2019 Water Quality Report

U.S. Army Corps of Engineers
Saint Louis District

Lake Shelbyville Water Quality Conditions: 2014-2019

July 2020

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Prepared for

United States Army Corps of Engineers
Saint Louis District
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EXECUTIVE SUMMARY

The United States Army Corps of Engineers (USACE) commitment to environmental compliance and protection of estuaries, rivers, lakes, and navigable waters arises from the national policy and directives expressed in Federal Statutes, Executive Orders, and internal regulations. These regulations were designed to minimize pollution, maximize recreation, protect aesthetics, preserve natural resources, and promote the comprehensive planning and use of water bodies to enhance the public interest rather than private gain; therefore, USACE, in the design, construction, management, operation, and maintenance of its facilities, will exert leadership within existing authorities and appropriations in the nationwide effort to protect, enhance, and sustain the quality of the nation's resources. It is USACEs policy to comply with requirements of the Clean Water Act and not to degrade existing water quality conditions to the maximum extent that is practicable, consistent with project authorities, Federal legal and regulatory requirements, the public interest, and water control manuals.

The United States Army Corps of Engineers, Saint Louis District (CEMVS), implemented a water quality monitoring program during the 1970s to evaluate how its civil projects may be affecting water resources. Data collected from this effort serves as an invaluable tool for evaluating the significance of annual water quality measurements and tracking long-term trends. Water quality data is provided to the Missouri Department of Natural Resources and the Illinois Environmental Protection Agency to be used as a screening mechanism for the Missouri and Illinois Water Quality Report which is required every two years by the Clean Water Act Sections 303(d) and 305(b).

The National Water Quality Inventory Report to Congress (305(b) report) is the primary vehicle for informing law makers and the public about general water quality conditions in the United States. This document characterizes our water quality, identifies widespread water quality problems of national significance and describes various programs implemented to restore and protect our waters. Currently the Illinois Environmental Protection Agency (IEPA, 2018) has listed Lake Shelbyville impaired for Total Suspended Solids, total phosphorus, and mercury, while the Kaskaskia upstream of the Lake is impaired for PCB's, dissolved oxygen, pH, Fecal Coliform, and mercury. The lists of sources for these impairments are runoff, crop production, shore modifications, and recreational pollution.

Water quality sampling in 2019 revealed some minor concerns at Lake Shelbyville. The following parameters exceeded state standards during the 2019 sampling season: phosphorus, nitrogen, iron, and total suspended solids.

TABLE OF CONTENTS

INTRODUCTION

Lake Shelbyville is located in Shelby and Moultrie Counties of east-central Illinois with the dam site approximately one-half mile east of Shelbyville. Two rivers, the West Okaw and the Kaskaskia, drain into Lake Shelbyville. The Kaskaskia River begins in Champaign County, while the West Okaw headwaters drain farmland from Piatt County southward. At normal recreation pool, the 11,100 acre lake is approximately 20 miles long, varying in width from one-quarter to one mile. Average depth is 19 feet, with depths much deeper in the original river channel. The Kaskaskia River is an important and prominent natural feature in Central and Southwestern Illinois. The watershed, primarily agricultural, is the second largest river system within Illinois, originating in Champaign County and flowing in a southwesterly direction for approximately 292 miles, where it unites with the Mississippi River in Randolph County. The Kaskaskia River Watershed encompasses an area of 5,746 square miles (10.2% of the entire state). The CEMVS manages and operates two large reservoirs on the Kaskaskia River, Lake Shelbyville and Carlyle Lake, as well as the 36 mile long navigable channel and lock and dam at the Kaskaskia River Project.

Shelbyville Lake is managed and operated by the CEMVS for the authorized purposes of flood risk management, recreation, water supply, navigation, and fish and wildlife conservation. The lake serves as a heavy recreational usage lake. The land surrounding the lake is used predominately for agriculture. Surrounding communities have existing industrial/commercial operations and residents which discharge wastewater into municipal wastewater treatment plants that ultimately discharge treated water into the Kaskaskia River basin. Agricultural runoff and municipal wastewater treatment facilities are the primary potential source of pollution into the Lake Shelbyville watershed. Additional sources are marinas, recreational watercraft discharges and wildlife fecal material runoff.

Water quality is of paramount importance for sustaining ecological integrity and services provided by the Kaskaskia River and Lake Shelbyville. Water quality is influenced by a range of both point and nonpoint pollution sources, which may include natural processes, industrial and municipal effluents, and surface runoff from agricultural arenas.

The Saint Louis District (CEMVS) of United States Army Corps of Engineers (USACE) has implemented a Water Quality Management Plan (WQMP) as part of the operation and maintenance activities associated with managing USACEs' civil works projects throughout the District which includes, among other reservoirs and rivers, the Kaskaskia River and Lake Shelbyville. The WQMP addresses surface water quality management issues and adheres to the guidance and requirements specified by Clean Water Act (CWA), as well as the self-imposed Engineering Regulation (ER) 1110-2-8154, "Water Quality and Environmental Management for USACE Civil Works Projects" (USACE,

2018). Water quality monitoring is implemented to fulfill five primary objectives that drive the CEMVS WQMP:

1) Establish baseline conditions, identify significant water quality trends, and document problems and accomplishments.
2) Ensure that surface water quality, as affected by CEMVS projects, is suitable for project purposes, existing water uses, public health and safety, and in compliance with applicable state and federal water quality standards.
3) Provide support to water control, project operations, and navigation for regulations and modifications.
4) Investigate special problems, design and implement modifications, and improve water management procedures
5) Establish and maintain strong working partnerships and collaborations with appropriate entities within and outside USACE regarding water quality.

This report is intended to document and assess water quality conditions occurring at Lake Shelbyville. The report describes conditions observed in 2019, as well as baseline data collected from 2014-2018. Additional historical data are available upon request.

LAKE SHELBYVILLE WQMP COVERAGE

The WQMP for Lake Shelbyville includes water samples taken at the following locations: major tributaries (SBV-12 and SBV-13), main body of the lake (SBV-2, SBV-4, SBV-11, and the marinas), and just downstream of the dam (SBV-1). See figure 1 and Table 1 for a site map and site coordinates.

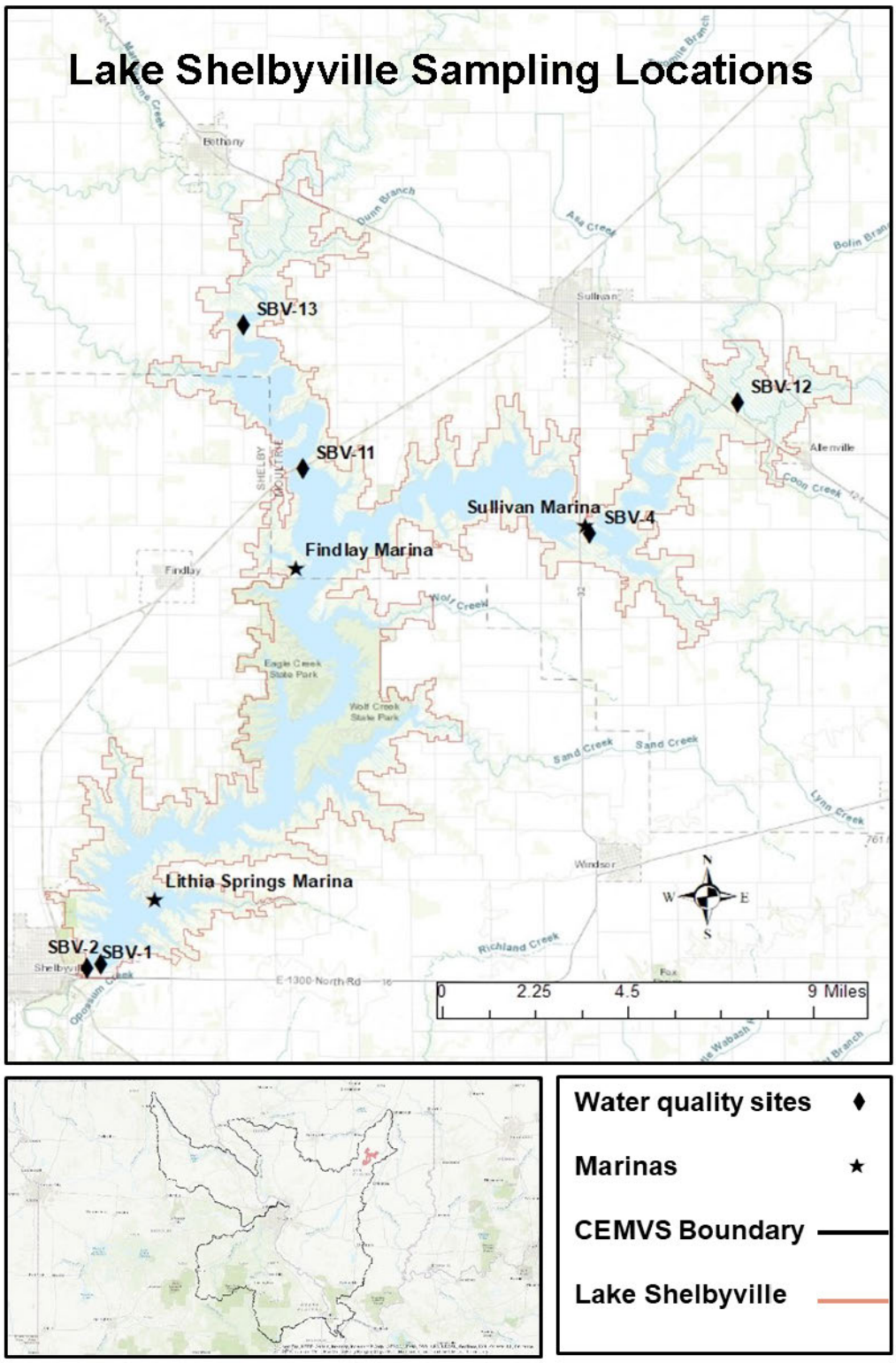


Figure 1. Water Quality (WQ) Sampling Locations in 2019 at Lake Shelbyville

Sample Location Summary Table

Table 1: Sample Location Summary and Geographic Location (NAD 1983)

Sample Location Type	Abbreviation	Site Name	Latitude	Longitude
Major Tributary	TRIB	SBV-13	39.59417	-88.72651
	TRIB	SBV-12	39.57170	-88.55345
Main Reservoir Surface	RS	SBV-2	39.40947	-88.77614
	RS	SBV-4	39.53397	-88.60528
	RS	SBV-11	39.55269	-88.70556
	RS	SBV-FIN	39.52388	-88.70820
	RS	SBV-LS	39.42802	-88.75728
	RS	SBV-SUL	39.53635	-88.60675
Reservoir Benthic	RB	SBV-2-10	39.40947	-88.77614
Tail Race (below dam)	TR	SBV-1	39.40823	-88.78124

Samples at Marinas are not always taken in the exact same location.

METHODS AND ANALYSIS: WATER QUALITY

Data Collection and Historical Reference Data

During 2019, water quality samples were collected and analyzed for 10 locations during four separate sampling events (n=40; Table 1). One duplicate sample was also collected during each sampling event for quality control purposes. Samples were collected from the upper one meter of the water column, preserved, and transported to the Applied Research and Development Laboratory (ARDL) in Mount Vernon, Illinois for analysis.

For the purpose of this report, historical reference data refers to water quality data collected during the previous five years (2014-2018) at Lake Shelbyville. Historical reference data are intended to represent the current condition of Lake Shelbyville.

Statistical Summary and Comparison to Applicable Water Quality Standards

Statistical analyses were performed on water quality monitoring data collected for 10 locations, and classified as TRIB (n= 2), RS (n=3), RB (n=1), and TR (n=1). Descriptive statistics were calculated to describe central tendencies and corresponding 95% confidence levels for the geometric mean. Monitoring results were compared to applicable water quality standard criteria established by the appropriate state agencies pursuant to the Federal Clean Water Act. If a state water quality standard criteria was not available, recommended criteria from the literature were considered.

Seasonal data are classified as: Winter (December 01 - March 14), Spring (March 15 – May 31), Summer (June 1 – September 15), Fall (September 16 – November 30).

Quality Assurance

The United States Army Corps of Engineers, Saint Louis District quality assurance procedures considers two primary focus areas: (1) those that involve laboratory analysis of samples, and (2) those concerning the collection and processing of the water samples in the field.

Since 2012, ARDL has analyzed water quality samples for CEMVS. Their quality assurance program includes the use of quality control charts, check standards, field and in-house matrix spikes, laboratory blanks and performance evaluation samples. In addition, one blind duplicate sample is submitted for at least every 20 samples, or, in this case, every sampling event (one event/day at Lake Shelbyville has 6 samples and one duplicate).

Internal checks are also used for field sampling. This includes adherence to operating procedures for data collection and periodic evaluation of sampling personnel. Field sampling equipment and multimeters are calibrated/serviced in accordance with factory recommendations.

Water Quality Parameters and Criteria

Parameters used to characterize water quality have been generally accepted criteria for assessing aquatic life and human health include:

Temperature (Temp) is important because it controls several aspects of water quality. Colder water holds more dissolved oxygen which is required by aquatic organisms. Plants grow more rapidly and use more oxygen in warmer water. Decomposition of organic matter which uses oxygen is accelerated in warmer water. Temperature can also determine the availability of toxic compounds such as ammonia. Since aquatic organisms are cold blooded, water temperature regulates their metabolism and ability to survive. The number and kinds of organisms that are found in streams or lakes is directly related to temperature. Certain organisms require a specific temperature range, such as Salmonids, which require water temperatures below 20°C. Water temperature criteria for warm water bodies in Illinois is within 2.8°C of the seasonal norm.

Dissolved Oxygen (DO) refers to the measurement of free oxygen molecules (O_2) that are not bonded to any other elements; thus, oxygen bonded in water (H_2O) would not be considered in a measurement of dissolved oxygen. Oxygen is dissolved in surface waters through interactions with the atmosphere and as a waste product of photosynthesis ($CO_2 + H_2O$ (CH_2O) + O_2) from phytoplankton and aquatic vegetation. Additional factors influencing DO include temperature, pressure, and salinity.

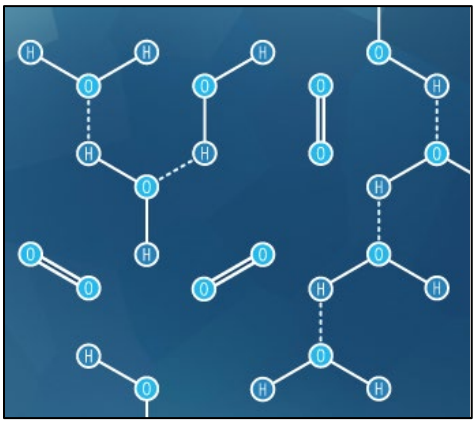


Figure 1: Dissolved oxygen (O_2) vs oxygen bonded in water (H_2O).

Dissolved oxygen is required for most aquatic life including fish, invertebrates, bacteria, and plants. Fish and invertebrates utilize DO for respiration through gills and cutaneous breathing, and plants require dissolved oxygen for respiration when photosynthesis is not possible. Smaller microbes and bacteria utilize DO for decomposition of organic materials, a process essential for nutrient cycling. Bottom feeders such as worms and mussels can persist when DO is ≥1mg/L, while most inland fish species require a minimum DO of 4mg/L. The DO water quality criteria for Illinois is ≥5mg/L.

Potential of Hydrogen (pH) is a measure of how acidic or basic water is. Potential of Hydrogen is reported on a logarithmic scale ranging from 0 – 14, with 7.0 being neutral. As pH increases from 7.0, water increases in alkalinity, whereas a decrease from 7.0 indicates an increase in acidity. Since pH is measured on a logarithmic scale, every one-unit change in pH indicates a 10-fold change in acidity; thus, a pH of 6.0 is ten times more acidic than a pH of 7.0 and a pH of 4.0 would be one-thousand times more than a pH of 7.0.

The pH of water varies considerably beyond the local level. Natural variation in bedrock and soil composition through which water moves has been reported as one of the most influential factors. Additional factors include decomposition of organic materials, acidity of local precipitation, discharge of effluents and chemicals, and mining operations.

Most freshwater streams and rivers have a natural pH ranging from 6 to 8. As pH approaches 5 (acidic), less tolerant fish and aquatic invertebrate assemblages may be extirpated, and a pH below 4.5 would be without most desired aquatic life. Conversely, when pH exceeds 9.5 (alkaline), aquatic fish and invertebrate begins to rapidly decrease and beyond 10, fish become extirpated. The pH water quality criteria for Illinois ranges from 6.5 – 9.0.

Conductivity is a measure of water's ability to conduct electrical current. In its purist form, water has a *near* neutral charge, indicating that it is an inefficient conductor of electrical current. Thus the ability to carry electrical current is driven by water soluble ions (atoms and molecules with a charge) such as salts and other inorganic materials. Conductivity is also influenced by water temperature; as temperature increases, conductivity increases. For this reason, conductivity is commonly reported as Specific Conductivity (SpCond), which is the measurement of conductivity at 25 degrees Celsius.

Conductivity in streams and rivers is affected by the geology of the area. Streams running through granite tend to have lower conductivity due to granite being composed of inert material; materials that do not ionize or dissolve into ionic compounds in water. Conversely, streams that run through areas of limestone or clay soils tend to have higher conductivity readings because of the presence of materials that ionize. Conductivity is useful as a general measure of water quality. A stream tends to have a relatively constant range of conductivity that, once established, can be used as a baseline. Significant changes, either increases or decreases, might indicate a source of pollution has been introduced into the water. The pollution source could be a treatment plant, which raises the conductivity, or an oil spill, which would lower the conductivity. In general, there are no water quality criteria for SpCond. The District threshold of 500 µS/cm is a rule of thumb value that is often associated with some form of biological impairment.

Oxidation Reduction Potential (ORP) is a measurement of the net status of all the oxidation and reduction reactions in a given water sample. Oxidation involves an exchange of electrons between 2 atoms. The atom that loses an electron is oxidized and the one that gains an electron is reduced. Oxidation reduction potential sensors measure the electrochemical potential between the solution and a reference electrode. Readings are expressed in millivolts. Positive readings indicate increased oxidizing potential and negative readings increased reduction. Oxidation reduction potential values are used much like pH values to determine water quality. While pH readings characterize the state of a system relative to the receiving or donating hydrogen ions (base or acid), ORP readings characterize the relative state of losing or gaining electrons. Generally ORP readings above 400mV are harmful to aquatic life; however,

ORP is a non-specific measurement, which is a reflection of a combination of effects of all the dissolved materials in the water. Therefore, the measurement of ORP in relatively clean water has only limited utility unless a predominant redox-active material is known to be present.

Total Suspended Solids (TSS) concentrations, which cause the photosynthetic activity to be reduced by more than 10% from the seasonably established norm, can have a detrimental effect on aquatic life. Soil particles, organic material, and other debris comprise suspended solids in the water column. **Turbidity (FNU)** measurements are inverse to suspended solid measurements. As TSS increases, the FNU or water transparency decreases. Total suspended solids can be an important indicator of the type and degree of FNU. Total Suspended Solids measurements represent a combination of **Volatile Suspended Solids (VSS)**, which consist of organic material, and **Nonvolatile Suspended Solids (NVSS)**, which is comprised of inorganic mineral particles in the water. In order to more accurately determine the types and amounts of suspended solids, VSS are analyzed. Volatile suspended solid concentration represents the organic portion of the total suspended solids. Organic material often includes plankton, and additional plant and animal debris present in water. Total VSS indicates the presence of organics in suspension; and, therefore, show additional demand levels of oxygen. Illinois Environmental Protection Agency (EPA) recommends that TSS not exceed 116 mg/L for streams and 12 mg/L for lakes. Illinois does not currently have a standard criteria for NVSS or VSS.

Total Organic Carbon (TOC) is a measure of the amount of organic carbon in a water body. In addition to natural organic substances, TOC includes insecticides and herbicides, as well as domestic and industrial waste. Industrial waste effluent may include carbon-containing compounds with various toxicity levels. Further, a high organic content means an increase in the growth of microorganisms which contribute to the depletion of oxygen supplies.

Currently, there are no state or federal water quality standard criteria set for TOC. Because carbon occurs naturally, its concentration varies based on physical and chemical attributes in a watershed; thus, this study relies on historical reference conditions to identify unfavorable conditions.

Metals Iron (TFe) and Manganese (TMn) (T=total) are nutrients for both plants and animals. Living organisms require trace amounts of metals. However, excessive amounts can be harmful to the organism. Heavy metals exist in surface waters in three forms, colloidal, particulate, and dissolved. Water chemistry determines the rate of adsorption and desorption of metals to and from sediment. Metals are desorbed from the sediment if the water experiences increases in salinity, decreases in redox potential, or decreases in pH. Metals in surface waters can be from natural or human sources. Metal levels in surface water may pose a health risk to humans and the environment.

Pesticides are commonly used throughout much of the agricultural landscape that the Kaskaskia River flows. This study considers one insecticide and seven herbicides.

Atrazine and Alachlor herbicides are commonly used agricultural chemicals which can be readily transported by rainfall runoff. Both compounds are suspected of causing cancer; and therefore, were monitored for the protection of human and aquatic health. Herbicides which are pesticides used to kill vegetation are the most widely used and sampled. Two of the most widely used herbicides are Atrazine and Alachlor. Atrazine is a preemergence or postemergence herbicide use to control broadleaf weeds and annual grasses. Atrazine is most commonly detected in ground and surface water due to its wide use, and its ability to persist in soil and move in water. Alachlor is a Restricted Use Pesticide (RUP) due to the potential to contaminate groundwater. The water quality standards for the pesticides sampled are located in Table 2.

Nitrogen occurs naturally in water through several forms including nitrogen (N2), nitrite (NO2-N), nitrate (NO3-N), ammonia (NH3), and ammonium (NH4). Nitrates are the most commonly reported form of nitrogen, and may have a meaningful influence on a water body's trophic status. Algae and other plants use NO3-N as a food source, thus excess levels of NO3-N can promote increases in algae production and hypereutrophic conditions.

In general, NO3-N does not have a *direct* effect on fish or aquatic insects. Illinois has set criteria standards for NO3-N to 10 mg/L to accommodate safe drinking waters for human and livestock; however, this threshold likely exceeds the concentration that is appropriate for assessing ecosystem health.

Total Ammonia Nitrogen (TAN) includes NH3 and NH4. Total ammonia nitrogen is a colorless gas with a strong pungent odor. Ammonia occurs naturally and is a biological requirement for aquatic life, however elevated concentrations can be toxic to freshwater organisms. Unnatural sources of ammonia include, accidental releases of ammonia rich fertilizer, effluent from sewage treatment plants, improper disposal of ammonia products, and livestock waste.

Toxic concentrations for freshwater organisms range from 0.53 – 22.8 mg/L, and are strongly dependent on both pH and temperature. In general, an increase in pH and/or temperature corresponds with an increase in toxicity. Additional information in regards to the relationship between pH, temperature, and ammonia, as it relates to toxicity, can be reviewed in Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater (USEPA 2013).

Total Phosphorus (TP) is analyzed as phosphorus, and has been monitored due to the potential for uptake by nuisance algae. Levels of phosphate can indicate the potential for rapid growth of algae (algae bloom) which can cause serious oxygen depletion during the algae decay process. Phosphorous is typically the limiting nutrient in a water body; therefore, any addition of phosphorous to the ecosystem stimulates the growth of plants and algae. Phosphorous is delivered to lakes and streams by way of runoff from agricultural fields and urban environments. Other sources of phosphorous are anaerobic decomposition of organic matter, leaking sewer systems, and point source pollution. The general standard for phosphorous in lake water is 0.05 mg/L. Dissolved

phosphorous, also called **Orthophosphate (PO_4-P)** is generally found in much smaller concentrations than total phosphorous, and is readily available for algal uptake. Orthophosphate concentrations in a water body vary widely over short periods of time as plants take it up and release it.

Chlorophyll a (CHL_a) is a measure of the amount of algae growing in a waterbody, and therefore can be used to classify trophic status. Although algae are a natural part of freshwater ecosystems, too much algae can cause aesthetic problems such as green scums and bad odors, and can result in decreased levels of DO.

Pheophytin a (PHEO a) is a natural degradation product or digestion of CHL_a. The ratio of PHEO_a to CHL_a can provide an indication of the decline or growth in eukaryotic algae and cyanobacteria populations.

Trophic Status is determined using a modified **Trophic State Index (TSI)**, as described by Carlson (1977). Trophic State Index is calculated from secchi-depth transparency, total phosphorus, and chlorophyll-a measurements. Values for these three parameters are converted to an index number ranging from 0-100 according to the following equations:

TSI (Seechi Depth) = 10(6 - (ln SD/ln 2))
TSI (Chlorophyll-*a*) = TSI(Chl) = 10(6 - ((2.04 - 0.68 ln Chl)/ln 2))
TSI (Total Phosphorus) = TSI(TP) = 10(6 – (ln (48/TP)/ln 2))

where ln indicates the Natural Logarithm

A TSI average value, calculated as the average of the three individually determined TSI metrics, is used as an overall indicator of a water body's trophic state. The relationship between TSI and trophic condition is defined as follows:

TSI	Trophic Condition
0-40	Oligotrophic
40-60	Mesotrophic
60-70	Eutrophic
80-100	Hypereutrophic

Laboratory Methods and Water Quality Criteria Summary Table

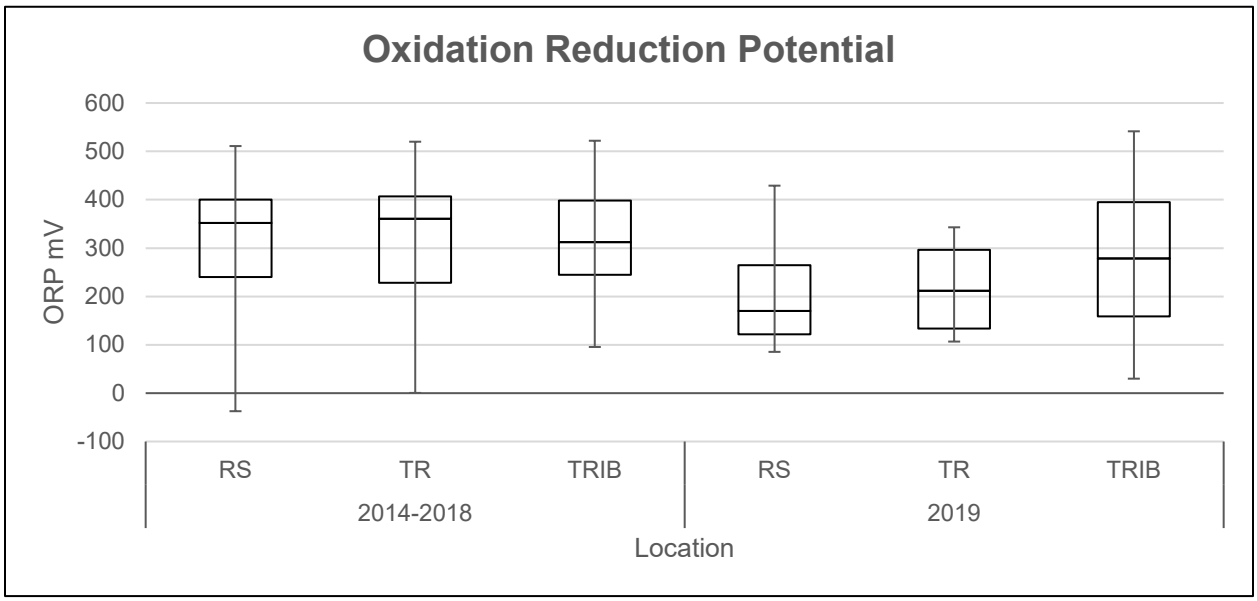
Table 2: Metrics, Methods, and Water Quality Criteria Used for Evaluating Water Quality

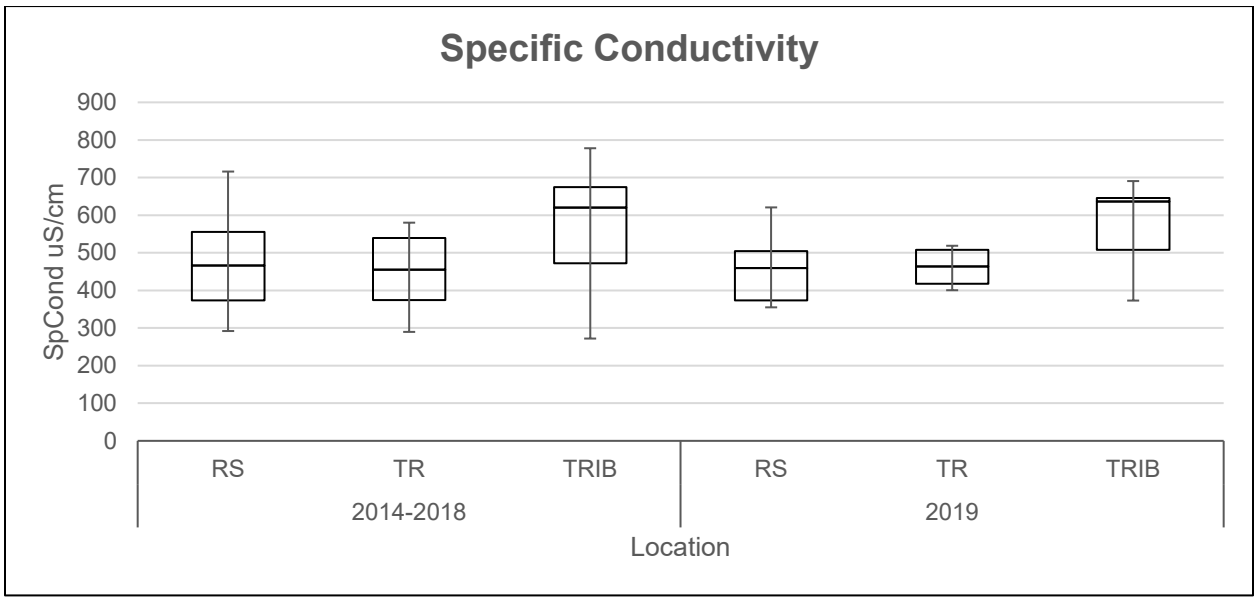
Metric	Abbreviation	Analysis Method	Water Quality Criteria	Source
Alachlor		EPA Method 8270C	< 2ug/L PWS or <1100 ug/L: aquatic life	Illinois EPA
Ammonia Nitrogen	NH_3	EPA Method 350.1	<15 mg/L	United States EPA
Atrazine	Atrazine	EPA Method 8270C	9 ug/L: Chronic or 82 ug/L: Acute or 3 ug/L DWS	Illinois EPA
Bacteria: E. Coliform	E Col	EPA Method 1604	< 235 E. Col per 100/mL for single sample	Illinois EPA
Chlorophyll a	Chl_a	SM Method 10200H	< 25mg/cm^3 (Eutrophic Upper Limit)	Carlson 1977
Chlorpyrifos		EPA Method 8270C	< .11 ug/L: aquatic life	Illinois EPA
Cyanazine		EPA Method 8270C	< 30 ug/L: chronic or < 370 ug/L acute (aquatic life)	Illinois EPA
Depth	Depth	Multiparameter Meter	Measurements reported at ~1 meter	-----
Dissolved Oxygen	DO	Multiparameter Meter	Greater than 5.0mg/L	Illinois EPA
Metolachlor		EPA Method 8270C	30.4 ug/L: Chronic or 380 ug/L: Acute	Illinois EPA
Metribuzin		EPA Method 8270C	8.4 mg/L: aquatic life or 8.3 mg/L: human health	Illinois EPA
Nitrate as Nitrogen	NO_3	Green Method	< 10 mg/L	Illinois EPA
Non-Volatile Suspended Solids	NVSS	TSS - VSS	-----	-----
Orthophosphate	Ortho	EPA Method 365.2	-----	-----
Pendmethalin		EPA Method 8270C	< 30 ug/L: chronic or < 350 ug/L acute (aquatic life)	Illinois EPA
Pheophytin a	Phpy_a	SM Method 10200H	-----	-----
Potential of Hydrogen	pH	Multiparameter Meter	Range: 6.5 – 9.0pH	Illinois EPA
Specific Conductivity	SpCond	Multiparameter Meter	500 uS/cm	-----
Temperature	Temp	Multiparameter Meter	Less than rise of 2.8°C above normal seasonal temperature	Illinois EPA
Total Dissolved Solids	TDS	Multiparameter Meter	< 500 mg/L	Illinois EPA
Total Manganese	TMn	EPA Method 6010C	< 1 mg/L	Illinois EPA

