LITTLE SEWICKLEY CREEK WATERSHED SURFACE WATER QUALITY INVESTIGATION

SEWICKLEY, PA

Prepared For:

LITTLE SEWICKLEY CREEK WATERSHED ASSOCIATION

Prepared By:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC. Pittsburgh, Pennsylvania

CEC Project 193-229

JULY 2021



TABLE OF CONTENTS

1.0	INTR	RODUCTION	1
2.0	METH 2.1 2.2	HODOLOGY Phase I – Two Day Field Reconnaissance Phase II - Quarterly Sample Collection	3
3.0	SUMN	MARY OF RESULTS	6
	3.1	Little Sewickley Creek Headwaters	
	3.2	Fern Hollow Headwaters	
	3.3	Backbone Road	
	3.4	Edgeworth - Tributary 36658	
	3.5 3.6	Sevin Road - Tributary 36660 and UNT-3 Devil's Hollow Conservation Area and Tributary 36666	
	3.0	Devil's Hollow Conservation Area and Tributary 30000	8
4.0	CONC	CLUSIONS AND POTENTIAL MITIGATION PROJECTS	10
	4.1	Conclusions	10
	4.2	Potential Mitigation Projects	
		4.2.1 Larger Scale Potential Mitigation Projects	
		4.2.2 Smaller Scale Potential Mitigation Projects	12
5.0	RESO	OURCES	13
6.0	REFE	ERENCES	15
		FIGURES	
Figure	1 – Site	te Location Map	
Figure	2 – Pha	nase I Sample Locations	
Figure	3A - P	Phase II, Little Sewickley Creek Headwaters	
Figure	3B - P	Phase II, Fern Hollow Headwaters	
Figure	3C - P	Phase II, Backbone Road	
Figure	3D - P	Phase II, Edgeworth	
Figure	3E – Pl	Phase II, Sevin Road	
Figure	3F - Pl	Phase II, Devil's Hallow Conservation Area	

TABLE

 $Table\ 1-Summary\ of\ Laboratory\ Analytical\ Results-Quarterly\ Monitoring$

1.0 INTRODUCTION

The Little Sewickley Creek Watershed Association (Association)'s mission is to protect and to conserve the natural beauty and environmental health of Little Sewickley Creek and its watershed. The Little Sewickley Creek Watershed (Watershed) is located in Allegheny County, Pennsylvania (Figure 1). It covers 9.6 square miles and encompasses parts of Bell Acres, Edgeworth, Franklin Park, Leetsdale, Leet Township, Sewickley Heights, and Sewickley Hills. The total length of the creek and its main tributaries is approximately 26.7 stream miles; it flows from east to west, towards the Ohio River.

Little Sewickley Creek (LSC) currently has a Pennsylvania Department of Environmental Protection (DEP) designation of High Quality/Trout Stocking Fishery. In 2012, the Association submitted a petition to the DEP to upgrade the stream designation to Exceptional Value. The DEP surveyed the stream at five points along the main stem in 2015, and rejected the petition due to a number of generalized water quality-related issues such as: elevated conductivity, sediment pollution, low biological diversity, and an abundance of pollutant tolerant species. The Association approached Civil & Environmental Consultants, Inc. (CEC) in May 2017 to team with the volunteers from their organization and the Allegheny County Conservation District (ACCD) to perform an assessment of the physical, chemical, and biological characteristics of the Watershed. This assessment provided a first step in identifying possible water-quality concerns within the Watershed. Analytical data from 1981 and 1982 showed elevated levels of dissolved solids, specific conductance, chloride and sodium. One of the recommendations at the conclusion of that 2017/2018 assessment was for the Association to develop and implement a watershed-wide water-quality monitoring program to update historical data and identify potential areas or discharge points of impacted water sources.

In May 2019, the Association approached Civil & Environmental Consultants, Inc. (CEC) to assess the Watershed's water quality. This document summarizes the findings of the water-quality testing program conducted by CEC in response to that request. The study was conducted to gain a better understanding of potential impacts to the Watershed and provide recommendations to improve the health and biodiversity of the Watershed. Water samples were collected quarterly between

September 2020 and June 2021 and analyzed for a variety of parameters to quantify base-flow surface water quality and identify potential point and nonpoint pollution sources within the Watershed.

2.0 METHODOLOGY

This investigation focuses on the general base-flow status of the surface water within the Watershed. The first phase of work involved two separate sampling events during which specific conductivity, pH and temperature data were collected and evaluated to direct future water quality sampling. The second phase of work involved completing quarterly surface water sampling and laboratory analyses at 20 locations across the Watershed.

2.1 PHASE I – TWO DAY FIELD RECONNAISSANCE

CEC conducted an initial field reconnaissance study in July of 2020, taking water quality parameters at 115 locations throughout the Watershed. Data were collected working upstream to downstream, starting at the headwaters of the streams, in order to be better able to capture small conductivity nuisances between the lower flowing branches. Measurements were taken in the approximate center of flow at half the depth of the water body. When accessing the stream to take measurements, field personnel moved in a downstream to upstream direction to minimize potential for disturbances to affect water chemistry. Data was collected at each location (Figure 2) using a Myron Ultra Meter and analyzed in the field for specific conductance, pH, and temperature. The physical appearances of the water and stream channel were also noted. Field parameters and observations were recorded on a handheld Trimble Global Positioning Unit (GPS) unit. Specific conductance values collected during the survey are shown in Figure 2.

Six areas were found during the initial screening in which tributaries exhibited elevated levels of specific conductance (i.e. greater than $800 \,\mu\text{S/cm}$):

- LSC Headwaters, along Magee Road, at the far northeastern end of the Watershed,
- Fern Hollow Creek Headwaters, along Water Works Road, at the far southern end of the Watershed,
- Tributaries 36662 and 36662A, along Backbone Road, west of Allegheny Country Club, at the southern end of the Watershed,
- Tributary 36658 along Little Sewickley Creek Road in the Borough of Edgeworth, at the eastern end of the Watershed,

- The headwaters of 3660 and adjacent unnamed tributary, southeast of Camp Meeting Road and west of Sevin Road, at the northeast end of the Watershed, and
- Tributaries 36659 and 36659A, near Devil's Hallow Conservation Area, west of Sewickley Heights Golf Club and Tributary 36666, east of Sewickley Heights Golf Club, at the northern end of the Watershed.

CEC established 20 locations (Figures 3A to 3E), for the collection of water samples for laboratory analysis to investigate the potential causes of the elevated specific conductivity in the six areas identified above.

2.2 PHASE II - QUARTERLY SAMPLE COLLECTION

CEC collected water samples and stream quality data at each of the 20 locations over four quarterly sampling events between September 2020 and June 2021. Additional information pertaining to the areas focused on for this investigation is provided below:

Phase II Study Areas

Area	Description	Sample Points					
Little Sewickley Creek	Near Acorn Park, headwaters of	LSC-1, LSC-2, UNT-					
Headwaters	LSC with several small springs in	1A, UNT-1B					
	area						
Fern Hollow Headwaters	Along Fern Hollow Rd, tributary to	FH-1, FH-2, FH-3,					
	LSC, several smaller tributaries feed	UNT-2					
	into Fern Hollow						
Backbone Road	West of Allegheny Country Club,	36662-1, 36662-2,					
	tributary to LSC with several small	3666A					
	branches						
Edgeworth	Along Little Sewickley Creek Road,	36658					
	Borough of Edgeworth, small						
	tributary to LSC						
Sevin Road	Along Sevin Road, south of Camp	36660-1, 3660-2, UNT-					
	Meeting Road, tributary to LSC with	3A, UNT-3B					
	several small branches						
Devil's Hollow Conservation	East of Sevin Road, west of	36659-1, 36659-2,					
Area, Tributary 36666	Sewickley Heights Golf Club, 36666	36659A, 36666					
	lies east of Sewickley Heights Golf						
	Club, 36659 feeds into 36660						

Sampling events were conducted under base-flow conditions and not within 48 hours of a precipitation event of 0.1" or more of rain. Collecting during base-flow conditions reduces the influence of stormwater runoff. Water quality parameters collected at the time of sampling included pH, specific conductivity, and temperature. Other observations such as qualitative flow volumes, water appearance, and odor were recorded on a handheld GPS unit. Samples were collected in a manner similar to that described in Section 2.1. The GPS unit was also used to navigate to ensure consistent sample locations.

Samples were placed directly on ice in coolers and submitted to Eurofins TestAmerica Laboratories or Campbell Laboratories for the following suite of parameters:

- Aluminum
- Calcium
- Chemical oxygen demand
- Chloride
- Fecal coliform
- Iron

- Magnesium
- Manganese
- Nitrate nitrogen
- Phosphate (total)
- Potassium
- Sodium

- Specific conductance
- Sulfate
- Surfactants
- Total dissolved solids
- Total petroleum hydrocarbons

3.0 SUMMARY OF RESULTS

Results are summarized on Table 1 and discussed under the specific Study Areas noted below. Data was compared to available Pennsylvania water quality criteria outlined in Pennsylvania Code, Title 25, and Chapter 93 (Chapter 93, DEP, 2020). Constituents without Chapter 93 water quality criteria were assessed for indications of potential sources of pollutants.

3.1 LITTLE SEWICKLEY CREEK HEADWATERS

LSC-2 exceeded the Chapter 93 water quality criteria (SWQC) for fecal coliforms (200 colony forming units (CFU)/100mL) in September 2020. LSC-2 is located directly downgradient of the confluence of an unnamed tributary and LSC. No other sample in this area contained elevated fecal coliform concentrations during the study period. UNT-1A exceeded the Chapter 93 SWQC for chloride (250 mg/L) and total dissolved solids (TDS, 750 mg/L) during the entire study. Chloride ranged between 311 mg/L and 452 mg/L and TDS ranged between 820 and 970 mg/L. UNT-1A is located at the headwaters of the unnamed tributary that enters LSC and is directly downgradient from Magee Road, within Acorn Park. No other Chapter 93 standards were exceeded in this area. UNT-1A and UNT-1B also had elevated levels of nitrate and phosphate relative to other tributary samples.

Concentrations of metals without Chapter 93 water quality standards were highest at UNT-1A and UNT-1B. Specific conductivity average for this unnamed tributary was elevated at approximately 1,433 µs/cm.

3.2 FERN HOLLOW HEADWATERS

In September 2020, December 2020, and June 2021 at FH-1 and in December 2020 and March 2021 at UNT-2, fecal coliform levels exceeded the Chapter 93 SWQC. Concentrations ranged between 231 CFU/100 mL and a levels of bacteria colonies that were too numerous to count. FH-1 is located and the headwaters of Fern Hollow and UNT-2 is located at the headwaters of an unnamed tributary that feed Fern Hollow. Both of these sample locations are near the intersection

of Blackburn and Scaife Roads. No other sample in this area indicated elevated fecal coliform during the study period, nor were any other Chapter 93 standards exceeded. Analytical results from FH-1 and UNT-2 samples also included elevated levels of chemical oxygen demand and MBAS relative to samples obtained from other parts of the Watershed. Specific conductivity average for Fern Hollow was approximately 942 µs/cm. The average specific conductivities and levels of TDS were also elevated relative to the rest of the Watershed.

