LSASD Project ID: 23-0118

National Pollutant Discharge Elimination System National Compliance Initiative Reconnaissance Inspection

Heartland Catfish Company

55001 US HWY 82 West
Itta Bena, MS

Project Date: August 8th, 2023

Report Date: October 5th, 2023

Project Leader: Chris McHugh
Water Quality Section
Field Services Branch
Laboratory Services & Applied Science Division
USEPA – Region 4
980 College Station Road
Athens, Georgia 30605-2720

The ANSI National Accreditation Board attests that U.S. EPA Region 4 Laboratory Services and Applied Science Division fulfills the requirements of ISO/IEC 17025:2017 ANAB Forensic Testing & Calibration AR 3125:2019 in the field of Forensic Testing. The activities contained in this report fall within the scope of accreditation, Certificate Number: AT-2628. Expires 08 June 2024.

Project Requestor:

Jairo Castillo-Valenzuela, Supervisor
Wastewater Enforcement Section
Enforcement & Compliance Assurance Division
USEPA – Region 4
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Analytical Support:

Inorganic Chemistry Section
Laboratory Services Branch
Laboratory Services and Applied Science Division
980 College Station Rd Athens, GA 30605

Waypoint Analytical
235 Highpoint Dr
Ridgeland, MS, 39157

Approvals:

Chris McHugh
Water Quality Section
Field Services Branch

Approving Officials:

Joel Owen, Technical Reviewer
Water Quality Section
Field Services Branch

Greg White, Section Supervisor
Water Quality Section
Field Services Branch

Introduction

On August 8th, 2023, representatives of the U.S. Environmental Protection Agency (U.S. EPA) Region 4 Laboratory Services and Applied Science Division (LSASD) conducted a National Pollutant Discharge Elimination System (NPDES) reconnaissance sampling inspection at Heartland Catfish Company in Itta Bena, MS. The evaluation was requested by the Enforcement & Compliance Assurance Division (ECAD) Water Enforcement Branch as part of the agency's goal to address significant non-compliance facilities. The inspection followed the procedures listed in the LSASD Project No. 23-0118 Sample and Analysis Plan (SAP). An additional sample of oil and grease was collected that was not listed on the SAP, as requested by the project requestor. All standard operating procedures used to conduct this assessment were followed as prescribed and are listed in the project's SAP. Table 1 lists the sampling participants and facility staff.

Table 1 – Inspection Personnel

Name	Position Organization	Dates on site
Chris McHugh	Inspector U.S EPA Region 4 LSASD	August 8th, 2023
Asher Sampong	Inspector U.S EPA Region 4 LSASD	August 8th, 2023
Austin Smith	ECED Water 1 Branch MDEQ	August 8th, 2023

Background

Heartland Catfish Company is authorized by the NPDES Permit No. MS0051098 to discharge its effluent via outfall 001 into the Yazoo River. The facility maintains a multi-lagoon system to utilize anaerobic and aerobic digestion of the oils/grease from the process water.

Currently, this facility is listed on the EPA Office of Enforcement and Compliance Assurance (OECA) significant/category 1 non-compliance for a variety of effluent discharge limit violations for E. coli, oil and grease, and dissolved oxygen.

Study Area and Methodology

The study area for the sampling evaluation was the effluent discharge pipe from the lagoon. A grab sample was collected and analyzed for Total Suspended Solids (TSS), Ammonia (NH3), Nitrate/Nitrite (NO_3, NO_2), Total Kjeldahl Nitrogen (TKN), Phosphorus (P), Biochemical Oxygen Demand (BOD_5), E. coli, and oil and grease. In – situ parameters of pH and dissolved oxygen (DO) were measured with a multi –

parameter meter and total residual Chlorine (TRC) with a pocket chlorimeter. Analytical methods used during this study are provided in this project's SAP.

Sample Analysis Results

Below in Table 2 are the analytical results for the sample collected at EFF001. A duplicate sample was collected to evaluate sampling precision. The full analytical results listed below in Table 3 are included in the final report PDF portfolio.

Table 2: EPA Sample Results vs. Permitted Limits (Highlighted Exceedances)

Analyte	EPA Analytical Results / Duplicate Sample Result	Permitted Limit	Sample Location	Sample Date and Time
Total Suspended Solids (TSS)	39 mg/L / 75 mg/L	≤ 469 mg/L Daily Max	EFF001	8/8/23 16:30
BOD_5	28 mg/L *A, J, H-8 / 31 mg/L * A, J, H-8	≤ 196 mg/L Daily Max	EFF001	8/8/23 16:30
NH_3 as N	1.9 mg/L / 2.0 mg/L * J, QM-2	≤ 38 mg/L Weekly Max	EFF001	8/8/23 16:30
Nitrate/Nitrite	1.5 mg/L / 1.5 mg/L	N/A	EFF001	8/8/23 16:30
Total Phosphorus	8.7 mg/L / 8.9 mg/L	N/A	EFF001	8/8/23 16:30
Total Kjeldahl Nitrogen (TKN)	6.0 mg/L / 6.8 mg/L	N/A	EFF001	8/8/23 16:30
Oil and Grease	< 6.0 mg/L	< 15 mg/L	EFF001	8/8/23 16:30
E. coli – grab sample	54 MPN/100mL	< 410 of colonies/100 ml Weekly Max	EFF001	8/8/23 16:30
Total Nitrogen (sum of NH_3, Nitrate/Nitrite, TKN)	9.4 mg/L / 10.3 mg/L	N/A	EFF001	Calculated
Dissolved Oxygen (DO) – In-situ	6.22 mg/L	≥ 6.0 mg/L Weekly Min	EFF001	8/8/23 16:30

pH – In-situ	8.45 S.U.	6.0 S.U. < pH < 9.0	EFF001	8/8/23 16:30
Total Residual Chlorine - Grab	0.36 mg/L	< 1.5 mg/L	EFF001	8/8/23 16:30