Total Organic Carbon	TOC	EPA Method 415.1	-----	-----
Total Iron	TFe	EPA Method 6010C	< 1 mg/L	Illinois EPA
Total Phosphorus	TP	EPA Method 365.2	Less than 0.05 mg/L	Illinois EPA
Total Suspended Solids	TSS	EPA Method 160.2	< 116 mg/L: streams or <12 mg/L: lakes	Illinois EPA
Trifluralin		EPA Method 8270C	< 1.1 ug/L: chronic or < 26 ug/L acute (aquatic life)	Illinois EPA
Turbidity	Turb	Multiparameter Meter	-----	-----
Volatile Suspended Solids	VSS	EPA Method 160.4	-----	-----

**1 mg/L is equivalent to 1 drop in two bathtubs and 1 ug/L is equivalent to 1 drop in an Olympic size swimming pool. PWS is public water supply. DWS is drinking water standard.*

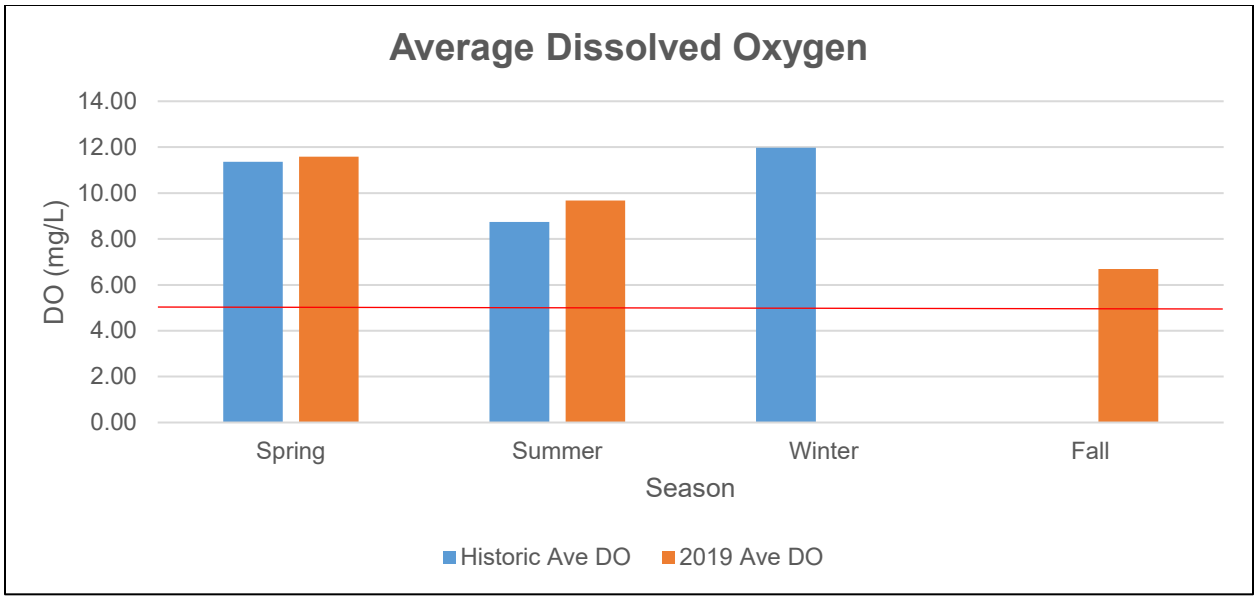
RESULTS AND SUMMARY STATISTICS: WATER QUALITY





		Historical Reference 2014-2018				2019			
	Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
SpCond	RS	465.04	466.00	52	30.19	455.97	459.70	21	40.96
	TR	452.45	455.40	17	46.22	461.60	463.60	4	92.94
	TRIB	580.27	620.00	33	45.63	575.78	636.60	8	96.89
ORP	RS	304.64	352.00	53	38.59	198.93	169.90	21	47.10
	TR	313.34	360.70	17	69.50	218.33	211.80	4	178.36
	TRIB	319.80	312.00	33	40.44	277.74	278.75	8	148.61

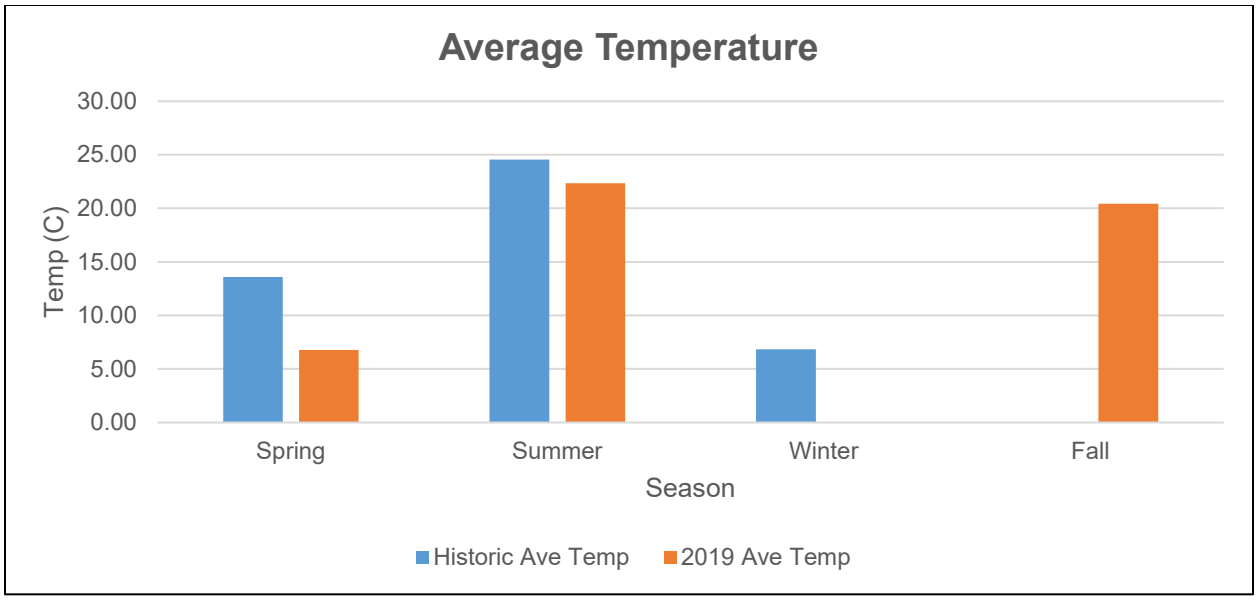
**This report does not acknowledge a water quality criteria for SpCond or ORP.*



Red line placed at the 5 mg/L level.

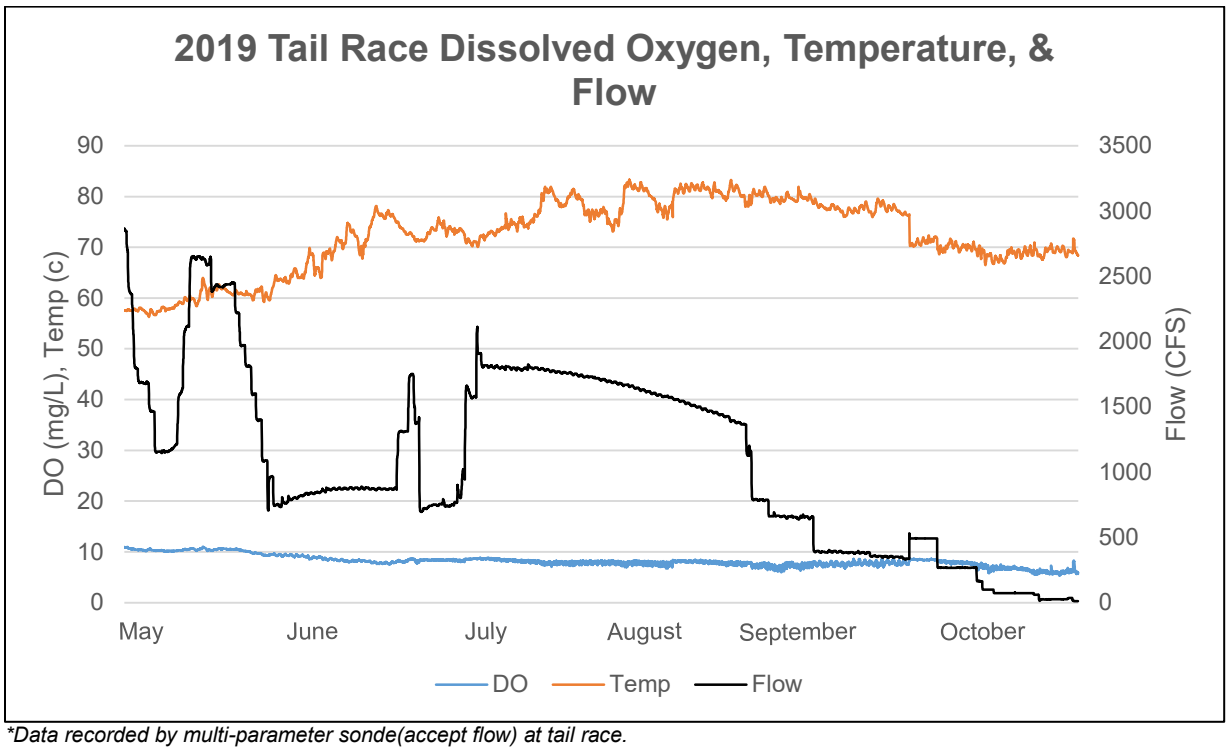
		Historical Reference 2014-2018				2019			
Season	Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
Spring	RS	10.96	11.10	31	0.82	11.15	11.12	3	2.78
	TR	11.04	11.13	29	0.89	13.31	13.31	1	
	TRIB	11.03	11.14	30	0.85	11.38	11.38	2	2.03
Summer	RS	8.05	8.50	71	0.74	8.99	8.99	16	1.92
	TR	7.93	8.37	69	0.75	9.47	9.47	2	8.96
	TRIB	7.92	8.34	70	0.73	9.93	9.52	4	2.49
Winter	RS	12.13	12.21	9	1.05				
	TR	11.91	12.04	7	1.38				
	TRIB	11.30	10.72	8	0.96				
Fall	RS					7.05	6.67	6	1.56
	TR					6.31	6.31	1	
	TRIB					5.78	5.78	2	4.51

** There were no observations of DO recorded at <5 mg/L in 2019. All observations met the Illinois state standard.*

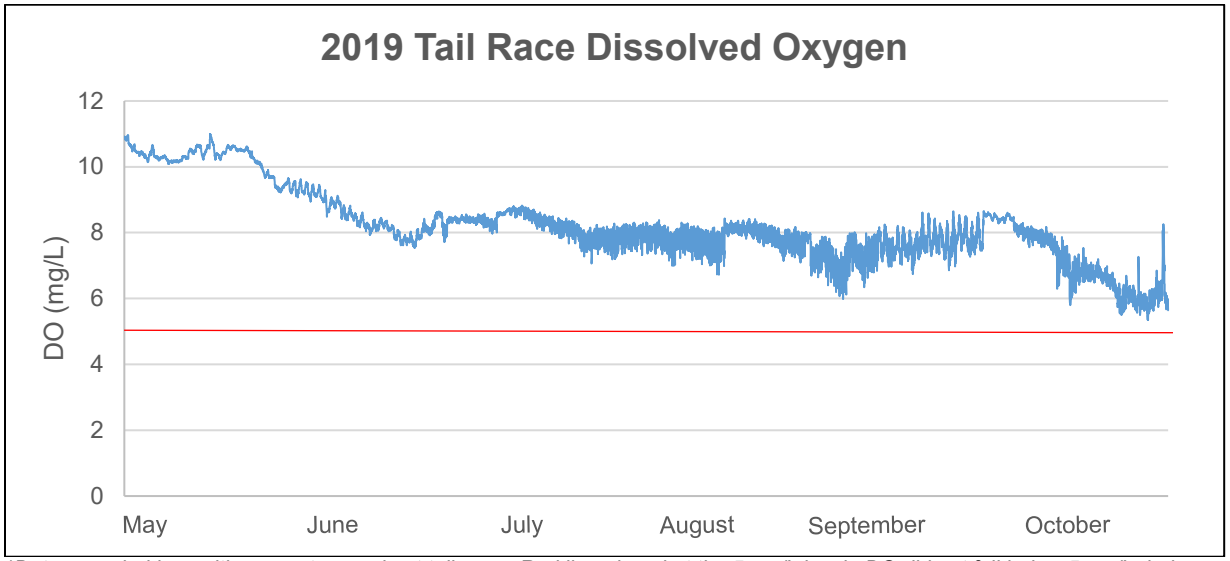


	Historical Reference 2014-2018					2019			
Season	Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
Spring	RS	13.57	13.05	15	2.17	6.96	7.56	3	4.60
	TR	12.61	12.99	5	5.01	4.94	4.94	1	
	TRIB	14.10	13.73	10	2.97	7.39	7.39	2	7.06
Summer	RS	25.59	25.88	35	0.64	22.37	22.70	12	3.24
	TR	19.90	19.32	10	2.49	20.95	20.95	2	64.17
	TRIB	25.09	25.48	20	1.15	22.96	23.07	4	10.18
Fall	RS					20.56	21.22	6	1.31
	TR					20.06	20.06	1	
	TRIB					20.28	20.28	2	12.71
Winter	RS	6.78	6.83	6	1.50				
	TR	5.77	5.77	2	13.53				
	TRIB	7.72	7.60	3	2.45				

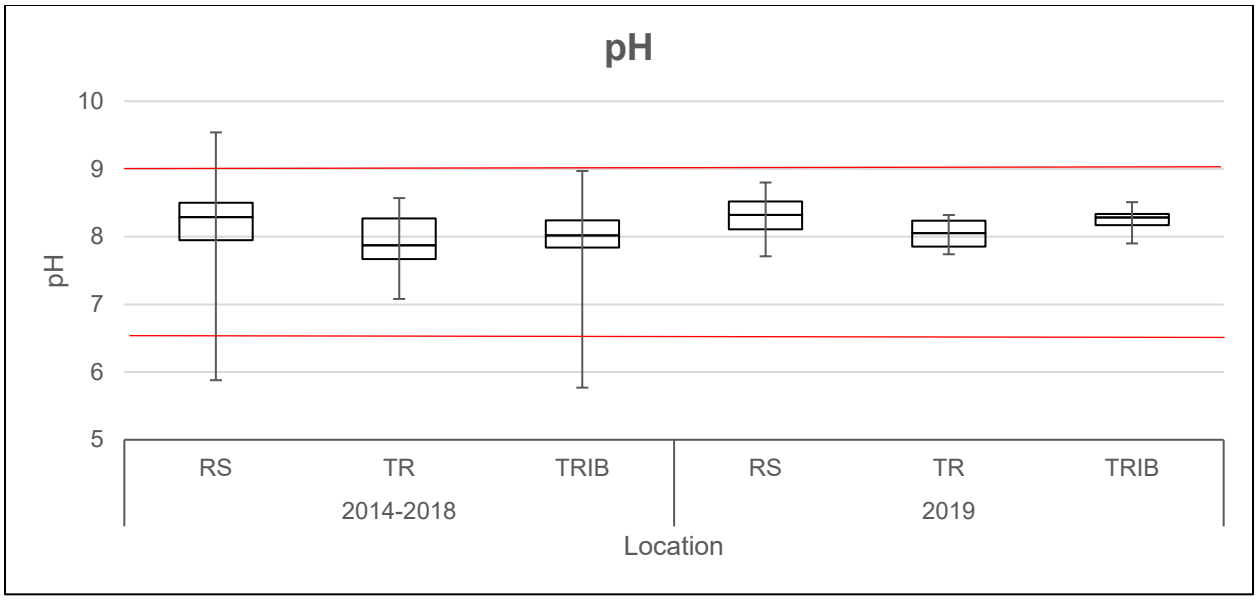
**Temperatures were within acceptable range of water quality criteria during 2019.*



*Data recorded by multi-parameter sonde(accept flow) at tail race.



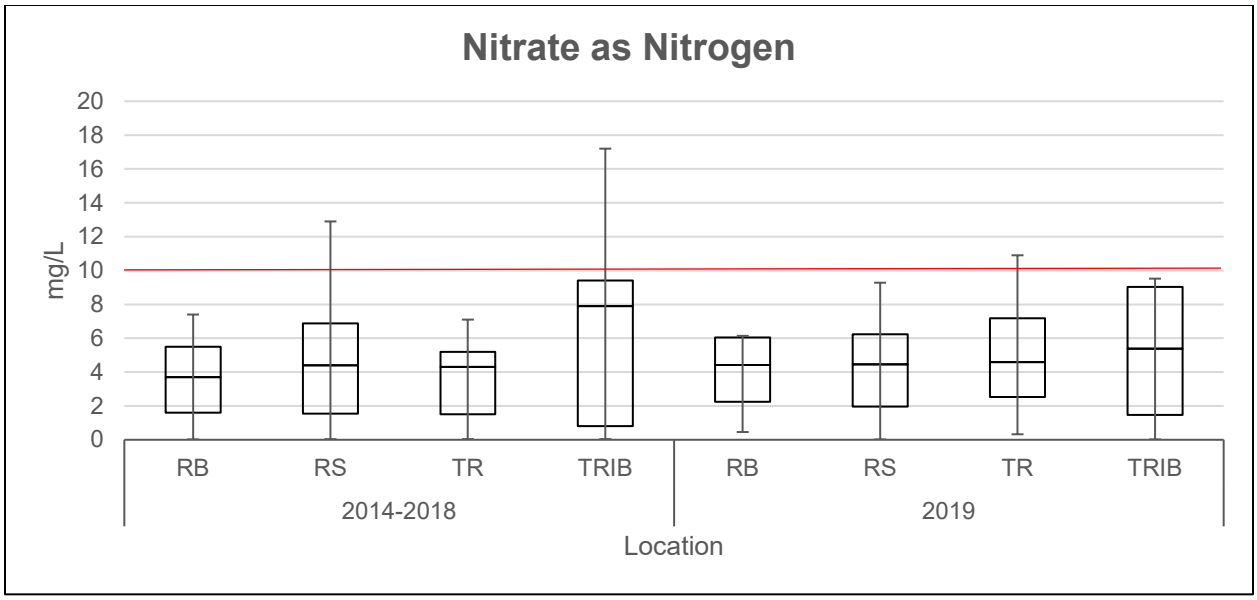
*Data recorded by multi-parameter sonde at tail race. Red line placed at the 5 mg/L level. DO did not fall below 5 mg/L during 2019.



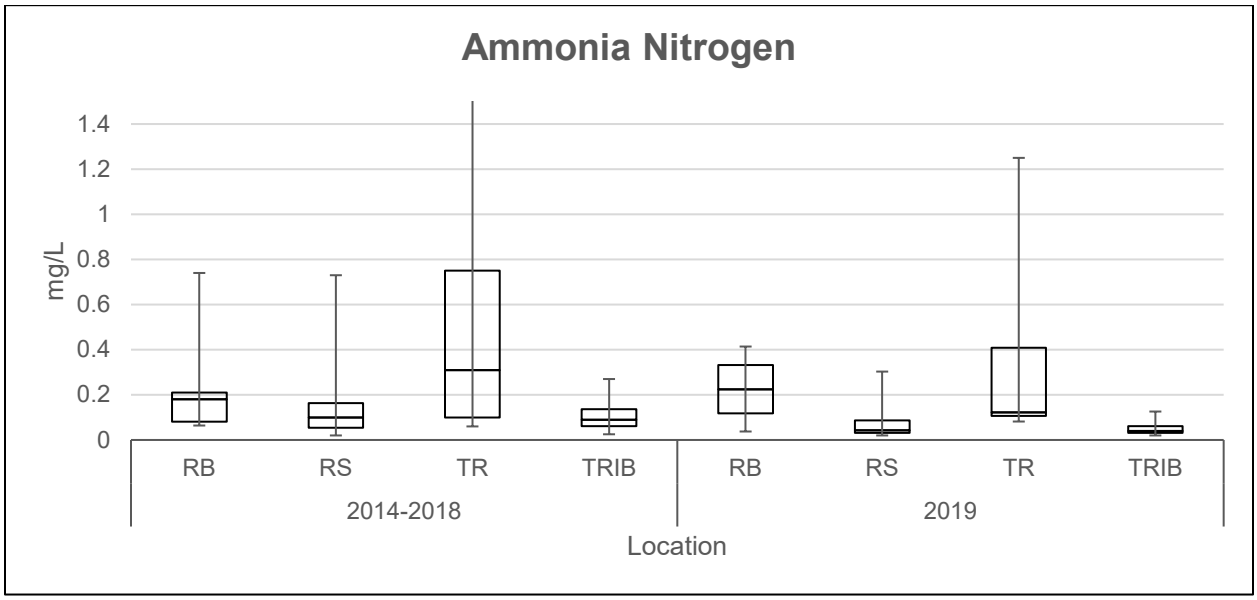
**Red lines indicate the upper and lower water quality criteria standards (9 and 6.5).*

		Historical Reference 2014-2018				2019			
	Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
pH	RS	8.14	8.29	53	0.18	8.30	8.32	21	0.14
	TR	7.91	7.87	17	0.22	8.04	8.05	4	0.43
	TRIB	8.00	8.02	33	0.19	8.25	8.29	8	0.15

pH observations were within water quality standards during 2019.

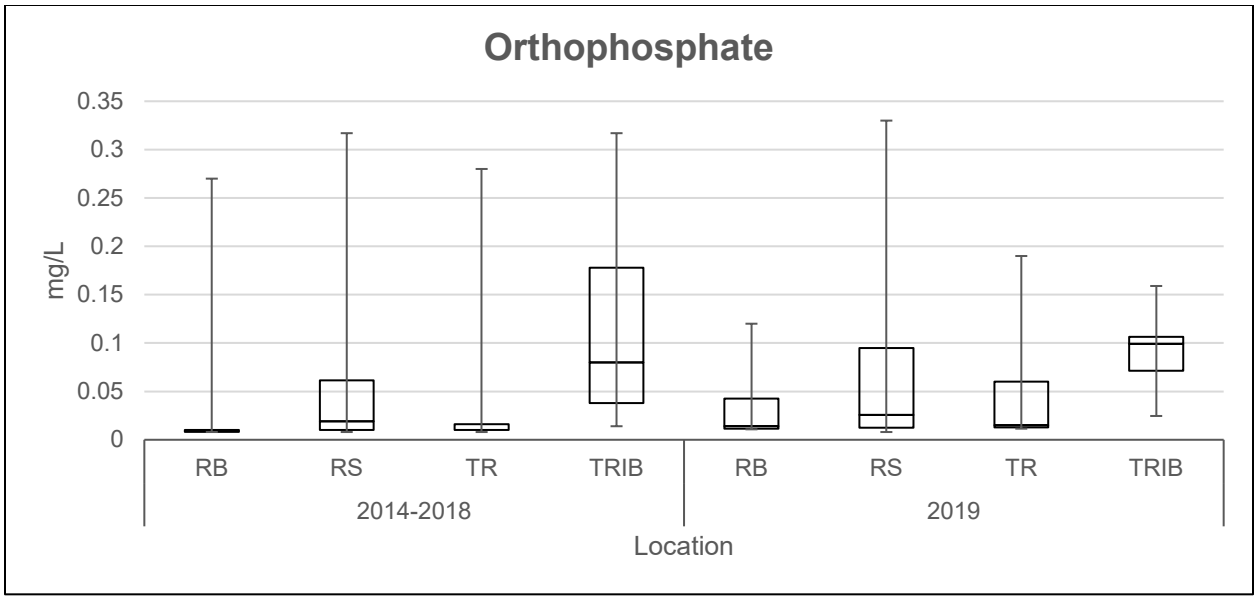


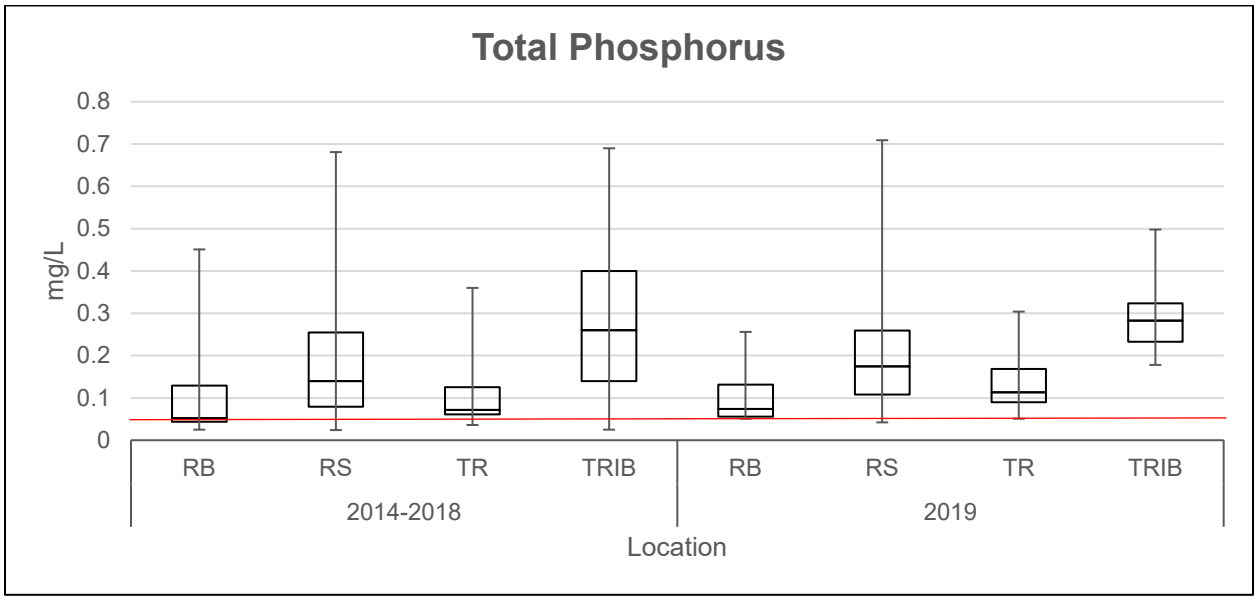
Red line indicates the water quality standard of 10 mg/L.



		Historical Reference 2014-2018				2019			
		Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
NO3N	RB	3.44	3.70	17	1.25	3.86	4.43	4	4.35
	RS	4.53	4.40	51	0.92	4.34	4.46	12	2.08
	TR	3.40	4.30	17	1.19	5.10	4.59	4	7.15
	TRIB	6.46	7.90	33	1.73	5.10	5.39	8	3.62
NH3N	RB	0.21	0.18	17	0.09	0.23	0.22	4	0.27
	RS	0.13	0.10	51	0.04	0.08	0.04	12	0.06
	TR	0.51	0.31	17	0.29	0.39	0.12	4	0.91
	TRIB	0.10	0.09	33	0.02	0.05	0.04	8	0.03

**Water quality standard 10 mg/L for nitrate was exceeded one time at the tail race location in 2019. All observations of ammonia were within the water quality standard.*

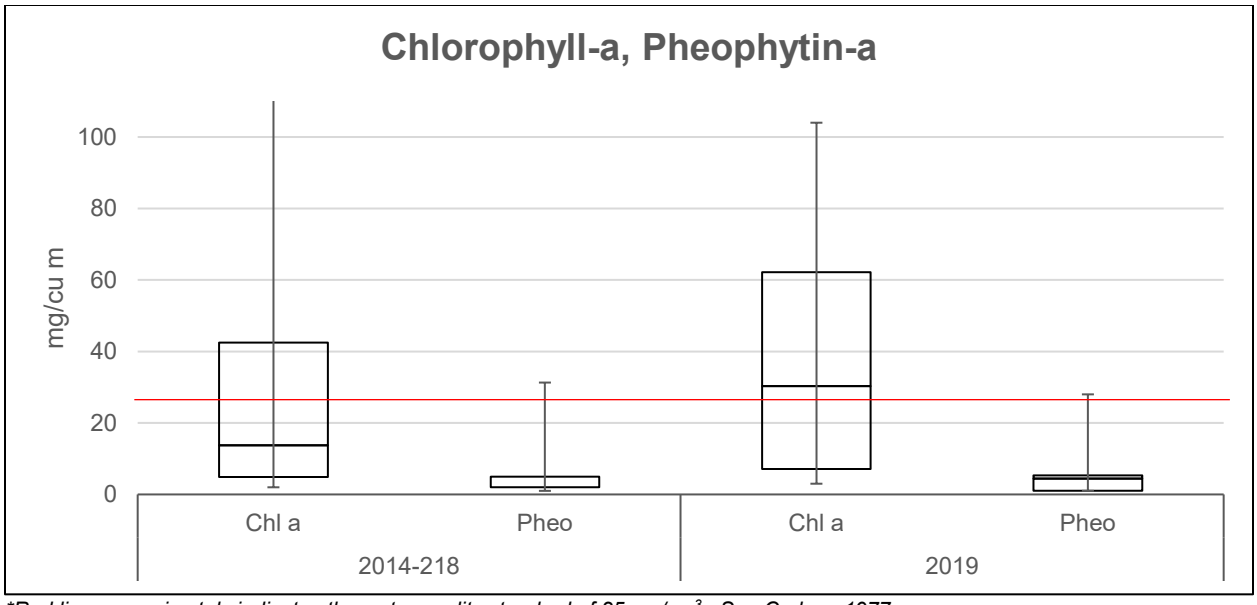




**Red line indicates the water quality standard of 0.05 mg/L.*

		Historical Reference 2014-2018				2019			
		Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
Ortho	RB	0.03	0.01	17	0.03	0.04	0.01	4	0.09
	RS	0.06	0.02	51	0.02	0.07	0.03	12	0.06
	TR	0.04	0.01	17	0.04	0.06	0.02	4	0.14
	TRIB	0.11	0.08	33	0.03	0.09	0.10	8	0.03
TP	RB	0.12	0.05	17	0.07	0.11	0.07	4	0.15
	RS	0.19	0.14	51	0.04	0.23	0.17	12	0.12
	TR	0.12	0.07	17	0.05	0.15	0.11	4	0.18
	TRIB	0.28	0.26	33	0.06	0.29	0.28	8	0.09

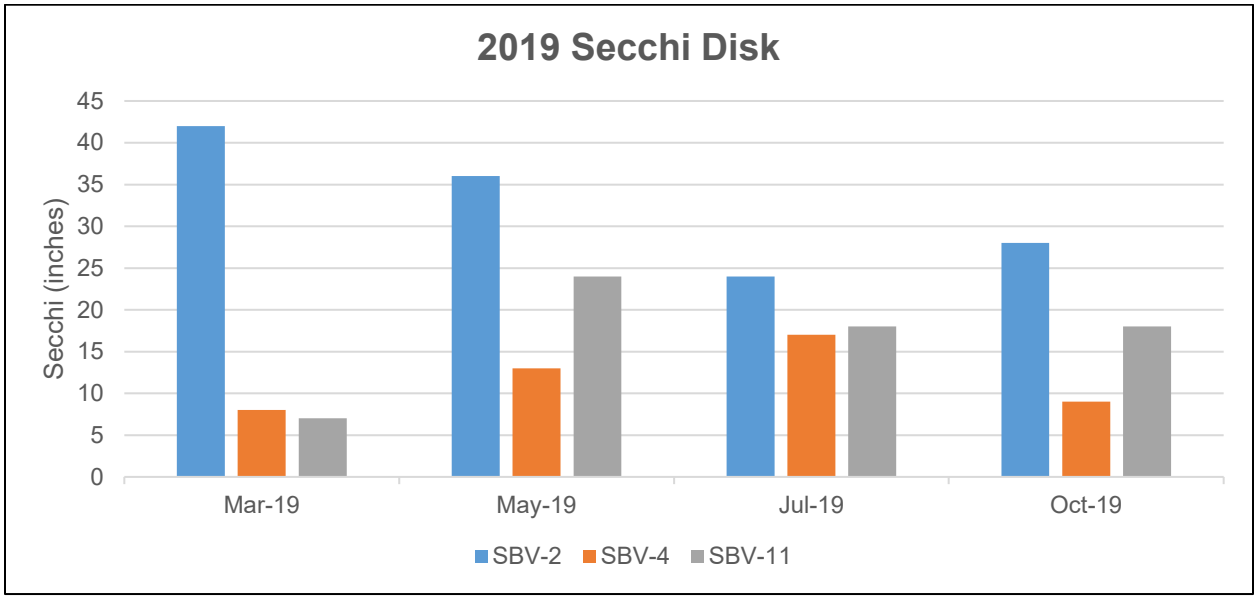
**Total phosphorus exceeded the proposed criteria of 0.05 mg/L for all locations. This study does not acknowledge a water quality criteria for orthophosphate.*

