pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0012742**
Facility Type	**Industrial**	APS ID	**623605**
Major / Minor	**Minor**	Authorization ID	**1244896**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Copperhead Chemicals Co. Inc.**	Facility Name	**Copperhead Chemicals Tamaqua Plant**
Applicant Address	120 River Road	Facility Address	120 River Road
	Tamaqua, PA 18252-5403		Tamaqua, PA 18252-5401
Applicant Contact	Charles Cappuccino	Facility Contact	Kaiya Campbell
Applicant Phone	(570) 386-6107	Facility Phone	(570) 386-6152
Client ID	112782	Site ID	485775
SIC Code	2892	Municipality	Walker Township
SIC Description	Manufacturing - Explosives	County	Schuylkill
Date Application Received	August 30, 2018	EPA Waived?	Yes
Date Application Accepted	November 30, 2018	If No, Reason	-

Purpose of Application: RENEWAL OF EXISTING NPDES PERMIT.

Summary of Review

The applicant is requesting the renewal of their 0.018 MGD (Minor IW with ELG) NPDES permit for discharge of IW wastewater to Little Schuylkill River (CWF; Stream #2202; impaired for aquatic life due to suspended solids, AMD metals, pH, siltation, water/flow variability) and IW stormwater outfalls discharging to Little Schuylkill River (CWF; Stream #2202), Brushy Run (CWF; Stream #2234) and the UNT No. 02235 to Brushy Run (CWF; Stream #2235).

Background:

- **Facility**: Produces pharmaceutical-grade Nitroglycerine, explosive-based propellants and pharmaceuticals. Onsite process chemicals include acids, nitrate esters, anhydrous ammonia, sodium hydroxide, acetone and other flammable liquids. The PPC Plan indicates magnesium hydroxide is used as a wastewater treatment chemical for certain site wastewaters. The waste streams are not subject to any pre-treatment prior to the IWTP. The site has legacy contamination pollutants from historic industrial activities (other types of explosive manufacturing, etc.) by prior site owner/operators. **NOTE**: Several Stormwater Outfall discharge locations and extrapolated NHD drainage points were updated in this permit renewal.
  - **IW Discharge (Outfall No. 011)**: 0.018 MGD. (0.017725 MGD (TA from Line Drawing) of treated Industrial Wastewater, NCCW, & sewage via Outfall #011 into the Little Schuylkill River (CWF, stream code # 2202; impaired due to suspended solids, AMD metals, pH, siltation, water/flow variability).
  - **Existing IW Stormwater Outfalls Nos. 002 – 007, 009, 010, 012 – 014**: Discharge into Little Schuylkill River and Brushy Run (CWF, Stream #2234) and UNT to Brushy Run (CWF) which flows into the Little Schuylkill River.
  - **New IW Stormwater Outfall No. 018 (HW TSD Thermal Treatment):** This is for the existing HW Thermal Treatment area which directs sheet flow to the UNT to Brushy Run (CWF, Stream # 2235). NHD indicates the specific area would flow toward the UNT, rather than Brushy Run itself. The application indicated no existing stormwater sampling point exists. A subdivided stormwater drainage area/outfall has been created for this HW TSD Area. If a sampleable outfall becomes available for this specific drainage area, stormwater

Approve	Deny	Signatures	Date
X		James D. Berger (signed) James D. Berger, P.E. / Environmental Engineer	May 28, 2021
X		Amy M. Bellanca (signed) Amy M. Bellanca, P.E. / Environmental Engineer Manager	6-3-21

Summary of Review

sampling will be required in addition to applicable stormwater BMPs, PPC Plan requirements, etc. The Department also reserves the right to require sheet flow sampling per standard IW stormwater conditions. **NOTE**: Stormwater Outfalls Nos. 15 – 17 are inactive stormwater outfalls, locations uncertain (and possibly not on Copperhead property which was subdivided from other explosives manufacturing operations and area).

- **In-stream Sampling Point/Stormwater Sampling Point (Outfall No. 001)**: There is one (1) stormwater/in-stream monitoring point (001) in Brushy Run at the confluence with the Little Schuylkill River that was apparently used as an indicator of overall stormwater contamination loadings entering the Little Schuylkill River (during precipitation events), but no associated in-stream water quality monitoring program to give its sampling results any use besides "indicator" (spot-checking for compliance with applicable Water Quality Standards).
- **Non-Representative Stormwater Outfalls**: Request for representative stormwater outfalls could not be granted.
  - Previously Outfall No. 007 (Little Schuylkill River) was considered representative of Outfall Nos. 010, 012, 013, and 014. That is no longer the case because of Application-documented exceedances documented in all of the supposedly represented outfalls when Outfall No. 007 had no exceedances.
  - No case has been made that any stormwater outfall can be considered representative of any other, other than the use of the monitored Brushy Run stormwater outfalls to cover assorted explosives storage areas that lack individual stormwater outfalls (for which applicable stormwater BMPs and PPC Plan requirements have been implemented). The Department retains authority to require installation of sheet flow stormwater sampling points and monitoring in event those areas are determined to be potential sources of contaminated stormwater discharges.
- **No Exposure Stormwater Outfall/Drainage Areas Request**: Request for "no exposure" outfalls could not be granted. The application failed to make any case that any existing drainage area was "no exposure":
  - The existing IW stormwater drainage area/outfall areas have known material handling/industrial activities within them, including evidence of TSS exceedances, with undefined legacy contamination by prior site owner/operators.
  - In terms of meeting the stormwater no-exposure conditions (using IW Stormwater NPDES General Permit PAG-03 guidance for "no exposure" conditions):
    - ≤30 mg/l TSS: The facility acknowledged it had high TSS levels at Stormwater Outfall Nos. 002, 003, 009, 010, 012, and 013 which were noted to be due to sand/grit from stormwater runoff. Application data indicated >100 mg/l TSS in Outfalls Nos. 002, 003, 004, 009, 010, 012, 013, and 014 discharges.
    - ≤2.0 mg/l Total Nitrogen: The facility indicated it had not met DEP Target QLs to show that any area met this level. Per EPA Sufficiently Sensitive Rule, the Department must treat insensitive Non-detect levels as the constituent being present at the insensitive ND level (above DEP Target QL).
    - 6.0 – 9.0 SU pH: The facility acknowledged it was below 6.0 SU at Stormwater Outfalls Nos. 001, 002, and 009. Application data indicated <6.0 SU pH in Outfall Nos. 001, 002, and 009.
    - Metals: No metal data was provided. See PAG-03 Appendixes A and F for assorted metals of interest for this site. Manganese should be sampled as an AMD TMDL constituent of interest.
    - Missing BOD5 and COD data: Stormwater Outfall Nos. 003, 004, 006, 012, 013.
- **Production Rates**:
  - Application indicated they produced 105,189 lbs of explosives on an annual average production basis over the last five years. Production rate was indicated to remain consistent over next 5 years.
  - Application indicated they produced 251,074 lbs Pharmaceuticals (nitroglycerine based) on an annual average production basis over the last five years. Production rate was indicated to remain consistent over next 5 years.
  - Estimated water usage rates for the entire plant was 0.013 MGD in 2017, 0.020 MGD in 2016, and 0.030 MGD in 2015.
- **Existing HW Thermal Treatment Unit**: New stormwater Outfall No. 018 created to address this newly subdivided drainage area. Within the Brushy Run watershed drainage area, Copperhead Chemical Company, Inc. has a HW TSD Permit (ID# PAR000030874) which authorizes it to thermally treat (by open burning) Wastewater Treatment Sludges from the Manufacturing and Processing of Explosives (K044) in "burn pans in three burning bays". This TSD unit has been explicitly addressed in this permit as it is subject to HW TSD-related IW Stormwater requirements:

Summary of Review

- The PPC Plan notes that this TSD unit includes concrete pads, burn pans, a paved access road, and roll-off container for ash residue. The Unit (Latitude: 40°, 44', 18.2"; Longitude: -75°, 59', 43.7") burns nitrate ester-contaminated process waste, residual nitrate ester washdown residuals, nitroglycerin-contaminated materials/washdown residuals, WWTP residuals, contaminated lab residuals, a "Triethylene Glycol (TEG) desensitizer", off-spec pharmaceutical nitroglycerine product, and wood pulp/shredded paper (mixed in for handling & burning) per their HW Permit attachments. Residual ash is removed for offsite disposal.
- Application indicated no existing stormwater sampling point. The 12/19/2012 Drawing V.1-01 Site Map appears to indicate that any stormwater from the TSD unit would likely proceed by sheet flow toward Brushy Run without any stormwater sampling location. NHD now indicates flow would flow to the UNT to Brushy Run.

- **Existing 1/25/1989 DRBC Docket No. D-88-83 (NPDES Permit No. PA0012742, Outfalls No. 011 and 008)**: Copperhead indicated this is the only DRBC Docket for its IWTP. Copperhead has not updated the old Atlas DRBC Docket to reflect major changes (change in site owner/operator from Atlas Powder Co.; not addressing STP conversion to the Amphidrome System/UV disinfection from Extended Aeration System/Chlorination; not addressing reduction in average from 0.0245 MGD to ~0.018 MGD discharge; elimination of IW Outfall No. 008; changes in site operations; etc.). The Department recommended that Copperhead update this Docket, but Copperhead declined. Existing DRBC Docket requirements are being incorporated into this permit in accordance with Chapter 92a.12. Copperhead indicated it could meet the existing DRBC Docket requirements.
  - **Existing DRBC Docket Limits and Monitoring Requirements**:
    - **Mass limits**: Cyanide, Aluminum; TSS; COD, BOD5, Zinc, Copper, Chromium, Lead, Nickel
    - **Concentration limits**: BOD5, TSS, Oil & Grease. NOTE: No existing TDS limit as STP discharge was expected to be below 1000 mg/l.
    - **Minimum Monthly Average Reduction**: The docket holder committed to trying to reach 85% BOD5 reduction by January 1, 1991, which requires influent monitoring and reporting.
  - **Future Updated DRBC Docket Requirements**: Any future updated DRBC docket requirements will be incorporated in the NPDES Permit during next renewal and/or major NPDES Permit Amendment. The DRBC retains full authority to enforce its own docket requirements separately.
  - **Stormwater BMP**: DRBC Docket Decision Item e required: "Sound practices of excavation, backfill, and reseeding shall be followed to minimize erosion and deposition of sediment in streams".
- **Possible Facility Sale/Transfer**: Copperhead clarified that the EIN# and name would not be changed (i.e. no permit transfer or name change minor amendment required).
- **SIC Code and TBELs:** Facility now identifies SIC Code# 2834 (Pharmaceutical Preparation Manufacturing) as its primary SIC Code, and SIC Code# 2892 (Explosives Manufacturing) as its secondary SIC Code. The facility manufactures pharmaceutical-grade nitroglycerine and explosives/propellants (nitrate ester compounds) in this 875-acre site.
  - **Production Rates for next 5-year permit term per Application**:
    - 22 production days per month (previous NPDES Permit had indicated 7 days, i.e. more concentrated production period with higher daily loadings had been expected in previous permitting).
    - 105,189 lbs/year explosives manufacturing
    - 251,674 lbs/year pharmaceutical production
  - **40 CFR 457 Subpart A (Explosives Manufacturing Point Sources: Manufacture of Explosives)**: **Production-normalized ELG limits apply**. Per the EPA NPDES Permit Writers' Manual Section 5.2.2.5: Permit writers incorporate such production-normalized effluent guidelines into NPDES permits as mass-based TBELs by using a reasonable measure of the permittee's actual long-term daily production. The objective in determining the production for a facility is to develop a single estimate of the long-term average daily production that can reasonably be expected to prevail during the next term of the permit (i.e., not the design production rate). Permit writers may establish such a production rate using the past 3 to 5 years of facility data. **For example, the permit writer might wish to use the average daily production rate calculated using the highest annual production from the previous 3 to 5 years.** Whatever value is selected, the permit writer should ensure that the production rate used in deriving mass-based effluent limitations is representative of the actual production likely to prevail during the next term of the permit.
    - **Due to variability of reported production rates as seen in Table 3 (below), the 2017 highest annual average production rates were used to calculate production-based ELG limits:**
      - **Annual Average: 138,488 lbs/year (138.488 K; 525 lbs/production day @264 production days per year)**
    - See Table calculations for ELG limit calculation details.

Summary of Review

- **40 CFR 439 Subpart D (Pharmaceutical Manufacturing Point Sources: Mixing/Compounding and Formulation)**: Flow-normalized ELGs apply. Per the EPA Permit Writers Manual Section 5.2.2.5: In some cases, permit writers are directed to calculate mass-based TBELs from flow-normalized effluent guidelines that are expressed as concentrations. For example, the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) effluent guidelines <www.epa.gov/waterscience/guide/ocpsf/> in Part 414 state that facilities "must achieve discharges not exceeding the quantity (mass) determined by multiplying the process wastewater flow subject to [the effluent guideline] times the concentration listed in the [effluent guideline]…"
  - Pharmaceutical Facility Wastewater: 1,900 GPD per Line Drawing.
- **IWTP Waste Streams**: Estimated 22 days/month production rate.
  - Site-generated sanitary flows: 1,200 GPD
  - Analytical Lab: 700 GPD (IW wastewater) broken down into an estimated at 70 GPD sanitary wastewater and 630 GPD industrial wastewater.
  - Laundry (domestic wastewater): 500 GPD
  - Boiler Blowdown (Chemical Additives in use): 325 GPD
  - Noncontact Cooling Water: 10,000 GPD (used seasonally during winter).
  - Total: 12,400 GPD (2,400 GPD domestic wastewater). **NOTE:** 0.018 MGD design flow being used for NPDES Permit basis flow.

