pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**		Application No.	**PA0205061**
Facility Type	**Non-Municipal**	**NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE**	APS ID	**985477**
Major / Minor	**Minor**		Authorization ID	**1259931**

Applicant and Facility Information

Applicant Name	**Mark IV Development, LLC**	Facility Name	**Raccoon Elementary School STP**
Applicant Address	3949 Patterson Road	Facility Address	3949 Patterson Road
	Aliquippa, PA 15001-1044		Aliquippa, PA 15001-1044
Applicant Contact	Mr. Anthony Policastro	Facility Contact	Same as Applicant
Applicant Phone	(412) 974-8840	Facility Phone	Same as Applicant
Client ID	320634	Site ID	254794
Ch 94 Load Status	Not Overloaded	Municipality	Raccoon Township
Connection Status	No Limitations	County	Beaver
Date Application Received	January 29, 2019	EPA Waived?	Yes
Date Application Accepted	January 30, 2019	If No, Reason	

Purpose of Application: Application for a renewal of an existing NPDES permit for discharge of treated Sewage.

Summary of Review

The applicant has applied for a renewal of an existing NPDES Permit, Permit No. PA0205061, which was previously issued by the Department on July 10, 2014. That permit expired on July 31, 2019.

WQM Permit No. 491401, issued on April 23, 1991, approved construction of a STP with a design flow rate of 0.00854 MDG. The existing treatment process consists of a comminutor, flow EQ, aeration, final clarifier, sludge holding tank, chlorination, dechlorination, and effluent pump station.

The receiving stream, UNT to Gums Run, is classified as a WWF, and is located in State Watershed No. 20-D.

The applicant has complied with Act 14 Notifications and no comments were received.

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.

Approve	Deny	Signatures	Date
X		William C. Mitchell, E.I.T. / Environmental Engineering Specialist	March 31, 2020
X		Donald J. Leone, P.E. / Environmental Engineer Manager	March 31, 2020

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.00854
Latitude	40º 36' 30.00"	Longitude	-80º 21' 36.00"
Quad Name	Aliquippa	Quad Code	1403
Wastewater Description:	Sewage Effluent		

Receiving Waters	Unnamed Tributary to Gums Run (WWF)	Stream Code	33576
NHD Com ID	99681980	RMI	0.70
Drainage Area	0.10	Yield (cfs/mi^2)	0.0027
Q_{7-10} Flow (cfs)	0.0003	Q_{7-10} Basis	WR Bulletin 12, STA# 03107700, pg. 425
Elevation (ft)		Slope (ft/ft)	0.0375
Watershed No.	20-D	Chapter 93 Class.	WWF
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	Raccoon Creek Watershed

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Midland Borough Water Authority		
PWS Waters	Ohio River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Changes Since Last Permit Issuance: NONE

Comments: The discharge is to an UNT to Gums Run, which flows into the Raccoon Creek Watershed that has a Final TMDL and is impaired by metals and pH. This sewage discharge is not expected to contribute to the stream impairment for which abandoned mine drainage is source of the impairment. No WLAs have been developed for this sewage discharge and they are not expected to contribute to the stream impairment for these pollutants.

Treatment Facility Summary				
Treatment Facility Name: Raccoon Elementary School				

WQM Permit No.	Issuance Date
491401	April 23, 1991

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Chlorination	0.00854

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0085		Not Overloaded		Hauled to Regional WWTP

Changes Since Last Permit Issuance: NONE.

Compliance History

Operations Compliance Check Summary Report
Facility: Raccoon_Elementary_School_STP
NPDES Permit No.: PA0205061
Compliance Review Period: 03/30/2015 – 03/30/2020

Open Violations by Client Summary

None.

Inspection Summary

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC	# OF VIOLATIONS
2837829	02/04/2019	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted	0
2533307	11/01/2016	Administrative/File Review	PA Dept of Environmental Protection	Violation(s) Noted	1

Violation Summary

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
771529	11/01/2016	302.202	Operator Certification - Failure to submit annual system fee	12/12/2016

Enforcement Summary

ENF ID	ENF TYPE DESC	EXECUTED DATE	VIOLATIONS	ENF FINALSTATUS	ENF CLOSED DATE
348395	Notice of Violation	11/01/2016	302.202	Comply/Closed	12/12/2016

DMR Violation Summary

Current eDMR user.

Effluent limit violation summary 3/30/2018 – 3/30/2020:

MONITORING END DATE	OUTFALL	PARAMETER	SAMPLE VALUE	PERMIT VALUE	UNIT OF MEASURE	STATISTICAL BASE CODE
01/31/2020	001	Ammonia-Nitrogen	3.1	3.0	mg/L	Average Monthly

Compliance Status:

Facility had a single DMR violation in January 2020, but no other noncompliance issues.