3.3 BACKBONE ROAD

36662-1 exceeded the Chapter 93 maximum concentration fish and aquatic life standard for aluminum in September 2020 (0.85 mg/L) and for chloride in September 2020 and June 2021 (averaged 264 mg/L). No other samples exceeded any Chapter 93 standards during the study period. These sampling locations are down gradient of the Allegheny Country Club.

Specific conductivity average this area was elevated at approximately 947.5 μs/cm. The lowest specific conductivity readings were recorded in March (660 us/cm) with the highest readings being recorded in September (1,400 us/cm). Phosphate was detected in September 2020, December 2020, and June 2021 at levels ranging between 1.1 to 0.31 mg/L. MBAS was detected (0.11 mg/L) in March 2021 at 36662A and TPH was detected (5.3 mg/L) in September 2020 at 36662-2.

3.4 EDGEWORTH - TRIBUTARY 36658

Tributary 36658 is located downgradient of Walker Park, along Little Sewickley Creek Road. 36658 exceeded the Chapter 93 SWQC standard for chloride in December 2020 (251 mg/L). No other samples exceeded any Chapter 93 standards during the study period.

Specific conductivity average was elevated at approximately 882.5 µs/cm. The lowest specific conductivity readings were recorded in March (700 us/cm) with the highest readings being recorded in December (1,100 us/cm). Phosphate and MBAS were not detected above their respective reporting limits. TPH was detected (5.8 mg/L) in March 2021.

3.5 SEVIN ROAD - TRIBUTARY 36660 AND UNT-3

UNT-3A exceeded the Chapter 93 maximum concentration fish and aquatic life standard for aluminum in September 2020 (1.1 mg/L). UNT-3A is located at the headwaters of the unnamed tributary that enters and is directly downgradient from the intersection of Camp Meeting Road and Sevin Road. 36660-2 exceeded the Chapter 93 SWQC for fecal coliform (273 CFU/100mL) in June 2021. 36660-2 is located downgradient of two unnamed tributaries that enter Tributary 36660 along Sevin Road. All sampling points exceeded the Chapter 93 SWQC for chloride and TDS at least once during the entire study, with the highest concentrations being at UNT-3A (chloride, 1,170 mg/L and TDS, 2,100 mg/L). No other Chapter 93 standards were exceeded in this area.

The samples within the Sevin Road area had the highest sodium concentrations of the Watershed (average 224 mg/L). UNT-3A had the highest specific conductivity readings in the Watershed, ranging from 1,700 - 2,200 µs/cm, with the highest readings recorded in March of 2021. Phosphate was detected at 36660-1 and UNT-3A in all quarters (maximum concentration 0.59 mg/L), at 36660-2 in March 2021 and June 2021 (maximum concentration 0.33 mg/L), and at UNT-3B in September 2020, March 2021, and June 2021 (maximum concentration 0.43 mg/L). MBAS was detected at low levels in samples from UNT-3A and UNT-3B in June 2021. 6.4 mg/l of TPH was detected in the March 2021 UNT-3B sample.

3.6 DEVIL'S HOLLOW CONSERVATION AREA AND TRIBUTARY 36666

The study area sits on either side of Sewickley Heights Golf Club (36659-1, 36659-2, and 36659A to the west and 36666 to the east). No samples exceeded any Chapter 93 standards during the study period.

Specific conductivity average was approximately 579.3 μs/cm. The lowest specific conductivity readings were recorded in December 2020 (440 us/cm) with the highest readings being recorded in March 2021 (870 us/cm). Phosphate was detected above the reporting limit at 36659-2 in June 2021 (0.37 mg/L) and at 36659A in September 2021, March 2021, and June 2021 (average concentration 0.42 mg/L). MBAS was detected above the reporting limit at 36659-1 in September

2020, December 2020, and June 2021 (average concentration 0.065 mg/L), at 36659-2 in September 2020, March 2021, and June 2021 (average concentration 0.078 mg/L), and at 36659A and 36666 in March 2021 (concentrations of 0.059 mg/L and 0.12 mg/L, respectfully). TPH was not detected above the reporting limit.

4.0 CONCLUSIONS AND POTENTIAL MITIGATION PROJECTS

4.1 CONCLUSIONS

The areas of elevated specific conductance identified in Phase I of the project lead to areas of the Watershed that may be experiencing runoff and/or infiltrating shallow groundwater that contains various contaminants. Phase II identified the following potential contaminants and general source locations:

- Little Sewickley Creek Headwaters (Figure 3A, unnamed tributary adjacent to Acorn Park)
 Elevated chloride, nitrate and phosphate
- Fern Hollow Headwaters (Figure 3B, South Branch Fern Hollow and unnamed trib. along Blackburn Road) – Elevated fecal coliform, MBAS and oxygen demand
- Backbone Road (Figure 3C, Trib. 36662) Elevated chloride, TPH and nitrate
- Sevin Road (Figure 3E, Trib. 36660, unnamed trib. along Sevin Road) Elevated chloride,
 TDS, sodium, phosphate, MBAS, TPH, oxygen demand and fecal coliform

Road salt mixing with precipitation and entering the stream would be the mostly likely source the elevated levels of chloride and related levels of TDS, which continued into June at some locations. In addition, there are some instances (March 2021 at UNT-1B, 36658, UNT-3B, and 36666) where elevated TPH levels occurred in the same quarters as elevated chloride and specific conductance, which provides additional support that the source of the chloride and dissolved solids detected in these samples is likely runoff from nearby roads.

There were elevated levels of fecal coliform observed occasionally throughout the Watershed; however, high levels fecal coliform levels were reoccurring near the headwaters of Fern Hollow, between FH-1 and UNT-2 and along Sevin Road. These patterns suggests a continuing source of sewage, such as a leaking sewer line or poorly draining septic field may be present in these areas. Elevated oxygen demands were also associated with these areas that would likely have a direct impact on aquatic organisms. Elevated levels of MBAS were also detected in these areas. MBAS are surfactants commonly found in detergents and commercially available cleaners.

In 2007, LSCWA members testified to the inadequacies of the Bell Acres sewage treatment plant located upstream from its Sevin Road property. Three of the Bell Acres Municipal Authority STPs that discharged into the Little Sewickley basin were reportedly in a state of disrepair and had routine overflows and violations of effluent limits. On July 5, 2012, the PADEP approved an Act 537 sewage plan to pump sewage from Bell Acres to the Leetsdale Municipal Authority sewage treatment plant. Residual effects from the inefficiencies of the Bell Acres sewage treatment plant may be the cause of the elevated potential contaminants observed in the Sevin Road area.

There were elevated levels of phosphate observed occasionally throughout the Watershed, however there were some locations that saw elevated concentrations throughout the extent of the study. These concentrations could be related to surface water runoff from nearby residents and/or the Allegheny Country Club. Phosphate is a common turf fertilizer component.

4.2 POTENTIAL MITIGATION PROJECTS

4.2.1 Larger Scale Potential Mitigation Projects

Evidence of sediment accumulation was observed in many of the study areas. Installation of erosion, sediment and runoff controls could help in reducing the sedimentation loading, and could also reduce metals, organics and chloride concentrations. Permanent erosion and sedimentation control best management practices that could be considered include:

- Grassed swales; that can slow the flow of runoff water, allowing sediment to settle out and water to infiltrate into the soil. Grassed swales can also remove small amounts of pollutants such as nutrients and heavy metals. Check dams can be added to grass swales to further reduce flow velocity and promote infiltration and pollutant removal.
- Filter strips are wide strips of vegetation located to intercept overland sheet flows of runoff. They can remove organic material, sediment, and heavy metals from runoff. Filter strips can consist of any type of dense vegetation from woods to grass and are best suited to low-density developments.

- Infiltration trenches; three to eight feet deep excavated trenches that are backfilled with stone to create precipitation retention and percolation into the subsoil. Properly designed infiltration trenches effectively remove sediment and other runoff pollutants.
- Constructed wetlands; areas inundated by water for a sufficient time to support vegetation adapted for life in saturated soil conditions. Wetlands can effectively filter sediment, nutrients, and some heavy metals from runoff waters.

The adaption of advanced erosion and sedimentation features would require, at a minimum, the cooperation of state and municipal highway departments, and long-term access agreements with landowners situated between the roadways and the streams within the watershed.

Additional watershed surveys would be required to locate sources of sediment that are significant in size and situated such that improved erosion and sedimentation practices could be employed.

4.2.2 Smaller Scale Potential Mitigation Projects

The locations in which evidence of runoff or shallow groundwater having been impacted by sewage, is entering the Watershed (elevated levels of fecal coliform, surfactants, nitrates, phosphate and chemical oxygen demand). The Association could provide this data to the municipal sewer authorities and neighboring property owners to help determine potential sources for the contamination. The Association could cooperate with the municipal authorities and neighboring property owners to further identify the sources of the impacted runoff and shallow groundwater and develop plans to remove the sources and/or control the infiltration of the impacted water.

The evidence of impacted runoff from the Allegheny Country Club could be presented by the Association to the Club administration for a discussion of potential corrective measures. Levels of nutrients and the organic compounds detected during the Phase II survey could be reduced through the addition of passive wetland treatment and/or improved pond aeration.

5.0 RESOURCES

CEC's 2017/2018 Report summarized findings of the physical, chemical, and biological assessment of the Watershed and provided numerous grant opportunities and organizations the Association could reach out to address the more significant mitigation projects. Many of those resources are still applicable to mitigation projects suggested in Section 4.2. Examples of the opportunities, which could be applicable to the types of mitigation noted in Section 4.2, are noted below. All URLs were active and working as of July 28, 2021. CEC recommends referring to Section 5.0 of the *Little Sewickley Creek Watershed Assessment* (CEC, 2018) for a complete list of grant opportunities.

Healthy Watersheds Protection, Healthy Watersheds Consortium Grants

www.epa.gov/hwp/healthy-watersheds-consortium-grants-hwcg

The Healthy Watersheds Consortium (HWC) is a partnership between the U.S. Endowment for Forestry and Communities, the U.S. Environmental Protection Agency, and the USDA Natural Resources Conservation Service. The goal of the HWC Grant Program is to "accelerate strategic protection of healthy, freshwater ecosystems and their watersheds", with primary focus on prevention of land deterioration in the watershed by:

- Developing funding mechanisms, plans, or other strategies to implement large-scale watershed protection, source water protection, green infrastructure, or related landscape conservation objectives
- Building the sustainable organizational infrastructure, social support, and long-term funding commitments necessary to implement large-scale protection of healthy watersheds
- Supporting innovative or catalytic projects that may accelerate funding for or implementation of watershed protection efforts, or broadly advance this field of practice.

Conservation Innovation Grants

www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/

Conservation Innovation Grants (CIG) are competitive grants that drive public and private sector innovation in resource conservation. Through the CIG program, public and private grantees develop the tools, technologies, and strategies to support next-generation conservation efforts on

working lands and develop market-based solutions to resource challenges. Grantees leverage the federal investment by at least matching it. CIG projects inspire creative problem-solving that boosts production on farms, ranches, and private forests - ultimately they improve water quality, soil health, and wildlife habitat.

Watershed Restoration and Protection Program

<u>dced.pa.gov/programs/watershed-restoration-protection-program-wrpp/</u>

The overall goal of the Watershed Restoration and Protection Program (WRPP) is to restore, and maintain restored stream reaches impaired by the uncontrolled discharge of nonpoint source polluted runoff, and ultimately to remove these streams from the Department of Environmental Protection's Impaired Waters list.

