

June 12, 2018

Mr. Kyle Scripter Supervisor of Maintenance Waverly Community Schools 3809 West Saint Joseph Lansing, Michigan 48917 kscripter@waverlyk12.net

RE: **Project # AE180001 WavCS** Total Maximum Daily Load (TMDL) Sampling Report Colt Elementary School

Dear Scripter:

Arch Environmental Group, Inc. recently conducted a round of TMDL Wet Weather Sampling at discharge point(s) CLT-07.CB.DP and CLT-08.MH.DP at Colt Elementary School on May 3, 2018, in accordance with the applicable NPDES Permit requirements. TMDL sampling is used to determine the level of specific pollutants in the stormwater system by collecting samples from 50% of the district's stormwater outfalls/discharge points during a representative wet weather event. The sampling results are then evaluated to determine if a particular point source needs to be addressed to reduce the pollutant load of the receiving waters. A report regarding the findings of this round of TMDL Sampling is attached.

If you have questions regarding this report, please feel free to contact please feel free to contact the cleanWATER team at (248) 426-0165.

Sincerely,

Arch Environmental Group, Inc. Environmental Services

Lessen MP ufetti

Jessica Perfetti Certified Industrial Site Stormwater Operator, I-14671

GRAND RAPIDS (616) 930-4116 Cedar Springs, MI **CHICAGO** (847) 462-9687 Cary, IL

TABLE OF CONTENTS

- 1.0 Project Summary
- 2.0 TMDL Sampling Procedures
- 3.0 TMDL Sampling Results
- 4.0 Conclusion
- 5.0 Best Management Practices to Reduce TMDL Pollutant Loads

Attachments:

TMDL Screening Inspection Log(s) Storm Sewer System Site Map Analytical Results & Chain of Custody

1.0 / Project Summary

Arch Environmental Group, Inc. (AEG) recently conducted a round of Total Maximum Daily Load (TMDL) Sampling for E. coli at discharge location(s) CLT-07.CB. DP and CLT-08.MH.DP at Colt Elementary School on May 3, 2018, in accordance with the applicable National Pollutant Discharge Elimination System (NPDES) Permit requirements.

A TMDL describes the process used to determine how much of a pollutant a lake or stream can assimilate and sets pollutant reduction targets for that water body. NPDES Municipal Separate Storm Sewer System (MS4) permits require regulated public entities located within urbanized areas that discharge storm water to an MS4 which leads to a water body designated with a TMDL, to demonstrate progress toward meeting Water Quality Standards (WQS). If the TMDL was written for E. coli or Total Phosphorus (TP), the MS4 permits further require permittees to collect representative samples of storm water discharges from their points of discharge to MS4s which lead to the impacted water bodies.¹ Based on a review of the sampling results, Stormwater Best Management Practices (BMP) implementation will be reviewed and BMPs may be updated to ensure progress toward achieving TMDL pollutant load reductions.

The receiving water body of Waverly Community Schools is the Grand River. The Grand River has been designated with a TMDL of E. coli. Further details on the TMDL listed can be found in the document "Total Maximum Daily Load for E. coli for the Grand River Kent County." Some examples of potential sources of E. coli in waterways include fecal material from livestock, humans, wildlife, waterfowl such as geese, and sanitary systems.

2.0 / TMDL Sampling Procedures

Applicable TMDL sampling was conducted with guidance from the "Storm Water Sampling Guidance for Total Phosphorus & E. coli." Sampling was conducted at designated outfalls/discharge points after a dry period of approximately 72 hours and during a rain event of approximately .25 inches or more. Please see the attached TMDL Screening Inspection Log(s) for specific rainfall amounts. Sampling was conducted on May 3, 2018 and the last significant rain event was on April 15, 2018. The weather history for the rain event is available upon request.

When a dip-cup or similar sampling device was needed to collect the sample, a blank sample was collected to ensure no contamination was coming from the sampling device. The blank collected during this round of TMDL sampling came back at zero (0) CFU indicating that the sampling device used was not contaminated. The lab results of the blank sample are attached. Furthermore, all sampling devices were decontaminated with bleach water and distilled water between each sampling location according to the protocol laid out in the "Storm Water Sampling Guidance for Total Phosphorus & E. coli." Each location sampled was analyzed for pH and temperature while onsite and the sampled outfall/discharge point (OF/DP) was inspected for color, odor, and abnormal vegetative growth. The collected samples were delivered to an external laboratory for analysis.