A The analyte was analyzed in replicate. Reported value is an average value of the replicates.
H-8 Recommended analytical holding time exceeded.
J The identification of the analyte is acceptable; the reported value is an estimate.
QM-2 Matrix Spike Recovery greater than method control limits

Table 3: Analytical Results (See attached documents in PDF portfolio)

Analysis	Total Pages
TSS, $CBOD_5$	7
Nitrate/Nitrite, Phosphorus, TKN	10
E. coli	35
Oil and Grease	9

Quality Assurance/ Quality Control

Chemistry data for analyses conducted by LSASD Laboratory Services Branch (LSB) were verified and qualified based on Laboratory Operations and Quality Assurance Manual (LOQAM) found on https://www.epa.gov/quality/epa-region-4-laboratory-services-branch-laboratory-operations-and-quality-assurance-manual. Quality control for the analyses: TSS, CBOD5, Nitrate/Nitrite, Phosphorus TKN and Total Nitrogen can be found in the quality control section of each attached analytical data package (E232409 CNA FINAL 06 28 23 and E232409 CNA FINAL 07 14 23). E. coli analysis performed by Waypoint Analytical was analyzed using Standard Method 9223B – 2016 using EPA – Approved IDEXX Colilert. Oil and grease analysis was analyzed using Standard Method 1664B. All provided certifications and accreditations are valid and unexpired. Copies of the certifications and quality control are included in the attached analytical package 23-166-0055.

The duplicate sample collected was used to evaluate sample collection precision. The table below shows the relate percent difference between samples. The TSS relative percent difference may be affected by the sampling from the bank and the possible agitation of the sample location.

Table 4: Duplicate Sample Relative Percent Difference (RPD) Comparison

Analyte	Sample Result (mg/L)	Duplicate Sample Result (mg/L)	Difference (mg/L)	Average (mg/L)	Relative Percent Difference (RPD)
TSS	39	75	-36	57	63%
BOD5	28	31	-3	29.5	10%
NH3	1.9	2	-0.1	1.95	5%
Nitrate/Nitrite	1.5	1.5	0	1.5	0%
Total Phosphorus	8.7	8.9	-0.2	8.8	2%
TKN	6	6.8	-0.8	6.4	13%

Summary

Heartland Catfish Company maintains a lagoon system to treat its process water waste stream. Samples collected were all within the NPDES permit limits. The lagoon may need additional mechanical aeration to maintain the sufficient dissolved oxygen concentration required by the NPDES permit.

Operational Observations

- The Lagoon has one floating blower near the discharge point. (See Appendix A). Additional blowers located throughout the lagoon would increase the dissolved oxygen concentration.

Appendix A: Photo Log

Lagoon with one floating aerator by discharge point. Taken 8/8/23 16:15pm

End of Report

Waypoint ANALYTICAL

2790 Whitten Road, Memphis, TN 38133
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www.waypointanalytical.com

8/16/2023

EPA Region IV
Mr. Chris McHugh
980 College station Road
Athens, GA, 30605

Ref: Analytical Testing
Lab Report Number: 23-221-0002
Client Project Description: Analytical Testing

Dear Mr. Chris McHugh:
Waypoint Analytical, LLC. received sample(s) on 8/9/2023 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method. Where the laboratory was not responsible for the sampling stage (refer to the chain of custody) results apply to the sample as received.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Connie Cook

Connie Cook
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.

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Certification Summary

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/29/2024
Arkansas	State Program	88-0650	02/07/2024
California	State Program	2904	06/30/2024
Florida	State Program - NELAP	E871157	06/30/2024
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2024
Illinois	State Program - NELAP	200078	10/10/2023
Kentucky	State Program	80215	06/30/2024
Kentucky	State Program	KY90047	12/31/2023
Louisiana	State Program - NELAP	LA037	12/31/2023
Louisiana	State Program - NELAP	04015	06/30/2024
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2024
North Carolina	State Program	415	12/31/2023
Pennsylvania	State Program - NELAP	68-03195	05/31/2024
South Carolina	State Program	84002	06/30/2023
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2023
Virginia	State Program	00106	06/30/2024
Virginia	State Program - NELAP	460181	09/14/2023

Laboratory ID: WP RMS: Waypoint Analytical Mississippi, Inc., Ridgeland, MS

State	Program	Lab ID	Expiration Date
Arkansas	State Program	88-1409	02/01/2024
Kentucky	State Program	KY98013	12/31/2023
Louisiana	State Program - NELAP	04023	06/30/2024
North Carolina	State Program	694	12/31/2023

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Sample Summary Table

Report Number: **23-221-0002**

Client Project Description: **Analytical Testing**

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
91748	23-0118	Aqueous	08/08/2023 15:30	08/09/2023	9223B-2016	WP RMS
91749	23-0119	Aqueous	08/08/2023 10:20	08/09/2023	9223B-2016	WP RMS

WP RMS - Ridgeland, MS: Waypoint Analytical - MS, Ridgeland, MS

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10536
EPA Region IV
Mr. Chris McHugh
980 College station Road
Athens , GA 30605

Project Analytical Testing
Information :

Report Date : 08/18/2023
Received : 08/09/2023

Report Number : **23-221-0002**

REPORT OF ANALYSIS

Lab No : **91748**
Sample ID : **23-0118**

Matrix: **Aqueous**
Sampled: **8/8/2023 15:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
E-coli	**54**	MPN/100mL	1	1	08/08/23 17:11	HVS	9223B-2016

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Athens , GA 30605

Project Analytical Testing
Information :