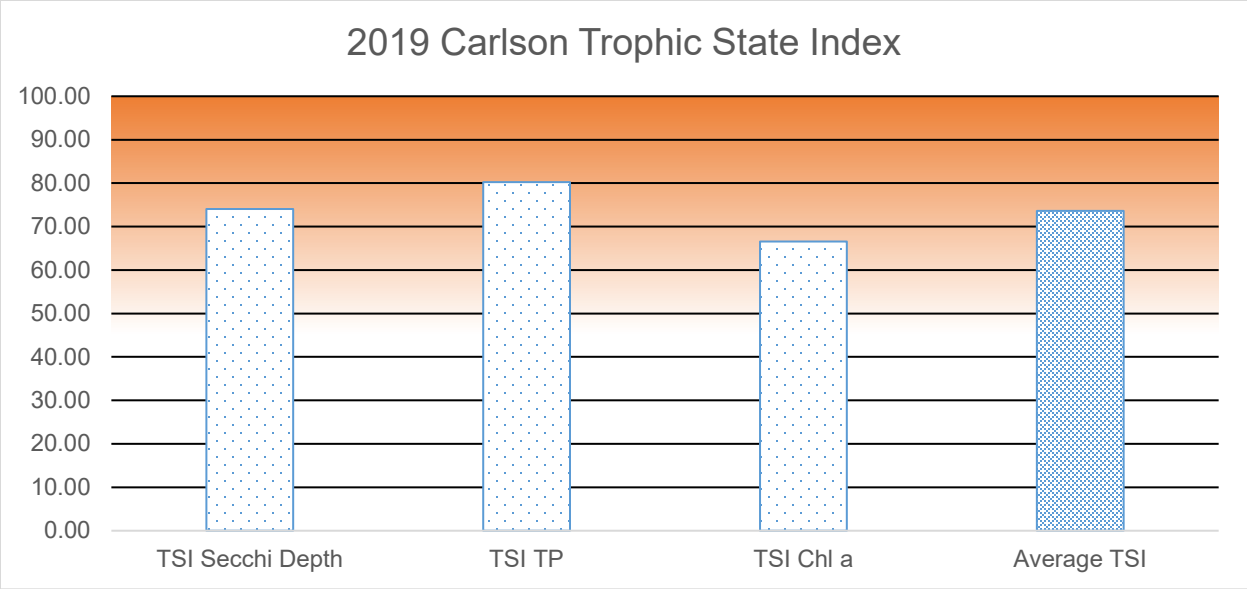


**Red line approximately indicates the water quality standard of 25 mg/cm^3. See Carlson 1977.*

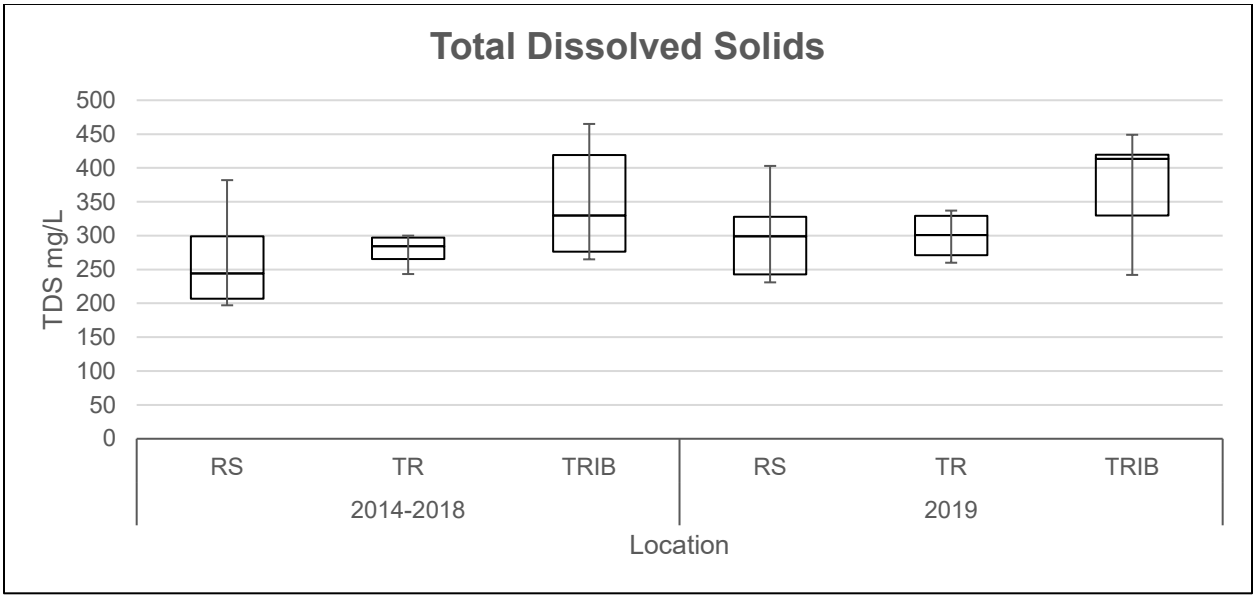
		Historical Reference 2014-2018				2019			
		Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)
Chl a	RS	28.59	13.70	51	9.73	39.10	30.35	12	20.88
Pheo a	RS	5.19	2.00	51	1.96	6.07	4.40	12	4.99

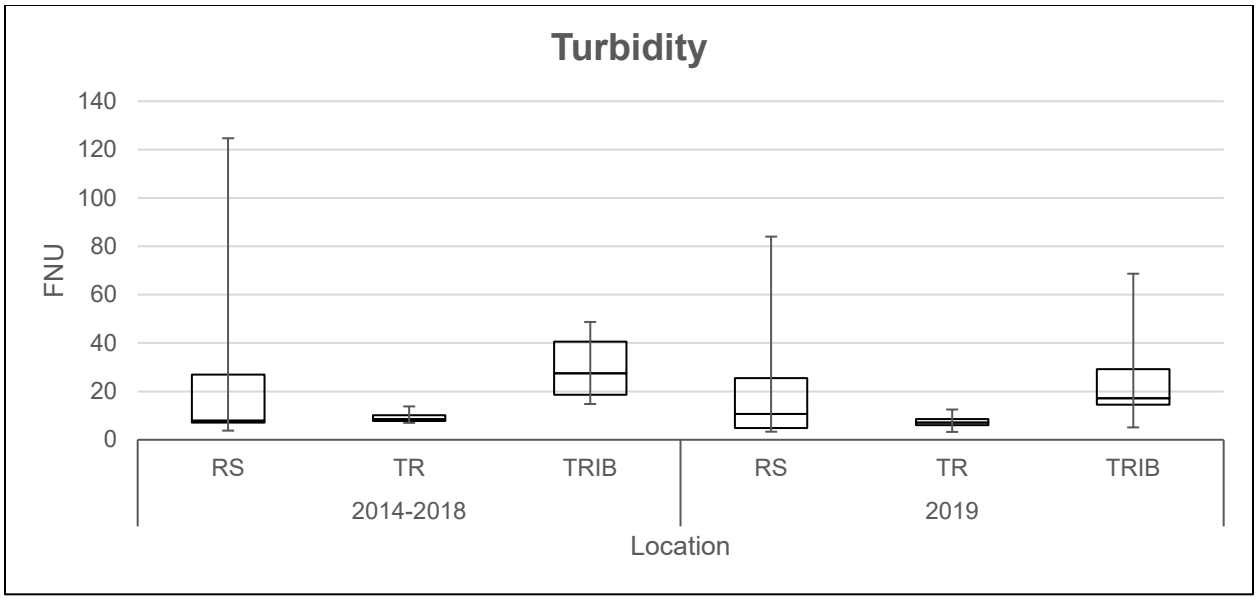
The proposed criteria for chlorophyll-a of 25mg/cm^3 was exceeded at most of the lake sites in 2019. This study does not acknowledge a criteria for pheophytin.





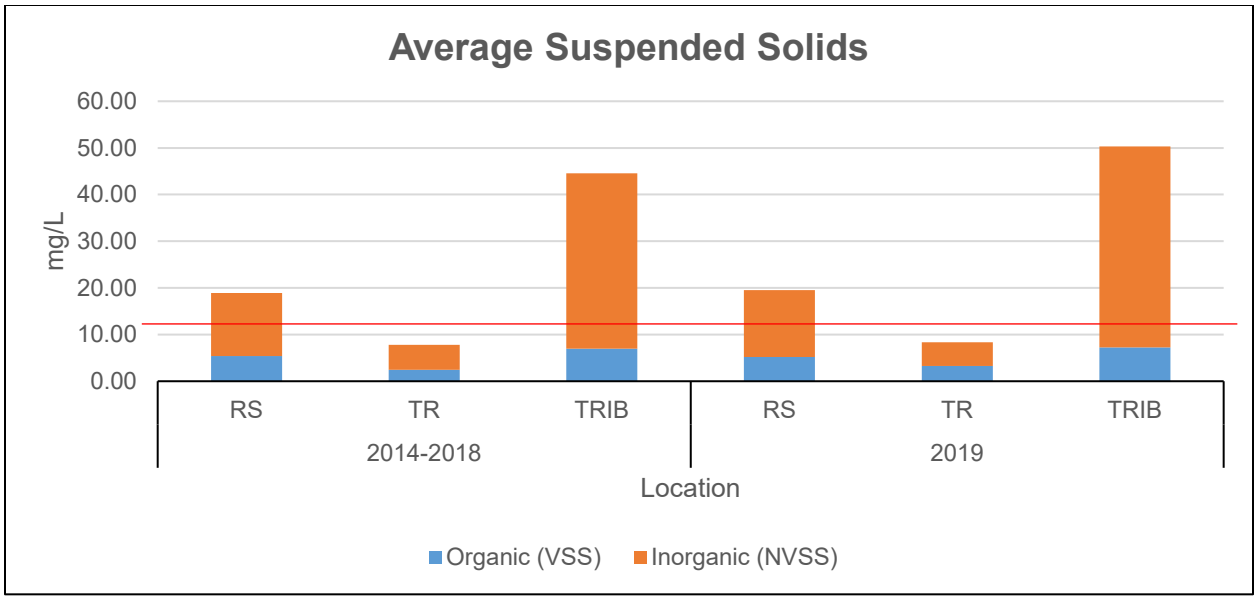
<40 = Oligotrophic __ 40-60 = Mesotrophic __ 60-70 = Eutrophic __ >80 Hypereutrophic





		Historical Reference 2014-2018				2019			
		Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
TDS	RS	258.05	244.00	17	26.39	296.38	299.00	21	26.56
	TR	278.07	284.50	4	41.47	299.75	301.00	4	60.40
	TRIB	347.21	329.85	8	66.54	374.00	413.50	8	63.11
FNU	RS	21.87	7.89	17	15.48	18.36	10.68	21	9.17
	TR	9.45	8.50	4	4.77	7.50	7.12	4	6.06
	TRIB	29.49	27.47	8	10.86	25.43	17.18	8	17.19

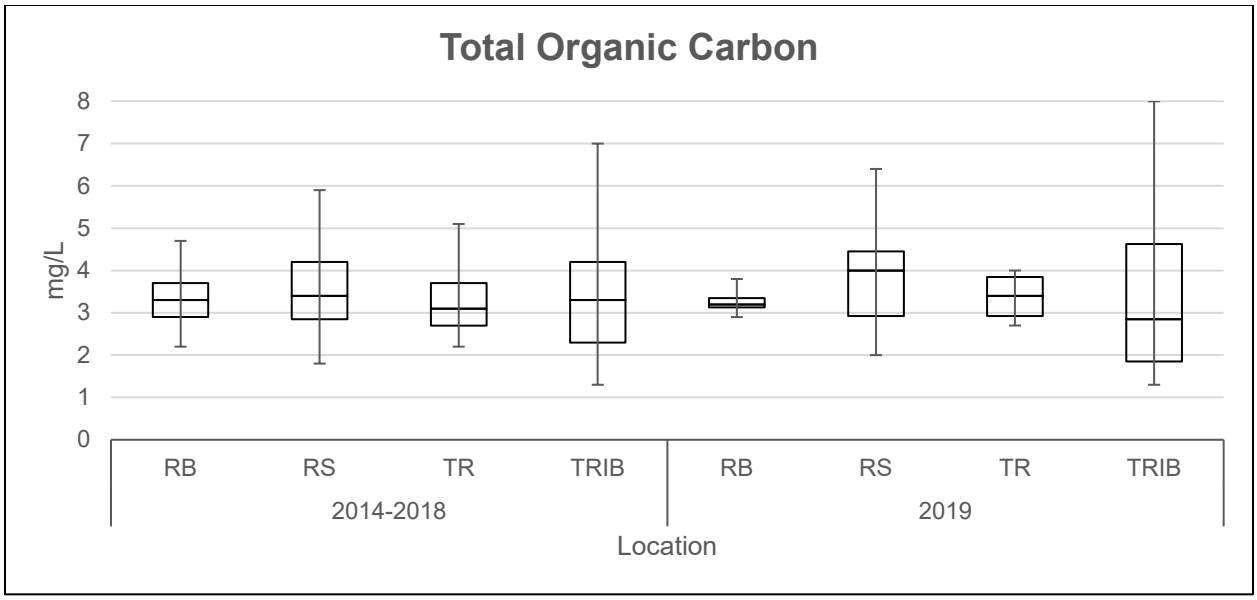
* *All observations of TDS were within the referenced water quality standard.*



**Red line indicates the TSS water quality standard of 12 mg/L for lakes.*

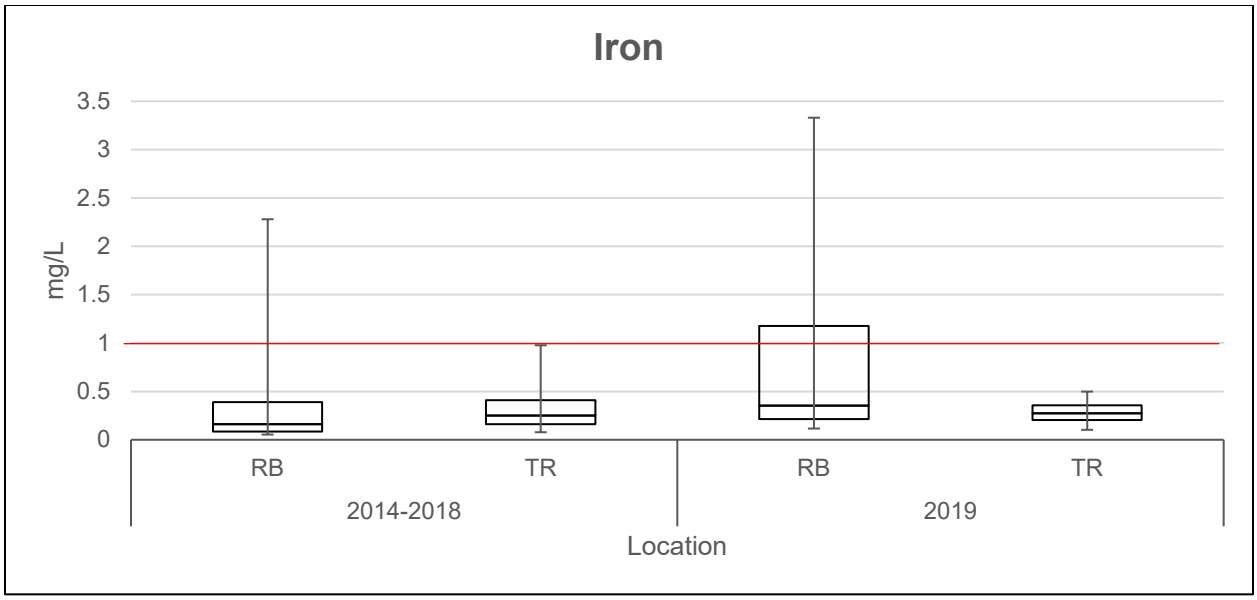
		Historical Reference 2014-2018				2019			
		Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
TSS	RS	18.91	14.00	51	4.42	19.52	15.60	12	10.89
	TR	7.83	8.00	17	1.17	8.35	8.00	4	6.59
	TRIB	44.53	29.60	18	21.62	50.33	31.15	8	35.16
VSS	RS	5.37	4.80	51	0.82	5.22	4.83	12	2.03
	TR	2.43	2.40	17	0.41	3.28	3.30	4	2.54
	TRIB	7.00	4.55	18	2.75	7.24	4.50	8	4.64
NVSS	RS	13.54	7.00	51	4.01	14.31	9.38	12	9.75
	TR	5.40	5.20	17	1.00	5.07	4.74	4	5.00
	TRIB	37.53	23.65	18	19.58	43.09	27.28	8	32.48

**In 2019 the TSS stream standard (116 mg/L) was exceeded once in a tributary, while the TSS lake standard (12 mg/L) was exceed multiple times in the lake.*

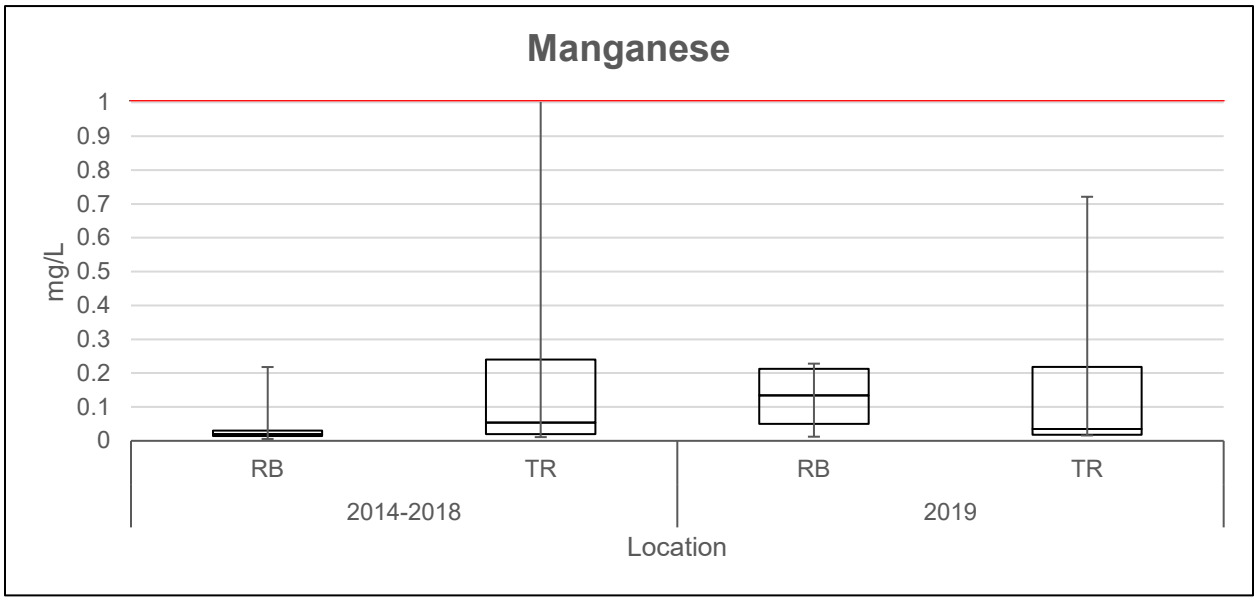


		Historical Reference 2014-2018				2019				
		Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)	
RB	3.38	3.30	17	0.36		3.28	3.20	4	0.60	RB
RS	3.59	3.40	51	0.28		3.82	4.00	12	0.77	RS
TR	3.32	3.10	17	0.42		3.38	3.40	4	0.99	TR
TRIB	3.55	3.30	33	0.51		3.49	2.85	8	1.91	TRIB

**This study does not recognize a water quality criteria for TOC.*



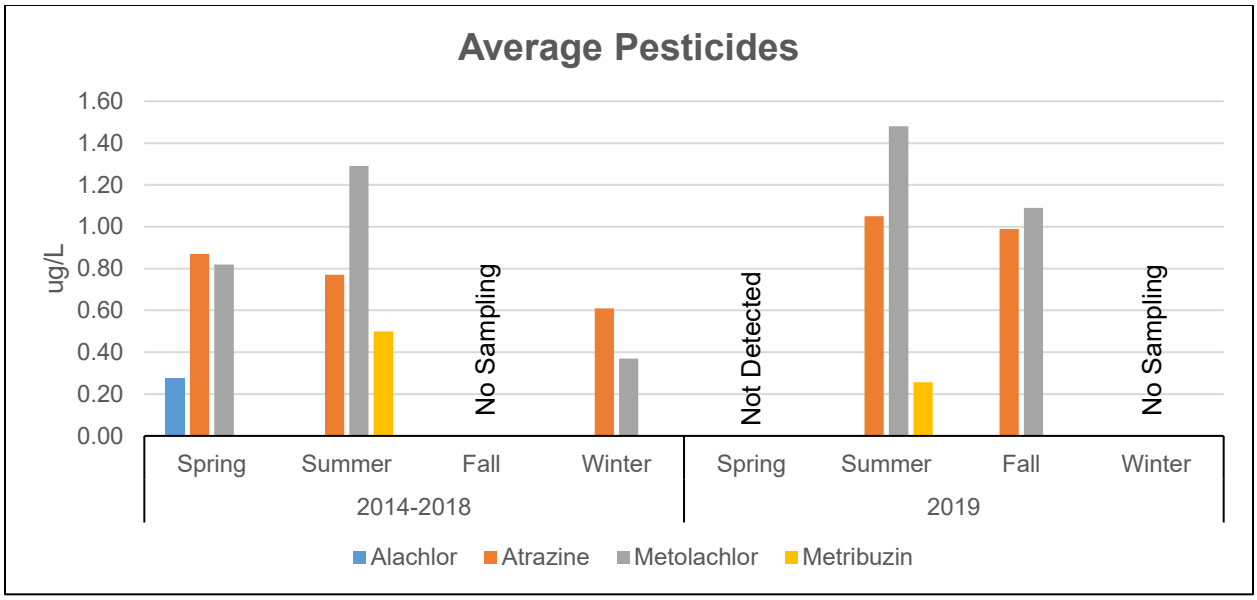
**Red line indicates the water quality standard of 1 mg/L.*



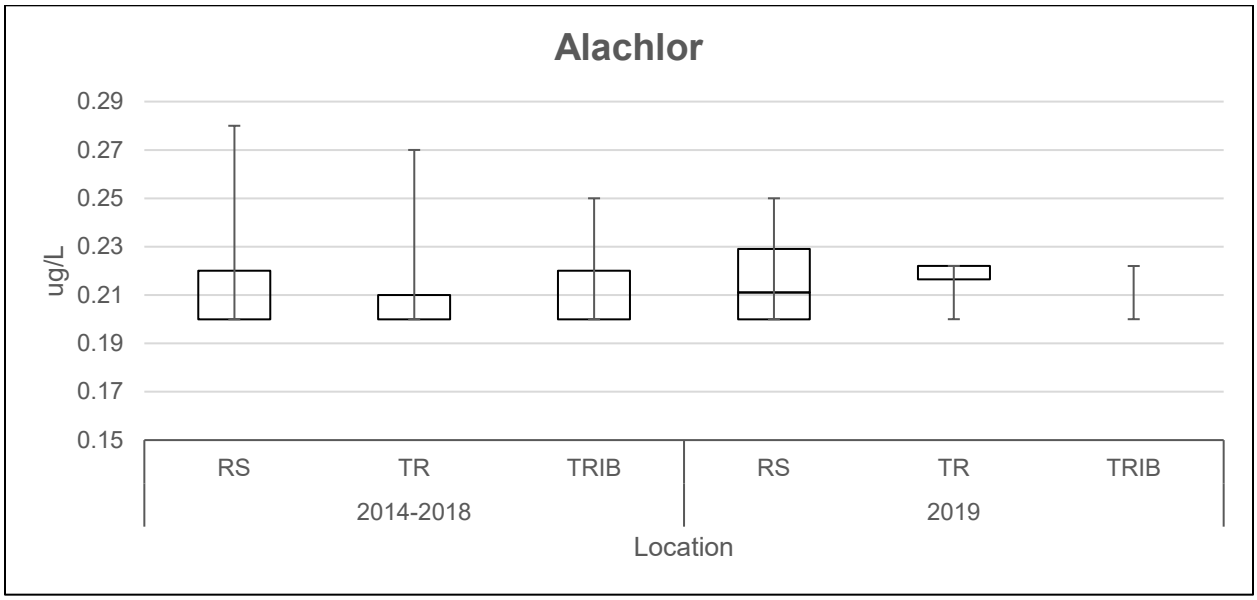
**Red line indicates the water quality standard of 1 mg/L.*

		Historical Reference 2014-2018				2019			
		Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
Iron	RB	0.36	0.16	17	0.28	1.04	0.35	4	2.44
	TR	0.34	0.25	17	0.13	0.29	0.27	4	0.26
Mang	RB	0.04	0.02	17	0.03	0.13	0.13	4	0.17
	TR	0.19	0.05	17	0.14	0.20	0.03	4	0.55

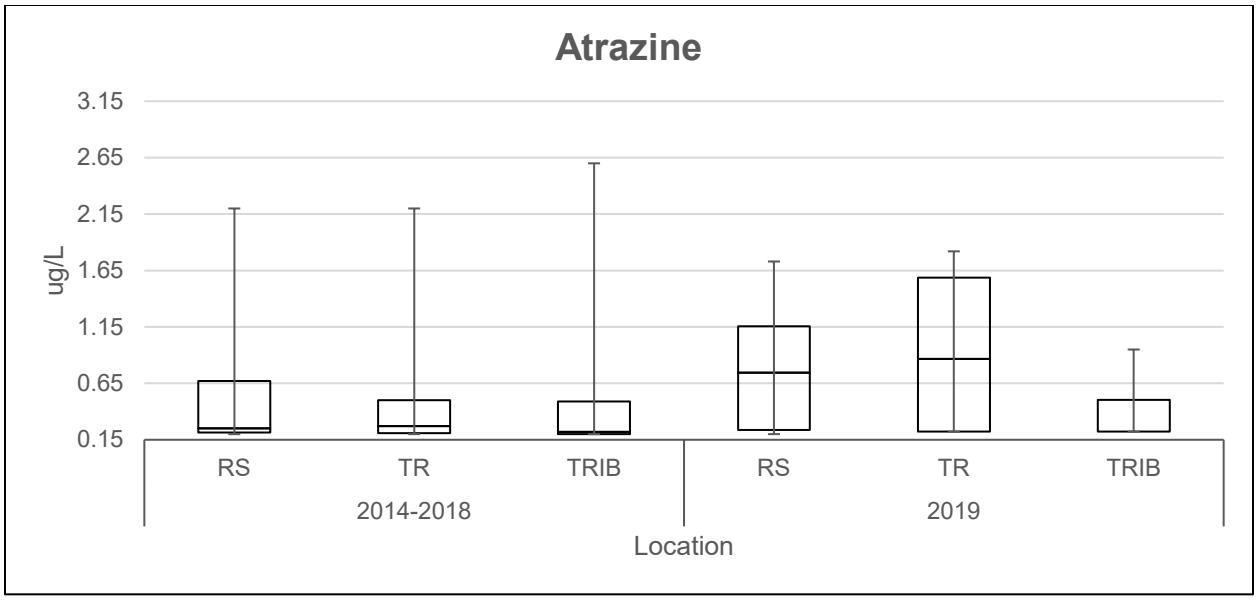
**In 2019 iron exceeded the standard of 1 mg/L near the lake bottom in front of the dam. Manganese did not exceed the criteria.*



Of the eight pesticides tested, only the above four were reported above detection levels for the period 2014-2019.

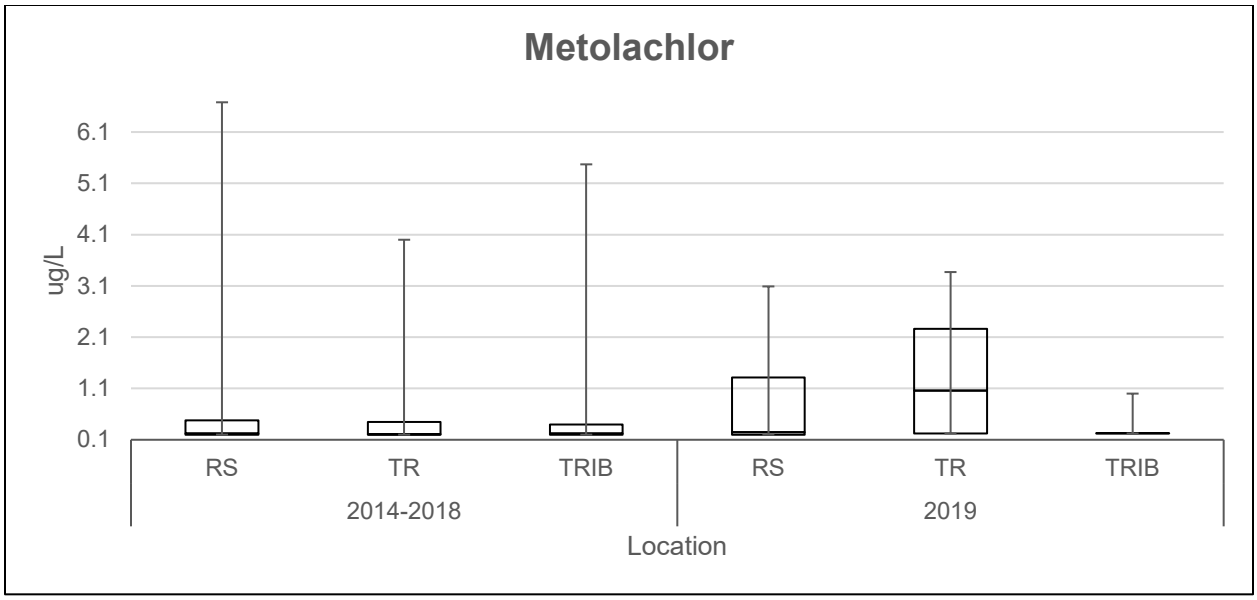


Alachlor did not exceed water quality criteria in 2019. There were not enough detected samples for statistical analyses.



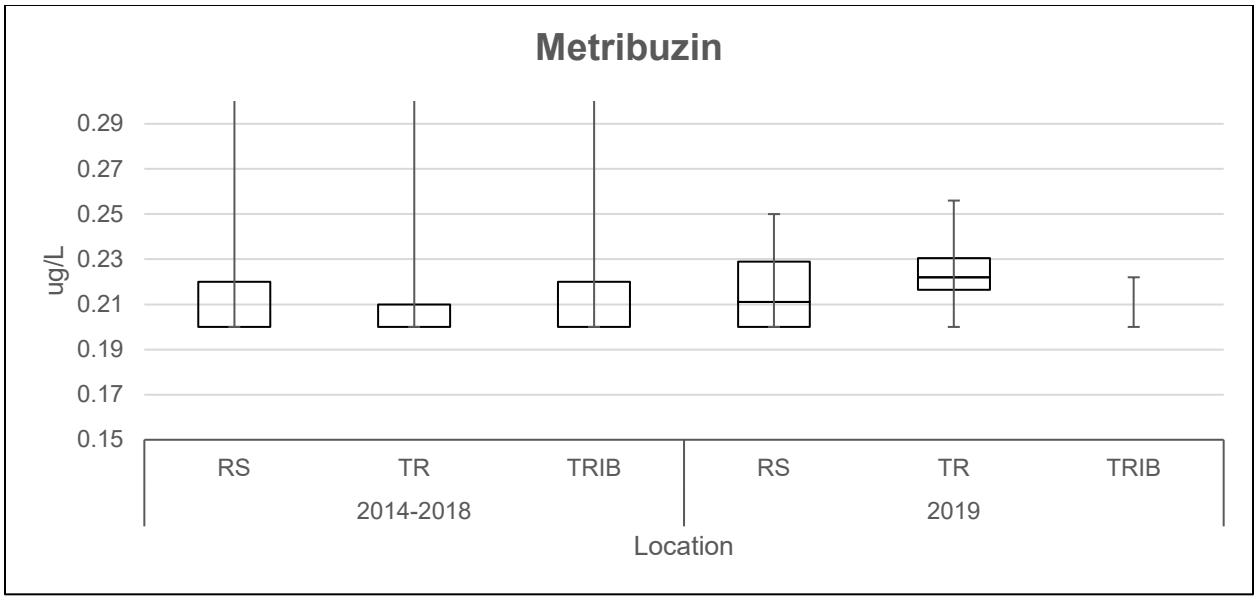
		Historical Reference 2014-2018				2019			
Atrazine		Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
spring	RS	0.57	0.33	3	1.14				
	TR	0.27	0.27	1					
	TRIB	1.62	1.62	2	12.45				
summer	RS	0.74	0.67	24	0.19	1.20	1.11	5	0.60
	TR	0.64	0.46	8	0.54	1.82	1.82	1	
	TRIB	0.94	1.00	11	0.41	0.55	0.48	3	0.92
winter	RS	0.49	0.49	2	3.37				
	TR	0.85	0.85	1					
	TRIB								
fall	RS					0.96	1.09	3	1.03
	TR					1.51	1.51	1	
	TRIB					0.58	0.58	1	

**Atrazine did not exceed water quality criteria in 2019.*



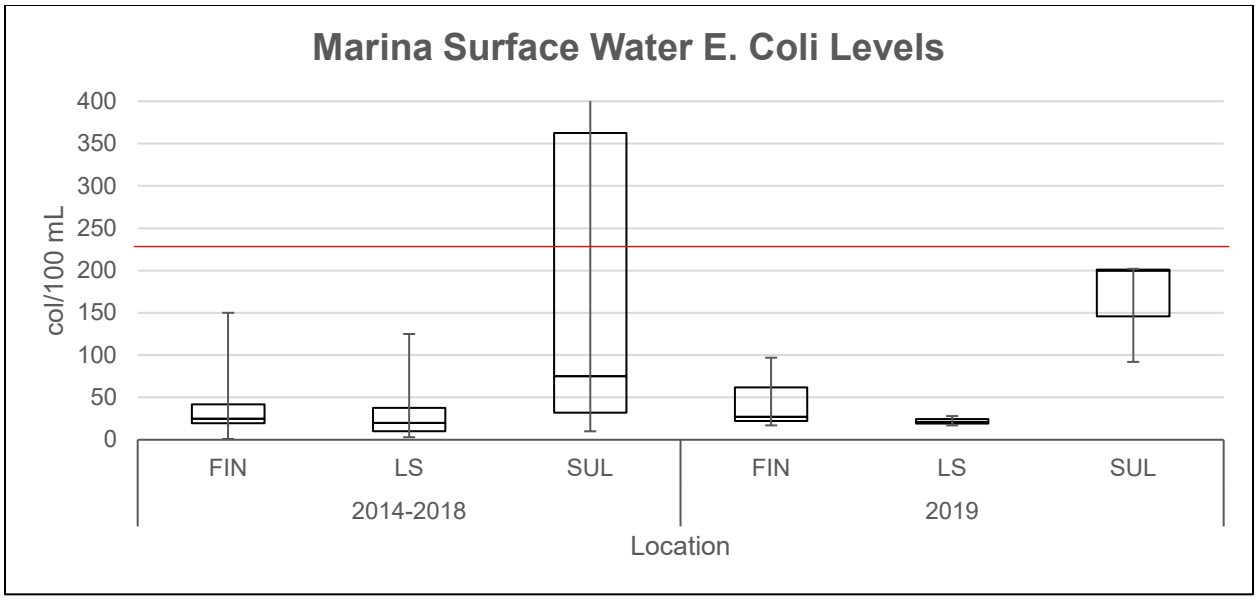
		Historical Reference 2014-2018				2019			
Metolachlor		Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
spring	RS	0.71	0.71	2	6.29				
	TR								
	TRIB	0.90	0.47	3	2.38				
summer	RS	1.11	0.55	20	0.68	1.45	1.26	5	1.60
	TR	1.51	0.76	6	1.57	3.37	3.37	1	
	TRIB	1.54	0.72	9	1.46	0.62	0.62	2	4.87
winter	RS	0.40	0.40	1					
	TR	0.45	0.45	1					
	TRIB	0.26	0.26	1					
fall	RS					0.83	0.81	3	1.58
	TR					1.89	1.89	1	
	TRIB								

**Metolachlor did not exceed water quality criteria in 2019.*



		Historical Reference 2014-2018				2019			
Metribuzin		Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
spring	RS								
	TR								
	TRIB								
summer	RS	0.456	0.456	1					
	TR	0.43	0.43	1		0.256	0.256	1	
	TRIB	0.555	0.555	2	0.063531				

**Metribuzin did not exceed water quality criteria in 2019.*



Red line approximately indicates the water quality standard of 235 col per 100 mL.

