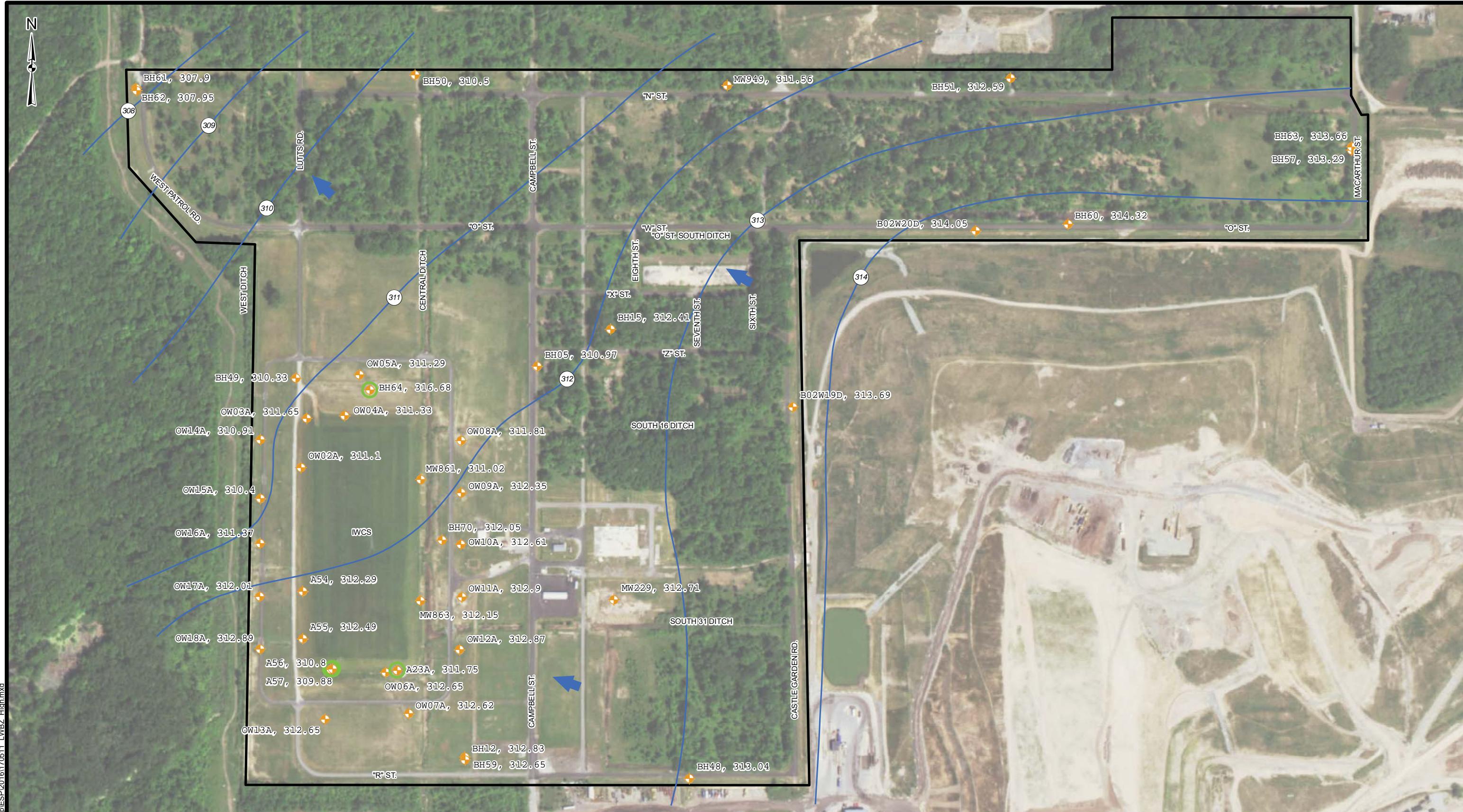


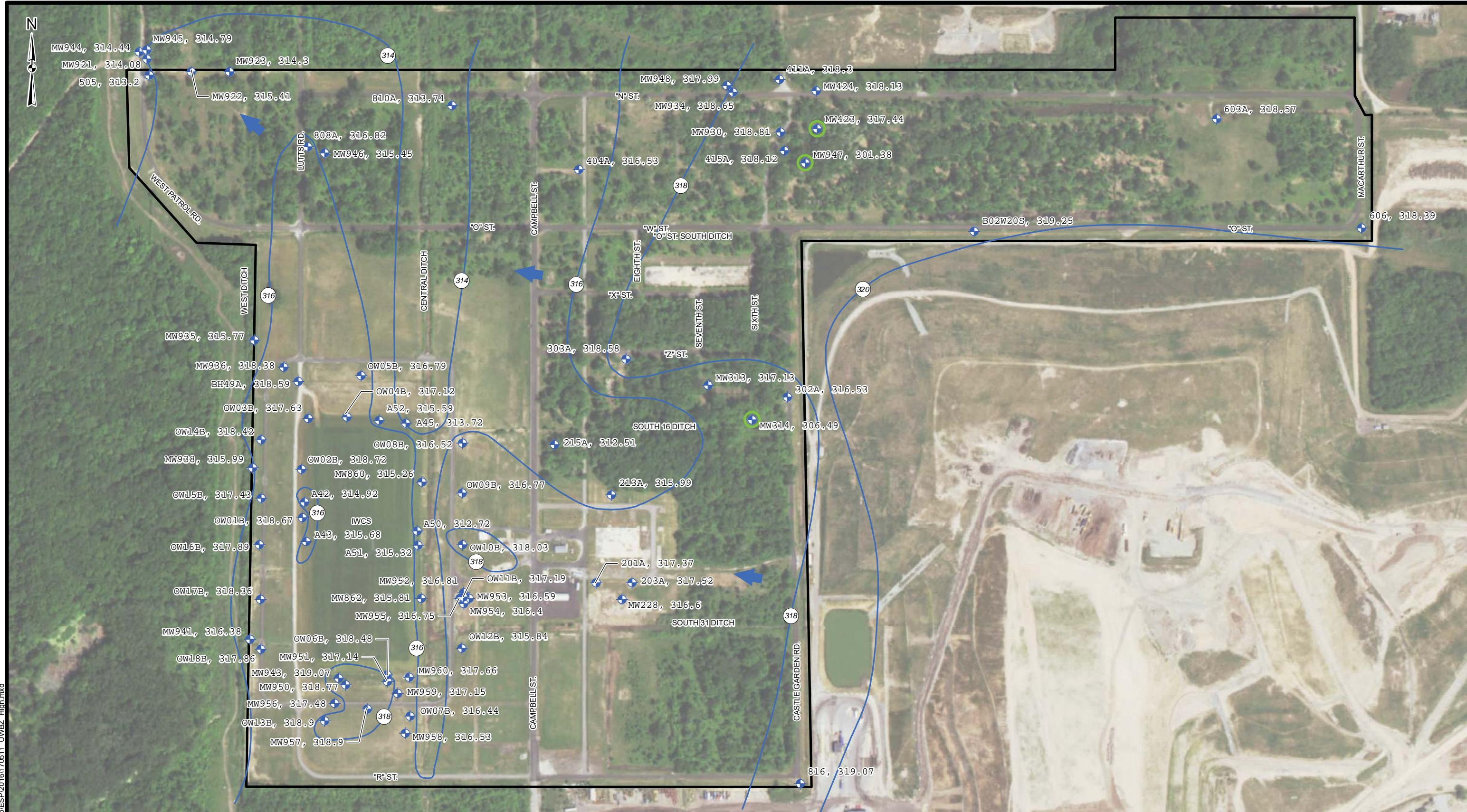
DOE limit + background is 6.06 pCi/g

FIGURE 12
TOTAL URANIUM CONCENTRATIONS IN SEDIMENT
1997 - 2016



DOE DOSE-BASED LIMIT + Avg. BKGD = 37.76 pCi/g





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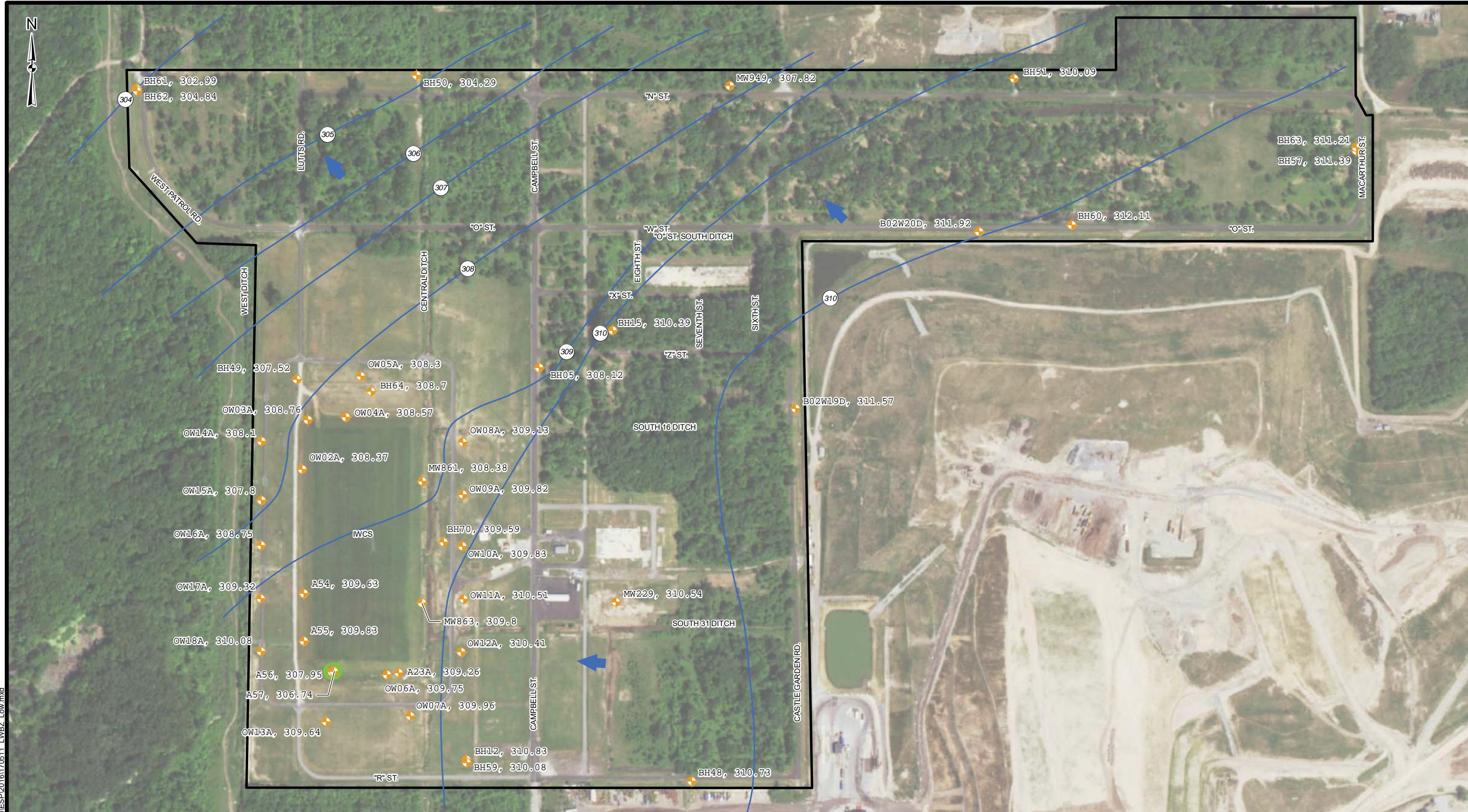
GROUNDWATER POTENTIOMETRIC SURFACE MAP FOR
THE UPPER WATER BEARING ZONE
(APRIL 6, 2016 - SEASONAL HIGH)

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NIAGARA FALLS STORAGE SITE
LEWISTON, NEW YORK

FIGURE 14

0 175 350 700
Feet



Document Path: K:\NFSS\GIS\Map\170511_LWBZ_Low.mxd

0 175 350 700
Feet

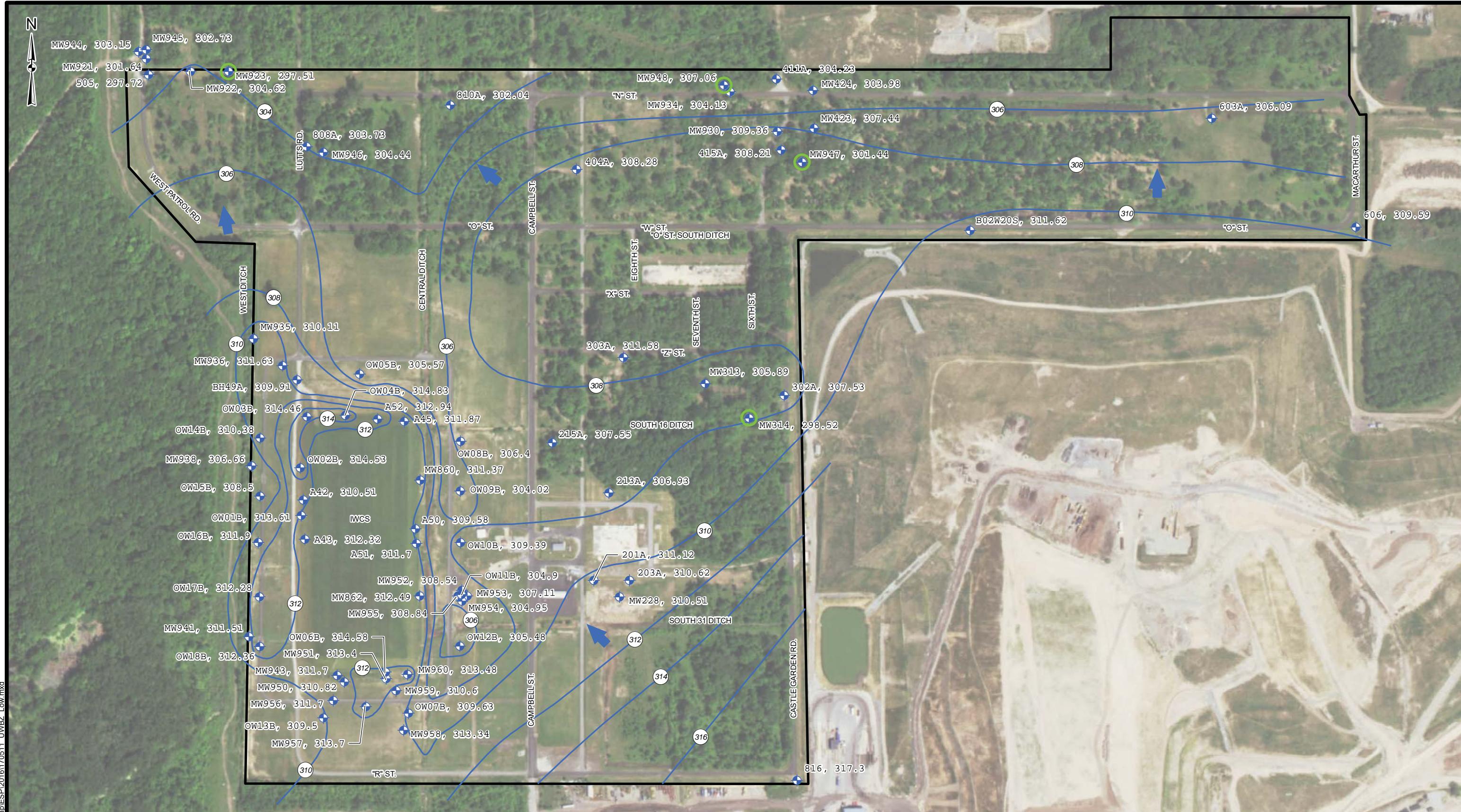
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Time Saved: 1:57:51 PM

GROUNDWATER POTENTIOMETRIC SURFACE MAP FOR
THE LOWER WATER BEARING ZONE
(SEPTEMBER 28, 2016 - SEASONAL LOW)

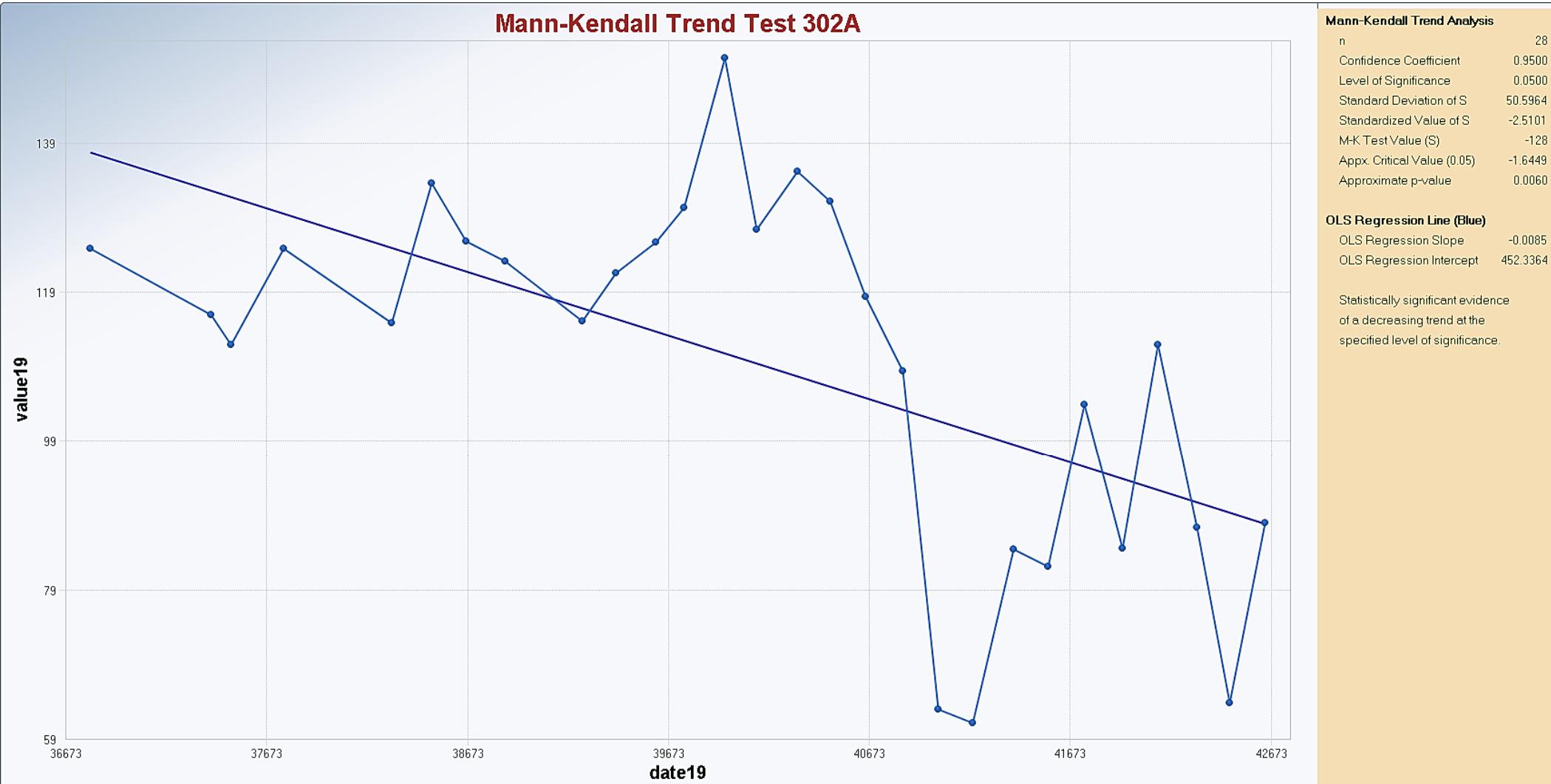
NIAGARA FALLS STORAGE SITE
LEWISTON, NEW YORK