Report Date : 08/18/2023
Received : 08/09/2023

Report Number : **23-221-0002**

REPORT OF ANALYSIS

Lab No : **91749**
Sample ID : **23-0119**

Matrix: **Aqueous**
Sampled: **8/8/2023 10:20**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
E-coli	**3**	MPN/100mL	1	1	08/08/23 17:11	HVS	9223B-2016

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

Parameter	Actual
Method of Analysis	SM-9223
SOP #	(matrix: AQU)
Test Code	
Method UOM	MPN/100 mL
Reporting Limit	1
Default Sample Size	100
Default Sample Size Units	mL
Analyst	HNS
Date/Time Batch Started	08/09/2023 17:11

Quanti-Tray Lot Number	LL0165
Sterile Water ID	—
Colilert Lot Number	CS-7016 L-1B
Incubator ID	BOD 6
Incubator Temp (Top)	35.5 / 35.5
Incubator Temp (Bottom)	35 / 35

		TOTAL			ECOLI			
Lab No	Sample Volume	Result (MPN/100 mL)	Large Wells	Small Wells	Result (MPN/100 mL)	Large Wells	Small Wells	4 Hr *
L 91749	100	149.7	44	16	3.1	3	0	
L 91748	1	>2419.6	49	48	54.6	31	5	

Date/Time In Incubator:	08/09/2023 17:11	UV Light ID:	UV Lamp 1
Date/Time out of Incubator:	08/10/2023 11:17	Comparator Lot #:	BW 320

All samples sizes are 100 mL unless otherwise noted.

* A Y/N in this column indicates whether an additional 4 hours incubation was required

Rev
8/15/23

WAYPOINT ANALYTICAL MISSISSIPPI
MICROBIOLOGY: Media Control Check

Instructions: Test each lot of Colilert media for performance by inoculation with three control bacteria minimally quarterly . Three control bacteria are used: EC Postive: *Escherichia coli* , TC Positive: *Klebsiella variicola* and a Negative Control: *Pseudomonas auerginosa* . Prepare and process as a sample. Record the results of the controls. Also process a sterile water control. If the sterile water control exhibits faint fluorescence or faint positive coliform result, discard and use a new batch of media. Incubate these controls at 35 + 0.5°C for 24 hours. Read and record the results.

		Yellow Color Observed	Fluorescence Observed
Expectations of Controls and Blank	E. coli	Yes	Yes
	Total Coliform	Yes	No
	Negative Control	No	No
	Blank (Sterile Water)	No	No

MICRO INC Top- 216531

Incubator ID:	BOD 6	**Thermometer ID:** MICRO INC BOTTOM				
Colilert ID:	CS-2016	Yellow Color Observed	Fluorescence Observed	Accept	Reject	Date/Initials
Colilert Lot#	FU 330					
Date/Time In:	06/09/2023 16:30					
Incubator Temp °C	35.5/35					
E. coli ID:	23-REAGT 0454	yes	yes	✓		HVS 06/10/23
Total Coliform ID:	23-REAGT-0451	yes	no	✓		↓
Negative Control ID:	23-REAGT-0452	no	no	✓		↓
Sterile Water ID:	23-REAGT-0896	no	no	✓		↓
Date/Time Out:	06/10/2023 11:00					
Incubator Temp °C	35.5/35					

Incubator ID:	BOD 6	**Thermometer ID:**				
Colilert ID:	CS-2107	Yellow Color Observed	Fluorescence Observed	Accept	Reject	Date/Initials
Colilert Lot#	LU550					
Date/Time In:	07/05/23 15:59					
Incubator Temp °C	35.5/35					
E. coli ID:	23-REAGT-0454	yes	yes	✓		HVS 07/06/23
Total Coliform ID:	23-REAGT-0451	yes	no	✓		↓
Negative Control ID:	23-REAGT-0452	no	no	✓		↓
Sterile Water ID:	23-REAGT-0896	no	no	✓		↓
Date/Time Out:	07/06/23 15:59					
Incubator Temp °C	35.6/35					

Waypoint Analytical Mississippi, Inc. **Multi-Well Sterility Check** Book / Page: 213

Add media lot # as well

Check sterility of multi-well trays one per lot by aseptically adding 100mL of tryptic soy broth, seal and incubate at 35 ± 0.5 °C for up to 48 hours.

No growth indicates sterility. Note that if the wells become very turbid (indicating a non-sterile condition), there could be gas production and concurrent blowout between wells.