Riparian Forest Buffer Funding

www.dcnr.pa.gov/Communities/Grants/RiversConservationandRiparianBufferGrants/Pages/default.aspx

DCNR provides grants to install riparian forest buffers along waterways in Pennsylvania. Eligible projects for Riparian Forest Buffer Program funding include:

- Landowner outreach
- Buffer design
- Site preparation and buffer installation
- Plant materials and tree shelters
- Post-planting establishment (approximately three years)

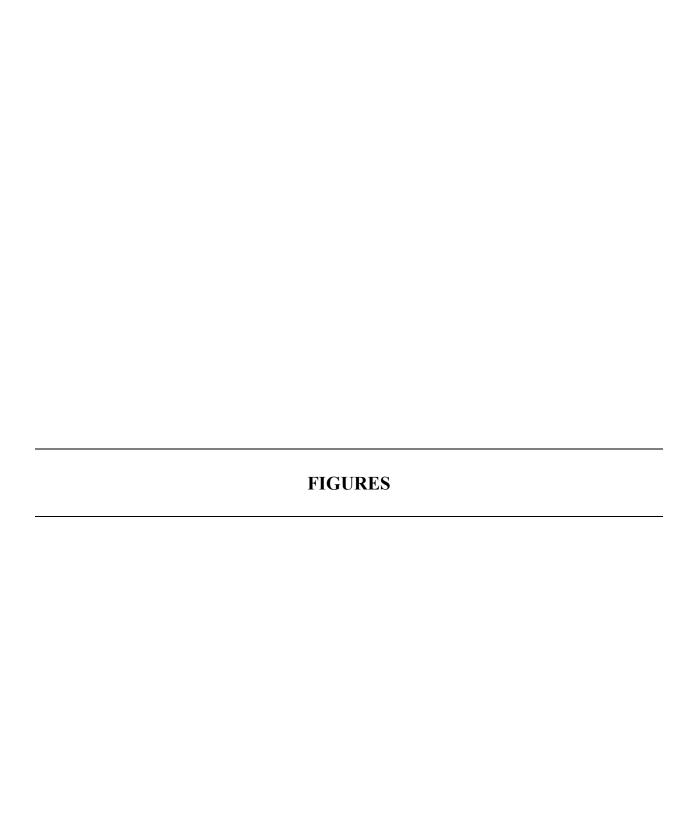
Conservation Leadership and Innovation Program

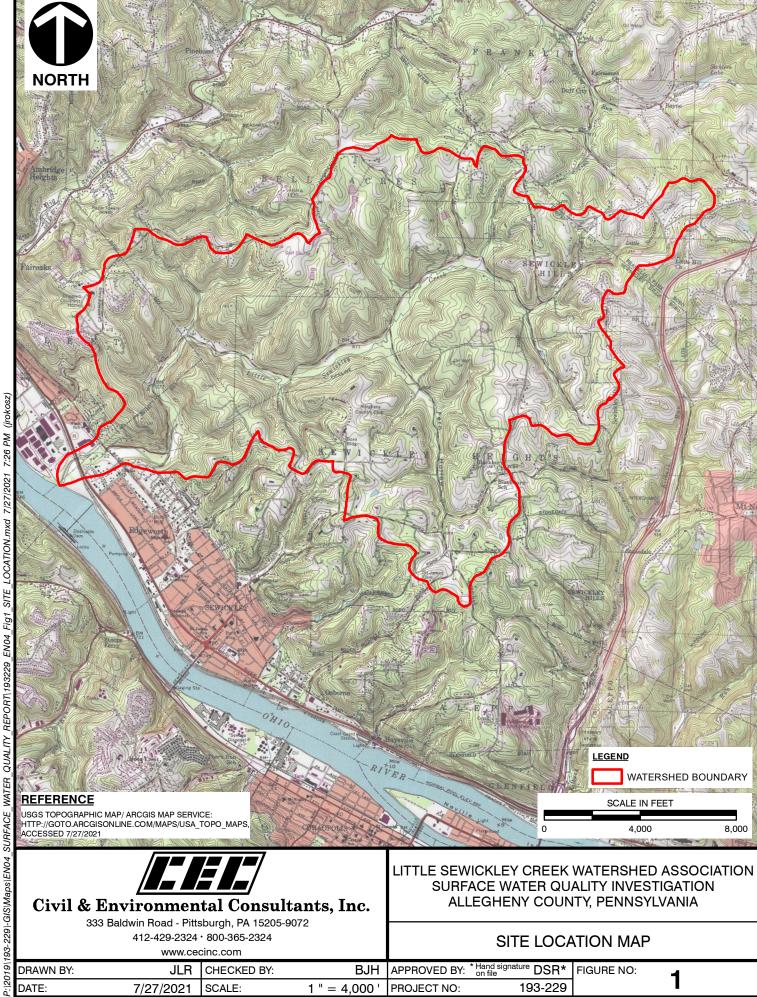
www.conservationsolutioncenter.org/grants

The purpose of the District's Conservation Leadership and Innovation Program is to promote, support, and fund projects that align with Conservation District's mission and vision. Most projects funded through the program should aim to reduce the impacts of non-point source pollution, improve the health of our water resources, and/or habitat restoration.

6.0 REFERENCES

- CEC, 2018. Little Sewickley Creek Watershed Assessment, Allegheny County, Pennsylvania, Prepared for Little Sewickley Creek Watershed Association, Prepared by Civil & Environmental Consultants, Inc., Pittsburgh, Pennsylvania, CEC Project 164-549, September 2018.
- DEP, 2015. Little Sewickley Creek, Allegheny County, Water Quality Standards Review, Stream Redesignation Evaluation Report, Segment: Basin, Stream Code: 3667, Drainage List W. Water Quality Monitoring Section, Division of Water Quality Standards, Bureau of Point and Non-Point Source Management, Department of Environmental Protection. February 2015.
- DEP, 2020. Pennsylvania Department of Environmental Protection, Title 25 Environmental Protection, Chapter 93, Water Quality Standards. Updated July 11, 2020.







Civil & Environmental Consultants, Inc.

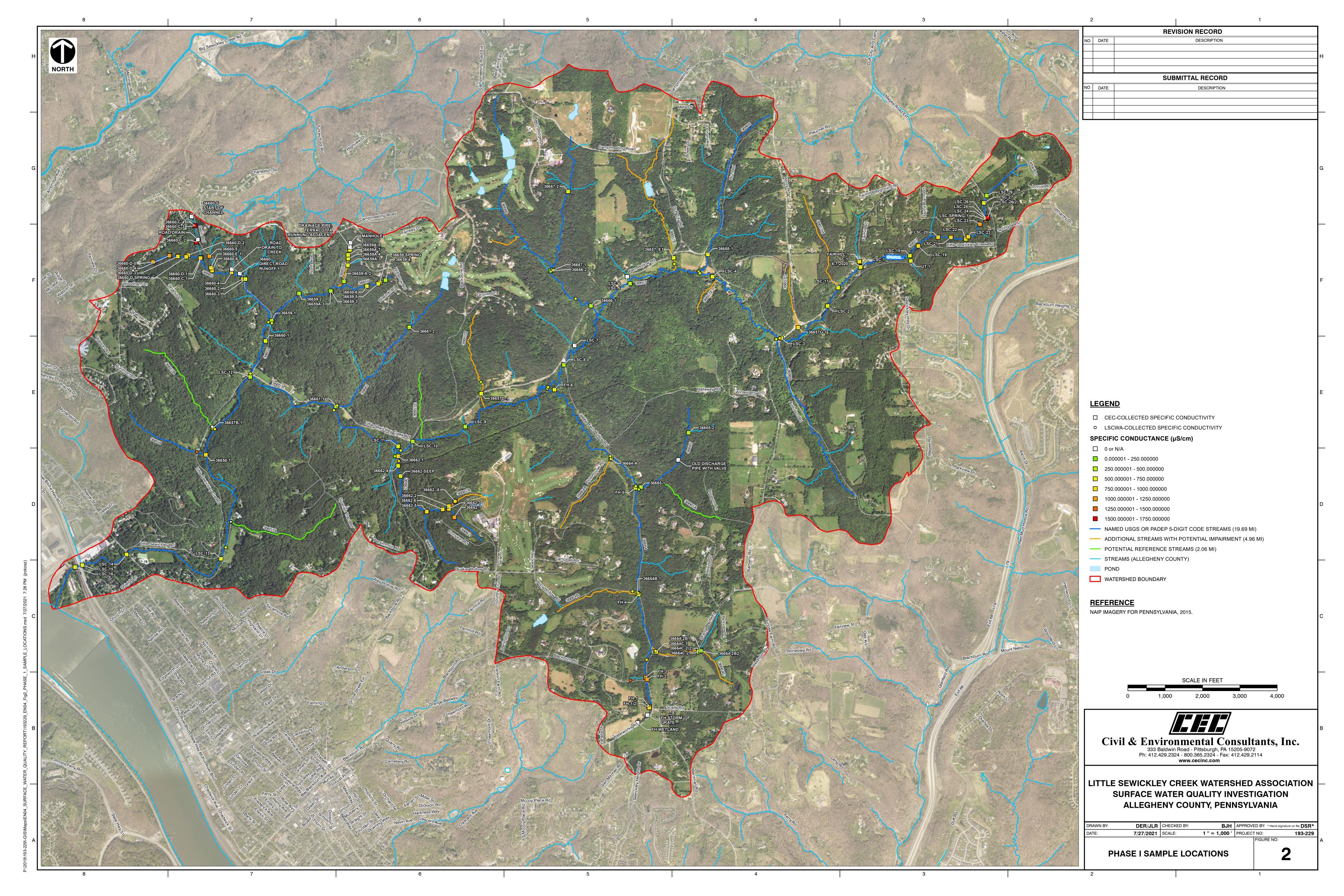
333 Baldwin Road - Pittsburgh, PA 15205-9072 412-429-2324 • 800-365-2324