FIGURE 15

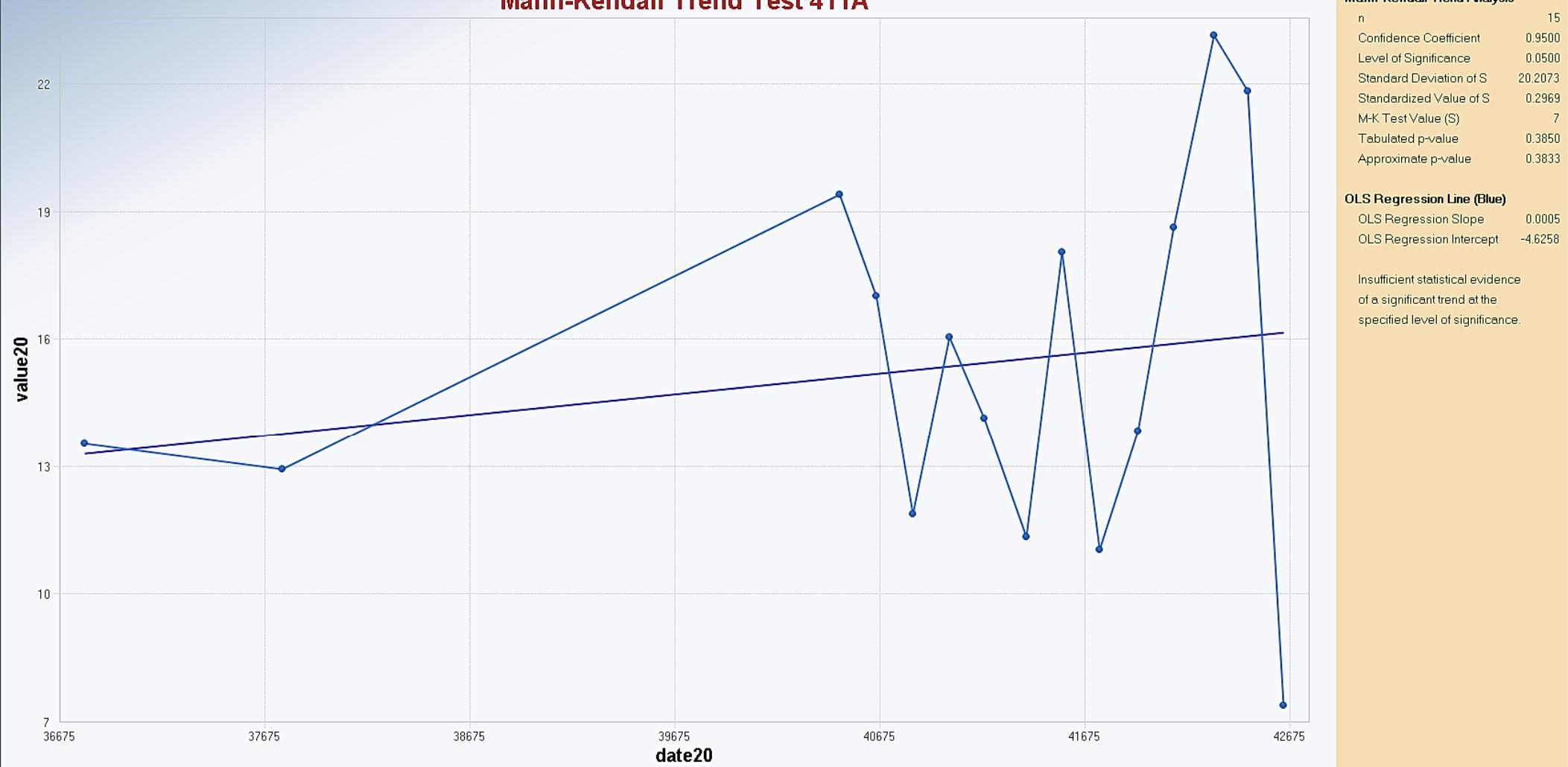


ATTACHMENT A
MANN-KENDALL TEST RESULTS

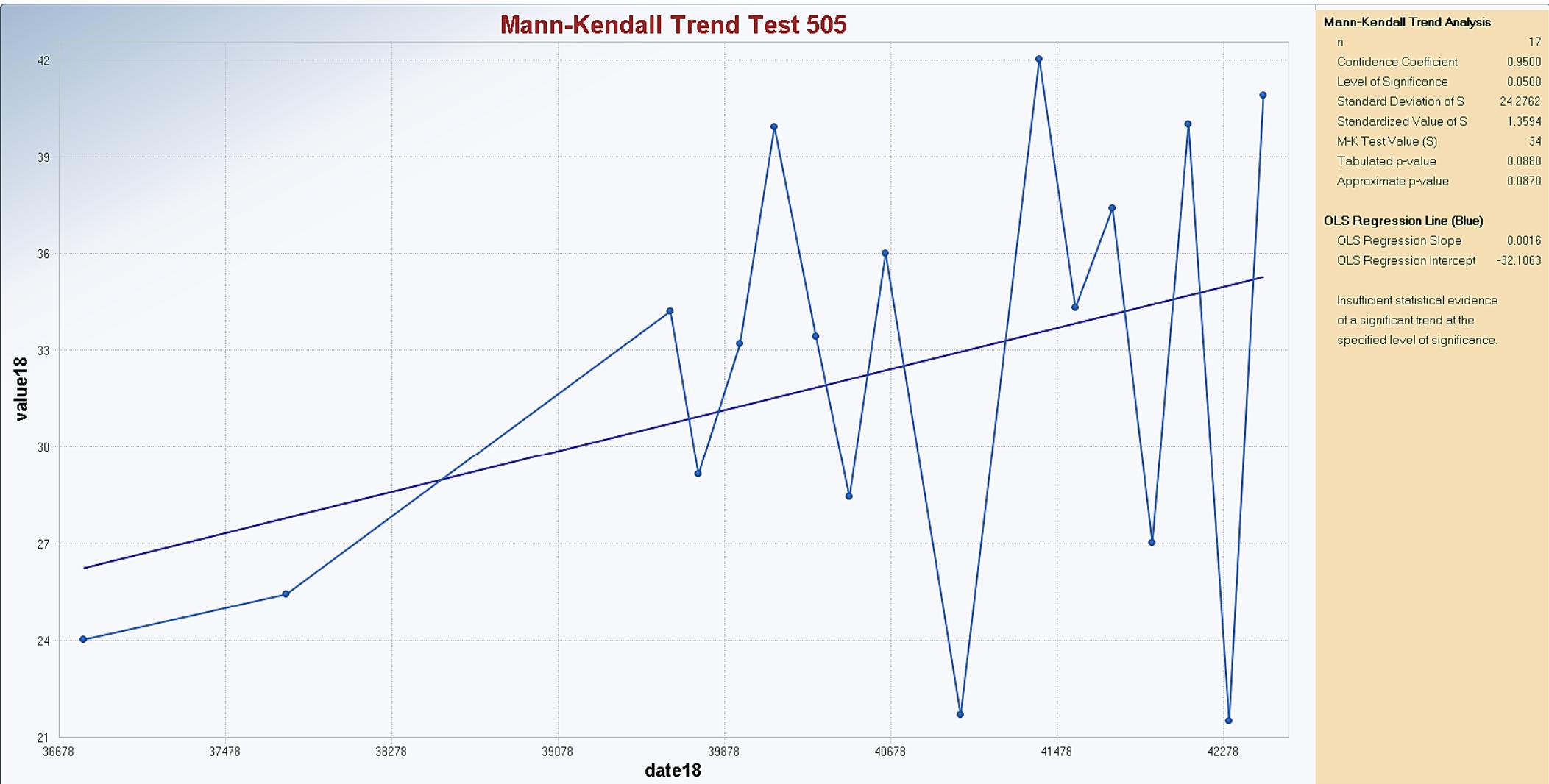
Mann-Kendall Trend Test 302A



Mann-Kendall Trend Test 411A



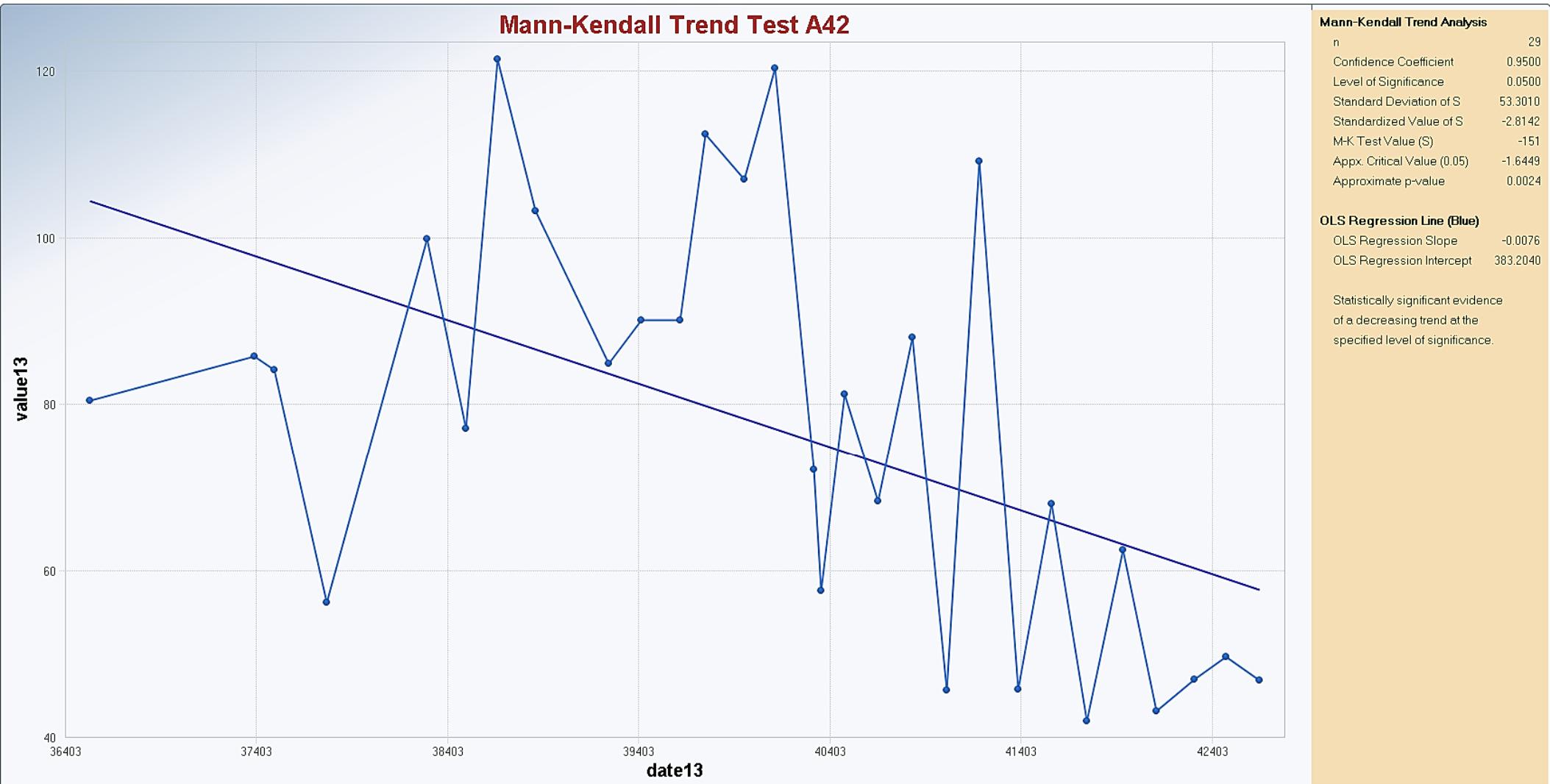
Mann-Kendall Trend Test 505



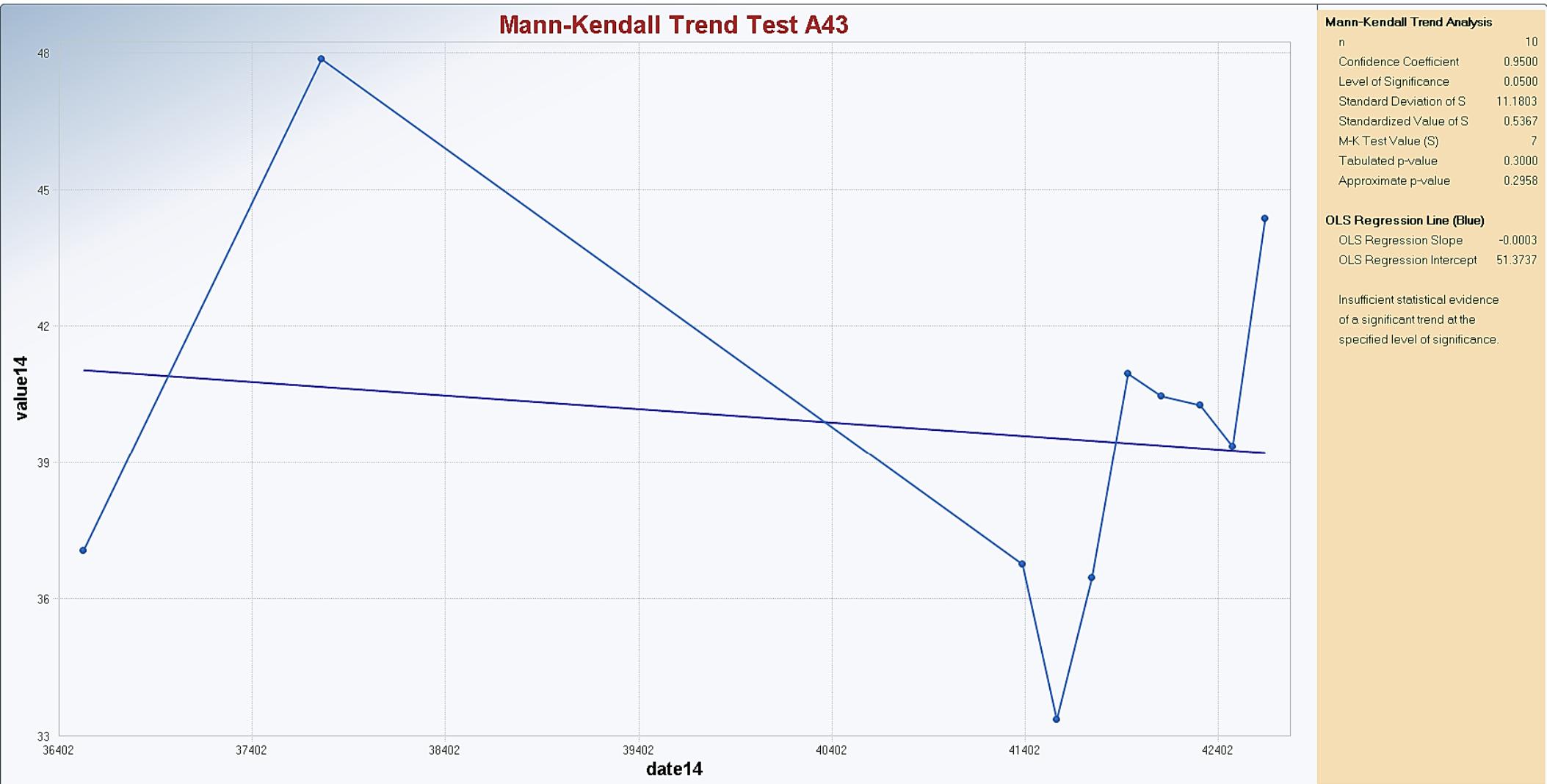
Mann-Kendall Trend Test 808A



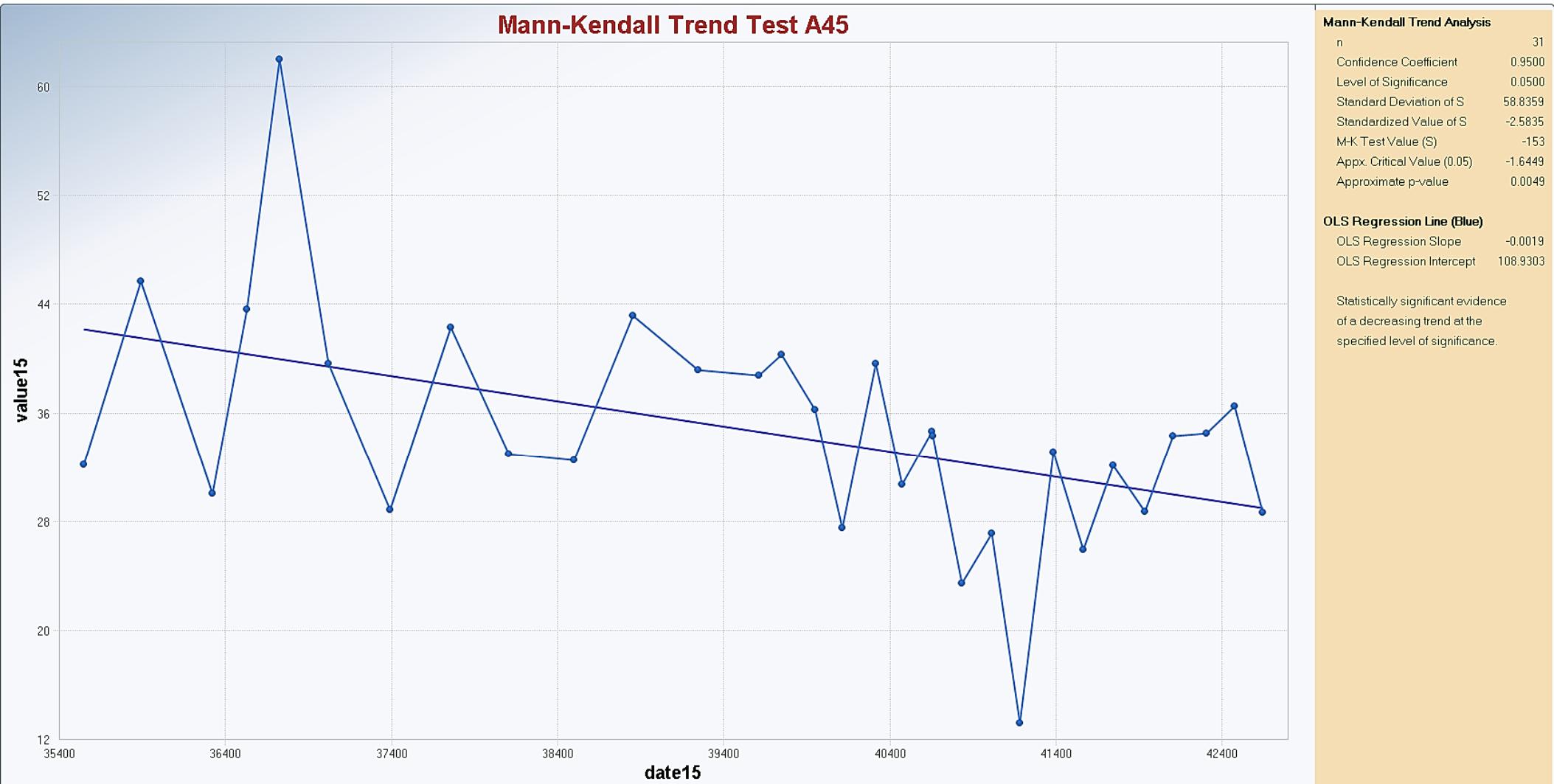
Mann-Kendall Trend Test A42



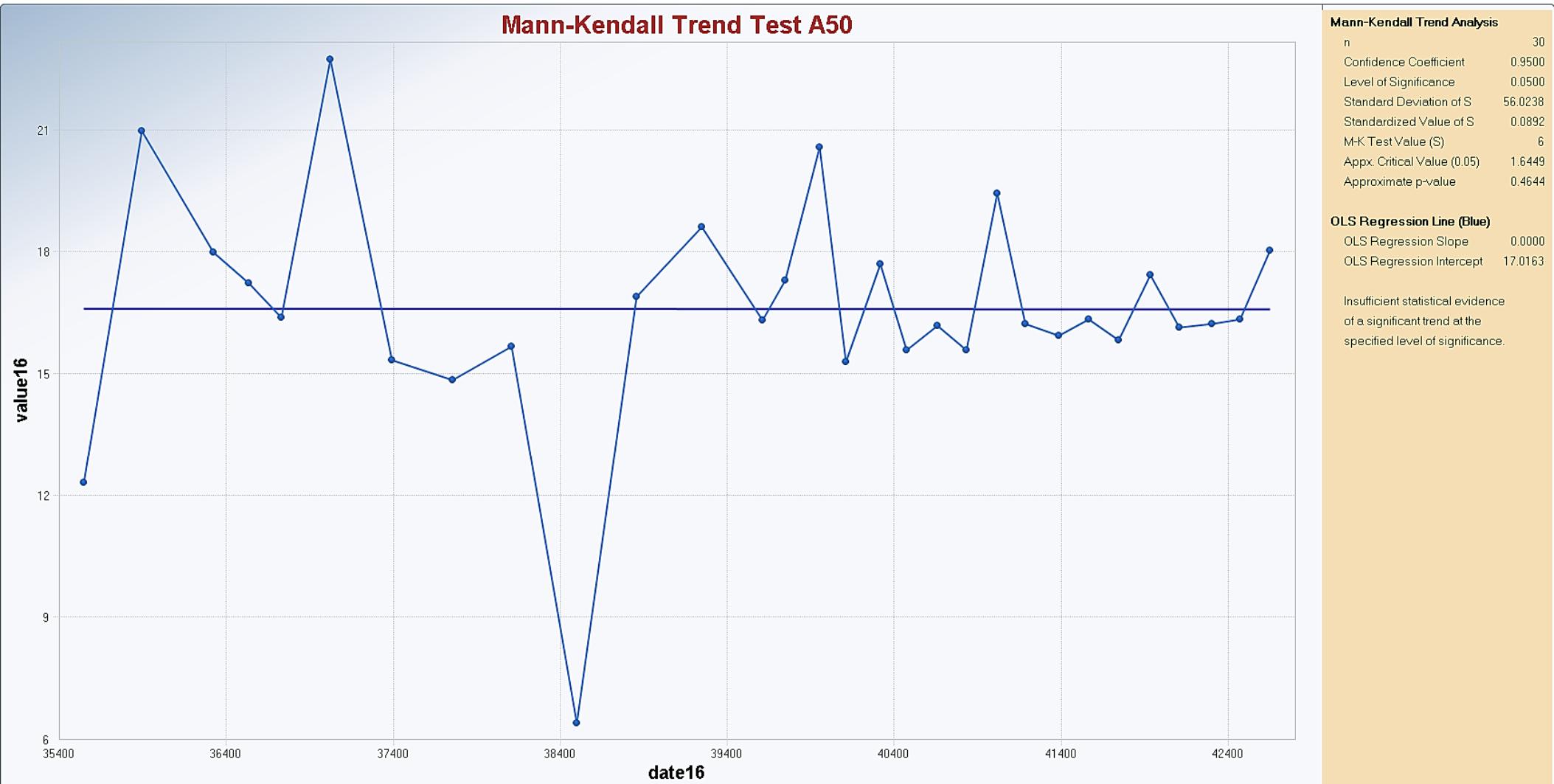
Mann-Kendall Trend Test A43



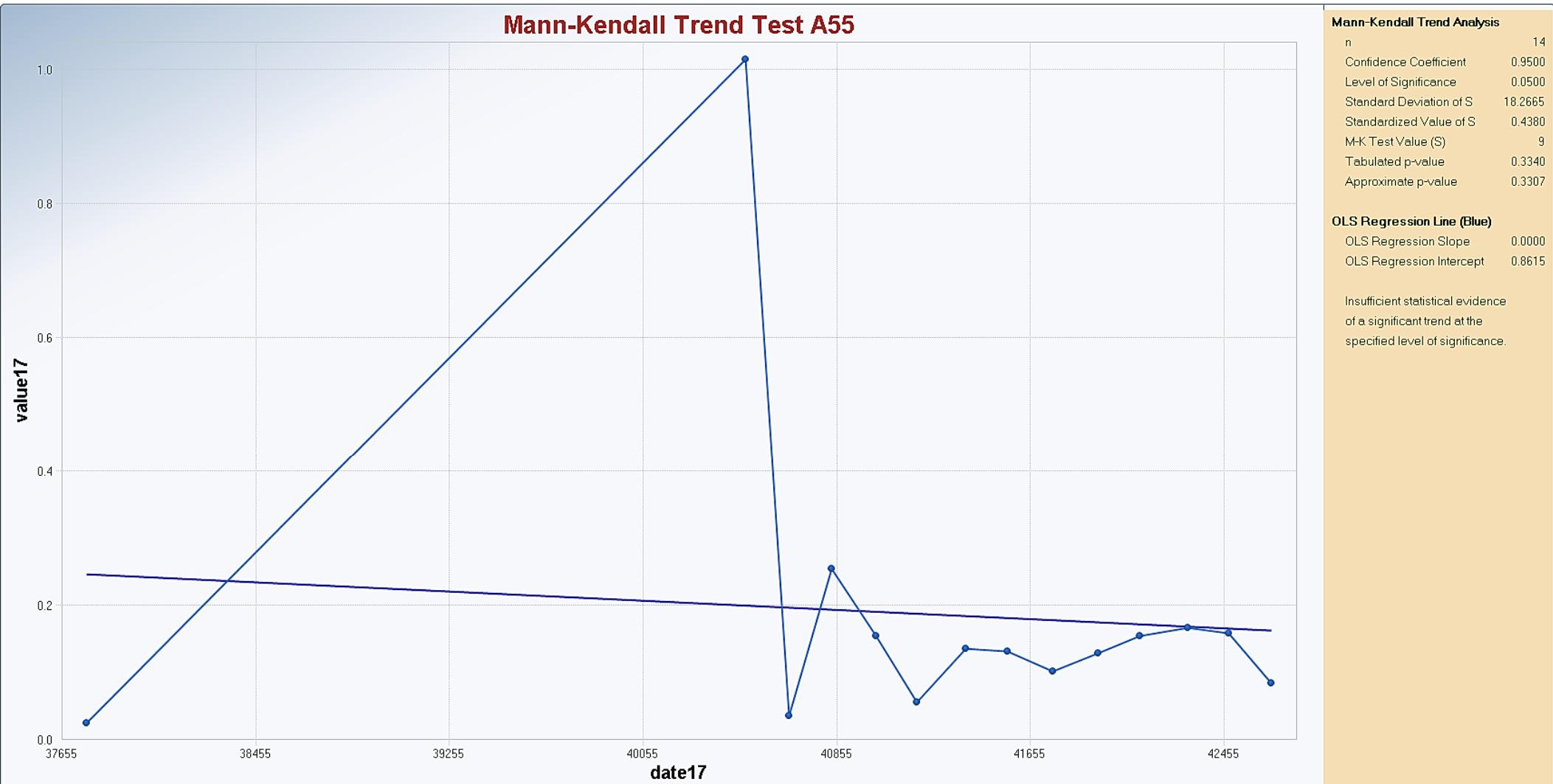
Mann-Kendall Trend Test A45



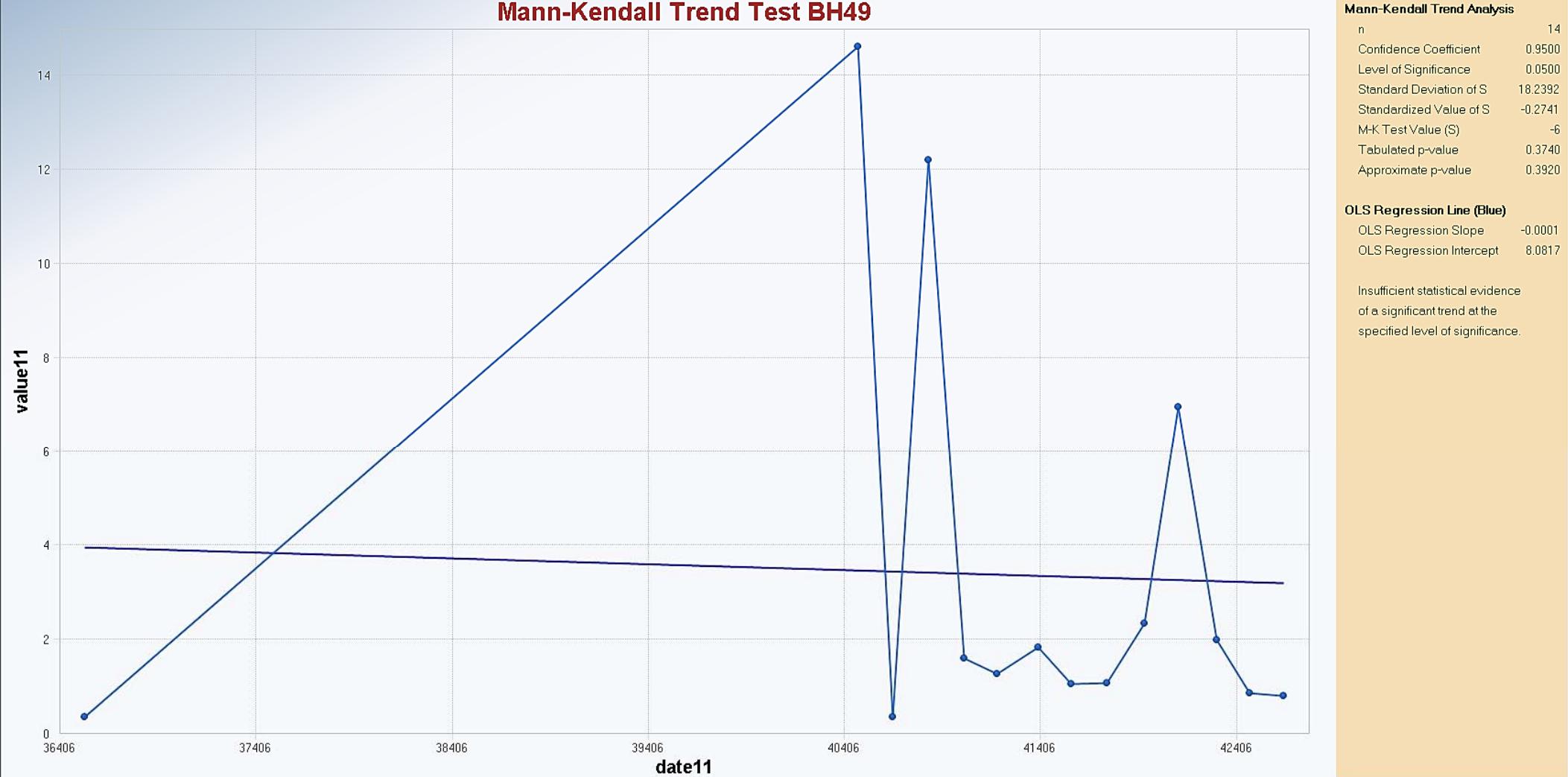
Mann-Kendall Trend Test A50



Mann-Kendall Trend Test A55



Mann-Kendall Trend Test BH49

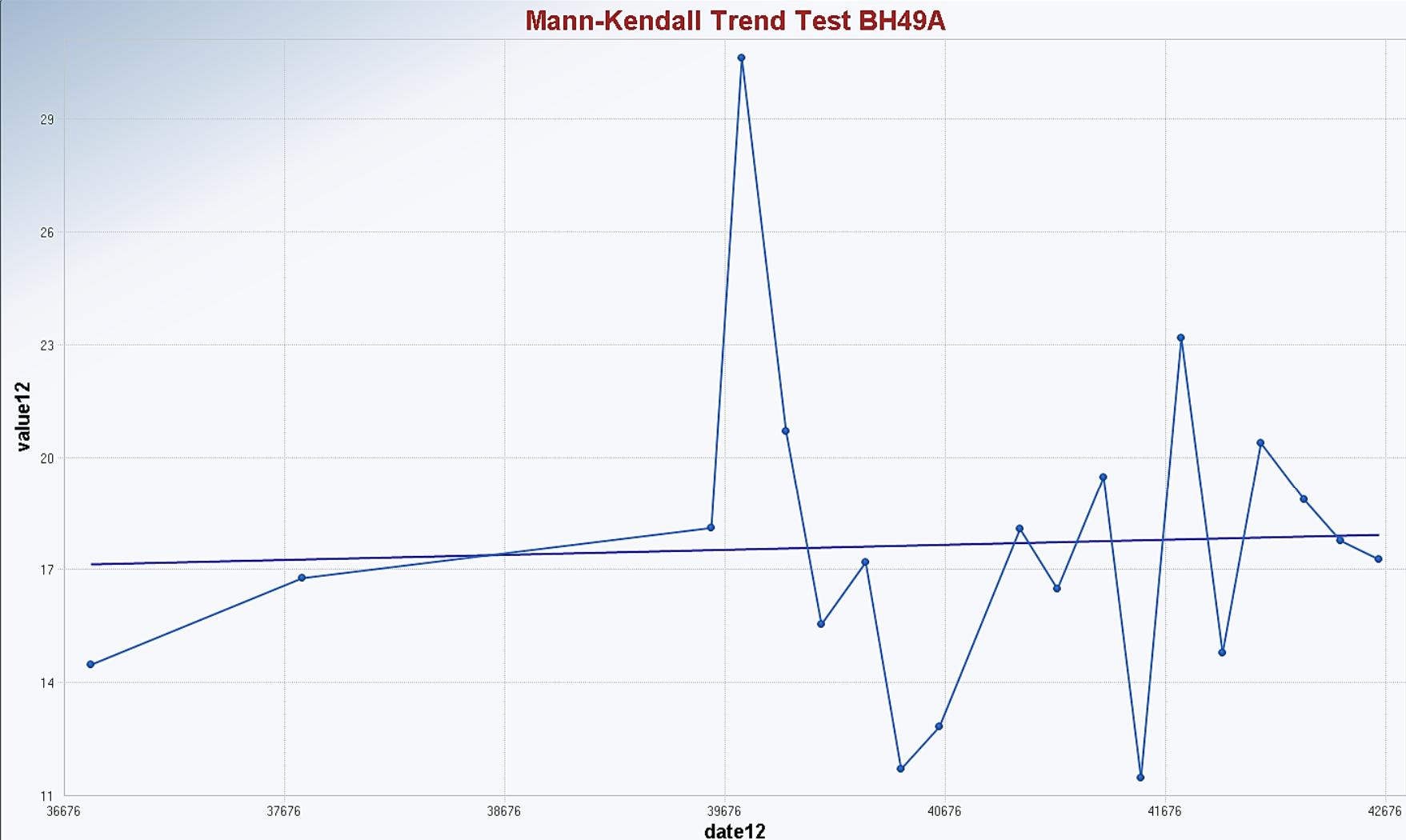


Mann-Kendall Trend Test BH49A

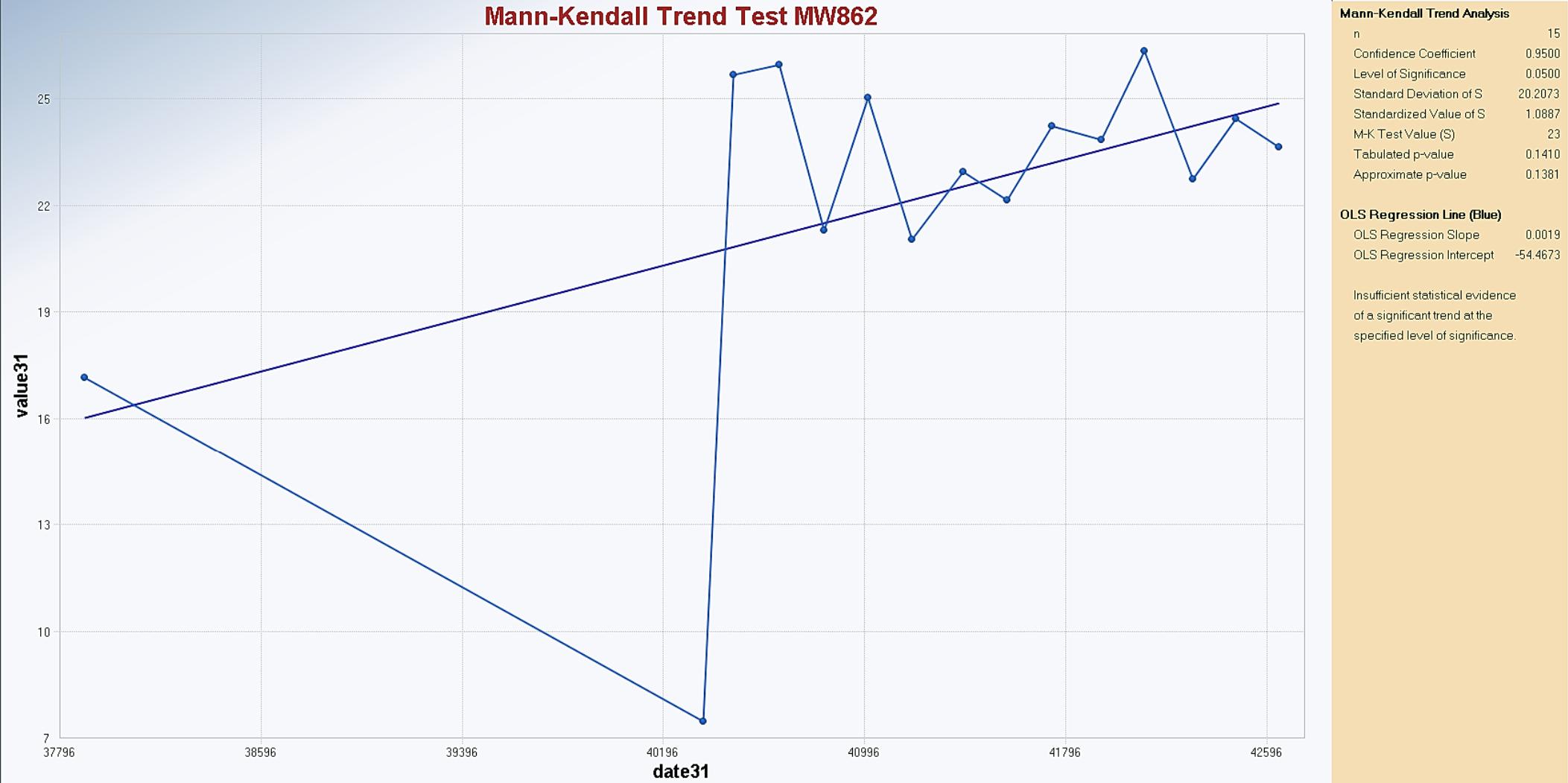
Mann-Kendall Trend Analysis	
n	19
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	28.5832
Standardized Value of S	0.2799