  NOTE: 120 GPD NG Hill Wastewater will now be trucked offsite to a WWTP for treatment/disposal. 2,500 – 6,000 GPD once or twice per month.
- **IW Stormwater General Permit PAG-03 Appendix A (HW TSD facilities) Constituents of Interest**: Applies to HW TSD units at Copperhead (HW Thermal Treatment Unit and HW storage units). Appendix A Constituents includes: **pH, TSS, COD, Ammonia-N, Arsenic, Cadmium, Cyanide, Lead, Mercury, Silver, Selenium**. **NOTE**: **In the last NPDES Permit Renewal, the facility used TCLP ash analysis to show that the HW TSD metals were not present in the Thermal Treatment Unit ash to remove metal monitoring from Outfall No. 001. However, the concern about legacy pollutants from prior owner/operator operations was not addressed. The soil sampling data (6/14/2012) indicating 9160 mg/kg Aluminum, 5.1 mg/kg Arsenic, 8.5 mg/kg Total Chromium, 22 mg/kg Lead, 210 mg/kg Manganese, <0.254 mg/kg Mercury, 5.5 mg/kg Nickel.**
- **IW Stormwater General Permit PAG-03 Appendix F (Chemicals and Allied Products) Constituents of Interest**: Applies to both primary and secondary SIC Codes. Appendix F Constituents includes: **pH, COD, Nitrate-Nitrite-N, Total Phosphorus, Lead, Zinc, Total Iron, Aluminum.**

NOTE: Site previously contained additional explosives/other manufacturing operations under prior owner/operators, with potential for legacy contaminants (from previous owner operations) in the stormwater runoff.

- **Amphidrome IWTP Flows/loadings per NPDES Permit Renewal Application**:
  - Design Flow: 0.018 MGD Flow
  - Average flow During Production/Operations: 0.011 MGD
  - Max flow During Production/Operations: 0.033 MGD
  - **Identified Organic Design Capacity: 6.8 lb/day. The existing NPDES permit BOD5 effluent mass limits are 4.0 lbs/day (monthly average) and 8.84 lbs/day (daily max).**
  - IWTP Design Criteria Assumptions (NPDES Permit Renewal Application):
    - BOD5: 105 mg/l (Effluent goal of ≤26.6 mg/l, 4 lbs/day)
    - TKN: 24 mg/l
    - Ammonia-N: 5 mg/l
    - TSS: 30 mg/l (Effluent goal of ≤21.2 mg/l, 3.2 lbs/day)
    - **Nitrates and Nitrites: No design goals for Nitrate or Nitrite reduction per applicant.**
  - **NG Hill Wastewater stream elimination**: As of July 2020, Copperhead indicated it would be trucking their NG Hill Wastewater (40 CFR 457 Subpart A explosives manufacturing) from their facility to another WWTP, rather than onsite treatment at the captive IWTP. (9/1/2020 Response Letter Item 3.a.). This will reduce influent loadings on the Amphidrome treatment unit.
    - Application included one sample analysis with 9,350 mg/l Nitrate-N; 7,890 mg/l Sulfate; 224 mg/l COD; 17 mg/l BOD5; 38 mg/l TSS, 16,700 mg/l Sodium; and 147 mg/l Alkalinity ($CaCO_3$). This is a likely contributing source of the effluent spiking of Nitrate-Nitrite (101.65 mg/l) and Sulfates (1700 mg/l). However, Nitrates would also be expected in other influent waste streams.
    - Per the PPC Plan, the facility previously used magnesium hydroxide to treat this wastewater at the IWTP.

Summary of Review

- **This is the Explosives Manufacturing Wastewater (120 GPD apparently produced) waste stream was subject to the 40 CFR 457 Subpart A ELG. ELG limits have been updated to reflect elimination of this waste stream.**
- Line Drawing did not show any NG Hill wastewater influent sampling point. No waste stream-specific sampling data is available.
- The PPC Plan Appendix F (Thermal Treatment Area PPC Plan) Section G-1 indicated previously, magnesium hydroxide would be fed into the incoming tanker and uniformly mixed by aeration. The treated wastewater would then be slowly drained into a settling tank, and supernatant discharged to the IWTP. Resultant sludge would be sent to the thermal treatment unit for disposal. The IWTP was estimated to generate approximately 4,000 lbs/year of magnesium hydroxide precipitant.
- It is unclear if passthrough occurred as catching pass-through would require sampling during the NG Hill wastewater receipt/treatment. At 2,500 – 6,000 gallons trucked-in (once or twice per month) to the IWTP, a slug of this wastewater would have been a problem for the 0.018 MGD Amphidrome System/UV Disinfection IWTP to treat.

- **OTHER Site Permits**:
  - PADEP Air Quality Permit No. 54-0003.
  - PADEP Waste Management Captive HW TSD Permit No. PAR000030874 (thermal treatment unit).

Permit Conditions: Changes bolded.

- Parts A & B: **Updated** per standard IW NPDES template
- **Part A.I._ (IMP/Outfall No. 111): New influent monitoring point for headworks of IWTP to allow for influent sampling.**
- **Part A.I (Outfall No. 018): Adding stormwater drainage area/outfall No. 018 to address the HW TSD (thermal treatment unit) which was indicated to be sheet flow drainage area. Sampling required if there is a sampleable point of concentrated stormwater sheet flow (or upon Department direction).**
- Parts C.I.A, B, C, & D: Standard IW conditions (necessary property rights; proper management of residuals; Relation to WQM Part II Permits; and BAT/ELG).
- Part C.I.E: **Updated** Chlorine minimization conditions (updated due to switch to UV disinfection).
- **Part C.II: New Ammonia-N Schedule of compliance due to uncertainties about the facility's ability to handle IW waste streams.**
- **Part C.III: New Toxics WQBEL condition (mercury), source unknown. Three Year compliance schedule.**
- Part C.IV: **Updated** Chemical Additive conditions
- Part C.V: **Updated** IW Stormwater conditions including the site-specific stormwater BMPs from their PPC Plan.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001, 003, 004, 006	Design Flow (MGD)	0 (stormwater only)
Latitude	40º 43' 54.77" (001) 40º 44' 4.95" (003) 40º 44' 9.77" (004) 40º 44' 1.35" (006)	Longitude	-75º 59' 0.30" (001) -75º 59' 19.24" (003) -75º 59' 23.56" (004) -75º 59' 16.70" (006)
Quad Name	New Ringgold	Quad Code	1338 (6.20.4)
Wastewater Description:	Stormwater associated with industrial activities		

Receiving Waters	Brushy Run (CWF)	Stream Code	2234
NHD Com ID	25984154	RMI	-
Drainage Area	1.81 square mile (at 001)	Yield (cfs/mi^2)	-
Q_{7-10} Flow (cfs)	-	Q_{7-10} Basis	-
Elevation (ft)	-	Slope (ft/ft)	-
Watershed No.	3-A	Chapter 93 Class.	CWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	-		
Source(s) of Impairment	-		
TMDL Status	Final	Name	February 2014 Little Schuylkill River TMDL (AMD and Siltation)

Background/Ambient Data: See below Data Source: See below

Nearest Downstream Public Water Supply Intake	PA AMER GLEN ALSACE EXETER WATER SYS (ID#101174-001)		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	-
PWS RMI	-	Distance from Outfall (mi)	~47 miles

Changes Since Last Permit Issuance: Natural Trout Reproduction stream.

Other Comments:

- **Legacy Pollutants**: Previous explosives manufacturing activities in this watershed by prior owner/operators (i.e. historical legacy contamination from prior operations potentially present). Updated monitoring requirements will clarify for future permit renewals.
- **Brushy Run**: Brushy Run disappears and reappears upstream of the Outfall No. 004 location, with flow directed to Little Schuylkill River.
- **HW Thermal Treatment TSD Area (burning bays)**: Now addressed under UNT to Brushy Run/Stormwater Outfall/Drainage Area No. 018.
- **Overall Brushy Run Watershed In-stream Monitoring Point**: Outfall #001 is an in-stream sampling point from edge of creek just upstream of Brushy Run confluence with Little Schuylkill River.
- **Little Schuylkill River Stream Impairments**:
  - **AMD Metals**: The facility should not be a significant source of AMD metals loadings.
  - **Sediment**: Implementation of stormwater BMPs should prevent any significant loadings of TSS.

Background/Ambient Data **Data Source**

		Sample ID: 2202757 (between 003 and 006, downstream of UNT Confluence/018) **Sequence Number:** 294 **Monitoring Point ID:** 0 **Date Created:** 3/29/2018 **Date Collected:** 3/19/2018
pH (SU)	6.42	
Temperature (°C)	4.4	See above
Hardness (mg/L)	11	See above
TDS (mg/l)	30	See above
Zinc (ug/l)	<5.0	See above
Silver (ug/l)	<40.0	See above
Selenium (ug/l)	<7	See above
Nitrate-N (mg/l)	0.30	See above
Nitrite-N (mg/l)	<0.001	See above
Nickel (ug/l)	<4.0	See above
Mercury (ug/l)	<2	See above
Manganese (ug/l)	<10.00	See above
Lead (ug/l)	<1.0	See above
Total Iron (ug/l)	<20.0	See above
Chromium Total (ug/l)	<4	See above
Cadmium (ug/l)	<0.2	See above
Arsenic (ug/l)	<3.0	See above
Aluminum (ug/l)	10.200	See above

Discharge, Receiving Waters and Water Supply Information

Outfall No.	011 (IWTP Discharge) 002, 005, 007, 009, 010, 012, 013, 014 (Stormwater)	Design Flow (MGD)	0.18 (011) 0 (002, 005, 007, 009, 010, 012, 013, 014)
Latitude	40º 43' 48.76" (011) 40º 43' 50.27" (002) 40º 43' 58.39" (005) 40º 44' 16.38" (007) 40º 43' 48.76" (009) 40º 44' 25.45" (010) 40º 44' 11.94" (012) 40º 44' 5.76" (013) 40º 44' 2.73" (014)	Longitude	-75º 59' 0.49" (011) -75º 58' 59.84" (002) -75º 58' 58.79" (005) -75º 58' 47.81" (007) -75º 59' 0.49" (009) -75º 58' 45.26" (010) -75º 58' 48.67" (012) -75º 58' 49.03" (013) -75º 58' 52.84" (014)
Quad Name	New Ringgold	Quad Code	1338 (6.20.4)
Wastewater Description:	011: IW Process Effluent with ELG. NCCW, Boiler blowdown, and Sewage 002, 005, 007, 009, 010, 012, 013, 014: Stormwater associated with industrial activities		

Receiving Waters	Little Schuylkill River (CWF, MF)	Stream Code	2202
NHD Com ID	25984248	RMI	**16.2 (Outfall 011 per DRBC Docket)**
Drainage Area	79.6 square miles (at 011)	Yield (cfs/mi^2)	~0.1902 (at 011)
Q_{7-10} Flow (cfs)	15.2 (at 011)	Q_{7-10} Basis	PAStreamstats
Elevation (ft)	~642 Feet (at 011)	Slope (ft/ft)	-
Watershed No.	3-A	Chapter 93 Class.	CWF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired		
Cause(s) of Impairment	FLOW REGIME MODIFICATION, HABITAT ALTERATIONS, METALS, PH, SILTATION, TOTAL SUSPENDED SOLIDS (TSS)		
Source(s) of Impairment	ACID MINE DRAINAGE, CHANNELIZATION, DAM OR IMPOUNDMENT, URBAN RUNOFF/STORM SEWERS		
TMDL Status	Final	Name	February 2014 Little Schuylkill River TMDL (AMD & Siltation)

Background/Ambient Data: See table below Data Source: See table below

Nearest Downstream Public Water Supply Intake: PA AMER GLEN ALSACE EXETER WATER SYS (ID#101174-001)

PWS Waters	Schuylkill River	Flow at Intake (cfs)	-
PWS RMI	-	Distance from Outfall (mi)	~47 miles

Changes Since Last Permit Issuance:

- Upstream Little Schuylkill Creek area (upstream of Atlas Road, T-517, upstream of all permitted outfalls) determined to be a Natural Trout Reproduction stream segment, but no impact from site outfalls.
- Facility upgraded to an Amphidrome treatment process with an anoxic/equalization tank and UV disinfection (replacing extended aeration/chlorine disinfection system) since prior NPDES permitting.

Other Comments:

- **Background Site Information:** This is an 875-acre explosives manufacturing site with multiple previous owners and discontinued industrial activities involving assorted types of explosives.

- **Upstream Desilting Basin:** There is an desilting basin upstream of the facility, on the Little Schuylkill River itself, as shown on E-maps.
- **Copperhead:** Copperhead's onsite industrial activities are focused on pharmaceutical-grade nitroglycerine (glycerol trinitrate) and nitrated ester-based explosives/propellants.
- **Previous site operations:** Previous explosives manufacturing activities in this watershed by prior owner/operators (i.e. historical contamination from prior operations likely present). The previous site owner (ICI Explosives USA) conducted assorted closure activities including removal many previous onsite structures & industrial activities, rendering the old USGS topo maps inaccurate for current site conditions. Potential residual sources of soil and stormwater contamination.