3.0 / TMDL Sampling Results

TMDL Benchmark Standards for E. coli:

• E. coli: The WQS for E. coli is the maximum amount of E. coli that is allowable in surface waters of the state. These standards are known as total body contact and partial body contact standards. Total body contact is a more conservative standard used during the summer to protect swimmers during total body contact and has the daily maximum of 300 CFU per 100 milliliters (mL). This applies to the warmer months

¹ Storm Water Sampling Guidance for Total Phosphorus & *E. coli*. November 24, 2009. DEQ TMDL Sampling Report Page 3 Project # AE180001 WavCS Colt Elementary School



of May 1st -October 31st and is the standard being used in this report. Partial body contact is the daily maximum of 1,000 CFU per 100 mL and applies to the waterways year-round.²

Structure ID: CLT-07.CB.DP	Structure Type: Catch Basin	Location: North of school, northeast corner of track.
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At the time of the sampling, clear water flow was noted, and CLT-07.CB.DP was free of odors, and abnormal vegetative growth. AEG collected a grab sample from CLT-07.CB.DP and the sample was screened for temperature and pH in the field. An E. coli grab sample was delivered to an external laboratory for analysis. Results from the sampling are summarized below. A more detailed TMDL Screening Inspection Log is also attached at the end of the report.

Parameter:	Results:	TMDL Benchmark Standard:	Units:
рН	7.75	6.5 - 9	pH Units
Temperature	13.6	N/A	Celsius
E. coli	26.2	300	CFU per 100mL

The sample results for CLT-07.CB.DP did not identify elevated levels of pH or E. coli above the TMDL Benchmark Standards. The reported levels for E. coli (26.2 CFU) are below the Michigan Public Health Department standards for Total Body Contact (E. coli >300 CFU).

Structure ID: CLT-08.MH.DP	Structure Type: Manhole	Location: Northeast corner of property in the grass.
Structure ID. CET-00.IVIII.DP	Structure rype. Mannole	Location. Northeast conner of property in the grass.

At the time of the sampling, clear water flow was noted, and CLT-08.MH.DP was free of odors, and abnormal vegetative growth. Sampled flow was coming from a field drain which drains the surrounding field/playground area. AEG collected a grab sample from CLT-08.MH.DP and the sample was screened for temperature and pH in the field. An E. coli grab sample was delivered to an external laboratory for analysis. Results from the sampling are summarized below. A more detailed TMDL Screening Inspection Log is also attached at the end of the report.

Parameter:	Results:	TMDL Benchmark Standard:	Units:
рН	7.3	6.5 - 9	pH Units
Temperature	14.7	N/A	Celsius
E. coli	365.4	300	CFU per 100mL

The sample results for CLT-08.MH.DP did not identify elevated levels of pH above the TMDL Benchmark Standards and the temperature was close in value to that of the sample collected at CLT-07.CB.DP. However, the highlighted value in the table above indicates that for discharge point CLT-08.MH.DP, the reported levels for E. coli (365.4 CFU) are slightly above the Michigan Public Health Department standards for Total Body Contact (E. coli >300 CFU).

4.0 / Conclusion

AEG did not identify any elevated levels of pH or E. coli above the TMDL Benchmark Standards for discharge location CLT-07.CB.DP sampled at Colt Elementary School on May 3, 2018. The sample results for CLT-08.MH.DP did not identify elevated levels of pH above the TMDL Benchmark Standards. However, AEG did identify slightly elevated levels of E. coli above the TMDL Benchmark Standards for discharge location CLT-08.MH.DP. Sampled

² "Michigan's E. Coli Water Quality Standard Guidance" May, 2016. MDEQ
 TMDL Sampling Report Page 4
 Project # AE180001 WavCS
 Colt Elementary School



flow in CLT-08.MH.DP was from a field drain which drains the surrounding field/playground area. Geese and other wildlife feces are likely the contributor to the slightly elevated E. coli levels. There are no signs of an illicit connection and no other pipes besides the field drain and sheet flow from the grassy field enter this basin.

