



Department of  
**Health**

**DIVISION OF LABORATORY SERVICES**

Knoxville Regional Laboratory  
2101 Medical Center Way  
Knoxville, TN 37920  
885-549-5201

Nashville Central Laboratory  
630 Hart Lane  
Nashville, TN 37243-0801  
615-262-6300

**Sent To:** Bill Moore  
Internal

Judy Manners  
TDOH

**Lab ID:** N1711078  
Nashville Central Laboratory

Sarah Driskell  
Internal

**Sampling Agency:** TDOH



\*TDOH.N1711078.M\*

This is to certify that the following results were determined using good laboratory practices and in accordance with federal or state approved methodologies.

A handwritten signature in black ink, appearing to read 'Anthony Wilson'.

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Anthony Wilson  
Analytical Supervisor

Lab-Sample Number: N1711078-01  
 Project Name: UDWI  
 Sample Description: 112

External Id #:

Sampler Project Name: UDWI

Project Site No.:

Station No.: 112  
 Date/Time Collected: 11/15/2017 09:45  
 Sampler's Name: Judy Manners  
 County: Polk - 70  
 Sample Matrix: Water  
 EFO: Chattanooga EFO  
 Sampling Agency: TDOH  
 Billing Code: HL00017233  
 Send Report To:  
 Priority Date: 12/10/2017  
 Date/time Received: 11/15/2017

Agency Invoiced: TDOH

Received By: Luz Maderal

TEST: ICP-OES		METHOD: 200.7				
PERFORMING LAB: Nashville Central Laboratory						
ANALYTE	RESULT	UNITS	Qual	MDL	SQL	ANALYZED BY DATE
Calcium	27.5	mg/L		0.0610	0.100	Manomohan Pat 11/17/2017
Iron	U	µg/L	U	5.30	10.0	Manomohan Pat 11/17/2017
Magnesium	3.64	mg/L		0.0280	0.100	Manomohan Pat 11/17/2017
Potassium	1.06	mg/L		0.0410	0.100	Manomohan Pat 11/17/2017
Sodium	1.11	mg/L		0.0470	0.100	Manomohan Pat 11/17/2017
Hardness, Calcium	68.7	mg/L		0.152	0.25	Manomohan Pat 11/17/2017
Hardness, Ca, Mg	83.7	mg/L		0.115	0.25	Manomohan Pat 11/17/2017

TEST: ICP Digestion (Water)		METHOD: 200.2				
PERFORMING LAB: Nashville Central Laboratory						
ANALYTE	RESULT	UNITS	Qual	MDL	SQL	ANALYZED BY DATE
Generic Prep	Completed					11/16/2017

TEST: ICP-MS		METHOD: 200.8				
PERFORMING LAB: Nashville Central Laboratory						
ANALYTE	RESULT	UNITS	Qual	MDL	SQL	ANALYZED BY DATE
Aluminum	4.27	µg/L	J	2.50	10.0	Shannon Spence 11/20/2017
Antimony	U	µg/L	U	0.310	1.00	Shannon Spence 11/20/2017
Arsenic	U	µg/L	U	0.770	5.00	Shannon Spence 11/20/2017
Barium	39.6	µg/L		0.330	5.00	Shannon Spence 11/20/2017
Beryllium	U	µg/L	U	0.250	1.00	Shannon Spence 11/20/2017
Boron	U	µg/L	U	3.20	10.0	Shannon Spence 11/20/2017
Cadmium	U	µg/L	U	0.260	1.00	Shannon Spence 11/20/2017
Chromium	0.956	µg/L	J	0.810	5.00	Shannon Spence 11/20/2017
Cobalt	U	µg/L	U	0.340	1.00	Shannon Spence 11/20/2017
Copper	U	µg/L	U	0.500	1.00	Shannon Spence 11/20/2017
Lead	U	µg/L	U	0.290	1.00	Shannon Spence 11/20/2017
Manganese	U	µg/L	U	0.400	1.00	Shannon Spence 11/20/2017
Nickel	0.660	µg/L	J	0.460	1.00	Shannon Spence 11/20/2017
Selenium	U	µg/L	U	0.920	5.00	Shannon Spence 11/20/2017

Silver	U	µg/L	U	0.0760	0.250	Shannon Spence	11/20/2017
Strontium	201	µg/L		0.520	1.00	Shannon Spence	11/20/2017
Thallium	U	µg/L	U	0.440	1.00	Shannon Spence	11/20/2017
Vanadium	U	µg/L	U	2.60	5.00	Shannon Spence	11/20/2017
Zinc	U	µg/L	U	1.70	5.00	Shannon Spence	11/20/2017