- **Q7-10 Flow:** Estimated 14.8 CFS with 0.1880 CFS/Square Mile LFY per PAStreamstats. Discharge hardness of 59.2 mg/l
  - The Little Schuylkill River has assorted AMD discharges upstream, contributing to the Q7-10 low flow conditions. Therefore, the low flows are reasonable.
  - PAStreamstats gives the most accurate low flow figures available due to orphan AMD discharges.
    - Nearest downstream gage is US Gage# 01470500 (Schuylkill River at Berne, PA) is so not too far from this site along the Little Schuylkill River site, but is located on the larger river.
    - The nearest upstream gage is non-representative due to numerous abandoned mine discharges and desilting basin located between it and the Copperhead Outfall #011.
  - ~811:1 dilution factor at Q7-10 flow.
- **Stream Impairments:**
  - **Flow regime modifications/habitat Alterations/Urban Stormwater Runoff:** The facility will not contribute to these causes of stream impairment.
  - **Siltation and TSS:** Permit limits and stormwater BMPs will ensure facility does not contribute to these causes of stream impairment.
  - **TMDL AMD Impairments (pH, AMD metals): The facility influent and effluent does show evidence of AMD metals present (whether from use as non-potable water or I&I infiltration), but Reasonable Potential Analysis indicated IW effluent should not contribute to concentration-related AMD metal impacts. Permit limits will address potential pH impacts. Stormwater BMPs and metal monitoring should address any stormwater-related impacts.**
    - No WLAs: Copperhead did not receive any Waste Load Allocations (WLAs) in the TMDL Table 9. Its contribution to the River was noted to be included in the TMDL LSNR sampling point.
    - Application Influent Sampling (1 sample influent/3 samples effluent): Data indicated potential AMD-impacts (whether from use of non-potable water sources or I&I entering IW collection/conveyance system:
      - pH:
        - Influent (1 sample): 7.3 SU
        - Effluent (368 samples): 6.9 – 9.5 SU.
      - Aluminum:
        - Influent (1 sample): 250 ug/l
        - Effluent Max (3 samples): 70 ug/l
      - Total Iron:
        - Influent (1 sample): 2200 ug/l
        - Effluent Max (3 samples): 650 ug/l
      - Dissolved Iron:
        - Influent (1 sample): 400 ug/l
        - Effluent Max (3 samples): 190 ug/l
      - Manganese:
        - Influent (1 sample): 35 ug/l.
        - Effluent Max (3 samples): 48 ug/l

Background/Ambient Data		**Data Source**
		Below Desilting Basin Sampling Point: Collected 7/9/2006 **Monitoring Point ID:** 74057 **Name:** L. Schuylkill R. just below the Desilting Basin **Monitoring Point Type Code:** 4 **Monitoring Point Type:** Stream **Monitoring Function:** Downgradient
pH (SU)	6.2	

Temperature (°C)	3.6	See above.
Hardness (mg/L)	236	Application sample information was 236 mg/l. Side streams were at lower Total Hardness.
TSS (mg/l)	16	Desilting Basin downgradient sampling data
TDS (mg/l)	-	See above
Sulfate (mg/l)	169.3	See above
Aluminum (ug/l)	652	See above
Total Iron (ug/l)	2102	See above
Manganese (ug/l)	1809	See above

Discharge, Receiving Waters and Water Supply Information

Outfall No.	018	Design Flow (MGD)	0 (stormwater only)
Latitude	40º 44' 9.94"	Longitude	-75º 59' 43.01"
Quad Name	New Ringgold	Quad Code	1338 (6.20.4)
Wastewater Description:	Stormwater associated with Industrial Activities		
Receiving Waters	Unnamed Tributary to Brushy Run (CWF, MF)	Stream Code	2235
NHD Com ID	25984150	RMI	-
Drainage Area	Undefined	Yield (cfs/mi^2)	See Brushy Run information.
Q_{7-10} Flow (cfs)	Undefined	Q_{7-10} Basis	-
Elevation (ft)	~920 Feet at TSD	Slope (ft/ft)	-
Watershed No.	3-A	Chapter 93 Class.	CWF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	-		
Source(s) of Impairment	-		
TMDL Status	Final	Name	Little Schuylkill River

Background/Ambient Data; None available		Data Source
pH (SU)	-	-
Temperature (°F)	-	-
Hardness (mg/L)	-	-
Other:	-	-

Nearest Downstream Public Water Supply Intake	PA AMER GLEN ALSACE EXETER WATER SYS (ID#101174-001)		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	-
PWS RMI	-	Distance from Outfall (mi)	>47 miles

Changes Since Last Permit Issuance: Existing drainage area/HW TSD unit in newly-defined stormwater drainage area.

Other Comments:

- See Background for HW TSD information.
- Location based on DEP Waste Management HW TSD locational information with NHD locator used to estimate drainage destination on UNT.
- The applicant declined to define this specific drainage area and indicated sheet flow (no sampleable stormwater outfall). It is assumed the drainage would flow toward the site access road shown on E-maps and then drain to UNT.
- Stormwater drainage area subject to HW TSD stormwater BMPs, PPC Plan requirements, and semi-annual monitoring if a sampleable stormwater outfall becomes available.

Treatment Facility Summary

Treatment Facility Name: Copperhead Chemical Company IWTP

WQM Permit No.	Issuance Date	Outfall #011-related
5470401	5/30/1970	Issued to Atlas Chemical Industries, Inc. Special Condition A required that secondary treatment standards be met. (Outfall #011 only STP discharge at site).
5470401-T1	1/5/1976	STP Transfer to Atlas Powder Co. Special Condition A required that secondary treatment standards be met and limited fecal coliform to 200/100 ml geo. Avg., and max of 1,000/100 ml in 10% sample. (Outfall #011 only STP discharge at site).
5488203	2/2/1989	Treatment plant modifications. 2/2/1989 IRR indicates modifications involved a neutralization tank with mixer, an equalization tank for NG Hill flows, a flocculation tank, clarifier and sand filters Metals precipitation using ferric chlorine. Design flow for modifications was 0.027 MGD, versus existing package plant at 0.036 MGD. 1989 DRBC Docket indicated this was a 0.036 MGD extended aeration, activated sludge process STP with sludge processing facilities.
5490201	5/30/1990	Added two (2) additional pressure filtration units to improve influent for WWTP discharging to Outfall #011.
5494202	9/29/1994	For four "Reed system" sludge drying beds. (Permittee indicates that drying beds are not in use at Copperhead). IRR indicated original Outfall #011 WWTP installed circa 1972, and tertiary treatment unit in 1989. **REMOVED PER NPDES PERMIT APPLICATION.**
5490201-T1	4/25/1997	WWTP transferred to ICI Explosives USA, Inc.
5415401	03/14/2016	Amphidrome (biologically active filter) and UV Disinfection System with one wet well and one ~14,716-gallon normal operating capacity (18,000-gallon max capacity) anoxic/equalization tank. The anoxic zone is meant to aid in denitrification. **The Design Engineer Report Section 3.1 and Module 15 (IWTP) indicated treated wastes were to include sanitary and NCCW. No mention of IW wastewater.**
5415401-A1	02/17/2017	Replacement Pump Station added to WWTP upgrade project for 2,500 GPD (sanitary, lab, and laundry flows).

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Biological (Industrial Waste)	Nitrification - Denitrification	Ultraviolet	0.018

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.018	6.80	Not Overloaded	None	Disposal offsite

*See below.

Changes Since Last Permit Issuance: See above WQM permits issued after previous NPDES Permit Renewal. IWTP upgrade (Amphidrome Reactor/UV disinfection) online as of September 20, 2016.

Other Comments:

NPDES Permit Renewal Application IWTP Description: Anoxic/EQ Tank, Amphidrome Reactor, and UV disinfection.

- The Amphidrome system was described as utilizing a biologically active filter (BAF) to achieve an aerobic environment for the oxidation of organics and nitrification.
- NPDES Permit Renewal application indicates the Anoxic/EQ tank has an equalization zone, settling zone (primary clarification) and sludge storage zone.
- Soda ash is used for alkalinity addition (0.86 lbs/day).
- I&I: The Application indicates an extensive I&I evaluation was done "within the last few years". They confirmed no natural spring water is being directed to the IWTP. No stormwater is directed to the IWTP.

Amphidrome IWTP Design Capacities:

- Organic Design Capacity: 6.80 lbs BOD5/day. The NPDES Permit Renewal application and WQM Permit Application Specs indicated the Amphidrome System design goal was to handle for a 0.018 MGD flow with 105 mg/l BOD5 influent, which equates to an Organic Design loading of: 15.7 lbs BOD5/day at maximum loadings.
- Hydraulic Design Capacity: 0.0177 MGD. The peak design flow was identified as 34,000 GPD. The application estimated average flows during production at 0.011 MGD, with 0.033 max flow during production.
- Lead and Mercury Loadings: Permittee indicated the Amphidrome biologically active filter process was not tested to determine lead or mercury treatment removal. WQM Permit Application Module 15 influent/effluent data did not address lead or mercury.
- Nitrate-Nitrite as N: The IWTP design was not evaluated for reduction of Nitrate-Nitrite as N from the industrial production processes (involving nitrates raw materials and nitrated products). Amphidrome Technical Specification Design Criteria assumptions assumed Influent with 5 mg/l Ammonia-N and 24 mg/l TKN (in addition to 105 mg/l BOD and 30 mg/l TSS). From Module 15 influent data, Nitrate-Nitrite-N would range from 1.1 mg/l to 20 mg/l. NPDES Permit Renewal Application indicated >100 mg/l during the three sampling events.

Former Sludge Drying Beds: Permanently removed per the Application.

Chemical Additives:

Chemical Additive	Purpose	Max Usage Rate (lbs/day)	Applicant-Calculated WQBEL (mg/l)	Concentration at 0.018 MGD* discharge (mg/l)	Concentration at 0.003 MGD** discharge (mg/l)	Most Stringent WQC and TMS-calculated WQBEL at 0.018 MGD discharge if applicable (mg/l)
Formula 7010	Boiler treatment	0.5	3.33	3.33	19.98	2.70 (Aquatic: CFC)
Formula 7187-F	See above	1.0	6.7	6.66	39.68	0.51 (Aquatic: AFC)
Formula 7350	See above	2.0	13.3	13.322	**79.936**	0.25 (Aquatic: AFC) **WQBEL: 137 mg/l**
Formula 7210-F	See above	1.1	7.3	7.32	**43.96**	0.06 (Aquatic: AFC) **WQBEL: 32.8 mg/l**

*At max usage rate @ 0.018 MGD discharge and assuming no breakdown in the product.
At max usage rate @ 0.003 MGD (lowest monthly average discharge in last 12 months) and assuming no breakdown of product. **In practical terms, WQBEL assumed 0.018 MGD flow (not 0.003 MGD flow) so the actual loading is 1/6th the TMS WQBEL-assumed loading. Therefore, no likelihood of impact.

- No chemical additive analytical method was identified in the NPDES permit application form.
- All additives in usage at same time, but not same active ingredients per MSDS-identified hazardous constituents:
  - Formula 7010 includes: Caustic Soda
  - Formula 7187-F includes: Sodium Hydroxide
  - Formula 7350 includes: Alkyl Alkanolamines (MSDS-identified several different chemicals as hazardous ingredients)
  - Formula 7210 includes: Cobalt Sulfide and Sodium Metabisulfite

Compliance History

DMR Data for In-stream Brushy Run Outfall 001 (from December 1, 2019 to March 31, 2021)

Parameter	DEC-20	JUN-20	DEC-19	JUN-19
pH (S.U.) Minimum	6.67	6.69	6.75	6.63
pH (S.U.) Instantaneous Maximum	6.67	6.69	6.75	6.63
TSS (mg/L) Daily Maximum	1	24	< 1	8
Total Dissolved Solids (mg/L) Daily Maximum	41	44	30	65
Oil and Grease (mg/L) Daily Maximum	< 5.0	< 5	< 5.0	< 5.0
Nitrate-Nitrite (mg/L) Daily Maximum	< 1.10	< 1.10	< 2.20	< 2.20
TKN (mg/L) Daily Maximum	< 0.50	< 0.50	< 0.50	< 0.50
Total Phosphorus (mg/L) Daily Maximum	< 0.05	0.06	< 0.05	< 0.05
Dissolved Magnesium (mg/L) Daily Maximum	1.4	1.3	1.2	1.1
Total Magnesium (mg/L) Daily Maximum	1.4	1.3	1.1	1.1
TOC (mg/L) Daily Maximum	1.1	3.3	< 1.0	0.8

DMR Data for Outfall 002 (from December 1, 2019 to March 31, 2021)

Parameter	DEC-20	DEC-19	JUN-19

pH (S.U.) Minimum	6.08	6.54	6.29
pH (S.U.) Instantaneous Maximum	6.08	6.54	6.29
TSS (mg/L) Daily Maximum	3	4	< 1
Oil and Grease (mg/L) Daily Maximum	< 5.0	< 5.0	< 5.0
Nitrate-Nitrite (mg/L) Daily Maximum	< 1.57	< 2.20	**< 2.20**
TKN (mg/L) Daily Maximum	< 0.50	< 0.50	< 0.50
Total Phosphorus (mg/L) Daily Maximum	0.05	< 0.05	< 0.05

DMR Data for Outfall 004 (from December 1, 2019 to November 30, 2020)

Parameter	DEC-19
pH (S.U.) Minimum	6.76
pH (S.U.) Instantaneous Maximum	6.76
TSS (mg/L) Daily Maximum	11
Oil and Grease (mg/L) Daily Maximum	< 5.0
Nitrate-Nitrite (mg/L) Daily Maximum	< 2.20
TKN (mg/L) Daily Maximum	< 0.50
Total Phosphorus (mg/L) Daily Maximum	< 0.05

DMR Data for Outfall 005 (from December 1, 2019 to March 31, 2021)

Parameter	JUN-20	JUN-19

pH (S.U.) Minimum	6.57	6.38
pH (S.U.) Instantaneous Maximum	6.57	6.38
TSS (mg/L) Daily Maximum	< 1	< 1
Oil and Grease (mg/L) Daily Maximum	< 5	< 5.0
Nitrate-Nitrite (mg/L) Daily Maximum	< 1.83	< 2.20
TKN (mg/L) Daily Maximum	< 0.50	< 0.50
Total Phosphorus (mg/L) Daily Maximum	0.05	0.05

DMR Data for Outfall 006 (from December 1, 2019 to March 31, 2021)

Parameter	DEC-20	JUN-20	DEC-19	JUN-19
pH (S.U.) Minimum	6.86	6.40	6.61	6.40
pH (S.U.) Instantaneous Maximum	6.86	6.40	6.61	6.40
TSS (mg/L) Daily Maximum	< 1	4	< 1	1
Oil and Grease (mg/L) Daily Maximum	< 5.0	< 5	< 5.0	< 5.0
Nitrate-Nitrite (mg/L) Daily Maximum	< 2.68	< 1.84	< 2.56	< 2.22
TKN (mg/L) Daily Maximum	< 0.50	< 0.50	< 0.50	< 0.50
Total Phosphorus (mg/L) Daily Maximum	< 0.05	< 0.05	< 0.05	< 0.05

