

2019 Water Quality Report

U.S. Army Corps of Engineers Saint Louis District

Carlyle Lake Water Quality Conditions: 2014-2019



July 2020

Carlyle Lake Water Quality Conditions: 2014-2019

Prepared for

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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 Carlyle Lake as impaired for total suspended solids, total phosphorous, and mercury while the Kaskaskia River upstream from the Lake is impaired for dissolved oxygen, Atrazine, and mercury. The lists of sources for these impairments are contaminated sediments, crop production, and unknown sources. The entire Kaskaskia watershed is impaired by the above parameters as well as many others.

Water quality sampling in 2019 revealed the following minor concerns at Carlyle Lake: bacteria, iron, total suspended solids, and total phosphorus.

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INTRODUCTION

The Carlyle Lake watershed encompasses approximately 1,663 square miles and includes all or portions of Bond, Clinton, Effingham, Fayette, Marion, Shelby, and Montgomery counties. The watershed includes the Kaskaskia River between Carlyle Lake Dam and Lake Shelbyville Dam and major tributaries of the Kaskaskia River, including: Big, Richland, Robinson, Becks, Ramsey, Old Hickory, and Hurricane Creeks (respectively) and the East Fork Kaskaskia River. Agriculture is the predominant land use within the watershed. Currently, 82% of the land is used for agricultural purposes. Of that 82%, 63% is cropland and 19% grassland. Since 1978, the number of farms has decreased by 25% and the acreage tilled has decreased by only 6%. Corn and soybeans are important to the region, but producers also grow 25% of the entire state's crop of wheat. Livestock production, including dairy, swine, poultry and beef cattle is a significant industry, especially in Clinton, Randolph and Washington Counties.

Carlyle Lake is located in south central Illinois at river mile 94.2 on the Kaskaskia River, upstream from its confluence with the Mississippi River and about one-half mile upstream from the town of Carlyle, Illinois. Carlyle is located in Clinton County, approximately 50 miles east of St. Louis, Missouri. Carlyle Lake is the largest manmade lake in the state and is approximately 12 miles long and 1-3 miles wide and has approximately 24,710 acres of water surface at summer pool elevation 445.0 feet NGVD (National Geodetic Vertical Datum). There are 88 miles of shoreline and approximately 12,800 acres of public land associated with the project. The lake is situated in gently rolling land with alluvial valleys with moderately low relief. The lake provides outdoor recreation opportunities for over 2.5 million visitors annually, which generates over \$80 million in visitor spending within 30- miles of the Lake. There are 41 recreation areas that include: 424 picnic sites, 726 campsites, 670 marina slips, 24 boat ramps, and 25 miles of hiking trails. 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.

Carlyle Lake is managed and operated by the CEMVS for the authorized purposes of flood risk management, navigation, water supply, water quality, fish and wildlife conservation, and recreation. 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 Carlyle Lake 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 Carlyle Lake. 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 Carlyle Lake. 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.
- 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 Carlyle Lake. The report describes conditions observed in 2019, as well as baseline data collected from 2014-2018. Additional historical data are available upon request.

CARLYLE LAKE WQMP COVERAGE

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

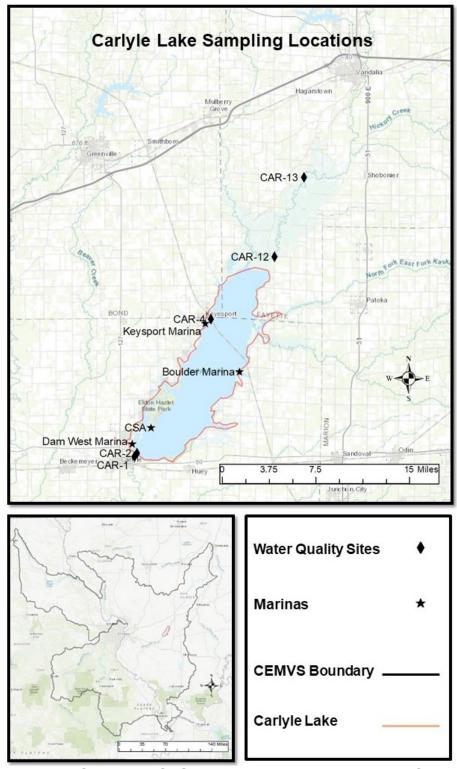


Figure 1. Water Quality (WQ) Sampling Locations in 2019 at Carlyle Lake

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	CAR-13	38.868961	-89.159605
	TRIB	CAR-12	38.868961	-89.193475
Main Reservoir Surface	RS	CAR-2	38.619492	-89.352747
	RS	CAR-4	38.740632	-89.267266
	RS	CAR-BL	38.693092	-89.234040
	RS	CAR-DW	38.627955	-89.358246
	RS	CAR-KP	38.736930	-89.273674
	RS	CAR-CSA	38.642647	-89.336805
Reservoir Benthic	RB	CAR-2-10	38.619492	-89.352747
Tail Race (below dam)	TR	CAR-1	38.616240	-89.355828

Samples at Marinas are not always taken in the exact same location. *BL=Boulder Marina*, *DW=Dam West Marina*, *KP=Keyesport Marina*, *CSA=Carlyle Sailing Association*.

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 Carlyle Lake. Historical reference data are intended to represent the current condition of Carlyle Lake.

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=2), 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 Carlyle Lake 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.

<u>Dissolved Oxygen (DO)</u> 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.

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

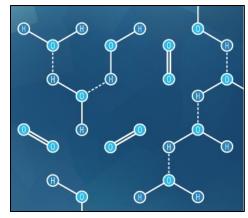


Figure 1: Dissolved oxygen (O_2) vs oxygen bonded in water (H_2O) .

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 $\geq 1 \text{mg/L}$, while most inland fish species require a minimum DO of 4 mg/L. The DO water quality criteria for Illinois is > 5 mg/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.

<u>Conductivity</u> 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 μ S/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.

<u>Total Organic Carbon (TOC)</u> 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.

<u>Pesticides</u> 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.

<u>Nitrogen</u> 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.

<u>Total Ammonia Nitrogen (TAN)</u> 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.

<u>Chlorophyll a (CHL a)</u> 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.

<u>Trophic Status</u> 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 In 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

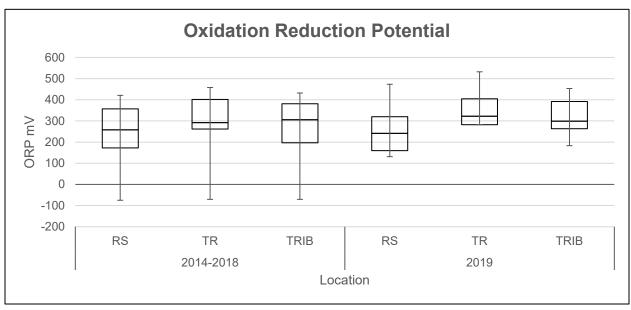
Table 2: Metrics, Methods, and Water Quality Criteria Used for Evaluating Water Quality

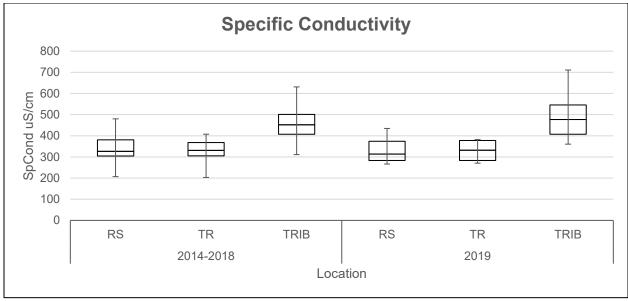
<u>Metric</u>	Abbreviation	Analysis Method	Water Quality Criteria	<u>Source</u>
Alachlor		EPA Method 8270C	< 2ug/L PWS or <1100 ug/L: aquatic life	Illinois EPA
Ammonia Nitrogen	NH ₃	EPA Method 350.1	<15 mg/L	United States EPA
Atrazine	Atrazine	EPA Method 8270C	9 ug/L: Chronic or 82 ug/L: Acute or 3 ug/L 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/cm³ (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	pН	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.

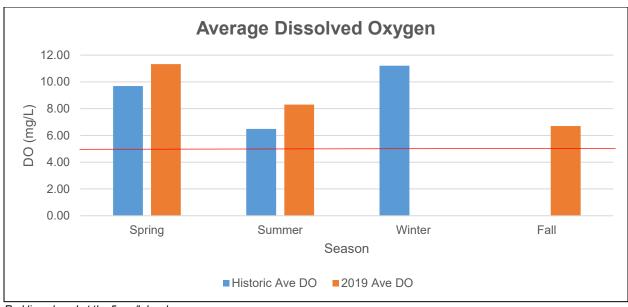
RESULTS AND SUMMARY STATISTICS: WATER QUALITY





		Histor	ical Refere	<u>2019</u>					
					CL				CL
	Location	Mean	Median	Count	(95.0%)	Mean	Median	Count	(95.0%)
SpCond	RS	344.32	326.50	42	21.77	329.03	313.10	17	27.29
	TR	329.02	331.00	17	26.71	329.08	331.95	4	92.52
	TRIB	457.30	452.00	30	30.03	504.06	477.00	8	112.33
ORP	RS	238.07	258.00	41	42.89	260.11	241.30	17	55.29
	TR	299.32	292.00	17	73.40	364.70	322.20	4	187.55
	TRIB	278.27	305.50	30	47.93	317.98	299.10	8	79.13

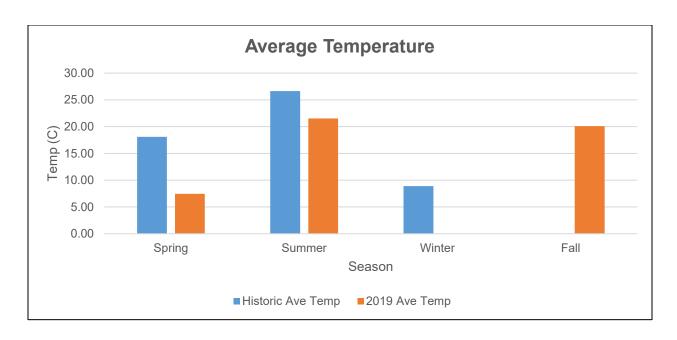
^{*}This report does not acknowledge a water quality criteria for SpCond or ORP.



Red line placed at the 5 mg/L level.

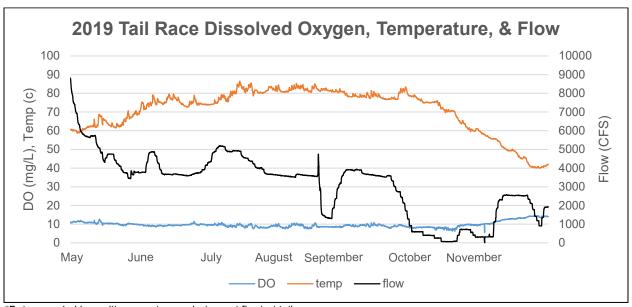
			D. (2040			0040		
	П	istorica	Reference	e 2014-2	<u> 2018</u>			<u> 2019</u>	
Season	Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
Spring	RS	9.24	8.97	11	1.54	10.78	10.78	2	15.69
	TR	9.90	9.89	4	3.97	13.30	13.30	1	
	TRIB	11.29	11.74	7	2.44	10.89	10.89	2	8.83
Summer	RS	6.80	6.85	28	0.74	8.36	8.11	10	1.39
	TR	7.74	7.99	11	0.47	9.13	9.13	2	9.15
	TRIB	7.02	7.33	19	0.88	8.21	8.15	4	2.73
Winter	RS	11.05	11.18	4	0.82				
	TR	12.67	12.67	2	1.97				
	TRIB	11.20	11.23	4	0.87				
Fall	RS					6.26	6.33	5	1.58
	TR					7.29	7.29	1	
	TRIB					7.34	7.34	2	31.32

^{*} On October 8 2019 DO was recorded at <5 mg/L at Boulder Marina and the tributary CAR-12. All other observations met the Illinois state standard.

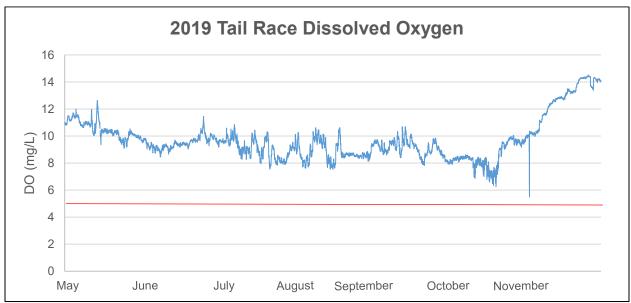


	<u>H</u>	istorical	Referenc	e 2014-20	<u>)18</u>		<u>.</u>	<u> 2019</u>	
					CL				_
Season	Location	Mean	Median	Count	(95.0%)	Mean	Median	Count	CL (95.0%)
Spring	RS	18.50	20.28	11	2.66	8.44	8.44	2	5.65
	TR	16.45	16.77	4	5.13	7.56	7.56	1	
	TRIB	18.78	19.56	7	3.14	6.61	6.61	2	9.88
Summer	RS	27.21	27.75	28	0.91	21.77	21.90	10	4.31
	TR	26.25	26.45	11	1.09	22.25	22.25	2	67.98
	TRIB	26.50	27.32	19	0.96	20.33	20.30	4	9.69
Fall	RS					20.13	19.94	5	1.11
	TR					20.50	20.50	1	
	TRIB					19.25	19.25	2	18.00
Winter	RS	9.13	8.86	4	3.73				
	TR	8.92	8.92	2	15.23				
	TRIB	8.65	8.62	4	5.13				

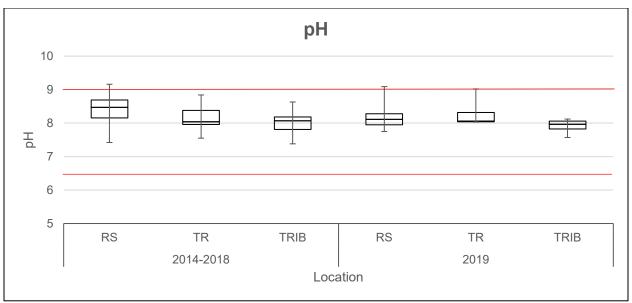
^{*}Temperatures were within acceptable range of water quality criteria during 2019.



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



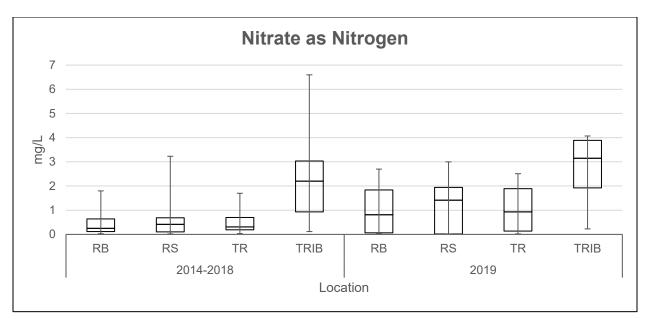
*Data recorded by multi-parameter sonde at tail race. Red line placed at the 5 mg/L level. DO did not fall below 5 mg/L during

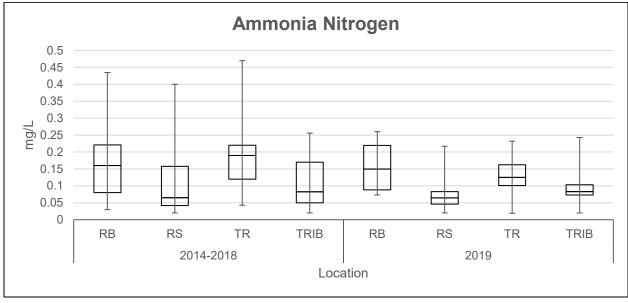


*Red lines indicate the upper and lower water quality criteria standards (9 and 6.5).

		<u>Hi</u> :		<u>2019</u>					
	Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
рН	RS	8.39	8.47	43	0.13	8.22	8.11	17	0.21
	TR	8.14	8.04	17	0.16	8.29	8.06	4	0.77
	TRIB	8.02	8.07	30	0.11	7.92	7.97	8	0.17

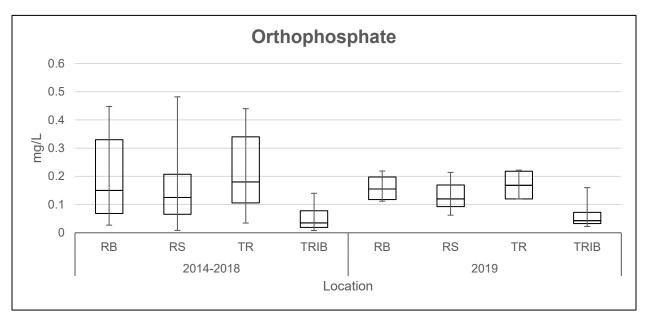
pH was recorded above 9 at CAR-2 and Dam West Marina as well as at the tail race in August. All other readings were within water quality standards during 2019.

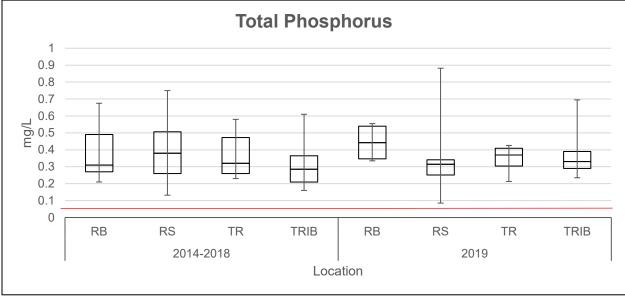




		<u>Hi</u>	storical Refer	ence 201	<u>14-2018</u>			<u> 2019</u>	
	Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
NO3N	RB	0.47	0.25	17	0.26	1.09	0.81	4	2.05
	RS	0.63	0.41	34	0.26	1.27	1.42	8	0.98
	TR	0.51	0.31	17	0.24	1.10	0.93	4	1.91
	TRIB	2.37	2.20	32	0.65	2.65	3.15	8	1.31
NH3N	RB	0.18	0.16	17	0.06	0.16	0.15	4	0.14
	RS	0.11	0.07	34	0.03	0.08	0.06	8	0.05
	TR	0.19	0.19	17	0.05	0.14	0.13	4	0.11
	TRIB	0.11	0.08	32	0.03	0.10	0.08	8	0.05

^{*}All observations of nitrate and ammonia nitrogen were within the water quality standard.

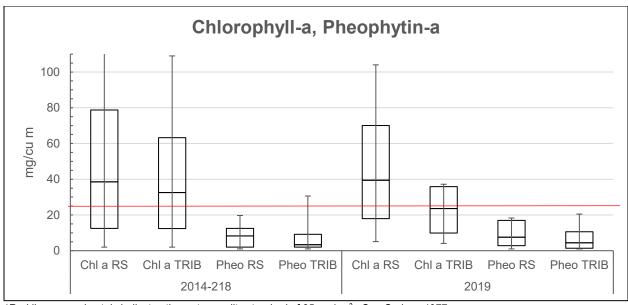




*Red line indicates the water quality standard of 0.05 mg/L.

		Hist	orical Refe	rence 201	<u>14-2018</u>		<u>2019</u>		
	Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
Ortho	RB	0.19	0.15	17	0.08	0.16	0.16	4	0.08
	RS	0.16	0.13	34	0.04	0.13	0.12	8	0.05
	TR	0.20	0.18	17	0.07	0.17	0.17	4	0.09
	TRIB	0.05	0.03	32	0.01	0.07	0.04	8	0.04
TP	RB	0.38	0.31	17	0.08	0.44	0.44	4	0.19
	RS	0.38	0.38	34	0.05	0.35	0.31	8	0.20
	TR	0.37	0.32	17	0.06	0.34	0.37	4	0.15
	TRIB	0.30	0.29	32	0.04	0.37	0.33	8	0.12

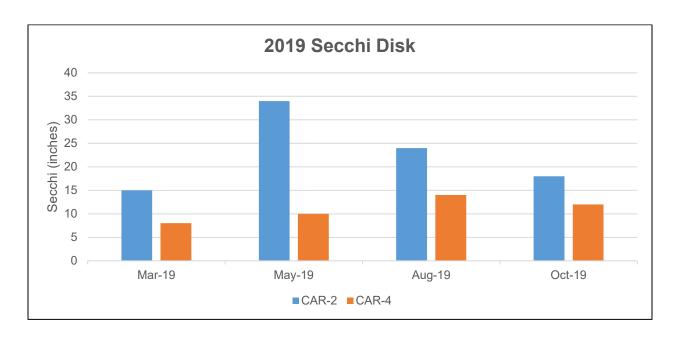
^{*}Total phosphorus exceeded the proposed criteria of 0.05 mg/L for all locations. This study does not acknowledge a water quality criteria for orthophosphate.

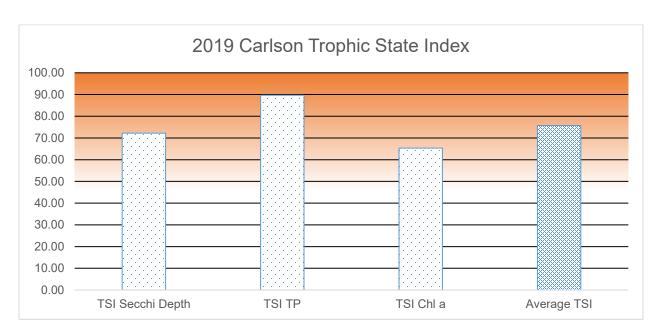


*Red line approximately indicates the water quality standard of 25 mg/cm³. See Carlson 1977.

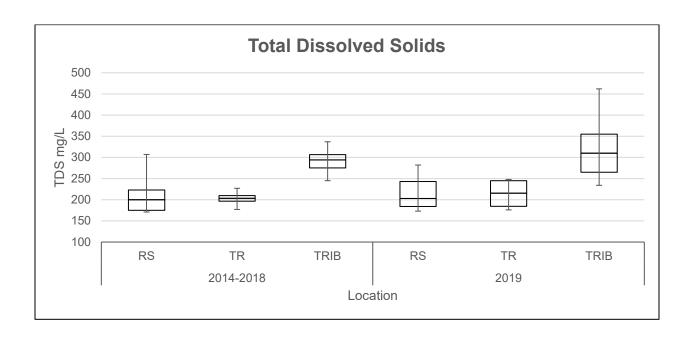
		Hist	torical Ref			<u> 2019</u>			
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)
Chl a	RS	52.92	38.55	32	17.92	46.83	39.45	8	31.66
	TRIB	39.45	32.50	15	17.88	22.13	23.60	4	26.55
Pheo a	RS	8.36	8.25	32	2.07	9.11	7.55	8	6.43
	TRIB	6.51	3.40	15	4.18	7.58	4.40	4	14.45

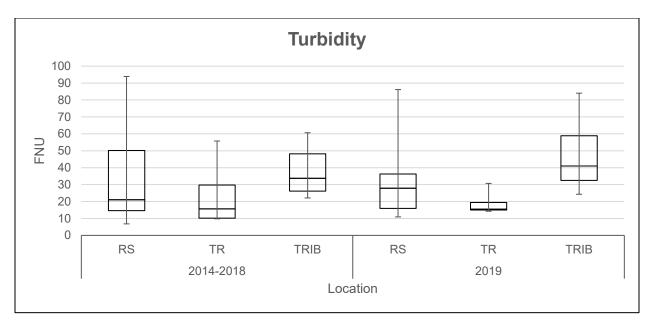
The proposed criteria for chlorophyll-a of 25mg/cm³ was exceeded at most of the lake sites in 2019. This study does not acknowledge a criteria for pheophytin.





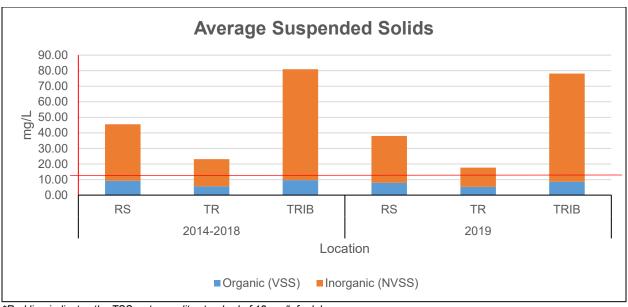
<40 = Oligotrophic ___ 40-60 = Mesotrophic ___ 60-70 = Eutrophic ___ >80 Hypereutrophic





		Histo	rical Refe	erence 2	014-2018	<u>2019</u>				
	Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)	
FNU	RS	58.61	23.66	16	53.03	38.88	30.67	17	20.04	
	TR	24.24	15.71	4	34.44	18.99	15.49	4	12.47	
	TRIB	37.95	33.75	8	12.17	48.03	40.95	8	19.26	
TDS	RS	207.18	200.00	17	21.42	213.76	203.00	17	17.71	
	TR	202.75	203.50	4	32.52	213.75	215.50	4	59.74	
	TRIB	291.63	294.00	8	23.03	327.75	310.00	8	73.05	

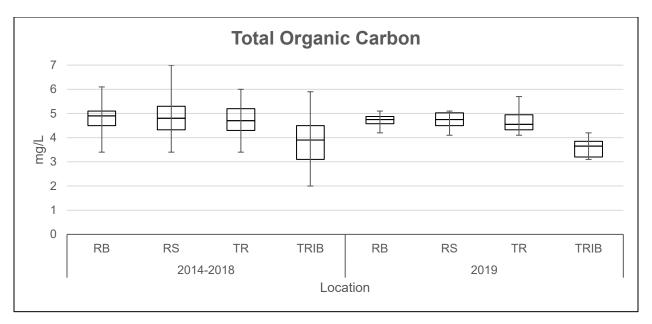
^{*} All observations of TDS were within the referenced water quality standard.