M-K Test Value (S)	9
Tabulated p-value	0.3910
Approximate p-value	0.3898

OLS Regression Line (Blue)	
OLS Regression Slope	0.0001
OLS Regression Intercept	11.5879

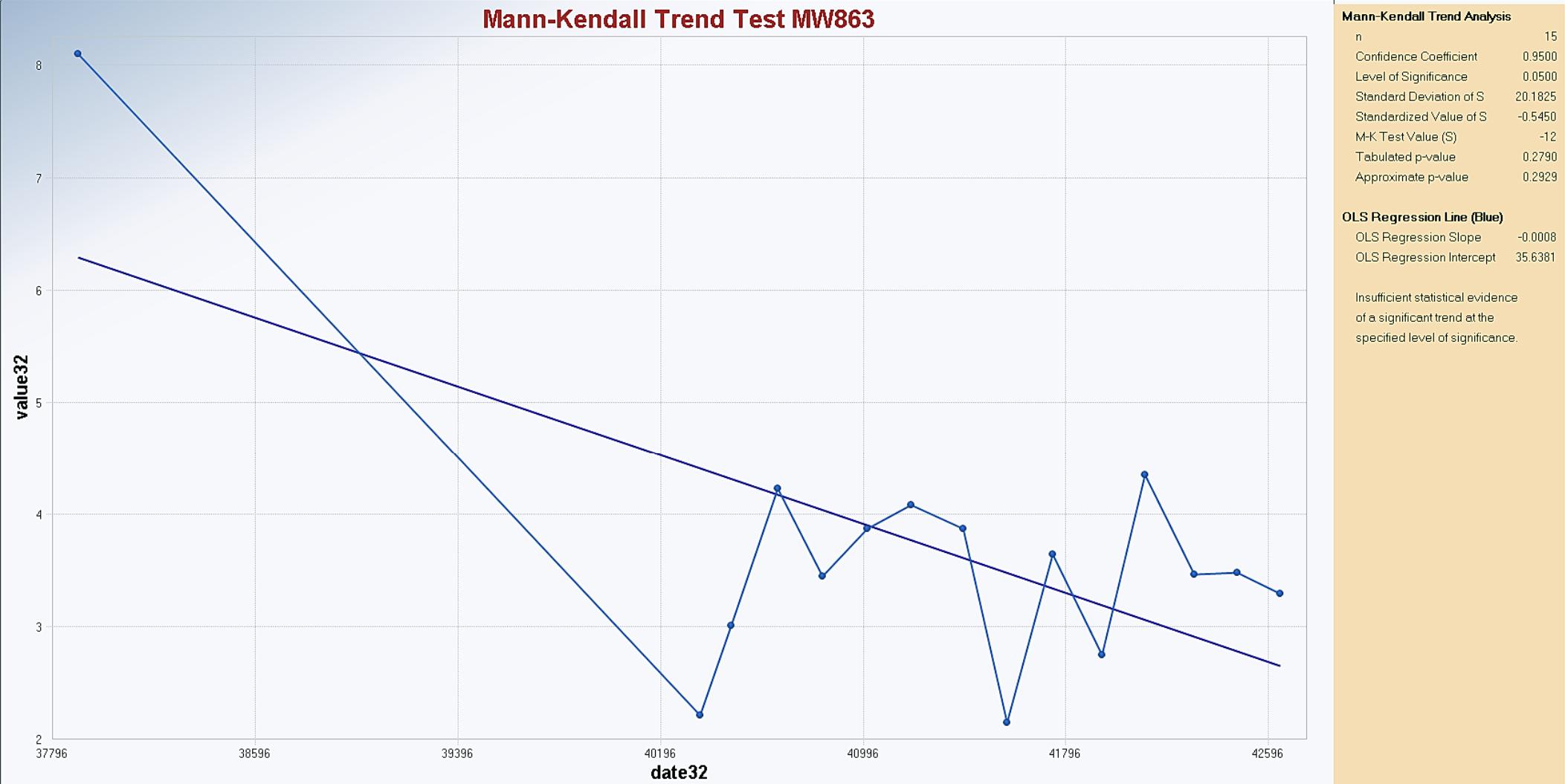
Insufficient statistical evidence
of a significant trend at the
specified level of significance.



Mann-Kendall Trend Test MW862



Mann-Kendall Trend Test MW863

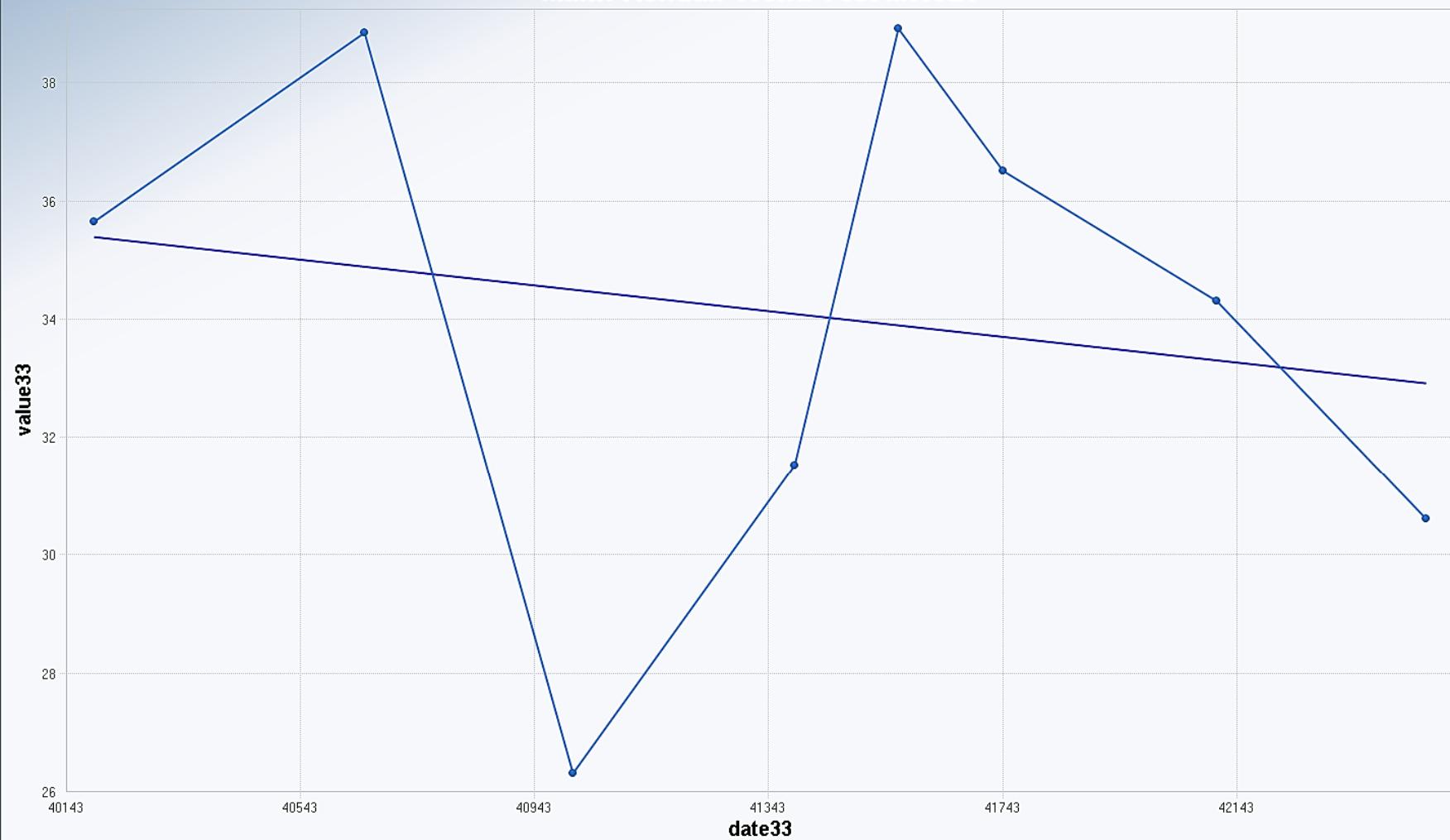


Mann-Kendall Trend Test MW921

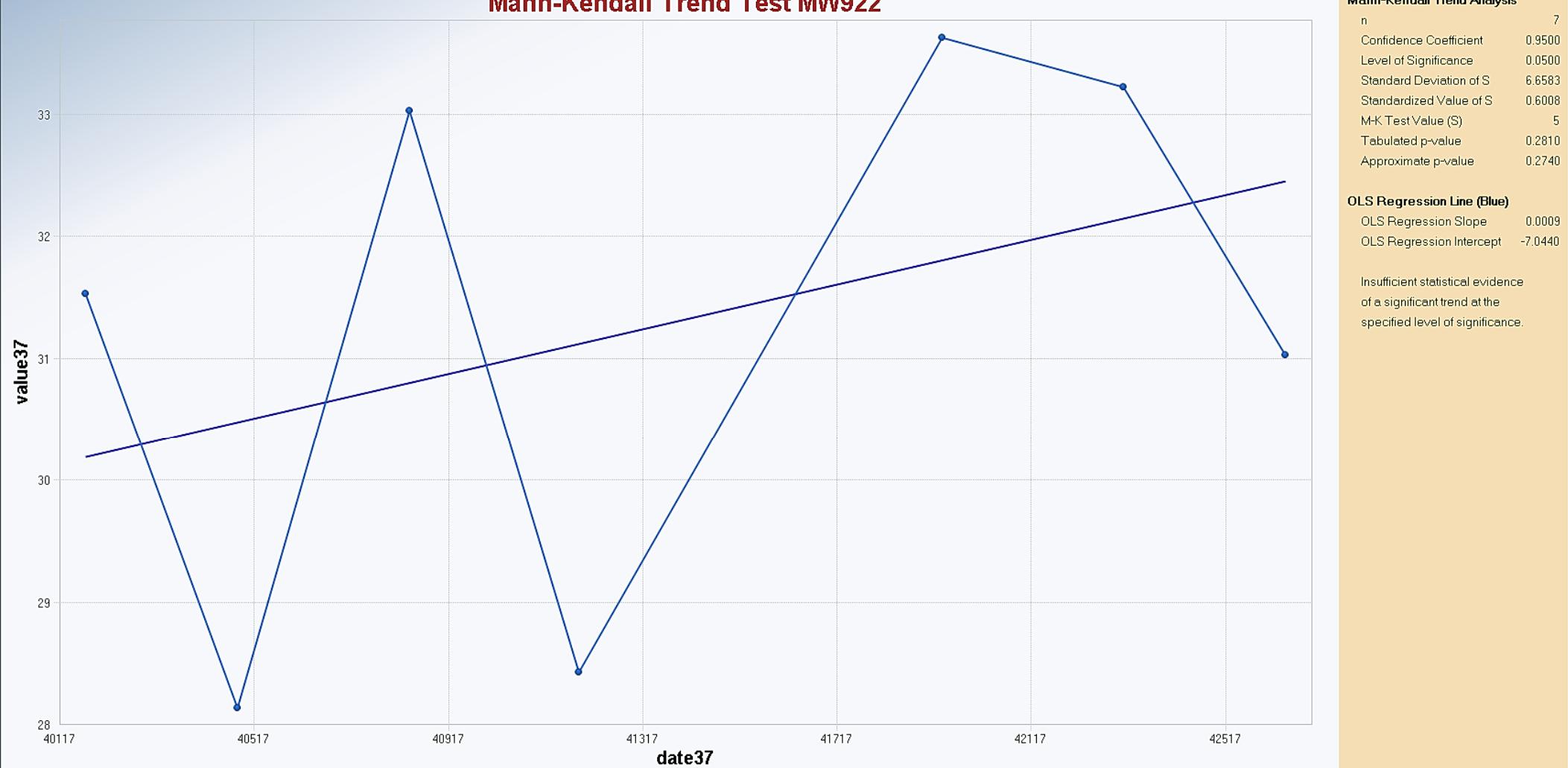
Mann-Kendall Trend Analysis	
n	8
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	8.0829
Standardized Value of S	-0.3712
M-K Test Value (S)	-4
Tabulated p-value	0.3600
Approximate p-value	0.3553

OLS Regression Line (Blue)	
OLS Regression Slope	-0.0011
OLS Regression Intercept	78.8125

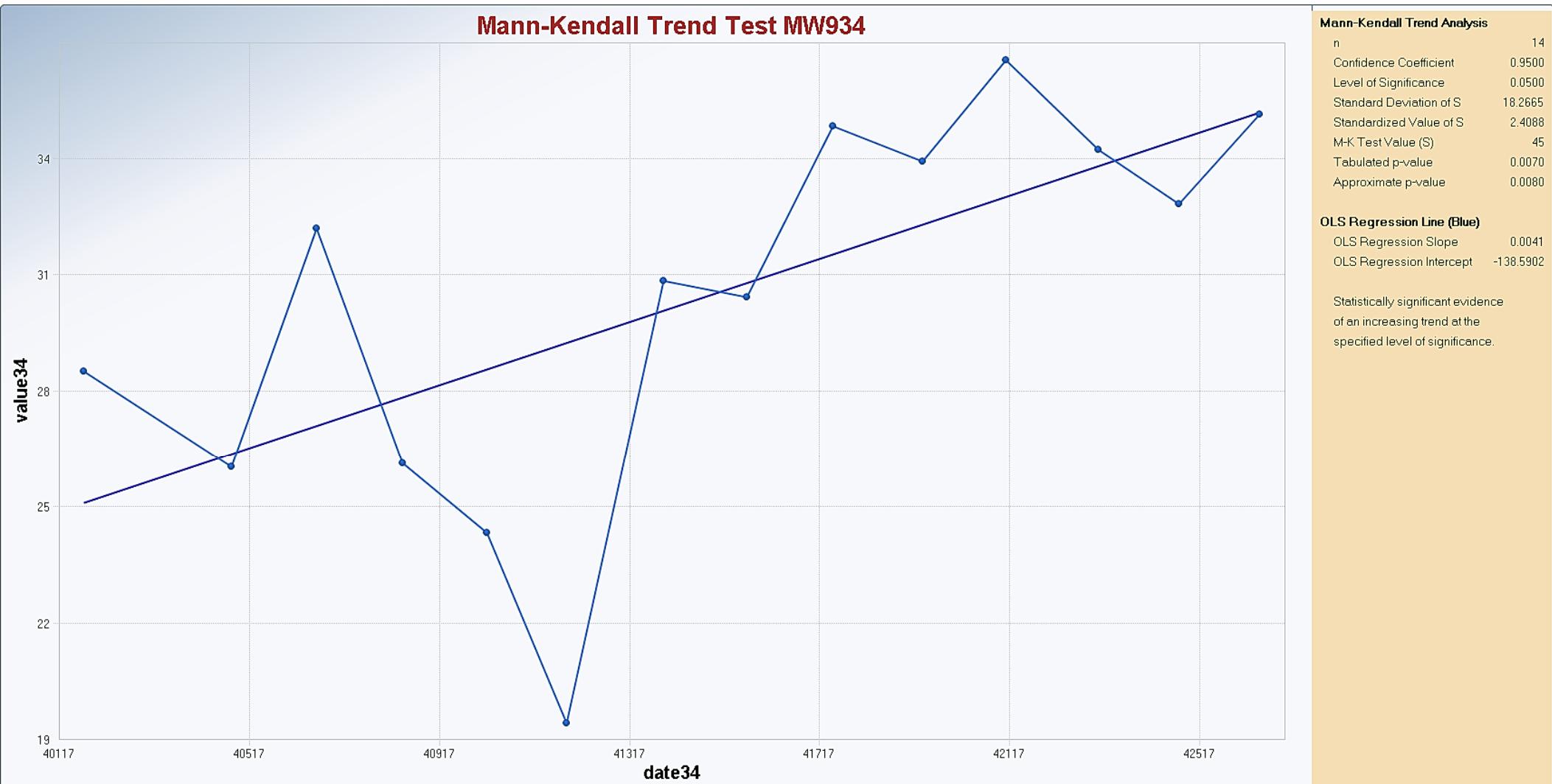
Insufficient statistical evidence
of a significant trend at the
specified level of significance.