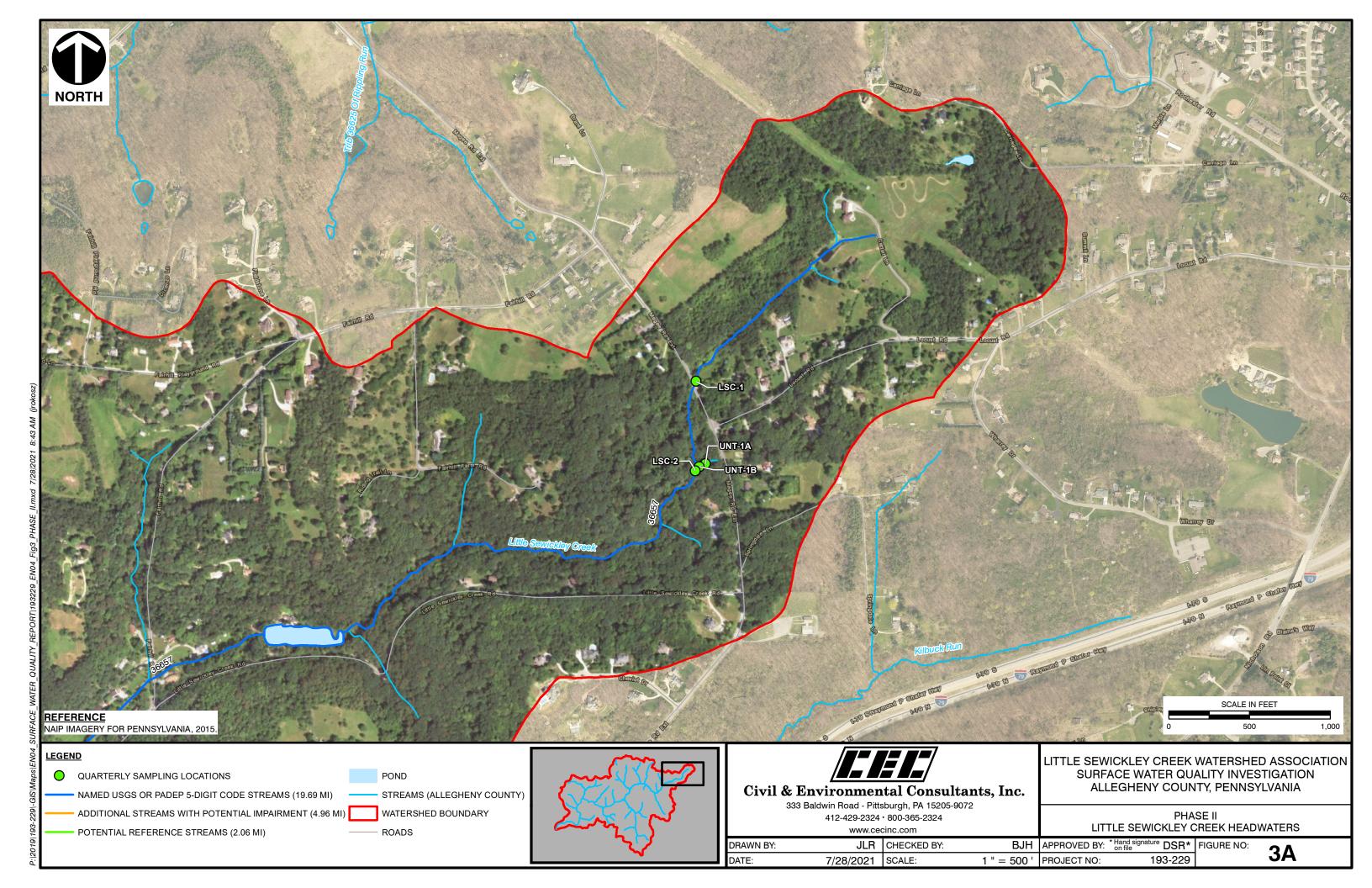
www.cecinc.com

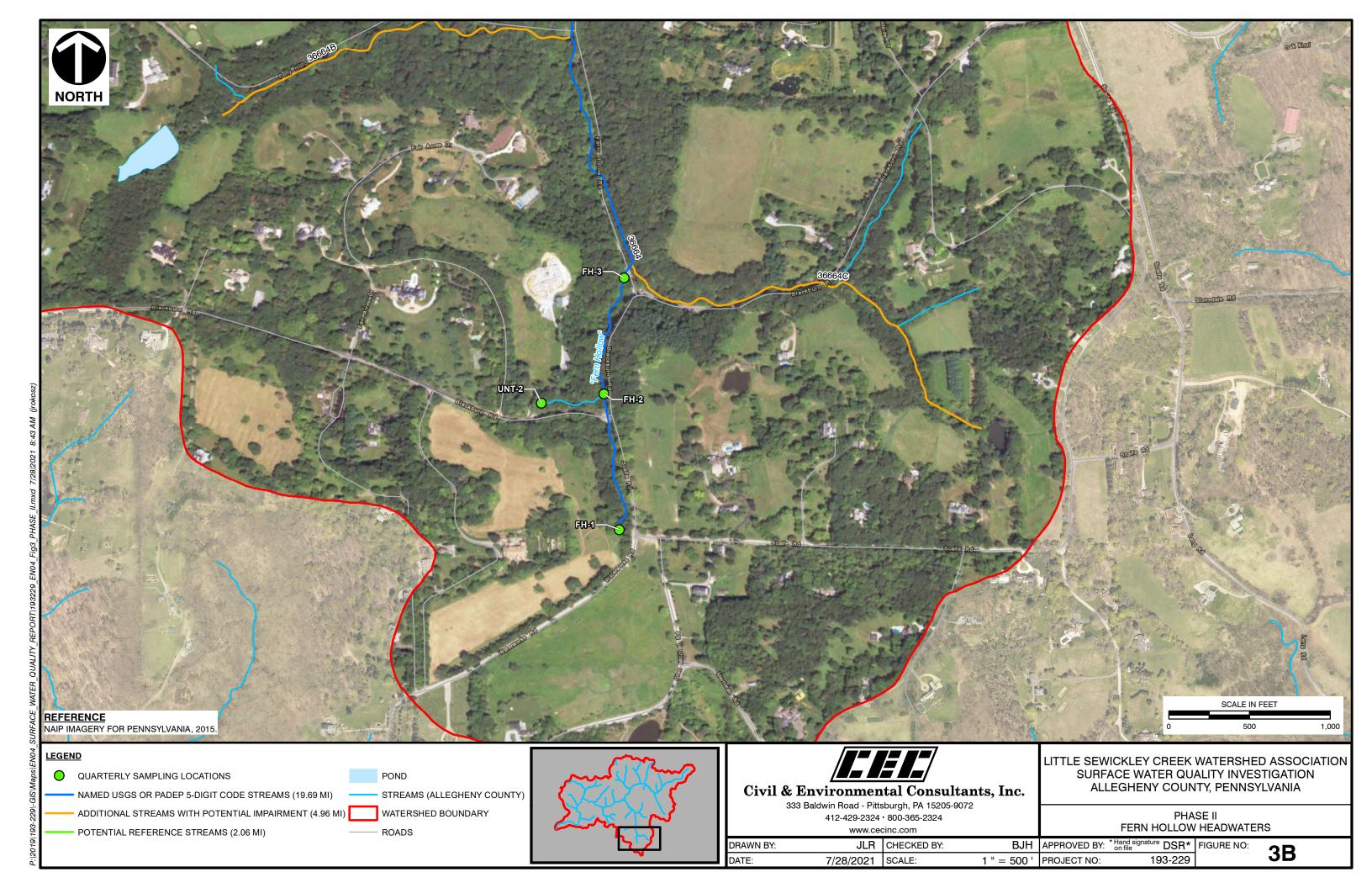
SURFACE WATER QUALITY INVESTIGATION ALLEGHENY COUNTY, PENNSYLVANIA

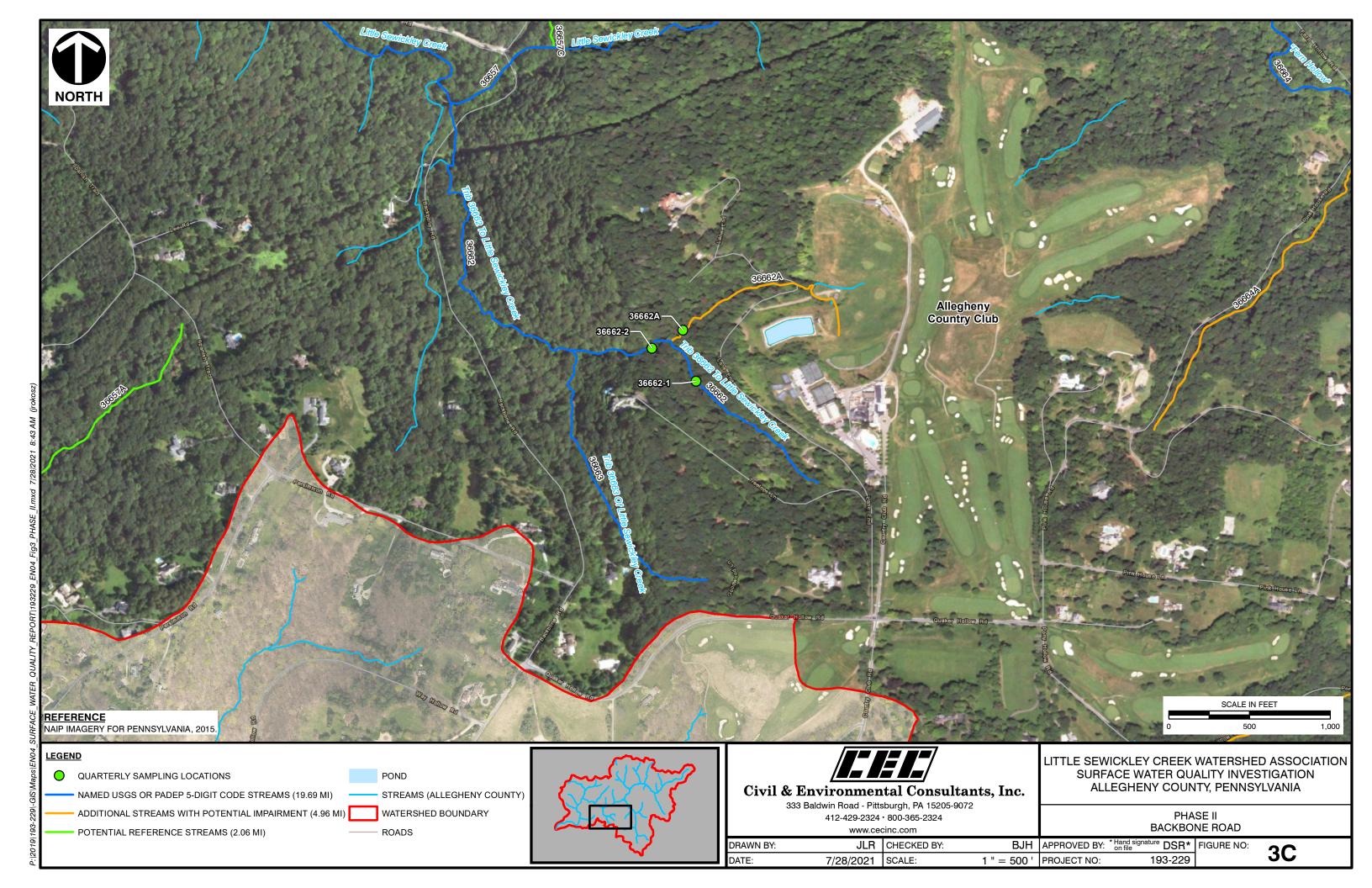
SITE LOCATION MAP

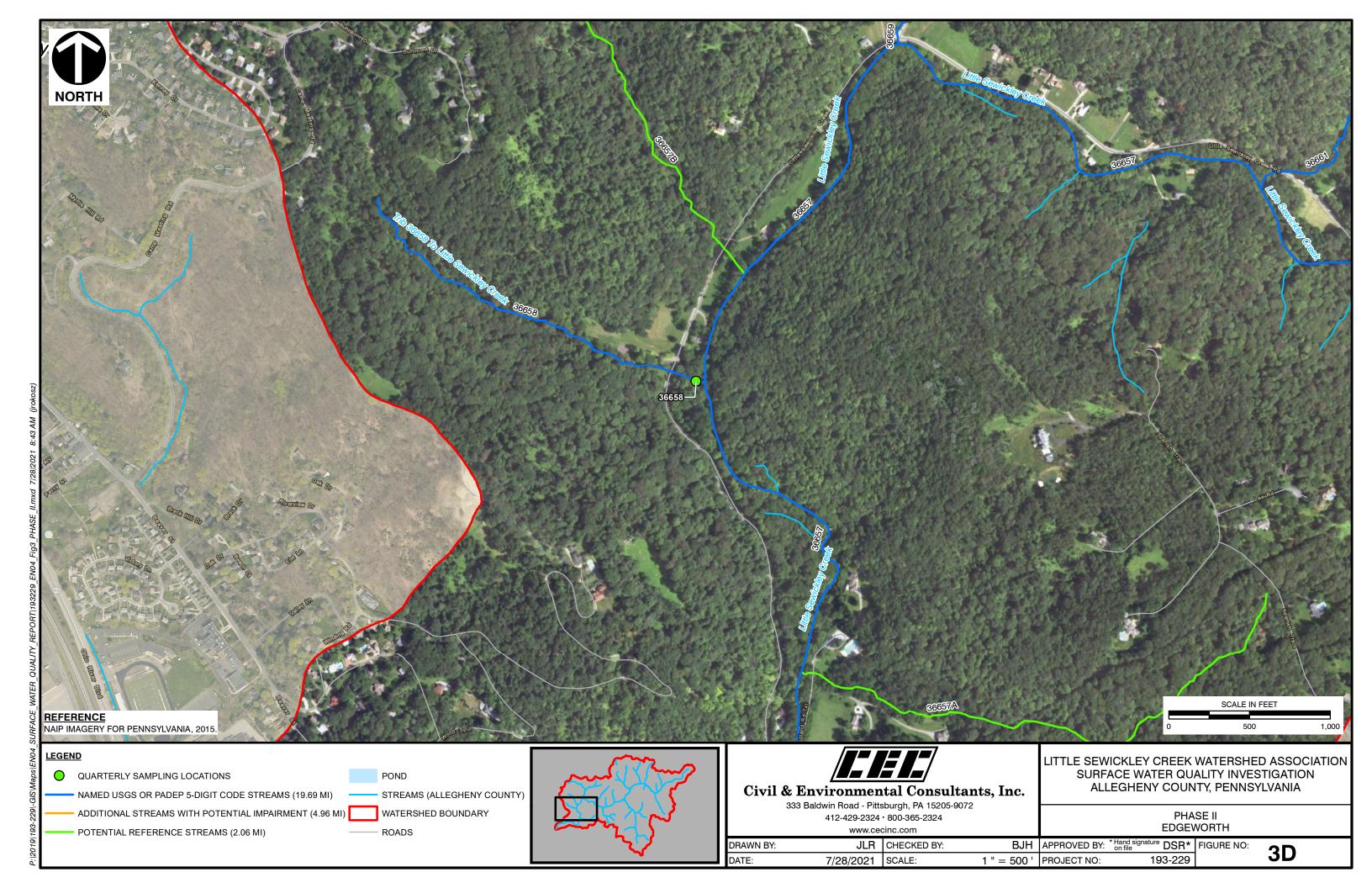
DRAWN BY:	JLR C	CHECKED BY:	BJH	APPROVED BY:	* Hand signature DSR*	FIGURE NO:	4