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

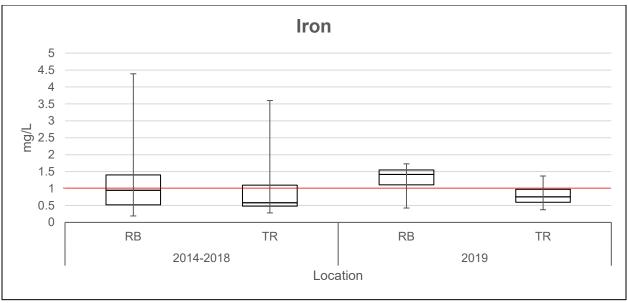
		<u>His</u>	torical Re	ference 2	2014-2018		<u>2019</u>				
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)		
TSS	RS	45.50	35.90	34	13.85	38.01	26.40	8	32.65		
	TR	23.07	17.80	17	6.87	17.64	19.95	4	9.88		
	TRIB	88.08	67.55	32	15.36	78.19	83.00	8	17.93		
VSS	RS	9.24	8.45	34	1.85	7.94	7.77	8	3.50		
	TR	5.62	5.00	17	1.54	5.28	4.23	4	6.73		
	TRIB	9.67	9.60	32	1.27	8.61	8.80	8	1.58		
NVSS	RS	36.26	22.75	34	12.49	30.08	17.20	8	31.11		
	TR	17.45	13.00	17	5.70	12.36	12.93	4	6.66		
	TRIB	71.21	56.25	32	14.64	69.58	76.40	8	17.51		

^{*}In 2019 the TSS stream standard (116 mg/L) was not exceeded, while the TSS lake standard (12 mg/L) was exceeded during each sampling event except at CAR-2 in May.

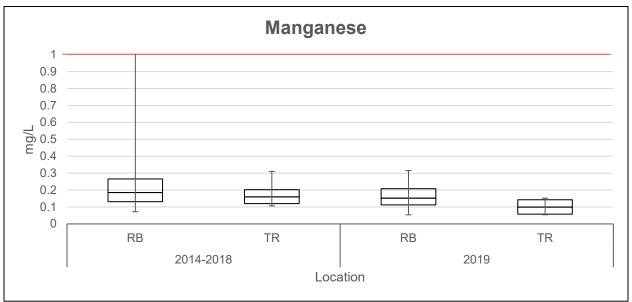


	<u>H</u>	istorical Re	eference 20	<u>014-2018</u>	<u>2019</u>				
Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)	
RB	4.75	4.90	17	0.36	4.70	4.75	4	0.60	
RS	4.83	4.80	34	0.28	4.70	4.75	8	0.32	
TR	4.67	4.70	17	0.38	4.73	4.55	4	1.11	
TRIB	3.91	3.90	32	0.36	3.60	3.65	8	0.34	

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



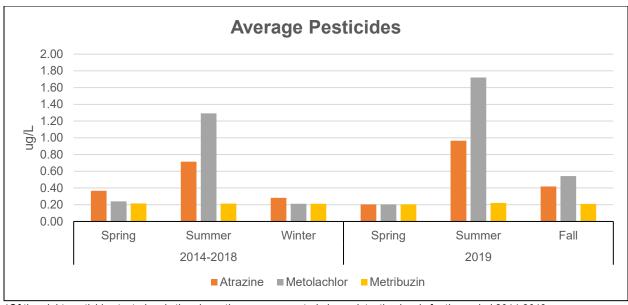
*Red line indicates the water quality standard of 1 mg/L.



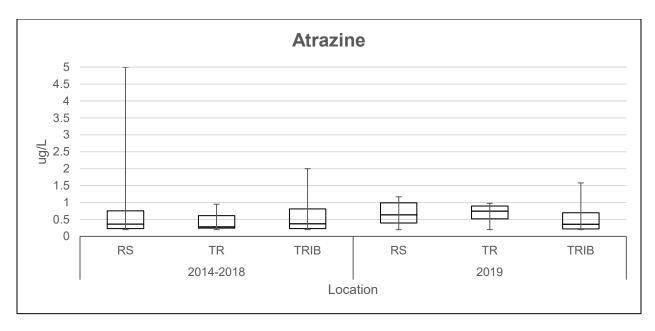
*Red line indicates the water quality standard of 1 mg/L.

		His	storical Re	ference 2	014-2018	2019				
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)	
Iron	RB	1.26	0.95	16	0.63	1.25	1.42	4	0.91	
	TR	1.02	0.58	17	0.50	0.81	0.76	4	0.67	
Mang	RB	0.26	0.19	16	0.13	0.17	0.15	4	0.17	
	TR	0.17	0.16	17	0.03	0.10	0.10	4	0.08	

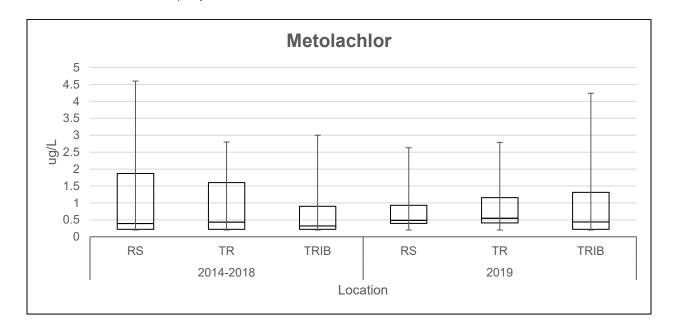
*In 2019 iron exceeded the standard of 1 mg/L near the lake bottom in front of the dam three times and once in the tail race. Manganese did not exceed the criterion.



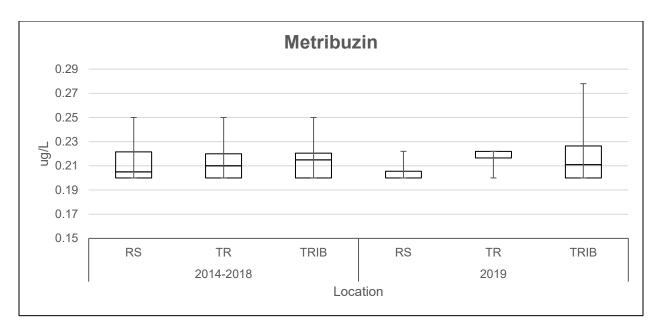
*Of the eight pesticides tested, only the above three were reported above detection levels for the period 2014-2019.



		<u>Hist</u>	orical Re	ference 2	<u>2014-2018</u>	<u>2019</u>			
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)
Atrazine	RS	0.67	0.36	34	0.31	0.66	0.63	8	0.32
	TR	0.43	0.28	17	0.13	0.67	0.74	4	0.55
	TRIB	0.57	0.37	32	0.17	0.60	0.36	8	0.47
*Atrazine did no	ot exceed wate	er quality c	riteria in 201	9.					

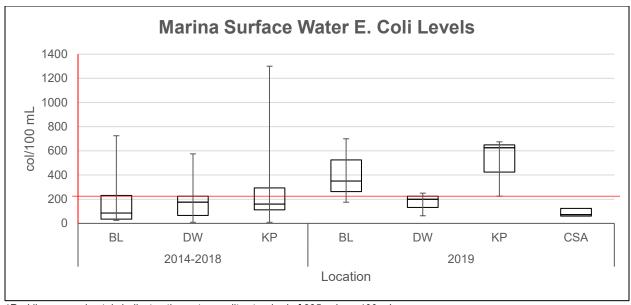


		Hist	orical Ref	erence 2	<u> 2014-2018</u>	<u>2019</u>				
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)	
Metolachlor	RS	1.05	0.39	34	0.40	0.89	0.49	8	0.78	
	TR	0.90	0.43	17	0.44	1.02	0.54	4	1.90	
	TRIB	0.80	0.32	32	0.33	1.22	0.44	8	1.35	
*Metolachlor did ı	not exceed wa	ater quality	criteria in 20	019.						



		Hist	orical Re	ference 2	<u>2014-2018</u>	<u>2019</u>			
	Location	Mean	Median	Count	CL(95.0%)	Mean	Median	Count	CL(95.0%)
Metribuzin	RS	0.21	0.21	34	0.01	0.21	0.20	8	0.01
	TR	0.21	0.21	17	0.01	0.22	0.22	4	0.02
	TRIB	0.21	0.22	32	0.01	0.22	0.21	8	0.02

^{*}Metribuzin did not exceed water quality criteria in 2019.



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

	Histo	orical Refe	erence 20	<u>)14-2018</u>		<u>20</u>	<u>19</u>	
Marina Location	Mean	Median	Count	CL (95.0%)	Mean	Median	Count	CL (95.0%)
Boulder				,				,
Marina	196.92	85.50	12	154.17	408.33	350.00	3	664.05
Dam West								
Marina	203.83	175.00	12	119.61	171.00	200.00	3	240.50
Keyesport								
Marina	268.75	160.00	12	218.06	508.33	625.00	3	612.70
Carlyle								
Sailing Association					99.00	72.00	3	165.77

^{*}Marina bacteria levels exceeded the reference water quality criterion at all locations except CSA.

	2019 Swimming Beach Bacteria Levels (E. Coli / 100mL)												
	Keye	esport	Harbor	Light	Dam	West	Mcl	Nair	Coles	Creek			
	East	West	East	West	North	South	North	South	North	South			
5/1/2019	25	45	144	145	40	29	60	55	51	42			
5/8/2019	36	50	130	133	43	47	70	55	85	68			
5/15/2019	55	51	115	122	65	50	45	33	65	105			
5/22/2019	105	102	120	110	45	42	65	60	95	90			
5/29/2019	140	112	85	80	120	100	140	122	130	115			
6/5/2019	200	180	150	141	120	88	50	45	105	91			
6/12/2019	88	79	158	145	45	41	150	110	58	52			
6/19/2019	75	75	165	145	55	45	116	94	98	91			
6/26/2019	100	90	150	135	75	55	40	40	120	114			
7/3/2019	123	110	176	151	96	88	71	60	126	91			
7/11/2019	128	89	110	105	160	141	180	150	146	142			
7/19/2019	95	105	225	204	120	114	143	120	150	435			
7/24/2019	115	108	185	154	105	92	133	112	165	140			
7/31/2019	46	41	110	97	75	66	50	41	44	32			
8/7/2019	74	58	171	161	84	80	97	78	89	91			
8/14/2019	101	79	174	145	87	74	75	69	120	98			
8/21/2019	71	88	152	132	75	55	56	40	144	132			
9/6/2019	65	55	155	135	45	41	37	35	124	121			
9/11/2019	78	65	175	161	47	41	54	50	113	111			
9/18/2019	51	45	145	145	41	36	51	49	91	85			

^{*}Beach bacteria levels exceeded the reference water quality criterion once in July at Coles Creek South.

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 bacteria, TP, TSS, and TFe were evident. In addition CHL_a and subsequent TSI levels were indicative of a hyper eutrophic system.

Average E. Coliform levels were higher at Boulder Marina (408 col/100mL) and Keyesport Marina (508 col/100mL) in 2019 compared to the historical averages of 197 col/100mL and 269 col/100mL respectively. Bacteria levels can be highly variable and high levels may not necessarily be representative of the entire system. There were precipitation events before some of these high samples were taken which can increase runoff and contribute to higher bacteria levels. E. Coliform levels are monitored for the protection of human health as it relates to full body contact of recreational waters. Given that 2019 high bacteria levels in the Marinas are not swimming areas, there is a lower risk to humans. Long term bacteria monitoring and analyses will be important to assess changes over time. Swimming beaches at Carlyle Lake are also monitored for bacteria by the Lake Project staff. During 2019 the state standard was exceeded only one time.

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 0.37 mg/L, comparable to the historical average of 0.35 mg/L. 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/cm³ was exceeded at most sampling locations in 2019. The 2019 average CHL_a of 34.48 mg/cm³ was less than the historical average of 46.19 mg/cm³. CHL_a is an indicator of the abundance of phytoplankton. Any water environment with a level recorded above 25 mg/cm³ is considered to be eutrophic (nutrient enrichment increases algal and plant growth and negative effects). The 2019 TSI level, an average of the individual trophic state indexes for secchi depth, CHL_a, and TP, for Carlyle Lake is 75.74. Carlyle Lake considered eutrophic based on this TSI level. 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 all locations in the lake (12 mg/L), but not in the tailrace or tributaries. Historical TSS levels are similar to the 2019 results.

Living organisms require trace amounts of metals, excessive levels can be harmful. TFe exceeded the criterion of 1 mg/L three times at the bottom reservoir location in front of the dam and once in the tailrace in 2019. Comparably, there are multiple times TFe was high historically (2014-2018) at the same locations. 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.

MONITORING PROGRAM RECOMMENDATIONS

The IEPA currently has listed Carlyle Lake as impaired for total suspended solids, total phosphorous, and mercury while the Kaskaskia River upstream from the Lake is impaired for dissolved oxygen, Atrazine, and mercury. The lists of sources for these impairments are contaminated sediments, crop production, and unknown sources. At present the only tributary being sampled by CEMVS is the Kaskaskia River. IEPA also has the following listed as impaired: Hurricane Creek, North Fork Kaskaskia, and East Fork Kaskaskia. It is recommended to add these three tributaries to the routine sampling plan in order to increase the dataset and improve our ability to assess the water quality condition of Carlyle Lake.

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 Carlyle Lake 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 Carlyle Lake it is recommended that Nitrite (NO₂) 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.

Given the above mentioned high bacteria levels observed at the Marinas in 2019, it is recommended to add routine bacteria sampling to the tributaries (CAR-12, CAR-13, and any additional tributaries). This would be useful in assessing getting a larger picture of potential bacteria coming in to the lake.

WORKS CITED

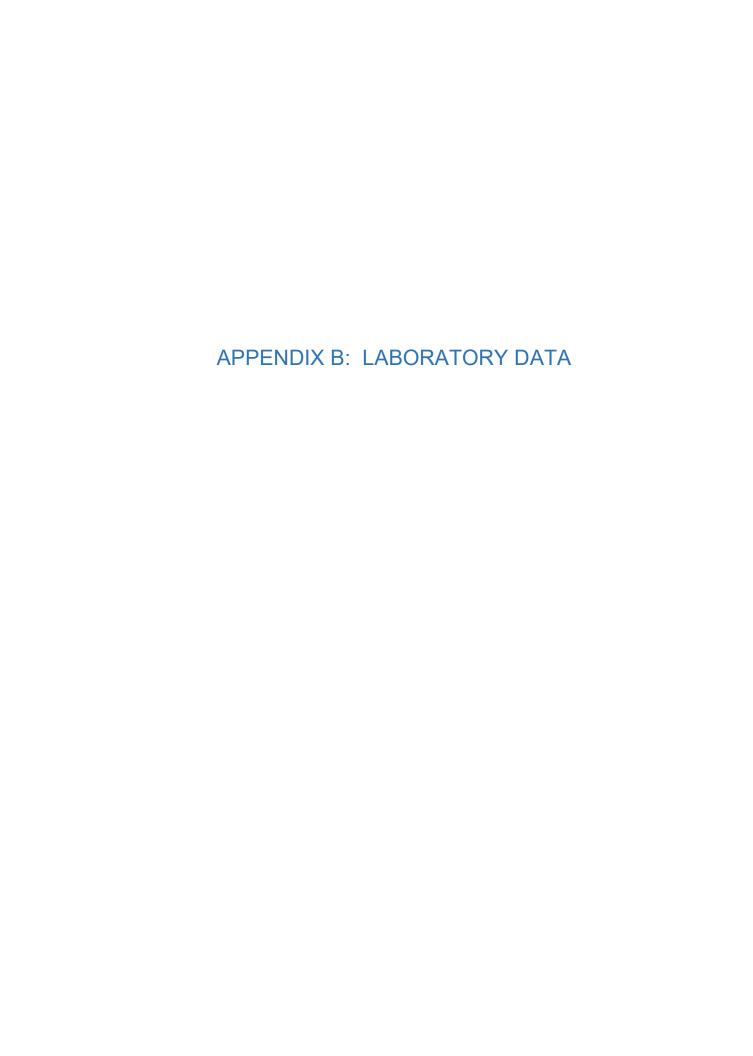
- Carlson, R. E. (1977). A Trophic State Index for Lakes1. Limnology and Oceanography, 22(2), 361-369.
- USACE. (2018). Engineering and Design: Water Quality Management. USACE ER 1110-2-8154. Washington D.C.
- USACE. (1987). Engineering and Design: Reservoir Water Quality Analysis. USACE ER 1110-2-1201. Washington D.C.
- IEPA. (2018). https://www2.illinois.gov/epa/topics/water-quality/watershed-management/tmdls/Pages/303d-list.aspx



							DO			
Date	Location	Depth	Temp	Redox	Cond	DO	mg/L	рН	TDS	Turbidity
3/19/2019	CAR-1	1.36	7.56	532.3	382	111.3	13.3	8.03	248	30.71
3/19/2019	CAR-2	0.62	7.94	469.7	379.1	101.7	12.04	8.01	246	29.98
3/19/2019	CAR-2	1.061	8.00	473.3	379.1	101.5	12.01	8.05	246	30.67
3/19/2019	CAR-2	2.026	8.00	475.2	379.1	101	11.95	8.05	246	30.26
3/19/2019	CAR-2	3.022	7.50	477.2	380.7	97.1	11.62	8.01	247	30.24
3/19/2019	CAR-2	4.03	7.22	478.4	381.1	95	11.45	7.98	248	28.33
3/19/2019	CAR-2	5.117	7.44	474.7	380.7	96.8	11.61	7.99	247	29.94
3/19/2019	CAR-2	6.025	7.17	474.9	381.4	95.3	11.5	7.97	248	28.73
3/19/2019	CAR-2	7.04	7.17	474.9	381.4	94.5	11.41	7.94	248	29.17
3/19/2019	CAR-2	8.082	7.17	474.2	381.3	94.2	11.38	7.92	248	28.46
3/19/2019	CAR-4	1.028	8.89	442.2	266.3	82.3	9.54	7.95	173	172.16
3/19/2019	CAR-4	2.058	8.89	442.7	266.2	79.8	9.25	7.81	173	173.26
3/19/2019	CAR-4	3.12	8.89	442.3	266.2	79.5	9.22	7.77	173	176.71
3/19/2019	CAR-4	4.089	8.89	441.9	266.2	79.4	9.2	7.76	173	180.84
3/19/2019	CAR-4	5.109	8.89	441.5	266.1	79.3	9.18	7.74	173	154.27
3/19/2019	CAR-4	6.098	8.94	440.8	265.7	79.2	9.17	7.73	173	153.95
3/19/2019	CAR-4	7.101	8.94	439.9	265.9	79.1	9.15	7.72	173	192.64
3/19/2019	CAR-4	8.036	8.89	439.1	266.3	79.1	9.15	7.71	173	174.13
3/19/2019	CAR-9	2.412	5.83	451.3	470.7	93.2	11.63	8.07	306	54.49
3/19/2019	CAR-9	0.998	5.83	453.4	470.4	92.8	11.58	8	306	84.02
3/19/2019	CAR-12	1.735	7.61	426.2	396	86.4	10.32	8.1	257	73.75
3/19/2019	CAR-12	1.263	7.39	425.4	398	84.8	10.19	7.93	259	81.4
5/14/2019	CAR-1	0.514	16.9	361.9	376	101.8	9.85	8.04	244	15.28
5/14/2019	CAR-2	0.039	17.1	367	377.3	82.4	7.94	7.99	245	13.34
5/14/2019	CAR-2	1.1	17.1	372.1	377.3	81.8	7.89	7.84	245	13.69
5/14/2019	CAR-2	2.138	16.9	371.6	377.2	78.9	7.64	7.79	245	13.74
5/14/2019	CAR-2	3.077	16.8	370.3	376.8	76.6	7.43	7.77	245	15.55
5/14/2019	CAR-2	4.061	16.5	369.1	373.6	64.5	6.29	7.65	243	24.54
5/14/2019	CAR-2	5.029	16.6	367.3	373.9	65.2	6.35	7.65	243	21.35
5/14/2019	CAR-2	5.988	16.6	366	374.7	65	6.33	7.65	244	23.77
5/14/2019		6.581	16.5	360.1	372.6	63.1	6.16	7.66	242	27.42
5/14/2019		0.354	16.4	229.6	434	97.3	9.52	8.03	282	32.72
5/14/2019	CAR-4	1.001	16.4	241.3	434.6	97.7	9.54	8.01	282	32.36
5/14/2019	CAR-4	2.165	16.3	247.6	426.3	95.2	9.33	7.95	277	33.33
5/14/2019		3.178	15.6	252.3	412.3	87.3	8.69	7.84	268	37.4
5/14/2019		4.069	15.2	256	412.2	82.5	8.27	7.78	268	42.84
5/14/2019		4.991	15.3	259	418.1	83.3	8.33	7.87	272	41.6
5/14/2019	CAR-4	6.088	15.2	260.1	422.1	82.1	8.23	7.86	274	46.54
5/14/2019		-0.184	15.1	293.1	483.6	100.5	10.09	8.04	314	40
5/14/2019		-0.09	15	305.1	491.7	91.4	9.2	8.11	320	34.38
5/14/2019	CAR-BL-MAR	0	18.2	245.7	295.4	120.7	11.36	8.36	192	18.04

5/14/2019	CAR-BL-MAR	1.167	14.8	156	291.9	60.2	6.09	7.75	190	44.38
5/14/2019	CAR-CSA-MAR	0.126	17.3	359.5	376.8	89.7	8.61	8.23	245	14.8
5/14/2019	CAR-CSA-MAR	1.113	16.8	358.1	373.3	82.9	8.04	8.15	243	17.8
5/14/2019	CAR-DW-MAR	0	17.3	319.7	365.9	88.5	8.49	8.19	238	15.83
5/14/2019	CAR-DW-MAR	1.14	16.8	320.3	365.9	82.7	8.02	8.11	238	16.6
5/14/2019	CAR-DW-MAR	2.349	16.4	264.1	368.4	62.5	6.11	7.88	239	32.94
5/14/2019	CAR-KP-MAR	0.34	16.3	300.7	395.9	90.6	8.88	8.05	257	36.26
5/14/2019	CAR-KP-MAR	1.137	15.4	301.1	395.1	82	8.19	7.94	257	49.85
5/14/2019	CAR-KP-MAR	0.631	15.5	300.5	396.7	80.7	8.05	7.91	258	39.86
8/1/2019	CAR-1	1.023	27.6	282.1	287.9	106.8	8.41	9.02	187	15.69
8/1/2019	CAR-2	0.449	28	165	285	141.2	11.06	9.03	185	10.99
8/1/2019	CAR-2	1.166	28	200.5	284.9	143	11.18	9.09	185	10.92
8/1/2019	CAR-2	2.033	27.9	213.4	285.1	142.4	11.16	9.1	185	11.1
8/1/2019	CAR-2	3.045	27.9	225.5	285.2	140.6	11.03	9.08	185	11.27
8/1/2019	CAR-2	4.095	27.9	232.4	285.2	140.1	10.99	9.08	185	11.34
8/1/2019	CAR-2	5.101	27.9	236.6	285.4	139.1	10.91	9.09	185	11.09
8/1/2019	CAR-2	5.984	27.7	244.4	285.8	129.6	10.19	9.06	186	11.07
8/1/2019	CAR-2	7.317	27.6	250.1	286.8	122	9.61	9.01	186	11.24
8/1/2019	CAR-2	8.011	27.5	255.3	287.7	108.7	8.57	8.95	187	12.86
8/1/2019	CAR-4	0	27.9	187.7	371.1	176	13.79	8.92	241	20.56
8/1/2019	CAR-4	1.043	27	215.3	371.4	119.7	9.53	8.67	241	25.04
8/1/2019	CAR-4	2.153	26.8	244.5	372.1	99.1	7.92	8.46	242	46.44
8/1/2019	CAR-4	3.005	26.3	257.1	369.4	63.6	5.12	8.15	240	45.55
8/1/2019	CAR-4	4.129	26.2	263.7	369.4	59.2	4.78	8.09	240	50.05
8/1/2019	CAR-4	5.08	26.2	268.1	368.2	53.3	4.31	8.03	239	92.38
8/1/2019	CAR-12	-0.378	25.7	275.5	360.3	79.1	6.45	7.57	234	41.9
8/1/2019	CAR-13	-0.167	25.6	367	410.5	87.1	7.12	7.83	267	51.62
8/1/2019	CAR-13	2.857	25.5	374.5	410.6	86.8	7.09	7.77	267	55.64
8/1/2019	CAR-13	2.077	25.5	379	410.5	86.8	7.09	7.7	267	52.09
8/1/2019	CAR-13	0.871	25.5	380.5	410.5	86.8	7.1	7.68	267	51.34
8/1/2019	CAR-BL-MAR	1.693	26.5	382	310.7	70	5.63	8.38	202	32.03
8/1/2019	CAR-BL-MAR	1.33	26.7	369	308.5	64.1	5.13	8.23	201	23.81
8/1/2019	CAR-CSA-MAR	0	28.2	388.3	283.9	155.5	12.13	8.97	185	10.72
8/1/2019	CAR-CSA-MAR	1.496	27.7	384.1	286.1	134	10.54	8.93	186	13.68
8/1/2019	CAR-DW-MAR	0.304	28.4	216.4	281	161.1	12.51	9.14	183	8.94
8/1/2019	CAR-DW-MAR	1.637	28.2	276.2	283	138.4	10.8	9.05	184	11.66
8/1/2019	CAR-DW-MAR	2.541	27.8	302	286.6	99.6	7.82	8.8	186	17.35
8/1/2019	CAR-KP-MAR	1.444	27.3	274.2	374.1	91.1	7.2	8.6	243	31.81
8/1/2019	CAR-KP-MAR	0.542	27.8	262.7	368.6	125.8	9.88	8.7	240	19.47
10/8/2019	CAR-1	0.826	20.5	282.5	270.4	81	7.29	8.08	176	14.26
10/8/2019	CAR-2	0.207	21.3	121.2	267.4	90.3	7.99	8.18	174	12.41
10/8/2019	CAR-2	1.07	21.2	131.2	268	82.2	7.29	8.14	174	13.96
10/8/2019	CAR-2	2.036	21.2	137.3	268	81.8	7.26	8.14	174	15.18

10/8/2019	CAR-2	3.091	21.2	143.9	267.9	82.3	7.3	8.12	174	15.89
10/8/2019	CAR-2	4.004	21.2	146.4	267.9	81.7	7.25	8.13	174	16.05
10/8/2019	CAR-2	5.135	21.2	150	268	81	7.19	8.12	174	15.66
10/8/2019	CAR-2	6.078	21.2	154.3	268.2	79.2	7.03	8.1	174	17.99
10/8/2019	CAR-2	7.048	21.2	156.4	268.1	78.9	7	8.12	174	17.37
10/8/2019	CAR-4	1.013	19.4	133.7	328.5	68.8	6.33	8.08	214	34.55
10/8/2019	CAR-4	2.053	19	142.3	334.3	69.8	6.47	8.06	217	40.69
10/8/2019	CAR-4	3.027	18.8	148.5	334.7	68.7	6.39	8.03	218	57.87
10/8/2019	CAR-4	4.091	18.8	153.3	334.4	68.5	6.37	8.01	217	52.49
10/8/2019	CAR-4	5.048	18.7	158.2	334	70.5	6.57	7.99	217	44.75
10/8/2019	CAR-4	6.055	18.5	163.1	333.6	70.9	6.64	7.96	217	51.16
10/8/2019	CAR-12	0.392	20.6	227.7	707	54.3	4.87	7.87	460	26.94
10/8/2019	CAR-13	0.342	17.9	179.3	710	103.4	9.78	8.12	462	22.02
10/8/2019	CAR-13	0.82	17.9	183.1	711	103.5	9.8	8.12	462	24.28
10/8/2019	CAR-BL-MAR	1.107	19.2	218.2	283.5	46.2	4.27	7.85	184	41.31
10/8/2019	CAR-CSA-MAR	0.528	20.9	107.6	266.5	103.3	9.23	8.46	173	15.57
10/8/2019	CAR-CSA-MAR	1.47	20.6	116	266.2	100.8	9.05	8.48	173	15.63
10/8/2019	CAR-DW-MAR	1.069	20.8	160	268.3	83.1	7.43	8.28	174	22.11
10/8/2019	CAR-DW-MAR	2.05	20.7	160.7	268.1	86	7.7	8.28	174	27.07
10/8/2019	CAR-KP-MAR	1.083	19.9	137.2	313.1	65.9	6	8.12	203	86.16





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: Carlyle Lake

Lab Name: ARDL, Inc.