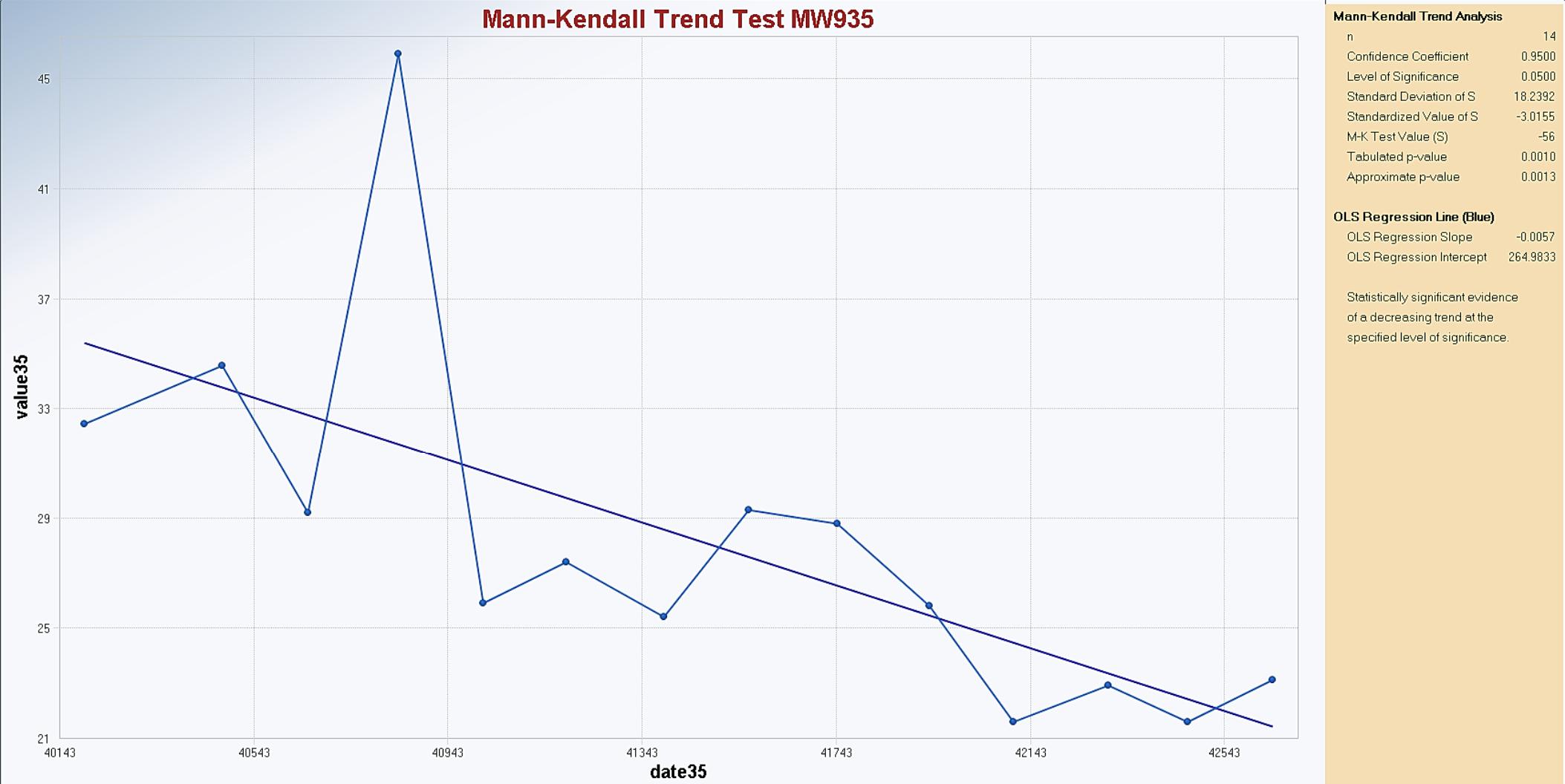
Mann-Kendall Trend Test MW922



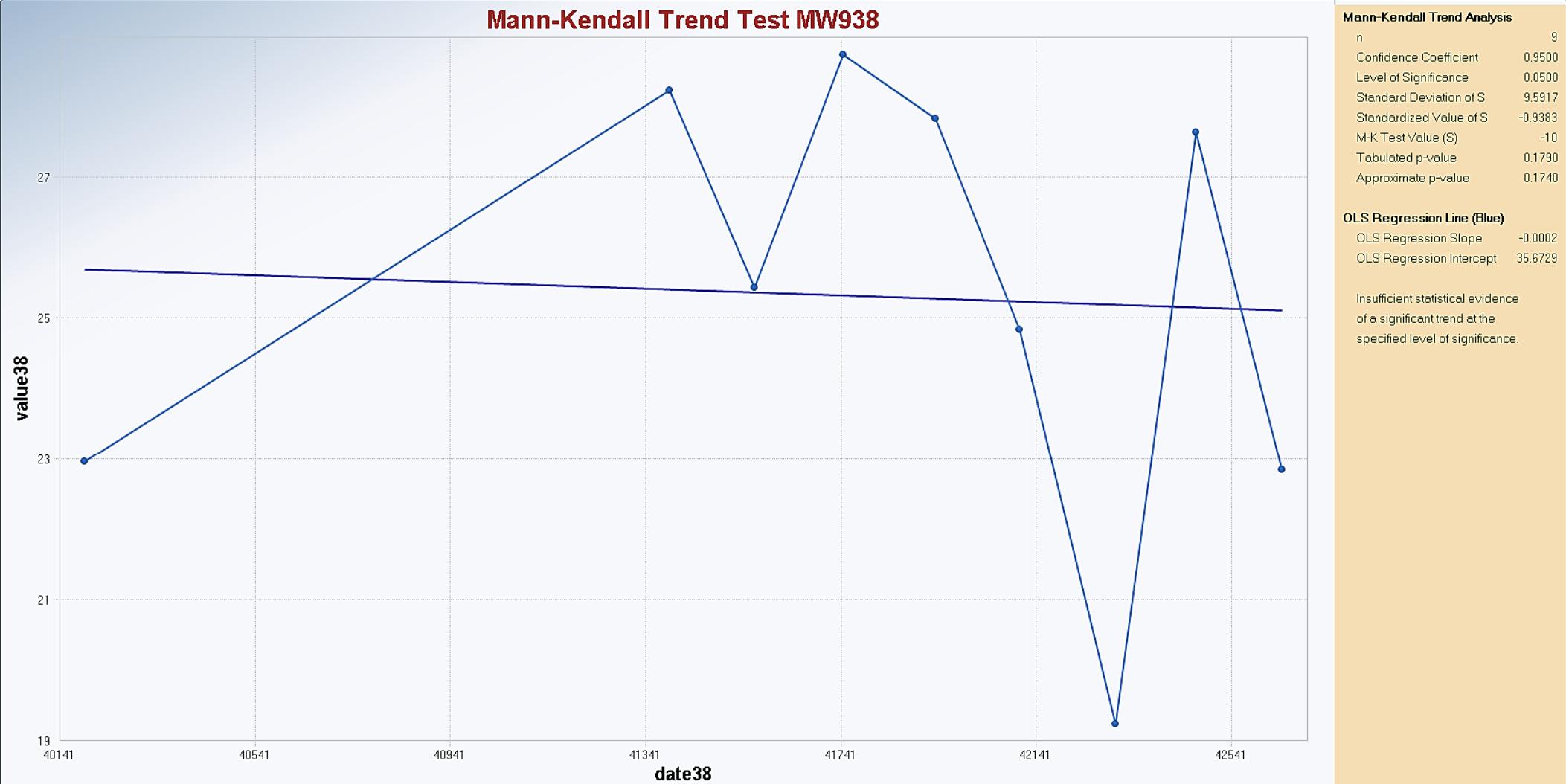
Mann-Kendall Trend Test MW934



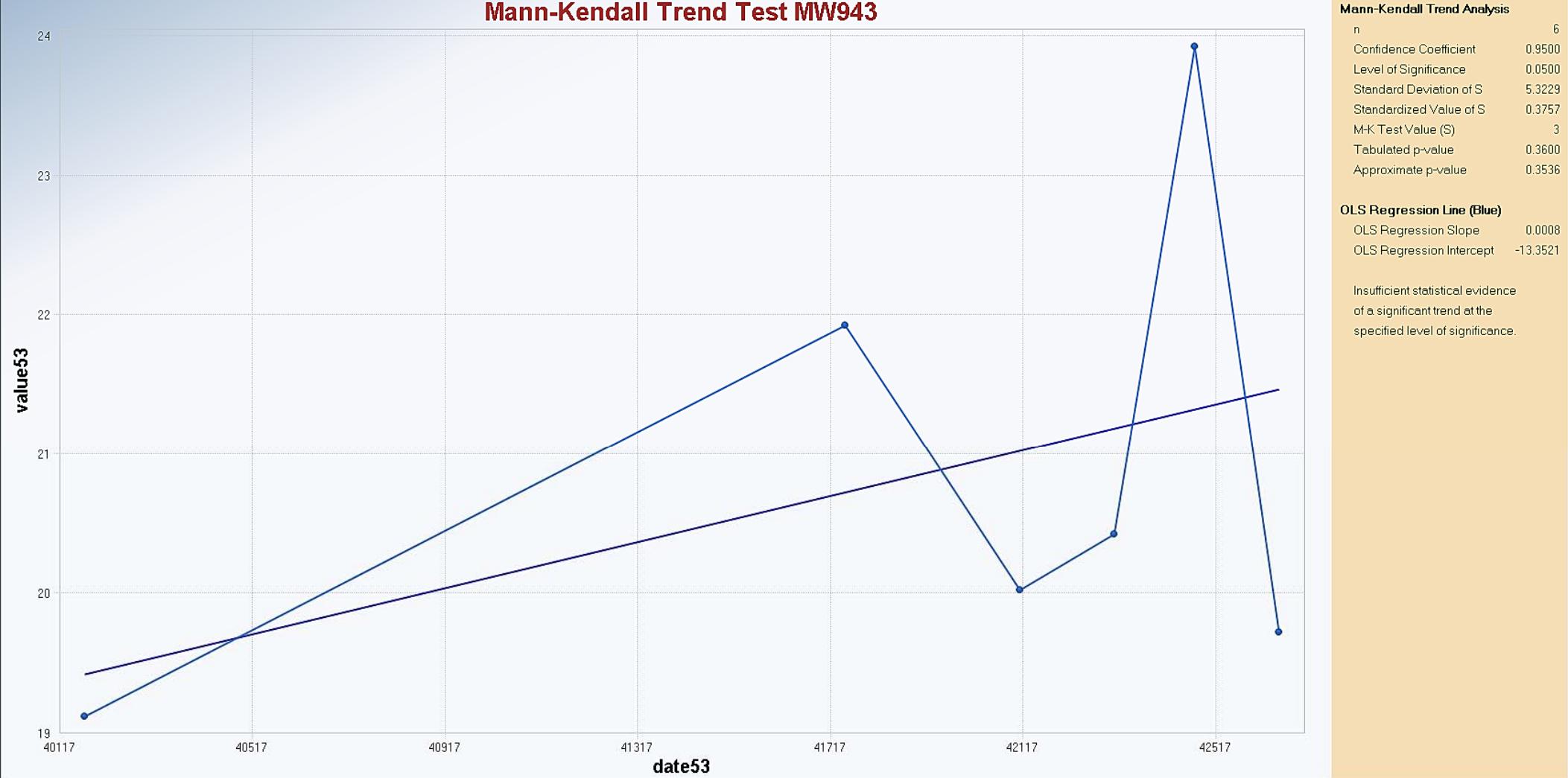
Mann-Kendall Trend Test MW935



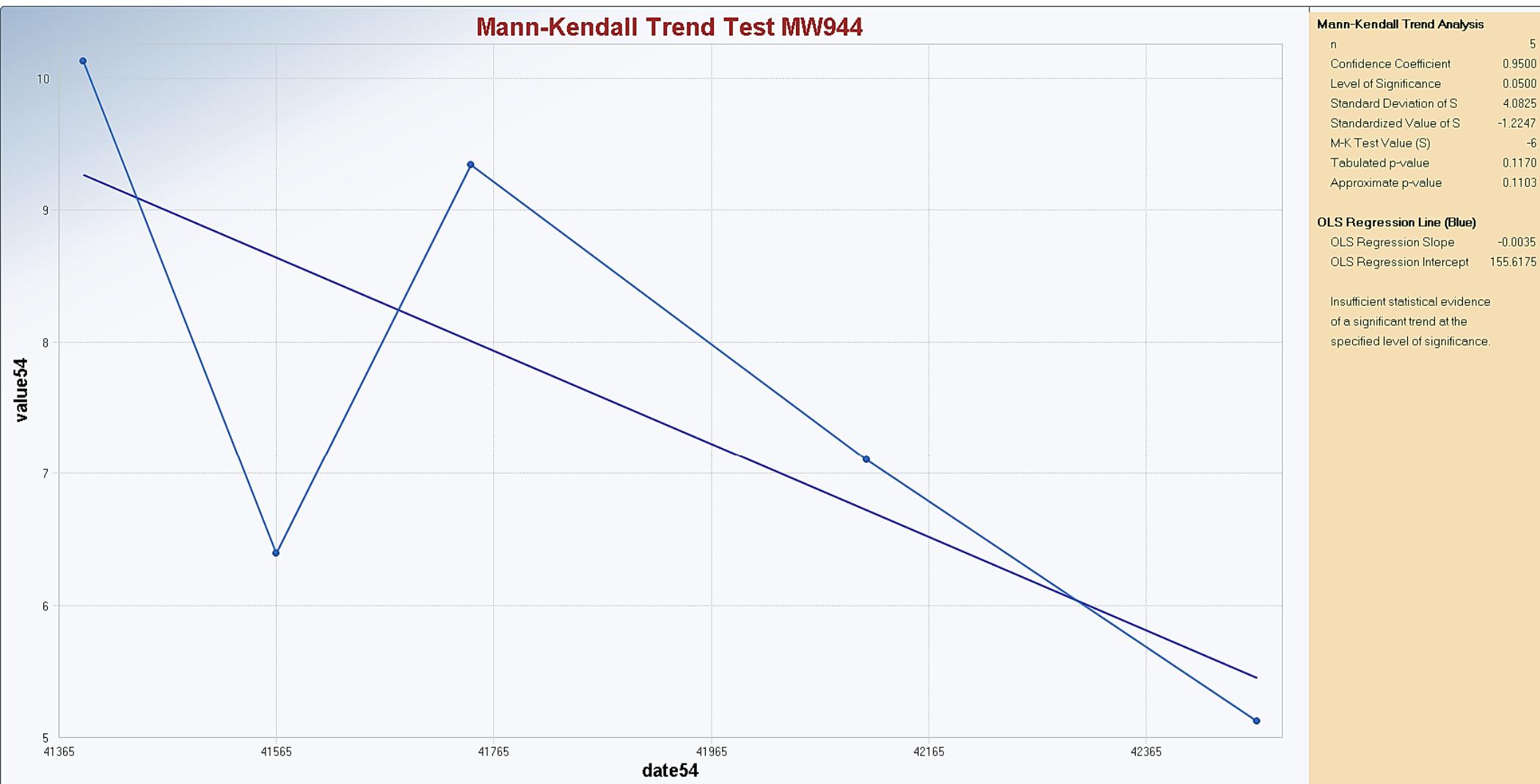
Mann-Kendall Trend Test MW938



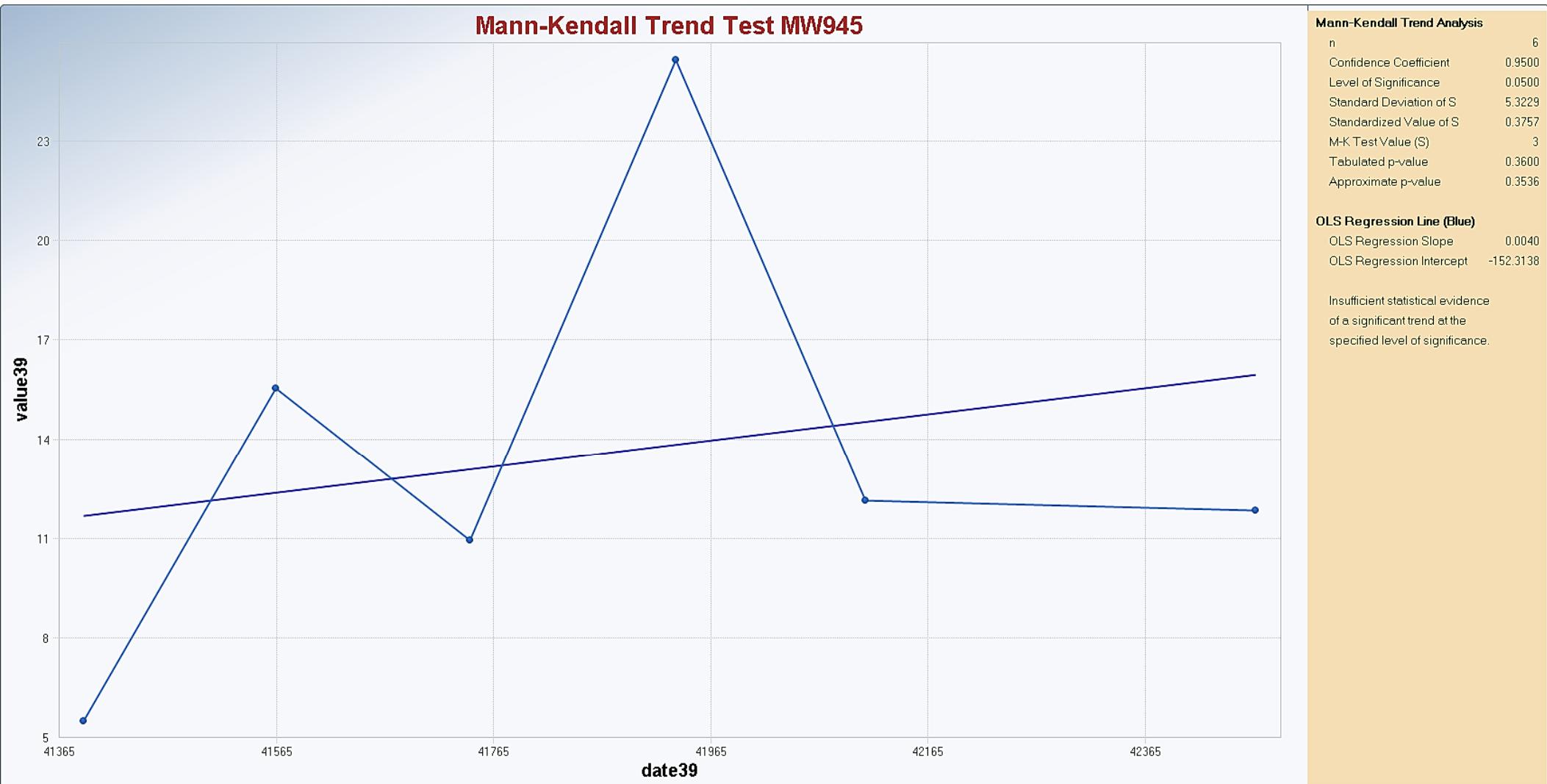
Mann-Kendall Trend Test MW943



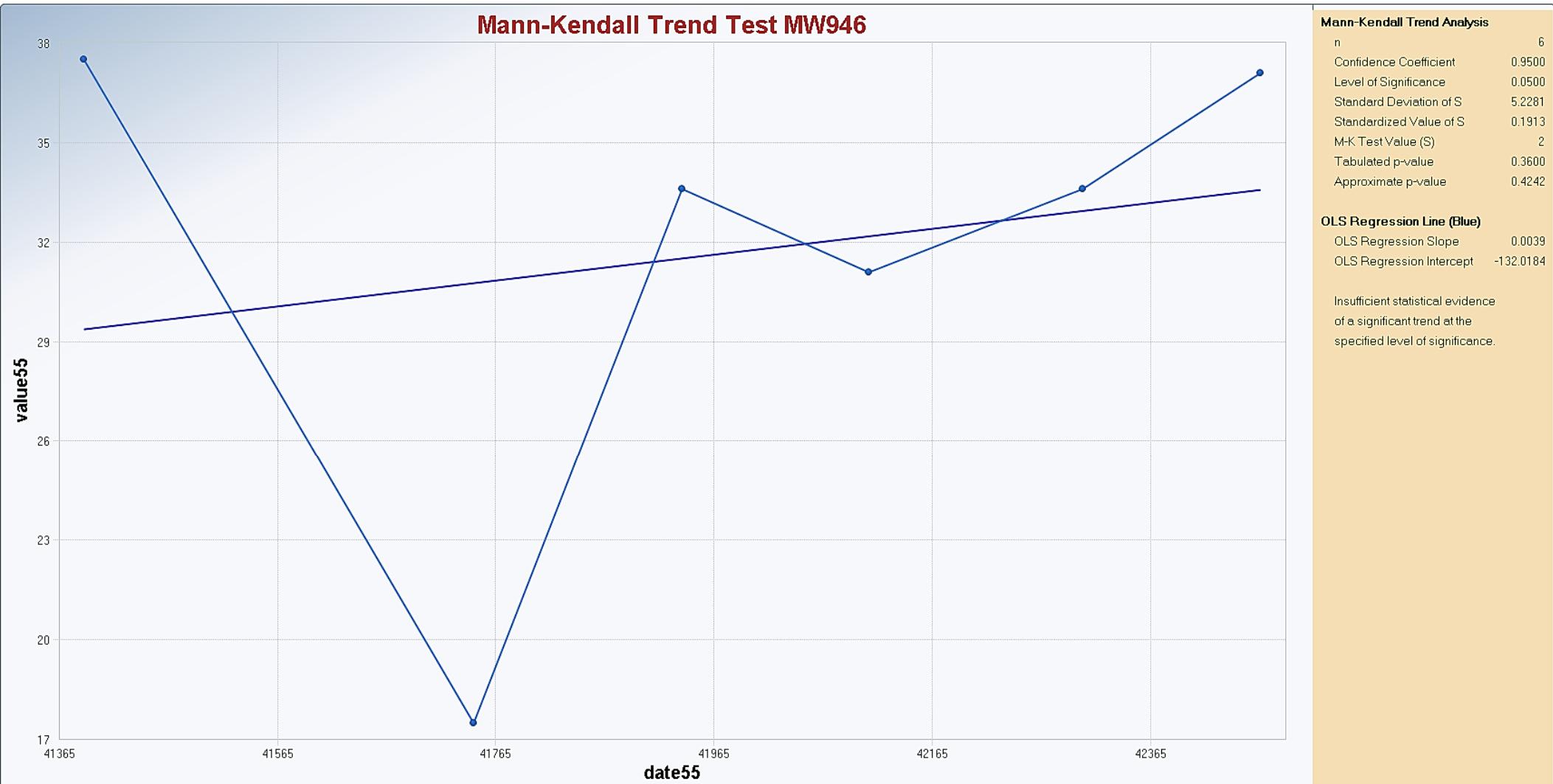
Mann-Kendall Trend Test MW944



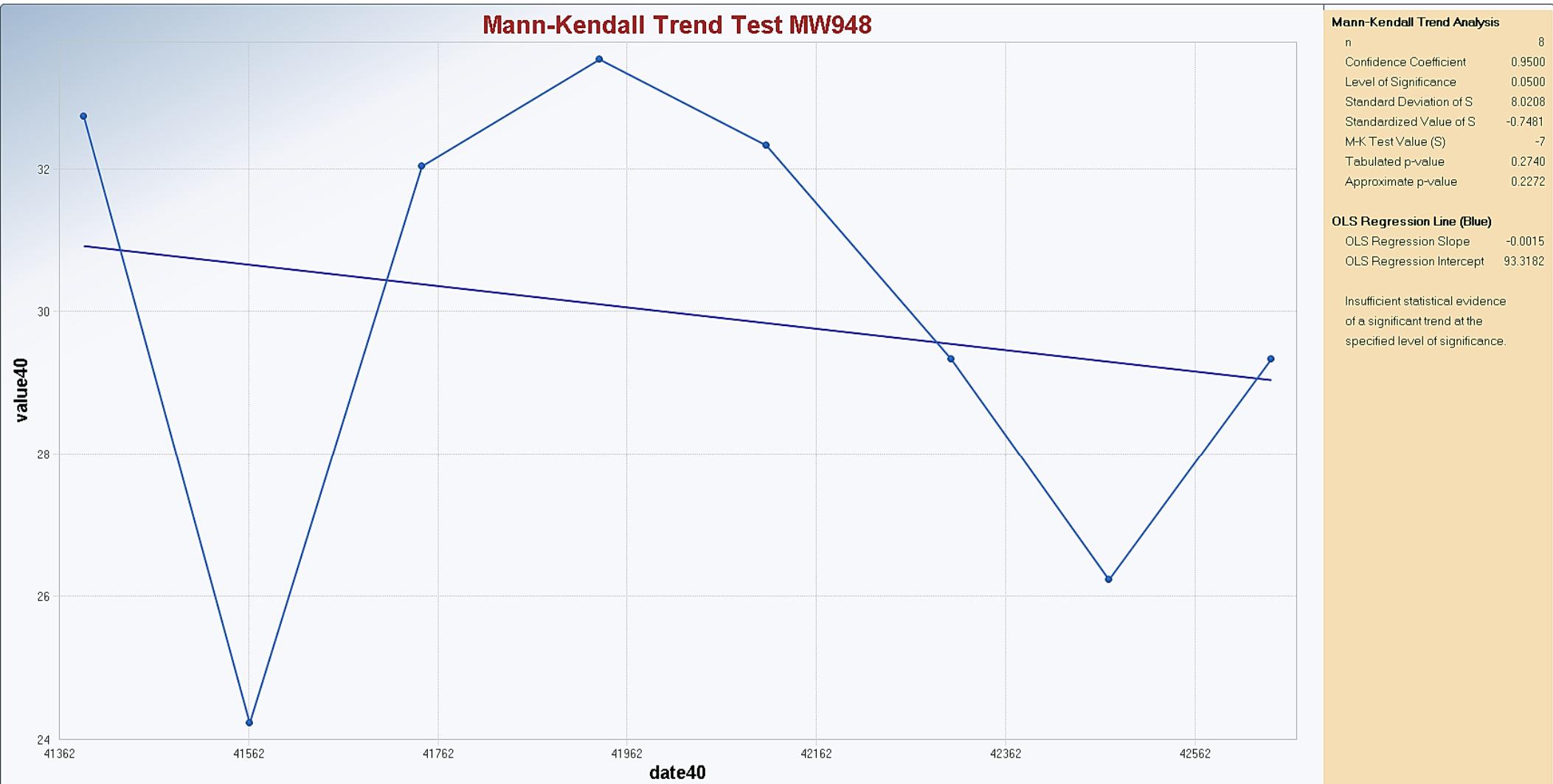
Mann-Kendall Trend Test MW945



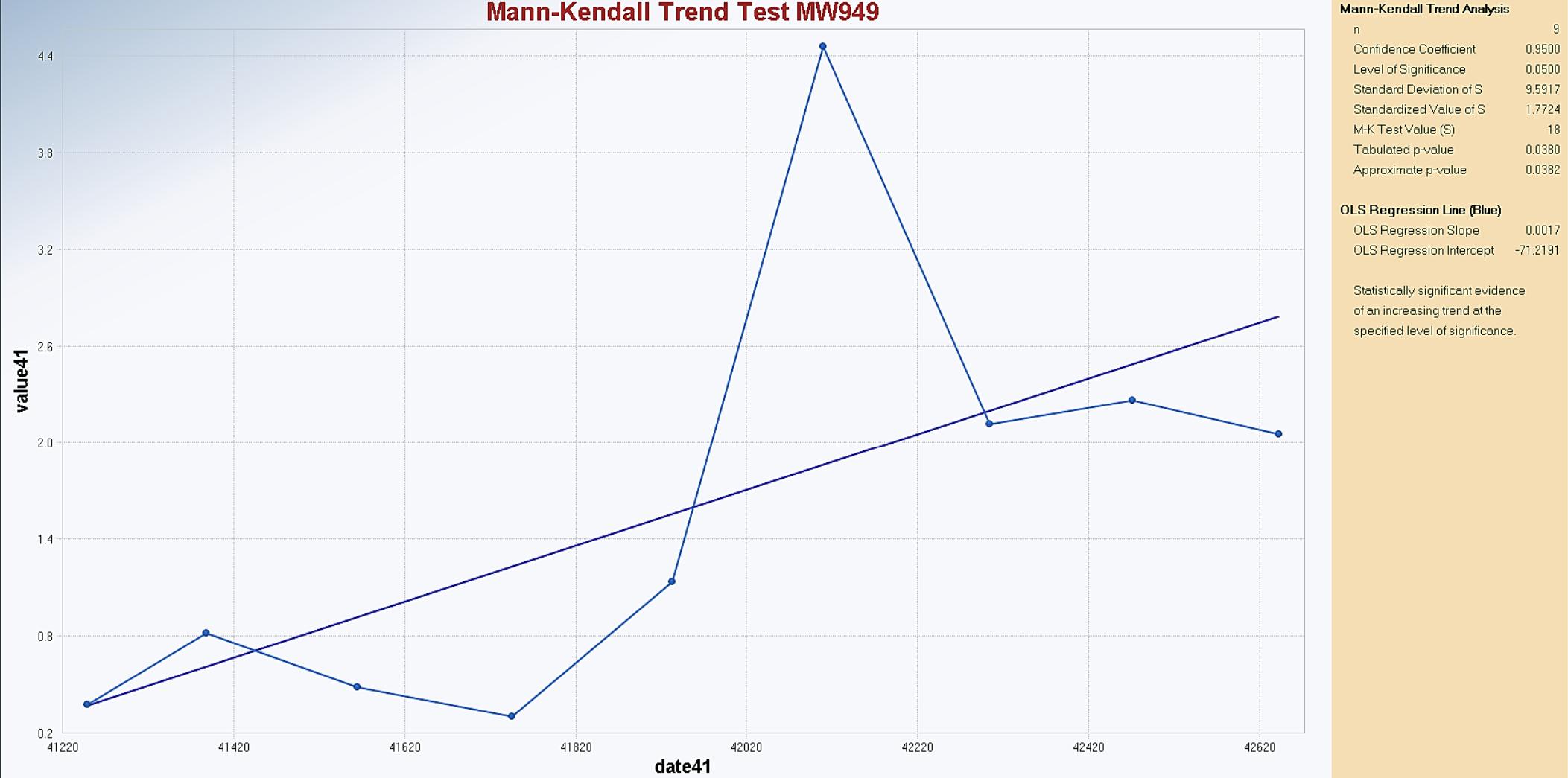