		Growth - with nutrient broth or TSB					
		Test Started	24 hr check			48 hr check	
Lot Number DM 4/5/21	Date Rec'd	date/time/initials	Y	N	date/time/initials	Y N	date/time/initials
~~AM501~~ AT011	3/22/21	4/5/21 15:00	✓		4/6/21 15:05	✓	4/7/21 15:07
AT012	4/10/21	4/26/21 15:00	✓			✓	4/28/21 16:65
~~CT~~ T028	5/6/21	5/12/21 9:00	✓		5/13/21 12:16	✓	5/14/21 14:28
BT600	6/16/21	6/16/21 15:40	✓		6/17/21 16:44	✓	6/18/21 16:83
DT023J	~~7/19/21~~	7/19/21 13:16	✓		7/20/21 14:17	✓	7/21/21 14:50 KDC
FT017J	~~8/24/21~~ 8/	8/24/21 8:36	✓		8/25/21 8:35	✓	8/26/21 9:44 KDC
GT018J		9/23/21 8:47	✓		9/24/21 16:14	✓	9/27/21 8:46 KDC
FT015J	10/7/21	10/18/21 16:01	✓		10/19/21 16:57	✓	10/20/21 17:17 KDC
LT017J	1	1/11/22 11:39	✓		1/12/22 10:00	✓	1/13/22 13:40 KDC
~~AH06~~ wms 4/4/22 AU037J		~~3/31/22 14:48 wms~~	✓		~~4/1/22 15:23~~		
AH06 AU037J		4/4/22 13:50 wms	✓		4/5/22 13:50	✓	4/6/22 14:00 wms
CU022J		5/3/22 14:18 MD	✓		5/4/22 14:30	✓	5/5/22 14:14 MD
09722 DU023J		6/27/22 9:32 MD	✓		6/28/22 9:58	✓	6/29/22 10:25 MD
~~8/9/22~~ EU028J		8/3/22 13:50 MD	✓		8/4/22 14:00 MD	✓	8/5/22 14:45 MD
↓ GU004J		10/20/22 14:08 MD	✓		10/21/22 8:54 MD	✓	10/22/22 8:46 MD
HU007J		01/24/23 16:15 HNS	✓		01/25/23 16:35 HNS	✓	~~01/26/23~~ 01/26/23 16:40 HNS
KU017J (Media: 22-REAGENT 0269)		03/13/23 15:05 HNS	✓		03/14/23 16:11 HNS	✓	03/15/2023 15:10 HNS
LU011J MLA-22-REAG-0285		05/01/23 15:46 HNS	✓		05/02/23 15:46 HNS	✓	05/03/2023 15:46 HNS
BV 105J MLA 23-REAG-0133		07/10/23 15:34 HNS	✓		07/11/23 16:05 HNS	✓	07/12/23 15:34 HNS

Waypoint ANALYTICAL

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Shipment Receipt Form

Customer Number: **10536**
Customer Name: **EPA Region IV**
Report Number: **23-221-0002**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	NA

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◉ Yes	◯ No	◯ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Carleen Qualls Date & Time: 08/09/2023 08:56:33

USEPA Region 4 COC (LAB COPY)

DateShipped:

CarrierName:

AirbillNo:

CHAIN OF CUSTODY RECORD

Project Number: 23-0118

Cooler #:

No: 08/08/23-0006

Lab: Region 4 Lab

Lab Contact: Mike Beall

Lab Phone: 706-355-8856

Sample Identifier	CLP Sample No.	Media/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
23-0118		Wastewater/ mchugh, christopher	Grab	oil and grease(30), E.coli(30)	A (Ice +H2SO4 pH<2), B (ice) (3)	EFF001	08/08/2023 15:30	

EPA Region IV
Analytical Testing

23-221-0002
10536
08-09-2023
08:48:18

Special Instructions:	Shipment for Case Complete? N Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Ashley Sampey 16:40	08/08/23	K. Townsend	1640 8/8/23	16.2°C
				8/9/23	

USEPA Region 4 COC (LAB COPY)

DateShipped:
CarrierName:
AirbillNo:

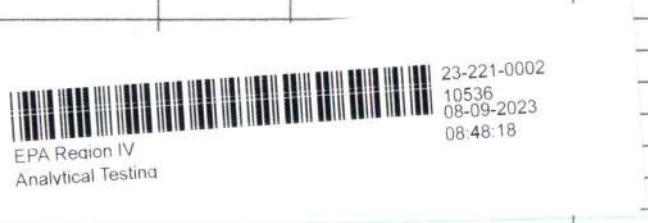
CHAIN OF CUSTODY RECORD

Project Number: 23-0119
Cooler #:

No: 08/08/23-0007

Lab: Region 4 Lab
Lab Contact: Mike Beall
Lab Phone: 706-355-8856

Sample Identifier	CLP Sample No.	Media/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
23-0119		Wastewater/ mchugh, christopher	Grab	E.coli(30)	A (ice) (1)	EFF001	08/08/2023 10:20	



Special Instructions:	**Shipment for Case Complete? N**
	Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Asher Sampang 16:40	08/08/23	K. Townsend	16:40	8/8/23 16.2°C
				8/9/23	

Waypoint ANALYTICAL

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8/29/2023

EPA Region IV
Mr. Asher Sampong
980 College Station Road
Athens, GA, 30605

Ref: Analytical Testing
Lab Report Number: 23-221-0003
Client Project Description: Analytical Testing

Dear Mr. Asher Sampong:
Waypoint Analytical, LLC. received sample(s) on 8/9/2023 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method. Where the laboratory was not responsible for the sampling stage (refer to the chain of custody) results apply to the sample as received.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Connie Cook

Connie Cook
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.

2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 ⁰ Fax 901.213.2440
www.waypointanalytical.com

Certification Summary

Laboratory ID: WP MTN: Waypoint Analytical, LLC., Memphis, TN

State	Program	Lab ID	Expiration Date
Alabama	State Program	40750	02/29/2024
Arkansas	State Program	88-0650	02/07/2024
California	State Program	2904	06/30/2024
Florida	State Program - NELAP	E871157	06/30/2024
Georgia	State Program	C044	11/14/2025
Georgia	State Program	04015	06/30/2024
Illinois	State Program - NELAP	200078	10/31/2024
Kentucky	State Program	80215	06/30/2024
Kentucky	State Program	KY90047	12/31/2023
Louisiana	State Program - NELAP	LA037	12/31/2023
Louisiana	State Program - NELAP	04015	06/30/2024
Mississippi	State Program	MS	11/14/2025
North Carolina	State Program	47701	07/31/2024
North Carolina	State Program	415	12/31/2023
Pennsylvania	State Program - NELAP	68-03195	05/31/2024
South Carolina	State Program	84002	06/30/2023
Tennessee	State Program	02027	11/14/2025
Texas	State Program - NELAP	T104704180	09/30/2023
Virginia	State Program	00106	06/30/2024
Virginia	State Program - NELAP	460181	09/14/2023