DATE:	7/27/2021 5	SCALE:	1 " = 4 000 '	PROJECT NO:	193-229		

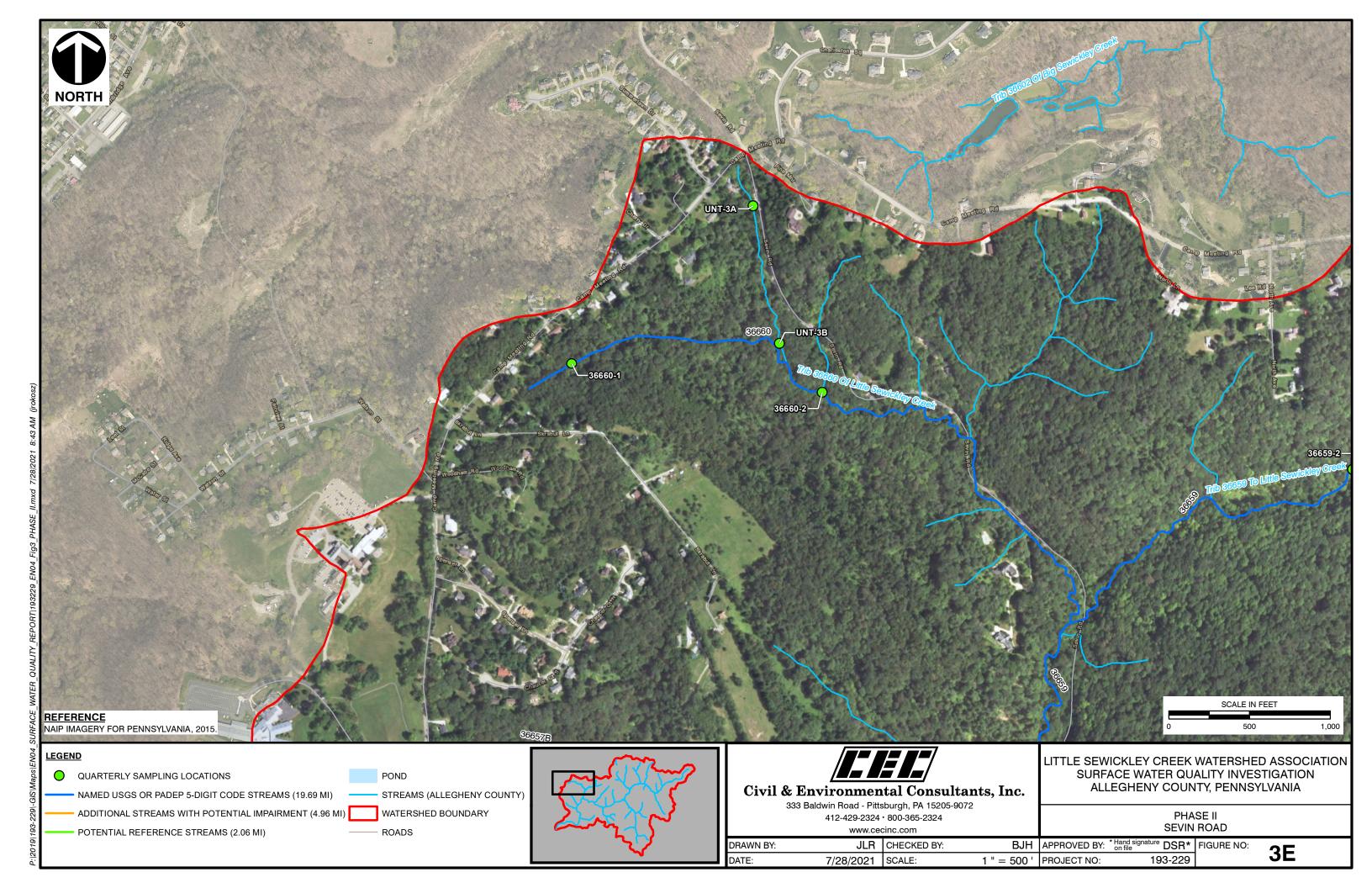


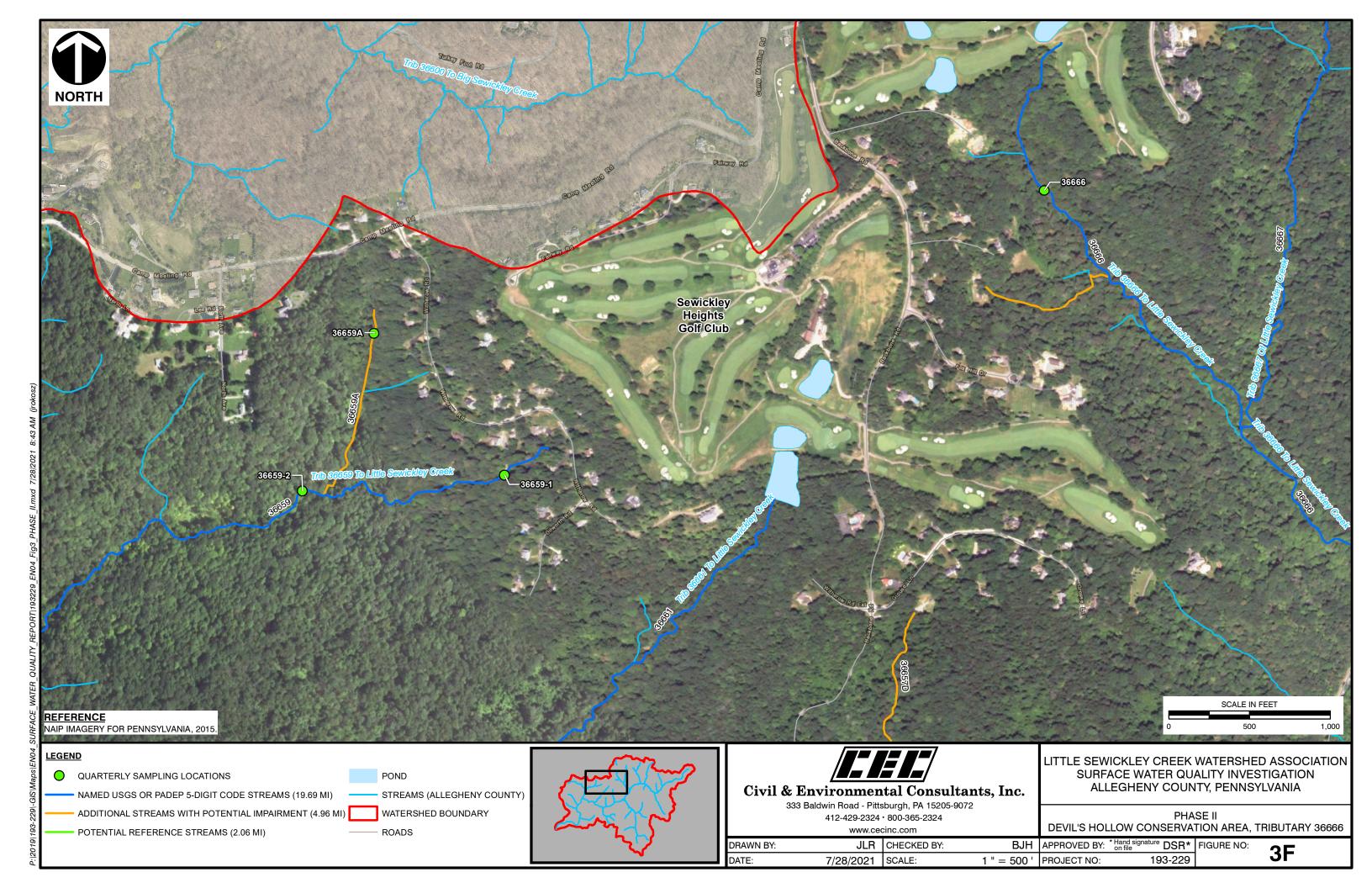












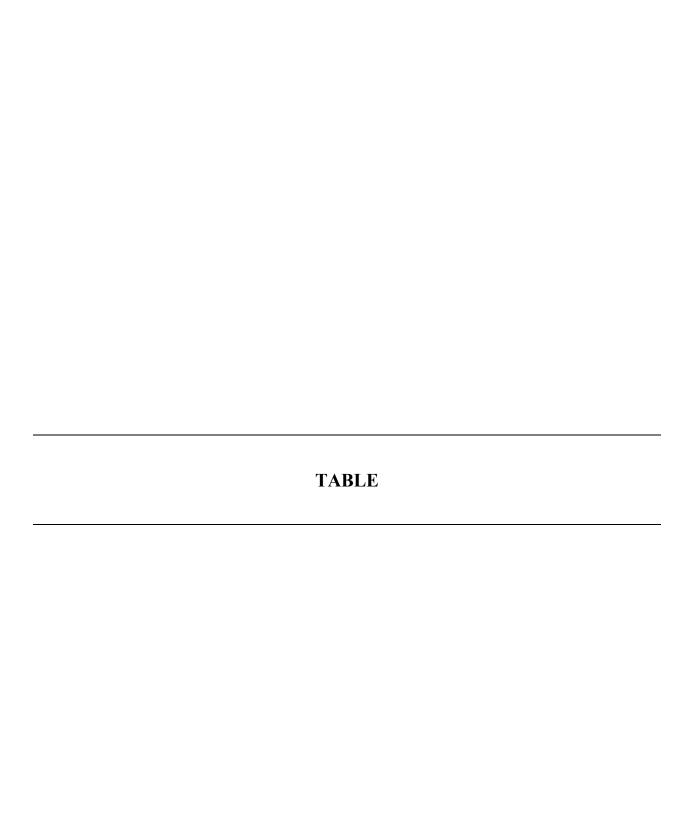


TABLE 1 (PAGE 2 of 5) SUMMARY OF LABORATORY ANALYTICAL RESULTS - QUARTERLY MONITORING LITTLE SEWICKLEY CREEK WATERSHED SEWICKLEY BOROUGH, ALLEGHENY COUNTY, PENNSYLVANIA