DMR Data for Outfall 007 (from December 1, 2019 to March 31, 2021)

Parameter	DEC-20	DEC-19	JUN-19

pH (S.U.) Minimum	7.47	6.78	6.51
pH (S.U.) Instantaneous Maximum	7.47	6.78	6.51
TSS (mg/L) Daily Maximum	2	1	16
Oil and Grease (mg/L) Daily Maximum	< 5.0	< 5.0	< 5.0
Nitrate-Nitrite (mg/L) Daily Maximum	< 1.10	< 2.20	< 2.20
TKN (mg/L) Daily Maximum	< 0.50	< 0.50	< 0.50
Total Phosphorus (mg/L) Daily Maximum	0.05	< 0.05	< 0.05

DMR Data for Outfall 009 (from February 1, 2019 to March 31, 2021)

Parameter	JUN-19
pH (S.U.) Minimum	6.13
pH (S.U.) Instantaneous Maximum	6.13
TSS (mg/L) Daily Maximum	< 1
Oil and Grease (mg/L) Daily Maximum	< 5.0
Nitrate-Nitrite (mg/L) Daily Maximum	< 2.20
TKN (mg/L) Daily Maximum	< 0.50
Total Phosphorus (mg/L) Daily Maximum	< 0.05

DMR Data for Outfall 010 (from December 1, 2019 to March 31, 2021)

Parameter	DEC-20	JUN-20	DEC-19	JUN-19
pH (S.U.) Minimum	7.36	6.60	7.19	6.46

pH (S.U.) Instantaneous Maximum	7.36	6.60	7.19	6.46
TSS (mg/L) Daily Maximum	1	17	1.0	11
Oil and Grease (mg/L) Daily Maximum	< 5.0	< 5	< 5.0	< 5.0
Nitrate-Nitrite (mg/L) Daily Maximum	< 1.10	< 1.10	< 2.20	< 2.20
TKN (mg/L) Daily Maximum	< 0.50	< 0.50	< 0.50	< 0.50
Total Phosphorus (mg/L) Daily Maximum	< 0.05	< 0.05	< 0.05	< 0.05

DMR Data for Outfall 011 (from April 1, 2020 to March 31, 2021)

Parameter	MAR-21	FEB-21	JAN-21	DEC-20
Flow (MGD) Average Monthly	**0.018**	**0.010**	**10256**	**0.020**
Flow (MGD) Daily Maximum	0.032	0.023	15031	0.078
pH (S.U.) Minimum	**5.6**	7.1	7.1	6.9
pH (S.U.) Maximum	7.5	7.6	8.4	7.6
TRC (mg/L) Average Monthly	GG	GG	GG	GG
TRC (mg/L) Instantaneous Maximum	GG	GG	GG	GG
BOD5 (lbs/day) Average Monthly	1.13	0.15	< 0.23	1.07
BOD5 (lbs/day) Daily Maximum	1.29	0.16	0.29	1.71
BOD5 (mg/L) Average Monthly	4.9	2.1	< 2.8	6.9
BOD5 (mg/L) Daily Maximum	5.7	2.1	3.5	9.6
COD (lbs/day) Average Monthly	5.87	1.83	< 2.14	7.45
COD (lbs/day) Daily Maximum	6.07	1.98	2.17	31.16

COD (mg/L) Average Monthly	< 25	< 25	< 25	43
COD (mg/L) Daily Maximum	< 25	< 25	25	175
TSS (lbs/day) Average Monthly	0.23	0.07	< 0.09	1.49
TSS (lbs/day) Daily Maximum	0.24	0.08	0.09	2.63
TSS (mg/L) Average Monthly	< 1	< 1	< 1	13.5
TSS (mg/L) Daily Maximum	< 1	< 1	1	25
Oil and Grease (mg/L) Average Monthly	< 5.0	< 5.0	< 5.0	9.0
Oil and Grease (mg/L) Instantaneous Maximum	< 5.0	< 5.0	< 5.0	9.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 2	< 2	< 2	< 2
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	< 2	< 2	< 2	< 2
Total Lead (mg/L) Daily Maximum	0.02			0.03
Total Mercury (mg/L) Daily Maximum	0.0010			0.0051

DMR Data for Outfall 011 (from December 1, 2019 to November 30, 2020)

Parameter	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19
Flow (MGD) Average Monthly	**0.012**	**0.011**	**0.010**	**0.008**	**0.008**	**0.008**	**0.013**	**0.014**	**0.011**	**0.015**	**0.015**	**0.015**
Flow (MGD) Daily Maximum	0.019	0.018	0.017	0.018	0.029	0.015	0.042	0.032	0.017	0.025	0.038	0.024
pH (S.U.) Minimum	7.0	6.9	6.8	6.7	6.8	7.0	6.1	7.1	7.0	6.7	6.7	6.7
pH (S.U.) Maximum	7.5	7.7	8.6	8.6	7.6	7.8	8.8	7.9	8.1	7.7	8.0	7.9
TRC (mg/L) Average Monthly	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG

TRC (mg/L) Instantaneous Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
BOD5 (lbs/day) Average Monthly	**0.61**	**0.40**	**0.42**	**0.46**	**0.31**	**0.56**	**1.06**	**0.63**	**0.76**	**0.24**	**0.41**	**6.60**
BOD5 (lbs/day) Daily Maximum	**0.98**	**0.57**	**0.53**	**0.49**	**0.31**	**0.60**	**1.21**	**0.66**	**1.20**	**0.27**	**0.48**	**12.92**
BOD5 (mg/L) Average Monthly	6.0	3.8	9.1	7.4	5.3	7.0	15.4	7.4	10.6	2.2	3.5	**46**
BOD5 (mg/L) Daily Maximum	9.4	4.6	13.2	7.5	8.3	8.2	26.3	7.4	17.9	2.3	3.9	**87.8**
COD (lbs/day) Average Monthly	**3.10**	**< 3.10**	**1.80**	**2.81**	**< 1.35**	**< 2.02**	**4.02**	**< 2.13**	**2.07**	**< 2.79**	**2.88**	**11.77**
COD (lbs/day) Daily Maximum	**3.74**	**4.21**	**2.70**	**4.19**	**1.76**	**2.22**	**5.13**	**< 2.22**	**2.46**	**< 2.95**	**3.11**	**21.93**
COD (mg/L) Average Monthly	30.5	< 29.5	32	43.5	< 26	< 25	44	< 25	< 25	< 25	< 25	**87**
COD (mg/L) Daily Maximum	36	34	39	62	27	25	63	< 25	< 25	< 25	< 25	**149**
TSS (lbs/day) Average Monthly	1.03	0.18	0.16	0.62	0.21	0.47	0.47	0.13	0.08	< 0.35	0.17	0.18
TSS (lbs/day) Daily Maximum	1.87	0.24	0.21	1.01	0.23	0.59	0.62	0.16	0.10	0.59	0.21	0.29
TSS (mg/L) Average Monthly	10.0	2	0.16	9.5	4.5	6	5	1.5	1.0	< 3.0	2	< 2
TSS (mg/L) Daily Maximum	18	3	0.21	15	6	8	7	2	1.0	5	2	2
Oil and Grease (mg/L) Average Monthly	< 5.0	6.0	< 5.0	< 5.0	< 6.0	< 5.0	< 5.0	< 5.0	< 5.0	< 15.0	< 5.0	< 5.0
Oil and Grease (mg/L) Instantaneous Maximum	< 5.0	6.0	< 5.0	< 5.0	< 6.0	< 5.0	< 5.0	< 5.0	< 5.0	26.0	< 5.0	< 5.0
Fecal Coliform (CFU/100 ml) Geometric Mean	8	< 2	< 2	< 2	< 2	< 2	< 2	3	< 2	7	< 2	< 2
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	8	< 2	< 2	< 2	< 2	< 2	< 2	3	< 2	7	< 2	< 2
Total Lead (mg/L) Daily Maximum			**0.07**			**0.02**			**0.01**			**0.02**
Total Mercury (mg/L) Daily Maximum			**0.0047**			**0.0029**			**0.0012**			**0.0101**

DMR Data for Outfall 013 (from December 1, 2019 to November 30, 2020)

Parameter	JUN-20	JUN-19
pH (S.U.) Minimum	7.16	6.59
pH (S.U.) Instantaneous Maximum	7.16	6.59
TSS (mg/L) Daily Maximum	< 1	47
Oil and Grease (mg/L) Daily Maximum	< 5	< 5.0
Nitrate-Nitrite (mg/L) Daily Maximum	< 1.17	< 2.20
TKN (mg/L) Daily Maximum	< 0.50	0.53
Total Phosphorus (mg/L) Daily Maximum	< 0.05	< 0.05

DMR Data for Outfall 014 (from December 1, 2019 to November 30, 2020)

Parameter	JUN-20
pH (S.U.) Minimum	7.03
pH (S.U.) Instantaneous Maximum	7.03
TSS (mg/L) Daily Maximum	10
Oil and Grease (mg/L) Daily Maximum	< 5
Nitrate-Nitrite (mg/L) Daily Maximum	< 1.27
TKN (mg/L) Daily Maximum	< 0.50
Total Phosphorus (mg/L) Daily Maximum	< 0.05

Compliance History

Effluent Violations for Outfall 011, from: March 1, 2019 To: March 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
BOD5	12/31/19	Avg Mo	6.60	lbs/day	1.77	lbs/day
BOD5	12/31/19	Daily Max	12.92	lbs/day	4.01	lbs/day
COD	12/31/19	Avg Mo	11.77	lbs/day	7.86	lbs/day
COD	12/31/19	Daily Max	21.93	lbs/day	21.60	lbs/day
COD	03/31/19	Daily Max	25.76	lbs/day	21.60	lbs/day
pH	03/31/21	Min	5.6	S.U.	6.0	S.U.
COD	12/31/20	Daily Max	31.16	lbs/day	21.60	lbs/day

Summary of Inspections:

SITE NAME	INSP PROGRAM	INSP ID	INSP CATEGORY	INSPECTED DATE	INSP TYPE	INSPECTION RESULT DESC	INSPECTOR ID	# OF VIOLATIONS
COPPERHEAD CHEM TAMAQUA PLT	WPCNP	2467238	PF	10/23/2019	Compliance Evaluation	No Violations Noted	00613405	0
COPPERHEAD CHEM TAMAQUA PLT	WPCNP	2567891	PF	12/20/2018	Compliance Evaluation	No Violations Noted	00531359	0
COPPERHEAD CHEM TAMAQUA PLT	WPCNP	2825241	PF	02/16/2017	Administrative/File Review	Violation(s) Noted	00531359	2
COPPERHEAD CHEM TAMAQUA PLT	WPCNP	2960003	PF	12/16/2014	Compliance Evaluation	No Violations Noted	00531359	0
COPPERHEAD CHEM TAMAQUA PLT	WPCNP	2330554	PF	04/28/2014	Routine/Partial Inspection	Violation(s) Noted	00613405	1

Other Comments:

- Copperhead attributed the March 2019 permit limit exceedances “due to the nitration wastewater trailer that had recently drained through the plant”.
- Copperhead attributed the December 2019 permit limit exceedances due to either a small amount of acetone from cleaning activities and/or a water main break that might have allowed organics to enter manhole via the cover.
- Mercury sources included a possible laboratory source, but application noted there are mercury traps to help prevent accidental discharges.
- No open violations per 5/20/2021 WMS Query (open violations by client number).

Permit: PA0012742
Client ID: 112782
Client: All

Open Violations: 0

No data was found using the criteria entered. Please revise your choices and try again

Development of Effluent Limitations

Outfall No. 111 (Internal Monitoring Point) **Design Flow (MGD)** NA
Latitude 40º 43' 49.00" **Longitude** -75º 59' 2.00"
Wastewater Description: Industrial Influent (at headworks to IWTP)

Permit limits and Monitoring Requirements:

Constituent	Limits or monitoring (mg/l unless indicated otherwise).	SBC	Application data:
BOD5	**Report (lb/d)** **Report (lb/d)** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**Required for monitoring per DRBC Docket requirements (BOD5 minimum monthly average reduction) and ELG concentration-based limits (based on raw influent concentration).**
Chemical Oxygen Demand (COD)	**Report (lb/d)** **Report (lb/d)** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**Required for monitoring ELG concentration-based limits (based on raw influent concentration).**

Development of Effluent Limitations

Outfall No.	001, 003, 004, 006 (Brushy Run) 002, 005, 007, 009, 010, 012, 013, 014 (Little Schuylkill River) 018 (UNT to Brushy Run)	**Design Flow (MGD)**	0 (stormwater only)
	40º 43' 54.00" (001)		-75º 59' 1.00" (001)
	40º 44' 4.00" (003)		-75º 59' 20.00" (003)
	40º 44' 10.00" (004)		-75º 59' 23.00" (004)
	40º 44' 1.00" (006)		-75º 59' 17.00" (006)
	40º 43' 51.00" (002)		75º 59' 2.00" (002)
	40º 43' 59.00" (005)		-75º 58' 59.00" (005)
	40º 44' 17.00" (007)		-75º 58' 51.00" (007)
	40º 43' 49.00" (009)		-75º 59' 2.00" (009)
	40º 44' 27.00" (010)		-75º 58' 46.00" (010)
	40º 44' 12.00" (012)		-75º 58' 49.00" (012)
	40º 44' 6.00" (013)		-75º 58' 50.00" (013)
	40º 44' 3.00" (014)		-75º 58' 53.00" (014)
Latitude	40º 44' 18.20" (018)	**Longitude**	-75º 59' 43.70" (018)

Wastewater Description: Stormwater associated with industrial activities

Permit limits and monitoring Requirements: Changes bolded.