Laboratory ID: WP RMS: Waypoint Analytical Mississippi, Inc., Ridgeland, MS

State	Program	Lab ID	Expiration Date
Arkansas	State Program	88-1409	02/01/2024
Kentucky	State Program	KY98013	12/31/2023
Louisiana	State Program - NELAP	04023	06/30/2024
North Carolina	State Program	694	12/31/2023

2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 ⁰ Fax 901.213.2440
www.waypointanalytical.com

Sample Summary Table

Report Number: **23-221-0003**

Client Project Description: **Analytical Testing**

Lab No	Client Sample ID	Matrix	Date Collected	Date Received	Method	Lab ID
91750	23-0118	Aqueous	08/08/2023 15:30	08/09/2023	1664B	WP RMS

WP RMS - Ridgeland, MS: Waypoint Analytical - MS, Ridgeland, MS

Waypoint ANALYTICAL
2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 º Fax 901.213.2440
www.waypointanalytical.com

Summary of Detected Analytes

Project: Analytical Testing

Report Number: 23-221-0003

Client Sample ID	Lab Sample ID					
Method	**Parameters**	**Result**	**Units**	**Report Limit**	**Analyzed**	**Qualifiers**

No Analytes Detected

2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 ⁰ Fax 901.213.2440
www.waypointanalytical.com

Client: EPA Region IV
Project: Analytical Testing
Lab Report Number: 23-221-0003
Date: 8/28/2023

CASE NARRATIVE

Oil and Grease Method 1664B
Sample 91750 (23-0118)
Analyte: Oil and Grease
QC Batch No: G184332
This target analyte was outside the acceptable limits in the matrix spike. The LCS was within acceptable limits.

Waypoint ANALYTICAL

2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 º Fax 901.213.2440
www.waypointanalytical.com

10536
EPA Region IV
Mr. Asher Sampong
980 College Station Road
Athens , GA 30605

Project Analytical Testing
Information :

Report Date : 08/29/2023
Received : 08/09/2023

Connie Cook
Project Manager

Report Number : **23-221-0003**

REPORT OF ANALYSIS

Lab No : **91750**
Sample ID : **23-0118**

Matrix: **Aqueous**
Sampled: **8/8/2023 15:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
HEM: Oil and Grease	<6.0	mg/L	6.0	1	08/28/23 10:15	HVS	1664B

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

Waypoint ANALYTICAL
2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 ° Fax 901.213.2440
www.waypointanalytical.com

Quality Control Data

Client ID: **EPA Region IV**
Project Description: **Analytical Testing**
Report No: **23-221-0003**

QC Analytical Batch: G184332
Analysis Method: 1664B
Analysis Description: Oil and Grease

Lab Reagent Blank LRB Matrix: AQU
Associated Lab Samples: 91750

Parameter	Units	Blank Result	MQL	Analyzed
HEM: Oil and Grease	mg/L	< 1.4	1.4	08/28/23 10:15

Lab Reagent Blank 2 LRB2 Matrix: AQU
Associated Lab Samples: 91750

Parameter	Units	Blank Result	MQL	Analyzed
HEM: Oil and Grease	mg/L	< 1.4	1.4	08/28/23 10:15

Ongoing Precision and Recovery OPR

Parameter	Units	Spike Conc.	OPR Result	% Recovery	Analyzed	%Rec Limits	Qualifie
HEM: Oil and Grease	mg/L	40.0	41.2	103	08/28/23 10:15	78-114	

Matrix Spike L 91750-MS

Parameter	Units	Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS %Rec	%Rec Limits	Max RPD
HEM: Oil and Grease	mg/L	< 6.0	174		107		61.0*	78-114	

Waypoint ANALYTICAL

2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 ° Fax 901.213.2440
www.waypointanalytical.com

Shipment Receipt Form

Customer Number: **10536**
Customer Name: **EPA Region IV**
Report Number: **23-221-0003**

Shipping Method

◯ Fed Ex	◯ US Postal	◉ Lab	◯ Other :	
◯ UPS	◯ Client	◯ Courier	Thermometer ID:	NA

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◉ Yes	◯ No	◯ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)

☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Carleen Qualls Date & Time: 08/09/2023 09:05:50

USEPA Region 4 COC (LAB COPY)
DateShipped:
CarrierName:
AirbillNo:

CHAIN OF CUSTODY RECORD

Project Number: 23-0118
Cooler #:

No: 08/08/23-0006
Lab: Region 4 Lab
Lab Contact: Mike Beall
Lab Phone: 706-355-8856

Sample Identifier	CLP Sample No.	Media/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
23-0118		Wastewater/ mchugh, christopher	Grab	oil and grease(30), E.coli(30)	A (Ice +H2SO4 pH<2), B (ice) (3)	EFF001	08/08/2023 15:30	


23-221-0003
10536
08-09-2023
09:05:37
EPA Region IV
Analytical Testing

Special Instructions:	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Ashley Simpson 16:40	08/08/23	K. Townsend	1640 8/8/23	16.2°C
				8/9/23	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 23-0118
Project: 23-0118, Heartland Catfish Recon - Reported by Kristin Trapp

August 24, 2023

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 23-0118, Heartland Catfish Recon

FROM: Kristin Trapp
LSB Inorganic Chemistry Section Chief

THRU: Stacie Masters, Chief
Laboratory Services Branch

TO: Christopher McHugh

Attached are the final results for the analytical groups listed below. This report shall not be reproduced except in full without approval of the Region 4 laboratory. These analyses were performed in accordance with the Laboratory Services Branch's Laboratory Operations and Quality Assurance Manual (LSB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the LSB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Chapter 5 of the LSB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Classical/Nutrient Analyses (CNA)		
Demand	SM 5210B (Water)	ISO
Solids	USGS I-3765-85 (Water)	ISO

Report Narrative for Work Order: E233202 Analysis: CNA

8/24/23 KT BOD: Due to the LSASD building being closed on 8/15/23 due to extreme temperature and humidity levels, the final DO of these samples was read on 8/16/23 (day 6). Samples are qualified with an H-8 and J qualifier, which states that the analytical holding time was exceeded.