Arch Environmental Group, Inc. recommends that the elevated location CLT-08.MH.DP be re-assessed each permit cycle to ascertain whether greater or reduced potential for E. coli TMDL contribution has occurred. Geese, gulls and ducks are speculated to be a major bacterial source in urban areas, particularly where large populations congregate. E. coli (*Escherichia Coli*) is a sub-group of the fecal coliform group and can be used as an indicator of fecal contamination. E. coli bacteria exist in animal and human fecal matter.³ Elevated levels of E. coli can occur at sites which have populations of wild or domesticated animals. E. coli originating from birds, raccoons and other wildlife may be present in large numbers in stormwater runoff. In an effort to determine the cause of the benchmark exceedance of E. coli, Arch Environmental Group reviewed the layout of the school storm water system as well as past tracer dye studies. Based on this investigation, sanitary sewer contamination from Colt Elementary School is not suspected. The source is likely natural sources, such as the presence of wild animals from the stormwater runoff of the surrounding grassy field.

5.0 / Best Management Practices to Reduce TMDL Pollutant Loads

The WavCS Stormwater Management Plan (SWMP) identifies and defines the districts BMPs to comply with the Six Minimum Measures that are the front line in the nationwide effort to reducing polluted stormwater discharges to our lake, rivers and streams. The Michigan Department of Environmental Quality (MDEQ) recognizes that having a Stormwater Management Plan in place built around the Six Minimum Measures specified in the NPDES General Jurisdictional Permit have the potential to significantly contribute to the reduction of TMDL Pollutants in the surface waters of the state. A link to the districts current SWMP can be found on the districts website at <u>http://www.waverlycommunityschools.net/our-district/storm-water-management/</u>. The Six Minimum Measures are listed below:

- Public Education and Outreach Program (PEP)
- Public Involvement and Participation Program (PIP)
- Illicit Discharge Elimination Program (IDEP)
- Post Construction Stormwater Management Program
- Construction Site Stormwater Runoff Control Program
- Pollution Prevention/Good Housekeeping Program for NPS faculty and staff.

The following is a list of prioritized TMDL best management practices from the districts SWMP that WavCS should continue to implement in order to improve water quality impairments associated with the E. coli TMDL of the Grand River. Prioritization of BMPs is based on WavCS targeted TMDL pollutants. Priority is given to BMPs that reduce E. coli loads.

E. COLI

- 1. WavCS will use its website to provide the public with information regarding pet waste (SEMCOG links/ GLRC). Additionally, GLRC posters are placed at various school buildings.
- 2. WavCS will prohibit illicit discharges, inspect and monitor suspected illicit discharges, and enforce elimination of the illicit discharges and connections.

³ Sources of E. coli In Surface Water" - Great Lakes Water Institute, University of Wisconsin, Milwaukee http://www.glwi.uwm.edu/research/genomics/ecoli/sources of ecoli in water.php



- 3. WavCS has reviewed all facilities for cross-connections between the sanitary and storm sewer systems.
- 4. WavCS will conduct hand sweeping in the parking lots/roadways monthly.
- 5. WavCS has established programs for soil erosion and sediment control from new or redevelopment construction. Such developments require permits and inspections for practices to keep exposed soils on site or controlled from runoff.
- 6. WavCS has implemented routine visual inspections of stormwater structural controls.
- WavCS will remove excessive sediments from structural sediment removal systems to maintain the maximum designed performance. Sediments will be disposed of offsite in accordance with Parts 115 or 121.

ALL TMDLs

- 1. WavCS will continue to use its website to provide the public information regarding local TMDL issues (phosphorous, E. coli, biota and dissolved oxygen TMDL Best Management Practice).
- 2. WavCS will continue to educate staff, faculty, and students using various venues including educational materials developed by the various watershed groups specifically related to these issues on the stormwater management webpage.
- 3. The district passed a post-construction stormwater board resolution to require implementation of the stormwater standards for construction.
- 4. Adequately maintains vegetation around stormwater facilities, ditches, and ponds.
- 5. Provide training to applicable staff and confirm training from contractors including restrictions on the use of phosphorous containing fertilizers, soaps, cleaners and other chemicals that could impact the separate storm drain system.

WavCS strives to be good stewards of the land within their jurisdiction and to use appropriate Best Management Practices (BMPs) to contribute to the improvement of water quality. WavCS is committed to practicing sound stormwater management practices; including observance and adherence to all local, state, and federal stormwater statutes, rules, and regulations.