Samples Received at ARDL: 3/19/19

ARDL Report No.: 8466

CASE NARRATIVE

<u>Customer</u> Sample No.	<u>Date</u> <u>Collected</u>	<u>Lab ID</u> <u>Number</u>	Analyses Requested
CAR-1	3/19/19	8466-01	NP Pesticide, Metals(1), Inorganics(2)
CAR-2-0	3/19/19	8466-02	NP Pesticide, Inorganics(2)(3)
CAR-2-10	3/19/19	8466-03	Metals(1), Inorganics(2)
CAR-4	3/19/19	8466-04	NP Pesticide, Inorganics(2)(3)
CAR-13	3/19/19	8466-05	NP Pesticide, Inorganics(2)
CAR-12	3/19/19	8466-06	NP Pesticide, Inorganics(2)(3)
CAR-15	3/19/19	8466-07	NP Pesticide, Inorganics(2)(3)

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

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.

DUPLICATE

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

"Test everything, keep the good" 1 Thes. 5:21

Page 1 of 2

Project Name: Carlyle Lake

ARDL Report No.: 8466

CASE NARRATIVE (Continued)

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

Percent recoveries of all matrix spikes and matrix spike duplicates were within control limits.

DUPLICATE

Duplicate analyses are reported as MS/MSD, except TSS, TVSS, chlorophyll/pheophytin. RPD of the duplicate analyses met criteria.

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



Including as appropriate:
Field Sample Results
Batch QC
Prep Blank
LCS/Spike Blank
Matrix QC
MS/MSD
Sample Duplicate

ARDL Data Package

8466

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

Project Name:	CARLYLE LAKE	Ana	lysis: N	P PESTICII	DES (82	70SIM-MO	D)
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi:	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-1		ARDL I	Lab No.:	00846	56-01	
Desc/Location:	CARLYLE LAKE		Lab F	ilename:	E0326	5905	
Sample Date:	03/19/2019		Receiv	ved Date:	03/19	9/2019	
Sample Time:	0820		Prep.	Date:	03/22	2/2019	
Matrix:	WATER		Analys	sis Date:	03/26	5/2019	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1103	34	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	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	87%	

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

(a) DOD and/or NELAC Accredited Analyte.

Sample 008466-01, Inorganic Analyses

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

Project Name: Project No.:	CARLYLE LAKE	Ana Analytical M	-	P PESTICII	DES (82	70SIM-MC	D)
-	fied - IL100308	-	method: 3				
Desc/Location: Sample Date:	CAR-2-0 CARLYLE LAKE 03/19/2019 0905		Lab F Recei	Lab No.: ilename: ved Date: Date:	E0320	66-02 6908 9/2019 2/2019	
Amount Used:	WATER 1000 mL 1 mL NA		-		-	5/2019 34	
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	85%	

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

(a) DOD-QSM Accredited Analyte.

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Sampling Sampling Sampling Sampling 1.00 0.0300 1.00 0.0600 1.00 0.0100 4.00 4.00	000 000 0	Lab Report No: 008466 Project Name: CARLYLE LAKE Project No: ARDL No: 008466-02 Field ID: CAR-2-0 Received: 03/19/2019 Amalyte LOD Amalyte LOD Amonia Nitrogen 0.0270 Chlorophyll-a, Correcte 1.0 Nitrate as Nitrogen 0.0570 Phosphorus 0.06800 Phosphorus, -ortho 0.00800 Solids, Total Suspended 4.0 Solids, Volatile Suspen 4.0	Report Date: 04/09/2019	Analysis: Inorganics NELAC Certified - IL100308	Sampling Loc'n: CARLYLE LAKE Sampling Date: 03/19/2019 Sampling Time: 0905	ŎОЛ	
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(a) DOD and/or NELAC Accredited Analyte.

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

NEL LAKE LAKE	Lab Report No:	No: 008466	99						X	Report Date:		019
66-03 Sampling Loc'n: CARLYLE LAKE 2-10 Sampling Date: 03/19/2019 9/2019 LOD LOQ Flag Result Units Method Method D.00500 0.0537 MG/L 3010A 6010C 03/ 0.0200 0.0300 0.0537 MG/L 3010A 6010C 03/ 0.0570 0.0600 2.7 MG/L NONE 350.1 0.0570 0.0100 0.35 MG/L NONE GREEN 0.00800 0.0100 0.35 MG/L NONE 365.2 0.00800 0.0100 0.125 MG/L NONE 160.2 spen 4.0 4.00 ND MG/L NONE 160.4 0.500 1.00 MG/L NONE 1160.4	Project Name: Project No:	CARLYLE L	AKE						Z	Analysis: IELAC Certif	: Inorganics fied - IL1003	ics 30308
LOD LOQ Flag Result Units Method Method	ARDL No: Field ID:	008466-03 CAR-2-10	o	Sampl	ing Loc ling Da		/LE LAKE 1/2019			Matrix Moisture	: WATER : NA	
LOD LOQ Flag Result Units Method Method	RECELVED:	TO2/ET/50	ח	giiiba	TT BUTT						-	
LOD LOQ Flag Result Units Method Method 0.0400 0.0500 1.34 MG/L 3010A 6010C 0.00400 0.00500 0.0537 MG/L 3010A 6010C 0.0570 0.0600 2.7 MG/L NONE 350.1 0.00800 0.0100 0.35 MG/L NONE 365.2 0.00800 0.0100 0.125 MG/L NONE 365.2 spen 4.0 4.00 ND MG/L NONE 160.2 nded 4.0 4.00 ND MG/L NONE 160.4								Prep	Analysis	Prep	Analysis	Run
0.0400 0.0500 1.34 MG/L 3010A 6010C 0.00400 0.00500 0.0537 MG/L 3010A 6010C 0.0200 0.0300 0.206 MG/L NONE 350.1 0.0570 0.0600 2.7 MG/L NONE GREEN 0.00800 0.0100 0.35 MG/L NONE 365.2 0.00800 0.0100 0.125 MG/L NONE 365.2 spen 4.0 4.00 ND MG/L NONE 160.2	Analy	Ð	LOD	TOO	Flag	Result	Units	Method	Method	Date	Date	Number
0.00400 0.00500 0.0537 MG/L 3010A 6010C 0.0200 0.0300 0.206 MG/L NONE 350.1 0.0570 0.0600 2.7 MG/L NONE GREEN 0.00800 0.0100 0.35 MG/L 365.2 365.2 0.00800 0.0100 0.125 MG/L NONE 365.2 spen 4.0 4.00 ND MG/L NONE 160.4	a) Iron		0.0400	0.0500		1.34	MG/L	3010A	6010C	03/21/19	03/21/19	P7173
0.0200 0.0300 0.206 MG/L NONE 350.1 0.0570 0.0600 2.7 MG/L NONE GREEN 0.00800 0.0100 0.35 MG/L 365.2 365.2 0.00800 0.0100 0.125 MG/L NONE 365.2 spen 4.0 4.00 ND MG/L NONE 160.4 n 0.500 1.00 4.2 MG/L NONE 415.1	a) Manganese		0.00400	0.00500		0.0537	MG/L	3010A	6010C	03/21/19	03/21/19	P7173
0.0570 0.0600 2.7 MG/L NONE GREEN 0.00800 0.0100 0.35 MG/L 365.2 365.2 0.00800 0.0100 0.125 MG/L NONE 365.2 4.0 4.00 ND MG/L NONE 160.2 4.0 4.00 ND MG/L NONE 160.4 0.500 1.00 4.2 MG/L NONE 415.1	mmonia Nitroge	an a	0.0200	0.0300		0.206	MG/L	NONE	350.1	NA	03/20/19	03214423
0.0100 0.35 MG/L 365.2 365.2 0.0100 0.125 MG/L NONE 365.2 4.00 MG/L NONE 160.2 4.00 ND MG/L NONE 160.4 1.00 4.2 MG/L NONE 415.1	litrate as Nitı	rogen	0.0570	0.0600		2.7	MG/L	NONE	GREEN	NA	03/29/19	04084458
0.00800 0.0100 0.125 MG/L NONE 365.2 4.0 4.00 20.0 MG/L NONE 160.2 4.0 4.00 ND MG/L NONE 160.4 0.500 1.00 4.2 MG/L NONE 15.1	hosphorus		0.00800.0	0.0100		0.35	MG/L	365.2	365.2	03/26/19	03/27/19	03294449
4.0 4.00 20.0 MG/L NONE 160.2 4.0 4.0 ND MG/L NONE 160.4 0.500 1.00 4.2 MG/L NONE 4.15.1	hosphorus, -o		0.00800	0.0100		0.125	MG/L	NONE	365.2	NA	03/20/19	03214427
4.0 4.00 ND MG/L NONE 160.4 0.500 1.00 4.2 MG/T, NONE 415.1	olids, Total &	Suspended	4.0	4.00		20.0	MG/L	NONE	160.2	NA	03/21/19	03274441
0.500 1.00 4.2 MG/T, MON 1.100 1.00	olids, Volati	le Suspen	4.0	4.00		ND	MG/L	NONE	160.4	NA	03/21/19	03274442
HICHT TATOM T /OUT 11:1	otal Organic (Jarbon	0.500	1.00		4.2	MG/L	NONE	415.1	NA	03/25/19	04084461

(a) DOD and/or NELAC Accredited Analyte.

Sample 008466-03, Inorganic Analyses

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

Project Name:	CARLYLE LAKE	Ana	lysis: N	P PESTICII	DES (82'	70SIM-MC	D)
Project No.:		Analytical M	ethod: 8	270C			
NELAC Certi	fied - IL100308	Prep M	ethod: 3	510C			
Field ID:	CAR-4		ARDL :	Lab No.:	0084	66-04	
Desc/Location:	CARLYLE LAKE		Lab F	ilename:	E032	5909	
Sample Date:	03/19/2019		Recei	ved Date:	03/19	9/2019	
Sample Time:	1010		Prep.	Date:	03/22	2/2019	
Matrix:	WATER		Analy	sis Date:	03/26	5/2019	
Amount Used:	1000 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Ba	tch:	B1103	34	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	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	73%	İ
			1

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

Report Date: 04/09/2019	Analysis: Inorganics NELAC Certified - IL100308	I LAKE MATER 2019 Moisture: NA	Prep Analysis Prep Analysis Run Units Method Method Date Number	MG/L NONE 350.1 NA 03/20/19 03214423 MG/CU.M. 10200H 10200H 03/20/19 03/28/19 04014452 MG/L NONE GREEN NA 03/29/19 04014452 MG/L 10200H 10200H 03/20/19 03/28/19 04014452 MG/L 365.2 365.2 03/26/19 03/27/19 0329449 MG/L NONE 160.2 NA 03/20/19 03214427 MG/L NONE 160.2 NA 03/21/19 03274441 MG/L NONE 160.4 NA 03/21/19 03274441 MG/L NONE 160.4 NA 03/21/19 04084461
		Loc'n: CARLYLE LAKE g Date: 03/19/2019 g Time: 1010	ag Result	0.0866 5.1 1.75 ND 0.882 0.125 11.2
		Sampling Loc'n: Sampling Date: Sampling Time:	LOQ F13	0.0300 1.00 1.00 0.0100 0.0100 6.58 6.58
99	AKE	Ø	LOD	0.0200 1.0 0.0570 1.0 0.00800 0.00800 6.58 6.58
Lab Report No: 008466	Project Name: CARLYLE LAKE Project No:	ARDL No: 008466-04 Field ID: CAR-4 Received: 03/19/2019	Analyte	Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Sample 008466-04, Inorganic Analyses

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

Project Name:	CARLYLE LAKE	Ana	lysis: N	P PESTICII	ES (827	70SIM-MO	D)
Project No.:		Analytical M	ethod: 8	270C			
NELAC Certi:	fied - IL100308	Prep M	ethod: 3	510C			
Field ID:	CAR-13		ARDL	Lab No.:	00846	56-05	
Desc/Location:	CARLYLE LAKE		Lab F	ilename:	E0326	5910	
Sample Date:	03/19/2019		Recei	ved Date:	03/19	9/2019	
Sample Time:	1120		Prep.	Date:	03/22	2/2019	
Matrix:	WATER		Analy	sis Date:	03/26	5/2019	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Ba	tch:	B1103	34	
% Moisture:	NA		Level	:	LOW		
					Data	***************************************	Dilution
Parameter		LOD	LOQ	Result	Flag	Units	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	85%	
			1

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

/2019	Inorganics d - IL100308		s Run Number	03/20/19 03214423	9 04084458	.9 03294449	.9 03214427	9 03274441	.9 03274442	.9 04084461
: 04/09/2019	: Inorg	MATER NA	Analysis Date	03/20/1	03/29/19	03/27/19	03/20/19	03/21/19	03/21/19	03/25/19
Report Date:	Analysis: Inorganics NELAC Certified - IL100308	Matrix: Moisture:	Prep Date	NA	NA	03/26/19	NA	NA	NA	NA
P4	Z .		Analysis Method	350.1	GREEN	365.2	365.2	160.2	160.4	415.1
			Prep Method	NONE	NONE	365.2	NONE	NONE	NONE	NONE
		CARLYLE LAKE 03/19/2019 1120	Units	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
			Result	0.103	4.07	0.451	0.162	83.2	5.6	3.1
		Sampling Loc'n: Sampling Date: Sampling Time:	Flag							
		Samp. Sam Sam	COT	0.0300	0.0600	0.0100	0.0100	4.00	4.00	1.00
991	AKE	5	ГОР	0.0200	0.0570	0.00800	0.00800	4.0	4.0	0.500
No: 008466	CARLYLE LAKE	008466-05 CAR-13 03/19/2019	رب 0	en	rogen		rtho	Suspended	le Suspen	Carbon
Lab Report No:	Project Name: Project No:	ARDL No: Field ID: Received:	Analyte	Ammonia Nitrogen	Nitrate as Nitrogen	Phosphorus	Phosphorus, -ortho	Solids, Total Suspended	Solids, Volatile Suspen	Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Sample 008466-05, Inorganic Analyses

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

Project Name:	CARLYLE LAKE	Ana	lysis: N	P PESTICII	DES (82	70SIM-MC	DD)
Project No.:		Analytical M	_				
NELAC Certi	fied - IL100308	-	ethod: 3				
Field ID:	CAR-12	•		Lab No.:		66-06	
Desc/Location:			Lab F	ilename:	E032	6911	
Sample Date:	03/19/2019		Recei	ved Date:	,	9/2019	
Sample Time:	1230		_	Date:		2/2019	
Matrix:	WATER		Analy	sis Date:	03/26	6/2019	
Amount Used:	1000 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1103	34	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND	A 04 A 14 T 1 T 1 T 1 T 1 T 1 T 1 T 1 T 1 T 1	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	I
Triphenylphosphate	30-130	92%	j
			1

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: 008466 Project Name: CARLYLE LAKE Project No:	66 AKE						K Z	Report Date: Analysis: NELAC Certifi	Report Date: 04/09/2019 Analysis: Inorganics NELAC Certified - IL100308	.cs
ARDL No: 008466-06 Field ID: CAR-12 Received: 03/19/2019	ŋ	Samplir Sampli Sampli	Sampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE 03/19/2019 1230			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen	0.0200 1.0 0.0570 1.0 0.00800 0.00800 4.0	0.0300 1.00 1.00 0.0100 0.0100 4.00		0.0876 4.1 3.38 ND 0.695 0.14 82.8 6.8	MG/L MG/CU.M. MG/CU.M. MG/L MG/L MG/L MG/L	10200H NONE 10200H 365.2 NONE NONE	350.1 10200H GREEN 10200H 365.2 365.2 160.2	NA 03/20/19 NA 03/20/19 03/26/19 NA NA	03/20/19 (03/28/19 (03/28/19 (03/28/19 (03/28/19 (03/20/19 (03/21) (03/21/19 (03/21) (03/21/19 (03/21) (03/21) (03/21) (03/21/19 (03/21) (03214423 04014452 04084458 04014452 03294449 03214427 03274441
Total Organic Carbon	0.500	1.00		3.8	MG/L	NONE	415.1	NA	03/25/19 (04084461

(a) DOD and/or NELAC Accredited Analyte.

Sample 008466-06, Inorganic Analyses

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

Project Name:	CARLYLE LAKE	Ar	alysis: N	P PESTICII	DES (82	70SIM-MC	D)
Project No.:		Analytical	-				
-	fied - IL100308	-	Method: 3				
Field ID:	CAR-15		ARDL 1	Lab No.:	0084	56-07	
Desc/Location:	CARLYLE LAKE		Lab F	ilename:	E032	5912	
Sample Date:	03/19/2019		Recei	ved Date:	03/1	9/2019	
Sample Time:	1235		Prep.	Date:	03/2	2/2019	
Matrix:	WATER		Analy	sis Date:	03/2	5/2019	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B110	34	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine	4	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%	Ì

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

keport Date: 04/09/2019 Analysis: Inorganics NELAC Certified - IL100308	Sampling Loc'n: CARLYLE LAKE Sampling Date: 03/19/2019 Sampling Time: 1235	Prep Analysis Prep Analysis Run OD LOQ Flag Result Units Method Method Date Date Number	0.0300 0.0843 MG/L NONE 350.1 NA	.0 1.00 4.1 MG/CU.M. 10200H 10200H 03/20/19 03/28/19 04014452	0.0600 3.31	.0 1.00 ND MG/CU.M. 10200H 10200H 03/20/19 03/28/19 04014452	0.0100 0.543	0800 0.0100 0.14 MG/L NONE 365.2 NA 03/20/19 03214427	4.00 80.0	4.00 6.4	
CYLE LAKE	19/2019									MG/L N	MG/T.
			0.0843	4.1	3.31	QN	0.543	0.14	80.0	6.4	4 3
	Sampling Samplin Samplin		0.0300	1.00	0.0600	1.00	0.0100	0.0100	4.00	4.00	00
AKE	61	LOD	0.0200	1.0	0.0570	1.0	0.800.0	0.800.0	4.0	4.0	002
Project Name: CARLYLE LAKE Project No:	ARDL No: 008466-07 Field ID: CAR-15 Received: 03/19/2019	Analyte	Ammonia Nitrogen	Chlorophyll-a, Correcte	Nitrate as Nitrogen	Pheophytin-a	Phosphorus	Phosphorus, -ortho	Solids, Total Suspended	Solids, Volatile Suspen	notael nineman Leton

(a) DOD and/or NELAC Accredited Analyte.

Sample 008466-07, Inorganic Analyses

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

riphenylphosph		30-13			92%	
URROGATE RECOV	ERIES:	Limit	S	Re	esults	
Pendimethalin		0.200	0.200	ND		UG/L
Cyanazine		0.200	0.200	ND		UG/L
Chlorpyrifos		0.200	0.200	ND		UG/L
Metolachlor		0.200	0.200	ND		ug/L
Alachlor		0.200	0.200	ND		UG/L
Metribuzin		0.200	0.200	ND		UG/L
Atrazine		0.200	0.200	ND		UG/L
Trifluralin		0.200	0.200	ND		UG/L
Parameter		LOD	LOQ	Result	Flag	Units
					Data	
% Moisture:	NA		Level:	LOW		
Final Volume:	1 mL		QC Batch:	B110	034	
Amount Used:	1000 mL		Instrument	ID: AG5		
Matrix:	QC Material		Analysis Da	ate: 03/2	26/2019	
Sample Time:	NA		Prep. Date:	03/2	22/2019	
Sample Date:	NA		Received Da	ate: NA		
Desc/Location:	NA		Lab Filenam	ne: E032	26903	
Field ID:	NA		ARDL Lab No	0084	466-01B1	
NELAC CETCI	ried - ILIOUSUS	Prep Met	nod: 3510C			
Project No.:	fied - IL100308	_	hod: 3510C			
Droject No .		Analytical Met	hod. 9270C			

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

⁽a) DOD-QSM Accredited Analyte.