Constituent	Limit (mg/l unless indicated otherwise)	SBC	Permit Basis
All Stormwater Outfalls	**-**	**-**	**-**
pH	**6.0 – 9.0 SU**	**IMIN - IMAX**	Existing monitoring requirement and PAG-03 Appendix F (Chemical and Allied Industries) constituent. **Chapter 95.2-based limit except for 001 (in-stream water sampling point, not stormwater).** **Previous Exceedances:** 001: 5.83 SU pH Minimum and 7.44 SU max (12 samples) but not subject to new limit. 002: 5.58 SU min and 8.67 SU max (12 samples). 009: 5.69 SU min and 8.60 SU max (7 samples).
Chemical Oxygen Demand (COD)	**120.0**	**IMAX**	**PAG-03 Appendix F (Chemical and Allied Industries) constituent. Limit based on PAG-03 Benchmark as statewide TBEL except for 001 (in-stream water sampling point, not stormwater).**
Total Suspended Solids (TSS)	**100.0**	**IMAX**	Existing monitoring requirement and PAG-03 Appendix F (Chemical and Allied Industries) constituent. **Limit based on PAG-03 Benchmark as statewide TBEL except for 001 (in-stream water sampling point, not stormwater).** **Previous Exceedances:**

			Outfall No. 003: 1034 mg/l max and 231 mg/l average (5 samples). 002: 498 mg/l max and 86 mg/l average (12 samples). 009: 483 mg/l max and 71 mg/l average (7 samples). 010: 282 mg/l max and 33 mg/l average (12 samples). 012: 553 mg/l max and 132 mg/l average (6 samples). 013: 168 mg/l max and 65 mg/l average (3 samples). 014: 123 mg/l max and 26 mg/l average (6 samples). Outfall No. 004: 522 mg/l max and 112 mg/l average (5 samples).
Oil & Grease	**30.0**	**IMAX**	Existing monitoring requirement retained to detect fuel spills/leaks. Chapter 95.2 limit
Nitrate-Nitrite-N	Report	**IMAX**	Existing monitoring requirement and PAG-03 Appendix F (Chemical and Allied Industries) constituent.
Total Phosphorus	Report	**IMAX**	See above
Lead, Total	**Report**	**IMAX**	**PAG-03 Appendix F (Chemical and Allied Industries) constituent.**
Zinc, Total	**Report**	**IMAX**	**See above**
Total Iron	**Report**	**IMAX**	**See above.**
Aluminum Total	**Report**	**IMAX**	**See above.**
Mercury, Total	**Report**	**IMAX**	**New constituent due to unidentified onsite sources (potentially including residual legacy contaminants from previous site owner/operator operations) now requiring IW Outfall limits. Also, PAG-03 Appendix A (HW TSD) stormwater constituent of interest.**
Stormwater Drainage Areas with HW TSD units subject to additional PAG-03 Appendix A (HW TSDs): Outfalls No. 001; 018, etc.)	-	-	-
Ammonia-N	**Report**	**IMAX**	**PAG-03 Appendix A (HW TSD) constituent.**
Arsenic, Total	**Report**	**IMAX**	**See above**
Cadmium, Total	**Report**	**IMAX**	**See above**
Total Cyanide	**Report**	**IMAX**	**See above**
Silver, Total	**Report**	**IMAX**	**See above**
Selenium, Total	**Report**	**IMAX**	**See above**
Manganese, Total	Not needed	-	Not a PAG-03 Appendix A or F constituent. Aluminum and Total Iron monitoring would address any site legacy AMD impacts (if

			any present) and/or usage of AMD-contaminated groundwater.
Brushy Run In-stream Monitoring Point No. 001-specific parameters	**-**	**-**	**-**
Total Dissolved Solids (TDS)	Report	IMAX	Retained due to TMDL (siltation) for Little Schuylkill River Application data: 118 mg/l max and 53 mg/l average (9 samples).
Dissolved Magnesium	Report	IMAX	Retained because magnesium treatment of wastewater is documented in the site Thermal Treatment Unit PPC Plan. Application data: 1.8 mg/l max and 1.3 mg/l average (9 samples)
Total Magnesium	Report	IMAX	Retained because magnesium treatment of wastewater is documented in the site Thermal Treatment Unit PPC Plan. Application data: 1.8 mg/l max and 1.32 mg/l average (9 samples)
Total Organic Carbon (TOC)	Report	IMAX	Retained to gather information in this permit term. Application data: 1.25 mg/l max and 0.83 mg/l average (9 samples)
TKN	Not needed.	-	Not a PAG-03 Appendix A or F constituent. Monitoring data did not show excessive concentrations.

Comments:

- **Stormwater Outfalls**: See Table 1 for summary of information on Outfalls.
- **Outfall No. 001**: This is an existing instream sampling point (above confluence with Little Schuylkill River) being reported as a stormwater outfall, not an IW Stormwater Outfall per se.
- **Outfalls No. 003, 004, and 006**: These are the Brushy Run stormwater outfalls that do not include the HW TSD areas.
- **IW Stormwater General Permit PAG-03 Appendix A (HW TSD facilities)**: Identified HW Management Units include HW Thermal Treatment Unit, Drum Storage Facility (Building 993 in Outfall No. 009 drainage area), Buildings 149 & 772 (in the Brushy Run watershed drainage area), Building 841 (in Outfall No. 002 drainage area), and Magazine 5 (location not shown on site map but other magazines in the Building 772 area). Appendix A Constituents: **pH, TSS, COD, Ammonia-N, Arsenic, Cadmium, Cyanide, Lead, Mercury, Silver, Selenium**
- **IW Stormwater General Permit PAG-03 Appendix F (Chemicals and Allied Products) Constituents**: Applies to both primary and secondary SIC Codes (i.e. apply site-wide). Appendix F Constituents: **pH, COD, Nitrate-Nitrite-N, Total Phosphorus, Lead, Zinc, Total Iron, Aluminum**
- **Site-specific Stormwater BMPs**:
    - PPC Plan Section 7.2 Stormwater BMP: If areas of the site exhibit evidence of erosion, they will be evaluated to determine a suitable slope stabilization BMP (i.e. erosion control matting, gabion baskets, etc.).
    - PPC Plan Section 7.3 Stormwater BMP: In the event of any disturbance, natural or manmade (construction activities), sediment and erosion prevention and control measures will be developed and implemented in accordance with Chapter 102 of the Department's rules and regulations and the Bureau of Soil and Water Conservation's "Erosion and Sediment Pollution Control Program Manual".
    - DRBC Docket: DRBC Docket Decision Item e required: "Sound practices of excavation, backfill, and reseeding shall be followed to minimize erosion and deposition of sediment in streams".

- Other Permits/Approvals: Other applicable DEP Permits' requirements are incorporated by reference.

Development of Effluent Limitations

Outfall No. 011 **Design Flow (MGD)** 0.018
Latitude 40º 43' 49.00" **Longitude** -75º 59' 2.00"
Wastewater Description: IW Process Effluent with ELG

Permit limits and Monitoring Requirements: Changes are bolded. **UPDATE ELG limits per any change to application info.**

Constituent	Limits or monitoring (mg/l unless indicated otherwise).	SBC	Application data:
BOD5	**1.52** lb/d **3.19** lb/d **30.0** **60.0** **75.0**	Monthly Average Daily Max Monthly Average Daily Max **IMAX**	**DRBC Docket concentration limits added per Chapter 92a.12 (with standard multipliers).** DRBC mass limits superseded by PA limits based on **DEP calculations (see below).** Application data: 31 mg/l max and 7.54 mg/l avg. (15 samples); 2.43 lbs/day max; 0.54 lb/d LTA EDMR: 2 – **46 mg/l;** 1.71 lb/day daily max**,**
BOD5 minimum reduction	**85%**	**Minimum Monthly Average**	**DRBC Docket Decision Item c requirement incorporated per Chapter 92a.12.**
Chemical Oxygen Demand (COD)	**3.85** lb/d **9.90** lb/d Report Report	Monthly Average Daily Max Monthly Average Daily Max	DRBC mass limits superseded by PA limits based on **DEP calculations (see below).** Application data: 331 mg/l max and 41.23 mg/l avg. (15 samples); **32.92 lb/day max; 2.85 lb/day LTA** EDMR: >25 – 97 mg/l; **31.16 lb/day Daily Max (other 11 samples below limits)**
Total Suspended Solids (TSS)	**2.10** lb/d **4.29** lb/d **30.0** **60.0** **75.0**	Monthly Average Daily Max Monthly Average Daily Max IMAX	**DRBC concentration limit (Decision Item c) being incorporated per Chapter 92a.12 (with standard multipliers) and due to stream impairment including TSS.** DRBC mass limits superseded by PA limits based on **DEP calculations (see below). Antibacksliding prohibition prevented any less stringent limits at this time.** Application data: 18 mg/l max and 6.23 mg/l avg. (15 samples); 1.41 lb/day max; 0.46 lb/day LTA. EDMR: 1 – 27 mg/l; 2.63 lb/day daily max.
pH	6.0 – 9.0 SU	**Inst.** Min - IMAX	Existing Chapter 95.2 limit. Application data: 6.9 -**9.5** SU (368 samples). EDMR: 6.7 – 8.1 SU
Total Residual Chlorine (TRC)	**0.50** **1.17**	**Monthly Average** **IMAX**	**New Part A limits (old 1.2/2.8 mg/l Regional BAT TBELs) replaced due to conversion to UV disinfection and Chapter 92a.48. Effective immediately. Monitoring only required when using chlorine.**

			Application data: 0.05 mg/l IMAX (3 samples) **EDMR: GG (not used). Source of TRC not identified by Copperhead.**
Oil & Grease	15.0 30.0	Monthly Average IMAX	Existing Chapter 95.2 limit. Application data: **27 mg/l max and 6.6 mg/l avg.** (15 samples) EDMR: <5.0 mg/l
Fecal Coliform (May 1 – Sept 1)	200/100 ml 1000/100 ml	GEO Mean IMAX	Existing permit limit. Application data: 520/100 ml max and 38/100 ml avg. (15 samples) EDMR: <2 – 48/100 ml
Fecal Coliform (Oct 1 – April 30)	2000/100 ml 10,000/100 ml	GEO Mean IMAX	See above
E Coli	Report/100 ml	IMAX	New annual monitoring requirement.
Total Lead	**0.01002 lb/d** **Report lb/d** **Report** Report	**Monthly Average** **Daily Max** **Monthly Average** Daily Max	**DRBC Mass limit incorporated per Chapter 92a.12. Concentration monitoring to allow calculation of mass loading and Chapter 92a.61.** Application data: 170 ug/l max, 56 ug/l avg. (11 samples) EDMR: 0.01 – 0.05 mg/l
Total Mercury **Three years – Interim monitoring** **Fourth Year – limits effective**	**0.004 lb/d** **0.008 lb/d** **27.2 ug/l** **50.2 ug/l** **68.1**	**Monthly Average** **Daily Max** **Monthly Average** Daily Max **IMAX**	**New WQBELs due to Reasonable Potential Analysis, effective in three years. Interim monthly minimum monitoring.** Application data: 18.2 ug/l max, 5.1 ug/l avg. (11 samples) EDMR: 0.0015 – 0.0153 mg/l
UV Intensity	**Report (uw/cm^2)**	**IMIN**	**New daily monitoring requirement due to sewage influent and use of UV disinfection.**
Total Dissolved Solids (TDS)	**Report lb/d** **Report lb/d** **Report** **Report**	**Quarterly Average** **Daily Max** **Quarterly Average** **Daily Max**	**New monitoring requirement as a DRBC constituent of interest (Chapter 92a.61). DRBC Docket indicated 1000 mg/l effluent was expected from previous IWTP design.** Application data: 3447 mg/l max, 1561 mg/l avg. (3 samples)
Total Cyanide	**0.00170 lb/d** **Report lb/d** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**DRBC Mass Limit being incorporated into NPDES Permit (Chapter 92a.12). Concentration monitoring to allow calculation of mass loading and Chapter 92a.61.** Application data: 5 ug/l max and 3 ug/l average (3 samples). 0.00025 lb/d Max Avg. Monthly.
Total Aluminum	**0.04486 lb/d** **Report lb/d** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**DRBC Mass Limit being incorporated into NPDES Permit (Chapter 92a.12). Concentration monitoring to allow calculation of mass loading and Chapter 92a.61. Permittee indicated it did not know the source.** Application data: Influent: 250 ug/l Effluent: 70 ug/l max and 40 ug/l average (3 samples). 0.00324 lb/d Max Avg. Monthly.
Total Chromium	**0.00466 lb/d** **Report**	**Monthly Average** **Daily Max**	**DRBC Mass Limit being incorporated into NPDES Permit (Chapter 92a.12).**

	Report	**Monthly Average** **Daily Max**	**Concentration monitoring to allow calculation of mass loading and Chapter 92a.61.** Application data: 4.1 ug/l max and 2.40 ug/l average (3 samples). 0.00015 lb/d Max Avg. Monthly.
Total Copper	**0.02695 lb/d** **Report lb/d** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**DRBC Mass Limit being incorporated into NPDES Permit (Chapter 92a.12). Concentration monitoring to allow calculation of mass loading and Chapter 92a.61.** Application data: 11.0 ug/l max, 7.0 ug/l avg. (3 samples)
Total Nickel	**0.02915 lb/d** **Report lb/d** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**DRBC Mass Limit being incorporated into NPDES Permit (Chapter 92a.12). Concentration monitoring to allow calculation of mass loading and Chapter 92a.61.** Application data: 9.8 ug/l max and 6.03 ug/l average (3 samples). 0.00040 lb/d Max Avg. Monthly
Total Zinc	**0.01773 lb/d** **Report lb/d** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**DRBC Mass Limit being incorporated into NPDES Permit (Chapter 92a.12). Concentration monitoring to allow calculation of mass loading and Chapter 92a.61.** Application data: 63 ug/l max and 40.3 ug/l average (3 samples). 0.0039 lb/d Max Avg. Monthly.
Total Nitrogen (TKN + Nitrate-Nitrite as N measured in same sample)	**Report lb/d** **Report lb/d** **Report** **Report**	**Annual Average** **Daily Max** **Annual Average** **Daily Max**	**New monitoring requirement (Chapter 92a.61).** Application data: See below.
Nitrate-Nitrite as N	**Report lb/d** **Report lb/d** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**New monitoring requirement for an expected effluent constituent due to nature of facility production (Chapter 92a.61). Spiking has occurred indicating potential IWTP overloading or other operational problem. Monitoring is required.** Application data: 101.65 mg/l max and 55.82 mg/l average (3 samples)
TKN	**Report lb/d** **Report lb/d** **Report** **Report**	**Annual Average** **Daily Max** **Annual Average** **Daily Max**	**New monitoring requirement (Chapter 92a.61).** Application data: 2.41 mg/l max and 1.73 mg/l average (3 samples)
Total Phosphorus	**Report lb/d** **Report lb/d** **Report** **Report**	**Annual Average** **Daily Max** **Annual Average** **Daily Max**	**New monitoring requirement (Chapter 92a.61).** Application data: 0.89 mg/l max and 0.70 mg/l average (3 samples)
Total Iron	**Report lb/d** **Report lb/d** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**Monitoring requirement per Reasonable Potential Analysis (Chapter 92a.61) and due to evidence of AMD metals in influent and effluent for updating the TMDL. Permittee indicated it did not know the source.** Application data: **Influent: 2,200 ug/l Total Iron; 400 ug/l Dissolved Iron (1 sample)** Effluent Total Iron: 650 ug/l max effluent