Attachments: TMDL Screening Inspection Log(s) Storm Sewer System Site Map Analytical Results & Chain of Custody

cc: AE180001 project file

TMDL Screening Inspection Log

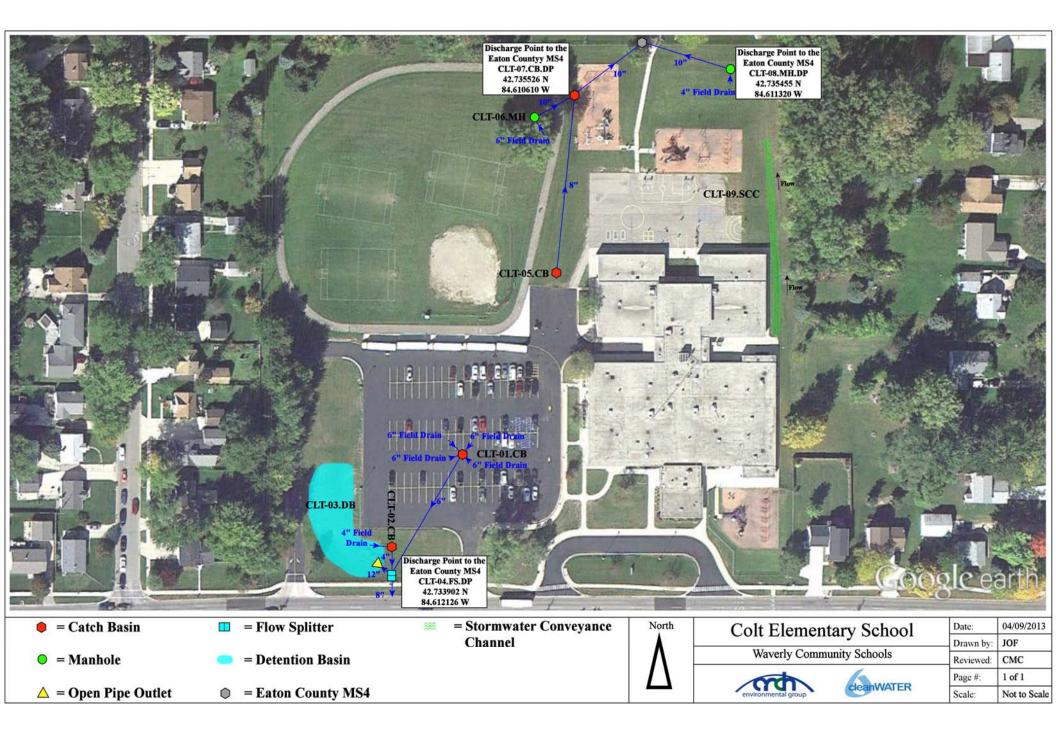
Building:	Colt Elem	entary Schoo	_		Client	: Wa	averly Communi	ty School	S
Samplers:	Amanda Peterson	Alec	Staber		Date	2	5/3/2018	3	
					Inspection Type:	:	TMDL Samp	ling	
				-					
Structure Information	ı:					_		_	
ID Number:	CLT-07.CB.DP	Structure Typ	pe Catch Basin			Lat	: 42.735526 N	Long:	84.610610 W
Туре:	Discharge Point	Locatio	on: North of scho	ol, northeast co	rner of track.	4	•	<u> </u>	
Outfall Dimensions	10"								
Observations:									
Standing Water Chara	acteristics	<u>Fle</u>	ow Characteristic	<u>cs</u>					
Standing	; Water: Yes		Flow Observed:	Yes, Continous]			
	Color: Clear		Source of Flow:	Inlet pipe					
	Odor: No		Velocity of Flow:	Slow]			
	Suds: No		Color of Flow:	Clear					
S	itaining: No		Flow Odor	No					
Oil	Sheen: No					-			
S	Sewage: No	<u>Ac</u>	dditional Comme	nts:					
Bacterial	l Sheen: No	N/	/Α						
	Algae: No								
	Slimes: No								
Abnormal G	irowth: No								
Sample ID And Inform	nation		Lab Analysis:	Results:	TMDL Threshold:	Units:	Photo ID:		
Sar	nple ID: CLT-07.CB.DP.TM	DL	pH:	7.75	6.5 - 9	pH units		when the	
Time Co	ollected: 11:45		Temperature	: 13.6	N/A	Celsius	this way to	1	
Last Rain	n Event: > 72 Hours		E. coli:	26.2	300	CFU per 100mL	Second V	6119 (S	
Current W	/eather: Overcast		Total Phospho	orus: N/A	N/A	ug/L	THE FRANCE	1 1 2	
Screening Locatio	on Type: Catch Basin		Other:					Star Star	All and
Total Rainfall (Inches): .57		Other:					Mar.	·• · · · · · · · · · · · · · · · · · ·
			Other:						
Outfall Characteri	zation: Unlikely								
Sample sent	t to Lab: Yes						1 1 1 L		