400 Aviation Drive; P.O. Box 1566 BLANK SUMMARY REPORT

62864 Mt. Vernon, IL ARDL, INC.

Analyte	Lab Report No: 008466 Project Name: C	66 CARLYLE LAKE	I.AKE						Report Date:	ਮ	04/09/2019 tified - IL100308
0.040 0.050 ND MG/L 3010A 6010C 03/21/19 03/21/19 P7173 0.004 0.005 ND MG/L 3010A 6010C 03/21/19 03/21/19 P7173 0.020 0.030 ND MG/L NONE 350.1 NA 03/20/19 03/21/19 P7173 1.0 1.0 ND MG/L NONE GREEN NA 03/20/19 04084458 0.019 0.020 ND MG/L NONE GREEN NA 04/05/19 04084457 1.0 ND MG/L NONE GREEN NA 04/05/19 04084457 0.019 0.020 ND MG/L NONE 365.2 03/26/19 03/27/19 04084449 0.008 0.010 ND MG/L NONE 160.2 NA 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19	ıalyte	LOD	ă o i	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
0.004 0.005 ND MG/L 3010A 6010C 03/21/19 03/21/19 P7173 0.020 0.030 ND MG/L NONE 350.1 NA 03/20/19 03/24423 1.0 1.0 ND MG/CU.M. 10200H 10200H 03/20/19 04014452 0.019 0.020 ND MG/L NONE GREEN NA 04/05/19 04014452 1.0 1.0 ND MG/L NONE GREEN NA 04/05/19 04014452 0.018 0.010 ND MG/L 365.2 365.2 03/26/19 03/27/19 03294449 0.008 0.010 ND MG/L NONE 160.2 NA 03/20/19 03/21/19 03214427 1.0 1.0 ND MG/L NONE 160.2 NA 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 03/21/19 04084461	Iron	0.040	0.050	QN	MG/L	3010A	6010C	03/21/19	03/21/19	P7173	008466-01B1
0.020 0.030 ND MG/L NONE 350.1 NA 03/20/19 03/24423 1.0 1.0 ND MG/CU.M. 10200H 10200H 03/20/19 03/28/19 04014452 0.019 0.020 ND MG/L NONE GREEN NA 04/05/19 04084457 1.0 1.0 ND MG/L 10200H 10200H 03/20/19 04/05/19 04084457 0.018 0.020 ND MG/L 365.2 365.2 03/26/19 03/27/19 03294449 0.008 0.010 ND MG/L NONE 160.2 NA 03/27/19 0321442 1.0 ND MG/L NONE 160.2 NA 03/21/19 0321442 1.0 ND MG/L NONE 160.2 NA 03/21/19 0321441 1.0 ND MG/L NONE 160.4 NA 03/21/19 04084461 0.50 1.0 ND M	Manganese	0.004	0.005	N	MG/L	3010A	6010C	03/21/19	03/21/19	P7173	008466-01B1
1.0 ND MG/CU.M. 10200H 10200H 03/20/19 03/28/19 04014452 0.019 0.020 ND MG/L NONE GREEN NA 04/05/19 04084458 0.019 0.020 ND MG/L NONE GREEN NA 04/05/19 04084457 1.0 1.0 ND MG/L 10200H 10200H 03/26/19 04084457 0.008 0.010 ND MG/L 365.2 365.2 03/26/19 03/27/19 04014452 0.008 0.010 ND MG/L NONE 160.2 NA 03/27/19 03214427 1.0 ND MG/L NONE 160.2 NA 03/21/19 0321442 1.0 ND MG/L NONE 160.2 NA 03/21/19 0321442 0.50 1.0 ND MG/L NONE 160.2 NA 03/21/19 0408441	onia Nitrogen	0.020	0.030	NO	MG/L	NONE	350.1	NA	03/20/19	03214423	008466-01B1
0.019 0.020 ND MG/L NONE GREEN NA 03/29/19 04084458 0.019 0.020 ND MG/L NONE GREEN NA 04/05/19 04084457 1.0 1.0 ND MG/L 10200H 10200H 03/20/19 03/28/19 04014452 0.008 0.010 ND MG/L NONE 365.2 NA 03/20/19 03214427 1.0 ND MG/L NONE 160.2 NA 03/21/19 03274441 1.0 ND MG/L NONE 160.2 NA 03/21/19 03274441 1.0 ND MG/L NONE 160.4 NA 03/21/19 0327441 0.50 1.0 ND MG/L NONE 415.1 NA 03/21/19 04084461	orophyll-a, Corre	1.0	1.0	NO	MG/CU.M.	10200H	10200H	03/20/19	03/28/19	04014452	008466-07B1
0.019 0.020 ND MG/L NONE GREEN NA 04/05/19 04084457 1.0 1.0 ND MG/CU.M. 10200H 10200H 03/20/19 03/28/19 04014452 0.008 0.010 ND MG/L NONE 365.2 NA 03/20/19 03294449 0.008 0.010 ND MG/L NONE 160.2 NA 03/21/19 03214427 1.0 ND MG/L NONE 160.2 NA 03/21/19 03274441 1.0 ND MG/L NONE 160.4 NA 03/21/19 03274442 0.50 1.0 ND MG/L NONE 415.1 NA 03/25/19 04084461	rate as Nitrogen	0.019	0.020	NO	MG/L	NONE	GREEN	NA	03/29/19	04084458	008466-05B1
1.0 1.0 ND MG/CU.M. 10200H 10200H 03/20/19 03/28/19 04014452 0.008 0.010 ND MG/L 365.2 365.2 03/26/19 03/27/19 03294449 0.008 0.010 ND MG/L NONE 160.2 NA 03/20/19 03214427 1.0 1.0 ND MG/L NONE 160.4 NA 03/21/19 03274441 1.0 1.0 ND MG/L NONE 160.4 NA 03/21/19 03274441 0.50 1.0 ND MG/L NONE 415.1 NA 03/25/19 04084461	rate as Nitrogen	0.019	0.020	NO	MG/L	NONE	GREEN	NA	04/05/19	04084457	008467-02B1
0.008 0.010 ND MG/L 365.2 365.2 03/26/19 03/27/19 03294449 0.008 0.010 ND MG/L NONE 365.2 NA 03/20/19 03214427 1.0 ND MG/L NONE 160.2 NA 03/21/19 03274441 1.0 ND MG/L NONE 160.4 NA 03/21/19 03274442 0.50 1.0 ND MG/L NONE 415.1 NA 03/25/19 04084461	ophytin-a	1.0	1.0	QN	MG/CU.M.	10200H	10200H	03/20/19	03/28/19	04014452	008466-07B1
0.008 0.010 ND MG/L NONE 365.2 NA 03/20/19 03214427 1.0 1.0 ND MG/L NONE 160.2 NA 03/21/19 03274441 1.0 1.0 ND MG/L NONE 160.4 NA 03/21/19 03274442 0.50 1.0 ND MG/L NONE 415.1 NA 03/25/19 04084461	sphorus	0.008	0.010	QN Q	MG/L	365.2	365.2	03/26/19	03/27/19	03294449	008464-07B1
1.0 1.0 ND MG/L NONE 160.2 NA 03/21/19 03274441 1.0 1.0 ND MG/L NONE 160.4 NA 03/21/19 03274442 0.50 1.0 ND MG/L NONE 415.1 NA 03/25/19 04084461	sphorus, -ortho	0.008	0.010	QN	MG/L	NONE	365.2	NA	03/20/19	03214427	008466-01B1
1.0 1.0 ND MG/L NONE 160.4 NA 03/21/19 03274442 0.50 1.0 ND MG/L NONE 415.1 NA 03/25/19 04084461	ids, Total Suspen	1.0	1.0	N Q	MG/L	NONE	160.2	NA	03/21/19	03274441	008466-01B1
0.50 1.0 ND MG/L NONE 415.1 NA 03/25/19 04084461	ids, Volatile Sus	1.0	1.0	QN QN	MG/L	NONE	160.4	NA	03/21/19	03274442	008466-01B1
	al Organic Carbon	0.50	1.0	NO	MG/L	NONE	415.1	NA	03/25/19	04084461	008466-01B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008466

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

62864

03/28/2019 Limit RPD 1 T 1 Analytical Method: 8270C Prep Method: 3510C 03/22/2019 03/26/2019 Report Date: RPD 1 ı 1 Analysis Date: Recovery 30-130 Limits 30-130 30-130 30-130 30-130 Prep. Date: Duplicate % Rec ŀ 1 ı Duplicate Level Analysis: NP PESTICIDES (8270SIM-MOD) ; ŀ 1 1 1 1 Duplicate Result ŀ 1 .1 .1 B11034 LOW Spike % Rec 79 91 98 QC Batch: Level: Level Spike Result Spike 0.85 0.91 0.98 0.79 QC Material Project Name: CARLYLE LAKE 1000 mL 008466 Trifluralin Metribuzin Metolachlor Alachlor Atrazine Parameter Lab Report No: Project No,: Amount Used: Matrix:

SURROGATE RECOVERIES:	Spike %R	Duplicate %R	%R Limits
Triphenylphosphate	84	1	30-130

1 1

30-130

1 1 1

30-130 30-130

1 1

100

88

0.88

Chlorpyrifos

Cyanazine

0.67 Н

Pendimethalin

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

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

Report Date: 04/09/2019 Lab Report No: 008466

	LE LAKE	SS 1 LCS 1 LCS 2 LCS 2 Rec Mean Analytical QC Lab	ssult Level % Rec Result Level % Rec Limits % Rec Run Number	5.1 5.0 102 87-115 P7173 008466-01C1	0.75 104).96 1.0 96 80-120 03214423 008466-01C1	1.1 1.0 106 80-120 04084457 008467-02C1	1.1 1.0 105 80-120 04084458 008466-05C1	0.71 0.67 106 80-120 0329449 008464-07C1	0.10 0.10 103 80-120 03214427 008466-01C1	10 10.0 100 76-120 04084461 008466-01C1
,	CARLYLE LAKE	LCS 1 LCS 1	Result Level		0.78 0.75	0.96 1.0			0.71 0.67	0.10 0.10	
	Project Name: CARLY)J	Analyte Re	(a) Iron	(a) Manganese	Ammonia Nitrogen	Nitrate as Nitrogen	Nitrate as Nitrogen	Phosphorus	Phosphorus, -ortho	Total Ordanic Carbon

NOTE: Any values tabulated above marked with an asterisk are outside of acceptable limits. (a) DOD and/or NELAC Accredited Analyte

Inorganic LCS Results for 008466

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

62864

03/28/2019 Limit RPD 30 30 30 30 30 Prep Method: 3510C Analytical Method: 8270C Received Date: 03/19/2019 Analysis Date: 03/26/2019 Report Date: 008466-01 RPD 1.3 1.2 1.9 4.9 9.9 0 Limits 30-130 30-130 30-130 30-130 30-130 % Rec 30-130 30-130 30-130 ARDL Lab No.: Lab Filename: % Rec MSD 69 84 79 87 102 97 Level MSD \vdash Analysis: NP PESTICIDES (8270SIM-MOD) Result 0.84 0.79 0.87 1.02 0.79 0.97 0.67 MSD 03/22/2019 1000 mL % Rec 86 B11034 80 104 MS 83 99 77 LOW NA Amount Used: Prep. Date: Level % Moisture: MS QC Batch: Level: Result 0.84 0.86 1.04 0.83 0.99 0.74 0.8 MS Result Sample 2 2 2 2 2 2 9 9 CARLYLE LAKE Project Name: CARLYLE LAKE 03/19/2019 008466 CAR-1 WATER 0820 Pendimethalin Chlorpyrifos rrifluralin Metolachlor Metribuzin Atrazine Alachlor Cyanazine Parameter Lab Report No: Desc/Location: Project No.: Sample Date: Sample Time: Field ID: Matrix:

kR MSD %R %R Limits	87 30-130	
MS %R	92	
SURROGATE RECOVERIES:	Triphenylphosphate	

Matrix Spikes for 008466-01, NP PESTICIDES (8270SIM-MOD)

^{&#}x27;nc' indicates sample >4X spike level.

^{&#}x27;*' indicates a recovery outside of standard limits.

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

Lab Report No: 008466

Report Date: 04/09/2019

NELAC Certified - IL100308 008466-01MS 008466-01MS 008466-05MS 008466-04MS 008466-01MS 008466-01MS 008466-01MS QC Lab Number 04084461 03214423 04084458 03294449 03214427 P7173 P7173 Run 20 Limit RPD 0 e 0 13 0 0 RPD 75-125 75-125 75-125 90-114 75-125 87-115 76-120 Limits % Rec 106 101 % Rec 8 93 97 99 MSD 0.50 2.0 1.0 0.10 5.0 Level MSD 0.52 2.1 0.23 9.2 Result MSD 97 101 103 101 % Rec 9 8 ΣW 1.0 2.0 1.0 0.10 5.0 Level MS 2.2 1.8 0.22 0.52 Result MS CARLYLE LAKE 0.14 0.88 0.12 0.054 4.1 Result 4.1 Sample WATER WATER WATER WATER WATER WATER WATER Matrix Sample Project Name: Nitrate as Nitrogen Total Organic Carbon Phosphorus, -ortho Ammonia Nitrogen (a) Manganese Phosphorus (a) Iron Analyte

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 008466

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

Lab Report No: 008466)8466						Report Date: 04/09/2019	04/09/2019
Project Name: CA	CARLYLE LAKE						NELAC Certifi	NELAC Certified - IL100308
	Sample	First	Second		Percent	Mean	Analytical	QC Lab
Analyte	Conc'n	Conc'n Duplicate	Duplicate	Units	Diff	(Smp,D1,D2)	Run	Number
Chlorophyll-a, Corrected	ed 4.1	4.1		MG/CU.M.	0	1 1	04014452	008466-07D1
Pheophytin-a	NO	0	1	MG/CU.M.	NG	!	04014452	008466-07D1
Solids, Total Suspended	led 18.3	19.8	;	MG/L	ω	l I	03274441	008466-01D1
Solids, Volatile Suspend	and 3.3	3.0	;	MG/L	80	ŧ	03274442	008466-01D1

(a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008466



Including as appropriate:

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

 $g \not\leftarrow \mathcal{U} \mathcal{L} \mathcal{L}$ chain of custody record

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

	80"	Γ														\neg
PRESERVATION	SPECIFY CHEMICALS ADDED AND FINAL PH IF KNOWN															
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				44	111	11/1	,,,,		Tal							, ·
carlyle Lake	SAMPLERS: (Signature)	SAMPLE NUMBER	CAR-1	CAR-2-0	CAR-2-10	CAR-4	CAR-13	CAR-12	CAR-15						Relinquished by: (Signature) Relinquished by: (Signature) Collection (Signature) Received for Laboratory by:	La chim

PURCHASE ORDER NO:

COOLER RECEIPT REPORT ARDL, INC.

AF	RDL#: 8466	Co No	poler # / a/ 2 umber of Coolers in Sh	ipment:	7				
Pro	pject: <u>Carlyle Lake</u>	Da	ate Received 3-10	7-19					
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 3-3	20	9 (Signature)	rehuis	n				
1.	Did cooler come with a shipping slip (airbill, etc.)?	v 3-2	0-19	YES	(NO	<u> </u>			
	If YES, enter carrier name and airbill number here:		Ca	usiles)					
2.	Were custody seals on outside of cooler?				NO	N/A			
	How many and where?,Seal Da	te:	.Seal Name:						
3.	Were custody seals unbroken and intact at the date and time of arrival?				NO	(NA)			
4.	Did you screen samples for radioactivity using a Geiger Counter?		•						
5.	Were custody papers sealed in a plastic bag?				NO				
6.	Were custody papers filled out properly (ink, signed, etc.)?			(ES	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 to	p of this form	YES	NO	Ņ/A			
9.	Was a separate container provided for measuring temperature? YES	NO_	✓ Observed Cooler Te	mp. 0,7	2 ~) ^			
В.	LOG-IN PHASE: Date samples were logged-in: 3-20-19	(Signa	ture) Ablack	kum	<u> </u>				
10.	Describe type of packing in cooler: <u>loase</u> ice		·	1000					
11.	11. Were all samples sealed in separate plastic bags?								
12.	12. Did all containers arrive unbroken and were labels in good condition?								
13.									
14.	Did all sample labels agree with custody papers?			YES	NO				
15.	Were correct containers used for the tests indicated?		······································	(ES	NO				
16.	Was pH correct on preserved water samples?			(ES	NO	N/A			
17.	Was a sufficient amount of sample sent for tests indicated?		······································	VES	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:			Transfer					
			Fraction	Fraction					
	·	-	Area #	Area #					
		_	Walkin	D.					
		·	By Ala	Ву					
		-	On	On					
_		-	3-20-19						
			Chain-of-Custody #	NIA					
(B	y: Signature) Date:		ŕ						

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COOLER RECEIPT REPORT ARDL, INC.

AR	DL#: 8466	Cod	oler# <u>2 42</u>	<u> </u>					
,		Nui	mber of Coolers in Ship	oment:<					
Pro	oject: Carlyle Lake		te Received: $3-19-$,	•			
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 3-3	70-1	9 (Signature)	achrei	m				
1.	Did cooler come with a shipping slip (airbill, etc.)?			YES	NO	,			
	If YES, enter carrier name and airbill number here:		Call	rier					
2.	Were custody seals on outside of cooler?				NO	N/A			
	How many and where?,Seal Date	e:	,Seal Name:						
3.	Were custody seals unbroken and intact at the date and time of arrival?			•	NO	(NA)			
4.	Did you screen samples for radioactivity using a Geiger Counter?			ES	NO				
5.	Were custody papers sealed in a plastic bag?			YES	(10)				
6.	Were custody papers filled out properly (ink, signed, etc.)?			(E3	.NO	N/A			
7.	Were custody papers signed in appropriate place by ARDL personnel?			VES	NO	N/A			
8.	Was project identifiable from custody papers? If YES, enter project name	at the top	o of this form	YES	NO	N/A			
9.	Was a separate container provided for measuring temperature? YES				C -> \(_*) с			
В.	LOG-IN PHASE: Date samples were logged-in: 3-20-19	_(Signat	ure) <u>Machri</u>	um:					
10.	2								
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?									
13.	13. Were sample labels complete?								
14.	Did all sample labels agree with custody papers?			VES	NO				
15.	Were correct containers used for the tests indicated?				NO				
16.	Was pH correct on preserved water samples?			VES.	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:			Transfer					
			Fraction	Fraction					
-	·	-	Area #	Area #					
			Walkin						
			By	Ву					
		-	On 3-20-19	On					
_		_	3-20-19						
			Chain-of-Custody#	· N7	A				
(E	By: Signature) Date:	1	, .						

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

www.ardlinc.com

Customer Name: SLCOE

Date: 7/01/19

Project Name: Carlyle Lake

Lab Name: ARDL, Inc.

Samples Received at ARDL: 5/14/19

ARDL Report No.: 8476

CASE NARRATIVE

Customer	<u>Date</u>	<u>Lab ID</u>	
Sample No.	Collected	Number	Analyses Requested
CAR-1	5/14/19	8476-01	NP Pesticides, Metals(1), Inorganics(2)
CAR-2-0	5/14/19	8476-02	NP Pesticides, Inorganics(2)(3)
CAR-2-10	5/14/19	8476-03	Metals(1), Inorganics(2)
CAR-4	5/14/19	8476-04	NP Pesticides, Inorganics(2)(3)
CAR-13	5/14/19	8476-05	NP Pesticides, Inorganics(2)
CAR-12	5/14/19	8476-06	NP Pesticides, Inorganics(2)(3)
CAR-15	5/14/19	8476-07	NP Pesticides, Inorganics(2)(3)
CAR-KP-MARINA	5/14/19	8476-08	E. Coli
CAR-DW-MARINA	5/14/19	8476-09	E. Coli
CAR-BL-MARINA	5/14/19	8476-10	E. Coli
CAR-CSA	5/14/19	8476-11	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.

MATRIX SPIKE

The matrix spike and matrix spike duplicate met recovery criteria.

"Test everything, keep the good" 1 Thes. 5:21

Page 1 of 2

Project Name: Carlyle Lake ARDL Report No.: 8476

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 and nitrate-nitrite were analyzed by an accredited outside laboratory due to instrument status. All samples required reanalysis at a dilution for nitrate-nitrite. Those for samples -02, -05, -06 and -07 were performed one day beyond normally accepted holding time. 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 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, TSS, and TVSS. RPD on all duplicate analyses were within control limits, with the exception of pheophytin-a (23% RPD), 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.
- X Sample preparation and/or analysis was performed outside of holding time requirements.

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



Including as appropriate:

Field Sample Results

Batch QC

Prep Blank

LCS/Spike Blank

Matrix QC

MS/MSD

Sample Duplicate

ARDL Data Package

8476

N:\ARDL Case Narratives\ARDL Data Package Contents.pdf - Revised May 14, 2019

Authorized By: DSD-QAO

Lab Report No: 008476 Report Date: 05/23/2019

,	CARLYLE LAKE	Ana Analytical M	_	PESTICII	DES (827	OSIM-MO	D)
Project No.:	C! 1 *** 100000						
NELAC Certi:	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	CAR-1		ARDL 1	Lab No.:	00847	76-01	
Desc/Location:	CARLYLE LAKE		Lab F	llename:	E0522	2905	
Sample Date:	05/14/2019		Recei	ved Date:	05/14	1/2019	
Sample Time:	0824		Prep.	Date:	05/15	5/2019	
Matrix:	WATER		Analys	sis Date:	05/22	2/2019	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1104	16	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.978		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	0.478		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%	ĺ
			- 1

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

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

Lab Report No:	008476							щ	Report Date:	: 06/17/2019	019
Project Name: CARL Project No:	CARLYLE LAKE							2	Analysis: ELAC Certifi	Analysis: Inorganics NELAC Certified - IL100308	lcs 00308
ARDL No: 00847 Field ID: CAR-1 Received: 05/14	008476-01 CAR-1 05/14/2019		Sampling I Sampling Sampling	ng ng		CARLYLE LAKE 05/14/2019 0824			Matrix: Moisture:	: WATER : NA	
Analyte	LOD		TOĞ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Manganese Ammonia Nitrogen Nitrate as Nitrogen Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0400 0.00400 0.0200 0.100 0.00800 0.00800 nded 1.33 spen 1.33	0	0.0500 0.00500 0.0300 0.100 0.0100 1.33 1.33		0.844 0.0582 0.232 1.68 0.213 0.12 8.67 1.47	MG/L MG/L MG/L MG/L MG/L MG/L MG/L MG/L	3010A 3010A NONE NONE 365.2 NONE NONE NONE	6010C 6010C 350.1 GREEN 365.2 365.2 160.2 160.4	05/17/19 05/17/19 NA NA 05/28/19 NA NA	05/20/19 05/20/19 05/28/19 (06/10/19 (05/29/19 (05/15/19 (05/15/19 (05/15/19 (05/15/19 (05/15/19 (05/30/19 (05/30/19 (05/30/19 (05/20/19 (05/30/19 (05/20/20 (05/20/19 (05/20/19 (05/20/19 (05/20/20 (05/20/20 (05/20/20 (05/20/20 (05/20/20 (05/20/20 (05/20/20 (05/20/20 (05/20) (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20) (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20) (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20) (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20 (05/20) (05/20 (05/20 (05/20 (05/20 (05/20 (05/20) (05/20 (05/20 (05/20) (05/20 (05/20) (05/20 (05/20) (05/20 (05/20) (05/20) (05/20 (05/20) (0	P7204 P7204 05294591 06144639 06034606 05174545 05174550 05174551

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008476 Report Date: 05/23/2019

Project No.:	CARLYLE LAKE	Analytical Me	-		DES (82	70SIM-MO	D)
Field ID: Desc/Location: Sample Date: Sample Time: Matrix: Amount Used: Final Volume: % Moisture:	CAR-2-0 CARLYLE LAKE 05/14/2019 0901 WATER 900 mL 1 mL NA		Lab Fi Receiv Prep. Analys		E0522 05/14 05/1	4/2019 5/2019 2/2019	
Parameter		LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222				UG/L	1
Metribuzin		0.222	0.222	ND		UG/L	1
Alachlor		0.222	0.222			UG/L	1
Metolachlor		0.222	0.222	0.500		UG/L	1
Chlorpyrifos		0.222		ND		UG/L	1
Cyanazine		0.222		ND		UG/L	1
Pendimethalin		0.222	0.222	ND		UG/L	1

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	79%	
			1

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

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

(a) DOD and/or NELAC Accredited Analyte.

Sample 008476-02, Inorganic Analyses

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

(a) DOD and/or NELAC Accredited Analyte.

Sample 008476-03, Inorganic Analyses

Lab Report No: 008476 Report Date: 05/23/2019

Project Name: CA Project No.: NELAC Certifie		Analytical Me	-		DES (82°	70SIM-MO	D)
Desc/Location: CA Sample Date: 05 Sample Time: 10 Matrix: WA Amount Used: 10	5/14/2019 029 ATER 000 mL mL		Lab Fi Receiv Prep. Analys		E0522 05/14 05/15	4/2019 5/2019 2/2019	
Parameter		LOD	LOQ	Result	Data Flag	Units	Dilution Factor
Trifluralin	A CONTRACTOR OF THE CONTRACTOR	0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	0.980		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	0.470		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 RECOVERI	IES: Limits	Results	
Triphenylphosphate	30-130	75%	

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

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

Project Name: CARLYLE LAKE Analysis: Inorganics Project Name: CARLYLE LAKE Sampling Loc'n: CARLYLE LAKE Sampling Loc'n: CARLYLE LAKE Sampling Date: 05/14/2019 Prep Matrix: WATER Moisture: NA Moist	ا ب	176						X	Report Date:		19
4 Sampling Loc'n: GARLYLE LAKE Sampling Date: 05/14/2019 LOD LOD LOD COCOO CO		AKE						N	Analysis ELAC Certi	: Inorgani fied - IL10	0308
Sampling Date: 05/14/2019 Sampling Time: 1029 LOD LOQ Flag Result Units Method Method Method Date			Sampli	ng Loc'		LE LAKE			Matrix		
LOD Flag Result Units Method Analysis Prep Analysis 0.0200 0.0300 0.0818 MG/L NONE 350.1 NA 05/28/19 1.0 1.00 29.0 MG/CU.M. 10200H 10200H 05/15/19 05/28/19 0.250 3.0 MG/CU.M. 10200H 10200H 05/15/19 05/28/19 0.00800 0.0100 0.274 MG/L NONE 365.2 NA 05/15/19 3.33 3.33 42.7 MG/L NONE 160.2 NA 05/15/19 3.33 3.33 6.33 MG/L NONE 160.4 NA 05/15/19 0.500 1.00 0.050 MG/L NONE 160.4 NA 05/15/19		<u>ه</u>	Samp] Samp]	ing Dat ing Tim		/2019			Moisture		
0.0200 0.0300 0.0818 MG/L NONE 350.1 NA 05/28/19 1.0 1.00 29.0 MG/CU.M. 10200H 10200H 05/15/19 05/28/19 0.250 3.0 MG/L NONE GREEN NA 06/10/19 1.0 3.4 MG/L 10200H 10200H 05/15/19 05/28/19 0.00800 0.0100 0.274 MG/L NONE 365.2 NA 05/28/19 0.00800 0.0100 0.0624 MG/L NONE 365.2 NA 05/15/19 3.33 3.33 42.7 MG/L NONE 160.2 NA 05/15/19 3.33 3.33 6.33 MG/L NONE 160.4 NA 05/15/19 0.500 1.00 0.50 NG/L NONE 160.4 NA 05/15/19	Analyte	LOD		Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
1.0 1.00 29.0 MG/CU.M. 10200H 10200H 05/15/19 05/28/19 0.250 3.0 MG/L NONE GREEN NA 06/10/19 1.0 3.4 MG/L 10200H 10200H 05/15/19 05/28/19 0.00800 0.0100 0.0624 MG/L NONE 365.2 NA 05/28/19 0.00800 0.0100 0.0624 MG/L NONE 365.2 NA 05/15/19 3.33 3.33 42.7 MG/L NONE 160.2 NA 05/15/19 3.33 3.33 6.33 MG/L NONE 160.4 NA 05/15/19 0.500 1.00 4.8 MG/L NONE 160.4 NA 05/15/19	Nitrogen	0.0200	0.0300		0.0818	MG/L	NONE	350.1	NA		5294591
0.250 0.250 3.0 MG/L NONE GREEN NA 06/10/19 1.0 1.00 3.4 MG/CU.M. 10200H 10200H 05/15/19 05/28/19 0.00800 0.0100 0.0624 MG/L NONE 365.2 NA 05/28/19 0.00800 0.0100 0.0624 MG/L NONE 160.2 NA 05/15/19 3.33 3.33 6.33 MG/L NONE 160.4 NA 05/15/19 0.500 1.00 4.8 MG/L NONE 160.4 NA 05/15/19	hyll-a, Correcte	1.0	1.00		29.0	MG/CU.M.	10200H	10200H	05/15/19		5294589
1.0 3.4 MG/CU.M. 10200H 10200H 05/15/19 05/28/19 05/28/19 05/28/19 05/28/19 05/28/19 05/28/19 05/29/19 0.00800 0.0100 0.0624 MG/L NONE 365.2 NA 05/15/19 3.33 3.33 42.7 MG/L NONE 160.2 NA 05/15/19 3.33 3.33 6.33 MG/L NONE 160.4 NA 05/15/19 0.500 1.00 4.8 MG/L NONE 415.1 NA 05/30/19	as Nitrogen	0.250	0.250		3.0	MG/L	NONE	GREEN	NA		6144639
0.00800 0.0100 0.274 MG/L 365.2 365.2 05/28/19 05/29/19 0.00800 0.0100 0.0624 MG/L NONE 365.2 NA 05/15/19 3.33 42.7 MG/L NONE 160.2 NA 05/15/19 0.500 1.00 4.8 MG/L NONE 415.1 NA 05/30/19	tin-a	1.0	1.00		3.4	MG/CU.M.	10200H	10200H	05/15/19		5294589
0.00800 0.0100 0.0624 MG/L NONE 365.2 NA 05/15/19 3.33 3.33 42.7 MG/L NONE 160.2 NA 05/15/19 3.33 3.33 6.33 MG/L NONE 160.4 NA 05/15/19 0.500 1.00 4.8 MG/L NONE 415.1 NA 05/30/19	rus	0.00800	0.0100		0.274	MG/L	365.2	365.2	05/28/19		6034606
3.33 3.33 42.7 MG/L NONE 160.2 NA 05/15/19 3.33 3.33 6.33 MG/L NONE 160.4 NA 05/15/19 0.500 1.00 4.8 MG/L NONE 415.1 NA 05/30/19	rus, -ortho	0.00800	0.0100		0.0624	MG/L	NONE	365.2	NA		5174545
3.33 3.33 6.33 MG/L NONE 160.4 NA 05/15/19 0.500 1.00 4.8 MG/L NONE 415.1 NA 05/30/19	Total Suspended	3.33	3.33		42.7	MG/L	NONE	160.2	NA		5174550
0.500 1.00 4.8 MG/L NONE 415.1 NA 05/30/19	Volatile Suspen	3.33	3.33		6.33	MG/L	NONE	160.4	NA		5174551
	rganic Carbon	0.500	1.00		4.8	MG/L	NONE	415.1	NA		6044608