Mann-Kendall Trend Test MW946



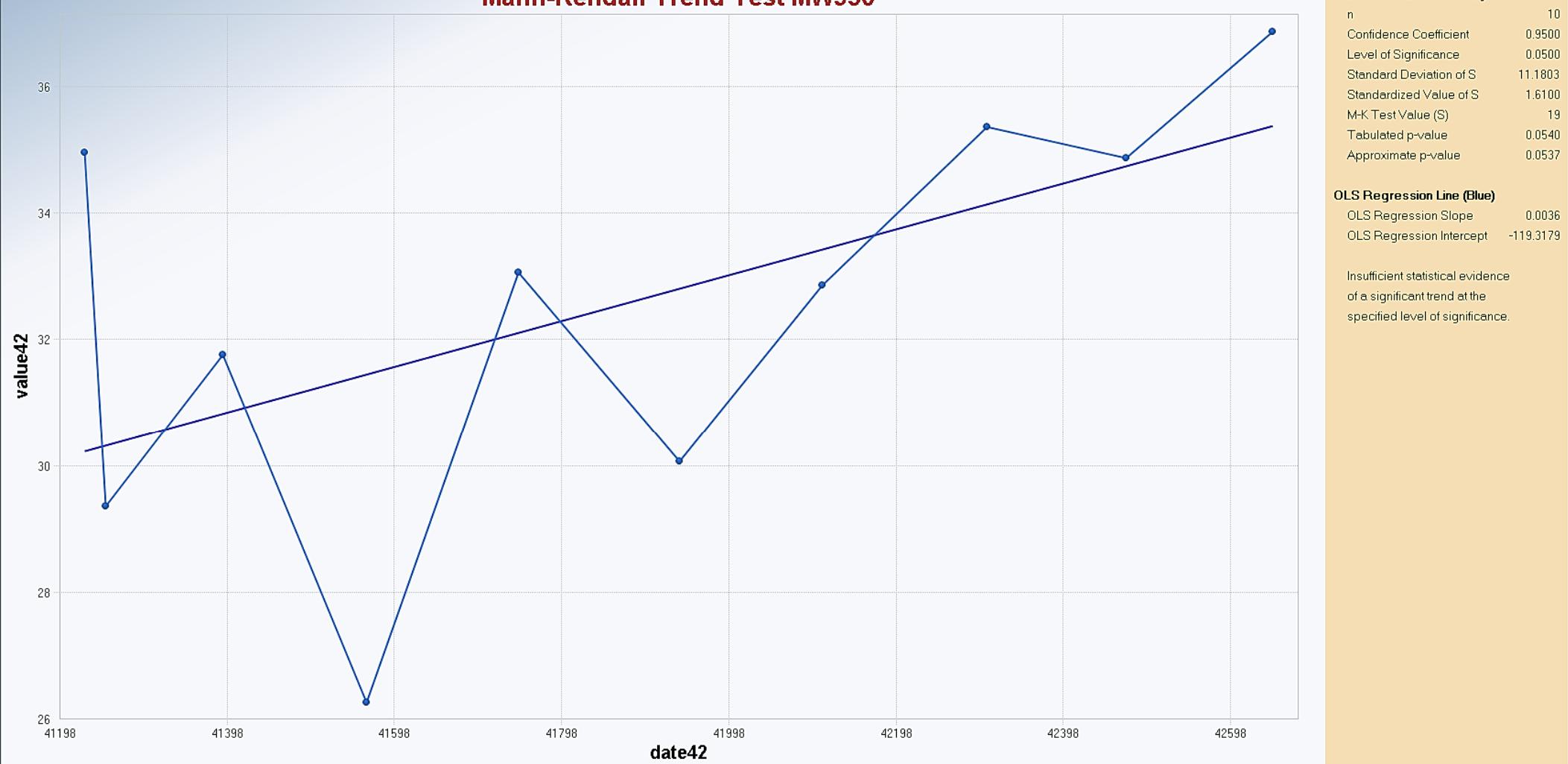
Mann-Kendall Trend Test MW948



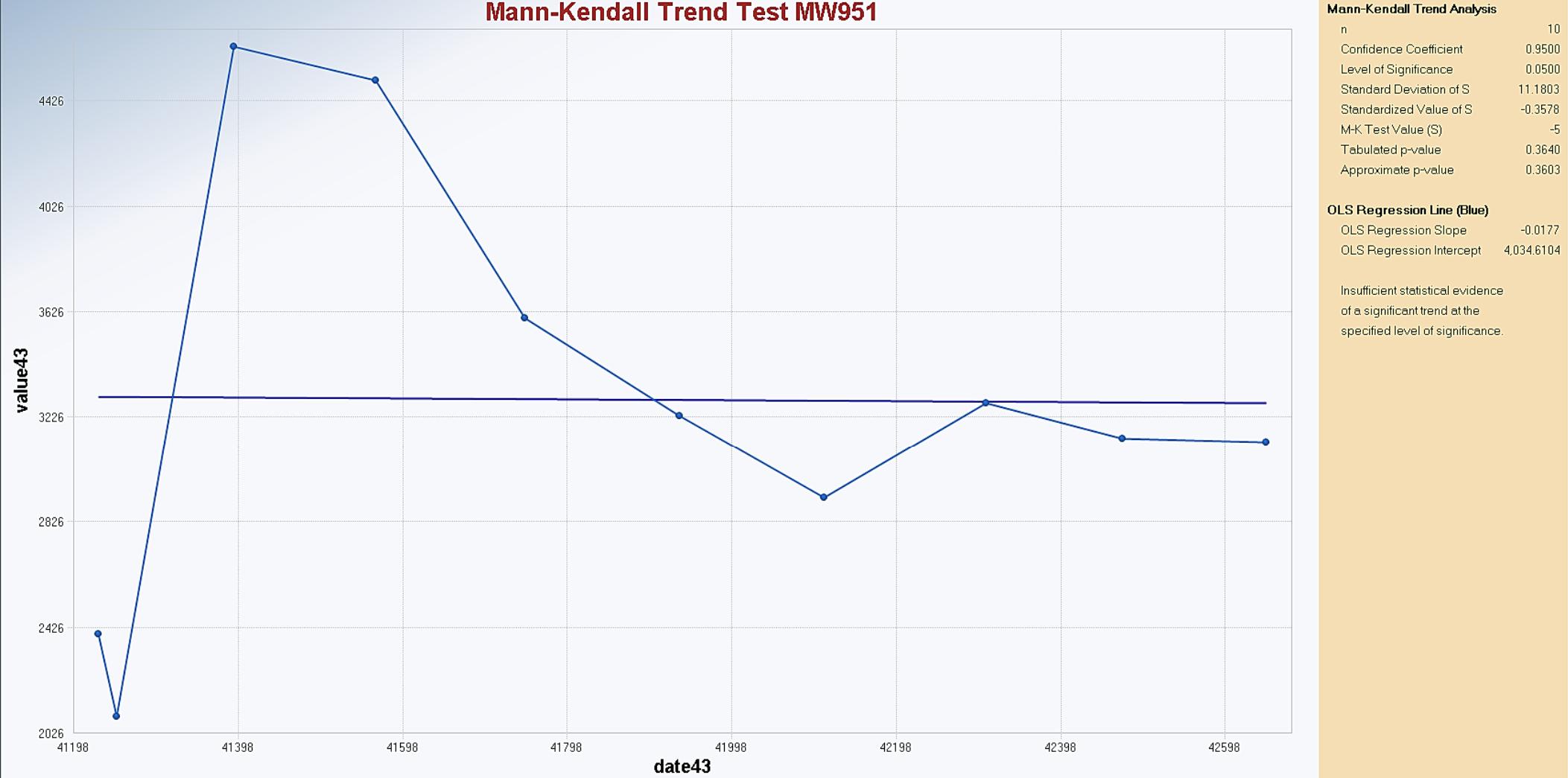
Mann-Kendall Trend Test MW949



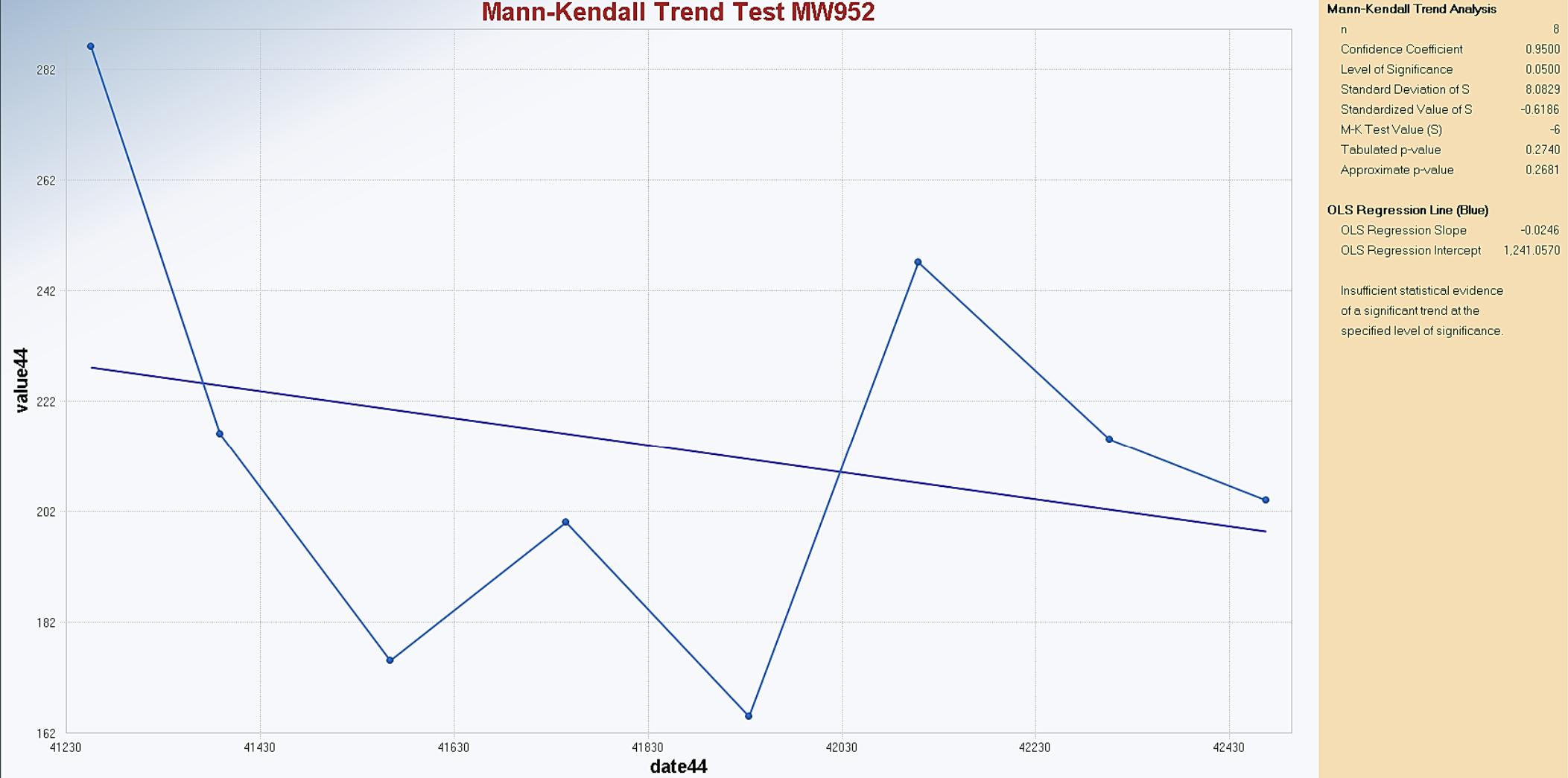
Mann-Kendall Trend Test MW950



Mann-Kendall Trend Test MW951



Mann-Kendall Trend Test MW952

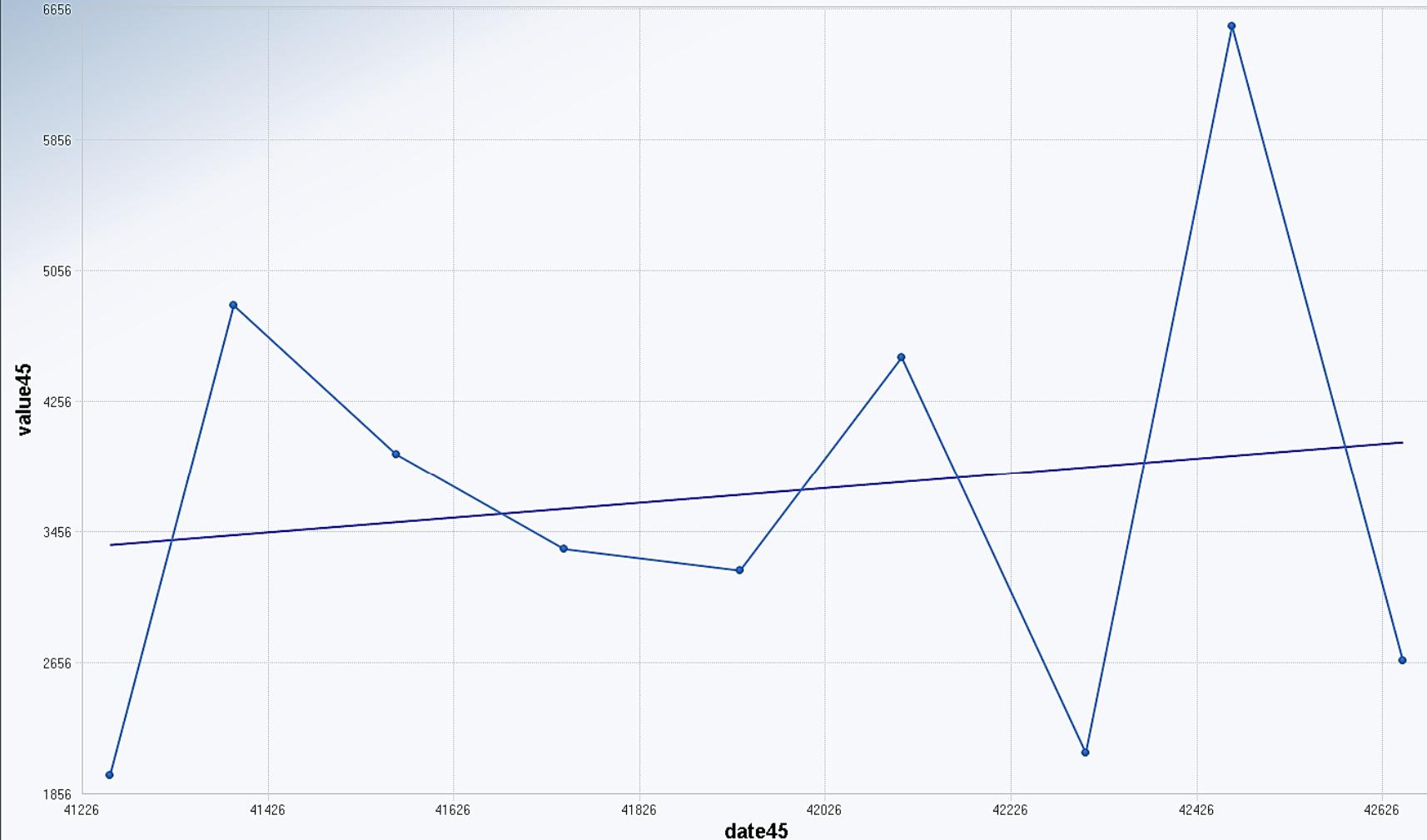


Mann-Kendall Trend Test MW953

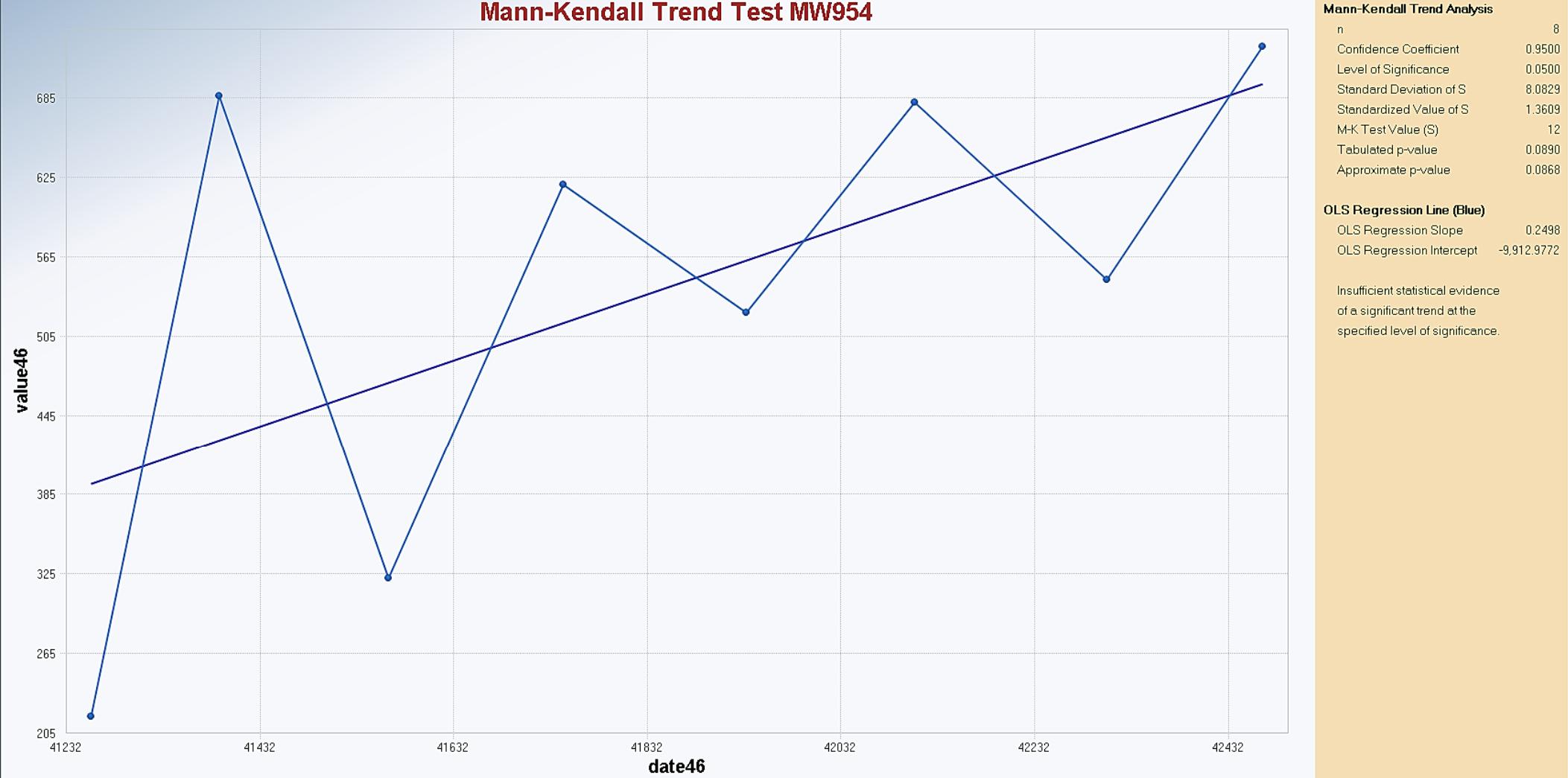
Mann-Kendall Trend Analysis	
n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	
M-K Test Value (S)	0
Tabulated p-value	0.5400
Approximate p-value	