	Historical Reference 2014-2018				2019			
Marina Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
Findlay	46	25	11	36	47	27	3	108
Lithia Springs	33	20	11	25	22	21	3	14
Sullivan	185	75	11	131	165	200	3	156

Marina bacteria levels did not exceed the reference water quality criteria.

2019 Swimming Beach Bacteria Levels (E. Coli / 100mL)

	Coon Creek		Dam West		Lithia Springs		Sullivan Beach		Wilborn Creek	
	shallow	deep	shallow	deep	shallow	deep	shallow	deep	shallow	deep
5/15/2019	20.3	1	2	3.1	1	1	46.4	61.3	60.2	98.8
5/29/2019	14.5	3.1	9.7	6.3	4.1	2	90.8	65.7	38.9	9.7
6/12/2019	1	2	4.1	1	1	1	17.5	7.5	7.5	4.1
6/26/2019	3	5.2	13.4	12.1	6.3	1	107.1	68.9	146.7	52.9
7/10/2019	2	1	2	3.1	1	1	11.9	10.9	17.3	16.1
7/25/2019	1	1	1	1	1	1		9.6	125.9	7.3
8/7/2019	1	1	2	2	1	1	1	2	3.1	1
8/21/2019	1	1	9.8	4.1	2	3.1		13.2	63.1	1
9/5/2019	1	1	1	2	2	1	8.6	8.5	1	3.1

Beach bacteria levels did not exceed the reference water quality criteria.

DISCUSSION: WATER QUALITY

Water quality metrics assessed by CEMVS can be sporadic and highly variable from year to year, thus long-term data collection using consistent and comparable methodology is critical to identify trends or patterns. In general, conditions observed during 2019 did not deviate far from conditions observed during the reference period (2014-2018); nevertheless, concerns regarding NO3-N, TP,TSS, and TFe were evident. In addition CHL_a and subsequent TSI levels were indicative of a eutrophic system.

TP levels have surpassed the 0.05 mg/L criterion for several years. In 2019 the TP criterion was exceeded at all locations with an average across all sites of 0.20 mg/L, comparable to the historical average of 0.18 mg/L. NO3-N levels 2019 were similar to the historical levels, but exceeded the criterion of 10 mg/L one time in 2019 at the tail race. This standard for NO3-N has been set for drinking water due to its potential to be harmful to infants between three and six months. Phosphorus is a limiting nutrient for primary producers (algae and plants) due to its relatively low amount in the environment. Higher inputs of TP and NO3-N into the lake contribute to a highly productive environment which stimulates algal growth that can lead to blooms that deplete the oxygen levels during die off. In addition, algal blooms can sometimes contain toxins which may be harmful to humans and wildlife.

Although there is not a state criterion for CHL_a the proposed standard of 25 mg/cm^3 was exceeded at most sampling locations in 2019. The 2019 average CHL_a of 39.10 mg/cm^3 was greater than the historical average of 28.59 mg/cm^3, but similar to the 2018 average of 39.43 mg/cm^3. CHL_a is an indicator of the abundance of phytoplankton. Any water environment with a level recorded above 25 mg/cm^3 is considered to be eutrophic (nutrient enrichment increases algal and plant growth and negative effects). The TSI level, an average of the individual trophic state indexes for secchi depth, CHL_a, and TP, for Lake Shelbyville is 73.62. Lake Shelbyville is considered eutrophic based on the TSI level of 73.62. This does not necessarily mean the water quality is poor, but that its trophic level indicates nutrient levels are abundant, which can support an abundance of plants and algae. Long term monitoring and analyses are important to assess changes over time.

Total solids can affect water quality by increasing temperature through the absorption of sunlight by suspended particles in the water column, and consequently reduce DO. Total solids are also strongly correlated with water clarity and the presence of Macrophytes. The 2019 TSS criteria were exceeded at multiple locations in the lake (12 mg/L) and one time at a tributary (116 mg/L). Historical TSS levels are similar to the 2019 results with the upper lake locations being consistently above the 12 mg/L criterion.

Living organisms require trace amounts of metals, excessive levels can be harmful. TFe exceeded the criterion of 1 mg/L one time at the bottom reservoir location in front of the dam in 2019 with a concentration of 3.33 mg/L. Comparably, there is one exceedance which occurred historically (2014-2018) at the same location. Iron cycling is a function of oxidation-reduction processes. Elevated levels of iron near the bottom of a lake is not

immediately detrimental to the overall lake system. Iron oxidizes relatively rapidly (minutes to hours); therefore, any iron released through the spillway will be oxidized in a short period of time.

All remaining parameters evaluated during the 2019 water quality monitoring effort were within designated criteria or within historical reference norms.

ASA CREEK IMPACTS

A limited investigation was started in October 2017 into the possibility of potential negative impacts to the Asa Creek arm of Lake Shelbyville and continued through 2019. As described in the 2018 Shelbyville Lake Annual Water Quality Report, the Corps was made aware of a concern of potential degradation of the Asa Creek tributary just downstream of the City of Sullivan waste water treatment plant (WTP). In addition to taking in-situ ambient water quality readings, water quality personnel took fecal coliform grab samples at the location where Asa Creek enters USACE waters and directly from the WTP effluent during the 2019 season. See appendix E for location map and data. Low levels of DO was recorded at multiple locations from 2017-2019 (Appendix A). Fecal coliform levels were high at the locations mentioned above.

Correspondence with the local Illinois Environmental Protection Agency Bureau of Water Division of Water Pollution Control has revealed that IEPA is aware and has been in contact with the WWTP regarding the situation. In December 2019 a teleconference meeting occurred with USACE, IEPA, and the City of Sullivan to discuss the findings. As a result of the discussion, USACE and Sullivan shared recent data and conducted a joint sampling for fecal coliform in January 2020. Two samples were taken from each of the 15 locations upstream and downstream of the WTP in Asa Creek. One sample went to a lab Sullivan used, while the other was analyzed at the USACE contracted lab. The results were shared between USACE and Sullivan. While the results from the two labs weren't identical, there was a clear trend of high bacteria levels at the WTP effluent as well as downstream of it. The Sullivan NPDES permit does not require bacteria monitoring except during the period May through October. IEPA has been made aware of all the latest findings. USACE water quality staff will continue to investigate as needed and coordinate with Lake Shelbyville Project, IEPA, and affected landowners.

Historical (2001-2018) average bacteria levels are three times higher at the Sullivan Marina, located just downstream of the confluence of Asa Creek, when compared to the other two marinas in the lake (Findlay & Lithia Springs). The public beach located near Sullivan Marina has also had a higher rate of closing due to unsafe bacteria levels. If current trends of high bacteria continue, negative impacts to beneficial uses are likely.

MONITORING PROGRAM RECOMMENDATIONS

In accordance with EM-1110-2-1201, sediment samples should be taken to monitor and assess potential impacts to aquatic and human health. Sediment sampling and analyses occurred at Lake Shelbyville in 2018, and prior to that in 2007. During these last analyses multiple exceedances over the recommended criteria were observed. Identifying trends over time is much more achievable with more consistent data. Contaminated sediments may have negative impacts on ecological processes. It is recommended, if possible, to sample and analyze for sediment metals and nutrients, as well as grain size analyses yearly or every two years.

Given the eutrophic status of Lake Shelbyville it is recommended that Nitrite (NO_2) be added to the monitoring program if possible. Doing so would allow CEMVS to evaluate Total Nitrogen (TN), which is a strong indicator of trophic status.

CHL_a has routinely been high at Lake Shelbyville in the lake, but there is no data for CHL_a in the tributaries or the tail race. It is recommended if possible to add this analyses to the tributaries and tail race to get a more complete understanding of algal activity upstream and downstream of the lake.

Given the above mentioned high bacteria levels observed in Asa Creek and near Sullivan Marina and public beach, it is recommended to add routine bacteria sampling to both tributary sites (SBV-12, SBV-13) as well as just downstream of Asa Creek. This would aid in isolating any further degradation in that section of the lake.

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APPENDIX A: Asa Creek Monitoring Results

USACE Lake Shelbyville / Asa Creek Tributary Monitoring: Sullivan Waste Water Treatment Plant to Lake

Time	Site	Date	Water Temp (oC)	Dissolved Oxygen (%)	Dissolved Oxygen mg/L	Specific Conductivity uS/cm	Total Dissolved Solids (mg/L)	pH	Oxidation Reduction Potential (mV)	Turbidity (FNU)	Depth (meters)	Fecal Coliform (col/100mL)	Notes
1037	Asa 1	10/26/2017	11.00	18.90	2.08	727	472.6	7.57	134.00	8.60	0.13		Just upstream of 1200/country club rd bridge. DO is very low.
1043	Asa 2	10/26/2017	10.90	27.90	3.07	713	463.2	7.71	121.20	7.90	0.09		Just downstream of 1200/country club rd bridge. DO is very low.
1115	Asa 3	10/26/2017	na	na	na	na	na	na	na	na	na		Just upstream of WWTP effluent. Data measured on site, but equipment failed to log. Technician noted all parameters were well within normal limits for good water quality.
1130	Asa 4	10/26/2017	na	na	na	na	na	na	na	na	na		Located 0.37 stream miles down stream of the USACE boundary. Data measured on site, but equipment failed to log. Technician noted all parameters were well within normal limits for good water quality.
1025	Asa 1	11/16/2017	8.20	46.00	5.41	637	414.1	7.62	176.60	3.70	0.01		Just upstream of 1200/country club rd bridge
1031	Asa 2	11/16/2017	8.00	52.90	6.25	619	402.527	7.74	161.90	3.60	0.70		Just downstream of 1200/country club rd bridge
1005	Asa 3	11/16/2017	6.60	75.00	9.18	532	345.92	8.02	292.30	2.40	0.09		Just upstream of WWTP effluent.
1130	Asa 4	11/16/2017	na	na	na	na	na	na	na	na	na		Site not accessable due to hunting. Took readings at Golf Course just upstream instead.
1037	Asa 5	11/16/2017	8.10	52.90	6.23	620	402.7	7.76	164.20	3.90	0.21		Located approximately 40' downstream of 1200 bridge. Bottom algea present on sediment. 'Sewer' smell on water.
1112	Asa golf course	11/16/2017	8.10	62.70	7.36	619	402.432	7.81	173.00	4.20	0.14		Bottom algea present on sediment.
1010	Asa WWTP effluent	11/16/2017	12.70	83.60	8.85	637	414.23	7.94	136.50	21.10	0.06		Bottom algea present on sediment.
1431	Asa 1	2/26/2018	8.20	95.70	11.26	599	389.1	7.88	134.70	16.20	0.04		5" of precipitation occurred within last week. High flow in Asa.
1442	Asa 3	2/26/2018	8.00	95.90	11.35	591	384.4	7.9	124.20	15.90	0.17		5" of precipitation occurred within last week. High flow in Asa.
1415	Asa 4	2/26/2018	9.50	99.90	11.38	583	379.2	8	67.70	28.00	0.25		5" of precipitation occurred within last week. High flow in Asa.
1444	Asa WWTP effluent	2/26/2018	8.50	93.90	10.97	612	397.8	7.77	127.30	33.10	0.21		5" of precipitation occurred within last week. High flow in Asa.
1445	Asa WWTP effluent	2/26/2018	8.20	95.00	11.17	600	390	7.79	128.00	15.90	0.32		5" of precipitation occurred within last week. High flow in Asa.
1230	Asa 1	4/10/2018	8.10	97.20	11.46	672	436	7.64	527.8	7.60	0.10		Asa creek has moderate flow - 2' to 3' depth. Some sewer smell.
1232	Asa 2	4/10/2018	8.10	97.90	11.54	667	433	7.71	519.1	7.40	0.10		Some sewer smell.
1251	Asa 4	4/10/2018	8.40	81.00	9.47	647	420	7.7	107.4	510.90	0.37		Instrument lying on the substrate - in the mud.
1253	Asa 4	4/10/2018	9.80	116.50	13.18	635	413	7.9	135	9.50	0.04		Measurement taken close to surface - not on bottom.
1314	Asa WWTP effluent	4/10/2018	8.20	97.30	11.44	675	439	7.72	411.8	13.70	0.19		Slightly coludy effluent.
1315	Asa 1	4/19/2018	10.80	120.60	13.33	691.5	449	8.76	329.20	3.64	0.16		Approximate depth 2'. No noticeable sewer smell.
1316	Asa 1	4/19/2018	10.70	130.10	14.39	695.8	452	8.37	499.60	3.44	0.22		
1317	Asa 2	4/19/2018	10.80	128.60	14.20	692.3	450	8.28	508.20	3.79	0.09		
1245	Asa 3	4/19/2018	9.20	116.20	13.32	688.9	448	8.19	494.60	2.18	0.06		
1302	Asa 4	4/19/2018	10.00	129.20	14.56	676	439	8.29	435.00	3.72	0.00		
1246	Asa WWTP effluent	4/19/2018	11.10	99.40	10.91	726.5	472	7.76	305.20	24.17	0.00		Slightly coludy effluent.
1312	Asa 1	6/14/2018	19.70	88.50	8.08	680.5	442	7.94	411.00	8.67	0.16		Moderate flow, approximate depth = 2', no smell, conditions same upstream and downstream of 1200 bridge
1302	Asa 3	6/14/2018	19.40	91.00	8.34	678.9	441	7.84	462.40	7.93	0.02		Moderate/high flow, approximate depth = 4', no smell, WWTP discharge slightly cloudy
1329	Asa 4	6/14/2018	21.30	95.80	8.47	680	442	8.17	430.60	24.71	0.59		
1240	ASA 1	9/6/2018	24.22	58.70	4.91	785	510	7.92	156.60	5.08	0.01		
1241	ASA 2	9/6/2018	24.28	57.90	4.84	787.1	512	7.9	164.90	5.18	0.05		On 9/6/18: ASA creek has low flow, appears clear, some sewer like odor at site 2.
1406	ASA 3	9/6/2018	23.78	60.90	5.14	766.6	498	8.18	36.00	7.07	0.00		Taken up stream of 1300 rd bridge (& wwtp)
1226	ASA 4	9/6/2018	27.67	95.00	7.47	766.6	498	8.49	178.90	26.06	0.33		
1227	ASA 4	9/6/2018	27.67	97.50	7.66	763.8	497	8.54	79.30	63.13	0.36		
1404	Asa WWTP effluent	9/6/2018	24.00	68.80	5.78	505.5	329	8.39	55.00	1.95	0.00		Taken at WWTP discharge
14:22	Asa 4	3/21/2019	8.56	103.2	12.03	730.3	475	8.22	185.5	5.59	0.035		
14:34	Asa 2	3/21/2019	8.00	99.2	11.73	733.2	477	8.18	166.9	36.26	0		
14:43	Asa 3	3/21/2019	7.17	102.2	12.33	731.5	475	8.24	173.8	5.36	0.028		
14:45	Asa WWTP effluent	3/21/2019	8.72	91.1	10.58	760.2	494	8.04	167.2	15.41	0.097		effluent cloudy
12:09	Asa 2	5/16/2019	16.00	113.6	11.18	725.2	471	8.11	146.1	4.27	0		
12:11	Asa 2	5/16/2019	16.00	114.7	11.28	726.1	472	8.12	147.5	4.38	0.138		
12:33	Asa 3	5/16/2019	16.50	94.8	9.25	742.8	483	7.88	152	11.94	0		
12:34	Asa 3	5/16/2019	15.50	109.9	10.95	729.1	474	8.1	152.5	3.3	0		
12:36	Asa 3	5/16/2019	15.50	110.2	10.98	729.4	474	8.06	121.3	3.43	0		
13:46	Asa 2	7/30/2019	23.7	74	6.26	657.9	428	7.37	427.7	4.07	0		
14:02	Asa 4	7/30/2019	28.9	19.3	1.49	551.5	358	7.5	320.2	24.29	0	2000	fecal sample taken from surface water at site Asa 4
14:19	Asa 3	7/30/2019	23.2	78.6	6.7	623.9	406	7.69	421.6	3.64	0		
14:22	Asa WWTP effluent	7/30/2019	23.3	88.7	7.55	881.9	573	7.25	348.4	2.56	0		
13:16:30	Asa 3	10/10/2019	15.3	43.5	4.34	765	497	7.79	191.6	1.21	0		
13:20:24	Asa WWTP effluent	10/10/2019	19.4	74.4	6.82	884	574	7.63	169.1	2613.26	0.039	75000	fecal sample taken directly from Sullivan WTP effluent discharge
13:38:37	Asa 1	10/10/2019	20.3	98.9	8.95	6.8	4	7.59	122.5	6.02	0		
13:41:37	Asa 2	10/10/2019	16.3	31.4	3.07	812	528	7.68	158	3.67	0		
13:43:06	Asa 2	10/10/2019	16.3	30.8	3.02	815	530	7.61	156.9	3.2	0.008		
14:00:18	Asa 4	10/10/2019	18.4	195.7	18.33	787	512	8.76	166.6	14.81	0		

Site	Coordinates
Asa 1	39.579008°, -88.595945°
Asa 2	39.578858°, -88.595966°
Asa 3	39.593372°, -88.596020°
Asa 4	39.566550°, -88.579378°
Asa 5	39.578651°, -88.595951°
Asa golf course	39.572266°, -88.590940°
Asa WWTP effluent	39.593192°, -88.595933°

Other:

In-situ Equipment	YSI ProDSS handheld multi-parameter sonde, calibrated and maintained per the manufacturer recommendations
Values in red text	values exceed water quality standard

APPENDIX B: FIELD DATA

Date	Location	Depth	Temp	Redox	Cond	DO	DOmgL	pH	TDSmgL	FNU
10/10/2019	SBV-2-10	1	17.8	168.9	479.8	95.5	9.07	8.24	312	28.97
10/10/2019	SBV-FIN	2.247	21.3	126.3	355.9	81.3	7.2	8.56	231	15.39
10/10/2019	SBV-LS	1.111	21.6	128.7	373.7	61	5.38	8.24	243	4.21
10/10/2019	SBV-SUL	2.046	19.2	97.4	525.6	66.6	6.14	8.71	342	37.28
10/10/2019	SBV-11	0.974	21.4	104.5	373.4	67.4	5.95	8.35	243	4.28
10/10/2019	SBV-2	1.053	21.1	85.4	355	99.2	8.82	8.8	231	10.68
10/10/2019	SBV-4	0.049	18.8	145	434.7	94.7	8.81	8.74	283	50.49
10/10/2019	SBV-1	1.151	20.1	106.7	423.4	69.6	6.31	7.74	275	12.51
10/10/2019	SBV-12	7.219	21.3	30	373	69.3	6.13	8.31	242	5.12
10/10/2019	SBV-13	1.938	19.3	105.7	531.5	58.8	5.42	8.51	345	42.22
3/21/2019	SBV-2-10	7.193	4.9	249.8	504.3	95.6	12.22	8.25	328	9.88
3/21/2019	SBV-11	1.001	8.4	210.1	382.4	85.8	10.04	8.07	249	84.02
3/21/2019	SBV-2	0.991	4.9	246.5	504.1	96.1	12.28	8.32	328	6.62
3/21/2019	SBV-4	1.357	7.6	170.8	620	93	11.12	8.27	403	37.85
3/21/2019	SBV-1	1.007	4.9	281.1	503.8	104.3	13.31	8.32	327	7.21
3/21/2019	SBV-12	0.532	7.9	176.2	659	94.8	11.22	8.18	428	13.43
3/21/2019	SBV-13	0.636	6.8	187	632.5	94.9	11.54	8.27	411	24.79
5/16/2019	SBV-2-10	7.902	15.5	109.6	516.8	69.6	6.94	7.94	336	23.17
7/30/2019	SBV-2-10	10.059	20.4	374.8	438.4	3.6	0.32	7.35	285	14.11
5/16/2019	SBV-FIN	1.124	18.3	185.9	528.4	160.8	15.12	8.52	343	6.58
5/16/2019	SBV-LS	1.249	17.9	169.9	471.5	157	14.88	8.5	306	5.47
5/16/2019	SBV-SUL	1.104	17.4	98.4	620.7	91.6	8.76	8.06	403	25.49
5/16/2019	SBV-11	1.018	17.8	129.9	459.7	104.6	9.93	8.34	299	16.29
5/16/2019	SBV-2	1.111	16.7	121.9	503.7	132.9	12.92	8.53	327	3.87
5/16/2019	SBV-4	1.239	16.9	113.2	619	89.5	8.65	8.01	402	27.88
7/30/2019	SBV-FIN	1.205	27.2	362.3	369.3	96.3	7.64	8.11	240	4.9
7/30/2019	SBV-LS	1.598	27.5	297.8	380.2	128.6	10.15	8.41	247	4.67
7/30/2019	SBV-SUL	1.139	27.2	337.1	472.3	71.5	5.67	7.71	307	15.07
7/30/2019	SBV-11	1.081	27.1	429.1	365.4	77.3	6.14	8.14	238	6.31
7/30/2019	SBV-2	1.037	27.1	353.1	387.6	116	9.21	8.27	252	3.34
7/30/2019	SBV-4	1.02	27.3	264.3	472.8	80.7	6.39	7.73	307	14.82
5/16/2019	SBV-1	1.121	15.9	142.5	518.7	102.8	10.17	8.21	337	7.03
7/30/2019	SBV-1	1.184	26.0	343	400.5	108.1	8.76	7.89	260	3.24
5/16/2019	SBV-12	0.279	16.6	370.5	641.2	87.7	8.53	7.9	417	18.61
5/16/2019	SBV-13	0.208	18.3	384.8	640.7	100.3	9.41	8.14	416	68.68
7/30/2019	SBV-12	0.48	27.8	426.2	690.7	155.1	12.17	8.3	449	14.88
7/30/2019	SBV-13	0.301	29.1	541.5	437.6	125.4	9.62	8.41	284	15.74

APPENDIX C: LABORATORY DATA

ARDL Inc.
Environmental | Analytical | Management | Safety

PO Box 1566
400 Aviation Drive
Mt. Vernon, IL 62864
618-244-3235
www.ardlinc.com

Customer Name: SLCOE **Date: 4/16/19**

Project Name: Shelbyville Lake / Kaskaskia River **Lab Name: ARDL, Inc.**

Samples Received at ARDL: 3/22/19 **ARDL Report No.: 8468**

CASE NARRATIVE

Customer Sample No.	Date Collected	Lab ID Number	Analyses Requested
SVL-1	3/21/19	8468-01	NP Pesticides, Inorganics(1)
SVL-2	3/21/19	8468-02	NP Pesticides, Inorganics(1)(2)
SVL-2-10	3/21/19	8468-03	Inorganics(1)
SVL-4	3/21/19	8468-04	NP Pesticides, Inorganics(1)(2)
SVL-12	3/21/19	8468-05	NP Pesticides, Inorganics(1)
SVL-13	3/21/19	8468-06	NP Pesticides, Inorganics(1)
SVL-11	3/21/19	8468-07	NP Pesticides, Inorganics(1)(2)
SVL-15	3/21/19	8468-08	NP Pesticides, Inorganics(1)(2)
KAS-3	3/21/19	8468-09	Inorganics(1)(2)(3)

(1) Including ammonia, nitrate, TOC, orthophosphate, total phosphorus, TSS, and VSS.
(2) Including chlorophyll/pheophytin.
(3) Including nitrite & TKN.

The quality control data are summarized as follows:

NPPEST\SIM FRACTION – METHOD 8270

HOLDING TIME
Samples were prepared and analyzed within method specified holding times.

INITIAL CALIBRATION
The initial calibration passed criteria.

CONTINUING CALIBRATION
The continuing calibration verification (CCV) passed criteria for all analytes. The closing CCV passed criteria for all analytes.

PREPARATION BLANK
The blank met acceptance criteria.

LABORATORY CONTROL SAMPLE
The LCS analyses met recovery criteria.

MATRIX SPIKE
The matrix spike and matrix spike duplicate met recovery criteria.

CASE NARRATIVE (Continued)

DUPLICATE
Duplicate analyses are reported as MS/MSD. RPD of the duplicate analyses met criteria.

INTERNAL STANDARD
All internal standard criteria were met.

SURROGATE
All surrogate recovery criteria were met.

INORGANIC FRACTION

TOC were analyzed by an accredited outside laboratory due to instrument status.

PREPARATION BLANK
Results of the preparation blanks were within acceptable limits.

LABORATORY CONTROL SAMPLE
Percent recoveries of all LCS analyses were within control limits.

MATRIX SPIKE
Only an MS sample data evaluation was performed for the TOC analysis. The sample result for nitrate was greater than 4 times the spike amount; therefore, percent recovery was not considered. Percent recovery of all other matrix spikes and matrix spike duplicates were within control limits.

DUPLICATE
All duplicate analyses are reported as MS/MSD, except chlorophyll-a, pheophytin-a, TOC, TSS, and TVSS. RPD on all duplicate analyses were within control limits, with the exception of pheophytin which was within ± the reporting limit and therefore acceptable.

DATA REPORTING QUALIFIERS

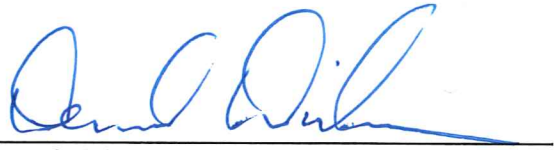
The following data reporting qualifiers are used as required:

ND - Indicates parameter was analyzed for but not detected. The sample quantitation limit has been corrected for weight, dilution and/or percent moisture.

REPORT ORGANIZATION

The data in this report appear by sample type (Field sample, preparation blank, laboratory control sample / spike blank, matrix spike /spike duplicate and sample duplicate). Within each sample type the data appear in the order that the analytical methods were discussed in this case narrative. Sample receipt information follows the analytical data.

Release of the data contained in this package has been authorized by the Technical Services Manager or his designee as verified by the following signature.