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008476 Report Date: 05/23/2019

,	CARLYLE LAKE		_	PESTICI	DES (827	OSIM-MO	D)
Project No.:		Analytical Me					
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	o10C			
Field ID:	CAR-13		ARDL 1	Lab No.:	0084	76-05	
Desc/Location:	CARLYLE LAKE		Lab F	ilename:	E0522	2910	
Sample Date:	05/14/2019		Recei	ved Date:	05/14	1/2019	
Sample Time:	1138		Prep.	Date:	05/15	5/2019	
Matrix:	WATER		Analys	sis Date:	05/22	2/2019	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	cch:	B1104	16	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin	V	0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.411		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	76%	ĺ

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

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

Lab Report No: 008	008476						щ	Report Date:	: 07/01/2019	019
Project Name: CARLYLE LAKE Project No:	LAKE						4	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008476-05 Field ID: CAR-13 Received: 05/14/2019	05	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE 05/14/2019 1138			Matrix: Moisture:	:: WATER	
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300		0.0704	MG/L	NONE	350.1	NA	05/28/19	05294591
Nitrate as Nitrogen	0.500	0.500	×	4.01	MG/L	NONE	GREEN	NA	06/12/19	06144640
Phosphorus	0.00800	0.0100		0.30	MG/I	365.2	365.2	05/28/19	05/29/19 (06034606
Phosphorus, -ortho	0.00800	0.0100		0.0283	MG/L	NONE	365.2	NA	05/15/19 (05174545
Solids, Total Suspended	4.0	4.00		85.2	MG/L	NONE	160.2	NA	05/15/19 (05174550
Solids, Volatile Suspen	n 4.0	4.00		8.4	MG/L	NONE	160.4	NA	05/15/19 (05174551
Total Organic Carbon	0.500	1.00		4.0	MG/L	NONE	415.1	NA	05/30/19 (06044608

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008476 Report Date: 05/23/2019

Project Name: Project No.:	CARLYLE LAKE	Analytical Me		PESTICII	DES (82	70SIM-MO	D)
-	fied - IL100308	-					
NELAC CEICI.	ried - Thiousus	riep Me	ethod: 35	310C			
Field ID:	CAR-12		ARDL I	Lab No.:	0084	76-06	
Desc/Location:	CARLYLE LAKE		Lab Fi	ilename:	E0522	2911	
Sample Date:	05/14/2019		Receiv	ved Date:	05/14	4/2019	
Sample Time:	1223		Prep.	Date:	05/1	5/2019	
Matrix:	WATER		Analys	sis Date:	05/22	2/2019	
Amount Used:	1000 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1104	46	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin	,	0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	0.470		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	0.400		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	1
Triphenylphosphate	30-130	80%	ĺ
1			ı

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

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

Lab Report No: 008476	476						Ж	Report Date:	: 07/01/2019	119
Project Name: CARLYLE LAKE Project No:	LAKE						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	10308
ARDL No: 008476-06 Field ID: CAR-12 Received: 05/14/2019	6 19	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE 05/14/2019 1223			Matrix: Moisture:	MATER NA	
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.500 1.0 0.00800 0.00800 6.67 6.67	0.0300 1.0 0.500 1.0 0.0100 6.67 6.67	×	0.078 37.2 3.85 7.3 0.327 0.0362 94.0 10.0	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE NONE	350.1 10200H GREEN 10200H 365.2 365.2 160.2 160.4	NA 05/15/19 NA 05/15/19 05/28/19 NA NA NA	05/28/19 (05/28/19 (05/28/19 (05/28/19 (05/29/19 (05/15/19 (05/15/19 (05/15/19 (05/15/19 (05/30)))))))))))	05294591 05294589 06144640 05294589 06034606 05174550 05174550 05174551

(a) DOD and/or NELAC Accredited Analyte.

Sample 008476-06, Inorganic Analyses

Lab Report No: 008476 Report Date: 05/23/2019

Project Name: Project No.:	CARLYLE LAKE	Anal Analytical Me	_	P PESTICII 270C	DES (827	70SIM-MO	D)
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-15		ARDL 1	Lab No.:	00847	76-07	
Desc/Location:	CARLYLE LAKE		Lab F:	ilename:	E0522	2912	
Sample Date:	05/14/2019		Receiv	ved Date:	05/14	1/2019	
Sample Time:	1032		Prep.	Date:	05/15	5/2019	
Matrix:	WATER		Analy	sis Date:	05/22	2/2019	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1104	46	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND	* **	UG/L	1
Atrazine		0.222	0.222	0.933		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	0.456		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	74%	

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

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

Lab Report No: 008476	476						Щ	Report Date:	: 07/01/2019	019
Project Name: CARLYLE LAKE Project No:	LAKE	The state of the s					z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008476-07 Field ID: CAR-15 Received: 05/14/2019	19	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE 05/14/2019 1032			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 0.500 0.500 0.00800 0.00800 4.0 4.0	0.0300 1.0 0.500 1.0 0.0100 4.00 4.00	×	0.059 29.0 2.77 2.7 0.30 0.06 43.6 7.2	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE NONE	350.1 10200H GREEN 10200H 365.2 365.2 160.2 160.4	NA 05/15/19 NA 05/15/19 05/28/19 NA NA NA	05/28/19 05/28/19 06/12/19 05/28/19 05/29/19 05/15/19 05/15/19	05294591 05294589 06144640 05294589 06034606 05174545 05174550 05174551

(a) DOD and/or NELAC Accredited Analyte.

Sample 008476-07, Inorganic Analyses

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

Report Date: 06/17/2019	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	p Analysis Run e Date Number	05/14/19 05174548
Report	Anal NELAC C	Ma Mois	ysis Prep nod Date	J4 NA
			Analysis Method	1604
			Prep Method	NONE
		Sampling Loc'n: CARLYLE LAKE Sampling Date: 05/14/2019 Sampling Time: 1045	Units	COL/100 ML
		ampling Loc'n: CARL; Sampling Date: 05/1 Sampling Time: 1045	Flag Result	625
		<pre>dampling Loc'n: Sampling Date: Sampling Time:</pre>	Flag	
		Sam San San	ÕOI	1.00
Lab Report No: 008476	CARLYLE LAKE	008476-08 CAR-KP-MARINA 05/14/2019	e LOD	1.0
Lab Report	Project Name: CARLYLE LAKE Project No:	ARDL No: 008476-08 Field ID: CAR-KP-MAR. Received: 05/14/2019	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

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

Report Date: 06/17/2019	Analysis: Inorganics NELAC Certified - IL100308	ix: WATER re: NA	Analysis Run Date Number	05/14/19 05174548
Report Dat	Analysi NELAC Cert	Matrix: Moisture:	Prep Date	NA
H			Analysis Method	1604
			Prep Method	NONE
		YLE LAKE 14/2019	Units	COL/100 ML
		'n: CARI te: 05/1 me: 0933	Result	200
		Sampling Loc'n: CARLYLE LAKE Sampling Date: 05/14/2019 Sampling Time: 0933	Flag	
		Sam Say	OOT	1.00
Lab Report No: 008476	CARLYLE LAKE	008476-09 CAR-DW-MARINA 05/14/2019	re LOD	1.0
Lab Report	Project Name: Project No:	ARDL No: Field ID: Received:	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

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

06/17/2019	Analysis: Inorganics NELAC Certified - IL100308	WATER NA	Analysis Run Date Number	05/14/19 05174548
Report Date: 06/17/2019	Analysis: Inorganics LAC Certified - IL1003	Matrix: Moisture: N	Prep Ana Date I	NA 05,
Rej	NEJ		Analysis Method	1604
			Prep Method	NONE
		CARLYLE LAKE 05/14/2019 1250	Units	COL/100 ML
			Result	175
		Sampling Loc'n: CARLYLE LAI Sampling Date: 05/14/2019 Sampling Time: 1250	Flag	
		Samp] Samp	COT	1.00
008476	CARLYLE LAKE	008476-10 CAR-BL-MARINA 05/14/2019	TOD	1.0
Lab Report No: 008476	Project Name: CAR Project No:	ARDL No: 008476-10 Field ID: CAR-BL-MAI Received: 05/14/201	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

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

ത	308		Run Number	174548
Report Date: 06/17/2019	Analysis: Inorganics NELAC Certified - IL100308	WATER	Analysis Date N	05/14/19 05174548
port Date:	Analysis: LAC Certif	Matrix: Moisture:	Prep Date	NA
Rej	NE.		Analysis Method	1604
			Prep	NONE
		CARLYLE LAKE 05/14/2019 0922	Units	COL/100 ML
		n: CARL) e: 05/14 e: 0922	Result	50.0
		Sampling Loc'n: CARLYLE LAKE Sampling Date: 05/14/2019 Sampling Time: 0922	Flag Result	
		Sampl Samp Samp	TOO	1.00
4.76	LAKE	19	TOD	1.0
No: 008	CARLYLE LAKE	008476-11 CAR-CSA 05/14/201	Φ	
Lab Report No: 008476	Project Name: Project No:	ARDL No: 008476-11 Field ID: CAR-CSA Received: 05/14/2019	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

Sample 008476-11, Inorganic Analyses

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

Lab Report No: 008476 Report Date: 05/23/2019

Project Name: Project No.:	CARLYLE LAKE	Analys Analytical Meth	is: NP PEST od: 8270C	CICIDES (82	270SIM-M	OD)
-	fied - IL100308	-	od: 3510C			
Field ID:	NA		ARDL Lab No	008	476-01B1	
Desc/Location:	NA		Lab Filenan	ne: E05	22903	
Sample Date:	NA		Received Da	ate: NA		
Sample Time:	NA		Prep. Date:	: 05/:	15/2019	
Matrix:	QC Material		Analysis Da	ate: 05/2	22/2019	
Amount Used:	1000 mL		Instrument	ID: AG5		
Final Volume:	1 mL		QC Batch:	B11	046	
% Moisture:	NA		Level:	LOW		
					Data	
Parameter		LOD	LOQ	Result	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 RECOV	ERIES:	Limits	3	R	esults	

SURROGATE RECOVERIES: Limits Results
Triphenylphosphate 30-130 82%

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

Mt. Vernon, IL 400 Aviation Drive; P.O. Box 1566 BLANK SUMMARY REPORT ARDL, INC.

Lab Report No: 008476

Report Date: 06/17/2019

62864

Project Name:	CARLYLE LAKE	I LAKE						NELAC	NELAC Certified -	ed - IL100308
Analyte	LOD	TOOT	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
(a) Iron	0.040	0.050	QN	MG/L	3010A	6010C	05/11/19	05/20/19	P7204	008476-01B1
(a) Manganese	0.004	0.005	N N	MG/L	3010A	6010C	05/17/19	05/20/19	P7204	008476-01B1
Ammonia Nitrogen	0.020	0:030	N	MG/L	NONE	350.1	NA	05/28/19 (05294591	008476-01B1
Chlorophyll-a, Corre	1.0	1.0	N	MG/CU.M.	10200H	10200H	05/15/19	05/28/19 (05294589	008476-04B1
E. Coliform	1.0	1.0	N Q	COL/100 ML	NONE	1604	NA	05/14/19 (05174548	008476-08B1
Nitrate as Nitrogen	0.050	0.050	N	MG/L	NONE	GREEN	NA	06/12/19 (06144640	008476-02B1
Nitrate as Nitrogen	0.050	0.050	N	MG/L	NONE	GREEN	NA	06/10/19 (06144639	008477-02B1
Pheophytin-a	1.0	1.0	NO	MG/CU.M.	10200H	10200H	05/15/19	05/28/19 (05294589	008476-04B1
Phosphorus	0.008	0.010	N	MG/L	365.2	365.2	05/28/19	05/29/19 (06034606	008476-06B1
Phosphorus, -ortho	0.008	0.010	N	MG/L	NONE	365.2	NA	05/15/19 (05174545	008476-01B1
Solids, Total Suspen	1.0	1.0	N	MG/L	NONE	160.2	NA	05/15/19 (05174550	008476-03B1
Solids, Volatile Sus	1.0	1.0	NO	MG/L	NONE	160.4	NA	05/15/19 (05174551	008476-03B1
Total Organic Carbon	0.50	1.0	ND	MG/L	NONE	415.1	NA	05/30/19 (06044608	008476-01B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008476

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

62864

Project Name: CARLYLE LAKE Project No.:	CARLYLE LAKE	Ar	Analysis: NP	PESTICIE	PESTICIDES (8270SIM-MOD)	IM-MOD)	Anal	ytical M Prep M	Analytical Method: 8270C Prep Method: 3510C	70C 10C
Matrix: Amount Used:	QC Material 1000 mL		QC Batch: Level:		B11046 LOW		Prep. Date: Analysis Da	Date: is Date:	Prep. Date: 05/15/2019 Analysis Date: 05/22/2019	19
	Parameter	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery	RPD	RPD Limit
Tri	Trifluralin	3.43	4	86	-	-	1	30-130		
Ą	Atrazine	2.99	4	75	1	1	1	30-130	1	1
Me	Metribuzin	3.07	4	77	1	1	1	30-130	1	1
A	Alachlor	2.75	4	69	1	;	1	30-130	1	1
Met	Metolachlor	3.25	4	81	i i	ì	1	30-130	1	1
Chl	Chlorpyrifos	2.93	4	73	1	}	ļ	30-130	1	1
CY	Cyanazine	3.72	4	93	ì i	1	# H	30-130	1	;
Pend	Pendimethalin	3.45	4	86	ţ	į		30-130	!	}

SURROGATE RECOVERIES: Spike %R Duplicate %R Limits
Triphenylphosphate 85.3 -- 30-130

^{&#}x27;*' indicates a recovery outside of standard limits.
Spike Blanks for 008476-01, NP PESTICIDES (8270SIM-MOD)

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

Report Date: 06/17/2019	NELAC Certified - IL100308	QC Lab	Number	008476-01C1	008476-01C1	008476-01C1	008477-02C1	008476-02C1	008476-06Cl	008476-01C1	008476-01C1
Report Dat	NELAC Cert	Analytical	Run	P7204	P7204	05294591	06144639	06144640	06034606	05174545	06044608
		Mean	% Rec	1	1	1	1	i i	ì	;	1
		% Rec	Limits	87-115	90-114	80-120	80-120	80-120	80-120	80-120	76-120
		LCS 2	% Rec	!	1	}	1	i	i	1	}
		LCS 2	Level	1	}	;	1	1	}	}	1
		LCS 2	Result	1	;	1	!	;	!	1	}
		LCS 1	% Rec	101	104	104	66	86	104	66	92
	KE	LCS 1	Level	5.0	0.75	1.0	5.0	5.0	0.67	0.10	10.0
3476	CARLYLE LAKE	LCS 1	Result	5.1	0.78	1.0	5.0	4.9	0.69	660.0	9.2
Lab Report No: 008476	Project Name:		Analyte	(a) Iron	(a) Manganese	Ammonia Nitrogen	Nitrate as Nitrogen	Nitrate as Nitrogen	Phosphorus	Phosphorus, -ortho	Total Organic Carbon

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

Inorganic LCS Results for 008476

⁽a) DOD and/or NELAC Accredited Analyte

A Lab Report No: 008476	ARDL, INC.	ບ່	MATRIX SPIKE 400 Aviation	IKE/SP Lon Dr	SPIKE/SPIKE DUPLICATE ation Drive; P.O. Box	CATE REPORT Box 1566	ORT Mt.	. Vernon, IL Repo	rt	62864 Date: (05/23/201
Project Name: CARLYLE LAKE Project No.:	LAKE		Analysis: N	NP PEST	PESTICIDES (827	(8270SIM-MOD)		Analytical Prep	ical Method: Prep Method:	: 8270C : 3510C	
Field ID: CAR-1 Desc/Location: CARLYLE LAKE Sample Date: 05/14/2019 Sample Time: 0824 Matrix: WATER	1 LAKE		Prep. Dat Amount Us % Moistur QC Batch: Level:	Prep. Date: Amount Used: % Moisture: QC Batch: Level:	05/15/2019 900 mL NA B11046 LOW		AR. La. Re An.	ARDL Lab No.: Lab Filename: Received Date Analysis Date		008476-01 05/14/2019 05/22/2019	
		Sample	MS	MS	MS	MSD	MSD	MSD	% Rec		RPD
Parameter		Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit
Trifluralin		E G	3.39	4.44	76.3	3.24	4.44	73	30-130	4.4	30
Atrazine		0.978	4.06	4.44	69.3	4	4.44	89	30-130	1.4	30
Metribuzin		N	3.28	4.44	73.8	3.24	4.44	73	30-130	٦	30
Alachlor		N Q	2.79	4.44	62.8	2.78	4.44	62.5	30-130	0.4	30
Metolachlor		0.478	3.84	4.44	75.8	3.8	4.44	74.8	30-130	1.2	30
Chlorpyrifos		ND	2.87	4.44	64.5	2.86	4.44	64.3	30-130	0.4	30
Cyanazine		Ñ.	3.86	4.44	86.8	3.83	4.44	86.3	30-130	9.0	30
Pendimethalin		N	3.42	4.44	7.7	3.49	4.44	78.5	30-130	1.9	30

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

^{&#}x27;*' indicates a recovery outside of standard limits. Matrix Spikes for 008476-01, NP PESTICIDES (8270SIM-MOD)

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

Report Date: 06/17/2019 Lab Report No: 008476

Project Name:		CARLYLE LAKE	AKE								NELAC	Certifi	NELAC Certified - IL100308
Analyte	Sample Matrix	Sample Result	MS Result	MS Level	MS * Rec	MSD Result	MSD Level	MSD % Rec	% Rec Limits	RPD	RPD	Run	QC Lab Number
(a) Iron	WATER	0.84	6.	1.0	101	1.8	1.0	66	87-115	н	20	P7204	008476-01MS
(a) Manganese	WATER	0.058	0.58	0.50	105	0.58	0.50	105	90-114	0	20	P7204	008476-01MS
Ammonia Nitrogen	WATER	0.23	2.3	2.0	104	2.3	2.0	103	75-125	0	20	05294591	008476-01MS
Phosphorus	WATER	0.33	1.2	0.83	101	1.2	0.83	104	75-125	2	20	06034606	008476-06MS
Phosphorus, -ortho	WATER	0.12	0.22	0.10	96	0.22	0.10	96	75-125	0	20	05174545	008476-01MS
Total Organic Carbon	WATER	4.7	8.9	5.0	83	8.9	5.0	83	76-120	0	20	06044608	008476-01MS

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

Inorganic Matrix Spikes for 008476

⁽a) DOD and/or NELAC Accredited Analyte.

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

7/2019	11100308	QC Lab Number	008476-04D1	008476-04D1	008476-03D1	008476-03D1
06/17	ed -	N K	0087	0087	008	008
Report Date: 06/17/2019	NELAC Certified - IL100308	Analytical Run	05294589	05294589	05174550	05174551
		Mean (Smp, D1, D2)		!	ł	!
		Percent Diff	0	23*	10	9
		Units	MG/CU.M.	MG/CU.M.	MG/L	MG/L
		Second	-	;	i	İ
		Sample First Conc'n Duplicate	29.0	2.7	64.8	8.9
9	LE LAKE	Sample Conc'n	29.0	3.4	58.4	6.4
Lab Report No: 008476	Project Name: CARLYLE LAKE	Analyte	Chlorophyll-a, Corrected	Pheophytin-a	Solids, Total Suspended	Solids, Volatile Suspend

See Case Narrative for exceptions. * indicates that agreement between duplicates is greater than 20%. (a) DOD and/or NELAC Accredited Analyte

Sample Duplicates for 008476



Including as appropriate:

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

ARDL Data Package 8476

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

PRESERVATION	SPECIFY CHEMICALS ADDED AND	NAL pH IF KNOWN																				
RESER		-			h.4	h.4	h.4	h.4	h.4	h.d	N.4	h.d	h.4	N 4	N 4							
Д,	di di	ICE			X	X	X	X	X	X	×	×	X	×	X							
		M444474	KEMARKS OR SAMPLE LOCATION																			
				\																		
	\			\																.,		
																Jan 12				REMARKS/SPECIAL INSTRUCTIONS:		
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	NEH	150		M	X		×													S/SF	d wit	
	· Ch	NN	% %	W	×	×		×	×	×	×									IARK	*Preserved with H ₂ SO ₄ #Preserved with HNO ₃	
	PO-	C	EON	*	×	×	×	×	×	×	×									REN	*Pre #Pre	
	10000000000000000000000000000000000000	X	50	Ó,	×	×	×	×	×	×	×									5	0	
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			0,	4	×	×	×	×	×	×	×									Sis.	is	cket
	INIATI		10 'OI	V																ed by	ed by	ng Ti
			AP AB		×	×	×	×	×	×	×	×	×	×	×					Received by: (Signature)	Received	Shipping Ticket No.
					+	1	9	6	bo	n	d	5	m	0	2					1	1	
			TIME		0824	060	3060	1029	1138	1223	150	191045	0933	1250	0932					Time	Time ///	Time
				0	50	2	1	41	0	18	6	JE !	0 61	191	0 6					_		-
		5	DATE	5/14/19	8/4/6	8/1/1/6	The	14	4	14	14	190	1/4/6	1/4/1	13	1				Date	Date	Date
		2 Cl	Ω	5	N	10	W	N	18	19	10	W	131	1/2	W.				-	5		
PROJECT Carlyle Lake	SAMPLERS: (Signature)	Archesky / Greeling	MBER		CAR-1	CAR-2-0	CAR-2-10	CAR-4	CAR - 13	CAR-12	CAR-15	CAR - KP - Marina	CAR - DW - Marina	CAR - BL - Marina	CAR - CSA		ΔΕ	DL	Rep	Relinquished by: (Signature)	Selimquished by: (Signature)	or Received for Laboratory by:

o PURCHASE ORDER NO:

COOLER RECEIPT REPORT ARDL, INC.

AR	DL#: <u>8474</u>	Coo	oler# 1 of 2			
		Nun	nber of Coolers in Ship	pment:	?	
Pro	oject: <u>Carlyle Lak</u> e		e Received:			
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 5-15	1-19	(Signature)	achrees	n,	
1.	Did cooler come with a shipping slip (airbill, etc.)?					
	If YES, enter carrier name and airbill number here:			Pacerier)	
2.	Were custody seals on outside of cooler?) N/A
	How many and where?,Seal Date:		,Seal Name:			
3.	Were custody seals unbroken and intact at the date and time of arrival?					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.)?	<i>.</i>		YES	NO	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?	•••••		VES	NO.	N/A
8.	Was project identifiable from custody papers? If YES, enter project name at t	the top	of this form	YES	NO	N/A
9.	Was a separate container provided for measuring temperature? YES		å . <i>c</i> / C -	Li E1	c o	
В.	LOG-IN PHASE: Date samples were logged-in: 5-15-19 (S	Signatu	ure) Mackru	MC_	0,0	
10.	Describe type of packing in cooler: Ibase (ce		>			
11.	Were all samples sealed in separate plastic bags?			YES	NO.	ジ 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?	•••••		Y€S	' 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:	[Transfer		
			Fraction	Fraction		
		Ì	Area #	Area #		
			Walkin			
	~ .		Walkin By	By '		
	ν,	}	On	On		
		l	5-15-19			
			Chain-of-Custody#	NA		
(B	sy: Signature) Date:		0, 000000 11			

COOLER RECEIPT REPORT ARDL, INC.