OLS Regression Line (Blue)	
OLS Regression Slope	0.4537
OLS Regression Intercept	-15,341.2991

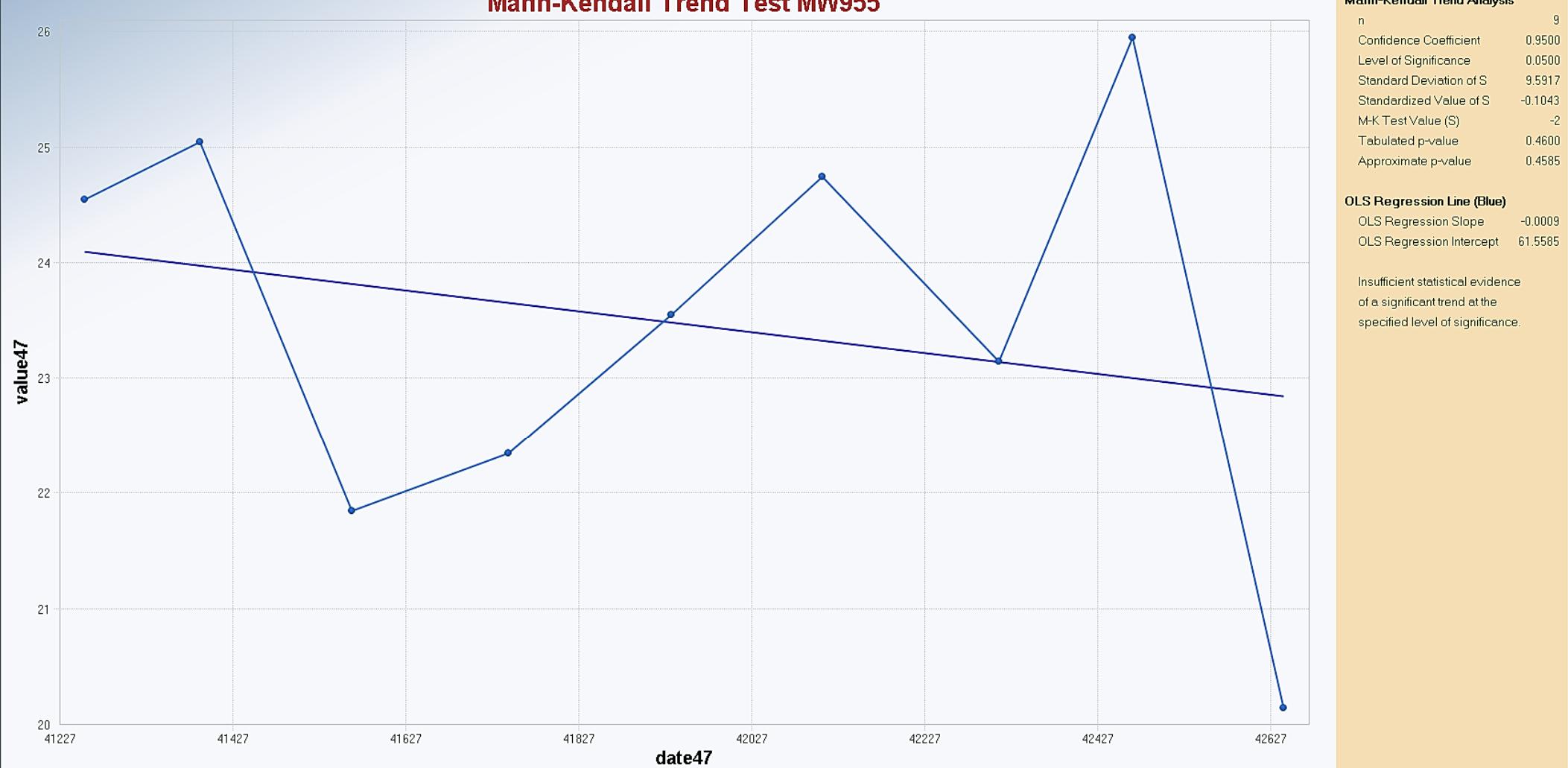
Insufficient statistical evidence
of a significant trend at the
specified level of significance.



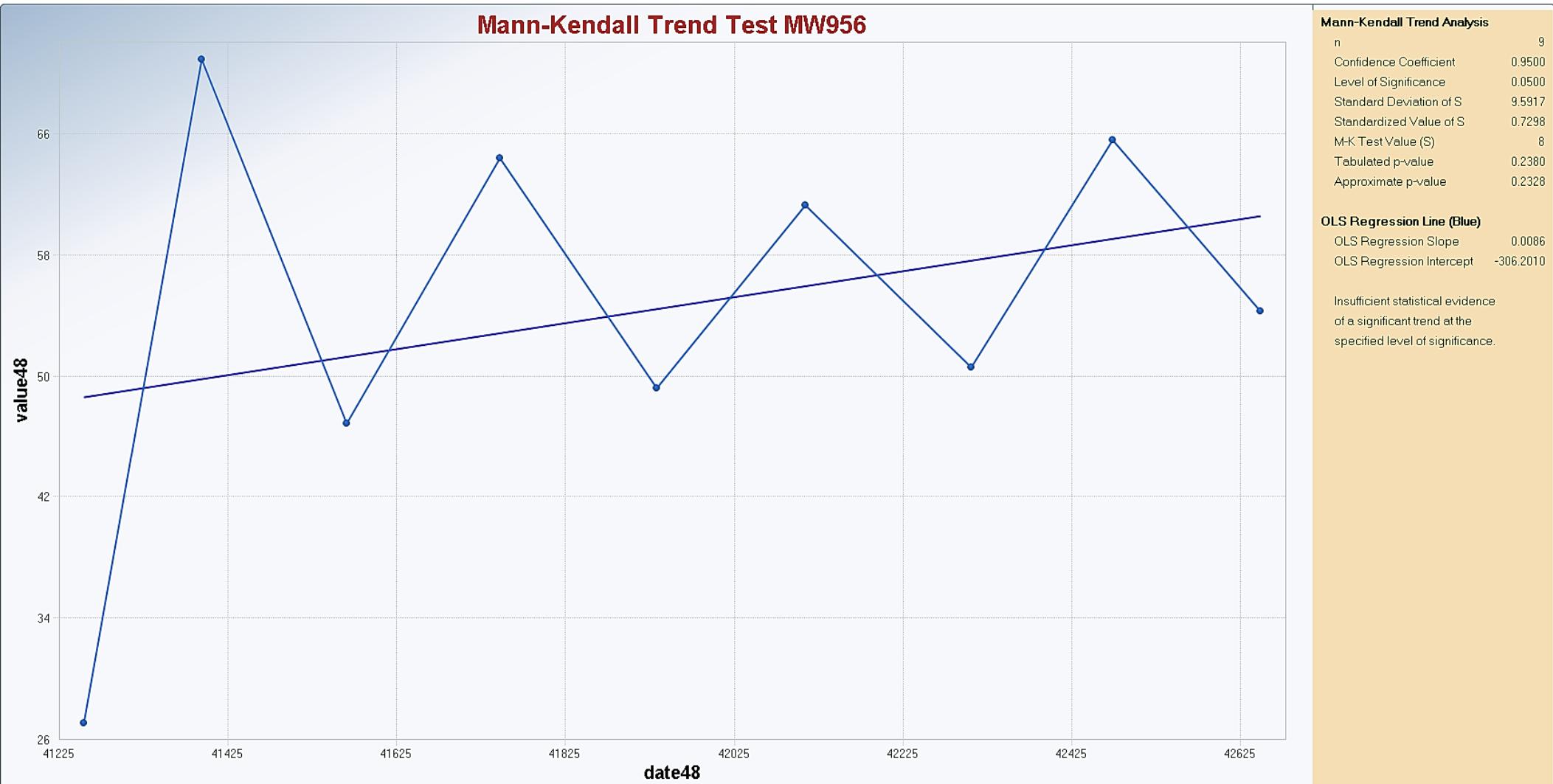
Mann-Kendall Trend Test MW954



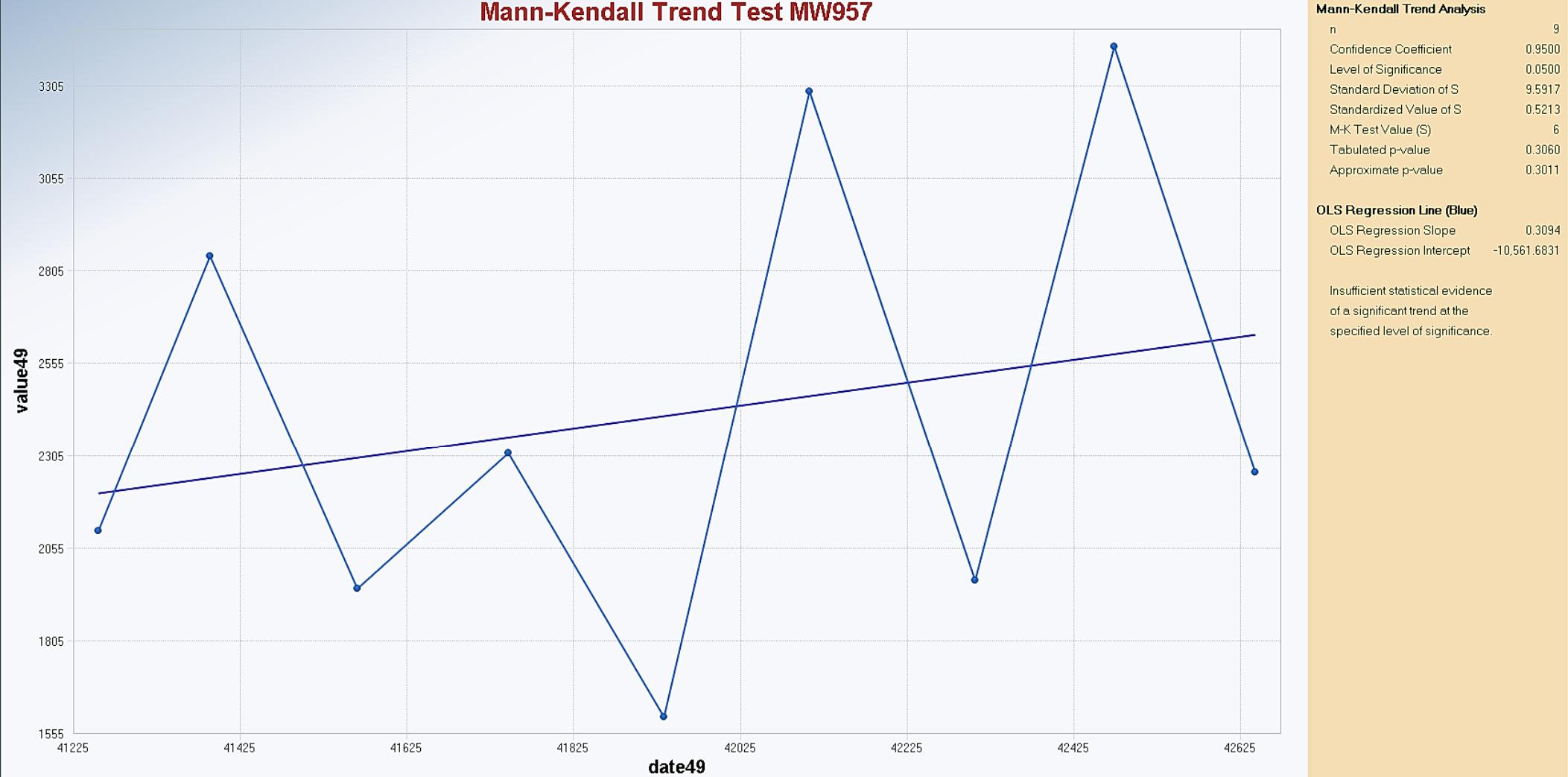
Mann-Kendall Trend Test MW955



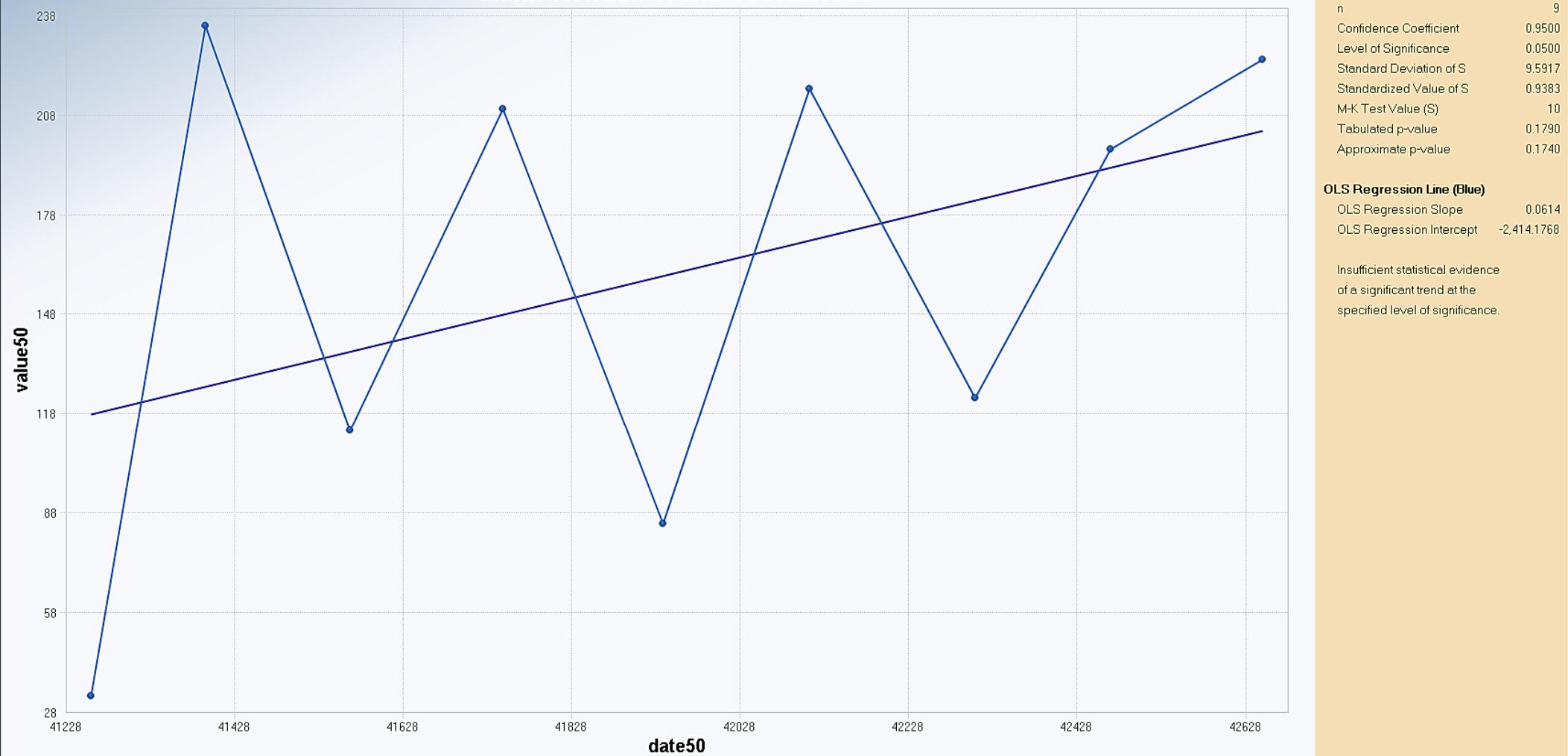
Mann-Kendall Trend Test MW956



Mann-Kendall Trend Test MW957



Mann-Kendall Trend Test MW958

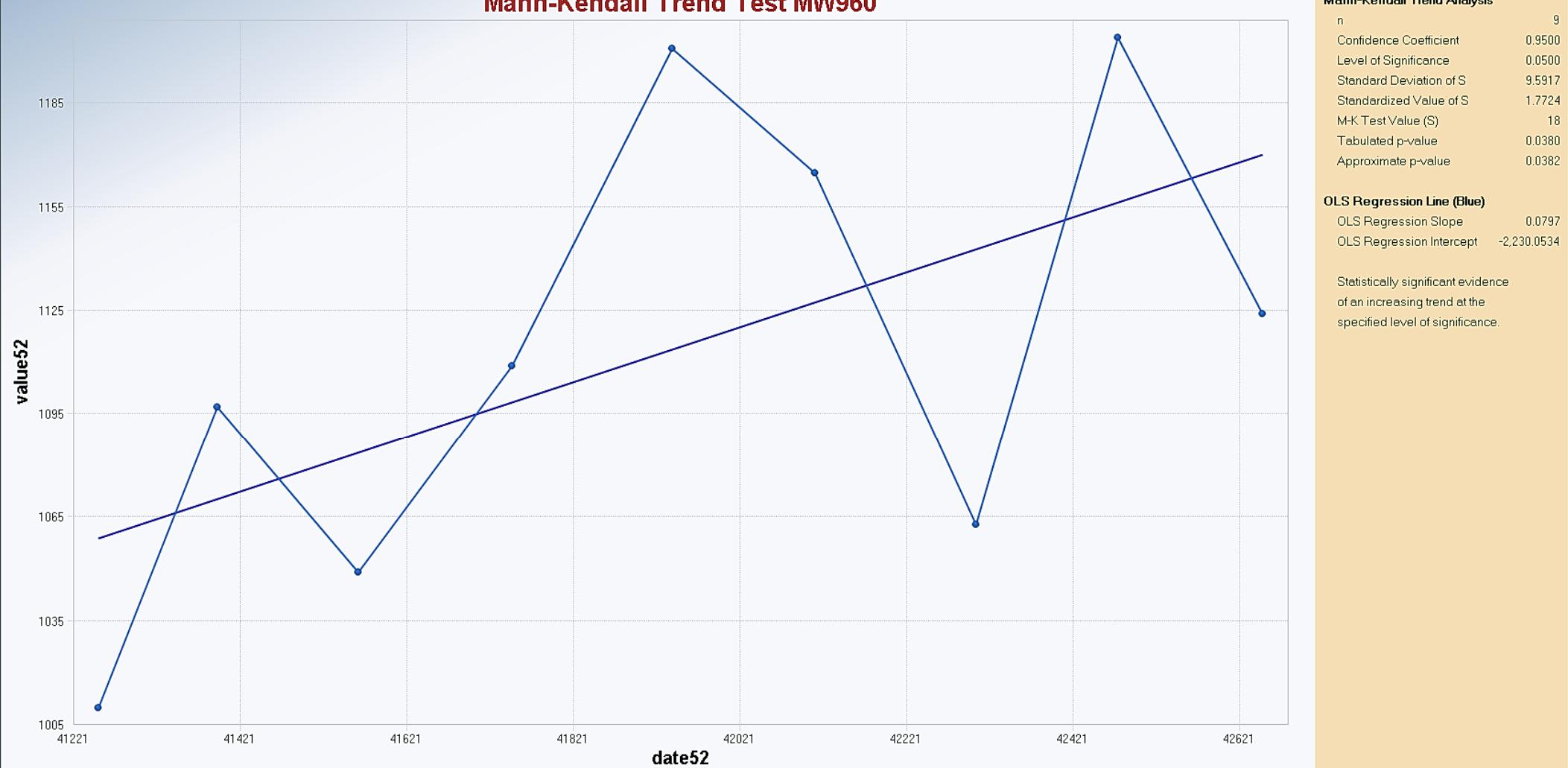


Mann-Kendall Trend Test MW959

Mann-Kendall Trend Analysis	
n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	0.7298
M-K Test Value (S)	8
Tabulated p-value	0.2380
Approximate p-value	0.2328
OLS Regression Line (Blue)	
OLS Regression Slope	0.0306
OLS Regression Intercept	-1.1713852
Insufficient statistical evidence of a significant trend at the specified level of significance.	