Dean S. Dickerson
Technical Services Manager

Sample & QC Results

Including as appropriate:
Field Sample Results
Batch QC
- Prep Blank
- LCS/Spike Blank

Matrix QC
- MS/MSD
- Sample Duplicate

ARDL Data Package 8468

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008468 Report Date: 03/28/2019

Project Name: SHELBYVILLE LAKE/KAS Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-1	ARDL Lab No.:	008468-01
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0326913
Sample Date:	03/21/2019	Received Date:	03/22/2019
Sample Time:	0945	Prep. Date:	03/22/2019
Matrix:	WATER	Analysis Date:	03/26/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11034
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	ND		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	ND		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	89%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008468-01 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-1 Sampling Date: 03/21/2019 Moisture: NA
Received: 03/22/2019 Sampling Time: 0945

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.307	MG/L	3010A	6010C	04/10/19	04/10/19	P7190
(a) Manganese	0.00400	0.00500		0.0159	MG/L	3010A	6010C	04/10/19	04/10/19	P7190
Ammonia Nitrogen	0.0200	0.0300		0.128	MG/L	NONE	350.1	NA	03/26/19	03274431
Nitrate as Nitrogen	0.190	0.200		5.93	MG/L	NONE	GREEN	NA	04/08/19	04114462
Phosphorus	0.00800	0.0100		0.304	MG/L	365.2	365.2	03/27/19	03/27/19	03294446
Phosphorus, -ortho	0.0080	0.010		0.19	MG/L	NONE	365.2	NA	03/22/19	03274435
Solids, Total Suspended	1.33	1.33		4.8	MG/L	NONE	160.2	NA	03/25/19	03274437
Solids, Volatile Suspen	1.33	1.33		ND	MG/L	NONE	160.4	NA	03/25/19	03274438
Total Organic Carbon	0.500	1.00		2.7	MG/L	NONE	415.1	NA	03/25/19	04084461

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008468 Report Date: 03/28/2019

Project Name: SHELBYVILLE LAKE/KAS Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-2	ARDL Lab No.:	008468-02
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0326916
Sample Date:	03/21/2019	Received Date:	03/22/2019
Sample Time:	1030	Prep. Date:	03/22/2019
Matrix:	WATER	Analysis Date:	03/26/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11034
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.200	0.200	ND		UG/L	1
Atrazine	0.200	0.200	ND		UG/L	1
Metribuzin	0.200	0.200	ND		UG/L	1
Alachlor	0.200	0.200	ND		UG/L	1
Metolachlor	0.200	0.200	ND		UG/L	1
Chlorpyrifos	0.200	0.200	ND		UG/L	1
Cyanazine	0.200	0.200	ND		UG/L	1
Pendimethalin	0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	95%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008468-02 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-2 Sampling Date: 03/21/2019 Moisture: NA
Received: 03/22/2019 Sampling Time: 1030

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.142	MG/L	NONE	350.1	NA	03/26/19	03274431
Chlorophyll-a, Correcte	1.0	1.00		4.7	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453
Nitrate as Nitrogen	0.190	0.200		5.95	MG/L	NONE	GREEN	NA	04/08/19	04114462
Pheophytin-a	1.0	1.00		ND	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453
Phosphorus	0.00800	0.0100		0.207	MG/L	365.2	365.2	03/27/19	03/27/19	03294446
Phosphorus, -ortho	0.0080	0.010		0.17	MG/L	NONE	365.2	NA	03/22/19	03274435
Solids, Total Suspended	1.11	1.11		3.89	MG/L	NONE	160.2	NA	03/25/19	03274437
Solids, Volatile Suspen	1.11	1.11		ND	MG/L	NONE	160.4	NA	03/25/19	03274438
Total Organic Carbon	0.500	1.00		2.7	MG/L	NONE	415.1	NA	03/25/19	04084461

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Mt. Vernon, Illinois 62864

Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008468-03 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-2-10 Sampling Date: 03/21/2019 Moisture: NA
Received: 03/22/2019 Sampling Time: 1040

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		3.33	MG/L	3010A	6010C	04/10/19	04/10/19	P7190
(a) Manganese	0.00400	0.00500		0.207	MG/L	3010A	6010C	04/10/19	04/10/19	P7190
Ammonia Nitrogen	0.0200	0.0300		0.145	MG/L	NONE	350.1	NA	03/26/19	03274431
Nitrate as Nitrogen	0.190	0.200		6.14	MG/L	NONE	GREEN	NA	04/08/19	04114462
Phosphorus	0.00800	0.0100		0.256	MG/L	365.2	365.2	03/27/19	03/27/19	03294446
Phosphorus, -ortho	0.0080	0.010		0.12	MG/L	NONE	365.2	NA	03/22/19	03274435
Solids, Total Suspended	2.0	2.00		27.8	MG/L	NONE	160.2	NA	03/25/19	03274437
Solids, Volatile Suspen	2.0	2.00		2.6	MG/L	NONE	160.4	NA	03/25/19	03274438
Total Organic Carbon	0.500	1.00		2.9	MG/L	NONE	415.1	NA	03/25/19	04084461

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Lab Report No: 008468 Report Date: 03/28/2019

Project Name:	SHELBYVILLE LAKE/KAS	Analysis:	NP PESTICIDES (8270SIM-MOD)
Project No.:		Analytical Method:	8270C
NELAC Certified - IL100308		Prep Method:	3510C

Field ID:	SVL-4	ARDL Lab No.:	008468-04
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0326917
Sample Date:	03/21/2019	Received Date:	03/22/2019
Sample Time:	1330	Prep. Date:	03/22/2019
Matrix:	WATER	Analysis Date:	03/26/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11034
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.200	0.200	ND		UG/L	1
Atrazine	0.200	0.200	ND		UG/L	1
Metribuzin	0.200	0.200	ND		UG/L	1
Alachlor	0.200	0.200	ND		UG/L	1
Metolachlor	0.200	0.200	ND		UG/L	1
Chlorpyrifos	0.200	0.200	ND		UG/L	1
Cyanazine	0.200	0.200	ND		UG/L	1
Pendimethalin	0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	83%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008468-04 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-4 Sampling Date: 03/21/2019 Moisture: NA
Received: 03/22/2019 Sampling Time: 1330

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0343	MG/L	NONE	350.1	NA	03/26/19	03274431
Chlorophyll-a, Correcte	1.0	1.00		5.1	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453
Nitrate as Nitrogen	0.190	0.200		9.11	MG/L	NONE	GREEN	NA	04/08/19	04114462
Pheophytin-a	1.0	1.00		ND	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453
Phosphorus	0.00800	0.0100		0.386	MG/L	365.2	365.2	03/27/19	03/27/19	03294446
Phosphorus, -ortho	0.0080	0.010		0.12	MG/L	NONE	365.2	NA	03/22/19	03274435
Solids, Total Suspended	2.0	2.00		21.4	MG/L	NONE	160.2	NA	03/25/19	03274437
Solids, Volatile Suspen	2.0	2.00		2.0	MG/L	NONE	160.4	NA	03/25/19	03274438
Total Organic Carbon	0.500	1.00		2.0	MG/L	NONE	415.1	NA	03/25/19	04084461

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Lab Report No: 008468 Report Date: 03/28/2019

Project Name: SHELBYVILLE LAKE/KAS Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-12	ARDL Lab No.:	008468-05
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0326918
Sample Date:	03/21/2019	Received Date:	03/22/2019
Sample Time:	1525	Prep. Date:	03/22/2019
Matrix:	WATER	Analysis Date:	03/26/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11034
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	ND		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	ND		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	89%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

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Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008468-05
Field ID: SVL-12
Received: 03/22/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 03/21/2019
Sampling Time: 1525

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		ND	MG/L	NONE	350.1	NA	03/26/19	03274431
Nitrate as Nitrogen	0.190	0.200		9.32	MG/L	NONE	GREEN	NA	04/08/19	04114462
Phosphorus	0.00800	0.0100		0.178	MG/L	365.2	365.2	03/27/19	03/27/19	03294446
Phosphorus, -ortho	0.0080	0.010		0.099	MG/L	NONE	365.2	NA	03/22/19	03274435
Solids, Total Suspended	1.87	1.87		25.2	MG/L	NONE	160.2	NA	03/25/19	03274437
Solids, Volatile Suspen	1.87	1.87		2.06	MG/L	NONE	160.4	NA	03/25/19	03274438
Total Organic Carbon	0.500	1.00		1.3	MG/L	NONE	415.1	NA	03/25/19	04084461

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Lab Report No: 008468 Report Date: 03/28/2019

Project Name: SHELBYVILLE LAKE/KAS Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-13	ARDL Lab No.:	008468-06
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0326919
Sample Date:	03/21/2019	Received Date:	03/22/2019
Sample Time:	1240	Prep. Date:	03/22/2019
Matrix:	WATER	Analysis Date:	03/26/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11034
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	ND		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	ND		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	88%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

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Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008468-06 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-13 Sampling Date: 03/21/2019 Moisture: NA
Received: 03/22/2019 Sampling Time: 1240

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0558	MG/L	NONE	350.1	NA	03/26/19	03274431
Nitrate as Nitrogen	0.190	0.200		9.52	MG/L	NONE	GREEN	NA	04/08/19	04114462
Phosphorus	0.00800	0.0100		0.367	MG/L	365.2	365.2	03/27/19	03/27/19	03294446
Phosphorus, -ortho	0.0080	0.010		0.099	MG/L	NONE	365.2	NA	03/22/19	03274435
Solids, Total Suspended	2.56	2.56		58.7	MG/L	NONE	160.2	NA	03/25/19	03274437
Solids, Volatile Suspen	2.56	2.56		3.59	MG/L	NONE	160.4	NA	03/25/19	03274438
Total Organic Carbon	0.500	1.00		1.4	MG/L	NONE	415.1	NA	03/25/19	04084461

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Lab Report No: 008468 Report Date: 03/28/2019

Project Name: SHELBYVILLE LAKE/KAS Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-11	ARDL Lab No.:	008468-07
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0326920
Sample Date:	03/21/2019	Received Date:	03/22/2019
Sample Time:	1200	Prep. Date:	03/22/2019
Matrix:	WATER	Analysis Date:	03/26/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11034
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.200	0.200	ND		UG/L	1
Atrazine	0.200	0.200	ND		UG/L	1
Metribuzin	0.200	0.200	ND		UG/L	1
Alachlor	0.200	0.200	ND		UG/L	1
Metolachlor	0.200	0.200	ND		UG/L	1
Chlorpyrifos	0.200	0.200	ND		UG/L	1
Cyanazine	0.200	0.200	ND		UG/L	1
Pendimethalin	0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	70%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Mt. Vernon, Illinois 62864

Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008468-07
Field ID: SVL-11
Received: 03/22/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 03/21/2019
Sampling Time: 1200

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.229	MG/L	NONE	350.1	NA	03/26/19	03274431
Chlorophyll-a, Correcte	1.0	1.00		3.0	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453
Nitrate as Nitrogen	0.190	0.200		6.12	MG/L	NONE	GREEN	NA	04/08/19	04114462
Pheophytin-a	1.0	1.00		1.9	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453
Phosphorus	0.00800	0.0100		0.709	MG/L	365.2	365.2	03/27/19	03/27/19	03294446
Phosphorus, -ortho	0.0080	0.010		0.33	MG/L	NONE	365.2	NA	03/22/19	03274435
Solids, Total Suspended	4.0	4.00		54.8	MG/L	NONE	160.2	NA	03/25/19	03274437
Solids, Volatile Suspen	4.0	4.00		6.0	MG/L	NONE	160.4	NA	03/25/19	03274438
Total Organic Carbon	0.500	1.00		4.4	MG/L	NONE	415.1	NA	03/25/19	04084461

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Lab Report No: 008468 Report Date: 03/28/2019

Project Name: SHELBYVILLE LAKE/KAS Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-15	ARDL Lab No.:	008468-08
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0326921
Sample Date:	03/21/2019	Received Date:	03/22/2019
Sample Time:	1040	Prep. Date:	03/22/2019
Matrix:	WATER	Analysis Date:	03/26/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11034
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.200	0.200	ND		UG/L	1
Atrazine	0.200	0.200	ND		UG/L	1
Metribuzin	0.200	0.200	ND		UG/L	1
Alachlor	0.200	0.200	ND		UG/L	1
Metolachlor	0.200	0.200	ND		UG/L	1
Chlorpyrifos	0.200	0.200	ND		UG/L	1
Cyanazine	0.200	0.200	ND		UG/L	1
Pendimethalin	0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	78%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008468-08 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-15 Sampling Date: 03/21/2019 Moisture: NA
Received: 03/22/2019 Sampling Time: 1040

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0441	MG/L	NONE	350.1	NA	03/26/19	03274431
Chlorophyll-a, Correcte	1.0	1.00		7.1	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453
Nitrate as Nitrogen	0.190	0.200		9.07	MG/L	NONE	GREEN	NA	04/08/19	04114462
Pheophytin-a	1.0	1.00		ND	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453
Phosphorus	0.00800	0.0100		0.468	MG/L	365.2	365.2	03/27/19	03/27/19	03294446
Phosphorus, -ortho	0.0080	0.010		0.13	MG/L	NONE	365.2	NA	03/22/19	03274435
Solids, Total Suspended	4.0	4.00		55.2	MG/L	NONE	160.2	NA	03/25/19	03274437
Solids, Volatile Suspen	4.0	4.00		4.8	MG/L	NONE	160.4	NA	03/25/19	03274438
Total Organic Carbon	0.500	1.00		2.0	MG/L	NONE	415.1	NA	03/25/19	04084461

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Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008468-09 Sampling Loc'n: KASKASKIA RIVER Matrix: WATER
Field ID: KAS-3 Sampling Date: 03/21/2019 Moisture: NA
Received: 03/22/2019 Sampling Time: 0910

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.020	0.030		0.14	MG/L	NONE	350.1	NA	03/26/19	03274431
Chlorophyll-a, Correcte	1.0	1.00		3.0	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453
Kjeldahl Nitrogen	0.190	0.200		0.835	MG/L	351.2	351.2	03/26/19	03/27/19	03274434
Nitrate as Nitrogen	0.190	0.200		5.82	MG/L	NONE	GREEN	NA	04/08/19	04114462
Nitrite as Nitrogen	0.0200	0.0200		ND	MG/L	NONE	354.1	NA	03/22/19	04014454
Pheophytin-a	1.0	1.00		ND	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453
Phosphorus	0.00800	0.0100		0.294	MG/L	365.2	365.2	03/27/19	03/27/19	03294446
Phosphorus, -ortho	0.0080	0.010		0.18	MG/L	NONE	365.2	NA	03/22/19	03274435
Solids, Total Suspended	1.33	1.33		21.2	MG/L	NONE	160.2	NA	03/25/19	03274437
Solids, Volatile Suspen	1.33	1.33		1.47	MG/L	NONE	160.4	NA	03/25/19	03274438
Total Organic Carbon	0.500	1.00		2.7	MG/L	NONE	415.1	NA	03/26/19	04084461

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METHOD BLANK REPORT

ARDL, Inc. 400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008466 Report Date: 03/28/2019

Project Name:	CARLYLE LAKE	Analysis:	NP PESTICIDES (8270SIM-MOD)
Project No.:		Analytical Method:	8270C
NELAC Certified - IL100308		Prep Method:	3510C
Field ID:	NA	ARDL Lab No.:	008466-01B1
Desc/Location:	NA	Lab Filename:	E0326903
Sample Date:	NA	Received Date:	NA
Sample Time:	NA	Prep. Date:	03/22/2019
Matrix:	QC Material	Analysis Date:	03/26/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11034
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units
Trifluralin	0.200	0.200	ND		UG/L
Atrazine	0.200	0.200	ND		UG/L
Metribuzin	0.200	0.200	ND		UG/L
Alachlor	0.200	0.200	ND		UG/L
Metolachlor	0.200	0.200	ND		UG/L
Chlorpyrifos	0.200	0.200	ND		UG/L
Cyanazine	0.200	0.200	ND		UG/L
Pendimethalin	0.200	0.200	ND		UG/L

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	92%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

BLANK SUMMARY REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER NELAC Certified - IL100308

Analyte	LOD	LOQ	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
(a) Iron	0.040	0.050	ND	MG/L	3010A	6010C	04/10/19	04/10/19	P7190	008468-01B1
(a) Manganese	0.004	0.005	ND	MG/L	3010A	6010C	04/10/19	04/10/19	P7190	008468-01B1
Ammonia Nitrogen	0.020	0.030	ND	MG/L	NONE	350.1	NA	03/26/19	03274431	008468-01B1
Chlorophyll-a, Corre	1.0	1.0	ND	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453	008468-07B1
Kjeldahl Nitrogen	0.19	0.20	ND	MG/L	351.2	351.2	03/26/19	03/27/19	03274434	008467-01B1
Nitrate as Nitrogen	0.019	0.020	ND	MG/L	NONE	GREEN	NA	04/08/19	04114462	008468-04B1
Nitrite as Nitrogen	0.020	0.020	ND	MG/L	NONE	354.1	NA	03/22/19	04014454	008468-09B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	03/22/19	03/28/19	04014453	008468-07B1
Phosphorus	0.008	0.010	ND	MG/L	365.2	365.2	03/27/19	03/27/19	03294446	008467-02B1
Phosphorus, -ortho	0.008	0.010	ND	MG/L	NONE	365.2	NA	03/22/19	03274435	008468-05B1
Solids, Total Suspen	1.0	1.0	ND	MG/L	NONE	160.2	NA	03/25/19	03274437	008468-07B1
Solids, Volatile Sus	1.0	1.0	ND	MG/L	NONE	160.4	NA	03/25/19	03274438	008468-07B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	03/25/19	04084461	008466-01B1

(a) DOD and/or NELAC Accredited Analyte

Inorganic Method Blanks for 008468

BLANK SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008466 Report Date: 03/28/2019

Project Name: CARLYLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD) Analytical Method: 8270C
Project No.: Prep Method: 3510C

Matrix: QC Material QC Batch: B11034 Prep. Date: 03/22/2019
Amount Used: 1000 mL Level: LOW Analysis Date: 03/26/2019

Parameter	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery Limits	RPD	RPD Limit
Trifluralin	0.79	1	79	--	--	--	30-130	--	--
Atrazine	0.85	1	85	--	--	--	30-130	--	--
Metribuzin	0.79	1	79	--	--	--	30-130	--	--
Alachlor	0.91	1	91	--	--	--	30-130	--	--
Metolachlor	0.98	1	98	--	--	--	30-130	--	--
Chlorpyrifos	0.88	1	88	--	--	--	30-130	--	--
Cyanazine	1	1	100	--	--	--	30-130	--	--
Pendimethalin	0.67	1	67	--	--	--	30-130	--	--

SURROGATE RECOVERIES:	Spike %R	Duplicate %R	%R Limits
Triphenylphosphate	84	--	30-130

(a) DOD-QSM Accredited Analyte.
'*' indicates a recovery outside of standard limits.
Spike Blanks for 008466-01, NP PESTICIDES (8270SIM-MOD)

LABORATORY CONTROL SAMPLE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER NELAC Certified - IL100308

Analyte	LCS 1 Result	LCS 1 Level	LCS 1 % Rec	LCS 2 Result	LCS 2 Level	LCS 2 % Rec	% Rec Limits	Mean % Rec	Analytical Run	QC Lab Number
(a) Iron	4.8	5.0	95	--	--	--	87-115	--	P7190	008468-01C1
(a) Manganese	0.75	0.75	100	--	--	--	90-114	--	P7190	008468-01C1
Ammonia Nitrogen	1.0	1.0	102	--	--	--	80-120	--	03274431	008468-01C1
Kjeldahl Nitrogen	0.97	1.0	97	--	--	--	80-120	--	03274434	008467-01C1
Nitrate as Nitrogen	1.0	1.0	103	--	--	--	80-120	--	04114462	008468-04C1
Nitrite as Nitrogen	0.97	1.0	97	--	--	--	80-120	--	04014454	008468-09C1
Phosphorus	0.78	0.67	116	--	--	--	80-120	--	03294446	008467-02C1
Phosphorus, -ortho	0.10	0.10	102	--	--	--	80-120	--	03274435	008468-05C1
Total Organic Carbon	10	10.0	100	--	--	--	76-120	--	04084461	008466-01C1

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits.

(a) DOD and/or NELAC Accredited Analyte

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008468 Report Date: 04/02/2019

Project Name: SHELBYVILLE LAKE/KAS Analysis: NP PESTICIDES (8270SIM-MOD) Analytical Method: 8270C
Project No.: Prep Method: 3510C

Field ID:	SVL-1	Prep. Date:	03/22/2019	ARDL Lab No.:	008468-01
Desc/Location:	SHELBYVILLE LAKE	Amount Used:	900 mL	Lab Filename:	
Sample Date:	03/21/2019	% Moisture:	NA	Received Date:	03/22/2019
Sample Time:	0945	QC Batch:	B11034	Analysis Date:	03/26/2019
Matrix:	WATER	Level:	LOW		

Parameter	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit
Trifluralin	ND	0.856	1.11	77	0.922	1.11	83	30-130	7.5	30
Atrazine	ND	0.922	1.11	83	0.989	1.11	89	30-130	7	30
Metribuzin	ND	0.9	1.11	81	0.956	1.11	86	30-130	6	30
Alachlor	ND	1.01	1.11	91	1	1.11	90	30-130	1.1	30
Metolachlor	ND	1.13	1.11	102	1.2	1.11	108	30-130	5.7	30
Chlorpyrifos	ND	0.978	1.11	88	0.989	1.11	89	30-130	1.1	30
Cyanazine	ND	1.09	1.11	98	1.17	1.11	105	30-130	6.9	30
Pendimethalin	ND	0.856	1.11	77	0.922	1.11	83	30-130	7.5	30

SURROGATE RECOVERIES:	MS %R	MSD %R	%R Limits
Triphenylphosphate	87	95	30-130

(a) DOD-QSM Accredited Analyte.
'nc' indicates sample >4X spike level.
'*' indicates a recovery outside of standard limits.
Matrix Spikes for 008468-01, NP PESTICIDES (8270SIM-MOD)

MATRIX SPIKE/SPIKE DUPLICATE REPORT
ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER NELAC Certified - IL100308

Analyte	Sample Matrix	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit	Run	QC Lab Number
(a) Iron	WATER	0.31	1.3	1.0	100	1.3	1.0	99	87-115	1	20	P7190	008468-01MS
(a) Manganese	WATER	0.016	0.53	0.50	104	0.54	0.50	104	90-114	1	20	P7190	008468-01MS
Ammonia Nitrogen	WATER	0.13	2.2	2.0	104	2.2	2.0	103	75-125	1	20	03274431	008468-01MS
Kjeldahl Nitrogen	WATER	0.84	1.7	0.80	113	1.6	0.80	97	75-125	8	20	03274434	008468-09MS
Nitrate as Nitrogen	WATER	9.1	10.3	1.0	115	10.4	1.0	131 *	75-125	2	20	04114462	008468-04MS
Phosphorus	WATER	0.39	1.2	0.83	93	1.2	0.83	100	75-125	5	20	03294446	008468-04MS
Phosphorus, -ortho	WATER	0.099	0.20	0.10	100	0.20	0.10	103	75-125	2	20	03274435	008468-05MS
Total Organic Carbon	WATER	2.7	7.8	5.0	103	--	--	--	76-120	--	--	04084461	008468-02MS

NOTE: Values tabulated above marked with an asterisk are explained in the associated narrative.
(a) DOD and/or NELAC Accredited Analyte.

SAMPLE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008468 Report Date: 04/12/2019

Project Name: SHELBYVILLE LAKE/KASKASKIA RIVER NELAC Certified - IL100308

Analyte	Sample Conc'n	First Duplicate	Second Duplicate	Units	Percent Diff	Mean (Smp,D1,D2)	Analytical Run	QC Lab Number
Chlorophyll-a, Corrected	3.0	3.0	--	MG/CU.M.	0	--	04014453	008468-07D1
Pheophytin-a	1.9	0	--	MG/CU.M.	0	--	04014453	008468-07D1
Solids, Total Suspended	54.8	56.0	--	MG/L	2	--	03274437	008468-07D1
Solids, Volatile Suspend	6.0	6.0	--	MG/L	0	--	03274438	008468-07D1

(a) DOD and/or NELAC Accredited Analyte

Sample Duplicates for 008468

[redacted]

Sample Receipt Information

Including as appropriate:

- COCs
- Cooler Receipts
- Airbills
- Email Communication / Instructions from Customer

8468

ARDL, Inc.

P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864
(618) 244-3235 Phone (618) 244-1149 Fax

CHAIN OF CUSTODY RECORD

PROJECT: Shelbyville Lake

SAMPLERS: (Signature) Schepker, Greeling

SAMPLE NUMBER	DATE 2019	TIME	COMP	GRAB	NO. OF CONTAINERS	TSS, TVSS	Chloro/Pheo	* TOC, T-PO4	O-PO4	* NO3-N, NH3-N	NP Pest	#T.Fe, T.Mn	E. coli	MS/MSD	NO2-N			REMARKS OR SAMPLE LOCATION	PRESERVATION ICED	PRESERVATION SPECIFY CHEMICALS ADDED AND FINAL pH IF KNOWN
SVL-1	3-21	0945		X		X		X	X	X	X	X		X					X	
SVL-2	3-21	1030		X		X	X	X	X	X	X								X	
SVL-2-10	3-21	1040		X		X		X	X	X		X							X	
SVL-4	3-21	1330		X		X	X	X	X	X	X								X	
SVL-12	3-21	3:25		X		X		X	X	X	X								X	
SVL-13	3-21	1240		X		X		X	X	X	X								X	
SVL-11	3-21	1200		X		X	X	X	X	X	X								X	
SVL-15	3-21	1040		X		X	X	X	X	X	X								X	
KAS-3	3-21	0910		X		X	X	X	X	X					X				Received TKN containers dlc 3/22/19	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
[signature]	3/21/19	4:44	Valerie Parkins
Valerie Parkins	3/21/19	6:10	Received by: (Signature)
Received for Laboratory by: (Signature) [signature]	Date 3/22/19	Time 0530	Shipping Ticket No.

REMARKS/SPECIAL INSTRUCTIONS:

*Preserved with H_2SO_4
#Preserved with HNO_3

KAS-3: NO_2 analyze with TSS

PURCHASE ORDER NO: _____

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 8468 Cooler # 1 of 2

Number of Coolers in Shipment: 2

Project: Shelbyville Lake / Kaskaskia River Date Received: 3-21-19 by vaj

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 3-22-19 (Signature) DBlackburn

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)
   If YES, enter carrier name and airbill number here: Courier
2. Were custody seals on outside of cooler? ..... YES (NO) N/A
   How many and where? _____, Seal Date: _____, Seal Name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (NA)
4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO
5. Were custody papers sealed in a plastic bag? ..... YES (NO)
6. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO N/A
7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A
8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A
9. Was a separate container provided for measuring temperature? YES____ NO✓ Observed Cooler Temp. 1.0 C
   Correction factor 0.0 C

B. **LOG-IN PHASE:** Date samples were logged-in: 3-22-19 (Signature) DBlackburn

10. Describe type of packing in cooler: loose ice
11. Were all samples sealed in separate plastic bags? ..... YES (NO) N/A
12. Did all containers arrive unbroken and were labels in good condition? ..... (YES) NO
13. Were sample labels complete? ..... (YES) NO
14. Did all sample labels agree with custody papers? ..... (YES) NO
15. Were correct containers used for the tests indicated? ..... (YES) NO
16. Was pH correct on preserved water samples? ..... (YES) NO N/A
17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO
18. Were bubbles absent in VOA samples? If NO, list by sample #: _____ YES NO (N/A)
19. Was the ARDL project coordinator notified of any deficiencies? ..... YES NO (N/A)

Comments and/or Corrective Action:
(By: Signature) Date:

Sample Transfer	
Fraction: all	Fraction:
Area #: Walkin	Area #:
By: dlc	By:
On: 3-22-19	On:

Chain-of-Custody # NA

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 8468 Cooler # 2 of 3

Number of Coolers in Shipment: 3

Project: Shelbyville Lake / Kaskaskia River Date Received: 3-21-19 by van

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 3-22-19 (Signature) DKCochrum

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)
   If YES, enter carrier name and airbill number here: Courier
2. Were custody seals on outside of cooler? ..... YES (NO) N/A
   How many and where? _____, Seal Date: _____, Seal Name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (NA)
4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO
5. Were custody papers sealed in a plastic bag? ..... YES (NO)
6. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO N/A
7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A
8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A
9. Was a separate container provided for measuring temperature? YES____ NO ✓ Observed Cooler Temp. 2.3 C
   Correction factor 0.0 C

B. **LOG-IN PHASE:** Date samples were logged-in: 3-22-19 (Signature) DKCochrum

10. Describe type of packing in cooler: loose ice
11. Were all samples sealed in separate plastic bags? ..... YES (NO) N/A
12. Did all containers arrive unbroken and were labels in good condition? ..... (YES) NO
13. Were sample labels complete? ..... (YES) NO
14. Did all sample labels agree with custody papers? ..... YES (NO)
15. Were correct containers used for the tests indicated? ..... (YES) NO
16. Was pH correct on preserved water samples? ..... (YES) NO N/A
17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO
18. Were bubbles absent in VOA samples? If NO, list by sample #: _____ YES NO (N/A)
19. Was the ARDL project coordinator notified of any deficiencies? ..... (YES) NO N/A

Comments and/or Corrective Action:
14) received Container for TKN analysis Mat on 1 of 1 for Kaskaskia River (KAS-3).
(By: Signature) dle Date: 3-22-19

Sample Transfer	
Fraction: all	Fraction
Area #: Walkin	Area #
By: dle	By
On: 3-22-19	On

Chain-of-Custody # N/A

M:\ADMIN\FORMS\COOLER RECEIPT REPORT.doc Rev. 02/22/17

ARDL Inc.
Environmental | Analytical | Management | Safety

PO Box 1566
400 Aviation Drive
Mt. Vernon, IL 62864
618-244-3235
www.ardlinc.com

Customer Name: SLCOE **Date: 6/25/19**

Project Name: Shelbyville Lake **Lab Name: ARDL, Inc.**

Samples Received at ARDL: 5/16/19 **ARDL Report No.: 8478**

CASE NARRATIVE

Customer Sample No.	Date Collected	Lab ID Number	Analyses Requested
SVL-1	5/16/19	8478-01	NP Pesticides, Metals(1), Inorganics(2)
SVL-2	5/16/19	8478-02	NP Pesticides, Inorganics(2)(3)
SVL-2-10	5/16/19	8478-03	Metals(1), Inorganics(2)
SVL-4	5/16/19	8478-04	NP Pesticides, Inorganics(2)(3)
SVL-12	5/16/19	8478-05	NP Pesticides, Inorganics(2)
SVL-13	5/16/19	8478-06	NP Pesticides, Inorganics(2)
SVL-11	5/16/19	8478-07	NP Pesticides, Inorganics(2)(3)
SVL-15	5/16/19	8478-08	NP Pesticides, Inorganics(2)(3)
LS MARINA	5/16/19	8478-09	E. Coli
FIN MARINA	5/16/19	8478-10	E. Coli
SUL MARINA	5/16/19	8478-11	E. Coli
ASA 4	5/16/19	8478-12	E. Coli

(1) Including iron and manganese.
(2) Including ammonia, nitrate, orthophosphate, total phosphorus, TOC, TSS, and TVSS.
(3) Including chlorophyll-a and pheophytin-a.

The quality control data are summarized as follows:

NP PESTICIDE FRACTION – METHOD 8270-SIM

HOLDING TIME
Samples were prepared and analyzed within method specified holding times.

INITIAL CALIBRATION
The initial calibration passed criteria.

CONTINUING CALIBRATION
The continuing calibration verification (CCV) passed criteria for all analytes. The closing CCV passed criteria for all analytes.

PREPARATION BLANK
The blank met acceptance criteria.

LABORATORY CONTROL SAMPLE
The LCS analyses met recovery criteria.

CASE NARRATIVE (Continued)

MATRIX SPIKE
The matrix spike and matrix spike duplicate met recovery criteria.

DUPLICATE
Duplicate analyses are reported as MS/MSD. RPD of the duplicate analyses met criteria.

INTERNAL STANDARD
All internal standard criteria were met.

SURROGATE
All surrogate recovery criteria were met.

INORGANIC FRACTION

TOC and Nitrate-nitrite were analyzed by an accredited outside laboratory due to instrument status.

PREPARATION BLANK
Results of the preparation blanks were within acceptable limits.

LABORATORY CONTROL SAMPLE
Percent recoveries of all LCS analyses were within control limits.

MATRIX SPIKE
Percent recovery of all matrix spikes and matrix spike duplicates.

DUPLICATE
All duplicate analyses are reported as MS/MSD except chlorophyll-a, pheophytin-a, TSS, and TVSS. RPD on all duplicate analyses were within control limits, with the exception of pheophytin-a (24% RPD), which was within ± the reporting limit and therefore acceptable.

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

ND - Indicates compound was analyzed for but not detected.

REPORT ORGANIZATION

The data in this report appear by sample type (Field sample, preparation blank, laboratory control sample / spike blank, matrix spike /spike duplicate and sample duplicate). Within each sample type the data appear in the order that the analytical methods were discussed in this case narrative. Sample receipt information follows the analytical data.

Release of the data contained in this package has been authorized by the Technical Services Manager or his designee as verified by the following signature.

Dean S. Dickerson
Technical Services Manager

Sample & QC Results

Including as appropriate:

- Field Sample Results
- Batch QC
  - Prep Blank
  - LCS/Spike Blank
- Matrix QC
  - MS/MSD
  - Sample Duplicate

ARDL Data Package 8478

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 05/23/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-1	ARDL Lab No.:	008478-01
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0522915
Sample Date:	05/16/2019	Received Date:	05/16/2019
Sample Time:	0915	Prep. Date:	05/17/2019
Matrix:	WATER	Analysis Date:	05/22/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11047
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	ND		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	ND		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	82%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008478-01
Field ID: SVL-1
Received: 05/16/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 05/16/2019
Sampling Time: 0915

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.239	MG/L	3010A	6010C	05/23/19	05/28/19	P7207
(a) Manganese	0.00400	0.00500		0.0187	MG/L	3010A	6010C	05/23/19	05/28/19	P7207
Ammonia Nitrogen	0.0200	0.0300		0.0817	MG/L	NONE	350.1	NA	05/28/19	05294592
Nitrate as Nitrogen	1.0	1.00		10.9	MG/L	NONE	GREEN	NA	06/12/19	06144640
Phosphorus	0.00800	0.0100		0.103	MG/L	365.2	365.2	05/28/19	05/29/19	06034606
Phosphorus, -ortho	0.00800	0.0100		0.0134	MG/L	NONE	365.2	NA	05/17/19	05204556
Solids, Total Suspended	2.0	2.00		12.6	MG/L	NONE	160.2	NA	05/17/19	05214562
Solids, Volatile Suspen	2.0	2.00		3.6	MG/L	NONE	160.4	NA	05/17/19	05214563
Total Organic Carbon	0.500	1.00		3.0	MG/L	NONE	415.1	NA	05/30/19	06044609

(a) DOD and/or NELAC Accredited Analyte.

Sample 008478-01, Inorganic Analyses

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 05/23/2019

Project Name:	SHELBYVILLE LAKE	Analysis:	NP PESTICIDES (8270SIM-MOD)
Project No.:		Analytical Method:	8270C
NELAC Certified - IL100308		Prep Method:	3510C

Field ID:	SVL-2	ARDL Lab No.:	008478-02
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0522918
Sample Date:	05/16/2019	Received Date:	05/16/2019
Sample Time:	0950	Prep. Date:	05/17/2019
Matrix:	WATER	Analysis Date:	05/22/2019
Amount Used:	800 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11047
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.250	0.250	ND		UG/L	1
Atrazine	0.250	0.250	ND		UG/L	1
Metribuzin	0.250	0.250	ND		UG/L	1
Alachlor	0.250	0.250	ND		UG/L	1
Metolachlor	0.250	0.250	ND		UG/L	1
Chlorpyrifos	0.250	0.250	ND		UG/L	1
Cyanazine	0.250	0.250	ND		UG/L	1
Pendimethalin	0.250	0.250	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	78%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008478-02 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-2 Sampling Date: 05/16/2019 Moisture: NA
Received: 05/16/2019 Sampling Time: 0950

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		ND	MG/L	NONE	350.1	NA	05/28/19	05294592
Chlorophyll-a, Correcte	1.0	1.00		31.8	MG/CU.M.	10200H	10200H	05/17/19	05/28/19	05294596
Nitrate as Nitrogen	0.500	0.500		5.73	MG/L	NONE	GREEN	NA	06/12/19	06144640
Pheophytin-a	1.0	1.00		4.8	MG/CU.M.	10200H	10200H	05/17/19	05/28/19	05294596
Phosphorus	0.00800	0.0100		0.0854	MG/L	365.2	365.2	05/28/19	05/29/19	06034606
Phosphorus, -ortho	0.00800	0.0100		0.0134	MG/L	NONE	365.2	NA	05/17/19	05204556
Solids, Total Suspended	2.0	2.00		9.4	MG/L	NONE	160.2	NA	05/17/19	05214562
Solids, Volatile Suspen	2.0	2.00		4.4	MG/L	NONE	160.4	NA	05/17/19	05214563
Total Organic Carbon	0.500	1.00		3.5	MG/L	NONE	415.1	NA	05/30/19	06044609

(a) DOD and/or NELAC Accredited Analyte.