TMDL Screening Inspection Log

Building:	Colt Eleme	entary School			Client	: V	Vaverly Community Schools
Inspectors:	Amanda Peterson	Alec Stabe	r		Date	2	5/3/2018
					Inspection Type	:	TMDL Sampling
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Structure Information	n:					_	
ID Number:	CLT-08.MH.DP	Structure Type Mar	nhole			L	at: 42.735455 N Long: 84.611320 W
Type:	Discharge Point	Location: Nor	theast corne	r of property i	n the grass.		
Outfall Dimensions	10"]					
Observations:							
Standing Water Chara	acteristics	Flow Char	racteristics				
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	Color: Clear	Source	e of Flow: Fie	ld drain			
	Odor: No	Velocity	y of Flow: Trie	ckle			
	Suds: No	Color	r of Flow: Cle	ear			
S	Staining: No	Flé	ow Odor No	1			
Oil	Sheen: No	1				_	
9	Sewage: No	Additiona	al Comments	<u>::</u>			
Bacteria	l Sheen: No			-			g field/playground area. Geese and other wildlife
	Algae: No						e are no signs of an illicit connection and no
	Slimes: No	other pipe	es besides th	e field drain a	nd sheet flow from	n the grassy field e	iter this basin.
Abnormal G	Growth: No	1					
Sample ID And Inform	nation	Lab	Analysis:	Results:	TMDL Threshold:	Units:	Photo ID:
Sar	mple ID: CLTMH.DP.TMDL	pH:		7.3	6.5 - 9	pH units	
Time Co	ollected: 12:00 PM	Terr	nperature:	14.7	N/A	Celsius	and the second second
Last Rai	n Event: > 72 Hours	E. co	oli:	365.4	300	CFU per 100mL	and the second second
Current W	Veather: Rain	Tota	al Phosphoru	s: N/A	N/A	ug/L	
Sample Locatio	on Type: Manhole	Othe	er:				
Total Rainfall	(Inches) .57	Othe	er:				
		Othe	er:				
Outfall Character	ization: Unlikely						
							2. 5 xlater
Sample sent	t to Lab: Yes						







2105 Pless Drive Brighton, Michigan 48114 Phone (810)229-7575 Fax (810)229-8650 E-mail bai-brighton@sbcglobal.net

May 04, 2018

Arch Environmental Group 37720 Interchange Dr. Farmington Hills, MI 48335

Subject: Colt Elementary School TMDL Sampling AE180001 Wav CS

Dear Ms. Koloski :

Thank you for making Brighton Analytical, L.L.C. your laboratory of choice. Attached are the results for the samples submitted on 05/03/2018 for the above mentioned project. NELAP/TNI Accredited Analysis and MDEQ Drinking Water Certified Analysis will be identified in their respective reporting formats. Hard copies can be supplied at your request for a fee of \$20.00 per copy.

The invoice for this project will be emailed separately. If you have any questions concerning the data or invoice, please don't hesitate to contact our office. We welcome your comments and suggestions to improve our quality systems. Please reference Brighton Analytical, L.L.C. Project ID 50439 when calling or emailing. We thank you for this opportunity to partner with you on this project and hope to work with you again in the future.