Sample Disposal Policy

Due to limited space for long term sample storage, LSB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 23-0118
Project: 23-0118, Heartland Catfish Recon - Reported by Kristin Trapp

SAMPLES INCLUDED IN THIS REPORT

Project: 23-0118, Heartland Catfish Recon

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
23-0118	E233202-01	Wastewater	8/8/23 16:30	8/9/23 14:00
23-0118-02	E233202-02	Wastewater	8/8/23 16:30	8/9/23 14:00

DATA QUALIFIER DEFINITIONS

A	The analyte was analyzed in replicate. Reported value is an average value of the replicates.
H-8	Recommended analytical holding time exceeded
J	The identification of the analyte is acceptable; the reported value is an estimate.

ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.

MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.

MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.

TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

ACCREDITATIONS:

ISO Accredited to ISO/IEC 17025:2017 and accreditation requirements for Forensic Science Testing Laboratories.

Refer to the certificate and scope of accreditation FT-0330 at:
http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

NR Not accredited for this test.

DW Accredited for conformance with ISO/IEC 17025:2017 and testing elements in the Fifth Edition of the Manual for the Certification of Laboratories Analyzing Drinking Water, EPA 815-R-05-004, 2005.

Refer to the certificate and scope of accreditation AT-2628 at:
http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

ISO/DW Accredited to ISO/IEC 17025:2017 and accreditation requirements for Forensic Science Testing Labs, and conformance with ISO/IEC 17025:2017 and testing elements in the Manual for the Certification of Laboratories Analyzing Drinking Water.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 23-0118
Project: 23-0118, Heartland Catfish Recon - Reported by Kristin Trapp

Classical/Nutrient Analyses

Project: 23-0118, Heartland Catfish Recon

Sample ID: 23-0118 **Lab ID:** E233202-01

Station ID: EFF001 **Matrix:** Wastewater

Date Collected: 8/8/23 16:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1640606	BOD, 5 Day	28	A, J, H-8	mg/L	2.0	8/10/23 9:14	8/16/23 11:00	SM 5210B
E1642818	Total Suspended Solids	39		mg/L	5.0	8/11/23 8:45	8/11/23 8:45	USGS I-3765-85

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 23-0118
Project: 23-0118, Heartland Catfish Recon - Reported by Kristin Trapp

Classical/Nutrient Analyses

Project: 23-0118, Heartland Catfish Recon

Sample ID: 23-0118-02 **Lab ID:** E233202-02

Station ID: EFF001 **Matrix:** Wastewater

Date Collected: 8/8/23 16:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1640606	BOD, 5 Day	31	A, J, H-8	mg/L	2.0	8/10/23 9:14	8/16/23 11:00	SM 5210B
E1642818	Total Suspended Solids	75		mg/L	5.0	8/11/23 8:45	8/11/23 8:45	USGS I-3765-85

Classical/Nutrient Analyses (CNA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2308022 - C SM5210 BOD										
Blank (2308022-BLK1)				Prepared: 08/10/23 Analyzed: 08/16/23						
SM 5210B										
BOD, 5 Day	U	2.0	mg/L							U
LCS (2308022-BS1)				Prepared: 08/10/23 Analyzed: 08/16/23						
SM 5210B										
BOD, 5 Day	210.80	2.0	mg/L	198.00		106	84.6-115.4			A
Batch 2308026 - C 2540 Solids										
Blank (2308026-BLK1)				Prepared & Analyzed: 08/11/23						
USGS I-3765-85										
Total Suspended Solids	U	5.0	mg/L							U
LCS (2308026-BS1)				Prepared & Analyzed: 08/11/23						
USGS I-3765-85										
Total Suspended Solids	102.10	5.0	mg/L	100.00		102	77.1-110			
LCS (2308026-BS2)				Prepared & Analyzed: 08/11/23						
USGS I-3765-85										
Total Suspended Solids	100.60	5.0	mg/L	100.00		101	77.1-110			
LCS (2308026-BS3)				Prepared & Analyzed: 08/11/23						
USGS I-3765-85										
Total Suspended Solids	104.40	5.0	mg/L	100.00		104	77.1-110			
LCS (2308026-BS4)				Prepared & Analyzed: 08/11/23						
USGS I-3765-85										
Total Suspended Solids	104.50	5.0	mg/L	100.00		104	77.1-110			
LCS Dup (2308026-BSD1)				Prepared & Analyzed: 08/11/23						
USGS I-3765-85										
Total Suspended Solids	107.80	5.0	mg/L	100.00		108	77.1-110	5.43	10	
Duplicate (2308026-DUP1)		**Source: E233002-02**		Prepared & Analyzed: 08/11/23						
USGS I-3765-85										
Total Suspended Solids	58.100	5.0	mg/L		57.900			0.345	10	

Classical/Nutrient Analyses (CNA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2308026 - C 2540 Solids										
MRL Verification (2308026-PS1)				Prepared & Analyzed: 08/11/23						**MRL-2**
USGS I-3765-85										
Total Suspended Solids	4.8000	5.0	mg/L	5.0000		96.0	57.1-130			U

Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
A	The analyte was analyzed in replicate. Reported value is an average value of the replicates.
MRL-2	MRL verification for Non-Potable Water matrix

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 23-0118
Project: 23-0118, Heartland Catfish Recon - Reported by Kristin Trapp

September 7, 2023

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 23-0118, Heartland Catfish Recon