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008478-03
Field ID: SVL-2-10
Received: 05/16/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 05/16/2019
Sampling Time: 0950

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.116	MG/L	3010A	6010C	05/23/19	05/28/19	P7207
(a) Manganese	0.00400	0.00500		0.0122	MG/L	3010A	6010C	05/23/19	05/28/19	P7207
Ammonia Nitrogen	0.0200	0.0300		0.0375	MG/L	NONE	350.1	NA	05/28/19	05294592
Nitrate as Nitrogen	0.500	0.500		6.01	MG/L	NONE	GREEN	NA	06/12/19	06144640
Phosphorus	0.00800	0.0100		0.0898	MG/L	365.2	365.2	05/28/19	05/29/19	06034606
Phosphorus, -ortho	0.00800	0.0100		0.0108	MG/L	NONE	365.2	NA	05/17/19	05204556
Solids, Total Suspended	2.0	2.00		13.0	MG/L	NONE	160.2	NA	05/17/19	05214562
Solids, Volatile Suspen	2.0	2.00		5.0	MG/L	NONE	160.4	NA	05/17/19	05214563
Total Organic Carbon	0.500	1.00		3.2	MG/L	NONE	415.1	NA	05/30/19	06044609

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Sample 008478-03, Inorganic Analyses

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 05/23/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-4	ARDL Lab No.:	008478-04
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0522919
Sample Date:	05/16/2019	Received Date:	05/16/2019
Sample Time:	1137	Prep. Date:	05/17/2019
Matrix:	WATER	Analysis Date:	05/22/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11047
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.200	0.200	ND		UG/L	1
Atrazine	0.200	0.200	0.610		UG/L	1
Metribuzin	0.200	0.200	ND		UG/L	1
Alachlor	0.200	0.200	ND		UG/L	1
Metolachlor	0.200	0.200	0.250		UG/L	1
Chlorpyrifos	0.200	0.200	ND		UG/L	1
Cyanazine	0.200	0.200	ND		UG/L	1
Pendimethalin	0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	79%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008478-04
Field ID: SVL-4
Received: 05/16/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 05/16/2019
Sampling Time: 1137

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0517	MG/L	NONE	350.1	NA	05/28/19	05294592
Chlorophyll-a, Correcte	1.0	1.00		7.8	MG/CU.M.	10200H	10200H	05/17/19	05/28/19	05294596
Nitrate as Nitrogen	0.500	0.500		9.28	MG/L	NONE	GREEN	NA	06/10/19	06144639
Pheophytin-a	1.0	1.00		ND	MG/CU.M.	10200H	10200H	05/17/19	05/28/19	05294596
Phosphorus	0.00800	0.0100		0.217	MG/L	365.2	365.2	05/28/19	05/29/19	06034606
Phosphorus, -ortho	0.00800	0.0100		0.0845	MG/L	NONE	365.2	NA	05/17/19	05204556
Solids, Total Suspended	2.0	2.00		19.8	MG/L	NONE	160.2	NA	05/17/19	05214562
Solids, Volatile Suspen	2.0	2.00		2.8	MG/L	NONE	160.4	NA	05/17/19	05214563
Total Organic Carbon	0.500	1.00		2.3	MG/L	NONE	415.1	NA	05/30/19	06044609

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Sample 008478-04, Inorganic Analyses

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 05/23/2019

Project Name:	SHELBYVILLE LAKE	Analysis:	NP PESTICIDES (8270SIM-MOD)
Project No.:		Analytical Method:	8270C
NELAC Certified - IL100308		Prep Method:	3510C

Field ID:	SVL-12	ARDL Lab No.:	008478-05
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0522920
Sample Date:	05/16/2019	Received Date:	05/16/2019
Sample Time:	1113	Prep. Date:	05/17/2019
Matrix:	WATER	Analysis Date:	05/22/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11047
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	0.478		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	ND		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	86%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008478-05 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-12 Sampling Date: 05/16/2019 Moisture: NA
Received: 05/16/2019 Sampling Time: 1113

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0408	MG/L	NONE	350.1	NA	05/28/19	05294592
Nitrate as Nitrogen	1.0	1.00		8.6	MG/L	NONE	GREEN	NA	06/10/19	06144639
Phosphorus	0.00800	0.0100		0.195	MG/L	365.2	365.2	05/28/19	05/29/19	06034606
Phosphorus, -ortho	0.00800	0.0100		0.0766	MG/L	NONE	365.2	NA	05/17/19	05204556
Solids, Total Suspended	2.50	2.50		33.5	MG/L	NONE	160.2	NA	05/17/19	05214562
Solids, Volatile Suspen	2.50	2.50		3.75	MG/L	NONE	160.4	NA	05/17/19	05214563
Total Organic Carbon	0.500	1.00		2.0	MG/L	NONE	415.1	NA	05/30/19	06044609

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Lab Report No: 008478 Report Date: 05/23/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-13	ARDL Lab No.:	008478-06
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0522921
Sample Date:	05/16/2019	Received Date:	05/16/2019
Sample Time:	1030	Prep. Date:	05/17/2019
Matrix:	WATER	Analysis Date:	05/22/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11047
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	ND		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	ND		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	71%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008478-06
Field ID: SVL-13
Received: 05/16/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 05/16/2019
Sampling Time: 1030

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0764	MG/L	NONE	350.1	NA	05/28/19	05294592
Nitrate as Nitrogen	1.0	1.00		8.94	MG/L	NONE	GREEN	NA	06/10/19	06144639
Phosphorus	0.00800	0.0100		0.309	MG/L	365.2	365.2	05/28/19	05/29/19	06034606
Phosphorus, -ortho	0.00800	0.0100		0.0556	MG/L	NONE	365.2	NA	05/17/19	05204556
Solids, Total Suspended	6.67	6.67		143	MG/L	NONE	160.2	NA	05/17/19	05214562
Solids, Volatile Suspen	6.67	6.67		12.7	MG/L	NONE	160.4	NA	05/17/19	05214563
Total Organic Carbon	0.500	1.00		2.2	MG/L	NONE	415.1	NA	05/30/19	06044609

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 05/23/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-11	ARDL Lab No.:	008478-07
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0522922
Sample Date:	05/16/2019	Received Date:	05/16/2019
Sample Time:	1100	Prep. Date:	05/17/2019
Matrix:	WATER	Analysis Date:	05/22/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11047
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	0.878		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	0.222		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	82%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008478-07
Field ID: SVL-11
Received: 05/16/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 05/16/2019
Sampling Time: 1100

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		ND	MG/L	NONE	350.1	NA	05/28/19	05294592
Chlorophyll-a, Correcte	1.0	1.00		60.7	MG/CU.M.	10200H	10200H	05/17/19	05/28/19	05294596
Nitrate as Nitrogen	0.500	0.500		6.58	MG/L	NONE	GREEN	NA	06/10/19	06144639
Pheophytin-a	1.0	1.00		5.2	MG/CU.M.	10200H	10200H	05/17/19	05/28/19	05294596
Phosphorus	0.00800	0.0100		0.186	MG/L	365.2	365.2	05/28/19	05/29/19	06034606
Phosphorus, -ortho	0.00800	0.0100		0.0292	MG/L	NONE	365.2	NA	05/17/19	05204556
Solids, Total Suspended	2.50	2.50		14.0	MG/L	NONE	160.2	NA	05/17/19	05214562
Solids, Volatile Suspen	2.50	2.50		5.25	MG/L	NONE	160.4	NA	05/17/19	05214563
Total Organic Carbon	0.500	1.00		3.0	MG/L	NONE	415.1	NA	05/30/19	06044609

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 05/23/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-15	ARDL Lab No.:	008478-08
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0522923
Sample Date:	05/16/2019	Received Date:	05/16/2019
Sample Time:	1300	Prep. Date:	05/17/2019
Matrix:	WATER	Analysis Date:	05/22/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11047
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	0.844		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	0.222		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	83%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008478-08 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-15 Sampling Date: 05/16/2019 Moisture: NA
Received: 05/16/2019 Sampling Time: 1300

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0325	MG/L	NONE	350.1	NA	05/28/19	05294592
Chlorophyll-a, Correcte	1.0	1.00		67.5	MG/CU.M.	10200H	10200H	05/17/19	05/28/19	05294596
Nitrate as Nitrogen	0.500	0.500		6.4	MG/L	NONE	GREEN	NA	06/10/19	06144639
Pheophytin-a	1.0	1.00		4.4	MG/CU.M.	10200H	10200H	05/17/19	05/28/19	05294596
Phosphorus	0.00800	0.0100		0.182	MG/L	365.2	365.2	05/28/19	05/29/19	06034606
Phosphorus, -ortho	0.00800	0.0100		0.0213	MG/L	NONE	365.2	NA	05/17/19	05204556
Solids, Total Suspended	2.50	2.50		14.0	MG/L	NONE	160.2	NA	05/17/19	05214562
Solids, Volatile Suspen	2.50	2.50		6.25	MG/L	NONE	160.4	NA	05/17/19	05214563
Total Organic Carbon	0.500	1.00		3.2	MG/L	NONE	415.1	NA	05/30/19	06044609

(a) DOD and/or NELAC Accredited Analyte.

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008478-09
Field ID: LS MARINA
Received: 05/16/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 05/16/2019
Sampling Time: 1000

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.0	1.00		28.0	COL/100 ML	NONE	1604	NA	05/16/19	05204553

(a) DOD and/or NELAC Accredited Analyte.

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008478-10
Field ID: FIN MARINA
Received: 05/16/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 05/16/2019
Sampling Time: 1040

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.0	1.00		27.0	COL/100 ML	NONE	1604	NA	05/16/19	05204553

(a) DOD and/or NELAC Accredited Analyte.

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008478-11 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SUL MARINA Sampling Date: 05/16/2019 Moisture: NA
Received: 05/16/2019 Sampling Time: 1143

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.0	1.00		200	COL/100 ML	NONE	1604	NA	05/16/19	05204553

(a) DOD and/or NELAC Accredited Analyte.

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Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008478-12
Field ID: ASA 4
Received: 05/16/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 05/16/2019
Sampling Time: 1213

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.0	1.00		325	COL/100 ML	NONE	1604	NA	05/16/19	05204553

(a) DOD and/or NELAC Accredited Analyte.

METHOD BLANK REPORT

ARDL, Inc. 400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008478 Report Date: 05/23/2019

Project Name: SHELBYVILLE LAKE	Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.:	Analytical Method: 8270C
NELAC Certified - IL100308	Prep Method: 3510C

Field ID:	NA	ARDL Lab No.:	008478-01B1
Desc/Location:	NA	Lab Filename:	E0522913
Sample Date:	NA	Received Date:	NA
Sample Time:	NA	Prep. Date:	05/17/2019
Matrix:	QC Material	Analysis Date:	05/22/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11047
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units
Trifluralin	0.200	0.200	ND		UG/L
Atrazine	0.200	0.200	ND		UG/L
Metribuzin	0.200	0.200	ND		UG/L
Alachlor	0.200	0.200	ND		UG/L
Metolachlor	0.200	0.200	ND		UG/L
Chlorpyrifos	0.200	0.200	ND		UG/L
Cyanazine	0.200	0.200	ND		UG/L
Pendimethalin	0.200	0.200	ND		UG/L

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	90%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

BLANK SUMMARY REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	LOD	LOQ	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
(a) Iron	0.040	0.050	ND	MG/L	3010A	6010C	05/23/19	05/28/19	P7207	008478-03B1
(a) Manganese	0.004	0.005	ND	MG/L	3010A	6010C	05/23/19	05/28/19	P7207	008478-03B1
Ammonia Nitrogen	0.020	0.030	ND	MG/L	NONE	350.1	NA	05/28/19	05294592	008478-01B1
Chlorophyll-a, Corre	1.0	1.0	ND	MG/CU.M.	10200H	10200H	05/17/19	05/28/19	05294596	008478-02B1
E. Coliform	1.0	1.0	ND	COL/100 ML	NONE	1604	NA	05/16/19	05204553	008478-09B1
Nitrate as Nitrogen	0.050	0.050	ND	MG/L	NONE	GREEN	NA	06/12/19	06144640	008476-02B1
Nitrate as Nitrogen	0.050	0.050	ND	MG/L	NONE	GREEN	NA	06/10/19	06144639	008477-02B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	05/17/19	05/28/19	05294596	008478-02B1
Phosphorus	0.008	0.010	ND	MG/L	365.2	365.2	05/28/19	05/29/19	06034606	008476-06B1
Phosphorus, -ortho	0.008	0.010	ND	MG/L	NONE	365.2	NA	05/17/19	05204556	008477-02B1
Solids, Total Suspen	1.0	1.0	ND	MG/L	NONE	160.2	NA	05/17/19	05214562	008478-06B1
Solids, Volatile Sus	1.0	1.0	ND	MG/L	NONE	160.4	NA	05/17/19	05214563	008478-06B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	05/30/19	06044609	008477-02B1

(a) DOD and/or NELAC Accredited Analyte

Inorganic Method Blanks for 008478

BLANK SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008478 Report Date: 05/23/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD) Analytical Method: 8270C
Project No.: Prep Method: 3510C

Matrix: QC Material QC Batch: B11047 Prep. Date: 05/17/2019
Amount Used: 1000 mL Level: LOW Analysis Date: 05/22/2019

Parameter	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery Limits	RPD	RPD Limit
Trifluralin	3.16	4	79	--	--	--	30-130	--	--
Atrazine	2.77	4	69	--	--	--	30-130	--	--
Metribuzin	2.92	4	73	--	--	--	30-130	--	--
Alachlor	2.51	4	63	--	--	--	30-130	--	--
Metolachlor	3.07	4	77	--	--	--	30-130	--	--
Chlorpyrifos	2.72	4	68	--	--	--	30-130	--	--
Cyanazine	3.45	4	86	--	--	--	30-130	--	--
Pendimethalin	3.25	4	81	--	--	--	30-130	--	--

SURROGATE RECOVERIES:	Spike %R	Duplicate %R	%R Limits
Triphenylphosphate	82	--	30-130

(a) DOD-QSM Accredited Analyte.

'*' indicates a recovery outside of standard limits.

Spike Blanks for 008478-01, NP PESTICIDES (8270SIM-MOD)

LABORATORY CONTROL SAMPLE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	LCS 1 Result	LCS 1 Level	LCS 1 % Rec	LCS 2 Result	LCS 2 Level	LCS 2 % Rec	% Rec Limits	Mean % Rec	Analytical Run	QC Lab Number
(a) Iron	4.9	5.0	98	--	--	--	87-115	--	P7207	008478-03C1
(a) Manganese	0.76	0.75	102	--	--	--	90-114	--	P7207	008478-03C1
Ammonia Nitrogen	1.0	1.0	102	--	--	--	80-120	--	05294592	008478-01C1
Nitrate as Nitrogen	5.0	5.0	99	--	--	--	80-120	--	06144639	008477-02C1
Nitrate as Nitrogen	4.9	5.0	98	--	--	--	80-120	--	06144640	008476-02C1
Phosphorus	0.69	0.67	104	--	--	--	80-120	--	06034606	008476-06C1
Phosphorus, -ortho	0.10	0.10	103	--	--	--	80-120	--	05204556	008477-02C1
Total Organic Carbon	9.1	10.0	91	--	--	--	76-120	--	06044609	008477-02C1

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits.

(a) DOD and/or NELAC Accredited Analyte

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008478 Report Date: 05/23/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD) Analytical Method: 8270C
Project No.: Prep Method: 3510C

Field ID:	SVL-1	Prep. Date:	05/17/2019	ARDL Lab No.:	008478-01
Desc/Location:	SHELBYVILLE LAKE	Amount Used:	900 mL	Lab Filename:	
Sample Date:	05/16/2019	% Moisture:	NA	Received Date:	05/16/2019
Sample Time:	0915	QC Batch:	B11047	Analysis Date:	05/22/2019
Matrix:	WATER	Level:	LOW		

Parameter	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit
Trifluralin	ND	3.53	4.44	79.5	3.6	4.44	81	30-130	1.9	30
Atrazine	ND	3.19	4.44	71.8	3.27	4.44	73.5	30-130	2.4	30
Metribuzin	ND	3.27	4.44	73.5	3.39	4.44	76.3	30-130	3.7	30
Alachlor	ND	2.83	4.44	63.8	2.9	4.44	65.3	30-130	2.3	30
Metolachlor	ND	3.47	4.44	78	3.61	4.44	81.3	30-130	4.1	30
Chlorpyrifos	ND	3	4.44	67.5	3.08	4.44	69.3	30-130	2.6	30
Cyanazine	ND	3.89	4.44	87.5	3.99	4.44	89.8	30-130	2.5	30
Pendimethalin	ND	3.63	4.44	81.8	3.67	4.44	82.5	30-130	0.9	30

SURROGATE RECOVERIES:	MS %R	MSD %R	%R Limits
Triphenylphosphate	81	82	30-130

(a) DOD-QSM Accredited Analyte.
'nc' indicates sample >4X spike level.
'*' indicates a recovery outside of standard limits.
Matrix Spikes for 008478-01, NP PESTICIDES (8270SIM-MOD)

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	Sample Matrix	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit	Run	QC Lab Number
(a) Iron	WATER	0.12	1.1	1.0	100	1.1	1.0	100	87-115	1	20	P7207	008478-03MS
(a) Manganese	WATER	0.012	0.53	0.50	103	0.53	0.50	103	90-114	1	20	P7207	008478-03MS
Ammonia Nitrogen	WATER	0.082	2.3	2.0	108	2.2	2.0	104	75-125	4	20	05294592	008478-01MS
Phosphorus	WATER	0.10	0.92	0.83	99	0.94	0.83	101	75-125	2	20	06034606	008478-01MS
Phosphorus, -ortho	WATER	0.077	0.18	0.10	103	0.18	0.10	106	75-125	2	20	05204556	008478-05MS

NOTE: Values tabulated above marked with an asterisk are explained in the associated narrative.

(a) DOD and/or NELAC Accredited Analyte.

Inorganic Matrix Spikes for 008478

SAMPLE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008478 Report Date: 06/18/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	Sample Conc'n	First Duplicate	Second Duplicate	Units	Percent Diff	Mean (Smp,D1,D2)	Analytical Run	QC Lab Number
Chlorophyll-a, Corrected	31.8	31.2	--	MG/CU.M.	2	--	05294596	008478-02D1
Pheophytin-a	4.8	6.1	--	MG/CU.M.	24*	--	05294596	008478-02D1
Solids, Total Suspended	143	149	--	MG/L	4	--	05214562	008478-06D1
Solids, Volatile Suspend	12.7	12.7	--	MG/L	0	--	05214563	008478-06D1

* indicates that agreement between duplicates is greater than 20%. See Case Narrative for exceptions.

(a) DOD and/or NELAC Accredited Analyte

Sample Duplicates for 008478

[redacted]

Sample Receipt Information

Including as appropriate:

- COCs
- Cooler Receipts
- Airbills
- Email Communication / Instructions from Customer

ARDL Data Package 8478

8478

ARDL, Inc.

P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864
(618) 244-3235 Phone (618) 244-1149 Fax

8478

CHAIN OF CUSTODY RECORD

PROJECT: Shelbyville Lake

SAMPLERS: (Signature) Tschapker D. Greeling

SAMPLE NUMBER	DATE	TIME	COMP	GRAB	NO. OF CONTAINERS	TSS, TVSS	Chloro/Pheo	* TOC, T-PO4	O-PO4	* NO3-N, NH3-N	NP Pest	# T.Fe, T.Mn	E. coli	MS/MSD				REMARKS OR SAMPLE LOCATION	PRESERVATION ICED	PRESERVATION SPECIFY CHEMICALS ADDED AND FINAL pH IF KNOWN
SVL-1	5-16	915		X		X		X	X	X	X	X		X					X	
SVL-2	5-16	950		X		X	X	X	X	X	X								X	
SVL-2-10	5-16	950		X		X		X	X	X		X							X	
SVL-4	5-16	1137		X		X	X	X	X	X	X								X	
SVL-12	5-16	1113		X		X		X	X	X	X								X	
SVL-13	5-16	1030		X		X		X	X	X	X								X	
SVL-11	5-16	1100		X		X	X	X	X	X	X								X	
SVL-15	5-16	1300		X		X	X	X	X	X	X								X	
LS Marina	5-16	1000		X									X						X	
FIN Marina	5-16	1040		X									X						X	
SUL Marina	5-16	1143		X									X						X	
ASA 4	5-16	1213											X							

	Date	Time	
Relinquished by: (Signature) Tschapker	5-16	1405	Received by: (Signature) Valerie Jenkins
Relinquished by: (Signature) Valerie Jenkins	5/16/19	1575	Received by: (Signature)
Received for Laboratory by: (Signature) ORC	5/16/19	1515	Shipping Ticket No.

5-17-19 0600 dlc 5-17-19

REMARKS/SPECIAL INSTRUCTIONS:

*Preserved with H_2SO_4
#Preserved with HNO_3

PURCHASE ORDER NO: _____

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 8478

Cooler # 1 of 3

Number of Coolers in Shipment: 3

Project: Shelbyville Lake

Date Received: 5-16-19 by vg

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 5-16-19 (Signature) DRC

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)

   If YES, enter carrier name and airbill number here: Courier

2. Were custody seals on outside of cooler? ..... YES (NO) N/A

   How many and where: — , Seal Date: — , Seal Name: —

3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (NA)

4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO

5. Were custody papers sealed in a plastic bag? ..... YES (NO)

6. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO N/A

7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A

8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A

9. Was a separate container provided for measuring temperature? YES ____ NO X Observed Cooler Temp. 0.3 C Correction factor 0.0 C

B. **LOG-IN PHASE:** Date samples were logged-in: 5-16-19 dlc 5/17/19 (Signature) DRC dlc 5-17-19 LDEckman

10. Describe type of packing in cooler: Loose Ice

11. Were all samples sealed in separate plastic bags? ..... YES (NO) N/A

12. Did all containers arrive unbroken and were labels in good condition? ..... (YES) NO

13. Were sample labels complete? ..... (YES) NO

14. Did all sample labels agree with custody papers? ..... (YES) NO

15. Were correct containers used for the tests indicated? ..... (YES) NO

16. Was pH correct on preserved water samples? ..... (YES) NO N/A

17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO

18. Were bubbles absent in VOA samples? If NO, list by sample #: ____ YES NO (N/A)

19. Was the ARDL project coordinator notified of any deficiencies? ..... YES NO (N/A)

Comments and/or Corrective Action:
(By: Signature) Date:

Sample Transfer	
Fraction: all	Fraction:
Area #: Walkin	Area #:
By: dlc	By:
On: 5-17-19	On:

Chain-of-Custody # N/A

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 8478

Cooler # 2 of 3

Number of Coolers in Shipment: 3

Project: Shelbyville lake

Date Received: 5-16-19 by vaf

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 5-16-19 (Signature) TPC

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)

   If YES, enter carrier name and airbill number here: Courier

2. Were custody seals on outside of cooler? ..... YES (NO) N/A

   How many and where? — ,Seal Date: — ,Seal Name: —

3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (NA)

4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO

5. Were custody papers sealed in a plastic bag? ..... YES (NO)

6. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO N/A

7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A

8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A

9. Was a separate container provided for measuring temperature? YES____ NO X Observed Cooler Temp. 0.2 C
   Correction factor 0.0 C

B. **LOG-IN PHASE:** Date samples were logged-in: 5-17-19 (Signature) DBCochrum

10. Describe type of packing in cooler: loose Ice

11. Were all samples sealed in separate plastic bags? ..... YES (NO) N/A

12. Did all containers arrive unbroken and were labels in good condition? ..... (YES) NO

13. Were sample labels complete? ..... (YES) NO

14. Did all sample labels agree with custody papers? ..... (YES) NO

15. Were correct containers used for the tests indicated? ..... (YES) NO

16. Was pH correct on preserved water samples? ..... (YES) NO N/A

17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO

18. Were bubbles absent in VOA samples? If NO, list by sample #: _____ YES NO (N/A)

19. Was the ARDL project coordinator notified of any deficiencies? ..... YES NO (N/A)

Comments and/or Corrective Action:
(By: Signature) Date:

Sample Transfer	
Fraction: all	Fraction:
Area #: Walkin	Area #:
By: dlc	By:
On: 5-17-19	On:

Chain-of-Custody # N/A

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 8478

Cooler # 3 of 3

Number of Coolers in Shipment: 3

Project: Shelbyville Lake

Date Received: 5-16-19 luy vaj

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 5-16-19 (Signature) DRC

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)

   If YES, enter carrier name and airbill number here: Courier

2. Were custody seals on outside of cooler? ..... YES (NO) N/A

   How many and where? _____, Seal Date: _____, Seal Name: _____

3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (N/A)
4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO
5. Were custody papers sealed in a plastic bag? ..... YES (NO)
6. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO N/A
7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A
8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A
9. Was a separate container provided for measuring temperature? YES____ NO X Observed Cooler Temp. 0.4 C
   Correction factor 0.0 C

B. **LOG-IN PHASE:** Date samples were logged-in: 5/17/19 (Signature) DSCochrum

10. Describe type of packing in cooler: loose ice
11. Were all samples sealed in separate plastic bags? ..... YES (NO) N/A
12. Did all containers arrive unbroken and were labels in good condition? ..... (YES) NO
13. Were sample labels complete? ..... (YES) NO
14. Did all sample labels agree with custody papers? ..... (YES) NO
15. Were correct containers used for the tests indicated? ..... (YES) NO
16. Was pH correct on preserved water samples? ..... (YES) NO N/A
17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO
18. Were bubbles absent in VOA samples? If NO, list by sample #: _____ YES NO (N/A)
19. Was the ARDL project coordinator notified of any deficiencies? ..... YES NO (N/A)

Comments and/or Corrective Action:
(By: Signature) Date:

Sample Transfer	
Fraction: all	Fraction:
Area #: Walkin	Area #:
By: dlc	By:
On: 5-17-19	On:

Chain-of-Custody # N/A

ARDL Inc.
Environmental | Analytical | Management | Safety

PO Box 1566
400 Aviation Drive
Mt. Vernon, IL 62864
618-244-3235
www.ardlinc.com

Customer Name: SLCOE **Date: 10/2/19**

Project Name: Shelbyville Lake **Lab Name: ARDL, Inc.**

Samples Received at ARDL: 7/31/19 **ARDL Report No.: 8502 Revision 1**

CASE NARRATIVE

Customer Sample No.	Date Collected	Lab ID Number	Analyses Requested
SVL-1	7/30/19	8502-01	NP Pesticides, Metals(1), Inorganics(2)
SVL-2	7/30/19	8502-02	NP Pesticides, Inorganics(2)(4)
SVL-2-10	7/30/19	8502-03	Metals(1), Inorganics(2)
SVL-4	7/30/19	8502-04	NP Pesticides, Inorganics(2)(4)
SVL-12	7/30/19	8502-05	NP Pesticides, Inorganics(2)
SVL-13	7/30/19	8502-06	NP Pesticides, Inorganics(2)
SVL-11	7/30/19	8502-07	NP Pesticides, Inorganics(2)(4)
SVL-15	7/30/19	8502-08	NP Pesticides, Inorganics(2)(4)
LS MARINA	7/30/19	8502-09	E. Coli
FIN MARINA	7/30/19	8502-10	E. Coli
SUL MARINA	7/30/19	8502-11	E. Coli
ASA-4	7/30/19	8502-12	Fecal
KAS 3	7/30/19	8502-13	Inorganics(2)(3)(4)

(1) Including iron and manganese.
(2) Including ammonia, nitrate, orthophosphate, total phosphorus, TOC, TSS, and TVSS.
(3) Including nitrite and TKN.
(4) Including chlorophyll-a and pheophytin-a.

Note: This report was revised on 10/2/2019 to correct LOD and LOQ values for nitrate.

The quality control data are summarized as follows:

NP PESTICIDE FRACTION – METHOD 8270-SIM

HOLDING TIME
Samples were prepared and analyzed within method specified holding times.

INITIAL CALIBRATION
The initial calibration passed criteria.

CONTINUING CALIBRATION
The continuing calibration verification (CCV) passed criteria for all analytes. The closing CCV passed criteria for all analytes.

PREPARATION BLANK
The blank met acceptance criteria.

LABORATORY CONTROL SAMPLE
The LCS analyses met recovery criteria.

CASE NARRATIVE (Continued)

MATRIX SPIKE
The matrix spike and matrix spike duplicate met recovery criteria.

DUPLICATE
Duplicate analyses are reported as MS/MSD. RPD of the duplicate analyses met criteria.

INTERNAL STANDARD
All internal standard criteria were met.

SURROGATE
All surrogate recovery criteria were met.

INORGANIC FRACTION

TOC were analyzed by an accredited outside laboratory due to instrument status.

Nitrate analysis was performed outside holding time due to instrumentation status. Samples were analyzed via method 300.0 using ion chromatography. These results have been flagged appropriately.

PREPARATION BLANK
Results of the preparation blanks were within acceptable limits.

LABORATORY CONTROL SAMPLE
Percent recoveries of all LCS analyses were within control limits.

MATRIX SPIKE
Percent recovery of all matrix spikes and matrix spike duplicates except 1 of 2 for TKN.

DUPLICATE
All duplicate analyses are reported as MS/MSD except chlorophyll-a, pheophytin-a, TSS, and TVSS. RPD on all duplicate analyses were within control limits.

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

ND - Indicates compound was analyzed for but not detected.

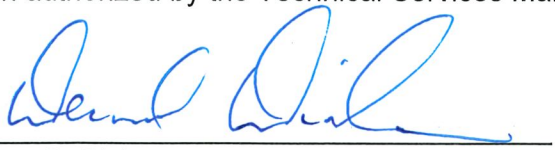
X - Sample preparation and/or analysis was performed outside of holding time requirements.

J - Indicates an estimated value. This flag is used either when estimating a concentration or this flag indicates analyte(s) associated with a DOD-QSM specified non-compliance pertaining to matrix QC criteria.

REPORT ORGANIZATION

The data in this report appear by sample type (Field sample, preparation blank, laboratory control sample / spike blank, matrix spike /spike duplicate and sample duplicate). Within each sample type the data appear in the order that the analytical methods were discussed in this case narrative. Sample receipt information follows the analytical data.

Release of the data contained in this package has been authorized by the Technical Services Manager or his designee as verified by the following signature.