LITTLE SEWICKLEY CREEK WATERSHED ASSOCIATION CEC PROJECT NUMBER 193-229

																		Surface Water So	creening Criteria	
																		Pennsylvani	a SWQS 1,2	
SAMPLE LOCATION:								Fern 1	Hollow								Fish & Aquatic	Life (SWQS _{AQ}) ³	Human Health	
SAMPLE ID:		FH	I-1			F	H-2			FI	I-3			UN	IT-2		Continuous Concentration	Maximum Concentration	Criteria	Specific Water Quality Criteria
DATE COLLECTED:	9/11/2020	12/9/2020	3/3/2021	6/17/2021	9/11/2020	12/9/2020	3/3/2021	6/17/2021	9/11/2020	12/9/2020	3/3/2021	6/17/2021	9/11/2020	12/9/2020	3/3/2021	6/17/2021	(Chronic)	(Acute)	(SWQS _{HH}) ⁴	Quantity Control
Total Metals (mg/L)																				
Aluminum	0.13 J	0.15 J	0.24	0.062 J	< 0.053	< 0.053	0.076 J	0.14 J	< 0.053	< 0.053	0.08 J	0.065 J	0.23	0.12 J	0.12 J	0.12 J	nse	0.75	nse	nse
Calcium	82	59	54	83	74	71	50	78	71	69	51	75	64	62	42	69	nse	nse	nse	nse
Iron	0.27	0.22	0.33	0.21	0.068 J	0.044 J	0.12	0.23	< 0.031	0.04 J	< 0.089	0.091 J	0.34	0.16	0.15	0.2	nse	nse	nse	1.5
Magnesium	17	13	9	15	15	14	8.5	15	14	14	8.7	14	14	13	7.5	14	nse	nse	nse	nse
Manganese	0.11	0.029	0.057	0.12	0.013 J	0.0086 J	0.014 J	0.033	0.016	0.0051 J	0.008 J	0.014 J	0.046	0.024	0.026	0.036	nse	nse	nse	1
Potassium	2.7 J	2.5 J	2.3 J	2.6 J	3.1 J	2.4 J	2.1 J	2.7 J	3.1 J	2.5 J	2.3 J	2.7 J	2.9 J	2.5 J	1.6 J	2.3 J	nse	nse	nse	nse
Sodium	61	79	100	89 B	97	94	120	120 B	87	100	120	120 B	100	71	96	110 B	nse	nse	nse	nse
Anions (mg/L)																				
Chloride	146	131	184	188	171	166	219	235	155	176	226	225	170	132	161	182	nse	nse	nse	250^{7}
Nitrate as N	0.97	2.35	0.909	0.682	0.727	1.04	0.999	0.807	0.756	1.13	1.09	1.12	2.6	1.44	1.36	1.85	nse	nse	nse	10 ⁷
Sulfate	88.6	53.9	34.9	43.6	50.6	55.6	35.4	46	55.1	63.3	35.2	45.4	51.4	42	32.6	48.9	nse	nse	nse	250^{7}
General Chemistry (mg/L unless otherwise noted)																				
Chemical Oxygen Demand	18	4.8 J	< 9.1	< 1.8	7.1 J	< 4.1	< 9.1	4.7 J	8.1 J	< 4.1	< 9.1	1.9 J	10	5.5 J	11	6.8 J	nse	nse	nse	nse
Methylene Blue Active Substances	< 0.049	1.3	0.13	< 0.049	< 0.049	< 0.049	0.12	< 0.049	< 0.049	< 0.049	0.1	< 0.049	< 0.049	< 0.049	0.15	0.06	nse	nse	nse	nse
Phosphate as PO ₄	0.16 J	0.39	< 0.11	< 0.11	0.24 J	< 0.11	< 0.11	< 0.11	< 0.11	0.11 J	< 0.11	0.24 J	0.56	0.17 J	< 0.11	0.39	nse	nse	nse	nse
Specific Conductance (umhos/cm)	900	800	900	1,000	990	940	970	1,100	900	940	980	1,100	970	780	800	1,000	nse	nse	nse	nse
Total Dissolved Solids	600	450	480	600	530	530	530	610	600	500	520	600	660	430	420	580	nse	nse	nse	500/750 ^{7,8}
Total Petroleum Hydrocarbons	< 1.4	< 0.57	< 3.3	< 1.4	< 1.4	< 0.59	< 3.6	< 1.5	< 1.5	0.86 J	3.6 J	< 1.6	< 1.5	< 0.57	< 3.1	< 1.5	nse	nse	nse	nse
Bacteriological (cfu/100 mL)																				
Fecal Coliform	345	857	109	264	87	40	184	180	82	22	131	115	104	TNTC	231	112	nse	nse	nse	200
Field Data																				
Specific Conductance (umhos/cm)	839.2	903	868	960.1	924.9	899	931	1,043	854	902	643	1,019	901.6	791	770	980.6	nse	nse	nse	nse
pH (S.U.)	7.33	7.91	8.01	7.83	7.38	7.88	7.9	7.81	7.88	7.81	7.97	7.75	7.95	7.77	7.62	7.77	nse	nse	nse	6.0-9.0
Temperature (°C)	19.2	7.92	4.95	16.8	19.1	3.66	5.21	16.4	19.1	3.48	5.24	17.5	19	5.81	4.84	17	nse	nse	nse	nse

- Notes:
 1. Pennsylvania Surface Water Quality Standards (SWQS) from Pennsylvania Code, Title 25, Chapter 93.
- 2. Water Quality Criteria for toxic substances from Pennsylvania Code, Title 25, Chapter 93.
- 3. Based on ingestion from drinking water, fish consumption and other modes of exposure.
- 4. Specific water quality criteria applicable to all waters of the state unless noted. Standards from Table 3 of Pennsylvania Code, Title 25, Chapter 93.
- 7. PA SWQS only applicable at planned or existing Public Water Supply intakes. Data being presented without highlights.
- 8. The first value is a monthly average. The second value is a maximum.
- "mg/L" denotes milligrams per liter "umhos/cm" denotes micromhos/centimeter
- "cfu" denotes colony forming unit
- "nse" denotes no standard established

- Analyte was not detected above the Laboratory Method Detection Limit.
- J Result is less than the RL but greater than the MDL and the concentration is an approximate value
- B Analyte was found in the blank.
- FL MS and/or MSD recovery above control limits.

TABLE 1 (PAGE 4 of 5) SUMMARY OF LABORATORY ANALYTICAL RESULTS - QUARTERLY MONITORING LITTLE SEWICKLEY CREEK WATERSHED

SEWICKLEY BOROUGH, ALLEGHENY COUNTY, PENNSYLVANIA LITTLE SEWICKLEY CREEK WATERSHED ASSOCIATION CEC PROJECT NUMBER 193-229

																		Surface Water So	creening Criteria	
																		Pennsylvani	a SWQS 1,2	
SAMPLE LOCATION:								Sevir	n Road								Fish & Aquation	Life (SWQS _{AQ}) ³	Human Health	
SAMPLE ID:		366	60-1			360	660-2			UNT	-3A			UN	Г-3В		Continuous Concentration	Maximum Concentration	Criteria	Specific Water Quality Criteria
DATE COLLECTED:	9/10/2020	12/8/2020	3/4/2021	6/16/2021	9/10/2020	12/8/2020	3/4/2021	6/16/2021	9/10/2020	12/8/2020	3/4/2021	6/16/2021	9/10/2020	12/8/2020	3/4/2021	6/16/2021	(Chronic)	(Acute)	(SWQS _{HH}) ⁴	
Total Metals (mg/L)																				
Aluminum	0.57	0.11 J	< 0.053	0.35	0.14 J	< 0.053	0.19 J	0.51	1.1	0.73	0.25	0.44	0.25	0.34	0.15 J	0.61	nse	0.75	nse	nse
Calcium	58	46	51	64	68	64	56	68	51	63 FL	150	79	78	96	110	96	nse	nse	nse	nse
Iron	0.85	0.13	< 0.089	0.47	0.14	0.054 J	0.18	0.65	0.9	0.88	0.37	0.49	0.22	0.5	0.14	0.75	nse	nse	nse	1.5
Magnesium	19	15	16	21 B	18	17	15	18 B	13	18	41	22 B	17	28	28	24 B	nse	nse	nse	nse
Manganese	0.099	0.013 J	0.0032 J	0.095	0.014 J	0.014 J	0.0094 J	0.033	0.083	0.079	0.042	0.031	0.013 J	0.071	0.0055 J	0.032	nse	nse	nse	1
Potassium	2.3 J	2.3 J	2.4 J	2.8 J	3 J	2.3 J	2.1 J	2.9 J	3 J	3 J	4.7 J	4.2 J	3.4 J	2.6 J	3.3 J	3.4 J	nse	nse	nse	nse
Sodium	190	170	160	200	99	110	130	120	250	280	570	430	180	71	360	260	nse	nse	nse	nse
Anions (mg/L)																				
Chloride	371	306	306	405	211	245	248	260	388	490	1,170	757	339	230	695	559	nse	nse	nse	250 ⁷
Nitrate as N	5.25	6.83	4.13	4.96	0.439	1.34	1.73	1.24	3.7	4.37	3.2	3.32	0.493	0.066 J	1.76	0.841	nse	nse	nse	10 ⁷
Sulfate	53.6	49.1	45.6	48.8	48.5	53.2	38.1	46.7	53.6	54.5	58.2	47.9	56.2	66.3	51.2	53.9	nse	nse	nse	250^{7}
General Chemistry (mg/L unless otherwise noted)																				
Chemical Oxygen Demand	32	8.6 J	< 9.1	13	5.4 J	4.5 J	< 9.1	11	14	10	14	11	6 J	7.2 J	< 9.1	13	nse	nse	nse	nse
Methylene Blue Active Substances	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	0.06	< 0.049	< 0.049	< 0.049	0.053	nse	nse	nse	nse
Phosphate as PO ₄	0.36	0.17 J	0.37	0.39	< 0.11	< 0.11	0.3 J	0.33	0.23 J	0.24 J	0.18 J	0.59	0.13 J	< 0.11	0.19 J	0.43	nse	nse	nse	nse
Specific Conductance (umhos/cm)	1,500	1,300	1,200	1,500	1,000	1,100	1,100	1,100	1,700	1,900	4,000	2,600	1,500	1,100	2,500	2,100	nse	nse	nse	nse
Total Dissolved Solids	1,000	770	670	880	680	630	870	620	1,100	1,100	2,200	1,500	750	670	1,300	1,200	nse	nse	nse	500/750 ^{7,8}
Total Petroleum Hydrocarbons	< 1.5	< 0.6	< 0.55	< 1.5	< 1.4	< 0.56	< 0.56	< 1.5	< 1.5	< 0.58	< 0.58	< 1.5	< 1.5	< 0.55	6.4 B	< 1.5	nse	nse	nse	nse
Bacteriological (cfu/100 mL)																				
Fecal Coliform	144	33	3	128	83	4	24	273	117	28	22	184	97	4	7	169	nse	nse	nse	200
Field Data																				
Specific Conductance (umhos/cm)	1,419	1,237	1,198	1,512	954.1	1,067	1,040	1,075	1,566	1,844	3,904	2,605	1,395	1,094	2,491	2,006	nse	nse	nse	nse
pH (S.U.)	7.45	7.69	7.36	7.98	6.69	7.54	7.06	7.62	7.66	7.7	6.94	7.58	7.58	7.52	7.05	7.9	nse	nse	nse	6.0-9.0
Temperature (°C)	17.6	4.55	6.1	15.7	21	3.57	4.5	15.1	20.8	5.46	5.1	16.6	20.6	5.48	4.1	14.9	nse	nse	nse	nse