<b>TEST: Mercury</b>		<b>METHOD: 245.1</b>					
<b>PERFORMING LAB: Nashville Central Laboratory</b>							
<b>ANALYTE</b>	<b>RESULT</b>	<b>UNITS</b>	<b>Qual</b>	<b>MDL</b>	<b>MQL</b>	<b>ANALYZED BY</b>	<b>DATE</b>
Mercury	U	µg/L	U	0.0360	0.200	Anthony Wilson	11/20/2017

<b>TEST: Mercury Digestion (Water)</b>		<b>METHOD: 245.1</b>					
<b>PERFORMING LAB: Nashville Central Laboratory</b>							
<b>ANALYTE</b>	<b>RESULT</b>	<b>UNITS</b>	<b>Qual</b>	<b>MDL</b>	<b>MQL</b>	<b>ANALYZED BY</b>	<b>DATE</b>
Generic Prep	Completed						11/20/2017

Lab-Sample Number: N1711078-01A  
Project Name: UDWI  
Sample Description: 112

External Id #:

**Sampler Project Name:**

**Project Site No.:**

**Station No.:** 112

**Date/Time Collected:** 11/15/2017 09:45

**Sampler's Name:** Judy Manners

**County:** Polk - 70

**Sample Matrix:**

**EFO:** Chattanooga EFO

**Sampling Agency:** TDOH

**Billing Code:**

**Agency Invoiced:** TDOH

**Send Report To:**

**Priority Date:**

**Date/time Received:** 11/15/2017

**Received By:** Luz Maderal

**TEST:** ICP-MS

**METHOD:** 200.8

**PERFORMING LAB:** Nashville Central Laboratory

ANALYTE	RESULT	UNITS	Qual	MDL	MQL	ANALYZED BY	DATE
Lithium	0.878	µg/L	J	0.360	1.00	Shannon Spence	11/28/2017

<u>Qualifier</u>	<u>Description</u>
J	Estimated value between MDL and MQL
MDL	Method Detection Limit
MQL	Method Quantitation Limit
U	Undetected
J	Result is less than the MQL but greater than or equal to the MDL and the concentration is an approximate value



N1711078 -001

PROJECT NAME:	UDWI	WATERBODY NAME:	N/A	*	Metals	
STATION NUMBER:	112	COUNTY:	Hartmann	X	aluminum, Al	
STREAM MILE:	N/A		Psik	X	antimony, Sb	
DESCRIPTION:	Wills Springs			X	arsenic, As	
LATITUDE:	N/A	LONGITUDE:	N/A	X	barium, Ba	
Matrix:	N/A	Depth:	N/A	X	beryllium, Be	
COLLECTED:	DATE 11/15/17	TIME 9:45		X	boron, B	
SAMPLER'S FULL NAME (printed):	Judy Manners			X	cadmium, Cd	
SAMPLING AGENCY: TDH				X	calcium, Ca	
IF PRIORITY, DATE NEEDED:				X	chromium, Cr	
SEND REPORT TO:	Judy.Manners@tn.gov	BILLING CODE	HL00017233	X	cobalt, Co	

Env. Microbiology	Gen. Inorganics (con't)	Other General Inorganics:			
X coliform, fecal*	X ortho-phosphoric				
X coliform, total*	X silica*				
X strep. fecal*	X sulfate*				
X E. Coli*	X turbidity*				
Enterococcus*	Preserved, Nutrient				
* General Inorganics	COD*				
Not Preserved	nitrogen, ammonia				
acidity as CaCO <sub>3</sub> *	nitrogen, NO <sub>2</sub> & NO <sub>3</sub>				
alkalinity as CaCO <sub>3</sub> *	nitrogen, total Kjeldahl				
BOD, 5-day*	X nitrogen, total organic				
CBOD, 5-day*	X phosphate, total				
X chloride*	SPECIAL PRESERVATION				
chromium, hexavalent	cyanide				
color	oil and grease				
conductivity*	phenols, total				
X fluoride*	sulfide, total*				
MIBAS*	TIC (TIC)				
X nitrogen, nitrate*					
X nitrogen, nitrite*					
pH					
residue, dissolved*	Asbestos				
residue, settleable*	bulk asbestos				
residue, suspended*	other microscopic				
residue, total*					

\* denotes analyses performed only on water

FIELD DETERMINATIONS

Conductivity, (ohms)	Chlorine, residual	Other Field Parameters:
Dissoved Oxygen, (mg/L)	Turbidity, (NTU)	
Temperature, (°C)	ORP, (mv)	
pH	Flow Rate	

Chain of Custody and Supplemental Information  
Only one chain of custody form is required per sample or point (if all collected at the same time)

1. Collected By: *Judy Manners* Date: 11/15/17 Time: 9:45  
 Delivered to: *Judy Manners* Date: 11/15/17 Time: 9:45  
 2. Received by: *Judy Manners* Date: 11/15/17 Time: 9:45

3. Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 4. Received in Lab by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 5. Received in Lab by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 6. Received in Lab by: *J. Manners* Date: 11/15/17 Time: 12:00  
 Logged in by: *J. Manners* Date: 11/15/17 Time: 12:00

PROJECT/SITE NO: UDWI  
 STATION NUMBER: 112  
 DESCRIPTION: *W. Lakes Spring*  
 STREAM MILE: N/A  
 COLLECT DATE: 11/5/17  
 CONTACT HAZARD: Judy Manners  
 SAMPLER'S NAME (printed): Judy Manners  
 SAMPLING AGENCY: TDOH  
 IF PRIORITY, DATE NEEDED:  
 SEND REPORT TO: Judy.Manners@tn.gov  
 DEPTH: N/A  
 TIME: 9:45  
 mR/hr Reading: N/A  
 Billing Code: HL00017233  
 phone # 615-253-8664  
 fax #

PROJECT NAME: *Polk*  
 COUNTY: *Madison*  
 DEPTH: N/A  
 TIME: 9:45  
 mR/hr Reading: N/A  
 Billing Code: HL00017233  
 phone # 615-253-8664  
 fax #

Sample Type  
 Air  
 Water  
 Sludge  
 Vegetation  
 Other  
 Milk  
 Tissue  
 Soil  
 Sediment  
 Swipe  
 Liquid  
 Solid

Request	EPA Method	RADIOCHEMICAL TEST	Request	EPA Method	RADIOCHEMICAL TEST	Air Samples	Field Comments:
	900.0	GROSS ALPHA (SUSPENDED)		905.0	STRONTIUM 90	Total Hours _____ Volume _____	
	900.0	GROSS ALPHA (DISSOLVED)		906.0	TRITIUM (H-3)	Sample Filtration _____ Sample Acidification _____	
	900.0	GROSS BETA (TOTAL)		00-07	THORIUM (TOTAL)		
	900.0	GROSS BETA (SUSPENDED)		908.0	URANIUM (TOTAL)		
	900.0	GROSS BETA (DISSOLVED)		901.1	GAMMA RADIONUCLIDES		
	R.1.3	GROSS ALPHA & GROSS BETA BY LIQUID LIQUID SCINTILLATION COUNTING	X		ISOTOPIC URANIUM BY ALPHASPECTROSCOPY		
					ADDITIONAL ANALYSES:		
					RADON		

N1711078 -001

Chain of Custody Information  
 1. Collected by *Judy Manners*  
 Date *11/5/17* Time *9:45*  
 Delivered to *Judy Manners*  
 Date *11/5/17* Time *8:56*  
 2. Received by \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_  
 Delivered to \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_  
 3. Received by \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_  
 Delivered to \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_

Additional Information  
 1. Approximate volume of sample:  
 2. Nearest town or city:  
 3. Others present at collection:  
 4. Field collection procedure, handling and/or preservation of this sample:  
 5. Mode of transportation to lab:  
 6. Sample sealed by:  
 7. Date sample sealed:  
 8. Remarks:

Central Laboratory Sample Receipt  
 pH (if applicable):  
 Temperature of temperature control:  
 Sample container condition:  
 Custody seal condition:  
 Was sample container properly labeled?  
 If not, explain:



N1711078 -002

PROJECT NAME:	UDWI	WATERBODY NAME:	N/A	*	Metals	
STATION NUMBER:	113	COUNTY:	Hamilton	X	aluminum, Al	
STREAM MILE:	N/A	CANON:	Canon	X	antimony, Sb	
DESCRIPTION:	Banks Rd Spring			X	arsenic, As	
LATITUDE:	N/A	LONGITUDE:	N/A	X	barium, Ba	
Matrix:	N/A	Depth:	N/A	X	beryllium, Be	
COLLECTED:	DATE: 11/15/17	TIME: 12:00		X	boron, B	1. Collected by [Signature] Time 12:00
SAMPLER'S FULL NAME (printed):	Judy Manners			X	cadmium, Cd	Date 11/15/17 Time 12:00
SAMPLING AGENCY:	TDH			X	calcium, Ca	Delivered to [Signature] Time 2:00
IF PRIORITY, DATE NEEDED:		BILLING CODE:	HL00017233	X	chromium, Cr	Date 11/15/17 Time 2:00
SEND REPORT TO:	Judy.Manners@tn.gov			X	cobalt, Co	2. Received by [Signature] Time
* Env. Microbiology		Gen. Inorganics (cont)		X	copper, Cu	Date
coliform, fecal*		ortho-phosphate		X	iron, Fe	Delivered to [Signature] Time
coliform, total*		silica*		X	lithium, Li	Date
strep. fecal*	X	sulfate*		X	lead, Pb	3. Received by [Signature] Time
E. Coli*		turbidity*		X	magnesium, Mg	Date
Enterococcus*		Preserved, Nutrient		X	manganese, Mn	Delivered to [Signature] Time
* General Inorganics		COD*		X	mercury, Hg	Date
Not Preserved		nitrogen, ammonia		X	nickel, Ni	4. Received in Lab by [Signature] Time
acidity as CaCO <sub>3</sub> *		nitrogen, NO <sub>3</sub> & NO <sub>2</sub>		X	potassium, K	Date
alkalinity as CaCO <sub>3</sub> *		nitrogen, total Kjeldahl		X	selenium, Se	5. Received in Lab by [Signature] Time
BOD, 5-day*		nitrogen, total organic		X	silver, Ag	Date
CBOD, 5-day*	X	phosphate, total		X	sodium, Na	6. Received in Lab by [Signature] Time
chloride*		SPECIAL PRESERVATION		X	strontium, Sr	Date 11/15/17 Time 12:00
chromium, hexavalent		cyanide		X	thallium, Tl	Logged in by [Signature] Time 12:00
color		oil and grease		X	vanadium, V	Date 11/15/17 Time 12:00
conductivity*		phenols, total		X	zinc, Zn	
fluoride*		sulfide, total*		X	hardness, Ca as CaCO <sub>3</sub> *	
MBAS*		<del>TOC*</del>		X	hardness, total as CaCO <sub>3</sub> *	
nitrogen, nitrate*		TCLP			Additional Information	
nitrogen, nitrite*		Other:			1. Others present at collection	
pH		Asbestos			2. Other samples collected	
residue, dissolved*		bulk asbestos			3. Mode of transportation to lab	
residue, settleable*		other microscopic			4. Cooler sealed by	
residue, suspended*					5. Date cooler sealed	
residue, total*					6. Remarks	