Dean S. Dickerson
Technical Services Manager

[redacted]

Sample & QC Results

Including as appropriate:

- Field Sample Results
- Batch QC
  - Prep Blank
  - LCS/Spike Blank
- Matrix QC
  - MS/MSD
  - Sample Duplicate

ARDL Data Package 8502

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008502 Report Date: 08/16/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-1	ARDL Lab No.:	008502-01
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0815905
Sample Date:	07/30/2019	Received Date:	07/30/2019
Sample Time:	1000	Prep. Date:	08/02/2019
Matrix:	WATER	Analysis Date:	08/15/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11079
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	1.82		UG/L	1
Metribuzin	0.222	0.222	0.256		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	3.37		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	84%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Lab Report No: 008502 Report Date: 10/02/2019

Project Name: SHELBYVILLE LAKE Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008502-01 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-1 Sampling Date: 07/30/2019 Moisture: NA
Received: 07/30/2019 Sampling Time: 1000

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.103	MG/L	3010A	6010C	07/31/19	08/23/19	P7233
(a) Manganese	0.00400	0.00500		0.0505	MG/L	3010A	6010C	07/31/19	08/23/19	P7233
Ammonia Nitrogen	0.0200	0.0300		0.115	MG/L	NONE	350.1	NA	08/07/19	08124784
Nitrate as Nitrogen	0.800	1.00	X	3.25	MG/L	NONE	300.0	NA	08/27/19	09034842
Phosphorus	0.00800	0.0100		0.0508	MG/L	365.2	365.2	08/15/19	08/16/19	08204809
Phosphorus, -ortho	0.00800	0.0100		0.0169	MG/L	NONE	365.2	NA	07/31/19	08014759
Solids, Total Suspended	2.0	2.00		4.8	MG/L	NONE	160.2	NA	08/05/19	08124782
Solids, Volatile Suspen	2.0	2.00		3.0	MG/L	NONE	160.4	NA	08/05/19	08124783
Total Organic Carbon	0.500	1.00		3.8	MG/L	NONE	415.1	NA	08/13/19	08204806

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Lab Report No: 008502 Report Date: 08/16/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-2	ARDL Lab No.:	008502-02
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0815908
Sample Date:	07/30/2019	Received Date:	07/30/2019
Sample Time:	1049	Prep. Date:	08/02/2019
Matrix:	WATER	Analysis Date:	08/15/2019
Amount Used:	800 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11079
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.250	0.250	ND		UG/L	1
Atrazine	0.250	0.250	1.73		UG/L	1
Metribuzin	0.250	0.250	ND		UG/L	1
Alachlor	0.250	0.250	ND		UG/L	1
Metolachlor	0.250	0.250	3.09		UG/L	1
Chlorpyrifos	0.250	0.250	ND		UG/L	1
Cyanazine	0.250	0.250	ND		UG/L	1
Pendimethalin	0.250	0.250	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	83%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Lab Report No: 008502 Report Date: 10/02/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-02
Field ID: SVL-2
Received: 07/30/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 07/30/2019
Sampling Time: 1049

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0684	MG/L	NONE	350.1	NA	08/07/19	08124784
Chlorophyll-a, Correcte	1.0	1.00		28.9	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799
Nitrate as Nitrogen	0.800	1.00	X	3.19	MG/L	NONE	300.0	NA	08/27/19	09034842
Pheophytin-a	1.0	1.00		ND	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799
Phosphorus	0.00800	0.0100		0.0422	MG/L	365.2	365.2	08/15/19	08/16/19	08204809
Phosphorus, -ortho	0.00800	0.0100	J	0.0092	MG/L	NONE	365.2	NA	07/31/19	08014759
Solids, Total Suspended	2.0	2.00		5.2	MG/L	NONE	160.2	NA	08/05/19	08124782
Solids, Volatile Suspen	2.0	2.00		3.4	MG/L	NONE	160.4	NA	08/05/19	08124783
Total Organic Carbon	0.500	1.00		4.2	MG/L	NONE	415.1	NA	08/13/19	08204806

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Lab Report No: 008502 Report Date: 10/02/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-03
Field ID: SVL-2-10
Received: 07/30/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 07/30/2019
Sampling Time: 1049

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.248	MG/L	3010A	6010C	07/31/19	08/23/19	P7233
(a) Manganese	0.00400	0.00500		0.228	MG/L	3010A	6010C	07/31/19	08/23/19	P7233
Ammonia Nitrogen	0.0200	0.0300		0.414	MG/L	NONE	350.1	NA	08/07/19	08124784
Nitrate as Nitrogen	0.800	1.00	X	2.84	MG/L	NONE	300.0	NA	08/27/19	09034842
Phosphorus	0.00800	0.0100		0.0508	MG/L	365.2	365.2	08/15/19	08/16/19	08204809
Phosphorus, -ortho	0.00800	0.0100		0.0118	MG/L	NONE	365.2	NA	07/31/19	08014759
Solids, Total Suspended	4.0	4.00		52.4	MG/L	NONE	160.2	NA	08/05/19	08124782
Solids, Volatile Suspen	4.0	4.00		6.8	MG/L	NONE	160.4	NA	08/05/19	08124783
Total Organic Carbon	0.500	1.00		3.2	MG/L	NONE	415.1	NA	08/13/19	08204806

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Lab Report No: 008502 Report Date: 08/16/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-4	ARDL Lab No.:	008502-04
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0815909
Sample Date:	07/30/2019	Received Date:	07/30/2019
Sample Time:	1300	Prep. Date:	08/02/2019
Matrix:	WATER	Analysis Date:	08/15/2019
Amount Used:	800 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11079
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.250	0.250	ND		UG/L	1
Atrazine	0.250	0.250	1.65		UG/L	1
Metribuzin	0.250	0.250	ND		UG/L	1
Alachlor	0.250	0.250	ND		UG/L	1
Metolachlor	0.250	0.250	1.26		UG/L	1
Chlorpyrifos	0.250	0.250	ND		UG/L	1
Cyanazine	0.250	0.250	ND		UG/L	1
Pendimethalin	0.250	0.250	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	83%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Lab Report No: 008502 Report Date: 10/02/2019

Project Name: SHELBYVILLE LAKE Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008502-04 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-4 Sampling Date: 07/30/2019 Moisture: NA
Received: 07/30/2019 Sampling Time: 1300

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0457	MG/L	NONE	350.1	NA	08/07/19	08124784
Chlorophyll-a, Correcte	1.0	1.00		63.5	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799
Nitrate as Nitrogen	0.800	1.00	X	2.46	MG/L	NONE	300.0	NA	08/27/19	09034842
Pheophytin-a	1.0	1.00		5.7	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799
Phosphorus	0.00800	0.0100		0.163	MG/L	365.2	365.2	08/15/19	08/16/19	08204809
Phosphorus, -ortho	0.00800	0.0100		ND	MG/L	NONE	365.2	NA	07/31/19	08014759
Solids, Total Suspended	4.0	4.00		18.8	MG/L	NONE	160.2	NA	08/05/19	08124782
Solids, Volatile Suspen	4.0	4.00		8.8	MG/L	NONE	160.4	NA	08/05/19	08124783
Total Organic Carbon	0.500	1.00		4.3	MG/L	NONE	415.1	NA	08/13/19	08204806

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Lab Report No: 008502 Report Date: 08/16/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-12	ARDL Lab No.:	008502-05
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0815910
Sample Date:	07/30/2019	Received Date:	07/30/2019
Sample Time:	1227	Prep. Date:	08/02/2019
Matrix:	WATER	Analysis Date:	08/15/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11079
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	0.222		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	0.233		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	86%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Lab Report No: 008502 Report Date: 10/02/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-05
Field ID: SVL-12
Received: 07/30/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 07/30/2019
Sampling Time: 1227

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0386	MG/L	NONE	350.1	NA	08/07/19	08124784
Nitrate as Nitrogen	0.800	1.00	X	2.17	MG/L	NONE	300.0	NA	08/27/19	09034842
Phosphorus	0.00800	0.0100		0.245	MG/L	365.2	365.2	08/15/19	08/16/19	08204809
Phosphorus, -ortho	0.00800	0.0100		0.101	MG/L	NONE	365.2	NA	07/31/19	08014759
Solids, Total Suspended	2.50	2.50		13.0	MG/L	NONE	160.2	NA	08/05/19	08124782
Solids, Volatile Suspen	2.50	2.50		5.0	MG/L	NONE	160.4	NA	08/05/19	08124783
Total Organic Carbon	0.500	1.00		3.5	MG/L	NONE	415.1	NA	08/13/19	08204806

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Lab Report No: 008502 Report Date: 08/16/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-13	ARDL Lab No.:	008502-06
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0815911
Sample Date:	07/30/2019	Received Date:	07/30/2019
Sample Time:	1134	Prep. Date:	08/02/2019
Matrix:	WATER	Analysis Date:	08/15/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11079
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.200	0.200	ND		UG/L	1
Atrazine	0.200	0.200	0.950		UG/L	1
Metribuzin	0.200	0.200	ND		UG/L	1
Alachlor	0.200	0.200	ND		UG/L	1
Metolachlor	0.200	0.200	1.00		UG/L	1
Chlorpyrifos	0.200	0.200	ND		UG/L	1
Cyanazine	0.200	0.200	ND		UG/L	1
Pendimethalin	0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	67%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Lab Report No: 008502 Report Date: 10/02/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-06
Field ID: SVL-13
Received: 07/30/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 07/30/2019
Sampling Time: 1134

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.126	MG/L	NONE	350.1	NA	08/07/19	08124784
Nitrate as Nitrogen	0.800	1.00	X	1.81	MG/L	NONE	300.0	NA	08/27/19	09034842
Phosphorus	0.00800	0.0100		0.266	MG/L	365.2	365.2	08/15/19	08/16/19	08204809
Phosphorus, -ortho	0.00800	0.0100		0.0246	MG/L	NONE	365.2	NA	07/31/19	08014759
Solids, Total Suspended	4.0	4.00		28.4	MG/L	NONE	160.2	NA	08/05/19	08124782
Solids, Volatile Suspen	4.0	4.00		8.8	MG/L	NONE	160.4	NA	08/05/19	08124783
Total Organic Carbon	0.500	1.00		5.0	MG/L	NONE	415.1	NA	08/13/19	08204807

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Lab Report No: 008502 Report Date: 08/16/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-11	ARDL Lab No.:	008502-07
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0815912
Sample Date:	07/30/2019	Received Date:	07/30/2019
Sample Time:	1230	Prep. Date:	08/02/2019
Matrix:	WATER	Analysis Date:	08/15/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11079
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	1.11		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	2.42		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	87%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

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Lab Report No: 008502 Report Date: 10/02/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-07
Field ID: SVL-11
Received: 07/30/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 07/30/2019
Sampling Time: 1230

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0408	MG/L	NONE	350.1	NA	08/07/19	08124784
Chlorophyll-a, Correcte	1.0	1.00		61.7	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799
Nitrate as Nitrogen	0.800	1.00	X	2.93	MG/L	NONE	300.0	NA	08/27/19	09034842
Pheophytin-a	1.0	1.00		4.4	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799
Phosphorus	0.00800	0.0100		0.115	MG/L	365.2	365.2	08/15/19	08/16/19	08204809
Phosphorus, -ortho	0.00800	0.0100		ND	MG/L	NONE	365.2	NA	07/31/19	08014759
Solids, Total Suspended	2.50	2.50		9.0	MG/L	NONE	160.2	NA	08/05/19	08124782
Solids, Volatile Suspen	2.50	2.50		6.25	MG/L	NONE	160.4	NA	08/05/19	08124783
Total Organic Carbon	0.500	1.00		4.6	MG/L	NONE	415.1	NA	08/13/19	08204807

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Lab Report No: 008502 Report Date: 08/16/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-15	ARDL Lab No.:	008502-08
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E0815913
Sample Date:	07/30/2019	Received Date:	07/30/2019
Sample Time:	1400	Prep. Date:	08/02/2019
Matrix:	WATER	Analysis Date:	08/15/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11079
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	1.41		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	1.11		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	80%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

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Lab Report No: 008502 Report Date: 10/02/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-08
Field ID: SVL-15
Received: 07/30/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 07/30/2019
Sampling Time: 1400

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0528	MG/L	NONE	350.1	NA	08/07/19	08124784
Chlorophyll-a, Correcte	1.0	1.00		63.5	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799
Nitrate as Nitrogen	0.800	1.00	X	2.45	MG/L	NONE	300.0	NA	08/27/19	09034842
Pheophytin-a	1.0	1.00		9.5	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799
Phosphorus	0.00800	0.0100		0.176	MG/L	365.2	365.2	08/15/19	08/16/19	08204809
Phosphorus, -ortho	0.00800	0.0100	J	0.0092	MG/L	NONE	365.2	NA	07/31/19	08014759
Solids, Total Suspended	4.0	4.00		18.8	MG/L	NONE	160.2	NA	08/05/19	08124782
Solids, Volatile Suspen	4.0	4.00		8.4	MG/L	NONE	160.4	NA	08/05/19	08124783
Total Organic Carbon	0.500	1.00		4.2	MG/L	NONE	415.1	NA	08/13/19	08204807

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008502 Report Date: 09/06/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-09
Field ID: LS MARINA
Received: 07/30/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 07/30/2019
Sampling Time: 1130

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.0	1.00		21.0	COL/100 ML	NONE	1604	NA	07/30/19	08024762

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008502 Report Date: 09/06/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-10
Field ID: FIN MARINA
Received: 07/30/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 07/30/2019
Sampling Time: 1215

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.0	1.00		17.0	COL/100 ML	NONE	1604	NA	07/30/19	08024762

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008502 Report Date: 09/06/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-11
Field ID: SUL MARINA
Received: 07/30/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 07/30/2019
Sampling Time: 1320

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.0	1.00		92.0	COL/100 ML	NONE	1604	NA	07/30/19	08024762

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008502 Report Date: 09/06/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-12
Field ID: ASA-4
Received: 07/30/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 07/30/2019
Sampling Time: 1405

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Fecal Coliform	1.0	1.00		2000	COL/100 ML	NONE	9222D	NA	07/30/19	08024761

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008502 Report Date: 10/02/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008502-13
Field ID: KAS 3
Received: 07/30/2019

Sampling Loc'n: KASKASKIA RIVER
Sampling Date: 07/30/2019
Sampling Time: 0850

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.133	MG/L	NONE	350.1	NA	08/07/19	08124784
Chlorophyll-a, Correcte	1.0	1.00		12.7	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799
Kjeldahl Nitrogen	0.190	0.200	J	1.07	MG/L	351.2	351.2	08/19/19	08/21/19	08214825
Nitrate as Nitrogen	0.800	1.00	X	3.17	MG/L	NONE	300.0	NA	08/27/19	09034842
Nitrite as Nitrogen	0.0200	0.0200		0.025	MG/L	NONE	354.1	NA	07/31/19	07314756
Pheophytin-a	1.0	1.00		3.2	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799
Phosphorus	0.00800	0.0100		0.262	MG/L	365.2	365.2	08/15/19	08/16/19	08204809
Phosphorus, -ortho	0.00800	0.0100		0.0143	MG/L	NONE	365.2	NA	07/31/19	08014759
Solids, Total Suspended	4.0	4.00		60.8	MG/L	NONE	160.2	NA	08/05/19	08124782
Solids, Volatile Suspen	4.0	4.00		6.4	MG/L	NONE	160.4	NA	08/05/19	08124783
Total Organic Carbon	0.500	1.00		3.9	MG/L	NONE	415.1	NA	08/13/19	08204807

(a) DOD and/or NELAC Accredited Analyte.

METHOD BLANK REPORT

ARDL, Inc. 400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008502 Report Date: 08/16/2019

Project Name:	SHELBYVILLE LAKE	Analysis:	NP PESTICIDES (8270SIM-MOD)
Project No.:		Analytical Method:	8270C
NELAC Certified - IL100308		Prep Method:	3510C

Field ID:	NA	ARDL Lab No.:	008502-01B1
Desc/Location:	NA	Lab Filename:	E0815903
Sample Date:	NA	Received Date:	NA
Sample Time:	NA	Prep. Date:	08/02/2019
Matrix:	QC Material	Analysis Date:	08/15/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11079
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units
Trifluralin	0.200	0.200	ND		UG/L
Atrazine	0.200	0.200	ND		UG/L
Metribuzin	0.200	0.200	ND		UG/L
Alachlor	0.200	0.200	ND		UG/L
Metolachlor	0.200	0.200	ND		UG/L
Chlorpyrifos	0.200	0.200	ND		UG/L
Cyanazine	0.200	0.200	ND		UG/L
Pendimethalin	0.200	0.200	ND		UG/L

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	101%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

BLANK SUMMARY REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008502 Report Date: 10/02/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	LOD	LOQ	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
(a) Iron	0.040	0.050	ND	MG/L	3010A	6010C	07/31/19	08/23/19	P7233	008502-01B1
(a) Manganese	0.004	0.005	ND	MG/L	3010A	6010C	07/31/19	08/23/19	P7233	008502-01B1
Ammonia Nitrogen	0.020	0.030	ND	MG/L	NONE	350.1	NA	08/07/19	08124784	008502-01B1
Chlorophyll-a, Corre	1.0	1.0	ND	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799	008502-02B1
E. Coliform	1.0	1.0	ND	COL/100 ML	NONE	1604	NA	07/30/19	08024762	008502-09B1
Fecal Coliform	1.0	1.0	ND	COL/100 ML	NONE	9222D	NA	07/30/19	08024761	008502-12B1
Kjeldahl Nitrogen	0.19	0.20	ND	MG/L	351.2	351.2	08/19/19	08/21/19	08214825	008502-13B1
Nitrate as Nitrogen	0.80	1.0	ND	MG/L	NONE	300.0	NA	08/27/19	09034842	008502-01B1
Nitrite as Nitrogen	0.020	0.020	ND	MG/L	NONE	354.1	NA	07/31/19	07314756	008502-13B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	07/31/19	08/12/19	08154799	008502-02B1
Phosphorus	0.008	0.010	ND	MG/L	365.2	365.2	08/15/19	08/16/19	08204809	008502-02B1
Phosphorus, -ortho	0.008	0.010	ND	MG/L	NONE	365.2	NA	07/31/19	08014759	008502-02B1
Solids, Total Suspen	1.0	1.0	ND	MG/L	NONE	160.2	NA	08/05/19	08124782	008502-03B1
Solids, Volatile Sus	1.0	1.0	ND	MG/L	NONE	160.4	NA	08/05/19	08124783	008502-03B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	08/13/19	08204806	008502-01B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	08/13/19	08204807	008502-06B1

(a) DOD and/or NELAC Accredited Analyte

Inorganic Method Blanks for 008502

BLANK SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008502 Report Date: 08/16/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD) Analytical Method: 8270C
Project No.: Prep Method: 3510C

Matrix: QC Material QC Batch: B11079 Prep. Date: 08/02/2019
Amount Used: 1000 mL Level: LOW Analysis Date: 08/15/2019

Parameter	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery Limits	RPD	RPD Limit
Trifluralin	3.81	4	95	--	--	--	30-130	--	--
Atrazine	3.33	4	83	--	--	--	30-130	--	--
Metribuzin	3.32	4	83	--	--	--	30-130	--	--
Alachlor	3.24	4	81	--	--	--	30-130	--	--
Metolachlor	3.66	4	92	--	--	--	30-130	--	--
Chlorpyrifos	3.24	4	81	--	--	--	30-130	--	--
Cyanazine	3.97	4	99	--	--	--	30-130	--	--
Pendimethalin	3.9	4	98	--	--	--	30-130	--	--

SURROGATE RECOVERIES:	Spike %R	Duplicate %R	%R Limits
Triphenylphosphate	96	--	30-130

(a) DOD-QSM Accredited Analyte.

'*' indicates a recovery outside of standard limits.

Spike Blanks for 008502-01, NP PESTICIDES (8270SIM-MOD)

LABORATORY CONTROL SAMPLE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008502 Report Date: 09/06/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	LCS 1 Result	LCS 1 Level	LCS 1 % Rec	LCS 2 Result	LCS 2 Level	LCS 2 % Rec	% Rec Limits	Mean % Rec	Analytical Run	QC Lab Number
(a) Iron	4.9	5.0	99	--	--	--	87-115	--	P7233	008502-01C1
(a) Manganese	0.77	0.75	103	--	--	--	90-114	--	P7233	008502-01C1
Ammonia Nitrogen	0.97	1.0	97	--	--	--	80-120	--	08124784	008502-01C1
Kjeldahl Nitrogen	1.0	1.0	102	--	--	--	80-120	--	08214825	008502-13C1
Nitrate as Nitrogen	12.8	14.0	92	--	--	--	80-120	--	09034842	008502-01C1
Nitrite as Nitrogen	0.97	1.0	97	--	--	--	80-120	--	07314756	008502-13C1
Phosphorus	0.65	0.67	97	--	--	--	80-120	--	08204809	008502-02C1
Phosphorus, -ortho	0.096	0.10	96	--	--	--	80-120	--	08014759	008502-02C1
Total Organic Carbon	8.6	10.0	86	--	--	--	76-120	--	08204806	008502-01C1
Total Organic Carbon	8.9	10.0	89	--	--	--	76-120	--	08204807	008502-06C1

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits.

(a) DOD and/or NELAC Accredited Analyte

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008502 Report Date: 08/16/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD) Analytical Method: 8270C
Project No.: Prep Method: 3510C

Field ID:	SVL-1	Prep. Date:	08/02/2019	ARDL Lab No.:	008502-01
Desc/Location:	SHELBYVILLE LAKE	Amount Used:	900 mL	Lab Filename:	
Sample Date:	07/30/2019	% Moisture:	NA	Received Date:	07/30/2019
Sample Time:	1000	QC Batch:	B11079	Analysis Date:	08/15/2019
Matrix:	WATER	Level:	LOW		

Parameter	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit
Trifluralin	ND	3.78	4.44	85	3.29	4.44	74	30-130	13.8	30
Atrazine	1.82	5.18	4.44	75.5	4.74	4.44	65.8	30-130	8.7	30
Metribuzin	0.256	3.62	4.44	75.8	3.34	4.44	69.5	30-130	8	30
Alachlor	ND	3.3	4.44	74.3	3.18	4.44	71.5	30-130	3.8	30
Metolachlor	3.37	6.91	4.44	79.8	6.58	4.44	72.3	30-130	4.9	30
Chlorpyrifos	ND	3.22	4.44	72.5	2.93	4.44	66	30-130	9.4	30
Cyanazine	ND	4	4.44	90	3.68	4.44	82.8	30-130	8.4	30
Pendimethalin	ND	3.77	4.44	84.8	3.41	4.44	76.8	30-130	9.9	30

SURROGATE RECOVERIES:	MS %R	MSD %R	%R Limits
Triphenylphosphate	87	79	30-130

(a) DOD-QSM Accredited Analyte.
'nc' indicates sample >4X spike level.
'*' indicates a recovery outside of standard limits.
Matrix Spikes for 008502-01, NP PESTICIDES (8270SIM-MOD)

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008502 Report Date: 09/06/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	Sample Matrix	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit	Run	QC Lab Number
(a) Iron	WATER	0.10	1.0	1.0	90	0.99	1.0	88	87-115	2	20	P7233	008502-01MS
(a) Manganese	WATER	0.051	0.56	0.50	102	0.55	0.50	100	90-114	1	20	P7233	008502-01MS
Ammonia Nitrogen	WATER	0.12	2.1	2.0	97	2.0	2.0	95	75-125	2	20	08124784	008502-01MS
Kjeldahl Nitrogen	WATER	1.1	1.6	0.80	69 *	1.9	0.80	106	75-125	17	20	08214825	008502-13MS
Nitrate as Nitrogen	WATER	3.3	11.1	8.0	98	11.1	8.0	98	75-125	0	20	09034842	008502-01MS
Nitrite as Nitrogen	WATER	0.025	1.0	1.0	101	1.0	1.0	101	75-125	0	20	07314756	008502-13MS
Phosphorus	WATER	0.042	0.86	0.83	99	0.88	0.83	101	75-125	2	20	08204809	008502-02MS
Phosphorus, -ortho	WATER	J 0.0092	0.10	0.10	94	0.10	0.10	94	75-125	0	20	08014759	008502-02MS
Total Organic Carbon	WATER	3.8	7.8	5.0	79	7.7	5.0	78	76-120	1	20	08204806	008502-01MS
Total Organic Carbon	WATER	5.0	9.0	5.0	80	9.4	5.0	87	76-120	4	20	08204807	008502-06MS

NOTE: Values tabulated above marked with an asterisk are explained in the associated narrative.

(a) DOD and/or NELAC Accredited Analyte.

SAMPLE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008502 Report Date: 09/06/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	Sample Conc'n	First Duplicate	Second Duplicate	Units	Percent Diff	Mean (Smp,D1,D2)	Analytical Run	QC Lab Number
Chlorophyll-a, Corrected	28.9	27.8	--	MG/CU.M.	4	--	08154799	008502-02D1
Pheophytin-a	ND	2.0	--	MG/CU.M.	NC	--	08154799	008502-02D1
Solids, Total Suspended	52.4	56.4	--	MG/L	7	--	08124782	008502-03D1
Solids, Volatile Suspend	6.8	7.6	--	MG/L	11	--	08124783	008502-03D1

(a) DOD and/or NELAC Accredited Analyte

Sample Receipt Information

Including as appropriate:

- COCs
- Cooler Receipts
- Airbills
- Email Communication / Instructions from Customer

ARDL Data Package 8502

8502

ARDL, Inc.

P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864
(618) 244-3235 Phone (618) 244-1149 Fax

CHAIN OF CUSTODY RECORD

PROJECT: Shelbyville Lake

SAMPLERS: (Signature) TS/BG/GR

SAMPLE NUMBER	~~DATE~~ Time	~~TIME~~ Date	COMP	GRAB	NO. OF CONTAINERS	# TSS, TVSS	Chloro/Pheo	* TOC, T-PO4	O-PO4	* NO3-N, NH3-N	NP Pest	#T.Fe;T.Mn	E. coli	MS/MSD	Fecal Coli	THAL	NO2-N (Nitrite)	REMARKS OR SAMPLE LOCATION	PRESERVATION ICED	PRESERVATION SPECIFY CHEMICALS ADDED AND FINAL pH IF KNOWN
SVL-1	1000	7-30-19		X		X		X	X	X	X	X		X					X	
SVL-2	1649	7-30-19		X		X	X	X	X	X	X								X	
SVL-2-10	1049	7-30-19		X		X		X	X	X		X							X	
SVL-4	1300	7-30-19		X		X	X	X	X	X	X								X	
SVL-12	1227	7-30-19		X		X		X	X	X	X								X	
SVL-13	1134	7-30-19		X		X		X	X	X	X								X	
SVL-11	1230	7-30-19		X		X	X	X	X	X	X								X	
SVL-15	1400 ~~1350~~	7-30-19		X		X	X	X	X	X	X								X	
LS Marina	1130	7-30-19		X									X						X	
FIN Marina	1215	7-30-19		X									X						X	
SUL Marina	1320	7-30-19		X									X						X	
ASA-4	1405	7-30-19	X												X				X	
KAS 3	0850	7-30-19	X			X	X	X	X	X	X	X	7/31/19			X	X	X	did NOT Receive NP Pest / did Receive NO3-N, NH3-N dlc 7-31-19 Also Received TOC, T-PO4	✓	

	Date	Time	
Relinquished by: (Signature)	7/30/19	1345	Received by: (Signature)
Relinquished by: (Signature)	7/30/19	1715	Received by: (Signature)
Received for Laboratory by: (Signature)	7/30/19	1715	Shipping Ticket No.

REMARKS/SPECIAL INSTRUCTIONS:

*Preserved with H_2SO_4
#Preserved with HNO_3

NO_2-N KAS-3 only
↳ Water From 32oz Clear

PURCHASE ORDER NO: _____

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 8502 Cooler # 1 of 2

Number of Coolers in Shipment: 2

Project: Shelbyville Lake Date Received: 7-30-19

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 7-30-19 (Signature) DKaehrum

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)

   If YES, enter carrier name and airbill number here: Courier

2. Were custody seals on outside of cooler? ..... YES NO (N/A)

   How many and where? _____, Seal Date: _____, Seal Name: _____

3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (NA)

4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO

5. Were custody papers sealed in a plastic bag? ..... YES (NO)

6. Were custody papers filled out properly (ink, signed, etc.)? Corrections not initialed or dated ..... YES (NO) N/A

7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A

8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A

9. Was a separate container provided for measuring temperature? YES____ NO✓ Observed Cooler Temp. 0.6 C
   Correction factor 0.0 C

B. **LOG-IN PHASE:** Date samples were logged-in: 7-31-19 (Signature) DKaehrum

10. Describe type of packing in cooler: loose ice

11. Were all samples sealed in separate plastic bags? ..... YES (NO) N/A

12. Did all containers arrive unbroken and were labels in good condition? ..... (YES) NO

13. Were sample labels complete? ..... (YES) NO

14. Did all sample labels agree with custody papers? ..... YES (NO)

15. Were correct containers used for the tests indicated? ..... (YES) NO

16. Was pH correct on preserved water samples? ..... (YES) NO N/A

17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO

18. Were bubbles absent in VOA samples? If NO, list by sample #: _____ YES NO (N/A)

19. Was the ARDL project coordinator notified of any deficiencies? ..... (YES) NO N/A

Comments and/or Corrective Action:
(14) did not receive NP Pest for KAS 3 & did receive NO3-N, NH3-N. Appears as though X was placed in wrong column. Adjusted CofC.
Also received A Toc, T-P04 container - added to C of C.
(By: Signature) dlc Date: 7-31-19

Sample Transfer	
Fraction: all	Fraction:
Area #: Walkin	Area #:
By: dlc	By:
On: 7-31-19	On:

Chain-of-Custody # N/A

M:\ADMIN\FORMS\COOLER RECEIPT REPORT.doc Rev. 02/22/17

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 8502 Cooler # 2 of 2

Number of Coolers in Shipment: 2

Project: Shelbyville Lake Date Received: 7-30-19

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 7-30-19 (Signature) LWackrow

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)

   If YES, enter carrier name and airbill number here: Couriers

2. Were custody seals on outside of cooler? ..... YES (NO) N/A

   How many and where? _____, Seal Date: _____, Seal Name: _____

3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (NA)

4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO

5. Were custody papers sealed in a plastic bag? ..... YES (NO)

6. Were custody papers filled out properly (ink, signed, etc.)? Corrections not initialed or dated ..... YES (NO) N/A

7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A

8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A

9. Was a separate container provided for measuring temperature? YES ____ NO ✓ Observed Cooler Temp. 1.3 C
   Correction factor 0.0 C

B. **LOG-IN PHASE:** Date samples were logged-in: 7-31-19 (Signature) LWackrow

10. Describe type of packing in cooler: loose ice

11. Were all samples sealed in separate plastic bags? ..... YES (NO) N/A

12. Did all containers arrive unbroken and were labels in good condition? ..... (YES) NO

13. Were sample labels complete? ..... (YES) NO

14. Did all sample labels agree with custody papers? ..... See Receipt 1 of 2 ..... YES (NO)

15. Were correct containers used for the tests indicated? ..... (YES) NO

16. Was pH correct on preserved water samples? ..... (YES) NO N/A

17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO

18. Were bubbles absent in VOA samples? If NO, list by sample #: _____ YES NO (N/A)

19. Was the ARDL project coordinator notified of any deficiencies? ..... (YES) NO N/A

Comments and/or Corrective Action:
(By: Signature) Date:

Sample Transfer	
Fraction: all	Fraction:
Area #: Walkin	Area #:
By: dlc	By:
On: 7-31-19	On:

Chain-of-Custody # N/A

M:\ADMIN\FORMS\COOLER RECEIPT REPORT.doc Rev. 02/22/17

ARDL Inc.
Environmental | Analytical | Management | Safety

PO Box 1566
400 Aviation Drive
Mt. Vernon, IL 62864
618-244-3235
www.ardlinc.com

Customer Name: SLCOE **Date: 11/6/19**

Project Name: Shelbyville Lake **Lab Name: ARDL, Inc.**

Samples Received at ARDL: 10/10/19 **ARDL Report No.: 8554**

CASE NARRATIVE

Customer Sample No.	Date Collected	Lab ID Number	Analyses Requested
SVL-1	10/10/19	8554-01	NP Pesticides, Metals(1), Inorganics(2)
SVL-2	10/10/19	8554-02	NP Pesticides, Inorganics(2)(3)
SVL-2-10	10/10/19	8554-03	Metals(1), Inorganics(2)
SVL-4	10/10/19	8554-04	NP Pesticides, Inorganics(2)(3)
SVL-12	10/10/19	8554-05	NP Pesticides, Inorganics(2)
SVL-13	10/10/19	8554-06	NP Pesticides, Inorganics(2
SVL-11	10/10/19	8554-07	NP Pesticides, Inorganics(2)(3)
SVL-15	10/10/19	8554-08	NP Pesticides, Inorganics(2)(3)
KAS-3	10/10/19	8554-09	Inorganics(2)(3)(4)
LS MARINA	10/10/19	8554-10	ECOLI
FIN MARINA	10/10/19	8554-11	ECOLI
SUL MARINA	10/10/19	8554-12	ECOLI
ASA/WWTP	10/10/19	8554-13	FECAL

(1) Including iron and manganese.
(2) Including ammonia, nitrate, orthophosphate, total phosphorus, TOC, TSS, and TVSS.
(3) Including chlorophyll-a and pheophytin-a.
(4) Including nitrite.

The quality control data are summarized as follows:

NP PESTICIDE FRACTION – METHOD 8270-SIM

HOLDING TIME
Samples were prepared and analyzed within method specified holding times.

INITIAL CALIBRATION
The initial calibration passed criteria.

CONTINUING CALIBRATION
The continuing calibration verification (CCV) passed criteria for all analytes except cyanazine (+22.4%) which was not detected in any of the associated samples. The closing CCV passed criteria for all analytes.

PREPARATION BLANK
The blank met acceptance criteria.

LABORATORY CONTROL SAMPLE
The LCS analyses met recovery criteria.

MATRIX SPIKE
The matrix spike and matrix spike duplicate met recovery criteria.

CASE NARRATIVE (Continued)

DUPLICATE
Duplicate analyses are reported as MS/MSD. RPD of the duplicate analyses met criteria.

INTERNAL STANDARD
All internal standard criteria were met.

SURROGATE
All surrogate recovery criteria were met.

INORGANIC FRACTION

TOC were analyzed by an accredited outside laboratory due to instrument status.

PREPARATION BLANK
Results of the preparation blanks were within acceptable limits.

LABORATORY CONTROL SAMPLE
Percent recoveries of all LCS analyses were within control limits.