Project: Carlegle Rale Date Received: 5-14-19	ARI	DL#: 8476	Cod	oler# 2 of 2 mber of Coolers in Shi	— inment· ∽	2	
A PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 5-14-19 (Signature)	Dro	iest Carliele Lake					•
1. Did cooler come with a shipping slip (airbill, etc.)?	FIU	Journal Marie				-	
If YES, enter carrier name and airbill number here: Caccusted Content	Α.						
Were custody seals on outside of cooler?	1.					NO	<i>.</i>
How many and where?		If YES, enter carrier name and airbill number here:		Lae	eriel		
3. Were custody seals unbroken and intact at the date and time of arrival?	2.	Were custody seals on outside of cooler?			YES	NO	N/A
4. Did you screen samples for radioactivity using a Geiger Counter?		How many and where?,Seal Date	e:	,Seal Name:			
5. Were custody papers sealed in a plastic bag?	3.	Were custody seals unbroken and intact at the date and time of arrival?			YES	NO	NA
6. Were custody papers filled out properly (ink, signed, etc.)?	4.	Did you screen samples for radioactivity using a Geiger Counter?			YES	NO	
7. Were custody papers signed in appropriate place by ARDL personnel?	5.	Were custody papers sealed in a plastic bag?			YES	NO.)
8. Was project identifiable from custody papers? If YES, enter project name at the top of this form	6.	Were custody papers filled out properly (ink, signed, etc.)?	······		YES	NO	N/A
9. Was a separate container provided for measuring temperature? YESNOC Observed Cooler TempO.2_C COrrection factor_O.O_C BLOG-IN PHASE: Date samples were logged-in:\$3-15-19(Signature)	7.	Were custody papers signed in appropriate place by ARDL personnel?	••••		(YES	NO	N/A
B. LOG-IN PHASE: Date samples were logged-in: \$\frac{3-15-19}{3-15-19}\$ (Signature) \textit{ Markhurm}\$ 10. Describe type of packing in cooler: \textit{ Loral Loral Call Companies} \textit{ Loral Loral Call Companies} \textit{ Months of Markhurm}\$ 11. Were all samples sealed in separate plastic bags?	8.						
B. LOG-IN PHASE: Date samples were logged-in: \$\frac{3-15-19}{3-15-19}\$ (Signature) \textit{ Markhurm}\$ 10. Describe type of packing in cooler: \textit{ Loral Loral Call Companies} \textit{ Loral Loral Call Companies} \textit{ Months of Markhurm}\$ 11. Were all samples sealed in separate plastic bags?	9.	Was a separate container provided for measuring temperature? YES	NO_	Observed Cooler Te	mp. O. 2	c A. O	C
10. Describe type of packing in cooler:	В.	LOG-IN PHASE: Date samples were logged-in: 3-15-19	_(Signat	ture) AMachi	kum		
12. Did all containers arrive unbroken and were labels in good condition? Were sample labels complete?	10.	Describe type of packing in cooler: <u>loase</u> , <u>vie</u>					 -
13. Were sample labels complete?	11.	Were all samples sealed in separate plastic bags?			YES	NO	N/A
14. Did all sample labels agree with custody papers?	12.	Did all containers arrive unbroken and were labels in good condition?				, NO	
15. Were correct containers used for the tests indicated? 16. Was pH correct on preserved water samples? 17. Was a sufficient amount of sample sent for tests indicated? 18. Were bubbles absent in VOA samples? If NO, list by sample #:	13.	Were sample labels complete?			YES	NO	
16. Was pH correct on preserved water samples?	14.	Did all sample labels agree with custody papers?			(YES)	NO	
17. Was a sufficient amount of sample sent for tests indicated?	15.	Were correct containers used for the tests indicated?			YES	NO	
18. Were bubbles absent in VOA samples? If NO, list by sample #:	16.	Was pH correct on preserved water samples?			<u>E</u> S	ON É	N/A
19. Was the ARDL project coordinator notified of any deficiencies?	17.	Was a sufficient amount of sample sent for tests indicated?			YES	, NO	
Comments and/or Corrective Action: Sample Transfer Fraction Area # Walkin By By Alt Area # Area #	18.	Were bubbles absent in VOA samples? If NO, list by sample #:			YES	NO	N/A
Fraction All Area # Walkin By By	19.	Was the ARDL project coordinator notified of any deficiencies?			YES	NO	(N/A
All Area # Walkin By By		Comments and/or Corrective Action:			Transfer		
Area # Walkin By By Area #				- 0	Fraction		
By By dlc.	-		-	Area #	Area #		
dle				Walkin			
On On 5-15-19				By	Ву		
. 5-15-19		·	1	On acc.	On		
		·		5-15-19			
Chain-of-Custody #/A				Chain-of-Custody #	N//4	1	
(By: Signature) Date:	(B	v: Signature) Date:	1	Shall For Sustouy #			



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: Carlyle Lake

Lab Name: ARDL, Inc.

Samples Received at ARDL: 8/1/19

ARDL Report No.: 8505 Revision 1

CASE NARRATIVE

<u>Customer</u> Sample No.	<u>Date</u> Collected	<u>Lab ID</u> Number	Analyses Requested
CAR-1	8/1/19	8505-01	NP Pesticides, Metals(1), Inorganics(2)
CAR-2-0	8/1/19	8505-02	NP Pesticides, Inorganics(2)(3)
CAR-2-10	8/1/19	8505-03	Metals(1), Inorganics(2)
CAR-4	8/1/19	8505-04	NP Pesticides, Inorganics(2)(3)
CAR-13	8/1/19	8505-05	NP Pesticides, Inorganics(2)
CAR-12	8/1/19	8505-06	NP Pesticides, Inorganics(2)(3)
CAR-15	8/1/19	8505-07	NP Pesticides, Inorganics(2)(3)
CAR-KP-MARINA	8/1/19	8505-08	E. Coli
CAR-DW-MARINA	8/1/19	8505-09	E. Coli
CAR-BL-MARINA	8/1/19	8505-10	E. Coli
CAR-CSA	8/1/19	8505-11	E. Coli
KAS-2	8/1/19	8505-12	Inorganics(2)(3)(4)
KAS-1	8/1/19	8505-13	Inorganics(2)(3)(4)

- (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 and TKN.

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.

Project Name: Carlyle Lake

ARDL Report No.: 8505 Revision 1

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 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, TSS, and TVSS. RPD on all duplicate analyses were within control limits, except pheophytin-a.

DATA REPORTING QUALIFIERS

The following data reporting qualifiers are used as required:

- ND Indicates parameter was analyzed for but not detected.
- X Sample preparation and/or analysis was performed outside of holding time requirements.
- 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

Page 2 of 2



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

8505

Lab Report No: 008505 Report Date: 08/20/2019

-	CARLYLE LAKE		4	PESTICII	DES (827	70SIM-MO	D)
Project No.:		Analytical Me					
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-1		ARDL I	Lab No.:	00850	05-01	
Desc/Location:	CARLYLE LAKE		Lab Fi	ilename:	E0815	5914	
Sample Date:	08/01/2019		Receiv	red Date:	08/02	L/2019	
Sample Time:	0840		Prep.	Date:	08/02	2/2019	
Matrix:	WATER		Analys	sis Date:	08/15	5/2019	
Amount Used:	900 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B110	79	
% Moisture:	NA		Level	:	LOW		
			· · · · · · · · · · · · · · · · · · ·		Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.867		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	2.79		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	72%	

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

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

10/02/2019	Inorganics ed - IL100308	WATER NA	Analysis Run Date Number	08/23/19 P7252 08/23/19 P7252 08/07/19 08194804 08/28/19 09034843 08/16/19 08204809 08/02/19 08124787 08/06/19 08124778
Report Date: 10/02/2019 Analysis: Inorganics NELAC Certified - IL100308	NELAC Certifie Matrix: Moisture:	Prep An Date	08/22/19 08 08/22/19 08 NA 08 NA 08/15/19 08 NA 08 NA 08	
		Analysis Method	6010C 6010C 350.1 300.0 365.2 160.2 160.4	
			Prep Method	3010A 3010A NONE NONE 365.2 NONE NONE NONE
		CARLYLE LAKE 08/01/2019 0840	Units	MG/L MG/L MG/L MG/L MG/L MG/L MG/L
			Result	0.374 0.140 0.0703 ND 0.404 0.217 22.0 11.2
Lab Report No: 008505 Project Name: CARLYLE LAKE Project No:	Sampling Loc'n: Sampling Date: Sampling Time:	Flag	×	
		Sampl Samp Samp	ōoī	0.0500 0.00500 0.0300 1.00 0.0100 4.00 4.00
	AKE 9	TOD	0.0400 0.00400 0.0200 0.800 0.00800 4.0 4.0	
	CARLYLE 1	CARLYLE LA 008505-01 CAR-1 08/01/2019	/te	yen rrogen ortho Suspended le Suspen Carbon
	Project Name: Project No: ARDL No: Field ID: Received:	Analyte	(a) Iron (a) Manganese Ammonia Nitrogen Nitrate as Nitrogen Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	

(a) DOD and/or NELAC Accredited Analyte.

Sample 008505-01, Inorganic Analyses

Lab Report No: 008505 Report Date: 08/20/2019

Project Name: CARLYLE LAKE Analysis: NP PESTICIDES (8270SIM-MOD)					D)		
Project No.:		Analytical Me	ethod: 82	270C			
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-2-0		ARDL I	Lab No.:	00850	05-02	
Desc/Location:	CARLYLE LAKE		Lab Fi	llename:	E0815	5917	
Sample Date:	08/01/2019		Receit	red Date:	08/02	1/2019	
Sample Time:	1000		Prep.	Date:	08/02	2/2019	
Matrix:	WATER		Analys	sis Date:	08/15	5/2019	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1107	79	
% Moisture:	NA		Level	1	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	0.780		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	2.63		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%	
			1

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

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

			in er	804 836 843 836 809 778 7778 807
Report Date: 10/02/2019 Analysis: Inorganics NELAC Certified - IL100308	nics 100308		Run Number	08194804 08294836 09034843 08294836 08124787 08124778 08124779
	. WATER	Analysis Date	08/07/19 08/23/19 08/23/19 08/16/19 08/02/19 08/06/19 08/06/19	
Report Date:	Analysis: ELAC Certif	ELAC Certif Matrix: Moisture:	Prep Date	NA 08/12/19 NA 08/12/19 08/15/19 NA NA NA
Re NE		Analysis Method	350.1 10200H 300.0 10200H 365.2 365.2 160.2 160.4	
			Prep Method	NONE 10200H NONE 10200H 365.2 NONE NONE NONE
		CARLYLE LAKE 08/01/2019 1000	Units	MG/L MG/CU.M. MG/L MG/CU.M. MG/L MG/L MG/L MG/L
			Result	0.0529 61.7 ND 18.3 0.314 0.194 13.6 9.2
		ampling Loc'n: Sampling Date: Sampling Time:	Flag	×'n
		Sampling Samplin Samplin	TOO	0.0300 1.00 1.00 0.0100 0.0100 4.00 1.00
505	AKE	61	TOD	0.0200 1.0 0.800 1.0 0.00800 0.00800 4.0 4.0
Lab Report No: 008505 ect Name: CARLYLE LAKE oject No:	008505-02 CAR-2-0 08/01/2019	rte	yen Correcte Trogen ortho Suspended Lle Suspen Carbon	
Lab Report Project Name: Project No:		ARDL No: Field ID: Received:	Analyte	Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No:	008505						Ľ.	Report Date:	: 10/02/2019	019
Project Name: CARI Project No:	CARLYLE LAKE						Z.	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 0085 Field ID: CAR- Received: 08/0	008505-03 CAR-2-10 08/01/2019	Sampling Samplin Samplin	ampling Loc'n: Sampling Date: Sampling Time:	, and the second	CARLYLE LAKE 08/01/2019 1015			Matrix: Moisture:	: WATER : NA	
Analyte	TOD	COT	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
(a) Iron (a) Manganese Ammonia Nitrogen Nitrate as Nitrogen Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen	0.0400 0.00400 0.0200 0.800 0.00800 0.00800 nded 4.0 1spen 4.0	0.0500 0.00500 0.0300 1.00 0.0100 4.00 4.00	×	0.424 0.132 0.0731 ND 0.335 0.191 38.0 10.0	MG/L MG/L MG/L MG/L MG/L MG/L MG/L	3010A 3010A NONE NONE 365.2 NONE NONE NONE	6010C 6010C 350.1 300.0 365.2 365.2 160.2 160.4	08/22/19 08/22/19 NA NA 08/15/19 NA NA NA	08/23/19 08/23/19 08/07/19 08/28/19 08/16/19 08/06/19 08/06/19	P7252 P7252 08194804 09034843 08204809 08124787 08124778

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008505 Report Date: 08/20/2019

-	CARLYLE LAKE		=	PESTICIE	ES (827	70SIM-MO	D)
Project No.:	C! - 1	Analytical Me					
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	SIUC			
Field ID:	CAR-4		ARDL I	Lab No.:	00850	05-04	
Desc/Location:	CARLYLE LAKE		Lab Fi	ilename:	E0815	5918	
Sample Date:	08/01/2019		Receiv	ved Date:	08/03	1/2019.	
Sample Time:	1145		Prep.	Date:	08/02	2/2019	
Matrix:	WATER		Analys	sis Date:	08/1	5/2019	
Amount Used:	1000 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B110	79	
% Moisture:	NA		Level	•	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	1.17		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	2.12		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.

(a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008505	505						ፚ	Report Date:	: 10/02/2019	119
Project Name: CARLYLE LAKE Project No:	LAKE						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	Lcs 00308
ARDL No: 008505-04 Field ID: CAR-4 Received: 08/01/2019	19	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE 08/01/2019 1145			Matrix: Moisture:	: WATER : NA	
Analyte	TOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.800 1.0 0.00800 0.00800 4.0 4.0	0.0300 1.00 1.00 0.0100 0.0100 4.00 1.00	×	0.0631 104 1.3 17.2 0.0852 0.0653 32.4 14.0	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE NONE	350.1 10200H 300.0 10200H 365.2 365.2 160.2 160.4	NA 08/12/19 NA 08/12/19 08/15/19 NA NA NA	08/07/19 08/23/19 08/23/19 08/23/19 08/16/19 08/06/19 08/06/19 08/06/19	08194804 08294836 09034843 08294836 08204809 0812478 08124778 08124779

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008505 Report Date: 08/16/2019

,	CARLYLE LAKE		_	PESTICIE	DES (82	70SIM-MO	D)
Project No.:		Analytical Me					
NELAC Certi:	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-13		ARDL I	Lab No.:	00850)5-05	
Desc/Location:	CARLYLE LAKE		Lab F	ilename:	E0815	5919	
Sample Date:	08/01/2019		Recei	ved Date:	08/03	1/2019	
Sample Time:	1310		Prep.	Date:	08/02	2/2019	
Matrix:	WATER		Analys	sis Date:	08/1	5/2019	
Amount Used:	1000 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1107	79	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	1.39		UG/L	1
Metribuzin		0.200	0.200	0.240		UG/L	1
Alachlor		0.200	0.200	ND		UG/L	1
Metolachlor		0.200	0.200	3.36		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 marked with '*' indicates they are outside standard limits.

Limits

30-130

SURROGATE RECOVERIES:

Triphenylphosphate

Results 80%

⁽a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008505	505						æ	Report Date:	: 10/02/2019	019
Project Name: CARLYLE LAKE Project No:	LAKE						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008505-05 Field ID: CAR-13 Received: 08/01/2019	5	Sampling Samplin Samplin	ו סס	Loc'n: CARLY Date: 08/01 Time: 1310	CARLYLE LAKE 08/01/2019 1310			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	001	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Nitrate as Nitrogen Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 0.800 0.00800 0.00800 6.67 6.67	0.0300 1.00 0.0100 0.0100 6.67 1.00	×	0.0741 2.91 0.37 0.0339 108 11.3	MG/L MG/L MG/L MG/L MG/L MG/L	NONE NONE 365.2 NONE NONE NONE	350.1 300.0 365.2 365.2 160.2 160.4 415.1	NA NA 08/15/19 NA NA NA NA	08/07/19 08/28/19 08/16/19 08/02/19 08/06/19 08/06/19	08194804 09034843 08204809 08124787 08124778

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008505 Report Date: 08/16/2019

Project Name: Project No.:	CARLYLE LAKE	Analytical Me	_	PESTICII 270C	DES (82	70SIM-MO	D)
_	fied - IL100308	-	ethod: 35				
Field ID:	CAR-12		ARDL 1	Lab No.:	00850	05-06	
Desc/Location:	CARLYLE LAKE		Lab F	llename:	E0815	5920	
Sample Date:	08/01/2019		Receiv	red Date:	08/03	1/2019	
Sample Time:	1353		Prep.	Date:	08/02	2/2019	
Matrix:	WATER		_	sis Date:	08/1	5/2019	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B110	79	
% Moisture:	NA		Level	:	LOM		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	1.58		UG/L	1
Metribuzin		0.222	0.222	0.278		UG/L	1
Alachlor		0.222	0.222	ND		UG/L	1
Metolachlor		0.222	0.222	4.24		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%	

⁽a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008505	505						12 ,	Report Date:	: 10/02/2019	119
Project Name: CARLYLE LAKE Project No:	LAKE						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	0308
ARDL No: 008505-06 Field ID: CAR-12 Received: 08/01/2019	6	Sampl Samp Samp	Sampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE 08/01/2019 1353			Matrix: Moisture:	: WATER : NA	
Analyte	TOD	Тоот	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.800 1.0 0.00800 0.00800 6.67 6.67	0.0300 1.00 1.00 0.0100 0.0100 6.67 1.00	×	0.104 11.8 2.46 1.5 0.335 0.0496 78.7 10.0	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE NONE	350.1 10200H 300.0 10200H 365.2 365.2 160.2 160.4	NA 08/12/19 NA 08/12/19 08/15/19 NA NA NA	08/07/19 08/23/19 08/23/19 08/23/19 08/06/19 08/06/19 08/06/19	08194804 08294836 09034843 08294836 08204809 08124787 08124779 08124779

(a) DOD and/or NELAC Accredited Analyte.

Lab Report No: 008505 Report Date: 08/20/2019

3	CARLYLE LAKE			PESTICII	DES (827	70SIM-MO	D)
Project No.:		Analytical M					
NELAC Certi:	fied - IL100308	Prep M	ethod: 35	510C			
Field ID:	CAR-15		ARDL I	Lab No.:	00850	05-07	
Desc/Location:	CARLYLE LAKE		Lab F:	llename:	E0815	5921	
Sample Date:	08/01/2019		Recei	ved Date:	08/01	L/2019	
Sample Time:	1155		Prep.	Date:	08/02	2/2019	
Matrix:	WATER		Analys	sis Date:	08/15	5/2019	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B110	79	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	1.34		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	2.43		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%	Ì

⁽a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008	008505						ĸ	Report Date:	: 10/02/2019	010
Project Name: CARLYLE LAKE Project No:	LAKE						N	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 30308
ARDL No: 008505-07 Field ID: CAR-15 Received: 08/01/2019	119	Sampl Samp	Sampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE 08/01/2019 1155			Matrix: Moisture:	: WATER : NA	Section of the sectio
Analyte	TOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen	0.0200	0.0300	ņ	0.0298	MG/L	NONE	350.1	NA	08/07/19 08194804	08194804
Chlorophyll-a, Correcte	1.0	1.00		254	MG/CU.M.	10200H	10200H	08/12/19	08/23/19	08294836
Nitrate as Nitrogen	0.800	1.00	×	1.31	MG/L	NONE	300.0	NA	08/28/19	09034843
Pheophytin-a	1.0	1.00		ND	MG/CU.M.	10200H	10200H	08/12/19	08/23/19	08294836
Phosphorus	0.00800	0.0100		0.0852	MG/L	365.2	365.2	08/15/19	08/16/19	08204809
Phosphorus, -ortho	0.00800	0.0100		0.0601	MG/L	NONE	365.2	NA	08/02/19	08124787
Solids, Total Suspended	1 4.0	4.00		30.4	MG/L	NONE	160.2	NA	08/06/19	08124778
Solids, Volatile Suspen	4.0	4.00		12.4	MG/L	NONE	160.4	NA	08/06/19	08124779
Total Organic Carbon	0.500	1.00		4.4	MG/L	NONE	415.1	NA	08/13/19	08204807

(a) DOD and/or NELAC Accredited Analyte.

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(a) DOD and/or NELAC Accredited Analyte.

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

Lab Report	Lab Report No: 008505	5						Re	Report Date:	: 09/06/2019	119
Project Name: CARLYLE LAKE Project No:	CARLYLE LA	KE						N	Analysis ILAC Certi	Analysis: Inorganics NELAC Certified - IL100308	lcs 00308
ARDL No: Field ID: Received:	008505-09 CAR-DW-MARINA 08/01/2019	INA	Samp] Samp	ampling Loc'n: Sampling Date: Sampling Time:	te: CARLY	Sampling Loc'n: CARLYLE LAKE Sampling Date: 08/01/2019 Sampling Time: 1050			Matrix: Moisture:	: WATER : NA	
Analyte	te	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform		1.0	1.00		63.0	COL/100 ML	NONE	1604	NA	08/01/19 08084769	18084769

(a) DOD and/or NELAC Accredited Analyte.

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

ran Neport No:	L NO: 002	008202					A COLUMN TO SERVICE SE	Ž.	Report Date:	e: 09/06/2019	019
Project Name: CARLYLE LAKE Project No:	CARLYLE	LAKE				-		N	Analysi ELAC Cert	Analysis: Inorganics NELAC Certified - IL100308	ics 30308
ARDL No: Field ID: Received:	008505-10 CAR-BL-MARINA 08/01/2019	10 Jarina 319	Samp Sam Sam	Sampling Loc Sampling Da Sampling Ti	oc'n: CZ Date: 08 Time: 14	Loc'n: CARLYLE LAKE Date: 08/01/2019 Time: 1410			Matrix: Moisture:	k: WATER e: NA	
Analyte	yte	LOD	TOO	Flag	Result	Units	Prep Method	Prep Analysis Method Method	Prep Date	Analysis Date	Run Number
E. Coliform		1.0	1.00		350	COL/100 ML	NONE	1604	NA	08/01/19 08084769	08084769

(a) DOD and/or NELAC Accredited Analyte.

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

Lab Report	Lab Report No: 008505) 5						Re	port Date:	Report Date: 09/06/2019	119
Project Name: Project No:	CARLYLE LAKE	AKE						NE	Analysis:	Analysis: Inorganics NELAC Certified - IL100308	.cs 10308
ARDL No: Field ID: Received:	008505-11 CAR-CSA 08/01/2019	6	Samp. Samı Samı	Sampling Loc'n: Sampling Date: Sampling Time:	te: 08/03 me: 1039	CARLYLE LAKE 08/01/2019 1039			Matrix: Moisture:	WATER NA	
Analyte	te	LOD	TOO	Flag	Result	Units	Prep	Analysis Method	Prep Date	Analysis Date	Run Number
E. Coliform		1.0	1.00		72.0	COL/100 ML	NONE	1604	NA	08/01/19 08084769	8084769

(a) DOD and/or NELAC Accredited Analyte.

Sample 008505-11, Inorganic Analyses

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

Lab Report No: 008505	505						£4	Report Date:	: 10/02/2019	019
Project Name: CARLYLE LAKE Project No:	LAKE						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 30308
ARDL No: 008505-12 Field ID: KAS-2 Received: 08/01/2019	2	Sampling Samplin Samplin	ا م ق		KASKASKIA RIVER 08/01/2019 1045			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	ООТ	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Kjeldahl Nitrogen Nitrite as Nitrogen Nitrite as Nitrogen Nitrite as Nitrogen Pheophytin-a Phosphorus Phosphorus Posphorus Po	0.0200 1.0 0.190 0.800 0.0200 1.0 0.00800 4.0 4.0 4.0	0.0300 1.00 0.200 1.00 0.0200 1.00 0.0100 4.00 4.00	×	0.0456 59.9 1.28 ND 0.042 6.8 0.49 0.199 70.4	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L MG/L	NONE 10200H 351.2 NONE 10200H 365.2 NONE NONE NONE NONE	350.1 10200H 351.2 300.0 354.1 10200H 365.2 365.2 160.2 160.4	NA 08/12/19 08/19/19 NA 08/12/19 08/15/19 NA NA NA	08/07/19 08/23/19 08/21/19 08/02/19 08/16/19 08/06/19 08/06/19	08194804 08294836 08214825 09034843 08144792 08294836 08204809 08124787 08124778

(a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No: 008505	505						Δ,	Report Date:	: 10/02/2019	019
Project Name: CARLYLE LAKE Project No:	AKE						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008505-13 Field ID: KAS-1 Received: 08/01/2019	61	Samplin Sampli Sampli	g I ng ng		KASKASKIA RIVER 08/01/2019 0922			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	COI	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Kjeldahl Nitrogen Nitrite as Nitrogen Nitrite as Nitrogen Pheophytin-a Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.190 0.800 0.0200 1.0 0.00800 4.0 4.0 4.0	0.0300 1.00 0.200 1.00 0.0200 1.00 0.0100 4.00 4.00	×	0.17 39.9 1.79 ND 0.115 16.0 0.593 0.178 38.8 7.6	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L MG/L	NONE 10200H 351.2 NONE 10200H 365.2 NONE NONE NONE	350.1 10200H 351.2 300.0 354.1 10200H 365.2 365.2 160.2 160.4	NA 08/12/19 08/19/19 NA 08/12/19 08/15/19 NA NA	08/07/19 08/23/19 08/21/19 08/02/19 08/23/19 08/16/19 08/06/19 08/06/19	08194804 08294836 08214825 09034843 08144792 08294836 08294836 08224787 08124779 08124779

(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	Analys	sis: NP PEST	CICIDES (82	270SIM-M	OD)
Project No.:	;	Analytical Meth	nod: 8270C			
NELAC Certi:	fied - IL100308	Prep Meth	nod: 3510C			
Field ID:	NA		ARDL Lab No	008	502-01B1	
Desc/Location:	NA		Lab Filenam	ne: E08	15903	
Sample Date:	NA		Received Da	ite: NA		
Sample Time:	NA		Prep. Date:	08/	02/2019	
Matrix:	QC Material		Analysis Da	ate: 08/	15/2019	
Amount Used:	1000 mL		Instrument	ID: AG5		
Final Volume:	1 mL		QC Batch:	B11	079	
% Moisture:	NA		Level:	LOW		
					Data	
Parameter		LOD	LOQ	Result	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%	

⁽a) DOD-QSM Accredited Analyte.