Mann-Kendall Trend Test MW960



Mann-Kendall Trend Test OW03A

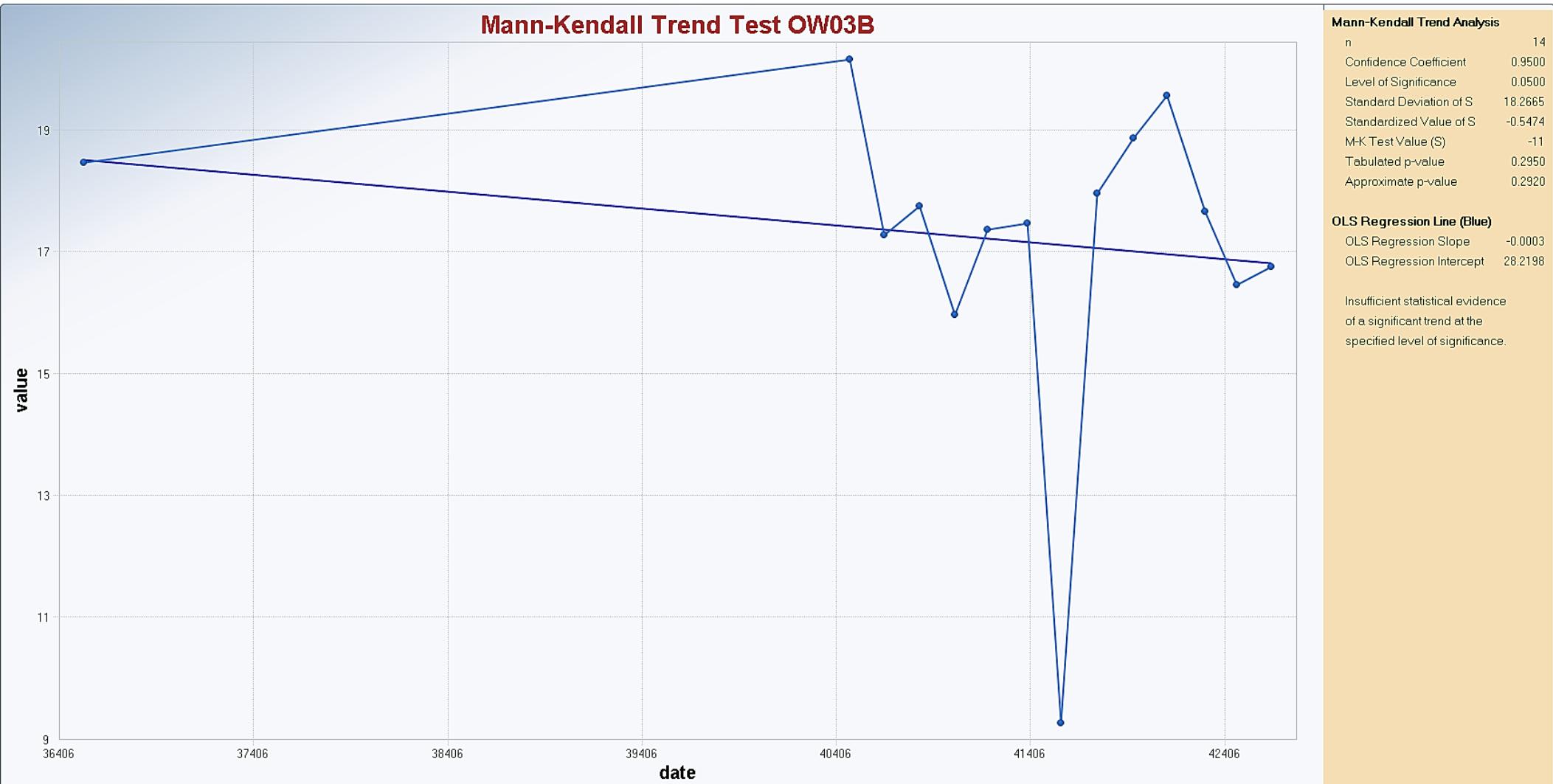
Mann-Kendall Trend Analysis	
n	14
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	18.2392
Standardized Value of S	-0.9321
M-K Test Value (S)	-18
Tabulated p-value	0.1650
Approximate p-value	0.1757

OLS Regression Line (Blue)	
OLS Regression Slope	-0.0001
OLS Regression Intercept	14.3238

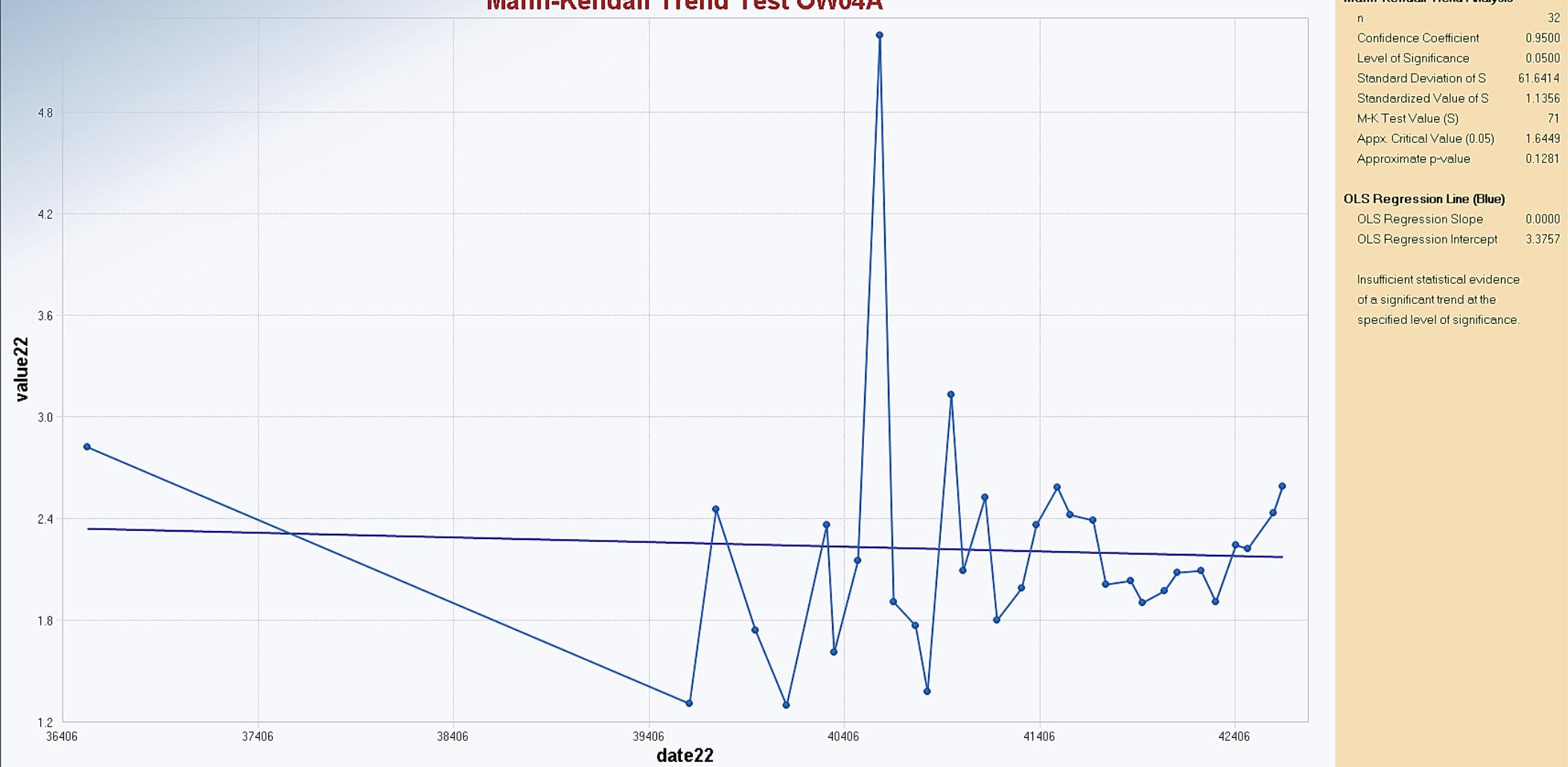
Insufficient statistical evidence
of a significant trend at the
specified level of significance.



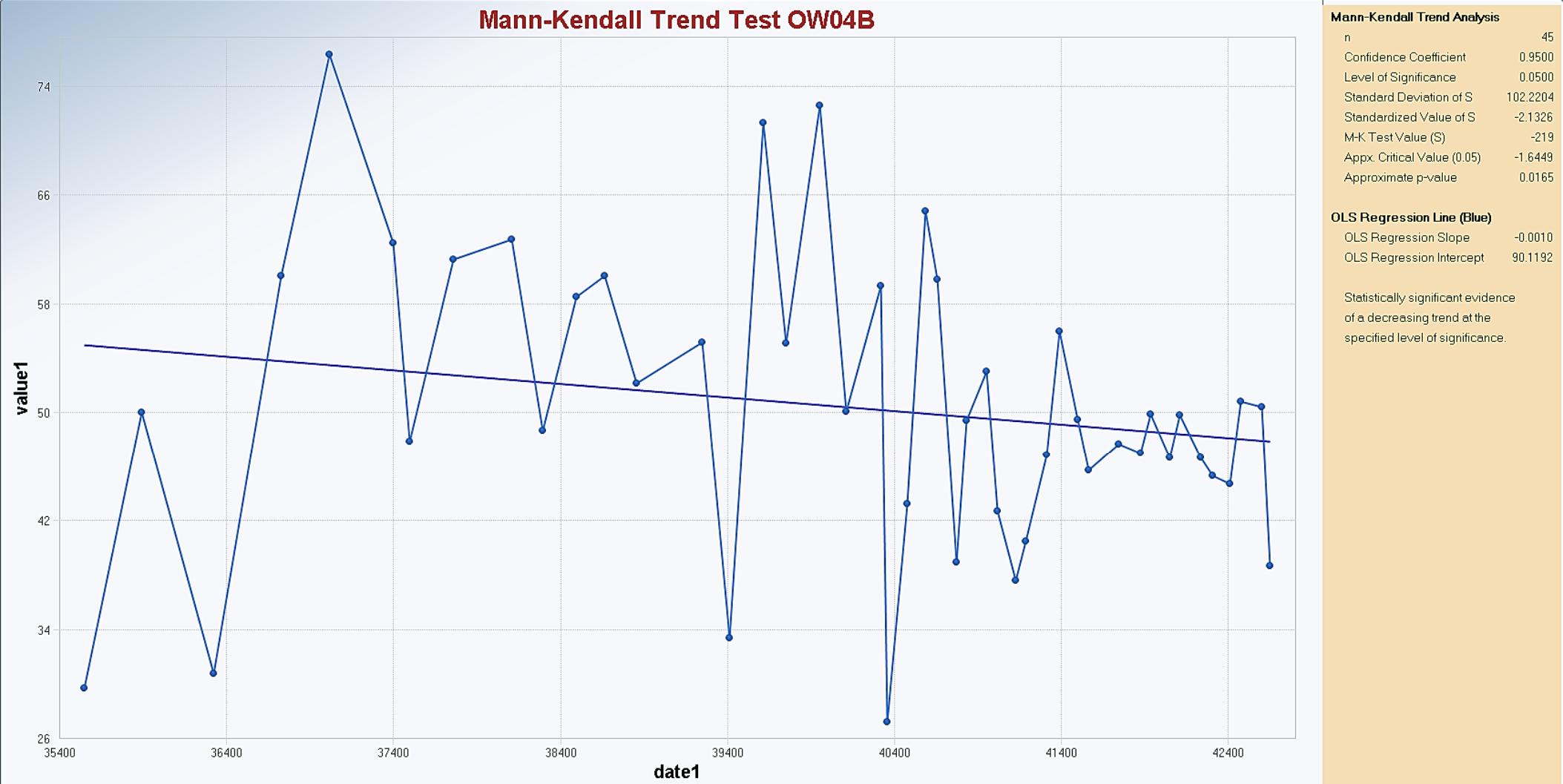
Mann-Kendall Trend Test OW03B



Mann-Kendall Trend Test OW04A



Mann-Kendall Trend Test OW04B

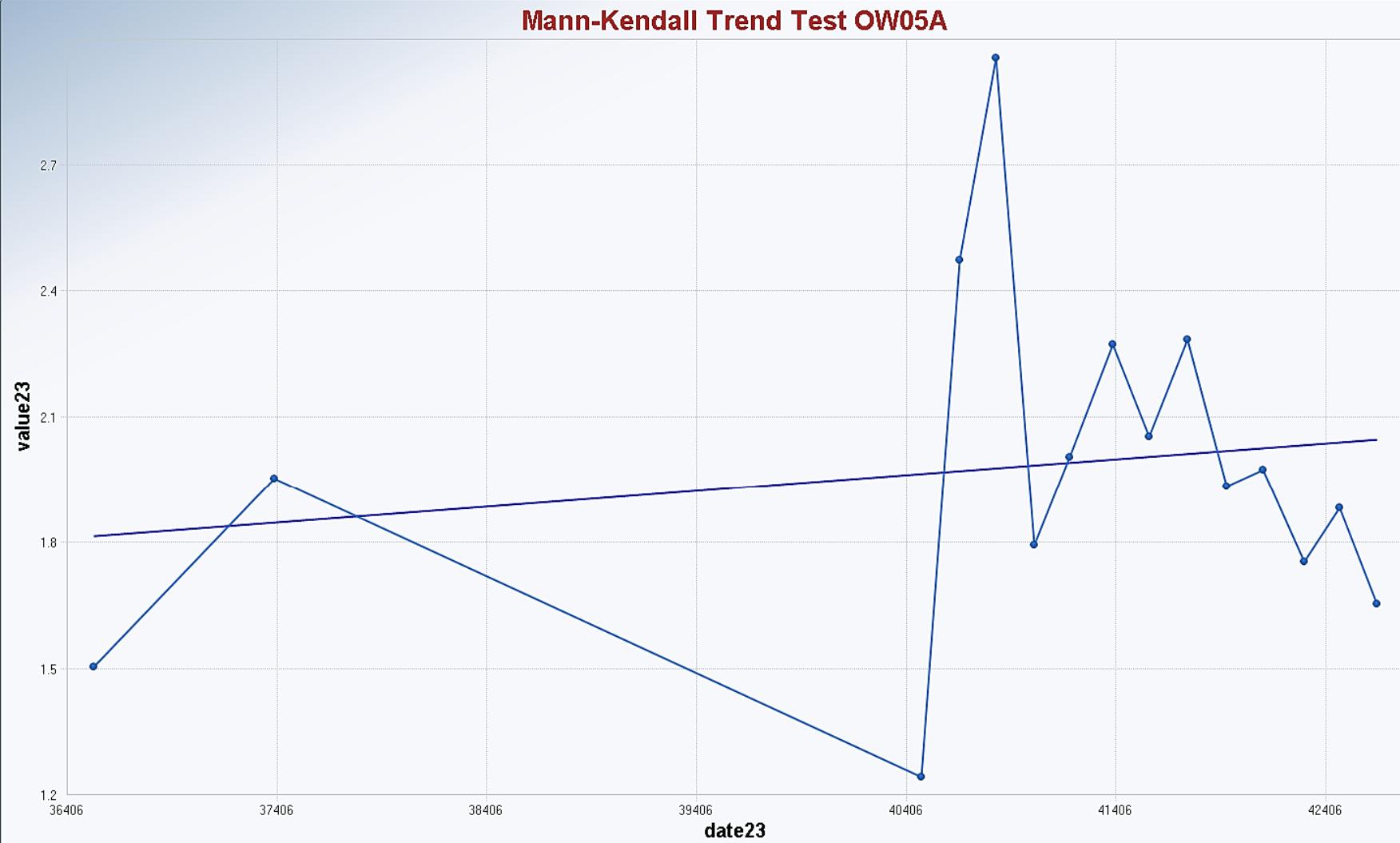


Mann-Kendall Trend Test OW05A

Mann-Kendall Trend Analysis	
n	15
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	20.2073
Standardized Value of S	-0.4949
M-K Test Value (S)	-11
Tabulated p-value	0.3130
Approximate p-value	0.3103

OLS Regression Line (Blue)	
OLS Regression Slope	0.0000
OLS Regression Intercept	0.4511

Insufficient statistical evidence
of a significant trend at the
specified level of significance.



Mann-Kendall Trend Test OW05B

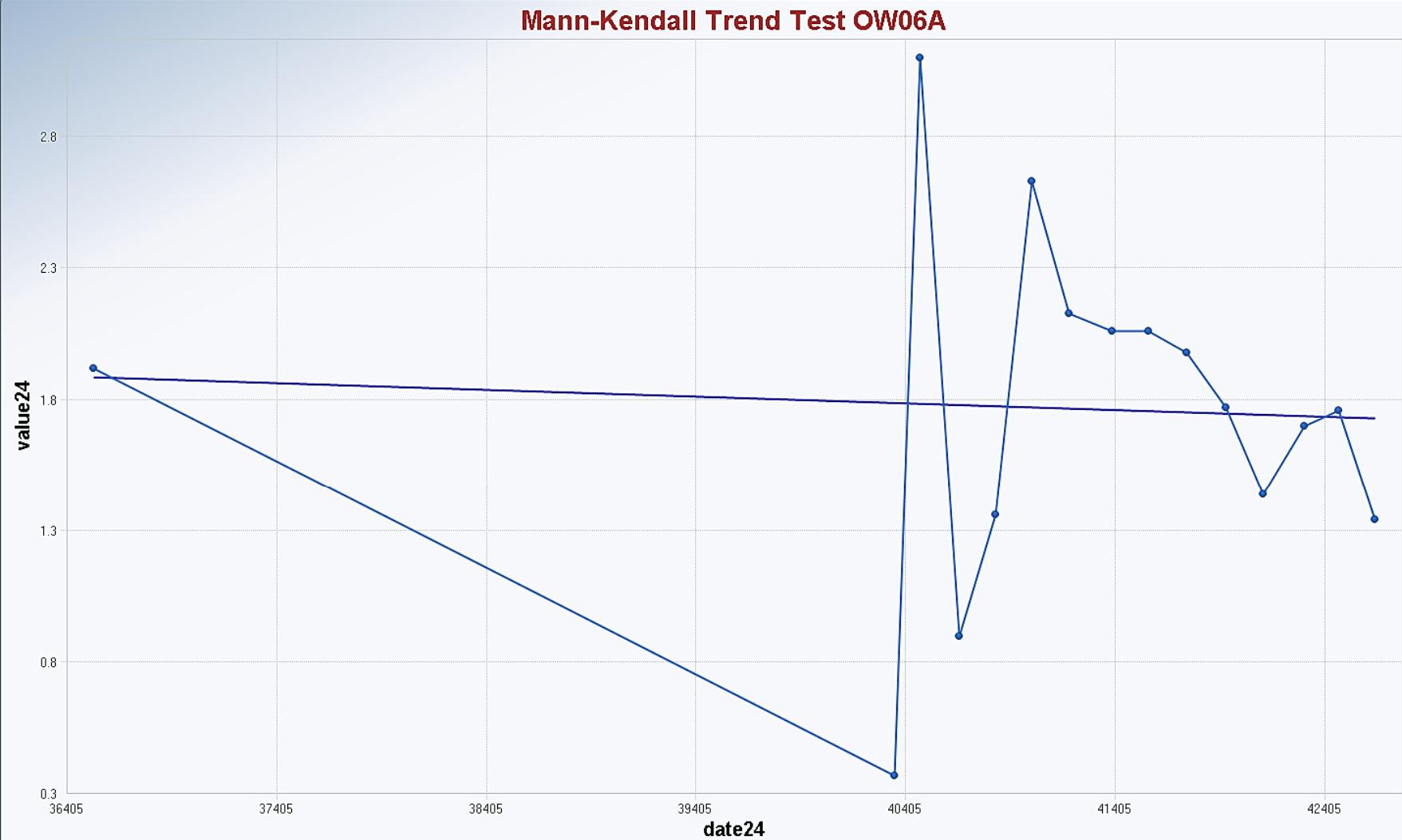


Mann-Kendall Trend Test OW06A

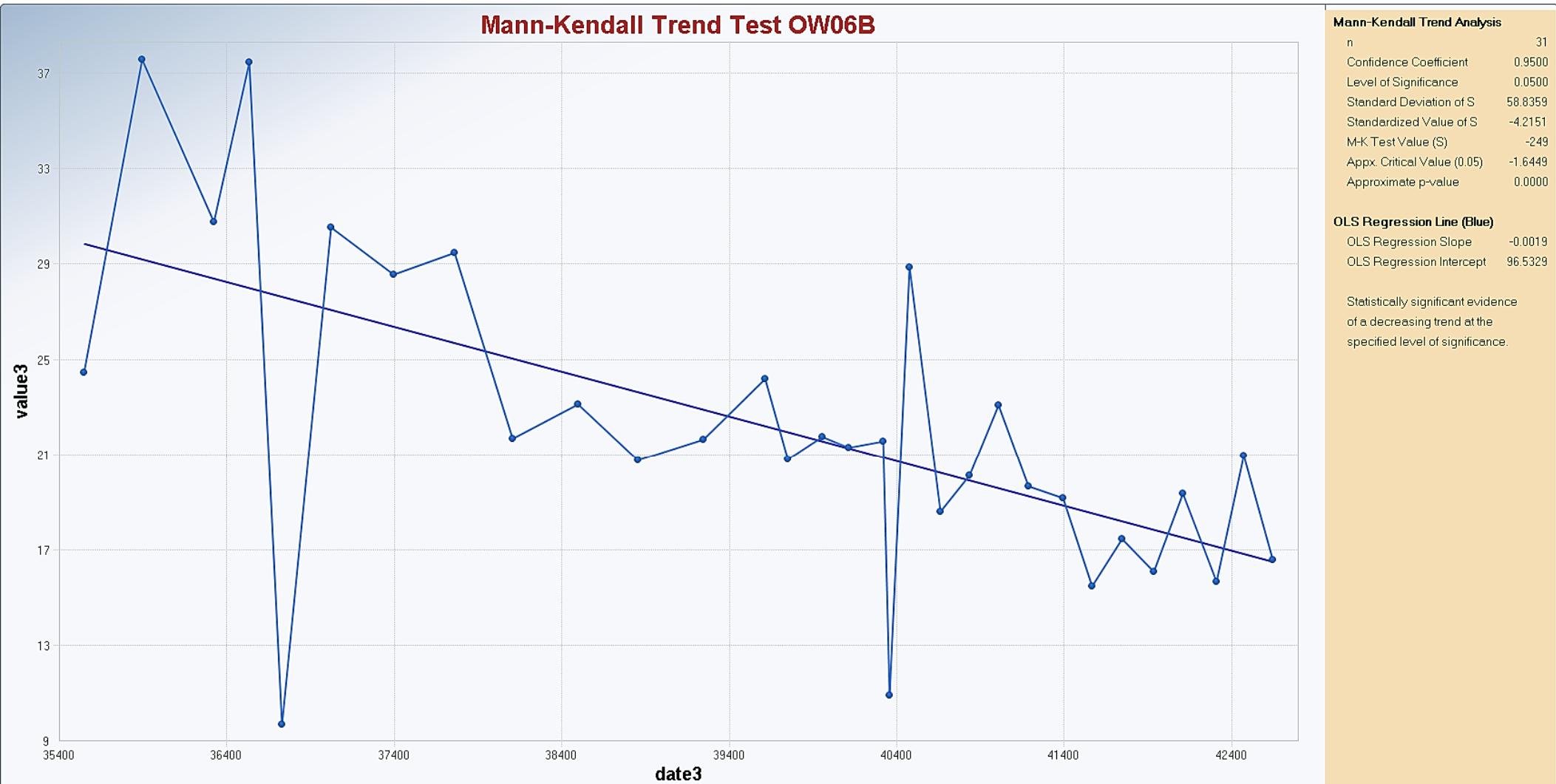
Mann-Kendall Trend Analysis	
n	15
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	20.1825
Standardized Value of S	-0.9414
M-K Test Value (S)	-20
Tabulated p-value	0.1640
Approximate p-value	0.1732

OLS Regression Line (Blue)	
OLS Regression Slope	0.0000
OLS Regression Intercept	2.8196

Insufficient statistical evidence
of a significant trend at the
specified level of significance.