			Effluent Dissolved Iron: 190 ug/l max effluent
Manganese	**Report lb/d** **Report lb/d** **Report** **Report**	**Annual Average** **Daily Max** **Annual Average** **Daily Max**	**New Annual monitoring requirement (Chapter 92a.61) due to evidence of AMD metals in influent and effluent for updating the TMDL. Permittee indicated it did not know the source.** Application data: Influent: 35 ug/l Effluent: 48 ug/l max Effluent
Ammonia-N **(5/1 to 10/31)** **Interim – first 3 years** **Final – 4th year of permit**	**Report lb/d** **Report lb/d** **25.0** **50.0** **50.0**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New limits per water quality modeling due to treatment of sanitary wastewater plus uncertainties about potential plant upsets. Interim monitoring.** Application Data: 0.24 mg/l max, 0.09 mg/l maximum monthly average concentration.
Ammonia-N **(11/1 to 4/30)**	**Report lb/d** **Report lb/d** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	

Comments:

- Monitoring/limits updated per current EDMR requirements (units; Instantaneous limits for grab sampling; etc.).
- Mass load limits require concentration monitoring & reporting to demonstrate compliance (no extra sampling required to report concentrations or daily max mass loadings).
- **Minimum Monitoring Frequencies**: Standard IW monitoring frequencies used.
  - **DRBC Limit-related**: Monthly monitoring is needed at minimum for the additional DRBC Docket-specific Monthly Average Limits (Minimum BOD5 monthly average reduction; Total Cyanide; Aluminum; Zinc; Copper; Total Chromium; Lead; Nickel).
  - **Additional sewage-specific Monitoring for this size of facility (0.018 MGD):**
    - Fecal Coliform: 2/month:
    - Ammonia-N: 2/month
    - DO; UV disinfection; TRC when chlorine is used: Daily
  - **Constituents being monitored for other reasons:**
    - Nitrate-Nitrite-N: Weekly monitoring to detect potential passthrough/interference events from nitration process wastewaters. The as-built IWTP was not designed or permitted to handle IW process wastewater (only sanitary wastewaters and NCCW identified in the WQM permit application). The Department will re-evaluate the need for monitoring and monitoring frequency during the next NPDES permit Renewal.
    - Total Dissolved Solids (TDS): Quarterly monitoring as siltation component (Little Schuylkill River TMDL) and DRBC constituent of interest
    - Nutrient Monitoring (Total Nitrogen, Total Kjehldahl Nitrogen, Total Phosphorus): Minimum annual monitoring.
    - AMD Metals (Total Iron and Manganese): Minimum annual monitoring to gather information for updating Little Schuylkill River TMDL (AMD).

BOD5, COD and TSS Limit Calculations: The BOD5, COD, and TSS mass limits were revised based on Application information (breakdown of waste streams; production rates; number of production days/month). The ELG waste streams loadings were then calculated with the sanitary wastewater loadings to calculate overall permit limits. As these limits are based upon existing TBELs (ELG and secondary treatment), the revised limits will be effective upon Permit Effective Date. The calculations and related information can be found in the following Tables:

- Table 2 (11/18/2018 Line Drawing Summary) identifies the site waste-streams
- Table 3 (ELG Production Rates Information) summarizes the identified production rates.
- Table 4 (Applicable ELGs) summarizes the ELG and applicable Long Term Average (LTA) rates for ELG limit calculations.
- Table 5 (Permit Limits) includes the calculation of the Limits (accounting for sanitary wastewater contributions).

NOTE: The previous NPDES Permit Renewal's Fact Sheet ELG calculations assumed a higher annual production rate (estimated by Copperhead but apparently not achieved) and 7 production days per month (which resulted in higher daily ELG limits and biased monthly average limits than if spread over 22 days production days per month). Tiered production rate limits (going up and down as market demand changes) is not an available option allowed by the WMS/EDMR/ICIS Systems. If Copperhead needs to increase production rates substantially in the new NPDES Permit term (resulting in higher mass loadings on the receiving stream), then a NPDES Major Amendment Application would be required.

NOTE: In practical terms, the as-built Amphidrome IWTP was designed for limited influent capacities that would limit how much it could handle before requiring hauling wastewater offsite and/or substantial IWTP Upgrade. The Amphidrome IWTP Influent design goals included:

- BOD5: 105 mg/l (Effluent goal of ≤26.6 mg/l, 4 lbs/day)
- TKN: 24 mg/l
- Ammonia-N: 5 mg/l
- TSS: 30 mg/l (Effluent goal of ≤21.2 mg/l, 3.2 lbs/day)
- Nitrates and Nitrites: No design goals for Nitrate or Nitrite influent reduction. The WQM Application did not address IW waste streams other than NCCW. Sanitary wastewater usually has low to zero nitrates and nitrites. The facility production processes involve nitrated esters and products. Passthrough or plant upsets could result from high IW loadings.

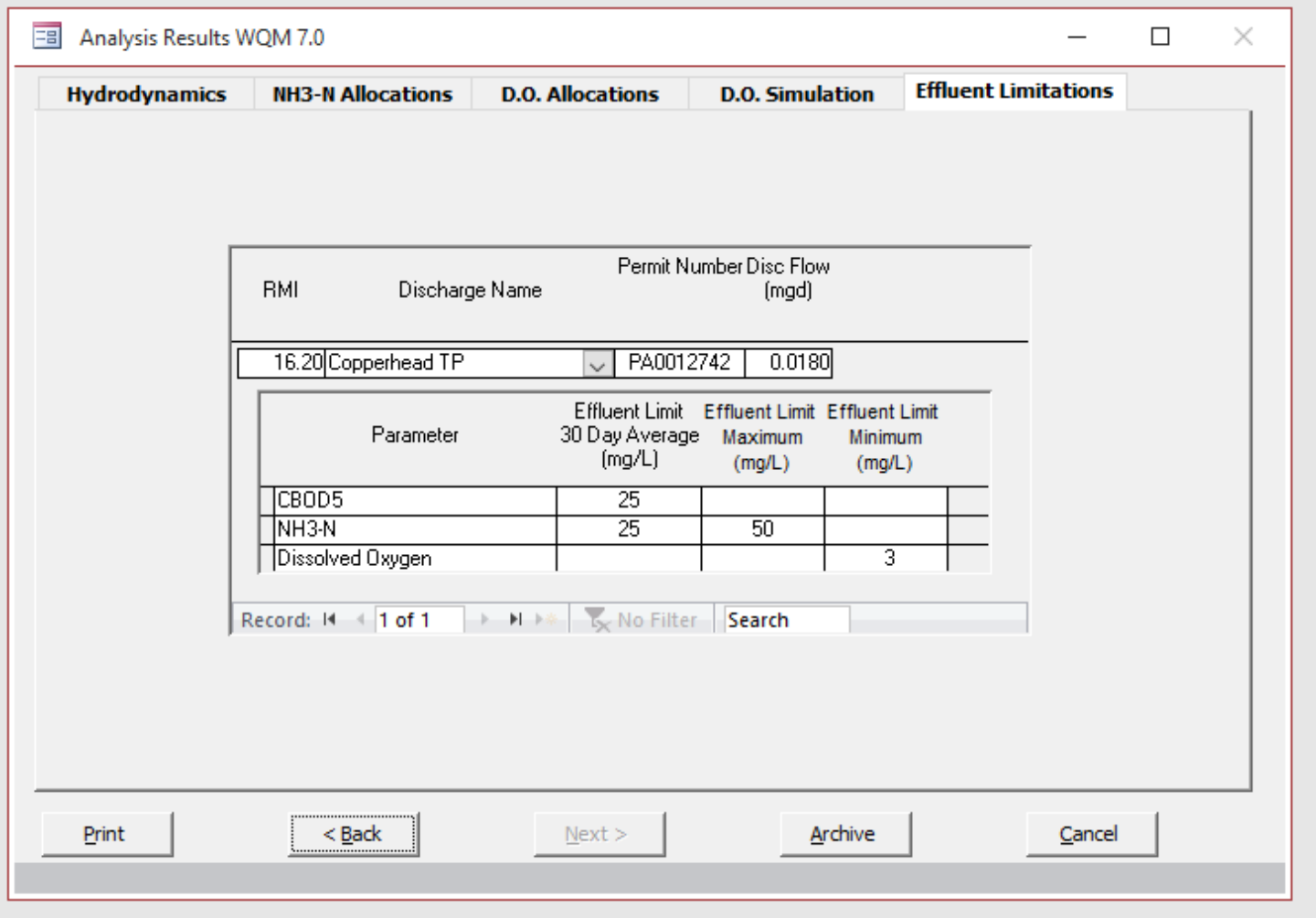
Reasonable Potential Analysis: See attached Toxic Management Spreadsheet output and TOXCONC output below:

- **Mercury**: Mercury (source unidentified) requires permit limits. Part C Toxics WQBELs with three-year schedule of compliance given before effective date. Interim monitoring required. The Little Schuylkill River dilution and >100 mg/l Little Schuylkill River hardness resulted in liberal limits for Mercury and no limits for Lead. Stormwater monitoring will determine if there are other sources of mercury or other metals impacting the (impaired) River.
- **Chemical Additives**: Several Chemical Additives were at potential concentrations that might have required permit limits if there was potential for spiking in concentrations beyond that expected at max daily usage. However, there is no potential if the facility keeps to its maximum daily usage values. See Treatment Plant section for details. No limits are therefore needed at this time.
  - If the facility increases max daily usage of its boiler treatment chemical additives (above and beyond the max daily usage identified in the Treatment Plant Section), the Department might impose monitoring requirements and permit limits. The Chemical Additive conditions and notification requirements would require prior notification before increasing the max usage rates.
  - Actual usage rates are generally expected to be lower than max usage rates.
- **Aluminum, Total Chromium, Total Cyanide, Copper, Nickel and Zinc with DRBC Docket Monthly Average mass Limits**: Monthly monitoring is required per Chapter 92a.12 with concentration reporting (Chapter 92a.61). DEP Water Quality modeling did not indicate a need for mass load WQBELs. Aluminum is an AMD metal, relevant to the Little Schuylkill River TMDL, but not a concentrations triggering WQBELs.
- **TMDL AMD Metals (Aluminum, Manganese, Total Iron)**: Due to unexplained presence of AMD metals in IWTP influent and effluent, monitoring will be required to gather information for updating the TMDL.
- **Nitrate-Nitrite as N**: The facility uses nitrate esters in its production. The NPDES Permit Renewal Application indicated that the 0.018 MGD Amphidrome IWTP did not have nitrate-nitrite treatment reduction design goals. Monitoring is being required to determine if the as-built IWTP is effectively treating site waste streams and to identify potential pass-through/interference events. For example, the formerly treated NG Hill wastewater (slugs of 2,500 – 6,000 gallons trucked into the 0.018 MGD IWTP) had a 9,200 mg/l Nitrate-N concentrations.

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Iron	Report	Report	Report	Report	Report	µg/L	1,500	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Mercury	0.004	0.008	27.2	50.2	68.1	µg/L	27.2	THH	Discharge Conc ≥ 50% WQBEL (RP)
Formula 7350	20.4	31.9	136	212	340	mg/L	136	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Formula 7210	4.91	7.65	32.7	51.0	81.7	mg/L	32.7	CFC	Discharge Conc ≥ 50% WQBEL (RP)



		Reviewer/Permit Engineer:	James Berger
Facility:	Copperhead Chemical Co.		
NPDES #:	PA0012742		
Outfall No:	011		
n (Samples/Month):	4		
Parameter	**Distribution Applied**	**Coefficient of Variation (daily)**	**Avg. Monthly**
Lead (mg/L)	Lognormal	1.2002194	0.1406881
Mercury (mg/L)	Lognormal	1.0982178	0.0148962

A	B	C	D	E	F	G

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9 — Copperhead Chemical Co.