- Notes:
 1. Pennsylvania Surface Water Quality Standards (SWQS) from Pennsylvania Code, Title 25, Chapter 93.
- 2. Water Quality Criteria for toxic substances from Pennsylvania Code, Title 25, Chapter 93.
- 3. Based on ingestion from drinking water, fish consumption and other modes of exposure.
- 4. Specific water quality criteria applicable to all waters of the state unless noted. Standards from Table 3 of Pennsylvania Code, Title 25, Chapter 93.
- 7. PA SWQS only applicable at planned or existing Public Water Supply intakes. Data being presented without highlights.
- 8. The first value is a monthly average. The second value is a maximum.
- "mg/L" denotes milligrams per liter
- "umhos/cm" denotes micromhos/centimeter
- "cfu" denotes colony forming unit "nse" denotes no standard established

- Analyte was not detected above the Laboratory Method Detection Limit.
- J Result is less than the RL but greater than the MDL and the concentration is an approximate value
- B Analyte was found in the blank.
- FL MS and/or MSD recovery above control limits.

TABLE 1 (PAGE 1 of 5)

SUMMARY OF LABORATORY ANALYTICAL RESULTS - QUARTERLY MONITORING LITTLE SEWICKLEY CREEK WATERSHED

SEWICKLEY BOROUGH, ALLEGHENY COUNTY, PENNSYLVANIA LITTLE SEWICKLEY CREEK WATERSHED ASSOCIATION CEC PROJECT NUMBER 193-229

																		Surface Water So	reening Criteria	
																		Pennsylvani	a SWQS ^{1, 2}	
SAMPLE LOCATION:								Little Sewickley C	Creek Headwaters								Fish & Aquatic	Life (SWQS _{AQ}) ³	Human Health	
SAMPLE ID:		LS	C-1			L	SC-2			UN'	Г-1А			UNT	`-1B		Continuous	Maximum	Criteria	Specific Water Quality Criteria
DATE COLLECTED:	9/11/2020	12/9/2020	3/3/2021	6/17/2021	9/11/2020	12/9/2020	3/3/2021	6/17/2021	9/11/2020	12/9/2020	3/3/2021	6/17/2021	9/11/2020	12/9/2020	3/3/2021	6/17/2021	Concentration (Chronic)	Concentration (Acute)	(SWQS _{HH}) ⁴	Quanty exiteria
Total Metals (mg/L)																				
Aluminum	0.2	0.1 J	0.22	0.15 J	0.3	0.36	0.22	0.11 J	0.62	0.23	0.059 J	< 0.053	0.53	0.64	0.44	0.053 J	nse	0.75	nse	nse
Calcium	51	47	23	37	90	82	27	51	110	110	78	120	97	91	54	100	nse	nse	nse	nse
Iron	0.74	0.21	0.25	0.25	0.39	0.55	0.3	0.16	0.89	0.34	< 0.089	< 0.089	0.85	0.98	0.57	< 0.089	nse	nse	nse	1.5
Magnesium	10	10	4.6 J	7.4	18	15	5.1	10	24	22	16	25	18	17	8.6	19	nse	nse	nse	nse
Manganese	0.82	0.11	0.021	0.066	0.04	0.2	0.022	0.017	0.081	0.036	0.0057 J	0.0064 J	0.08	0.11	0.054	0.01 J	nse	nse	nse	1
Potassium	3.2 J	2.1 J	1.6 J	1.8 J	3.4 J	2.5 J	1.7 J	2 J	3.8 J	3.4 J	3.5 J	2.9 J	4 J	3.8 J	3.1 J	3.3 J	nse	nse	nse	nse
Sodium	69	38	32	30 B	100	74	44	54 B	170	150	250	190 B	110	120	120	140 B	nse	nse	nse	nse
Anions (mg/L)																				
Chloride	103	72	64.3	49.8	205	165	93.2	102	331	311	452	371	241	239	217	298	nse	nse	nse	250^{7}
Nitrate as N	0.335	1.19	1.23	0.522	1.82	0.977	1.25	0.8	4.24	4.07	2.23	2.79	5.46	4.15	1.82	2.81	nse	nse	nse	10^7
Sulfate	38.6	38.5	21.4	25.9	53.6	60.4	23.2	33.6	62	56	51.1	67.6	56.7	52.8	42.5	57.8	nse	nse	nse	250^{7}
General Chemistry (mg/L unless otherwise noted)																				
Chemical Oxygen Demand	12	< 4.1	< 9.1	< 1.8	8.7 J	5.2 J	< 9.1	< 1.8	11	< 4.1	< 9.1	5 J	11	11	< 9.1	7.1 J	nse	nse	nse	nse
Methylene Blue Active Substances	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	0.1	0.11	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	0.13	< 0.049	nse	nse	nse	nse
Phosphate as PO ₄	< 0.11	< 0.11	< 0.11	0.13 J	0.57	< 0.11	< 0.11	0.22 J	1.2	0.8	0.26 J	0.57	1.1	0.81	0.22 J	0.59	nse	nse	nse	nse
Specific Conductance (umhos/cm)	730	540	350	420	1,100	940	440	610	1,700	1,500	1,800	1,700	1,200	1,200	970	1,400	nse	nse	nse	nse
Total Dissolved Solids	490	290	180	230	610	500	270	350	890	820	960	970	660	710	530	740	nse	nse	nse	500/750 ^{7,8}
Total Petroleum Hydrocarbons	< 1.5	< 0.61	< 3.2	< 1.5	< 1.5	< 0.59	< 3.2	< 1.5	< 1.5	< 0.58	3.7 J	< 1.6	< 1.5	< 0.61	3.8 J	< 1.7	nse	nse	nse	nse
Bacteriological (cfu/100 mL)																				
Fecal Coliform	129	11	182	189	236	11	16	161	85	30	8	76	27	15	10	122	nse	nse	nse	200
Field Data																				
Specific Conductance (umhos/cm)	687.1	521	333	381.7	1,082	763	453	596.4	1,562	1,402	1,720	1,652	1,160	1,156	942	1,304	nse	nse	nse	nse
pH (S.U.)	7.63	8.05	7.23	7.59	7.56	7.98	8.16	6.95	7.2	7.43	7.23	7.14	7.65	7.88	7.24	7.21	nse	nse	nse	6.0-9.0
Temperature (°C)	20.1	5.09	4.15	15.4	18.6	4.41	3.15	12.9	16.1	9.72	7.13	12.7	18.5	7.38	7.32	12.5	nse	nse	nse	nse

- Notes:
 1. Pennsylvania Surface Water Quality Standards (SWQS) from Pennsylvania Code, Title 25, Chapter 93.
- 2. Water Quality Criteria for toxic substances from Pennsylvania Code, Title 25, Chapter 93.
- Based on ingestion from drinking water, fish consumption and other modes of exposure. 4. Specific water quality criteria applicable to all waters of the state unless noted. Standards from Table 3 of Pennsylvania Code, Title 25, Chapter 93.
- 7. PA SWQS only applicable at planned or existing Public Water Supply intakes. Data being presented without highlights.
- 8. The first value is a monthly average. The second value is a maximum.
- "mg/L" denotes milligrams per liter
- "umhos/cm" denotes micromhos/centimeter "cfu" denotes colony forming unit
- "nse" denotes no standard established

- Qualifiers:- Analyte was not detected above the Laboratory Method Detection Limit.
- J Result is less than the RL but greater than the MDL and the concentration is an approximate value
- B Analyte was found in the blank.
- FL MS and/or MSD recovery above control limits.

TABLE 1 (PAGE 3 of 5) SUMMARY OF LABORATORY ANALYTICAL RESULTS - QUARTERLY MONITORING

LITTLE SEWICKLEY CREEK WATERSHED SEWICKLEY BOROUGH, ALLEGHENY COUNTY, PENNSYLVANIA LITTLE SEWICKLEY CREEK WATERSHED ASSOCIATION CEC PROJECT NUMBER 193-229