FROM: Kristin Trapp
LSB Inorganic Chemistry Section Chief

THRU: Stacie Masters, Chief
Laboratory Services Branch

TO: Christopher McHugh

Attached are the final results for the analytical groups listed below. This report shall not be reproduced except in full without approval of the Region 4 laboratory. These analyses were performed in accordance with the Laboratory Services Branch's Laboratory Operations and Quality Assurance Manual (LSB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the LSB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Chapter 5 of the LSB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Classical/Nutrient Analyses (CNA)		
Ammonia as N	EPA 350.1 (Water)	ISO
Ammonia/TKN	EPA 351.2 (Water)	ISO
Nitrate and/or Nitrite	EPA 353.2 (Water)	ISO/DW
Phosphorous	EPA 365.1 (Water)	ISO

Sample Disposal Policy

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 23-0118
Project: 23-0118, Heartland Catfish Recon - Reported by Kristin Trapp

SAMPLES INCLUDED IN THIS REPORT

Project: 23-0118, Heartland Catfish Recon

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
23-0118	E233202-01	Wastewater	8/8/23 16:30	8/9/23 14:00
23-0118-02	E233202-02	Wastewater	8/8/23 16:30	8/9/23 14:00

DATA QUALIFIER DEFINITIONS

J	The identification of the analyte is acceptable; the reported value is an estimate.
QM-2	Matrix Spike Recovery greater than method control limits

ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.

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ACCREDITATIONS:

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Refer to the certificate and scope of accreditation FT-0330 at:
http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

NR Not accredited for this test.

DW Accredited for conformance with ISO/IEC 17025:2017 and testing elements in the Fifth Edition of the Manual for the Certification of Laboratories Analyzing Drinking Water, EPA 815-R-05-004, 2005.

Refer to the certificate and scope of accreditation AT-2628 at:
http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

ISO/DW Accredited to ISO/IEC 17025:2017 and accreditation requirements for Forensic Science Testing Labs, and conformance with ISO/IEC 17025:2017 and testing elements in the Manual for the Certification of Laboratories Analyzing Drinking Water.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 23-0118
Project: 23-0118, Heartland Catfish Recon - Reported by Kristin Trapp

Classical/Nutrient Analyses

Project: 23-0118, Heartland Catfish Recon

Sample ID: 23-0118 **Lab ID:** E233202-01

Station ID: EFF001 **Matrix:** Wastewater

Date Collected: 8/8/23 16:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7664-41-7	Ammonia as N	1.9		mg/L	0.050	8/17/23 15:34	8/21/23 13:00	EPA 350.1
E17148461	Total Kjeldahl Nitrogen	6.0		mg/L	0.25	8/28/23 15:33	8/29/23 11:31	EPA 351.2
E701177	Nitrate/Nitrite as N	1.5		mg/L	0.25	8/30/23 9:44	8/30/23 17:28	EPA 353.2
7723-14-0	Total Phosphorus	8.7		mg/L	0.10	8/14/23 15:53	8/16/23 16:15	EPA 365.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Laboratory Services and Applied Science Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 23-0118
Project: 23-0118, Heartland Catfish Recon - Reported by Kristin Trapp

Classical/Nutrient Analyses

Project: 23-0118, Heartland Catfish Recon

Sample ID: 23-0118-02 **Lab ID:** E233202-02

Station ID: EFF001 **Matrix:** Wastewater

Date Collected: 8/8/23 16:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7664-41-7	Ammonia as N	2.0	J, QM-2	mg/L	0.050	8/17/23 15:34	8/21/23 13:00	EPA 350.1
E17148461	Total Kjeldahl Nitrogen	6.8		mg/L	0.25	8/28/23 15:33	8/29/23 11:31	EPA 351.2
E701177	Nitrate/Nitrite as N	1.5		mg/L	0.050	8/30/23 9:44	8/30/23 17:28	EPA 353.2
7723-14-0	Total Phosphorus	8.9		mg/L	0.10	8/14/23 15:53	8/16/23 16:15	EPA 365.1

Classical/Nutrient Analyses (CNA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2308019 - C 350.1 Ammonia										
Blank (2308019-BLK1)				Prepared: 08/17/23 Analyzed: 08/21/23						
EPA 350.1										
Ammonia as N	U	0.050	mg/L							U
LCS (2308019-BS1)				Prepared: 08/17/23 Analyzed: 08/21/23						
EPA 350.1										
Ammonia as N	0.96100	0.050	mg/L	1.0030		95.8	90-110			
Matrix Spike (2308019-MS1)	**Source: E233202-02**			Prepared: 08/17/23 Analyzed: 08/21/23						
EPA 350.1										
Ammonia as N	2.9380	0.050	mg/L	1.0030	1.9580	97.7	90-110			
Matrix Spike (2308019-MS2)	**Source: E233203-01**			Prepared: 08/17/23 Analyzed: 08/21/23						
EPA 350.1										
Ammonia as N	1.4980	0.050	mg/L	1.0030	0.56500	93.0	90-110			
Matrix Spike Dup (2308019-MSD1)	**Source: E233202-02**			Prepared: 08/17/23 Analyzed: 08/21/23						
EPA 350.1										
Ammonia as N	3.0990	0.050	mg/L	1.0030	1.9580	114	90-110	5.33	10	QM-2
Matrix Spike Dup (2308019-MSD2)	**Source: E233203-01**			Prepared: 08/17/23 Analyzed: 08/21/23						
EPA 350.1										
Ammonia as N	1.6470	0.050	mg/L	1.0030	0.56500	108	90-110	9.48	10	
MRL Verification (2308019-PS1)				Prepared: 08/17/23 Analyzed: 08/21/23						
EPA 350.1										
Ammonia as N	0.055000	0.050	mg/L	0.050000		110	70-130			MRL-2
Batch 2308020 - C 351.2 TKN										
Blank (2308020-BLK1)				Prepared: 08/28/23 Analyzed: 08/29/23						
EPA 351.2										
Total Kjeldahl Nitrogen	U	0.050	mg/L							U
LCS (2308020-BS1)				Prepared: 08/28/23 Analyzed: 08/29/23						
EPA 351.2										
Total Kjeldahl Nitrogen	1.4070	0.050	mg/L	1.4600		96.4	90-110			