14.8	= Q stream (cfs)	0.5	= CV Daily
0.018	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.417	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	70.720	1.3.2.iii	WLA cfc =	165.306
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	26.352	5.1d	LTA_cfc =	96.101

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.170	

Table 1 (Site Outfalls)

Outfall	Nature of Discharge	Latitude	Longitude	Receiving Water & comments
011	IW Process wastewater; NCCW; sanitary wastes	40°, 43', 49"	-75°, 59', 02"	Little Schuylkill River Active IW outfall near WWTP. (All permitted stormwater outfalls discharge upstream of this location.)
001*	In-stream sampling point reporting as Stormwater outfall (51,321,015 SF: 1.79% impervious, i.e. 918,647.25)	40°, 43', 54"	-75°, 59', 01"	Brushy Run above confluence with Little Schuylkill River Includes HW Thermal Treatment Unit (sheet flow) and several HW Storage areas (in buildings) and Outfalls Nos. 003, 004, and 006 subareas in addition to explosives manufacturing/storage (Pharmaceutical Blend Facility; Boiler house). Module 1 BMPs include: Spill containment at the acetone tank; preventive maintenance for each production line; covered process areas; material handling procedures; daily tank inspections; containment for all above ground storage tanks; and monitoring & inventory of process wastewaters. PPC Plan Appendix J indicated secondary containment and leak detection for all liquid waste and raw material storage tanks; "GMP" program at PBF and Mix & Pack areas; monitoring and inventory of process wastewaters. Other information: Drainage Map shows that there are various Copperhead HW Storage Areas and buildings that might contribute stormwater discharges to Brushy Run includes the HW TSD area (on the opposite side of the other Brushy Run outfalls) plus other assorted HW storage areas not addressed by the new Brushy Run outfalls. The Outfalls #003, #004, and #006 drainage also contribute to this drainage (including the Pharmaceutical Blend Facility, Boiler House and waste handling). PPC Plan also notes that Boiler House (along Brushy Run) materials include Number 2 Fuel Oil. **Application Data Exceedances): Minimum 5.83 SU pH (12 samples).**
002* (a.k.a. SW-II)	Stormwater (282,217 SF; 35.65% impervious, i.e. 100,610.4 SF)	40°, 43', 51"	-75°, 59', 02"	Little Schuylkill River Explosives manufacturing/storage. Includes WWTP subarea and HW Storage Area. BMPs include: Module 1 indicated: WWTP monitoring, observation and reporting. Containment at all waste storage areas. Waste storage areas protected from elements and Onsite fuel storage tanks of double wall construction. PPC Plan Appendix J indicated: Waste storage areas protected from the elements.

				Other Information: This outfall is a plastic pipe that collects drainage from around the garage and fueling island. The area gasoline and diesel fuel tanks are double walled. HW Storage Area in area per drawing. The PPC Plan indicates that some of the WWTP area stormwater goes to this Outfall. At one time, this was an IW discharge point for treated stormwater, but that option is not allowed by this permit. It is sampleable. Sometimes looks gray, possibly clay and fines in discharge per Copperhead SHW Supervisor during 2012 Site Visit. **Application Data Exceedances of future limits: 498 mg/l TSS Max and 5.88 SU pH minimum (12 samples).** **NOTE**: DRBC Docket No. D-88-83 indicates there was a separate IW outfall that was to be eliminated by 5/26/1989 on Brushy Run at RMI 0.6 (from a natural spring and from a former "gel and dynamite mixhouse").
003	Stormwater (73,376 SF; 5.36% impervious, i.e. 3,933 SF)	40°, 44', 04"	-75°, 59', 20"	Brushy Run Explosives manufacturing/storage. No industrial activities identified but PPC Plan Appendix J indicates Mix & Pack operations and other industrial building. **No identified BMPs in drainage area to control pollutants in stormwater.** Industrial activities in area (including mix & pack operations). By Pharmaceutical Blend Facility (PBF) Building. PPC Plan indicates PBF materials include acetone, ethyl acetate, methanol, and nitroglycerine-based pharmaceuticals. Other Information: Flow is directed to a pipe, and then a bare earthen channel (covered with leaves) before discharging to Brushy Run. Old stormwater pipe was completely clogged, so they tied into an existing vegetated drainage channel. NOTE: 2012 Site Visit recommended cleaning out leaves, and doing something to cut down on erosion (grass, rip-rap, etc.) since looked like some undercutting or erosion might be taking place. Noted that they could sample at the end of pipe, as it was downslope of industrial activities within no obvious source between it and Brushy Run in ditch. NOTE: 1/30/2003 IRR indicates that former SW-IV was removed from 2003 NPDES permit because it was on other ICI property not owned by Copperhead. Unattached figure excerpt shows it located on other side of Little Schuylkill River, not on Brushy Creek.

				Application Data Exceedances of future limits: 1034 mg/l max and 231 mg/l TSS average (5 samples).
004	Stormwater (165,303 SF; 16.62% impervious, i.e. 27,473.4 SF)	40°, 44', 10"	-75°, 59', 23"	**Brushy Run** Explosives manufacturing/storage. No industrial activities identified in Module 1 (but PPC Plan indicates Mix and Pack operations). **No identified BMPs in drainage area to control pollutants in stormwater.** Other Information: Not accessible on 2012 Site Visit, due to ongoing explosives activities in that area. Described as a concrete dock where a pipe might direct stormwater discharge to Brushy Run, but Kaiya has never seen flow. Updated application calls this a "Mix & Pack Outfall", but it could be the Building 866 flow or vice-versa. **NOTE**: 1/30/2003 IRR indicates that former SW-IV was removed from 2003 NPDES permit because it was on other ICI property not owned by Copperhead. Unattached figure excerpt shows it located on other side of Little Schuylkill River, not on Brushy Creek. **Application Data Exceedances of future limits: 522 mg/l max and 112 mg/l TSS average (5 samples).**
005 (a.k.a. SW-V)	Stormwater (98,305 SF; 15.49% impervious, i.e. 15,227.5 SF)	40°, 43', 59"	-75°, 58', 59"	Little Schuylkill River Explosives manufacturing/storage and main access road. No industrial activities identified in Module 1 or PPC Plan Appendix J). No identified BMPs in drainage area to control pollutants in stormwater. Other Information: Includes site access road and NG Hill area. Pipe and culvert are periodically cleaned out by Copperhead. Flow crosses road via concrete culvert. Sometimes has flow. **Application Data Exceedances of future limits:** None reported (2 – 6 samples)
006	Stormwater (457,162 SF; 8.48% impervious, i.e. 38,767.3 SF)	40°, 44', 01"	-75°, 59', 17"	Brushy Run Explosives manufacturing/storage. No industrial activities identified in Module 1 but PBF activities noted in PPC Plan Appendix J. **No identified BMPs in drainage area to control pollutants in stormwater.** Other Information: "Bunkered building". NOTE: 1/30/2003 IRR indicates that former SW-VI was removed from 2003 NPDES permit because it was on other ICI property not owned by Copperhead. **Application Data Exceedances of future limits:** None reported (9 samples)
007*	Stormwater	40°, 44', 17"	-75°, 58', 51"	Little Schuylkill River

(a.k.a. SW-VII)	(4,092,696 SF; 4.57% impervious, i.e. 187,036.2 SF)			Explosives manufacturing/storage and main access road. No industrial activities identified in Module 1 or PPC Plan Appendix J. **No identified BMPs in drainage area to control pollutants in stormwater.** Other information: No significant industrial activities but includes site access road, and does get some roof gutter drainage from lab and office, but they think that they also properly store some empty containers outside of the buildings. Intermittent flow. **Application Data Exceedances of future limits:** None reported (3 - 12 samples).
008	**NA** **Inactive IW**	-	-	Little Schuylkill River **Inactive,** this was formerly an IW discharge point (via clay pipe discharge), but now only water collected in a small trench would ever be discharged. The pipes are plugged. NOTE: The PPC Plan indicates that this Outfall #008 is "out of service" and that stormwater from the site can be diverted and treated prior to discharge. NOTE: 1/30/2003 IRR indicates that SW-VIII was removed from 2003 NPDES permit because it was on other ICI property not owned by Copperhead. Unattached figure excerpt shows it located on other side of Little Schuylkill River, distinct from IW Outfall #008.
009 (a.k.a. SW-IX)	Stormwater (90,455 SF; 29.33% impervious, i.e. 26,530.5 SF))	40°, 43', 49"	-75°, 59', 02"	Little Schuylkill River Explosives manufacturing/storage and main access road. HW Storage Building is shown in one figure as outside this drainage area (downstream of Outfall No. 009 and 011). BMPs include WWTP monitoring and observation and written O&M Plan Other Information: Industrial activities including some WWTP subarea stormwater flow, and HW Storage Area. **Application Data Exceedances of future limits: 483 mg/l TSS max and 71 mg/l average (7 samples). 5.69 SU pH minimum (7 samples).**
010* (formerly SW-XI, then SW-X)	Stormwater (2,226,491 SF; 1.70% impervious, i.e. 37,850.4 SF)	40°, 44', 27"	-75°, 58', 46"	Little Schuylkill River Stormwater discharge with main access road. No industrial activities identified in Module 1 or PPC Plan Appendix J. **No identified BMPs in drainage area to control pollutants in stormwater.** Other Information: Outfall nearest facility entrance, and includes access road. Known previously as Outfall #011 until renamed in prior permit to prevent confusion with IW outfall #011; no industrial activities; NOTE: 1/30/2003 IRR indicates that original SW-X was removed from 2003 NPDES permit because it was on other ICI property not owned by Copperhead.

				Unattached figure excerpt shows it located on other side of Little Schuylkill River, downstream of Outfall #011. **Application Data Exceedances of future limits: 282 mg/l TSS max, 33 mg/l average (12 samples).**
012 (a.k.a. SW-XII)	Stormwater (381,344 SF; 8.00% impervious, i.e. 30,507.5 SF)	40°, 44', 12"	-75°, 58', 49"	Little Schuylkill River Stormwater discharge with main access road. No industrial activities identified in Module 1 or Appendix J. **No identified BMPs in drainage area to control pollutants in stormwater.** Other Information: No industrial activities, and area subject to flooding. Intermittent flow ditch. Noted need to keep stormwater controls clean of leaves/debris as typical stormwater BMP. **Application Data Exceedances of future limits: 553 mg/l TSS max and 132 mg/l average (6 samples).**
013 (a.k.a. SW-XIII)	Stormwater (212,100 SF; 15.81% impervious, i.e. 33,533 SF)	40°, 44', 06"	-75°, 58', 50"	Little Schuylkill River Stormwater discharge for main access road and Wet Well pump station. No industrial activities identified in Module 1 or PPC Plan Appendix J. **No identified BMPs in drainage area to control pollutants in stormwater.** Other Information: Wet well (with pumps and ¼ mile force main to direct flow to WWTP) for site sewage flows (from office & lab) not far from Outfall, but sewage pipe 12 foot below grade. Flow generally ends up infiltrating before getting into stream. 2012 Site Visit mentioned need to handle fallen leaves in outfall drainage routes as a normal stormwater practice. **Application Data Exceedances of future limits: 168 mg/l TSS max, 65 mg/l average (3 samples).**
014 (a.k.a. SW-XIV)	Stormwater (486,976 SF; 6.08% impervious, i.e. 29,608.2 SF)	40°, 44', 03"	-75°, 58', 53"	Little Schuylkill River Stormwater discharge for main access road. No industrial activities identified in Module 1 or PPC Plan Appendix J. **No identified BMPs in drainage area to control pollutants in stormwater.** Other Information: No industrial activities in drainage area. Hillside runoff flows to outfall. **Application Data Exceedances of future limits: 123 mg/l TSS max, 26 mg/l average (6 samples).**
015 (SW-I)	NA -Inactive SW outfall	?	?	Brushy Run per E-maps **Inactive**, formerly Outfall #999, a.k.a. SW-1/Powder Line, E-maps location differs from new Brushy Run Outfalls. Actual location unverified.
016 (SW-IV)	NA -Inactive SW outfall	?	?	Brushy Run per E-maps **Inactive**, formerly Outfall #999, a.k.a.

				SW-IV. E-maps location differs from new Brushy Run Outfalls. 1/30/2003 IRR indicates that this outfall was removed from 2003 NPDES permit because it was on other former ICI property not owned by Copperhead.
017 (a.k.a. SW-III)	NA -Inactive SW outfall	?	?	Little Schuylkill River **Inactive**, formerly SW-III Burning Grounds, location not indicated on available drawings – but coordinates put it on the other side of Little Schuylkill River from the Copperhead site. The 1/30/2003 IRR indicates that this outfall was removed from the 2003 NPDES permit because it was on other ICI property not owned by Copperhead. Actual location unverified.
018 (Existing, but Newly defined)	**Stormwater from HW TSD (area and % impermeable undefined)**	40°, 44', 18.2"	-75°, 59', 43.7"	**UNT to Brushy Run** **Captive HW Thermal Treatment Area. In-stream sampling point deemed not adequate for compliance monitoring purposes. Area indicated to be sheet flow drainage area by permittee. Lat/Long based on DEP Waste Management HW TSD facility coordinates.** **<u>PPC Plan Description</u>: Concrete pads, burn pans, roll-off container for managing ash, and a storage container for supplies.** **No application data for this stormwater sheet flow area.**

*Said to discharge in typical storm event (undefined by Copperhead) per previous NPDES Permit Renewal Application. The other 2008 NPDES permitted stormwater outfalls would discharge during atypical events by implication.

Table 2 (Line Drawing Summary)

Source*	Flow	Routed thru Pump Station	Comment
Pharmaceutical Facility	1,900 GPD	No	Includes sanitary flows from pharmaceutical production areas. January 2006 EPA Pharmaceutical Guidance (EPA 821-F-05-006) indicates that the ELG took into account up to 25% non-pharmaceutical flows.
Sanitary Flow	1,200 GPD	Yes	-
Analytical Lab	700 GPD	Yes	70 GPD sanitary wastewater 630 GPD IW wastewater
Laundry	500 GPD	Yes	-
Cleaning Water from/through "Mix & Pack"***	120 GPD (occasional 10,000 GPD batch per previous application)	No	-
Boiler Blowdown***	325 GPD	No	There is also an identified "chemical addition point" for steam or chemicals shown. Line drawing indicates flow includes sanitary flows.
NCCW	10,000 GPD	No	Line drawing indicates seasonal use, including winter to prevent line freezing but NCCW flows appear year-round per 2020 EDMR data. Mass loading ELG limits eliminates impact of NCCW dilution on permit limits.
NG Hill Wastewater	2,500 – 6,000 GPD (once or twice per month)	No	**No longer going to IWTP.** 120 GPD goes into batch per previous renewal Application. **Now being trucked offsite for treatment.**
Chlorination water supply (direct to WWTP)	2,880 GPD	No	Indicated to be potential source for chlorine residuals found in IWTP discharge after UV disinfection usage. Water supply for all uses is public water system per application.
TOTAL	14,745 GPD (omitting chlorinated water supply usage at IWTP) except for impact of batched flows on daily volume).	NA	IWTP was sized for 0.018 MGD with NPDES permit ADF of 0.017725 MGD. Sanitary flows include the 1,200 GPD sanitary flows, 500 GPD laundry flow, 70 GPD Lab flow (total of 1770 GPD). Other sanitary flows assumed addressed in ELGs. **NOTE**: 0.018 MGD design flow used for NPDES Permit Basis Flow and water quality modeling.