																			Surface Water S	creening Criteria	
																			Pennsylvan	ia SWQS ^{1, 2}	
SAM	MPLE LOCATION:						Backbo	one Road							Edge	woth		Fish & Aquatic	Life (SWQS _{AQ}) ³	Human Health	
	SAMPLE ID:		36	662-1			366	662-2			366	62A			360	558		Continuous	Maximum	Criteria	Specific Water Quality Criteria
DA	TE COLLECTED:	9/11/2020	12/9/2020	3/3/2021	6/17/2021	9/11/2020	12/9/2020	3/3/2021	6/17/2021	9/11/2020	12/9/2020	3/3/2021	6/17/2021	9/10/2020	12/8/2020	3/4/2021	6/16/2021	Concentration (Chronic)	Concentration (Acute)	(SWQS _{HH}) ⁴	Quanty Street
Total Metals (mg/L)																					
Aluminum		0.85	0.067 J	0.077 J	0.28	0.086 J	< 0.053	0.098 J	< 0.053	0.15 J	< 0.053	0.15 J	0.098 J	0.59 J	< 0.053	0.13 J	0.084 J	nse	0.75	nse	nse
Calcium		110	95	69	110	93	84	67	94	91	93	79	98	44	42	24	41	nse	nse	nse	nse
Iron		1.3	0.095 J	0.095 J	0.42	0.12	0.044 J	0.11	< 0.089	0.17	0.052 J	0.18	0.11	0.068 J	< 0.031	0.17	0.13	nse	nse	nse	1.5
Magnesium		25	22	15	24	19	18	14	19	18	19	15	20	13	13	8	13 B	nse	nse	nse	nse
Manganese		0.07	0.0049 J	0.0057 J	0.024	0.0057 J	0.0025 J	0.0055 J	< 0.0027	0.0064 J	0.0023 J	0.0085 J	0.016	< 0.0021	< 0.0021	0.0031 J	0.0047 J	nse	nse	nse	1
Potassium		4 J	3 J	2.5 J	3.5 J	3.8 J	3.1 J	2.5 J	3.5 J	3.9 J	3.5 J	2.7 J	3.7 J	3.8 J	3.2 J	2.4 J	3.3 J	nse	nse	nse	nse
Sodium		120	85	68	110 B	73	54	41	68 B	61	45	33	60 B	100	150	100	98	nse	nse	nse	nse
Anions (mg/L)																					
Chloride		268	199	164	260	147	101	84.3	122	108	73.6	56.1	95.1	188	251	136	172	nse	nse	nse	250^{7}
Nitrate as N		0.809	1.47	2.52	0.958	1.84	1.98	1.74	1.34	2.12	2.37	1.54	1.4	0.939	1.21	1.93	0.94	nse	nse	nse	10 ⁷
Sulfate		94.2	77.1	52.2	77.3	71.5	70.6	54.4	60.8	66.4	70.6	59.3	59.1	49.4	52	42.2	47.7	nse	nse	nse	250^{7}
General Chemistry (mg/L un	inless otherwise noted)																				
Chemical Oxygen Dem	nand	15	4.1 J	< 9.1	7.1 J	9 J	< 4.1	< 9.1	8.2 J	5.9 J	< 4.1	< 9.1	4 J	< 4.1	< 4.1	< 9.1	7.8 J	nse	nse	nse	nse
Methylene Blue Active	e Substances <	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	0.11	< 0.05 FL	< 0.049	< 0.049	< 0.049	< 0.049	nse	nse	nse	nse
Phosphate as PO ₄		0.31	< 0.11	< 0.11	0.25 J	0.78	0.69	0.19 J	0.78	1.1	0.97	0.18 J	1.1	< 0.11	< 0.11	0.14 J	0.16 J	nse	nse	nse	nse
Specific Conductance ((umhos/cm)	1,400	1,100	860	1,300	990	850	660	940	890	820	660	900	900	1,100	700	830	nse	nse	nse	nse
Total Dissolved Solids		740	650	460	740	540	480	360	580	480	490	360	530	620	640	380	510	nse	nse	nse	500/750 ^{7,8}
Total Petroleum Hydro	ocarbons <	< 1.5	< 0.57	< 3.2	< 1.7	5.3 FL	< 0.59	< 3.1	< 1.5	< 1.5	< 0.59	3.7 J	< 1.5	< 1.5	< 0.59	5.8 B	< 1.6	nse	nse	nse	nse
Bacteriological (cfu/100 mL)	4)																				
Fecal Coliform		49	3	30	148	47	15	7	56	43	24	5	106	59	11	15	122	nse	nse	nse	200
Field Data																					
Specific Conductance ((umhos/cm)	1,289	1,048	825	1,236	935.5	826	416	886.6	854.8	787	640	856.6	853.5	1,279	442	831.7	nse	nse	nse	nse
рН (S.U.)		7.72	7.78	7.78	7.91	7.72	7.13	7.6	7.52	7.92	7.82	7.9	7.99	6.78	6.9	6.63	6.51	nse	nse	nse	6.0-9.0
Temperature (°C)		18.5	3.64	3.43	14.2	18.1	4.19	3.59	14.2	17.6	4.69	4.83	13.2	18.7	4.25	2.59	15	nse	nse	nse	nse

- Notes:
 1. Pennsylvania Surface Water Quality Standards (SWQS) from Pennsylvania Code, Title 25, Chapter 93.
- 2. Water Quality Criteria for toxic substances from Pennsylvania Code, Title 25, Chapter 93.
- 3. Based on ingestion from drinking water, fish consumption and other modes of exposure. 4. Specific water quality criteria applicable to all waters of the state unless noted. Standards from Table 3 of Pennsylvania Code, Title 25, Chapter 93.
- 7. PA SWQS only applicable at planned or existing Public Water Supply intakes. Data being presented without highlights.
- 8. The first value is a monthly average. The second value is a maximum.

"mg/L" denotes milligrams per liter

"umhos/cm" denotes micromhos/centimeter

"cfu" denotes colony forming unit

"nse" denotes no standard established

- Analyte was not detected above the Laboratory Method Detection Limit.
- J Result is less than the RL but greater than the MDL and the concentration is an approximate value
- B Analyte was found in the blank.
- FL MS and/or MSD recovery above control limits.

TABLE 1 (PAGE 5 of 5) SUMMARY OF LABORATORY ANALYTICAL RESULTS - QUARTERLY MONITORING LITTLE SEWICKLEY CREEK WATERSHED SEWICKLEY BOROUGH, ALLEGHENY COUNTY, PENNSYLVANIA

LITTLE SEWICKLEY CREEK WATERSHED ASSOCIATION CEC PROJECT NUMBER 193-229

																	Surface Water Se	creening Criteria		
																		Pennsylvani	a SWQS 1,2	
SAMPLE LOCATIO	ON:							Devil's Hallow C	Conservation Area								Fish & Aquatic	Life (SWQS _{AQ}) ³	Human Health	
SAMPLE	ID:	36	6659-1			366	659-2			366	659A			366	666		Continuous	Maximum	Criteria	Specific Water Quality Criteria
DATE COLLECTI	E D: 9/10/2020	12/8/2020	3/4/2021	6/16/2021	9/10/2020	12/8/2020	3/4/2021	6/16/2021	9/10/2020	12/8/2020	3/4/2021	6/16/2021	9/11/2020	12/8/2020 3/3/2021		6/16/2021	Concentration (Chronic)	Concentration (Acute)	(SWQS _{HH}) ⁴	Quanty Critchia
Total Metals (mg/L)																				
Aluminum	0.12 J	< 0.053	0.088 J	0.1 J	0.065 J	< 0.053	0.073 J	J < 0.053	0.099 J	0.056 J	0.18 J	< 0.053	0.065 J	< 0.053	0.11 J	0.069 J	nse	0.75	nse	nse
Calcium	53	39	34	40	47	49	30	44	75	74	39	62	58	37	39	42	nse	nse	nse	nse
Iron	0.14	< 0.031	< 0.089	0.12	0.08 J	0.042 J	< 0.089	< 0.089	0.14	0.067 J	0.15	< 0.089	0.13	0.048 J	0.32	0.11	nse	nse	nse	1.5
Magnesium	14	11	10	12 B	12	12	8	11 B	15	17	8.3	14 B	16	11	11	12 B	nse	nse	nse	nse
Manganese	0.0045 J	< 0.0021	< 0.0027	0.0033 J	0.0023 J	< 0.0021	< 0.0027	< 0.0027	0.027	0.0054 J	0.0035 J	0.0044 J	0.041	0.017	0.14	0.034	nse	nse	nse	1
Potassium	4.9 J	3 .	J 3 J	4.1 J	4 J	3 J	2.5 J	J 3.6 J	3.7 J	3.3 J	2.5 J	3.6 J	4.2 J	3.3 J	3.5 J	3.6 J	nse	nse	nse	nse
Sodium	27	31	50	30	25	39	66	34	32	64	120	49	20	24	51	45	nse	nse	nse	nse
Anions (mg/L)																				
Chloride	73.8	65	86.1	71.9	54	91.1	99.6	71.2	71.1	144	158	88.9	46.8	57	102	87.9	nse	nse	nse	250^{7}
Nitrate as N	1.99	2.21	2.29	1.8	1.43	1.37	1.8	1.24	0.244	0.427	0.955	0.393	0.407	0.454	1.24	0.442	nse	nse	nse	10 ⁷
Sulfate	51.2	48.1	39.2	42.6	43.5	45.8	37.5	40	50.1	49.1	40.4	55	22.8	30	31.7	25.9	nse	nse	nse	250^{7}
General Chemistry (mg/L unless otherwise no	oted)																			
Chemical Oxygen Demand	< 4.1	7.2	J < 9.1	7.0	< 4.1	5.5	< 9.1	10	< 4.1	4.8 J	< 9.1	9.6 J	13	6.9 J	< 9.1	9.6 J	nse	nse	nse	nse
Methylene Blue Active Substances	0.064	0.065	< 0.049	0.067	0.085	< 0.049	0.082	0.067	< 0.049	< 0.049	0.059	< 0.049	< 0.049	< 0.049	0.12	< 0.049	nse	nse	nse	nse
Phosphate as PO ₄	0.13 J	< 0.11	0.22 J	0.2 J	0.3 J	0.13 J	0.27	J 0.3 7	0.46	0.26 J	0.36	0.45	< 0.11	< 0.11	< 0.11	0.13 J	nse	nse	nse	nse
Specific Conductance (umhos/cm)	560	470	520	470	490	580	570	490	660	840	870	670	530	440	580	530	nse	nse	nse	nse
Total Dissolved Solids	370	280	290	310	320	350	330	280	350	490	450	370	290	250	320	310	nse	nse	nse	500/750 ^{7,8}
Total Petroleum Hydrocarbons	< 1.5	< 0.59	< 0.58	< 1.4	< 1.5	< 0.57	< 0.56	< 1.5	< 1.5	< 0.59	< 0.55	< 1.5	< 1.5	< 0.57	4.2 J	< 1.5	nse	nse	nse	nse
Bacteriological (cfu/100 mL)																				
Fecal Coliform	44	15	7	87	78	2	22	98	22	2	26	38	62	5	3	18	nse	nse	nse	200
Field Data																				
Specific Conductance (umhos/cm)	528.3	460	501.5	460.5	461.8	553	559.3	480.5	625.5	811	841	651.6	500.3	445	562	514.3	nse	nse	nse	nse
pH (S.U.)	7.1	7.63	7.33	7.86	7.14	7.46	7.67	7.52	7.14	7.42	7.5	7.64	8.12	8.22	8.08	7.74	nse	nse	nse	6.0-9.0
Temperature (°C)	18.6	3.39	4.3	14.9	18.8	3.48	4.1	15.1	18.6	4.97	4.5	14.9	18.7	4.45	4.72	17.7	nse	nse	nse	nse

- Notes:
 1. Pennsylvania Surface Water Quality Standards (SWQS) from Pennsylvania Code, Title 25, Chapter 93.
- 2. Water Quality Criteria for toxic substances from Pennsylvania Code, Title 25, Chapter 93.
- 3. Based on ingestion from drinking water, fish consumption and other modes of exposure.
- 4. Specific water quality criteria applicable to all waters of the state unless noted. Standards from Table 3 of Pennsylvania Code, Title 25, Chapter 93.
- 7. PA SWQS only applicable at planned or existing Public Water Supply intakes. Data being presented without highlights.
- 8. The first value is a monthly average. The second value is a maximum.
- "mg/L" denotes milligrams per liter
- "umhos/cm" denotes micromhos/centimeter
- "cfu" denotes colony forming unit "nse" denotes no standard established

- Analyte was not detected above the Laboratory Method Detection Limit.
- J Result is less than the RL but greater than the MDL and the concentration is an approximate value
- B Analyte was found in the blank.
- FL MS and/or MSD recovery above control limits.