Sincerely, Brighton Analytical, L.L.C.







	righton Analytical L.L.C.	Br Phone: (e-mail M	ghton Analyt 2105 Pless D ighton, Michiga 810)229-7575 (:bai-brighton@: IDNRE Certifie LAC Accredited	rive an 48114 (810)229- sbcglobal d #9404	8650 .net			
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Submit Date:	5/3/2018					37720 Interchange Dr.		
Report Date:	5/4/2018					Farmington Hills, MI 4833	5	
BA Report Number:	50439	I	Project Name:	Colt E	lemen	tary School TMDL Samplin	ıg	
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			Sample ID:	CLT-0	7.CB.	DP.TMDL		Analysis
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E. coli	-	26.2	CFU/10	0 ml	1	SM9223B M Well	WT	05/03/2018
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Date	5/4/2018

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BA Report Number:	50440]	Project Name:	Wave	rly Hig	h School TMDL Sampling			
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Paramet	ters	Result	Units		DL	Method Reference	Analyst	Date	
Microbiological An	alysis								
E. coli		0	CFU/10	0 ml	1	SM9223B M Well	WT	05/03/2018	
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Date	5/4/2018

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BA-PROJECT #:	ABBREVIATIONS FOR MATRIX S = Solid I = I ionid	DW A =	T = Tube M = Misc.	80		IZED В мо ыке муон	HDPE 1 GLASS, STERIL	×	×									DATE: TIME:	5/3/18 3:th	
			T = Tube $M = Misc.$	3	VCLEKIV	ЧТЕР В 1 ио ын 4 №0 4 №0 1 №0 1 №0 1 №0 1 №0 1 №0	STERIL GLASS, HDPE 1 HDPE 1 HDPE 1	×	×											
	10-229-7575 -229-8650	$\frac{TMO/_{\kappa} \int c_{m} \psi_{r_{1}}}{fMO/_{\kappa} \int c_{m} \psi_{r_{2}}} \frac{DW = Drinking H_{2}}{P = 0 = 011}$ $P = Wipe$ $A = Air (Tredlar Bag)$ $A = Filter$	T = Tube T = Tube M = Misc.	Container Type &	VGLERIV REFRAULAE TEREFRAED SERAED	IZED В ¹ ио ьке 4 ³ 20 ⁴ 1и0 ³ 1и0 ³ (ькег)	2.LEGIT GCTV22' HD5E / HD5E / HD5E / HD5E / HD5E / KOV.2											DATE:	118	
	10-229-7575 -229-8650	TMDL Scrubby		Container Type &	VCLEBIV REEKAULIAE EREEKAED. REEKAED	'IZED В ' ио ыке и чон 1°20° 1и0° 1и0°	HDPE (GLASS, HDPE } HDPE } HDPE }												118	
	Phone: 810-229-7575 Fax: 810-229-8650	TMDL Scrubby		A. P. Container Type &	VCLERIV TERRAVIIAE TERRAVIIAE TERRAED AbLonded ph: X // N/V	Samble Coll.	ACTERIL GLASS, AMBER HDPE I HDPE I HDPE I HDPE I HDPE I HDPE I HDPE I											DATE:	118	
	Phone: 810-229-7575 Fax: 810-229-8650	High Scloel TMDK Scruting		and A.P. Container Type &	VCLERIV TERRAVIIAE TERRAVIIAE TERRAED AbLonded ph: X // N/V	Samble Coll.	ACTERIL GLASS, AMBER HDPE I HDPE I HDPE I HDPE I HDPE I HDPE I HDPE I											RECEIVED BY: DATE:	118	
L.L.C.TM	10-229-7575 -229-8650	High Scloel TMDK Scruting		A.S. and A.P. Container Type &	VCLERIV TERRAVIIAE TERRAVIIAE TERRAED AbLonded ph: X // N/V	Contraction of the second seco	ЗТЕRIL АМВЕК НОРЕ 1 НОРЕ 1 НОРЕ 1 НОРЕ 1 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		WVC-03. MH. OP.TMN \$13/18 10:20 X							tructions:	Please fill out the Chain of Custody completely and review. Incorre	RECEIVED BY: DATE:	118	
	Phone: 810-229-7575 Fax: 810-229-8650	High School TMDh. Samiling Wav CS	PO #: (PLEASE NOTE IF DIFFERENT BILLING ADDRESS) U = T = Tube M = Misc.	and A.P. Container Type &	VGLERIV REFRAULAE TEREFRAED SERAED	Samble Coll.	ACTERIL GLASS, AMBER HDPE I HDPE I HDPE I HDPE I HDPE I HDPE I HDPE I								10)	Special Instructions:		DATE:	118	2