Completed by: David Roote

Completed date: 3/30/2020

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.00854
Latitude 40º 36' 30.00" **Longitude** -80º 21' 36.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Total Residual Chlorine	0.02	Average Monthly	TRC_CALC
Dissolved Oxygen	5.0	Minimum	WQAM 63
Ammonia Nov 1 - Apr 30	3.0	Average Monthly	WQAM 63
Ammonia-Nitrogen May 1 – Oct 31	1.9	Average Monthly	WQAM 63

Best Professional Judgment (BPJ) Limitations

Comments: N/A

Anti-Backsliding

N/A

Additional Considerations:

For pH, Dissolved Oxygen (DO) and Total Residual Chlorine (TRC), a monitoring frequency 1/day has been imposed. In general, less frequent monitoring may be established only when the permittee demonstrates that there will be no discharge on days where monitoring is not required.

Nutrient monitoring is required to establish the nutrient load from the waste water treatment facility and the impacts that load may have on the quality of the receiving stream(s). A 1/year monitor and report requirement for Total N & Total P has been added to the permit as per Chapter 92.a.61.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Departments Technical Guidance for the Development and Specification of Effluent Limitations.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	0.00854	XXX	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.02	XXX	0.04	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	Grab
TSS	XXX	XXX	XXX	30	XXX	60	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	3.0	XXX	6.0	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	1.9	XXX	3.8	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: Outfall # 001

Discharge to Gum Run - WWF

HEADWATER DATA

page

$Q_{7\text{-}10}$	=	.00027
TEMP.	=	25
pH	=	7.0
D.O.	=	85%
$CBOD_5$	=	2
$NH_3\text{-}N$	=	.1
K_c	=	0

Q_d	=	.00854
TEMP.	=	20
pH	=	7
D.O.	=	2
$CBOD_5$	=	25
$NH_3\text{-}N$	=	25
K_c	=	1.5

Q_t	=	0.0
TEMP.	=	
pH	=	
$CBOD_5$	=	
$NH_3\text{-}N$	=	

D.O.	=	5
K_n	=	.6
Slope	=	.0375
Length	=	800'
D.A.	=	.10
W/D ratio	=	10

Reach - Pt of Discharge
to 920' contour
Δ elev - 30'
Slope - 30/800 = .0375

Final effluent #

NO3 NO2 - N/A - Ohio River

CBOD 5 - 25
NH3-N - 1.9
3.0

D.O. - 5 mg/l
Fecal - 200/100 ml
2000/100 ml } no dilution

RACOON ELEMENTARY SCHOOL DISCHARGE TO GUM RUN
FILE:

DEFAULT DATA

A. STREAM VALUES

1 Q1-10/Q7-10 RATIO.............:.64
2 Q30-10/Q7-10 RATIO............:1.36
3 TEMPERATURE...................:25 ← WWF
4 PH............................:7
5 C-BOD5........................:2 } assumed
6 NH3-N.........................:.1
7 D.O. SATURATION (%)...........:.85
8 D.O. GOAL.....................:5
9 WIDTH/DEPTH RATIO.............:10
10 KC....(HEADWATERS ONLY!)......:0
11 KN............................:.6

B. DISCHARGE VALUES (30 DAY AVE)

12 C-BOD5........................:25
13 NH3-N.........................:25
14 EFFLUENT D.O..................:2
15 EFFLUENT TEMP.................:20
16 KC............................:1.5
17 BAL.TECHNOLOGY(1=Y 0=N).......:0

HEADWATERS AND TRIBUTARY DATA

NO. OF REACHES : 1

RH	Q7-10 (CFS)	T (C)	PH	DO (MG/L)	CBOD5 (MG/L)	NH3-N (MG/L)
HW	2.7E-02	25	7	7.12	2	.1
1	0					

RACOON ELEMENTARY SCHOOL DISCHARGE TO GUM RUN
FILE:

STREAM CHARACTERISTICS

RCH	Q7-10 CFS	T (C)	PH	DO MG/L	CBOD5 MG/L	NH3-N MG/L
1	0	25	7	7.12	2	.1

Q 1-10/Q 7-10 = .64
Q30-10/Q 7-10 = 1.36

DISCHARGER DATA
Q7-10 DESIGN CONDITIONS

RH	Q MGD	T (C)	PH	DO MG/L	CBOD5 MG/L	NH3-N MG/L	KC
1	2.5AE-0	20	7	3	25	20	1.5

Run #

RACOON ELEMENTARY SCHOOL DISCHARGE TO GUM RUN
FILE:

REACH CHARACTERISTICS

RH	D.O. GOAL	KN (/D)	RCH. SL. (FT/FT)	RCH. LEN. (FT.)	DRAIN AREA (MI^2)	W/D
1	5	.6	.0375	800	.1	10

REACH CHARACTERISTICS

RH	KR (/D)	TT (DAYS)
1	0	0

let program calculate

RACOON ELEMENTARY SCHOOL DISCHARGE TO GUM RUN
FILE: RACOON GUM.WQM6.3

NH3-N DISCHARGE ALLOCATIONS AT Q30-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	8.54E-03	1.95	1.95	0	0

NH3-N DISCHARGE ALLOCATIONS AT Q1-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	8.54E-03	9.75	9.75	0	0

RACOON ELEMENTARY SCHOOL DISCHARGE TO GUM RUN
FILE: RACOON GUM.WQM6.3

MULTIPLE DISCHARGE LIMITATIONS
(TOTAL) DISCHARGE = 8.54E-03 MGD
TEMP = 20.1 PH = 7
CBOD-5= 24.54 NH3-N= 1.91 D.O. = 5.04
KC'= 1.497 KN= .6 D.O.GOAL = 5
KR= 50.925 (OWENS)
DIS. 1 RCH. 1 TRVL TIME:.251

TR.TM. (DAYS)	CBOD-5 (MG/L)	NH3-N (MG/L)	D.O. (MG/L)
.025	23.63	1.88	7.12
.05	22.76	1.85	7.12
.075	21.92	1.83	7.12
.1	21.11	1.8	7.12
.125	20.33	1.77	7.12
.15	19.57	1.75	7.12
.175	18.85	1.72	7.12
.2	18.15	1.69	7.12
.225	17.48	1.67	7.12
.251	16.84	1.64	7.12

MULTIPLE DISCHARGE LIMITATIONS
(TOTAL) DISCHARGE = 8.54E-03 MGD
TEMP = 20.1 PH = 7
CBOD-5= 24.54 NH3-N= 1.86 D.O. = 5.04
KC'= 1.497 KN= .6 D.O.GOAL = 5
KR= 20 (USR DEF.)
DIS. 1 RCH. 1 TRVL TIME:.251

Set Kr value

TR.TM. (DAYS)	CBOD-5 (MG/L)	NH3-N (MG/L)	D.O. (MG/L)
.025	23.63	1.84	5.47
.05	22.76	1.81	5.8
.075	21.92	1.78	6.07
.1	21.11	1.75	6.2
.125	20.33	[illegible]	6.35
.15	19.57	[illegible]	6.47
.175	18.85	[illegible]	6.58
.2	18.15	[illegible]	6.68
.225	17.48	[illegible]	[illegible]
.251	16.84	1.6	6.85

RACOON ELEMENTARY SCHOOL DISCHARGE TO GUM RUN
FILE: RACOON GUM.WQM6.3

D.O. ALLOCATIONS

DIS #	Q (MGD)	---NH3-N--- IND. CONC. (MG/L)	CUM. CONC. (MG/L)	----CBOD5----- IND. CONC. (MG/L)	CUM. CONC. (MG/L)	CRIT. RCH.	PCT. REM. (PCT)
1	8.54E	1.900	1.900	25.00	25.0000		

Limitations

HEADWATERS AND TRIBUTARY DATA

NO. OF REACHES : 1

RH	Q7-10 (CFS)	T (C)	PH	DO (MG/L)	CBOD5 (MG/L)	NH3-N (MG/L)
HW	5.4E-05	7		10.79	2	.1
1	0					

[illegible]

RACOON ELEMENTARY SCHOOL DISCHARGE TO GUM RUN
FILE: RACOON WINTER.WQM6.3

NH3-N DISCHARGE ALLOCATIONS AT Q30-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	8.54E-03	3.05	3.05	0	0

winter NH3-N

NH3-N DISCHARGE ALLOCATIONS AT Q1-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	8.54E-03	14.66	14.66	0	0

Copy of TRC_CALC

TRC EVALUATION

0.0003	= Q stream (cfs)	0.5	= CV Daily
0.00854	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.995	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	**1.3.2.iii**	WLA afc = 0.026	**1.3.2.iii**	WLA cfc = 0.018
PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373	**5.1c**	LTAMULT cfc = 0.581
PENTOXSD TRG	**5.1b**	LTA_afc= 0.010	**5.1d**	LTA_cfc = 0.011

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.017	AFC
		INST MAX LIMIT (mg/l) = 0.039	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**