*Influent Sample Point 1 receives 1,900 GPD flow from Pharmaceutical Facility, 1,200 GPD Sanitary flows, 700 GPD Lab flows, 500 GPD Laundry, 120 GPD (occasional 10,000-gallon batches per previous application) Mix & Pack cleaning water, 325 GPD Boiler Blowdown, & 10,000 GPD NCCW (seasonal usage). Influent Sample Point 2 only received 2,500 – 6,000 GPD (occasional batch) flow from NG Hill but was omitted by current NPDES Permit renewal application Line Drawing (with NG Hill waste stream being trucked offsite).

Table 3 (ELG Production Rates Information)

Year	Explosives Manufacturing (40 CFR 457 Subpart A –Manufacture of Explosives) for Production-based ELGs	Pharmaceuticals Preparations (40 CFR 439 Subpart D – Mixing, Compounding and Formulation) for concentration-based ELGs
Wastewater	120 GPD (batched at 2,500 – 6,000 gallons once or twice per month) NG Hill Wastewater (no longer going to IWTP) 700 GPD Analytical Lab Unknown percentage of "sanitary flows" from washdown waters, etc.	**1,900 GPD Pharmaceutical Facility Wastewater per Line drawing (basis for concentration-based ELG limits).**
Max Design Production Rate	5,300 lbs/day	117,250 lbs/month (3908.33 lbs/day for 30-day month)
Average Annual Production (Previous 5 years and anticipated 5 years)**	**138,488 lbs (Max Year of 5 used as LTA)** 105,189 lbs 5-year Average (88,634 – 138,488 lbs range) (31.7% variability for Max Year from 5-year average)	251,674 lbs (172,394 - 325,329 lbs range, decreasing over last 5 years) (29.26% variability for Max Year)
Average Monthly Production (based on 5-year annual average production)	8,766 lbs (5-year average)	20,973 lbs (5-year average)
Maximum Monthly Production	36,345 lbs (Max month, 414.6% of 5-year average production rate which equates to 1,652 lbs/production day during max month) (15,253 – 36,345 lb range) 20,697 lbs (5-year average max month; 236% of 5-year average; 941 lb/day for 22-day production month)	61,291 (2013 max month, 292% of 5-year average) (23,759 – 61,291 lb range) 20,997.2 lbs (5-Year average max month; ~5 year average; 955 lbs/day for 22-day production month)
Average Daily Production	**525 lb/d based on highest year of production used as basis for Production-based ELG limits *** 387 lb/production day based on 5-year avg. (336 – 525 lbs/production day range)	953.3 lb/production rate based on 5-year average) (657 – 1,232 lb/production rate range)
Production days per month	22 days	22 days
Production hours per day	8 hours	8 hours
Total Days per year of production	264 at 22 production days/month	264 at 22 production days/month

***** Per the EPA Permit Writers Manual, the highest production rate year and month was chosen for the Long Term Average (LTA) to avoid the need for tiered production limits or NPDES permit amendment in event of greater market demand. The calculations provide an additional margin because of non-production days would have zero to minimal ELG loadings in terms of monthly average loading calculations. Annual average production rates within 20% EPA rule-of-thumb for variation without need for tiered discharge limitations (2010 EPA NPDES Permit Writers' Guide, page 5-28). **The previous NPDES Permit Renewal Fact Sheet Table and ELG permit limits were based on available application information that indicated fewer days of production (~7 days/month on average with higher max daily loadings) and an expected increase in future production rates to ~161,419 lbs/years. Therefore, the production-based limits are being reduced in this permit term. In practical terms, the limited equalization/storage capacity and design capacities of the as-built 0.018 MGD IWTP sets a limit for production before hauling offsite of wastewater would be required, and the Part A.III.C.2 (Planned Change in Waste Stream) notification requirements might trigger NPDES permit amendment requirements.**

Table 4 (Applicable ELGs)

	Loadings	Regulation	Applicable ADF Loading
40 CFR 457 Subpart A (Manufacture of Explosives)	**Production-based ELG limits**	**-**	**-**
COD (BPT/BAT)	7.77/1000 lb product (MDL) 2.59/1000 lb product (AML)	40 CFR 457.12	525 lb/day
BOD_5 (BPT/BCT)	0.72/1000 lb product (MDL) 0.24/1000 lb product (AML)	40 CFR 457.12	525 lb/day
TSS (BPT/BCT)	0.25/1000 lb product (MDL) 0.084/1000 lb product (AML)	40 CFR 457.12	525 lb/day
pH (BPT/BCT)	6.0 – 9.0	40 CFR 457.12	NA
40 CFR 439 Subpart D (Pharmaceutical Mixing, Compounding and Formulation) BPT/BCT	**Concentration-based ELG limits**	**-**	**-**
COD (BPT/BAT)	228 mg/l (MDL) 86 mg/l (AML) Unless 40 CFR 439.22(d) requires a lower limit based on influent based on 74% reduction of influent COD LTA multiplied by a variability factor of 2.2.	40 CFR 439.22(c, d) IBR 439.42	1,900 GPD
BOD_5 (BPT/BCT)	Maximum Monthly BOD_5 (mass load) must be reduced to 90% or more of influent BOD LTA daily (multiplied by a variability factor of 3)***. No facility shall be required to attain a monthly average limitation for BOD_5 that is less than the equivalent of 45 mg/L.	40 CFR 439.12(a) IBR 439.42	1,900 GPD
TSS (BPT/BCT)	Maximum Monthly TSS (mass load) must be 1.7BOD_5 (mass limit, as calculated above).	40 CFR 439.12(b) IBR 439.42	1,900 GPD
pH (BPT)	6.0 – 9.0	25 Pa. Code 95.2 (eCFR 40 CFR 439.43 IBR 439.42 which is missing a pH limit)	-

Table 5 (Permit Limits)

Parameter	Monthly Average (lbs/day unless indicated otherwise)	Daily Maximum (lbs/day unless indicated otherwise)
Part 457 Subpart A (Explosives Manufacturing)	**-**	**-**
COD	(2.59)(0.525) = **1.359** (rounded up)	(7.7)(0.525) = **4.043** (rounded up)
BOD_5	(0.24)(0.525) = **0.126**	(0.72)(0.525) = **0.378** (rounded up)
TSS	(0.084)(0.525) = **0.044**	(0.25)(0.525) = **0.131** (rounded down)
pH	6.0 – 9.0 SU	6.0 – 9.0 SU
Part 439 Subpart D (Pharmaceutical Production)	-	-
COD	(86 mg/l)(0.0019 MGD)(8.34) = **1.362**	(228 mg/l)(0.0019 MGD)(8.34) = **3.612**
BOD_5	(90% reduction of BOD_5 LTA**)(variability of 3) = (0.10)(9.61 BOD_5/day)(3) = **0.961** Or (45 mg/l)(0.0019)(8.34) = 0.713 (minimum allowance superseded)	(2)(0.961) = **1.922**
TSS	(1.7)(BOD_5 limit) = **1.633**	(2)(1.633) = **3.267)**
pH	6.0 – 9.0 SU	6.0 – 9.0 SU
Sanitary flows*	**1,770 GPD**	-
COD	Assuming ballpark 85% reduction of medium strength domestic wastewater (508 mg/l COD per Metcalf & Eddy Table 3-18 5th Ed) results in an effluent loading of 76.2 mg/l (**1.124 lbs/d at 0.001770 MGD**) but no TBEL or DRBC Docket limit applies.	2.25 (assuming standard multiplier applies)
BOD_5	(30 mg/l)(0.00177)(8.34) = **0.443** Secondary Treatment and DRBC Docket limit	**0.886** (Standard multiplier)
TSS	(30 mg/l)(0.00177)(8.34) = **0.443** Secondary Treatment and DRBC Docket limit	**0.886** (Standard multiplier)
Combined flows limits	-	-
COD	1.359 + 1.362 + 1.124 = 3.845 (**rounded to 3.85**) Existing Limit: 12.51 lb/d*** 12/19 -11/20 EDMR data range: <1.35 – 4.02 and 11.77 outlier.	4.043 + 3.612 + 2.25 = **9.90** Existing Limit: 35.46 lb/d*** 12/19 -11/20 EDMR data range: 1.76 – 5.13 mg/l with 21.93 outlier
BOD_5	0.126 + 0.961 + 0.425 = 1.512 (**rounded to 1.52**) Existing Limit: 4.0 lb/d*** 12/19 -11/20 EDMR data range: 0.31 – 1.06 with 6.60 outlier	0.378 + 1.922 + 0.886 = **3.186 (rounded to 3.19)** Existing Limit: 8.84 lb/d*** 12/19 -11/20 EDMR data range: 0.27 – 1.21 with 12.92 outlier
TSS	0.044 + 1.633 + 0.425 = 2.102 (**rounded to 2.10**) Existing Limit: 4.9 lb/d*** 12/19 -11/20 EDMR data range: 0.08 – 1.03 (no outlier)	0.131 + 3.267 + 0.886 = 4.284 (**rounded to 4.29**) Existing Limit: 10.1 lb/d*** 12/19 -11/20 EDMR data range: 0.01 – 1.87 (no outlier)
Nitrate-Nitrite N	No ELG TBELs apply (ELG indicator constituents are assumed to cover other constituents). Domestic wastewater would normally have zero Nitrate-Nitrite-N loadings (Metcalf & Eddy 5th Ed. Table 3-18). Monitoring due to high Nitrate-Nitrite loading	No ELG TBELs apply (ELG indicator constituents are assumed to cover other constituents). Domestic wastewater would normally have zero Nitrate-Nitrite-N loadings (Metcalf & Eddy 5th Ed. Table 3-18). Monitoring due to high Nitrate-Nitrite loading.
pH	6.0 – 9.0 SU	6.0 – 9.0 SU

*1.770 GPD (1,200 GPD sanitary flow, 70 GPD lab flow, 500 GPD laundry flows). Other flows addressed under ELGs. Medium strength domestic wastewater influent has 220 mg/l BOD, 500 mg/l COD, and 220 mg/l TSS per literature sources. Secondary treatment requirements for BOD_5 are defined by the Federal Regulations. A multiplication factor of 2 was assumed for Maximum Daily Limits.

****No 1,900 GPD Pharmaceutical IW wastewater stream concentrations submitted with application or in previous WQM Permit Application No. 5415401 data (with the application indicating only sanitary waste streams and NCCW, no IW wastewaters).** Available data**.**

- **NPDES Permit Renewal Application data:** Single combined IWTP influent sample BOD5: 87 mg/l; 9.3 lb/d which back-calculates to ~12.800 GPD flow).
- **WQM Permit Application No. 5415401 data:** Combined IWTP Influent BOD5 Data: 1.46 lb/day – 6.80 lb/day (8 monthly samples). Concentrations ranged from 9 mg/l – 105 mg/l concentrations with flows ranging from 0.0077 – 0.0158 MGD. 6.8 lb/day occurred during 0.0078 MGD flow day (i.e. reduced NCCW contribution which would not be expected to contribute BOD5 loadings). The 6.80 lb/day loading was used as Amphidrome organic design capacity. **The 8 samples LTA average would be 2.38 lb/day. Adding in the single NPDES application sample result would result in a 3.203 lb/d LTA for 9 samples. Using the variability of 3 factor, results in 9.61 lb/day BOD5 for use in the calculation (which covers all available IWTP influent data).** Other waste streams:
    - 40 CFR Part 459 Subpart A wastewater ELGs were separately calculated.
    - NCCW is considered a negligible source of BOD5, COD or TSS.
    - Boiler Blowdown is considered a negligible source of BOD5. COD and TSS loadings are assumed addressed by the overall ELG.
    - Sanitary wastewater: In the absence of site-specific PBF ELG wastewater concentration data or subarea flow data, the sanitary loadings were assumed to be zero during the influent sampling dates as the worst-case loading in terms of ELG calculations. In practical terms, the Amphidrome would be organically overloaded at >6.80 lb/day BOD5 monthly average loadings.

***Previous NPDES Permit ELG limit calculations were based on 7/production days per month (not 22 which led to higher monthly average and daily max limits for the same production rates), and higher predicted annual production rates that did not materialize.

Communication Log:

8/30/2018: Renewal application submitted.
9/17/2018: Application Incompleteness Letter

- Application was missing stormwater outfalls; missing stormwater sampling data required by application and existing NPDES permit; form items not completed; effluent sampling data not meeting all DEP Target QLs; etc.
- Only application-noted site change was their WWTP upgrading (equalization tank, Amphidrome system, UV disinfection & related pump station per issued WQM permits).

11/30/2018: Application revisions received including most recent 1/25/1989 DRBC Docket No. D-88-83 (issued to Atlas Powder Company) for the IWTP discharging under this NPDES Permit.
1/30/2019: NPDES Administrative Extension Letter issued.
4/16/2020: Technical Deficiency Letter issued
4/23/2020: Copperhead E-mail acknowledging receipt of Technical Deficiency Letter.
9/1/2020: Response to Technical Deficiency Letter received
1/20/2021: Consultant (Mary Beth Peters) E-mail indicating potential sale/transfer of facility and asking for application status.
1/21/2021: DEP (Berger) E-mail explaining requirements for NPDES/WQM permit transfers (as part of application and/or after final permit action). Review will be prioritized due to potential sale.
1/25/2021: DEP (Berger) E-mail asking for omitted NPDES Permit application response information (revised topo map; revised site plan; additional stormwater sampling data) and clarification if NPDES/WQM permit transfer application is coming in soon or before/after Final NPDES permit action.
4/1/2021: Response to 1/21/2021 and 1/25/2021 DEP E-mails received.