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

Lab Report No: 008505	0.5							Report Date:		10/02/2019
Project Name:	CARLYLE LAKE	LAKE						NELA	NELAC Certified	ed - IL100308
Analyte	TOD	TOO	Blank Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run	QC Lab Number
(a) Iron	0.040	0.050	QN	MG/L	3010A	6010C	08/22/19	08/23/19	P7252	008505-01B1
(a) Manganese	0.004	0.005	QN	MG/L	3010A	6010C	08/22/19	08/23/19	P7252	008505-01B1
Ammonia Nitrogen	0.020	0.030	R	MG/L	NONE	350.1	NA	08/07/19	08194804	008505-01B1
Chlorophyll-a, Corre	1.0	1.0	Q	MG/CU.M.	10200H	10200H	08/12/19	08/23/19	08294836	008505-02B1
E. Coliform	1.0	1.0	Q	COL/100 ML	NONE	1604	NA	08/01/19	08084769	008505-08B1
Kjeldahl Nitrogen	0.19	0.20	QN	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	08/28/19	09034843	008505-02B1
Nitrite as Nitrogen	0.020	0.020	R	MG/L	NONE	354.1	NA	08/02/19	08144792	008505-12B1
Pheophytin-a	1.0	1.0	ON	MG/CU.M.	10200H	10200H	08/12/19	08/23/19	08294836	008505-02B1
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	NO	MG/L	NONE	365.2	NA	08/02/19	08124787	008505-01B1
Solids, Total Suspen	1.0	1.0	NO	MG/L	NONE	160.2	NA	08/06/19	08124778	008505-01B1
Solids, Volatile Sus	1.0	1.0	N	MG/L	NONE	160.4	NA	08/06/19	08124779	008505-01B1
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 008505

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

62864

Lab Report No: 008502	: 008502							Rep	ort Date:	Report Date: 08/16/2019
Project Name: Project No.:	Project Name: SHELBYVILLE LAKE Project No.:	Aı	Analysis: NP B	ESTICID	is: NP PESTICIDES (8270SIM-MOD)	M-MOD)	Anal	Analytical Method: Prep Method:	ical Method: 8270C Prep Method: 3510C	00
Matrix: Amount Used:	QC Material 1000 mL		QC Batch: Level:	B11079 LOW	079		Prep. Date: Analysis Da	t e :	08/02/2019 08/15/2019	00
	Parameter	Spike Result	Spike Level	Spike * Rec	Duplicate Result	Duplicate Level	Duplicate % Rec	Recovery	RPD	RPD Limit
T1	Trifluralin	3.81	4	95		en in		30-130	en es	
	Atrazine	3.33	4	83	1	1	1	30-130	ţ	4
Park	Metribuzin	3.32	4	83	1		1	30-130	!	
	Alachlor	3.24	4	81	į	1	ł ź	30-130	ŧ 1	‡ ‡
ŭ	Metolachlor	3.66	ঝ	92	į	***	***	30-130	i i	4
ฮ	Chlorpyrifos	3.24	4	18	;	1	1	30-130	į	ĺ
	Cyanazine	3.97	ঘ	66	!	į	‡ •	30-130	1	!
Pei	Pendimethalin	g. 6	4	86	1	ř	ţ	30-130	1	!

&R Limits	30-130
Duplicate %R	1
Spike %R	96
SURROGATE RECOVERIES:	Triphenylphosphate

^{&#}x27;*' indicates a recovery outside of standard limits. Spike Blanks for 008502-01, NP PESTICIDES (8270SIM-MOD)

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

Lab Report No: 008505	05								Report Date:	:e: 09/06/2019
Project Name:	CARLYLE LAKE	KE							NELAC Cert	NELAC Certified - IL100308
	LCS 1	LCS 1	LCS 1	LCS 2	LCS 2	LCS 2	% Rec	Mean	Analytical	OC Lab
Analyte	Result	Level	% Rec	Result	Level	% Rec	Limits	% Rec	Run	Number
(a) Iron	5.0	5.0	100	-	-		87-115	1	P7252	008505-01C1
(a) Manganese	0.77	0.75	103	;	;	1	90-114	}	P7252	008505-01C1
Ammonia Nitrogen	66.0	1.0	66	1	1	1	80-120	}	08194804	008505-01C1
Kjeldahl Nitrogen	1.0	1.0	102	1	1	1	80-120	}	08214825	008502-13C1
Nitrate as Nitrogen	13.3	14.0	95	1	1	1	80-120	}	09034843	008505-02C1
Nitrite as Nitrogen	0.97	1.0	6		;	1	80-120	}	08144792	008505-12C1
Phosphorus	0.65	19.0	76	+	1	1	80-120	1	08204809	008502-02C1
Phosphorus, -ortho	0.094	0.10	94	1	1	1	80-120	!	08124787	008505-01C1
Total Organic Carbon	8.9	10.0	68	1	!	1	76-120	ļ	08204807	008502-06C1

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

Inorganic LCS Results for 008505

⁽a) DOD and/or NELAC Accredited Analyte

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

Project Name: CARLYLE LAKE Project No.:	7	Analysis:	NP PESTI	PESTICIDES (827	(8270SIM-MOD)		Analytical Prep	ical Method: Prep Method:	1: 8270C	
Field ID: CAR-1 Desc/Location: CARLYLE LAKE Sample Date: 08/01/2019		Prep. Amoun. % Moi.	: : : : : : : : : : : : : : : : : : :	08/02/2019 900 mL NA		AI LE	, ~		008505-01 08/01/2019	
sampie 11me: 0840 Matrix: WATER		QC Bat Level:	: :	BIIU/9 LOW		AI	Analysıs L	Date: U8/J	08/13/2019	
	Sample	MS	MS	MS.	MSD	MSD	MSD	* Rec		RPD
Parameter	Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit
Trifluralin	QN	ю	4.44	67.5	2.86	4.44	64.3	30-130	4.9	30
Atrazine	0.867	3.71	4.44	64	3.87	4.44	67.5	30-130	4.1	30
Metribuzin	QN	3.02	4.44	68	3.14	4.44	70.8	30-130	4	30
Alachlor	QN	2.84	4.44	64	2,93	4,44	99	30-130	3.1	30
Metolachlor	2.79	5.96	4.44	71.3	6.19	4.44	76.5	30-130	3.8	30
Chlorpyrifos	QN	2.6	4.44	58.5	2.48	4.44	55.8	30-130	4.8	30
Cyanazine	QN	3.58	4.44	80.5	3.7	4.44	83.3	30-130	3.4	30
Pendimethalin	ĘŅ.	80 %	4 44	a a	0 6	4 44	7,7	30-130	G,	30

%R Limits	30-130
MSD %R	69
MS &R	62
SURROGATE RECOVERIES:	Triphenylphosphate

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

09/06/2019 Report Date: Lab Report No: 008505

Project Name:	 w	CARLYLE LAKE	AKE								NELAC	Certif	NELAC Certified - IL100308
	Sample	Sample	MS	MS	MS	MSD	MSD	MSD	* Rec		RPD		QC Lab
Analyte	Matrix	Result	Result	Level	* xec	Result	Level	æ Rec	Limits	RPD	Limit	Run	Number
(a) Iron	WATER	0.37	1.3	1.0	92	1.3	1.0	97	87-115	4	20	P7252	008505-01MS
(a) Manganese	WATER	0.14	0.65	0.50	103	0.63	0.50	98	90-114	4	20	P7252	008505-01MS
Ammonia Nitrogen	WATER	0.070	2.1	2.0	66	2.1	2.0	66	75-125	ч	20	08194804	008505-01MS
Kjeldahl Nitrogen	WATER	1.3	2.1	0.80	103	2,1	0.80	108	75-125	8	20	08214825	008505-12MS
Nitrate as Nitrogen	WATER	Ø.	7.2	8.0	06	7.1	8.0	68	75-125	Ħ	20	09034843	008505-02MS
Phosphorus	WATER	0.34	1.2	0.83	101	1.2	0.83	103	75-125	7	20	08204809	008505-03MS
Phosphorus, -ortho	WATER	0.22	0.33	0.10	111	0.33	0.10	109	75-125	г	20	08124787	008505-01MS
Total Organic Carbon	WATER	4.4	8.9	5.0	90	8.9	5.0	91	76-120	0	20	08204807	008505-07MS

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

⁽a) DOD and/or NELAC Accredited Analyte.

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

Lab Report No: 008505	505						Report Date: 09/06/2019	09/06/2019
Project Name: CARLYLE LAKE	LYLE LAKE						NELAC Certifi	NELAC Certified - IL100308
Analyte	Sample Conc'n I	Sample First Conc'n Duplicate	Second Duplicate Units	Units	Percent Diff	rcent Mean Diff (Smp, D1, D2)	Analytical Run	QC Lab Number
Chlorophyll-a, Corrected 61.7	d 61.7	65.4	1 11	MG/CU.M.	9	-	08294836	008505-02D1
Pheophytin-a	18.3	3.9		MG/CU.M.	130*	!	08294836	008505-02D1
Solids, Total Suspended	d 22.0	22.8	!	MG/L	4	-	08124778	008505-01D1
Solids, Volatile Suspend	d 11.2	12.0		MG/L	7	!	08124779	008505-01D1

See Case Narrative for exceptions. * indicates that agreement between duplicates is greater than 20%. (a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008505



Sample Receipt Information

Including as appropriate:

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

ARDL Data Package

8505

CHAIN OF CUSTODY RECORD

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

ARDL, Inc.

(618) 244-1149 Fax

(618) 244-3235 Phone

SPECIFY CHEMICALS ADDED AND FINAL PH IF KNOWN **PRESERVATION** × × × × ICED × × × × * use 3207 plastic TSS | TVS bottle for NO2 SAMPLE LOCATION REMARKS REMARKS/SPECIAL INSTRUCTIONS: *Preserved with H2SO4 #Preserved with HNO3 × Received by: (Signature) Received by: (Signature) × × × × Shipping Ticket No. × × × × × × NO. OF CONTAINERS GKAB × × × × × × × × × × × COMP 2001 1321 1260 5101 5511 120 (045 Time 145 1050 1410 TIME 1210 Time 0840 9001 1039 Time Date/ 8/1/14 0 DATE Date Greeling, Ben Relinquished by: (Signature) CAR - DW - Marina Received for Laboratory by. SAMPLE NUMBER CAR - BL - Marina CAR - KP - Marina SAMPLERS: (Signature) Rodd ars, G -10(里) CAR - 2 - 0Carlyle Lake CAR-15 CAR - 13 CAR - 12 1 CAR-2CAR-4 CAR-PROJECT Report 8505

o PURCHASE ORDER NO:

COOLER RECEIPT REPORT ARDL, INC.

ARI	DL #:	Cooler#Wone	. 7		
	ject. Challe lake / Kaskaskia	Number of Coolers in Shipm	nent:		-
Pro	ject: Chryle Call KASKOSKIA	Date Received:	7		
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened:	(Signature)			
1.	Did cooler come with a shipping slip (airbill, etc.)?	161	YES	NO	
	If YES, enter carrier name and airbill number here:				
2.	Were custody seals on outside of cooler?		YES	NO	NA
	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?		KES	NO	
5.	Were custody papers sealed in a plastic bag?		YES	NO	ř.
6.	Were custody papers filled out properly (ink, signed, etc.)?		ÝES	NO	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?			NO	N/A
8.	Was project identifiable from custody papers? If YES, enter project name at	the top of this form		NO	N/A
9.	Was a separate container provided for measuring temperature? YES	O	Li E L)) (0
В.	LOG-IN PHASE: Date samples were logged-in: 8 -2-19	Signature) Machine	M. Clott factor C	<u> </u>	c
10.	Describe type of packing in cooler: Isake (ae)				,
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?	· ······	VES	NO	
13.	Were sample labels complete?	······································	VES	NO	
14.	Did all sample labels agree with custody papers?			NÓ	
15.	Were correct containers used for the tests indicated?		YES	NO	
16.	Was pH correct on preserved water samples?		VES	NO	N/A
17.	Was a sufficient amount of sample sent for tests indicated?		ÆS	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:	Sample 1			
	127 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Fraction	Fraction		
10	OTE! CARRECTION ON COFC	Area #	Area #		À
N	OT initialed or dated	Walkin			
		-СО-	Ву		
		On	On		
		8-2-19			
		Chain-of-Custody#	_/YA		
(E	By: Signature) Ale Date: 8-2-19				,

COOLER RECEIPT REPORT ARDL, INC.

ARI	DL #: _8505	Cooler# ARDL-5	_ 2		
		Number of Coolers in Ship	ment:		-
Pro	ject: VArlyle Celce/Kaskaskiss R	Date Hoodived.	119		
A.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened:	(Signature)			
1.	Did cooler come with a shipping slip (airbill, etc.)?	Yea	YES	NO	
	If YES, enter carrier name and airbill number here:				
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?			NO	
5.	Were custody papers sealed in a plastic bag?			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?		YÈ\$	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 Tem	np. 2.5	C	_
В.	LOG-IN PHASE: Date samples were logged-in: \$\int 2-19\$	Signature) A Carcher	mection factor	<u> </u>	
10.	Describe type of packing in cooler: <u>loase ice</u>				
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?			> NO	
13.	Were sample labels complete?	<i>f</i>	YES	> NO	
14.	Did all sample labels agree with custody papers?		¥ES	NO	
15.	Were correct containers used for the tests indicated?		YES	NO	
16.	Was pH correct on preserved water samples?		≪ES	ОИ	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)
Ė	Comments and/or Corrective Action:		Transfer		
		Fraction	Fraction		
	•	Area #	Area #		,
		Walkin			
		le alkin By Ale	Ву		
-		On	On		
		8-2-19			
	·	Chain-of-Custody#	NIA		
/1	By: Signature) Date:	Glain-Ol-Cusiody #			
	by, digitature) Date.				

COOLER RECEIPT REPORT ARDL, INC.

ARI	DL #: 8505	Cooler#	-3	5	
	1 1 / Malreskia K.	Number of Coolers	in Shipment:		_
Pro	ect: Cantyle Cale/KAzluskia F.	Date Received:	8/1/19		
Α.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened:	(Signature)	133		
1.	Did cooler come with a shipping slip (airbill, etc.)?			NO	
	If YES, enter carrier name and airbill number here:				
2.	Were custody seals on outside of cooler?			NO	N/A
	How many and where?,Seal Date:				
3.	Were custody seals unbroken and intact at the date and time of arrival?				NA
4.	Did you screen samples for radioactivity using a Geiger Counter?				(NA)
5.	Were custody papers sealed in a plastic bag?				
6.	Were custody papers filled out properly (ink, signed, etc.)?			NO	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?			NO	N/A
8.	Was project identifiable from custody papers? If YES, enter project name at the			NO	N/A
9.	Was a separate container provided for measuring temperature? YES			С	
В.	LOG-IN PHASE: Date samples were logged-in: 8-2-19 (S			0.0	c
10.					
	Were all samples sealed in separate plastic bags?		_		N/A
12.	Did all containers arrive unbroken and were labels in good condition?		4		
13.	Were sample labels complete?		_		
14.	Did all sample labels agree with custody papers?				
15.	Were correct containers used for the tests indicated?				
	Was pH correct on preserved water samples?				N/A
	Was a sufficient amount of sample sent for tests indicated?		,		
18.	Were bubbles absent in VOA samples? If NO, list by sample #:				€V/A
19.	Was the ARDL project coordinator notified of any deficiencies?			NO	(N/A)
_	Comments and/or Corrective Action:	Fraction	Fraction		
		all	T Tubilon		h l
		Area #	Area #		
	,	Walkin			
		By An.	Ву		
\vdash		On	On		
		On 8-7-19			
		Chain-of-Cus	stody# //A		
L(E	y: Signature) Date:				



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

www.ardlinc.com

Customer Name: SLCOE

Date: 10/30/19

Project Name: Carlyle Lake

Lab Name: ARDL, Inc.

Samples Received at ARDL: 10/8/19

ARDL Report No.: 8551

CASE NARRATIVE

Customer	<u>Date</u>	Lab ID	
Sample No.	Collected	<u>Number</u>	Analyses Requested
CAR-1	10/8/19	8551-01	NP Pesticides, Metals(1), Inorganics(2)
CAR-2-0	10/8/19	8551-02	NP Pesticides, Inorganics(2)(3)
CAR-2-10	10/8/19	8551-03	Metals(1), Inorganics(2)
CAR-4	10/8/19	8551-04	NP Pesticides, Inorganics(2)(3)
CAR-13	10/8/19	8551-05	NP Pesticides, Inorganics(2)
CAR-12	10/8/19	8551-06	NP Pesticides, Inorganics(2)(3)
CAR-15	10/8/19	8551-07	NP Pesticides, Inorganics(2)(3)
CAR-KP-MARINA	10/8/19	8551-08	E. Coli
CAR-DW-MARINA	10/8/19	8551-09	E. Coli
CAR-BL-MARINA	10/8/19	8551-10	E. Coli
CAR-CSA	10/8/19	8551-11	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 except cyanazine (+22%). This analyte 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.

"Test everything, keep the good" 1 Thes. 5:21

Page 1 of 2

Project Name: Carlyle Lake ARDL Report No.: 8551

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

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, 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.
- 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 8551

N:\ARDL Case Narratives\ARDL Data Package Contents.pdf - Revised June 21, 2019

Authorized By: DSD-QAO

Lab Report No: 008551 Report Date: 10/29/2019

Project Name: Project No.:	CARLYLE LAKE	Analytical Me	_	PESTICII	DES (827	OSIM-MO	D)
-	fied - IL100308	_	ethod: 35				
Field ID:	CAR-1		ARDL I	Lab No.:	00855	51-01	
Desc/Location:	CARLYLE LAKE		Lab F	ilename:	E1025	5907	
Sample Date:	10/08/2019		Receiv	ved Date:	10/08	3/2019	
Sample Time:	0830		Prep.	Date:	10/09	9/2019	
Matrix:	WATER		Analys	sis Date:	10/25	5/2019	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1112	20	
% Moisture:	NA		Level	:	LOW		
	- Various Mart op Asse Character And Table			7//// WWW. 100 Mar. 4/2	Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.622		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	0.611		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	92%	

⁽a) DOD-QSM Accredited Analyte.

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

t No: 008551 Report Date: 10/30/2019	CARLYLE LAKE Analysis: Inorganics NELAC Certified - IL100308	008551-01 Sampling Loc'n: CARLYLE LAKE CAR-1 Sampling Date: 10/08/2019 10/08/2019 Sampling Time: 0830	Prep Analysis Prep Analysis Run yte LOD LOQ Flag Result Units Method Method Date Number	0.0400 0.0500 0.668 MG/L 3010A 6010C 10/16/19 10/23/19 P7284	0.00400 0.00500 0.152 MG/L 3010A 6010C 10/16/19 10/23/19 P7284	0.0200 0.0300 0.111	0.0190 0.0200 0.177 MG/L NONE GREEN NA 10/10/19	0.00800 0.0100 0.335 MG/L 365.2 365.2 10/21/19 10/23/19	0.00800 0.0100 0.222	4.0 4.00 21.6	ile Suspen 4.0 4.00 5.2 MG/L NONE 160.4 NA 10/14/19 10234986	
Lab Report No: 008	Project Name: CARLYLE Project No:	ARDL No: 008551-0 Field ID: CAR-1 Received: 10/08/20	Analyte	(a) Iron	(a) Manganese	Ammonia Nitrogen	Nitrate as Nitrogen	Phosphorus	Phosphorus, -ortho	Solids, Total Suspended	Solids, Volatile Suspen	

(a) DOD and/or NELAC Accredited Analyte.

Sample 008551-01, Inorganic Analyses

Lab Report No: 008551 Report Date: 10/28/2019

Project Name: Project No.:	CARLYLE LAKE	Ana Analytical M	=	PESTICII 270C	DES (82	70SIM-MO	D)
-	fied - IL100308	-	ethod: 3				
Field ID:	CAR-2-0		ARDL	Lab No.:	00855	51-02	
Desc/Location:	CARLYLE LAKE		Lab F:	ilename:	E1025	5910	
Sample Date:	10/08/2019		Recei	ved Date:	10/08	3/2019	
Sample Time:	0935		Prep.	Date:	10/09	9/2019	
Matrix:	WATER		Analy	sis Date:	10/25	5/2019	
Amount Used:	900 mL		Instr	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1112	20	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.222	0.222	ND		UG/L	1
Atrazine		0.222	0.222	0.489		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	0.533		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	78%	j

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

Report Date: 10/30/2019	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER Moisture: NA	Prep Analysis Run Date Date Number	NA 10/15/19 10234987 10/09/19 10/14/19 10234984 NA 10/10/19 10245001 10/09/19 10/14/19 10234984 10/21/19 10/23/19 10234984 NA 10/09/19 10154970 NA 10/14/19 10234985 NA 10/14/19 10234986
Repo	A) NELA(M	Analysis Method	350.1 10200H 10, GREEN 10200H 10, 365.2 160.2 160.2
			Prep Method	NONE 10200H NONE 10200H 365.2 NONE NONE NONE
		CARLYLE LAKE 10/08/2019 0935	Units	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L
			Result	ND 49.9 ND 11.7 0.326 0.214 18.0 5.6
		ו סס	Flag	
		Sampling Samplin Samplin	Ŏ01	0.0300 1.00 0.0200 1.00 0.0100 4.00 4.00
51	AKE	6	TOD	0.0200 1.0 0.0190 1.0 0.00800 4.0 4.0 4.0
Lab Report No: 008551 Project Name: CARLYLE LAKE	CARLYLE L	Project Name: CARLYLE LA Project No: ARDL No: 008551-02 Field ID: CAR-2-0 Received: 10/08/2019	t te	1
			Analyte	Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Sample 008551-02, Inorganic Analyses

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

LOD LOQ Flag Result Units 0.0400 0.0500 1.49 MG/L 0.0200 0.0300 0.0931 MG/L 0.0190 0.0200 0.0931 MG/L 0.00800 0.0100 0.534 MG/L 8.33 8.33 20.0 MG/L
0.500 1.00 4.7

(a) DOD and/or NELAC Accredited Analyte.

Sample 008551-03, Inorganic Analyses

Lab Report No: 008551 Report Date: 10/28/2019

,	CARLYLE LAKE	Analytical Me	_	PESTICII	DES (827	OSIM-MO	D)
Project No.: NELAC Certi	fied - IL100308	-	ethod: 35				
Field ID:	CAR-4	***************************************	ARDL I	Lab No.:	00855	51-04	
Desc/Location:	CARLYLE LAKE	Lab Filename: E1025911					
Sample Date:	10/08/2019	Received Date: 10/08/2019					
Sample Time:	1105	Prep. Date: 10/09/2019					
Matrix:	WATER	Analysis Date: 10/25/2019					
Amount Used:	1000 mL	Instrument ID: AG5					
Final Volume:	1 mL	QC Batch: B11120					
% Moisture:	NA	Level:		LOW			
				.,,,	Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND	***************************************	UG/L	1
Atrazine		0.200	0.200	0.460		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	0.460		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%	
			i

⁽a) DOD-QSM Accredited Analyte.

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

Droiner Name. CABLVIE IAKE	AKE						The state of the s	. sisylend	Thornanios	8
							Z	NELAC Certified - IL100308	fied - IL1	30308
ARDL No: 008551-04		Sampl	Sampling Loc'n:		CARLYLE LAKE			Matrix:	: WATER	
Field ID: CAR-4		Samp	Sampling Date:		10/08/2019			Moisture:	: NA	
Received: 10/08/2019	67	Samp	Sampling Time:	ime: 1105						
						Prep	Analysis	Prep	Analysis	Run
Analyte	LOD	TOÖ	Flag	Result	Units	Method	Method	Date	Date	Number
Ammonia Nitrogen	0.0200	0.0300	p	0.025	MG/L	NONE	350.1	NA	10/15/19 10234987	10234987
Chlorophyll-a, Correcte	1.0	1.00		95.3	MG/CU.M.	10200H	10200H	10/09/19		10234984
Nitrate as Nitrogen	0.0190	0.0200		ΩN	MG/L	NONE	GREEN	NA		10245001
Pheophytin-a	1.0	1.00		16.9	MG/CU.M.	10200H	10200H	10/09/19	10/14/19	10234984
Phosphorus	0.00800	0.0100		0.387	MG/L	365.2	365.2	10/21/19		10255009
Phosphorus, -ortho	0.800.0	0.0100		0.161	MG/L	NONE	365.2	NA	10/09/19	10154970
Solids, Total Suspended	6.67	6.67		42.0	MG/L	NONE	160.2	NA	10/14/19	10234985
Solids, Volatile Suspen	6.67	6.67		11.3	MG/L	NONE	160.4	NA	10/14/19	10234986
Total Organic Carbon	0.500	1.00		٦.	MG/T.	NONE	415,1	NA	10/19/19	TA462384

(a) DOD and/or NELAC Accredited Analyte.