Classical/Nutrient Analyses (CNA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2308020 - C 351.2 TKN										
Matrix Spike (2308020-MS1)		**Source: E233202-02**		Prepared: 08/28/23 Analyzed: 08/29/23						
EPA 351.2										
Total Kjeldahl Nitrogen	7.7900	0.25	mg/L	1.0030	6.8050	98.2	90-110			XM-1
Matrix Spike (2308020-MS2)		**Source: E233203-01**		Prepared: 08/28/23 Analyzed: 08/29/23						
EPA 351.2										
Total Kjeldahl Nitrogen	5.6500	0.25	mg/L	1.0030	4.7050	94.2	90-110			XM-1
Matrix Spike Dup (2308020-MSD1)		**Source: E233202-02**		Prepared: 08/28/23 Analyzed: 08/29/23						
EPA 351.2										
Total Kjeldahl Nitrogen	8.9150	0.25	mg/L	1.0030	6.8050	210	90-110	13.5	20	XM-1
Matrix Spike Dup (2308020-MSD2)		**Source: E233203-01**		Prepared: 08/28/23 Analyzed: 08/29/23						
EPA 351.2										
Total Kjeldahl Nitrogen	5.8700	0.25	mg/L	1.0030	4.7050	116	90-110	3.82	20	XM-1
MRL Verification (2308020-PS1)				Prepared: 08/28/23 Analyzed: 08/29/23						
EPA 351.2										
Total Kjeldahl Nitrogen	0.075000	0.050	mg/L	0.050000		150	70-130			MRL-2, QR-2
Batch 2308033 - C 365.1 TPhos										
Blank (2308033-BLK1)				Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	U	0.010	mg/L							U
LCS (2308033-BS1)				Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	0.39300	0.010	mg/L	0.39300		100	90-110			
Matrix Spike (2308033-MS1)		**Source: E232905-01**		Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	2.0000	0.050	mg/L	0.50000	1.5150	97.0	90-110			
Matrix Spike (2308033-MS2)		**Source: E233002-11**		Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	2.3200	0.050	mg/L	0.50000	1.8500	94.0	90-110			

Classical/Nutrient Analyses (CNA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2308033 - C 365.1 TPhos										
Matrix Spike (2308033-MS3)	**Source: E233202-01**			Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	9.0700	0.10	mg/L	0.50000	8.7400	66.0	90-110			XM-1
Matrix Spike (2308033-MS4)	**Source: E233203-01**			Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	1.3800	0.020	mg/L	0.50000	0.89800	96.4	90-110			
Matrix Spike Dup (2308033-MSD1)	**Source: E232905-01**			Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	1.9950	0.050	mg/L	0.50000	1.5150	96.0	90-110	0.250	10	
Matrix Spike Dup (2308033-MSD2)	**Source: E233002-11**			Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	2.3150	0.050	mg/L	0.50000	1.8500	93.0	90-110	0.216	10	
Matrix Spike Dup (2308033-MSD3)	**Source: E233202-01**			Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	9.0000	0.10	mg/L	0.50000	8.7400	52.0	90-110	0.775	10	XM-1
Matrix Spike Dup (2308033-MSD4)	**Source: E233203-01**			Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	1.3900	0.020	mg/L	0.50000	0.89800	98.4	90-110	0.722	10	
MRL Verification (2308033-PS1)				Prepared: 08/14/23 Analyzed: 08/16/23						
EPA 365.1										
Total Phosphorus	0.0090000	0.010	mg/L	0.010000		90.0	70-130			MRL-2, U
Batch 2308070 - C 353.2 NO3-NO2										
Blank (2308070-BLK1)				Prepared & Analyzed: 08/30/23						
EPA 353.2										
Nitrate/Nitrite as N	U	0.050	mg/L							U
LCS (2308070-BS1)				Prepared & Analyzed: 08/30/23						
EPA 353.2										
Nitrate/Nitrite as N	0.48070	0.050	mg/L	0.50000		96.1	90-110			

Classical/Nutrient Analyses (CNA) - Quality Control
US-EPA, Region 4, LSASD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2308070 - C 353.2 NO3-NO2										
LCS (2308070-BS1)				Prepared & Analyzed: 08/30/23						
Matrix Spike (2308070-MS1)		**Source: E233202-01**		Prepared & Analyzed: 08/30/23						
EPA 353.2										
Nitrate/Nitrite as N	4.1150	1.2	mg/L	2.5000	1.5225	104	90-110			
Matrix Spike Dup (2308070-MSD1)		**Source: E233202-01**		Prepared & Analyzed: 08/30/23						
EPA 353.2										
Nitrate/Nitrite as N	4.0720	1.2	mg/L	2.5000	1.5225	102	90-110	1.05	10	
MRL Verification (2308070-PS1)				Prepared & Analyzed: 08/30/23						
EPA 353.2										
Nitrate/Nitrite as N	0.054200	0.050	mg/L	0.050000		108	70-130			MRL-2

Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
MRL-2	MRL verification for Non-Potable Water matrix
QM-2	Matrix Spike Recovery greater than method control limits
QR-2	MRL verification recovery greater than upper control limits.
XM-1	Sample background/spike ratio higher than method evaluation criteria