MATRIX SPIKE
Only an MS sample data evaluation was performed for the TOC analysis. Percent recoveries of all matrix spikes and matrix spike duplicates were within control limits.

DUPLICATE
All duplicate analyses are reported as MS/MSD except chlorophyll-a, pheophytin-a, TOC, TSS, and TVSS. RPD on all duplicate analyses were within control limits.

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

ND - Indicates parameter was analyzed for but not detected.

J - Indicates an estimated value. This flag is used either when estimating a concentration or this flag indicates analyte(s) associated with a DOD-QSM specified non-compliance pertaining to matrix QC criteria.

REPORT ORGANIZATION

The data in this report appear by sample type (Field sample, preparation blank, laboratory control sample / spike blank, matrix spike /spike duplicate and sample duplicate). Within each sample type the data appear in the order that the analytical methods were discussed in this case narrative. Sample receipt information follows the analytical data.

Release of the data contained in this package has been authorized by the Technical Services Manager or his designee as verified by the following signature.

Dean S. Dickerson
Technical Services Manager

Sample & QC Results

Including as appropriate:

- Field Sample Results
- Batch QC
  - Prep Blank
  - LCS/Spike Blank
- Matrix QC
  - MS/MSD
  - Sample Duplicate

ARDL Data Package 8554

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 10/29/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-1	ARDL Lab No.:	008554-01
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E1025917
Sample Date:	10/10/2019	Received Date:	10/10/2019
Sample Time:	1030	Prep. Date:	10/14/2019
Matrix:	WATER	Analysis Date:	10/25/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11121
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.200	0.200	ND		UG/L	1
Atrazine	0.200	0.200	1.51		UG/L	1
Metribuzin	0.200	0.200	ND		UG/L	1
Alachlor	0.200	0.200	ND		UG/L	1
Metolachlor	0.200	0.200	1.89		UG/L	1
Chlorpyrifos	0.200	0.200	ND		UG/L	1
Cyanazine	0.200	0.200	ND		UG/L	1
Pendimethalin	0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	89%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-01
Field ID: SVL-1
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1030

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.498	MG/L	3010A	6010C	10/16/19	10/23/19	P7284
(a) Manganese	0.00400	0.00500		0.721	MG/L	3010A	6010C	10/16/19	10/23/19	P7284
Ammonia Nitrogen	0.0400	0.0600		1.25	MG/L	NONE	350.1	NA	10/15/19	10234992
Nitrate as Nitrogen	0.0190	0.0200		0.324	MG/L	NONE	GREEN	NA	10/15/19	10245003
Phosphorus	0.00800	0.0100		0.123	MG/L	365.2	365.2	10/28/19	10/29/19	10315018
Phosphorus, -ortho	0.00800	0.0100		0.0115	MG/L	NONE	365.2	NA	10/11/19	10234991
Solids, Total Suspended	4.0	4.00		11.2	MG/L	NONE	160.2	NA	10/16/19	10234994
Solids, Volatile Suspen	4.0	4.00		5.2	MG/L	NONE	160.4	NA	10/16/19	10234995
Total Organic Carbon	0.500	1.00		4.0	MG/L	NONE	415.1	NA	10/19/19	TA462384

(a) DOD and/or NELAC Accredited Analyte.

Sample 008554-01, Inorganic Analyses

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 10/29/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-2	ARDL Lab No.:	008554-02
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E1025920
Sample Date:	10/10/2019	Received Date:	10/10/2019
Sample Time:	1120	Prep. Date:	10/14/2019
Matrix:	WATER	Analysis Date:	10/25/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11121
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.200	0.200	ND		UG/L	1
Atrazine	0.200	0.200	1.29		UG/L	1
Metribuzin	0.200	0.200	ND		UG/L	1
Alachlor	0.200	0.200	ND		UG/L	1
Metolachlor	0.200	0.200	1.47		UG/L	1
Chlorpyrifos	0.200	0.200	ND		UG/L	1
Cyanazine	0.200	0.200	ND		UG/L	1
Pendimethalin	0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	77%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-02
Field ID: SVL-2
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1120

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.303	MG/L	NONE	350.1	NA	10/15/19	10234993
Chlorophyll-a, Correcte	1.0	1.00		25.4	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019
Nitrate as Nitrogen	0.0190	0.0200		0.463	MG/L	NONE	GREEN	NA	10/15/19	10245003
Pheophytin-a	1.0	1.00		4.4	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019
Phosphorus	0.00800	0.0100		0.0578	MG/L	365.2	365.2	10/28/19	10/29/19	10315018
Phosphorus, -ortho	0.00800	0.0100		0.0141	MG/L	NONE	365.2	NA	10/11/19	10234991
Solids, Total Suspended	2.50	2.50		7.5	MG/L	NONE	160.2	NA	10/16/19	10234994
Solids, Volatile Suspen	2.50	2.50		3.5	MG/L	NONE	160.4	NA	10/16/19	10234995
Total Organic Carbon	0.500	1.00		3.8	MG/L	NONE	415.1	NA	10/19/19	TA462384

(a) DOD and/or NELAC Accredited Analyte.

Sample 008554-02, Inorganic Analyses

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-03
Field ID: SVL-2-10
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1120

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron	0.0400	0.0500		0.461	MG/L	3010A	6010C	10/16/19	10/23/19	P7284
(a) Manganese	0.00400	0.00500		0.0621	MG/L	3010A	6010C	10/16/19	10/23/19	P7284
Ammonia Nitrogen	0.0200	0.0300		0.304	MG/L	NONE	350.1	NA	10/15/19	10234993
Nitrate as Nitrogen	0.0190	0.0200		0.457	MG/L	NONE	GREEN	NA	10/15/19	10245003
Phosphorus	0.00800	0.0100		0.0578	MG/L	365.2	365.2	10/28/19	10/29/19	10315018
Phosphorus, -ortho	0.00800	0.0100		0.0167	MG/L	NONE	365.2	NA	10/11/19	10234991
Solids, Total Suspended	4.0	4.00		57.6	MG/L	NONE	160.2	NA	10/16/19	10234994
Solids, Volatile Suspen	4.0	4.00		6.4	MG/L	NONE	160.4	NA	10/16/19	10234995
Total Organic Carbon	0.500	1.00		3.8	MG/L	NONE	415.1	NA	10/19/19	TA462384

(a) DOD and/or NELAC Accredited Analyte.

Sample 008554-03, Inorganic Analyses

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 10/29/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-4	ARDL Lab No.:	008554-04
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E1025921
Sample Date:	10/10/2019	Received Date:	10/10/2019
Sample Time:	1330	Prep. Date:	10/14/2019
Matrix:	WATER	Analysis Date:	10/25/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11121
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.200	0.200	ND		UG/L	1
Atrazine	0.200	0.200	0.490		UG/L	1
Metribuzin	0.200	0.200	ND		UG/L	1
Alachlor	0.200	0.200	ND		UG/L	1
Metolachlor	0.200	0.200	0.200		UG/L	1
Chlorpyrifos	0.200	0.200	ND		UG/L	1
Cyanazine	0.200	0.200	ND		UG/L	1
Pendimethalin	0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	77%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-04
Field ID: SVL-4
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1330

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0354	MG/L	NONE	350.1	NA	10/15/19	10234993
Chlorophyll-a, Correcte	1.0	1.00		104	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019
Nitrate as Nitrogen	0.0190	0.0200		ND	MG/L	NONE	GREEN	NA	10/15/19	10245003
Pheophytin-a	1.0	1.00		28.0	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019
Phosphorus	0.00800	0.0100		0.429	MG/L	365.2	365.2	10/28/19	10/29/19	10315018
Phosphorus, -ortho	0.00800	0.0100		0.0864	MG/L	NONE	365.2	NA	10/11/19	10234991
Solids, Total Suspended	6.67	6.67		53.3	MG/L	NONE	160.2	NA	10/16/19	10234994
Solids, Volatile Suspen	6.67	6.67		12.7	MG/L	NONE	160.4	NA	10/16/19	10234995
Total Organic Carbon	0.500	1.00		6.4	MG/L	NONE	415.1	NA	10/19/19	TA462384

(a) DOD and/or NELAC Accredited Analyte.

Sample 008554-04, Inorganic Analyses

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 10/29/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-12	ARDL Lab No.:	008554-05
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E1025922
Sample Date:	10/10/2019	Received Date:	10/10/2019
Sample Time:	1245	Prep. Date:	10/14/2019
Matrix:	WATER	Analysis Date:	10/25/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11121
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	ND		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	ND		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	94%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-05
Field ID: SVL-12
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1245

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0346	MG/L	NONE	350.1	NA	10/15/19	10234993
Nitrate as Nitrogen	0.0190	0.0200		0.446	MG/L	NONE	GREEN	NA	10/15/19	10245003
Phosphorus	0.00800	0.0100		0.30	MG/L	365.2	365.2	10/28/19	10/29/19	10315018
Phosphorus, -ortho	0.00800	0.0100		0.159	MG/L	NONE	365.2	NA	10/11/19	10234991
Solids, Total Suspended	4.0	4.00		28.8	MG/L	NONE	160.2	NA	10/16/19	10234994
Solids, Volatile Suspen	4.0	4.00		ND	MG/L	NONE	160.4	NA	10/16/19	10234995
Total Organic Carbon	0.500	1.00		4.5	MG/L	NONE	415.1	NA	10/19/19	TA462384

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 10/29/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-13	ARDL Lab No.:	008554-06
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E1025923
Sample Date:	10/10/2019	Received Date:	10/10/2019
Sample Time:	1155	Prep. Date:	10/14/2019
Matrix:	WATER	Analysis Date:	10/25/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11121
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	0.578		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	ND		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	66%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-06
Field ID: SVL-13
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1155

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		ND	MG/L	NONE	350.1	NA	10/15/19	10234993
Nitrate as Nitrogen	0.0190	0.0200		ND	MG/L	NONE	GREEN	NA	10/15/19	10245003
Phosphorus	0.00800	0.0100		0.498	MG/L	365.2	365.2	10/28/19	10/29/19	10315018
Phosphorus, -ortho	0.00800	0.0100		0.123	MG/L	NONE	365.2	NA	10/11/19	10234991
Solids, Total Suspended	10.0	10.0		72.0	MG/L	NONE	160.2	NA	10/16/19	10234994
Solids, Volatile Suspen	10.0	10.0		18.0	MG/L	NONE	160.4	NA	10/16/19	10234995
Total Organic Carbon	0.500	1.00		8.0	MG/L	NONE	415.1	NA	10/19/19	TA462384

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 10/29/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-11	ARDL Lab No.:	008554-07
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E1025924
Sample Date:	10/10/2019	Received Date:	10/10/2019
Sample Time:	1135	Prep. Date:	10/14/2019
Matrix:	WATER	Analysis Date:	10/25/2019
Amount Used:	900 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11121
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.222	0.222	ND		UG/L	1
Atrazine	0.222	0.222	1.09		UG/L	1
Metribuzin	0.222	0.222	ND		UG/L	1
Alachlor	0.222	0.222	ND		UG/L	1
Metolachlor	0.222	0.222	0.811		UG/L	1
Chlorpyrifos	0.222	0.222	ND		UG/L	1
Cyanazine	0.222	0.222	ND		UG/L	1
Pendimethalin	0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	79%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE Analysis: Inorganics
Project No: NELAC Certified - IL100308

ARDL No: 008554-07 Sampling Loc'n: SHELBYVILLE LAKE Matrix: WATER
Field ID: SVL-11 Sampling Date: 10/10/2019 Moisture: NA
Received: 10/10/2019 Sampling Time: 1135

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		ND	MG/L	NONE	350.1	NA	10/15/19	10234993
Chlorophyll-a, Correcte	1.0	1.00		72.6	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019
Nitrate as Nitrogen	0.0190	0.0200		0.223	MG/L	NONE	GREEN	NA	10/15/19	10245003
Pheophytin-a	1.0	1.00		14.4	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019
Phosphorus	0.00800	0.0100		0.153	MG/L	365.2	365.2	10/28/19	10/29/19	10315018
Phosphorus, -ortho	0.00800	0.0100		0.0219	MG/L	NONE	365.2	NA	10/11/19	10234991
Solids, Total Suspended	4.0	4.00		17.2	MG/L	NONE	160.2	NA	10/16/19	10234994
Solids, Volatile Suspen	4.0	4.00		6.4	MG/L	NONE	160.4	NA	10/16/19	10234995
Total Organic Carbon	0.500	1.00		4.6	MG/L	NONE	415.1	NA	10/21/19	TA462603

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 10/29/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.: Analytical Method: 8270C
NELAC Certified - IL100308 Prep Method: 3510C

Field ID:	SVL-15	ARDL Lab No.:	008554-08
Desc/Location:	SHELBYVILLE LAKE	Lab Filename:	E1025925
Sample Date:	10/10/2019	Received Date:	10/10/2019
Sample Time:	1200	Prep. Date:	10/14/2019
Matrix:	WATER	Analysis Date:	10/25/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11121
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	0.200	0.200	ND		UG/L	1
Atrazine	0.200	0.200	0.550		UG/L	1
Metribuzin	0.200	0.200	ND		UG/L	1
Alachlor	0.200	0.200	ND		UG/L	1
Metolachlor	0.200	0.200	0.210		UG/L	1
Chlorpyrifos	0.200	0.200	ND		UG/L	1
Cyanazine	0.200	0.200	ND		UG/L	1
Pendimethalin	0.200	0.200	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	84%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-08
Field ID: SVL-15
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1200

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0349	MG/L	NONE	350.1	NA	10/15/19	10234993
Chlorophyll-a, Correcte	1.0	1.00		95.3	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019
Nitrate as Nitrogen	0.0190	0.0200		ND	MG/L	NONE	GREEN	NA	10/15/19	10245003
Pheophytin-a	1.0	1.00		24.4	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019
Phosphorus	0.00800	0.0100		0.399	MG/L	365.2	365.2	10/28/19	10/29/19	10315018
Phosphorus, -ortho	0.00800	0.0100		0.11	MG/L	NONE	365.2	NA	10/11/19	10234991
Solids, Total Suspended	6.67	6.67		47.3	MG/L	NONE	160.2	NA	10/16/19	10234994
Solids, Volatile Suspen	6.67	6.67		10.7	MG/L	NONE	160.4	NA	10/16/19	10234995
Total Organic Carbon	0.500	1.00		7.4	MG/L	NONE	415.1	NA	10/21/19	TA462603

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-09
Field ID: KAS-3
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 0930

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		ND	MG/L	NONE	350.1	NA	10/15/19	10234993
Chlorophyll-a, Correcte	1.0	1.00		12.7	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019
Nitrate as Nitrogen	0.0190	0.0200		1.54	MG/L	NONE	GREEN	NA	10/15/19	10245003
Nitrite as Nitrogen	0.0200	0.0200		ND	MG/L	NONE	354.1	NA	10/11/19	10244999
Pheophytin-a	1.0	1.00		1.3	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019
Phosphorus	0.00800	0.0100		0.0923	MG/L	365.2	365.2	10/28/19	10/29/19	10315018
Phosphorus, -ortho	0.00800	0.0100		0.0219	MG/L	NONE	365.2	NA	10/11/19	10234991
Solids, Total Suspended	2.0	2.00		17.8	MG/L	NONE	160.2	NA	10/16/19	10234994
Solids, Volatile Suspen	2.0	2.00		2.8	MG/L	NONE	160.4	NA	10/16/19	10234995
Total Organic Carbon	0.500	1.00		3.3	MG/L	NONE	415.1	NA	10/21/19	TA462603

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-10
Field ID: LS MARINA
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1140

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.0	1.00		17.0	COL/100 ML	NONE	1604	NA	10/10/19	10154968

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-11
Field ID: FIN MARINA
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1217

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.0	1.0		97.0	COL/100 ML	NONE	1604	NA	10/10/19	10154968

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-12
Field ID: SUL MARINA
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1319

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform	1.0	1.0		202	COL/100 ML	NONE	1604	NA	10/10/19	10154968

(a) DOD and/or NELAC Accredited Analyte.

ARDL, INC.
400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE
Project No:

Analysis: Inorganics
NELAC Certified - IL100308

ARDL No: 008554-13
Field ID: ASA/WWTP
Received: 10/10/2019

Sampling Loc'n: SHELBYVILLE LAKE
Sampling Date: 10/10/2019
Sampling Time: 1315

Matrix: WATER
Moisture: NA

Analyte	LOD	LOQ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Fecal Coliform	1.0	1.00		75000	COL/100 ML	NONE	9222D	NA	10/10/19	10154969

(a) DOD and/or NELAC Accredited Analyte.

METHOD BLANK REPORT

ARDL, Inc. 400 Aviation Drive; P.O. Box 1566
Mt. Vernon, Illinois 62864

Lab Report No: 008554 Report Date: 10/29/2019

Project Name: SHELBYVILLE LAKE	Analysis: NP PESTICIDES (8270SIM-MOD)
Project No.:	Analytical Method: 8270C
NELAC Certified - IL100308	Prep Method: 3510C

Field ID:	NA	ARDL Lab No.:	008554-01B1
Desc/Location:	NA	Lab Filename:	E1025915
Sample Date:	NA	Received Date:	NA
Sample Time:	NA	Prep. Date:	10/14/2019
Matrix:	QC Material	Analysis Date:	10/25/2019
Amount Used:	1000 mL	Instrument ID:	AG5
Final Volume:	1 mL	QC Batch:	B11121
% Moisture:	NA	Level:	LOW

Parameter	LOD	LOQ	Result	Data Flag	Units
Trifluralin	0.200	0.200	ND		UG/L
Atrazine	0.200	0.200	ND		UG/L
Metribuzin	0.200	0.200	ND		UG/L
Alachlor	0.200	0.200	ND		UG/L
Metolachlor	0.200	0.200	ND		UG/L
Chlorpyrifos	0.200	0.200	ND		UG/L
Cyanazine	0.200	0.200	ND		UG/L
Pendimethalin	0.200	0.200	ND		UG/L

SURROGATE RECOVERIES:	Limits	Results
Triphenylphosphate	30-130	90%

Surrogate recoveries marked with '*' indicates they are outside standard limits.

(a) DOD-QSM Accredited Analyte.

BLANK SUMMARY REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	LOD	LOQ	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
(a) Arsenic	0.002	0.003	ND	MG/L	3010A	6010C	10/16/19	10/23/19	P7284	008546-04B1
(a) Cadmium	0.0008	0.002	ND	MG/L	3010A	6010C	10/16/19	10/23/19	P7284	008546-04B1
(a) Iron	0.04	0.05	ND	MG/L	3010A	6010C	10/16/19	10/23/19	P7284	008546-04B1
(a) Lead	0.002	0.003	ND	MG/L	3010A	6010C	10/16/19	10/23/19	P7284	008546-04B1
(a) Manganese	0.004	0.005	ND	MG/L	3010A	6010C	10/16/19	10/23/19	P7284	008546-04B1
(a) Zinc	0.004	0.005	ND	MG/L	3010A	6010C	10/16/19	10/23/19	P7284	008546-04B1
Ammonia Nitrogen	0.020	0.030	ND	MG/L	NONE	350.1	NA	10/15/19	10234993	008554-02B1
Ammonia Nitrogen	0.020	0.030	ND	MG/L	NONE	350.1	NA	10/15/19	10234992	008554-01B1
Chlorophyll-a, Corre	1.0	1.0	ND	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019	008554-02B1
E. Coliform	1.0	1.0	ND	COL/100 ML	NONE	1604	NA	10/10/19	10154968	008554-10B1
Fecal Coliform	1.0	1.0	ND	COL/100 ML	NONE	9222D	NA	10/10/19	10154969	008554-13B1
Nitrate as Nitrogen	0.019	0.020	ND	MG/L	NONE	GREEN	NA	10/15/19	10245003	008554-03B1
Nitrite as Nitrogen	0.020	0.020	ND	MG/L	NONE	354.1	NA	10/11/19	10244999	008554-09B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	10/11/19	10/28/19	10315019	008554-02B1
Phosphorus	0.008	0.010	ND	MG/L	365.2	365.2	10/28/19	10/29/19	10315018	008554-03B1
Phosphorus, -ortho	0.008	0.010	ND	MG/L	NONE	365.2	NA	10/11/19	10234991	008554-02B1
Solids, Total Suspen	1.0	1.0	ND	MG/L	NONE	160.2	NA	10/16/19	10234994	008554-03B1
Solids, Volatile Sus	1.0	1.0	ND	MG/L	NONE	160.4	NA	10/16/19	10234995	008554-03B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	10/19/19	TA462384	008551-01B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	10/21/19	TA462603	008554-07B1

(a) DOD and/or NELAC Accredited Analyte

Inorganic Method Blanks for 008554

BLANK SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008554 Report Date: 10/29/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD) Analytical Method: 8270C
Project No.: Prep Method: 3510C

Matrix: QC Material QC Batch: B11121 Prep. Date: 10/14/2019
Amount Used: 1000 mL Level: LOW Analysis Date: 10/25/2019

Parameter	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery Limits	RPD	RPD Limit
Trifluralin	3.19	4	80	--	--	--	30-130	--	--
Atrazine	3.03	4	76	--	--	--	30-130	--	--
Metribuzin	3.18	4	80	--	--	--	30-130	--	--
Alachlor	3.08	4	77	--	--	--	30-130	--	--
Metolachlor	3.4	4	85	--	--	--	30-130	--	--
Chlorpyrifos	3.14	4	79	--	--	--	30-130	--	--
Cyanazine	3.74	4	94	--	--	--	30-130	--	--
Pendimethalin	3.41	4	85	--	--	--	30-130	--	--

SURROGATE RECOVERIES:	Spike %R	Duplicate %R	%R Limits
Triphenylphosphate	94.3	--	30-130

(a) DOD-QSM Accredited Analyte.
'*' indicates a recovery outside of standard limits.
Spike Blanks for 008554-01, NP PESTICIDES (8270SIM-MOD)

LABORATORY CONTROL SAMPLE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	LCS 1 Result	LCS 1 Level	LCS 1 % Rec	LCS 2 Result	LCS 2 Level	LCS 2 % Rec	% Rec Limits	Mean % Rec	Analytical Run	QC Lab Number
(a) Iron	5.2	5.0	104	--	--	--	87-115	--	P7284	008551-01C1
(a) Manganese	0.80	0.75	107	--	--	--	90-114	--	P7284	008551-01C1
Ammonia Nitrogen	0.98	1.0	98	--	--	--	80-120	--	10234992	008554-01C1
Ammonia Nitrogen	1	1.0	100	--	--	--	80-120	--	10234993	008554-02C1
Nitrate as Nitrogen	0.96	1.0	96	--	--	--	80-120	--	10245003	008554-03C1
Nitrite as Nitrogen	0.98	1.0	98	--	--	--	80-120	--	10244999	008554-09C1
Phosphorus	0.65	0.67	98	--	--	--	80-120	--	10315018	008554-03C1
Phosphorus, -ortho	0.097	0.10	97	--	--	--	80-120	--	10234991	008554-02C1
Total Organic Carbon	9.7	10.0	97	--	--	--	76-120	--	TA462384	008551-01C1
Total Organic Carbon	9.6	10.0	96	--	--	--	76-120	--	TA462603	008554-07C1

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits.

(a) DOD and/or NELAC Accredited Analyte

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008554 Report Date: 10/29/2019

Project Name: SHELBYVILLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD) Analytical Method: 8270C
Project No.: Prep Method: 3510C

Field ID:	SVL-1	Prep. Date:	10/14/2019	ARDL Lab No.:	008554-01
Desc/Location:	SHELBYVILLE LAKE	Amount Used:	1000 mL	Lab Filename:	
Sample Date:	10/10/2019	% Moisture:	NA	Received Date:	10/10/2019
Sample Time:	1030	QC Batch:	B11121	Analysis Date:	10/25/2019
Matrix:	WATER	Level:	LOW		

Parameter	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit
Trifluralin	ND	3.07	4	76.8	3.29	4	82.3	30-130	6.9	30
Atrazine	1.51	4.43	4	73	4.67	4	79	30-130	5.3	30
Metribuzin	ND	3.16	4	79	3.32	4	83	30-130	4.9	30
Alachlor	ND	2.99	4	74.8	3.04	4	76	30-130	1.7	30
Metolachlor	1.89	5.18	4	82.3	5.23	4	83.5	30-130	1	30
Chlorpyrifos	ND	2.87	4	71.8	3.03	4	75.8	30-130	5.4	30
Cyanazine	ND	3.57	4	89.3	3.78	4	94.5	30-130	5.7	30
Pendimethalin	ND	3.16	4	79	3.38	4	84.5	30-130	6.7	30

SURROGATE RECOVERIES:	MS %R	MSD %R	%R Limits
Triphenylphosphate	91	94	30-130

(a) DOD-QSM Accredited Analyte.
'nc' indicates sample >4X spike level.
'*' indicates a recovery outside of standard limits.
Matrix Spikes for 008554-01, NP PESTICIDES (8270SIM-MOD)

MATRIX SPIKE/SPIKE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	Sample Matrix	Sample Result	MS Result	MS Level	MS % Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD Limit	Run	QC Lab Number
(a) Iron	WATER	0.50	1.5	1.0	101	1.5	1.0	101	87-115	0	20	P7284	008554-01MS
(a) Manganese	WATER	0.72	1.2	0.50	100	1.2	0.50	98	90-114	1	20	P7284	008554-01MS
Ammonia Nitrogen	WATER	1.3	3.3	2.0	100	3.3	2.0	101	75-125	1	20	10234992	008554-01MS
Nitrate as Nitrogen	WATER	0.46	1.3	1.0	83	1.3	1.0	89	75-125	4	20	10245003	008554-03MS
Phosphorus	WATER	0.058	0.89	0.83	100	0.91	0.83	103	75-125	2	20	10315018	008554-03MS
Phosphorus, -ortho	WATER	0.014	0.12	0.10	106	0.11	0.10	98	75-125	7	20	10234991	008554-02MS

NOTE: Values tabulated above marked with an asterisk are explained in the associated narrative.

(a) DOD and/or NELAC Accredited Analyte.

Inorganic Matrix Spikes for 008554

SAMPLE DUPLICATE REPORT

ARDL, INC. 400 Aviation Drive; P.O. Box 1566 Mt. Vernon, IL 62864

Lab Report No: 008554 Report Date: 11/01/2019

Project Name: SHELBYVILLE LAKE NELAC Certified - IL100308

Analyte	Sample Conc'n	First Duplicate	Second Duplicate	Units	Percent Diff	Mean (Smp,D1,D2)	Analytical Run	QC Lab Number
Chlorophyll-a, Corrected	25.4	27.2	--	MG/CU.M.	7	--	10315019	008554-02D1
Pheophytin-a	4.4	3.9	--	MG/CU.M.	12	--	10315019	008554-02D1
Solids, Total Suspended	57.6	60.4	--	MG/L	5	--	10234994	008554-03D1
Solids, Volatile Suspend	6.4	7.2	--	MG/L	12	--	10234995	008554-03D1

(a) DOD and/or NELAC Accredited Analyte

Sample Receipt Information

Including as appropriate:

- COCs
- Cooler Receipts
- Airbills
- Email Communication / Instructions from Customer

ARDL Data Package 8554

ARDL, Inc.

P.O. Box 1566, 400 Aviation Drive, Mt. Vernon, IL 62864
(618) 244-3235 Phone (618) 244-1149 Fax

5554

CHAIN OF CUSTODY RECORD

PROJECT: Shelbyville Lake

SAMPLERS: (Signature) T. Schepker, G. Rodgers, B. Breeling

SAMPLE NUMBER	DATE	TIME	COMP	GRAB	NO. OF CONTAINERS	TSS, TVSS	Chloro/Pheo	* TOC, T-PO4	O-PO4	* NO3-N, NH3-N	NP Pest	# T.Fe; T.Mn	E. coli	MS/MSD	%NO2-N	Fecal Coli.			REMARKS OR SAMPLE LOCATION	PRESERVATION: ICED	PRESERVATION: SPECIFY CHEMICALS ADDED AND FINAL pH IF KNOWN
	10/10/19																				
SVL-1		1030		X		X		X	X	X	X	X		X						X	
SVL-2		1120		X		X	X	X	X	X	X									X	
SVL-2-10		1120		X		X		X	X	X		X								X	
SVL-4		1330		X		X	X	X	X	X	X									X	
SVL-12		1245		X		X		X	X	X	X									X	
SVL-13		1155		X		X		X	X	X	X									X	
SVL-11		1135		X		X	X	X	X	X	X									X	
SVL-15		1200		X		X	X	X	X	X	X									X	
KAS-3		0930		X		X	X	X	X	X					X					X	
LS Marina		1140		X									X							X	
FIN Marina		1217		X									X							X	
SUL Marina		1319		X									X							X	
ASA/WWTP		1315		X												X				X	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
	9/10/19	1545	Valerie Jenkins
Relinquished by: (Signature) Valerie Jenkins	9/16/19	1545	
Received for Laboratory by: (Signature) DL Cochrum	Date 10/11/19	Time 0535	Shipping Ticket No.

REMARKS/SPECIAL INSTRUCTIONS:

*Preserved with H_2SO_4
#Preserved with HNO_3

dlc 10-11-19

PURCHASE ORDER NO: _____

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 8554 Cooler # 1 of 2

Number of Coolers in Shipment: 2

Project: Shelby Ville Lake Date Received: 10-10-19

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 10-10-19 (Signature) DKackrum

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)

   If YES, enter carrier name and airbill number here: Courier

2. Were custody seals on outside of cooler? ..... YES (NO) N/A

   How many and where? _____, Seal Date: _____, Seal Name: _____

3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (NA)
4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO
5. Were custody papers sealed in a plastic bag? ..... YES (NO)
6. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO N/A
7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A
8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A
9. Was a separate container provided for measuring temperature? YES____ NO✓ Observed Cooler Temp. 1.6 C
   Correction factor 0.0 C

B. **LOG-IN PHASE:** Date samples were logged-in: 10-11-19 (Signature) DKackrum

10. Describe type of packing in cooler: loose ice
11. Were all samples sealed in separate plastic bags? ..... YES (NO) N/A
12. Did all containers arrive unbroken and were labels in good condition? ..... (YES) NO
13. Were sample labels complete? ..... (YES) NO
14. Did all sample labels agree with custody papers? ..... (YES) NO
15. Were correct containers used for the tests indicated? ..... (YES) NO
16. Was pH correct on preserved water samples? ..... (YES) NO N/A
17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO
18. Were bubbles absent in VOA samples? If NO, list by sample #: _____ YES NO (N/A)
19. Was the ARDL project coordinator notified of any deficiencies? ..... YES NO (N/A)

Comments and/or Corrective Action:
(By: Signature) Date:

Sample Transfer	
Fraction: all	Fraction:
Area #: Walkin	Area #:
By: dlc	By:
On: 10-11-19	On:

Chain-of-Custody # N/A

COOLER RECEIPT REPORT
ARDL, INC.

ARDL #: 8554 Cooler # 2 of 2

Number of Coolers in Shipment: 2

Project: Shelby Ville Lake Date Received: 10-10-19

A. **PRELIMINARY EXAMINATION PHASE:** Date cooler was opened: 10-10-19 (Signature) DSLackrum

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)

   If YES, enter carrier name and airbill number here: Courier

2. Were custody seals on outside of cooler? ..... YES (NO) N/A

   How many and where? _____, Seal Date: _____, Seal Name: _____

3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO (NA)
4. Did you screen samples for radioactivity using a Geiger Counter? ..... (YES) NO
5. Were custody papers sealed in a plastic bag? ..... YES (NO)
6. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO N/A
7. Were custody papers signed in appropriate place by ARDL personnel? ..... (YES) NO N/A
8. Was project identifiable from custody papers? If YES, enter project name at the top of this form ..... (YES) NO N/A
9. Was a separate container provided for measuring temperature? YES____ NO✓ Observed Cooler Temp. 0.7 C
   Correction factor 0.0 C

B. **LOG-IN PHASE:** Date samples were logged-in: 10-11-19 (Signature) DSLackrum

10. Describe type of packing in cooler: bagged ice

11. Were all samples sealed in separate plastic bags? ..... YES (NO) N/A
12. Did all containers arrive unbroken and were labels in good condition? ..... (YES) NO
13. Were sample labels complete? ..... (YES) NO
14. Did all sample labels agree with custody papers? ..... (YES) NO
15. Were correct containers used for the tests indicated? ..... (YES) NO
16. Was pH correct on preserved water samples? ..... (YES) NO N/A
17. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO
18. Were bubbles absent in VOA samples? If NO, list by sample #: _____ YES NO (N/A)
19. Was the ARDL project coordinator notified of any deficiencies? ..... YES NO (N/A)

Comments and/or Corrective Action:
(By: Signature) Date:

Sample Transfer	
Fraction: all	Fraction:
Area #: walkin	Area #:
By: dle	By:
On: 10-11-19	On:

Chain-of-Custody # N/A