Sample 008551-04, Inorganic Analyses

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

Lab Report No: 008551 Report Date: 10/28/2019

J	CARLYLE LAKE		_	PESTICI	DES (827	70SIM-MO	D)
Project No.:		Analytical Me					
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-13		ARDL I	Lab No.:	00855	51-05	
Desc/Location:	CARLYLE LAKE		Lab F	ilename:	E1025	5912	
Sample Date:	10/08/2019		Recei	red Date:	10/08	3/2019	
Sample Time:	1228		Prep.	Date:	10/09	9/2019	
Matrix:	WATER		Analys	sis Date:	10/25	5/2019	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1112	20	
% Moisture:	NA		Level	•	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	0.220		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	0.480		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	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

	808		Run Number	10234987 10245001 10255009 10154970 10234985 10234986 TA462384	
10/30/2019	Inorganics d - IL1003	WATER NA		10/15/19 10234987 10/10/19 10245001 10/23/19 10255009 10/09/19 10154970 10/14/19 10234986 10/14/19 10234986	
10	i: In		Analysis Date	10/1 10/2 10/2 10/0 10/1 10/1	
Report Date:	Analysis: Inorganics NELAC Certified - IL100308	Matrix: Moisture:	Prep Date	NA NA 10/21/19 NA NA NA	
K.	Z		Analysis Method	350.1 GREEN 365.2 365.2 160.2 160.4	
			Prep	NONE NONE 365.2 NONE NONE NONE	
		CARLYLE LAKE 10/08/2019 1228	Units	MG/L MG/L MG/L MG/L MG/L MG/L MG/L	
			Result	ND 0.317 0.235 0.0224 44.0 9.2 3.8	
		Sampling Loc'n: Sampling Date: Sampling Time:	Flag		
		Sampl Samp Samp	TOO	0.0300 0.0200 0.0100 4.00 4.00	
551	LAKE	19	LOD	0.0200 0.0190 0.00800 0.00800 4.0 4.0	
E No: 008551	CARLYLE LAKE	008551-05 CAR-13 10/08/2019	/te	gen trogen ortho Suspended ile Suspen	
Lab Report No:	Project Name: Project No:	ARDL No: Field ID: Received:	Analyte	Ammonia Nitrogen Nitrate as Nitrogen Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	

(a) DOD and/or NELAC Accredited Analyte.

Sample 008551-05, Inorganic Analyses

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

Lab Report No: 008551 Report Date: 10/28/2019

Project Name: Project No.:	CARLYLE LAKE	Anal Analytical Me		P PESTICII 270C	DES (82	70SIM-MO	D)
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-12		ARDL I	Lab No.:	0085	51-06	
Desc/Location:	CARLYLE LAKE		Lab Fi	ilename:	E102	5913	
Sample Date:	10/08/2019		Receiv	ved Date:	10/08	3/2019	
Sample Time:	1303		Prep.	Date:	10/0	9/2019	
Matrix:	WATER		Analys	sis Date:	10/2	5/2019	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	tch:	B1112	20	
% Moisture:	NA		Level	:	LOW		
	,		***************************************		Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	0.300		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	0.630		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%	j
			- 1

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

			in	987 987 9001 9009 970 985 986
2019	nics 100308		Run Number	10234987 10234984 10234984 10255009 10154970 10234985 10234986 TA462384
: 10/30/2019	: Inorganics fied - IL1003	: WATER : NA	Analysis Date	10/15/19 10234987 10/14/19 10234984 10/10/19 10245001 10/14/19 10234984 10/23/19 10255009 10/09/19 10154970 10/14/19 10234985 10/14/19 10234986
Report Date:	Analysis: Inorganics NELAC Certified - IL100308	Matrix: Moisture:	Prep Date	NA 10/09/19 NA 10/09/19 10/21/19 NA NA NA
Ř	Z		Analysis Method	350.1 10200H GREEN 10200H 365.2 365.2 160.2 160.4
			Prep Method	NONE 10200H NONE 10200H 365.2 NONE NONE NONE
		CARLYLE LAKE 10/08/2019 1303	Units	MG/L MG/CU.M. MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L
	Loc'n:		Result	0.243 35.4 0.227 20.5 0.261 0.0502 49.6 7.6
		0 0	Flag	
	The state of the s	Sampling Samplin Samplin	001	0.0300 1.00 0.0200 1.00 0.0100 4.00 4.00
51	AKE	6	LOD	0.0200 1.0 0.0190 1.0 0.00800 0.00800 4.0 4.0
. No: 008551	CARLYLE LAKE	008551-06 CAR-12 10/08/2019	rte	yen Correcte Trogen Ortho Suspended .le Suspen Carbon
Lab Report No:	Project Name: Project No:	ARDL No: Field ID: Received:	Analyte	Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon

(a) DOD and/or NELAC Accredited Analyte.

Sample 008551-06, Inorganic Analyses

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

Lab Report No: 008551 Report Date: 10/28/2019

Project Name:	CARLYLE LAKE		_	PESTICI	DES (827	OSIM-MO	D)
Project No.:		Analytical Me					
NELAC Certi	fied - IL100308	Prep Me	ethod: 35	510C			
Field ID:	CAR-15		ARDL I	Lab No.:	00855	51-07	
Desc/Location:	CARLYLE LAKE		Lab Fi	llename:	E1025	5914	
Sample Date:	10/08/2019		Recei	ved Date:	10/08	3/2019	
Sample Time:	1115		Prep.	Date:	10/09	9/2019	
Matrix:	WATER		Analys	sis Date:	10/25	5/2019	
Amount Used:	1000 mL		Instru	ument ID:	AG5		
Final Volume:	1 mL		QC Bat	ch:	B1112	20	
% Moisture:	NA		Level	:	LOW		
					Data		Dilution
Parameter		LOD	LOQ	Result	Flag	Units	Factor
Trifluralin		0.200	0.200	ND		UG/L	1
Atrazine		0.200	0.200	0.360		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	0.350		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	62%	
			1

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: 008551	551						K	Report Date:	: 10/30/2019	019
Project Name: CARLYLE LAKE Project No:	LAKE						Z	Analysis: Inorganics NELAC Certified - IL100308	: Inorganics fied - IL1003	ics 00308
ARDL No: 008551-07 Field ID: CAR-15 Received: 10/08/2019	7	Sampl Samp	Sampling Loc'n: Sampling Date: Sampling Time:		CARLYLE LAKE 10/08/2019 1115			Matrix: Moisture:	: WATER : NA	
Analyte	LOD	TOO	Flag	Result	Units	Prep Method	Analysis Method	Prep Date	Analysis Date	Run Number
Ammonia Nitrogen Chlorophyll-a, Correcte Nitrate as Nitrogen Pheophytin-a Phosphorus Phosphorus, -ortho Solids, Total Suspended Solids, Volatile Suspen Total Organic Carbon	0.0200 1.0 0.0190 1.0 0.00800 0.00800 6.67 6.67	0.0300 1.00 0.0200 1.00 0.0100 6.67 6.67		ND 89.3 ND 21.9 0.448 0.161 45.3 12.0 5.5	MG/L MG/CU.M. MG/L MG/L MG/L MG/L MG/L MG/L	NONE 10200H NONE 10200H 365.2 NONE NONE NONE	350.1 10200H GREEN 10200H 365.2 365.2 160.2 160.4	NA 10/09/19 NA 10/09/19 NA NA NA NA	10/15/19 10/14/19 10/10/19 10/23/19 10/09/19 10/14/19 10/14/19	10234987 10234984 10245001 10234984 10255009 10154970 10234985 10234986 10234986

(a) DOD and/or NELAC Accredited Analyte.

Sample 008551-07, Inorganic Analyses

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

Report Date: 10/30/2019	Analysis: Inorganics NELAC Certified - IL100308	K: WATER	Analysis Run Date Number	10/08/19 10154971
sport Date	Analysis SLAC Certi	Matrix: Moisture:	Prep Date	NA
Re	N.		Prep Analysis Method Method	1604
			Prep Method	NONE
		Sampling Loc'n: CARLYLE LAKE Sampling Date: 10/08/2019 Sampling Time: 1126	Units	COL/100 ML
		n: CARLY te: 10/08 ne: 1126	Result	675
		ampling Loc'n: Sampling Date: Sampling Time:	Flag	
		Samp Sam Sam	ŎОΊ	1.00
Lab Report No: 008551	CARLYLE LAKE	008551-08 CAR-KP-MARINA 10/08/2019	e TOD	1.0
Lab Report	Project Name: CARLYLE LAKE Project No:	ARDL No: 008551-08 Field ID: CAR-KP-MAR. Received: 10/08/2019	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

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

Report Date: 10/30/2019	Analysis: Inorganics NELAC Certified - IL100308	WATER NA	Analysis Run Date Number	10/08/19 10154971
port Date:	Analysis: LAC Certifi	Matrix: Moisture:	Prep A Date	NA 1
Rej	NE		Prep Analysis Method Method	1604
			Prep Method	NONE
		CARLYLE LAKE 10/08/2019 1011	Units	COL/100 ML
		n: CARL)	Result	250
		Sampling Loc'n: CARLYLE LAKE Sampling Date: 10/08/2019 Sampling Time: 1011	Flag	
		Samp. Sami Sami	TOO	1.00
lo: 008551	ARLYLE LAKE	008551-09 CAR-DW-MARINA 10/08/2019	LOD	1.0
Lab Report No: 008551	Project Name: CARLYLE LAKE Project No:	ARDL No: 008551-09 Field ID: CAR-DW-MAR. Received: 10/08/2019	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

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

Report Date: 10/30/2019	Analysis: Inorganics NELAC Certified - IL100308	Matrix: WATER isture: NA	Analysis Run Date Number	10/08/19 10154971
port Date	Analysis LAC Certi	Matrix: Moisture:	Prep Date	NA
Re	Щ N		Analysis Method	1604
			Prep Method	NONE
		CARLYLE LAKE 10/08/2019 1330	Units	COL/100 ML NONE
			Flag Result	700
	And the second s	ampling Loc'n: Sampling Date: Sampling Time:	Flag	
		Samp San San	Ŏ01	1.00
lo: 008551	CARLYLE LAKE	008551-10 CAR-BL-MARINA 10/08/2019	LOD	1.0
Lab Report No: 008551	Project Name: CARLYLE LAKE Project No:	ARDL No: 008551-10 Field ID: CAR-BL-MA Received: 10/08/201	Analyte	E. Coliform

(a) DOD and/or NELAC Accredited Analyte.

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

Report Date: 10/30/2019	Analysis: Inorganics NELAC Certified - IL100308	IX: WATER	Analysis Run Date Number	10/08/19 10154971
eport Dat	Analysi ELAC Cert	Matrix: Moisture:	Prep Date	NA
Ŗ	IN		Prep Analysis Method Method	1604
			Prep Method	NONE
		Sampling Loc'n: CARLYLE LAKE Sampling Date: 10/08/2019 Sampling Time: 1000	Units	COL/100 ML
		n: CARL)	Result	175
		ampling Loc'n: Sampling Date: Sampling Time:	Flag	
		Samp Sam Sam	Ŏ01	1.00
551	LAKE	1.19	ГОР	1.0
No: 008	CARLYLE	008551-11 CAR-CSA 10/08/2019	φ ψ	
Lab Report No: 008551	Project Name: CARLYLE LAKE Project No:	ARDL No: 008551-11 Field ID: CAR-CSA Received: 10/08/201	Analyte	E. Coliform

(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: 008551 Report Date: 10/28/2019

Project Name: Project No.: NELAC Certi	CARLYLE LAKE	Analytical Meth	is: NP PEST od: 8270C od: 3510C	CICIDES (82	270SIM-M	OD)
THERE OUT CT.		110p 11001				
Field ID:	NA		ARDL Lab No	008	551-01B1	
Desc/Location:	NA		Lab Filenam	ne: E102	25905	
Sample Date:	NA		Received Da	ate: NA		
Sample Time:	NA		Prep. Date:	: 10/0	09/2019	
Matrix:	QC Material		Analysis Da	ate: 10/2	25/2019	
Amount Used:	1000 mL		Instrument	ID: AG5		
Final Volume:	1 mL		QC Batch:	B11:	120	
% Moisture:	NA		Level:	LOW		
					Data	
Parameter		LOD	LOQ	Result	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 RECOV	ERIES:	Limits		Re	esults	

SURROGATE RECOVERIES:	Limits	Results	
Triphenylphosphate	30-130	97%	!

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

(a) DOD-QSM Accredited Analyte.

Mt. Vernon, IL 400 Aviation Drive; P.O. Box 1566 BLANK SUMMARY REPORT ARDL, INC.

Lab Report No: 008551	551							Report Date:		10/30/2019
Project Name:	CARLYLE LAKE	E LAKE						NELA	NELAC Certified	ed - 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) 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	ON	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	10234987	008551-01B1
Chlorophyll-a, Corre	1.0	1.0	N	MG/CU.M.	10200H	10200H	10/09/19	10/14/19	10234984	008551-06B1
E. Coliform	1.0	1.0	ND	COL/100 ML	NONE	1604	NA	10/08/19	10154971	008551-08B1
Nitrate as Nitrogen	0.019	0.020	ND	MG/I	NONE	GREEN	NA	10/10/19	10245001	008551-01B1
Pheophytin-a	1.0	1.0	ND	MG/CU.M.	10200H	10200H	10/09/19	10/14/19	10234984	008551-06B1
Phosphorus	0.008	0.010	ND	MG/L	365.2	365.2	10/21/19	10/23/19	10255009	008551-01B1
Phosphorus, -ortho	0.008	0.010	ON	MG/L	NONE	365.2	NA	10/09/19	10154970	008551-03B1
Solids, Total Suspen	1.0	1.0	ND	MG/L	NONE	160.2	NA	10/14/19	10234985	008551-01B1
Solids, Volatile Sus	1.0	1.0	NO	MG/L	NONE	160.4	NA	10/14/19	10234986	008551-01B1
Total Organic Carbon	0.50	1.0	NO	MG/L	NONE	415.1	NA	10/19/19	TA462384	008551-01B1

(a) DOD and/or NELAC Accredited Analyte Inorganic Method Blanks for 008551

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

Lab Report No:	008551							Reg	oort Date	Report Date: 10/28/2019	
Project Name: CARLYLE LAKE Project No.:	ARLYLE LAKE	And	Analysis: NP	PESTICIDE	s: NP PESTICIDES (8270SIM-MOD)	(M-MOD)	Anal	Analytical Method: Prep Method:	ical Method: 8270C Prep Method: 3510C	8270C 3510C	
Matrix: Amount Used:	QC Material 1000 mL		QC Batch: Level:	1: B11120 LOW	120		Prep. Date: Analysis Da	Prep. Date: Analysis Date:	10/09/2019	61	
Par	Parameter	Spike Result	Spike Level	Spike % Rec	Duplicate Result	Duplicate	Duplicate % Rec	Recovery	RPD	RPD Limit	
Trif	Trifluralin	3.21	4	80		44 1	1	30-130	440 (84)		
At	Atrazine	2.99	4	75	1	1	1	30-130	1	!	
Met	Metribuzin	2.98	4	75	;	1	1	30-130	1	!	
Al	Alachlor	3.12	4	78	1	1	;	30-130	1	1	
Meto	Metolachlor	3.39	4	85	}	}	1	30-130	;	1	
Chlo	Chlorpyrifos	3.07	4	77	+	}	1	30-130	;	1	
Суа	Cyanazine	3.87	4	76	ì	}	1	30-130	1	}	
Pendi	Pendimethalin	3.53	4	88	1	}	1	30-130	ŀ	1	
	SUR	SURROGATE RECOVERIES:		Spike %R		Duplicate %R	%R Limits				

30-130

85.3

Triphenylphosphate

(a) DOD-QSM Accredited Analyte.

Spike Blanks for 008551-01, NP PESTICIDES (8270SIM-MOD) '*' indicates a recovery outside of standard limits.

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

Lab Report No: 008551	8551								Report Dat	Report Date: 10/30/2019
Project Name:	CARLYLE LAKE	KE							NELAC Cert	NELAC Certified - IL100308
	LCS 1	LCS 1	LCS 1	LCS 2	LCS 2	LCS 2	% Rec	Mean	Analytical	QC Lab
Analyte	Result	Level	% Rec	Result	Level	* Rec	Limits	% Rec	Run	Number
(a) Iron	5.2	5.0	104			-	87-115	1	P7284	008551-01C1
(a) Manganese	0.80	0.75	107	1	i	1	90-114	ł	P7284	008551-01C1
Ammonia Nitrogen	0.99	1.0	66	;	1	1	80-120	i	10234987	008551-01C1
Nitrate as Nitrogen	0.91	1.0	91	1	1	1	80-120	+	10245001	008551-01C1
Phosphorus	99.0	0.67	86	1	1	1	80-120	1	10255009	008551-01C1
Phosphorus, -ortho	960.0	0.10	96	}	1	;	80-120	!	10154970	008551-03C1
Total Organic Carbon	7.6	10.0	26	1	;	!	76-120	1	TA462384	008551-01C1

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

⁽a) DOD and/or NELAC Accredited Analyte

		Report Date: 10/29/2019
	62864	Date: 1
	II	eport
	Mt. Vernon, IL 62864	EK.
	Mt.	
REPORT	1566	
ATE	Box	
DUPLIC	P.0.	
SPIKE	Orive;	
MATRIX SPIKE/SPIKE DUPLICATE REPORT	400 Aviation Drive; P.O. Box 1566	
MATRI	400 2	
	INC.	
	ARDL,	51

Lab Report No:

Limit RPD 30 30 30 Analytical Method: 8270C Prep Method: 3510C Received Date: 10/08/2019 Analysis Date: 10/25/2019 008551-01 10.5 15.3 18.2 15.2 11.7 RPD 9.3 9.1 9.1 Limits 30-130 30-130 30-130 30-130 30-130 % Rec 30-130 30-130 30-130 ARDL Lab No.: Lab Filename: 89.5 80.8 82.3 81.3 104.8 87.3 % Rec 8 77 MSD 4.44 4.44 4.44 4.44 4.44 Level 4.44 4.44 4.44 MSD Analysis: NP PESTICIDES (8270SIM-MOD) Result 3.66 4.57 3.42 4.66 3.88 4.21 3.61 MSD 10/09/2019 % Rec 89.8 90.3 90.3 101.8 868 104.8 104.3 114.8 900 mL B11120 ΜS LOW Amount Used: Prep. Date: 4.44 4.44 4.44 4.44 4.44 % Moisture: Level 4.44 4.44 4.44 MS QC Batch: Level: Result 4.61 4.01 4.01 5.13 3.99 4.66 4.63 5.1 MS 0.622 Sample Result 0.611 ON ON N Q Q 8 8 Q CARLYLE LAKE Project Name: CARLYLE LAKE 10/08/2019 CAR-1 WATER 0830 Chlorpyrifos Pendimethalin Metribuzin Metolachlor Trifluralin Cyanazine Alachlor Atrazine Parameter Desc/Location: Project No.: Sample Date: Sample Time: Field ID: Matrix:

SURROGATE RECOVERIES:	MS &R	MSD %R	%R Limits
${\tt Triphenylphosphate}$	103	98	30-130

⁽a) DOD-QSM Accredited Analyte.

^{&#}x27;nc' indicates sample >4X spike level.

Matrix Spikes for 008551-01, NP PESTICIDES (8270SIM-MOD) '*' indicates a recovery outside of standard limits.

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

Lab Report No: 008551	o: 00855	51								Repor	Report Date:		10/30/2019	
Project Name:		CARLYLE LAKE	AKE								NELAC	Certifi	NELAC Certified - IL100308	
			A STATE OF THE STA		Ann (-)			and the second s	The second secon		-			
	Sample	Sample	WS	MS	MS	MSD	MSD	MSD	% Rec		RPD		QC Lab	
Analyte	Matrix	Result	Result	Level	% Rec	Result	Level	% Rec	Limits	RPD	Limit	Run	Number	
(a) Iron	WATER	0.67	1.8	1.0	111	1.8	1.0	111	87-115	0	20	P7284	008551-01MS	
(a) Manganese	WATER	0.15	0.68	0.50	107	0.68	0.50	106	90-114	0	20	P7284	008551-01MS	
Ammonia Nitrogen	WATER	0.11	2.2	2.0	103	2.2	2.0	103	75-125	н	20	10234987	008551-01MS	
Nitrate as Nitrogen	WATER	0.18	0.92	1.0	75	0.92	1.0	75	75-125	0	20	10245001	008551-01MS	

10255009 008551-01MS 10154970 008551-03MS 008551-01MS 008551-06MS

TA462384 TA462384

20 20 20 20 20

2075

75-125 75-125 76-120 76-120

113 102 93 103

0.83 0.10 5.0 5.0

1.3

9.1

111 102 98 95

0.83

1.3 0.32 9.3 8.2

0.34

Phosphorus Phosphorus, -ortho Total Organic Carbon Total Organic Carbon

WATER WATER WATER

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

Inorganic Matrix Spikes for 008551

⁽a) DOD and/or NELAC Accredited Analyte.

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

on.	308		6D1	6D1	1D1	1D1
10/30/201	.ed - IL100	QC Lab Number	008551-06D1	008551-06D1	008551-01D1	008551-01D1
Report Date: 10/30/2019	NELAC Certified - IL100308	Analytical Run	10234984	10234984	10234985	10234986
		Mean (Smp, D1, D2)	- L	;	1	1
		Percent Diff	3	8	7	∞
		Units	MG/CU.M.	MG/CU.M.	MG/L	MG/L
		Second Duplicate	!	!	1	-
		Sample First Conc'n Duplicate	34.5	18.9	22.0	4.8
1	LE LAKE	Sample Conc'n	35.4	20.5	21.6	5.2
Lab Report No: 008551	Project Name: CARLYLE LAKE	Analyte	Chlorophyll-a, Corrected	Pheophytin-a	Solids, Total Suspended	Solids, Volatile Suspend

(a) DOD and/or NELAC Accredited Analyte Sample Duplicates for 008551



Sample Receipt Information

Including as appropriate:

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

ARDL Data Package 8551

CHAIN OF CUSTODY RECORD

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

ARDL, Inc.

(618) 244-1149 Fax (618) 244-3235 Phone

																	<u> </u>		
PRESERVATION	SPECIFY CHEMICALS ADDED AND FINAL PH IF KNOWN																		
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		TIME	0830	26,00	0440	5011	1228	1303	1115	1126	1011	1330	000)				Date Time	Time //0.25	1
	٥	DATE	6/0/19	-									_				Date 10/8/19	Date/0/9/19	'Date 10/8/19
PROJECT Carlyle Lake	SAMPLERS: (Signature) Greeling, Ben Rodgers, Frace	SAMPLE NÚMBER	CAR-1	CAR-2-0	CAR-2-10	CAR-4	CAR-13	CAR-12	CAR-15	CAR – KP – Marina	CAR - DW - Marina	CAR - BL - Marina	CAR - CSA		ARD	, LR	BRefinduished by: (Signature)	Greathquished for Signature),	Laboratory L

PURCHASE ORDER NO:_

COOLER RECEIPT REPORT ARDL, INC.

AR	DL#: 8551	Coo	ler# <u>2 4 3</u> ber of Coolers in S		9	
		Num	ber of Coolers in S	hipment:	<u> </u>	
Pro	ject: <u>Parlyle, Lake</u>		Received: 10			
Α.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 10 -8	7-19	(Signature)	Joekru	m_	
1.	Did cooler come with a shipping slip (airbill, etc.)?					
	If YES, enter carrier name and airbill number here:			Causie	1)	
2.	Were custody seals on outside of cooler?					N/A
	How many and where?,Seal Date:_		,Seal Name:			
3.	Were custody seals unbroken and intact at the date and time of arrival?					
4.	Did you screen samples for radioactivity using a Geiger Counter?			YE	s NO	
5.	Were custody papers sealed in a plastic bag?			YE	s NO	>
6.	Were custody papers filled out properly (ink, signed, etc.)?				s NO	N/A
7.	Were custody papers signed in appropriate place by ARDL personnel?			ΨE	S NO	N/A
8.	Was project identifiable from custody papers? If YES, enter project name at	the top	of this form	ÝĒ	S) NO	N/A
9.	Was a separate container provided for measuring temperature? YES					0
В.	LOG-IN PHASE: Date samples were logged-in: 10-9-19	(Signatı	ire) Akac	Rection factor	010	
10.	Describe type of packing in cooler:					
11.	Were all samples sealed in separate plastic bags?			YE	s No	∑ N/A
12.	Did all containers arrive unbroken and were labels in good condition?	•••••			S NO	
13.	Were sample labels complete?	•••••		XE	S NO	
14.	Did all sample labels agree with custody papers?			¥E	s NO	
15.	Were correct containers used for the tests indicated?			YE	s no	
16.	Was pH correct on preserved water samples?			YE	S NO	N/A
17.	Was a sufficient amount of sample sent for tests indicated?			ÝE	s' NO	ı
18.	Were bubbles absent in VOA samples? If NO, list by sample #:		4.	YE	S NC	N/A
19.	Was the ARDL project coordinator notified of any deficiencies?	•••••		YE	S NO	(N/A
<u> </u>	Comments and/or Corrective Action:		Samı	ole Transfer		
			Fraction	Fraction		
-			Area #	Area #		
			Walkin			
			Walken By	Ву		
-				On		
			10-9-19			
				1/		
-	Date:		Chain-of-Custody	y# <u>/ </u>	<u> </u>	
	By: Signature) Date:					

COOLER RECEIPT REPORT ARDL, INC.

AR	DL#: <u> </u>	Coo	ler#_3 af	3			
		Nun	nber of Coolers	in Shipm	ent: <u> </u>		_
Pro	ject: <u>Carlyle Lak</u> e		e Received: 🖊	Α			
Α.	PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 10 -8	7-19	(Signature)	II/a	ehrur	n	
1.	Did cooler come with a shipping slip (airbill, etc.)?						,
	If YES, enter carrier name and airbill number here:			Pari	ries		
2.	Were custody seals on outside of cooler?					NO	N/A
	How many and where?,Seal Date:_		,Seal Nam	e:			
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.)?					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			_		C C	С
В.	LOG-IN PHASE: Date samples were logged-in: 10-9-19 (Signati	ure) Ala	<u>Chr</u>	CHOT TACTOT_		
10.	Describe type of packing in cooler: Locale cae						
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?						
14.	Did all sample labels agree with custody papers?						
15.	Were correct containers used for the tests indicated?						
16.	Was pH correct on preserved water samples?						N/A
17.	. Was a sufficient amount of sample sent for tests indicated?						
18.	Were bubbles absent in VOA samples? If NO, list by sample #:					NO	N/A
19.	Was the ARDL project coordinator notified of any deficiencies?				YES	NO	N/A
	Comments and/or Corrective Action:			ample T			
			Fraction		Fraction		
-			Area #		Area #		
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(E	By: Signature) Date:			· ·= j "			