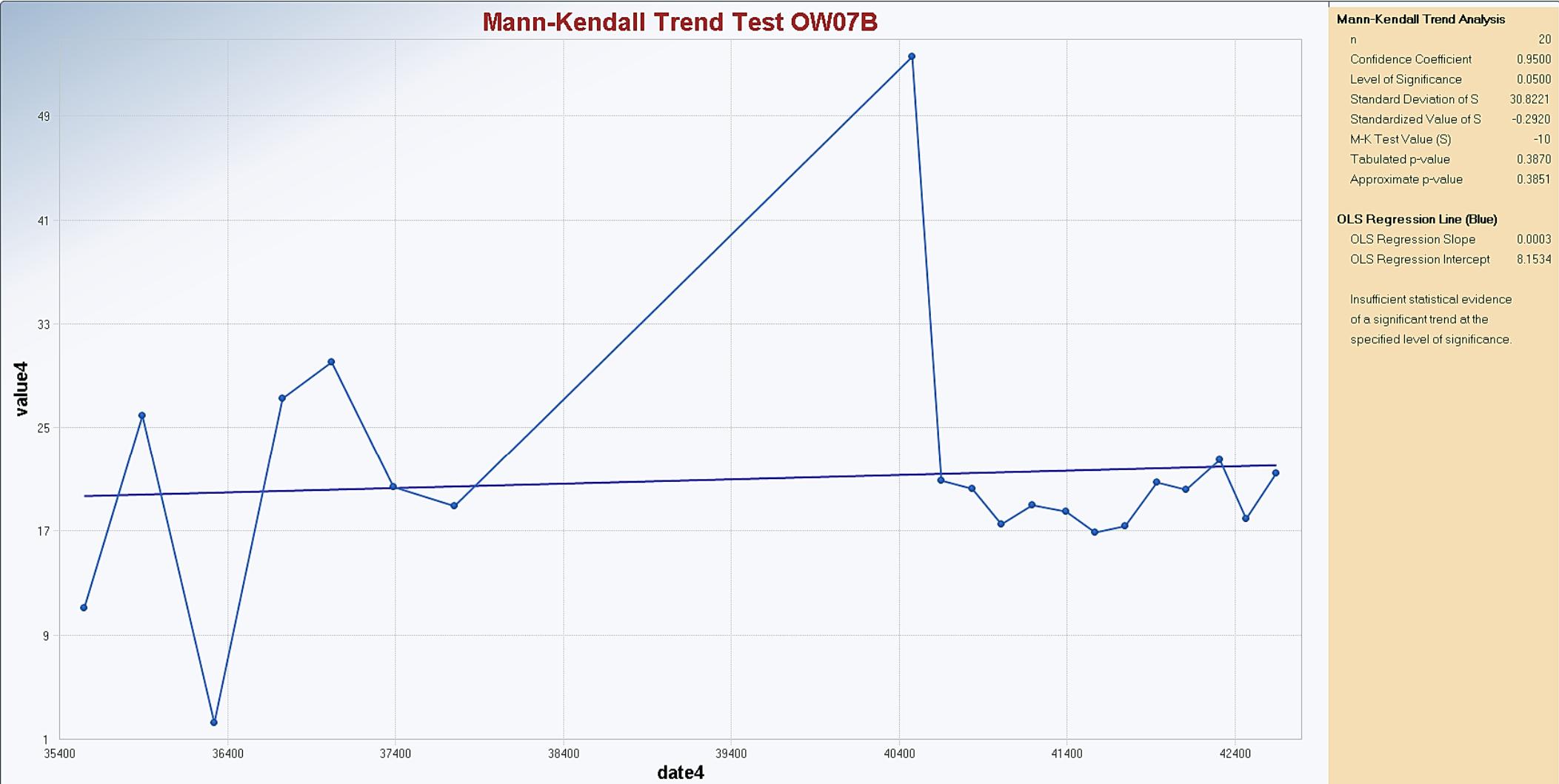
Mann-Kendall Trend Test OW06B



Mann-Kendall Trend Test OW07A



Mann-Kendall Trend Test OW07B

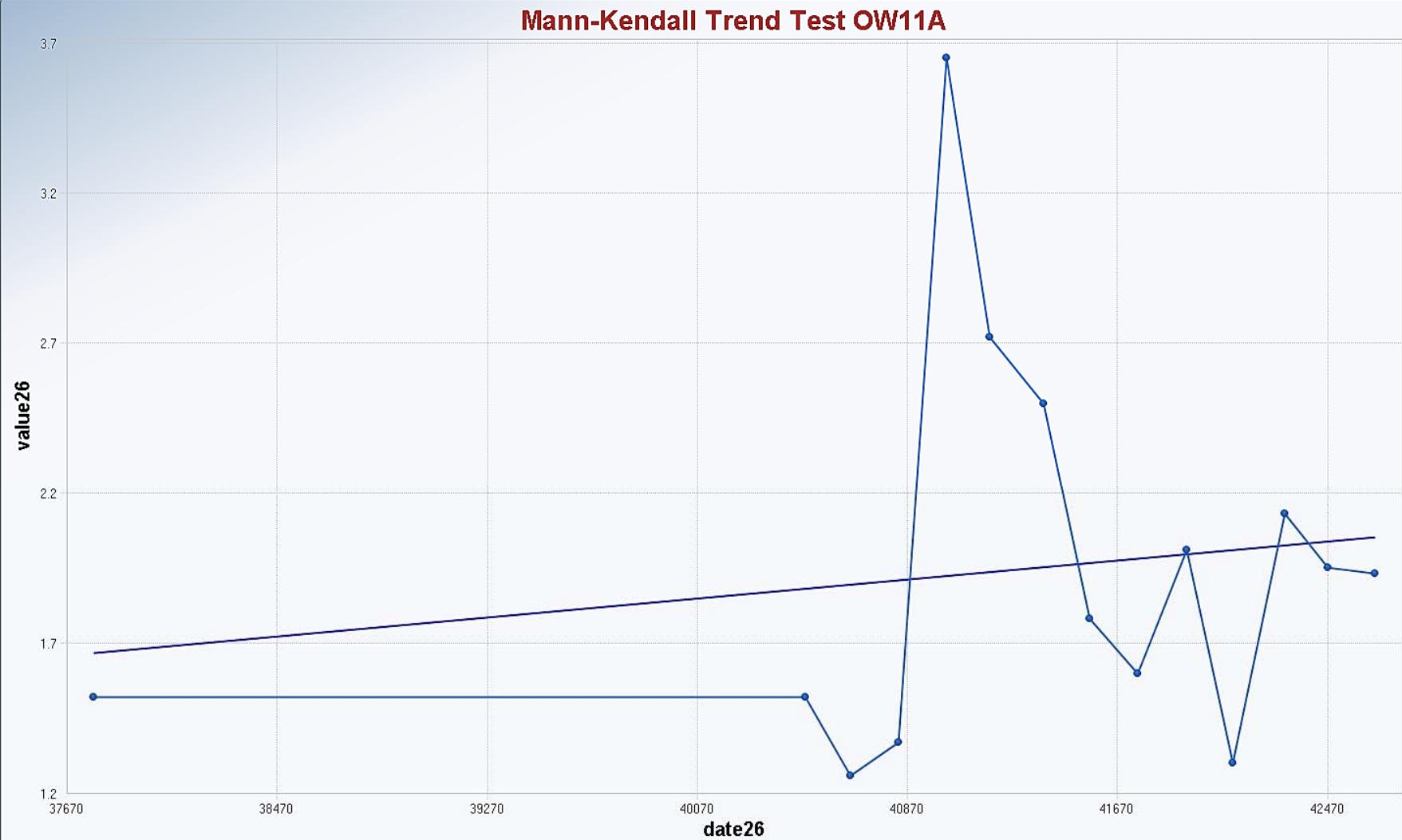


Mann-Kendall Trend Test OW11A

Mann-Kendall Trend Analysis	
n	14
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	18.2392
Standardized Value of S	0.4934
M-K Test Value (S)	10
Tabulated p-value	0.2950
Approximate p-value	0.3108

OLS Regression Line (Blue)	
OLS Regression Slope	0.0001
OLS Regression Intercept	-1.3632

Insufficient statistical evidence
of a significant trend at the
specified level of significance.



Mann-Kendall Trend Test OW11B

Mann-Kendall Trend Analysis

n	26
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	45.3689
Standardized Value of S	0.3086
M-K Test Value (S)	15
Appx. Critical Value (0.05)	1.6449
Approximate p-value	0.3788

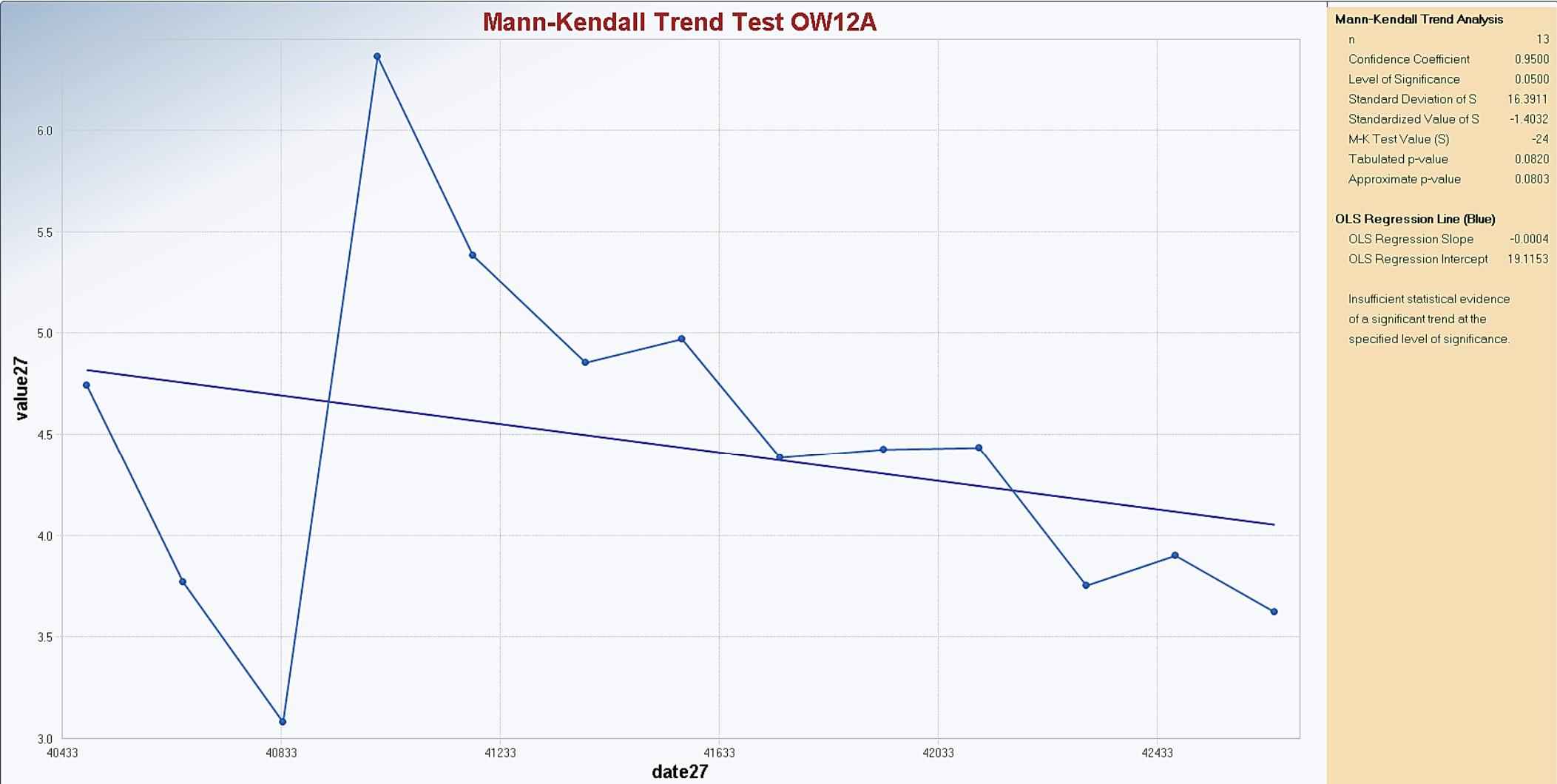
OLS Regression Line (Blue)

OLS Regression Slope	0.0087
OLS Regression Intercept	-11.6924

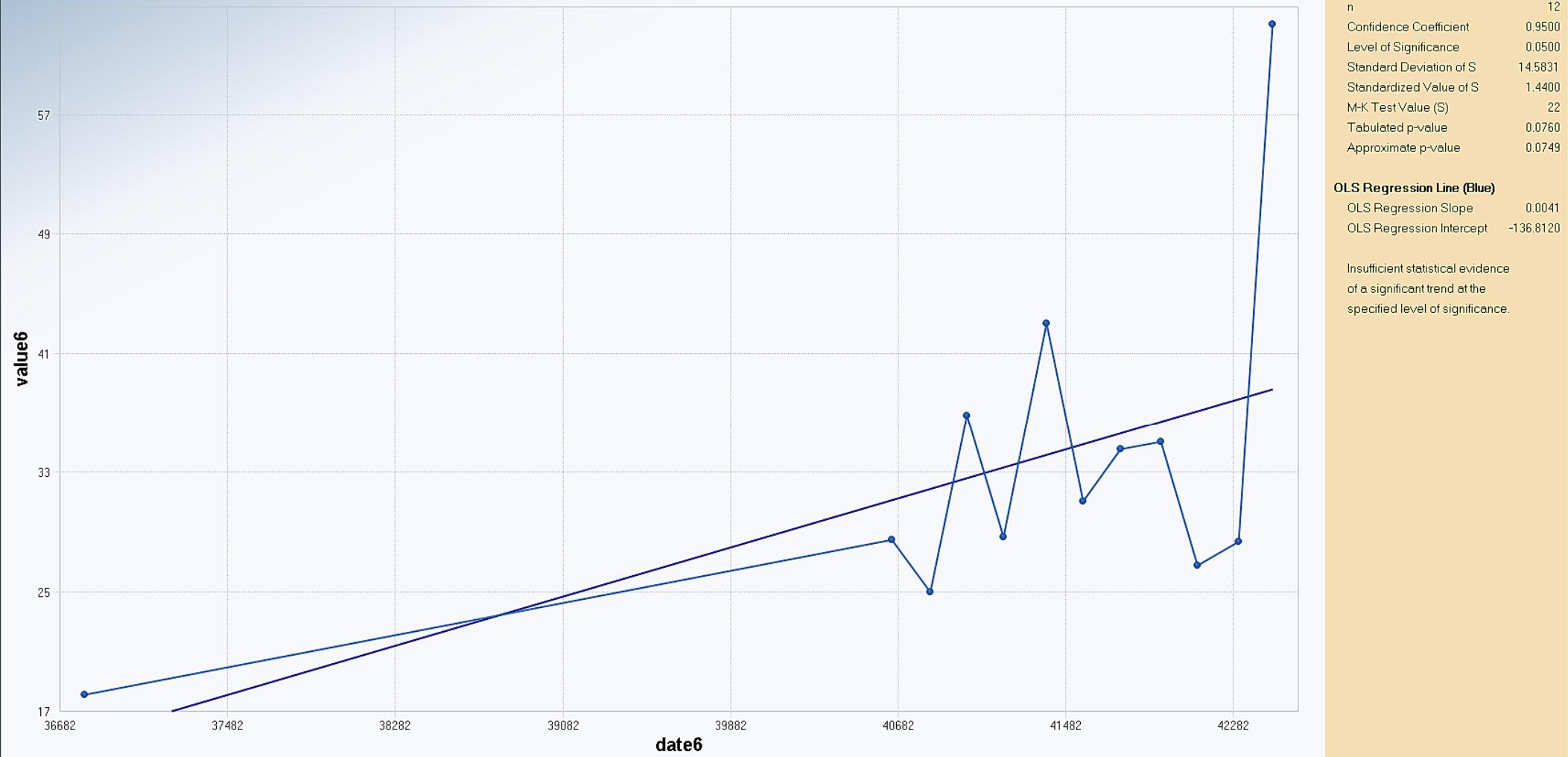
Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Test OW12A



Mann-Kendall Trend Test OW12B



Mann-Kendall Trend Test OW13A

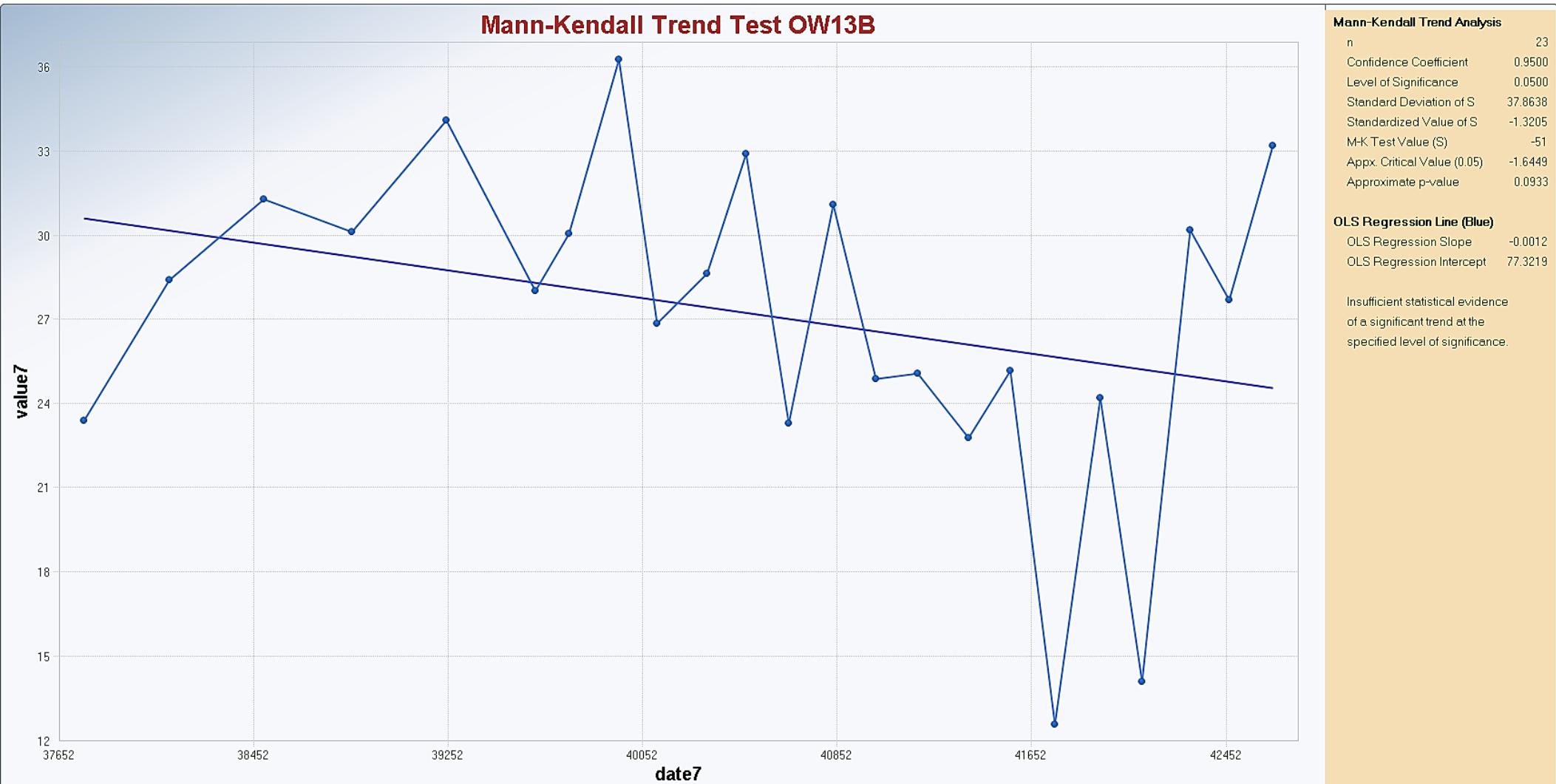
Mann-Kendall Trend Analysis	
n	15
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	20.0915
Standardized Value of S	0.6968
M-K Test Value (S)	15
Tabulated p-value	0.2480
Approximate p-value	0.2430

OLS Regression Line (Blue)	
OLS Regression Slope	0.0000
OLS Regression Intercept	0.5420

Insufficient statistical evidence
of a significant trend at the
specified level of significance.



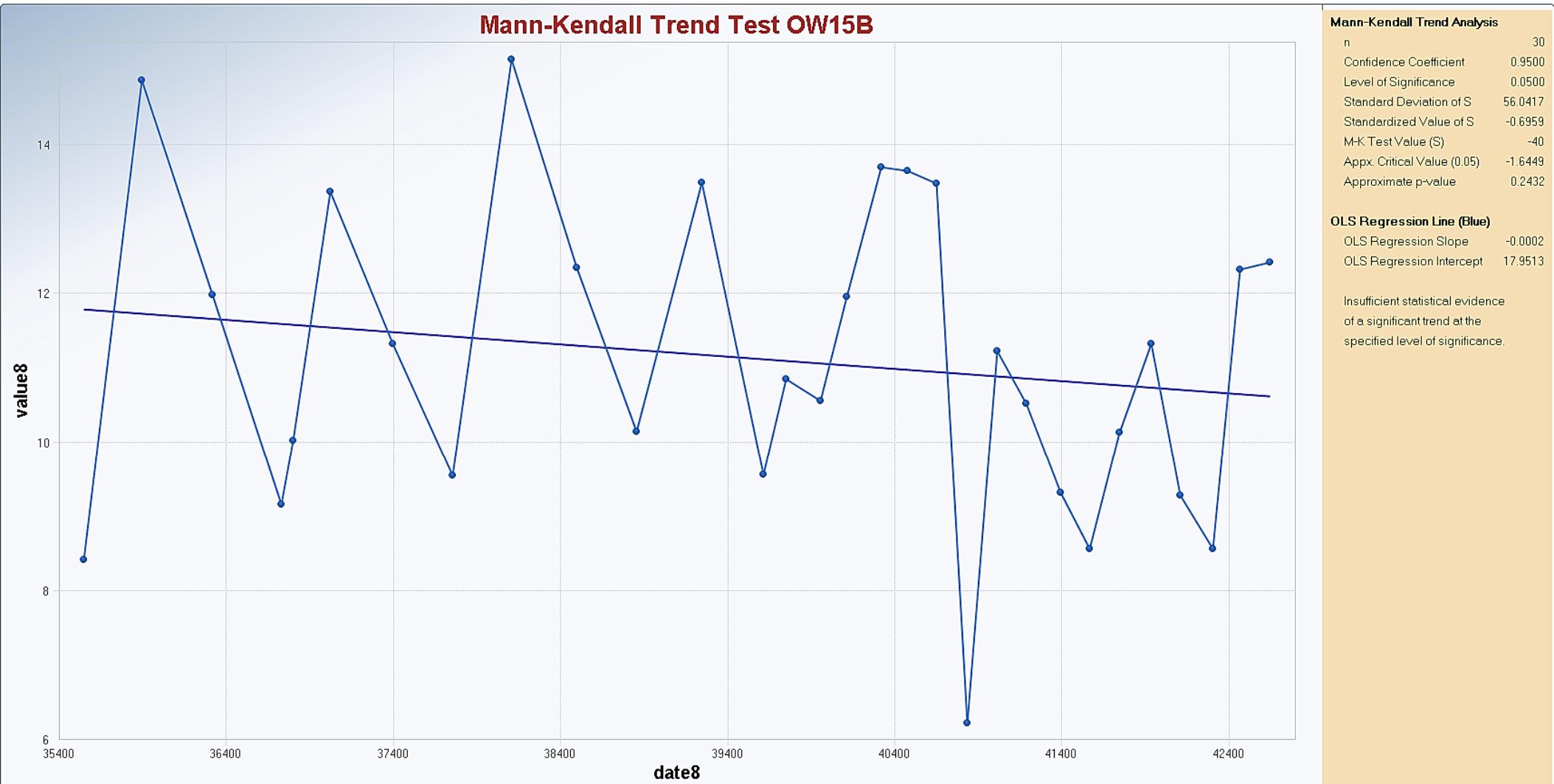
Mann-Kendall Trend Test OW13B



Mann-Kendall Trend Test OW15A



Mann-Kendall Trend Test OW15B



Mann-Kendall Trend Test OW17A

Mann-Kendall Trend Analysis	
n	14
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	18.2392
Standardized Value of S	-0.6031
M-K Test Value (S)	-12
Tabulated p-value	0.2590
Approximate p-value	0.2732

OLS Regression Line (Blue)	
OLS Regression Slope	0.0001
OLS Regression Intercept	-1.9039

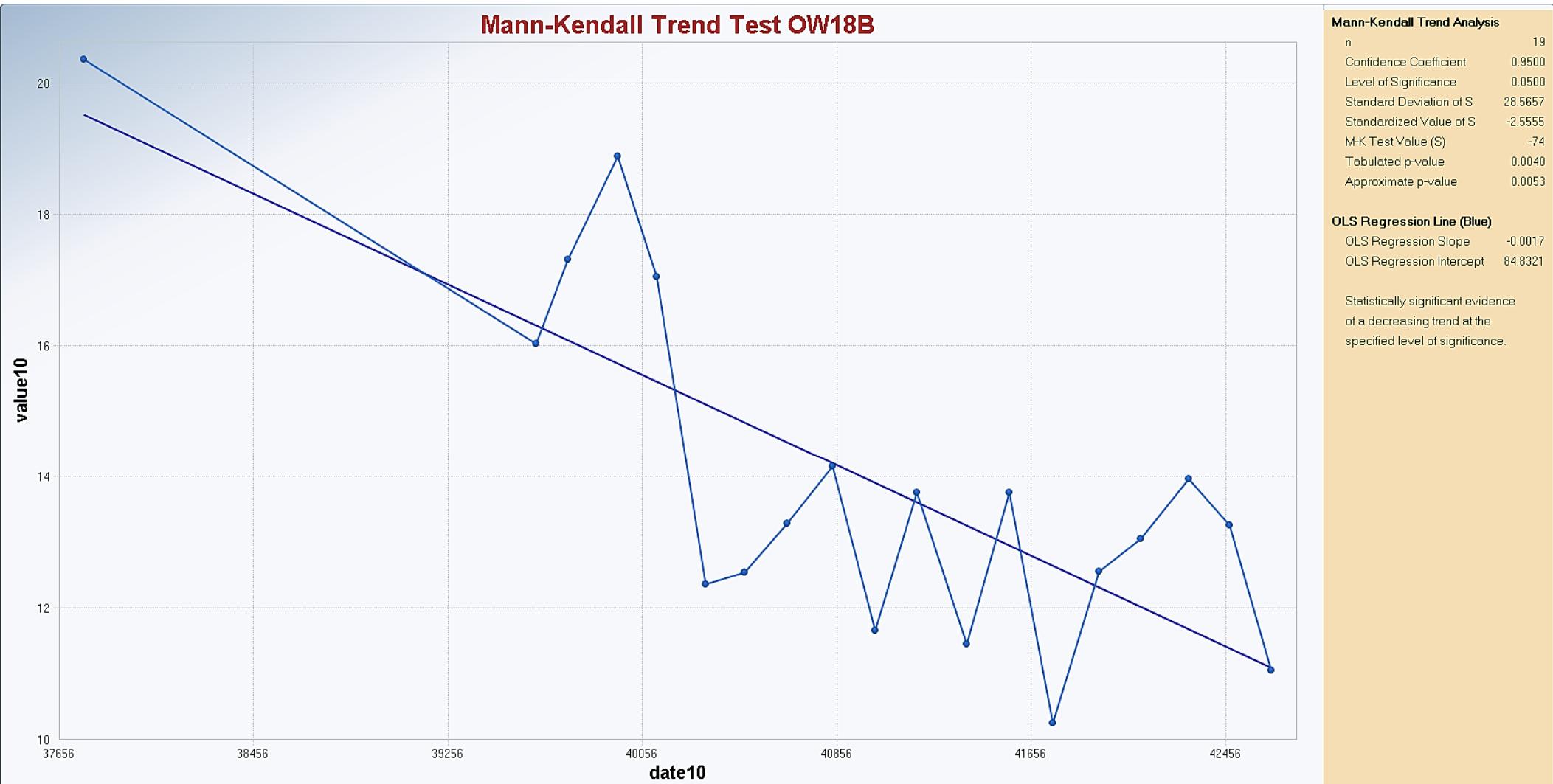
Insufficient statistical evidence
of a significant trend at the
specified level of significance.



Mann-Kendall Trend Test OW17B



Mann-Kendall Trend Test OW18B



Mann-Kendall Trend Test MW423