\* denotes analyses performed only on water

FIELD DETERMINATIONS

Conductivity, (u/mhos)	Chlorine, residual	Other Field Parameters:
Dissolved Oxygen, (mg/L)	Turbidity, (NTU)	
Temperature, (°C)	ORP, (mv)	
pH	Flow Rate	



PROJECT/SITE NO: UDWI  
 STATION NUMBER: 113  
 DESCRIPTION: *River at Spring*  
 STREAM MILE: N/A  
 COLLECT DATE: 11/5/17  
 CONTACT HAZARD: mR/hr Reading: N/A  
 SAMPLERS NAME (printed): Judy Manners  
 SAMPLING AGENCY: TDOH  
 BILLING CODE: HL00017233  
 IF PRIORITY, DATE NEEDED:  
 SEND REPORT TO: Judy.Manners@tn.gov  
 phone # 615-253-6664  
 fax #

PROJECT NAME: *Cannon*  
 COUNTY: *Henderson*  
 DEPTH: N/A  
 TIME: 12:00  
 Field Comments:  
 Air Samples  
 Volume \_\_\_\_\_  
 Total Hours \_\_\_\_\_  
 Sample Filtration \_\_\_\_\_  
 Sample Acidification \_\_\_\_\_

Request	EPA Method	RADIOCHEMICAL TEST	Request	EPA Method	RADIOCHEMICAL TEST
X	9990.0	GROSS ALPHA (TOTAL)	905.0	STRONTIUM 89	
	900.0	GROSS ALPHA (SUSPENDED)	905.0	STRONTIUM 90	
	900.0	GROSS ALPHA (DISSOLVED)	905.0	TITANIUM (H-3)	
X	9990.0	GROSS BETA (TOTAL)	00-07	THORIUM (TOTAL)	
	900.0	GROSS BETA (SUSPENDED)	908.0	URANIUM (TOTAL)	
	900.0	GROSS BETA (DISSOLVED)	901.1	GAMMA RADIONUCLIDES	
	R 1.3	GROSS ALPHA & GROSS BETA BY LIQUID LIQUID SCINTILLATION COUNTING	X	ADDITIONAL ANALYSES:	RADON

R  
N1711078 -002

Chain of Custody Information

1. Collected by	<i>Judy Manners</i>	Date	11/5/17	Time	12:00
Delivered to	<i>[Signature]</i>	Date	11/5/17	Time	2:00
2. Received by	<i>[Signature]</i>	Date	11/5/17	Time	2:00
Delivered to		Date		Time	
3. Received by		Date		Time	
Delivered to		Date		Time	
4. Received in Lab by	<i>[Signature]</i>	Date	11/5/17	Time	1400
Logged in by	<i>[Signature]</i>	Date	11/5/17	Time	1400

Additional Information

- Approximate volume of sample:
- Nearest town or city:
- Others present at collection:
- Field collection procedure, handling and/or preservation of this sample:
- Mode of transportation to lab:
- Sample sealed by:
- Date sample sealed:
- Remarks:

Central Laboratory Sample Receipt

pH (if applicable):

Temperature of temperature control:

Sample container condition:

Custody seal condition:

Was sample container properly labeled? If not, explain:

