pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0094064**
Facility Type	**Non-Municipal**	APS ID	**802432**
Major / Minor	**Minor**	Authorization ID	**1206028**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Gary & Jay Ritchey**	Facility Name	**Keystone Restaurant & Truck Stop STP**
Applicant Address	PO Box 277	Facility Address	PO Box 277
	Ebensburg, PA 15931-0277		Ebensburg, PA 15931-0277
Applicant Contact	Gary Ritchey	Facility Contact	***same as applicant***
Applicant Phone	(814) 886-4533	Facility Phone	***same as applicant***
Client ID	113458	Site ID	237284
Ch 94 Load Status	Not Overloaded	Municipality	Munster Township
Connection Status		County	Cambria
Date Application Received	October 30, 2017	EPA Waived?	Yes
Date Application Accepted	November 8, 2017	If No, Reason	

Purpose of Application: NPDES permit renewal for an extended aeration sewage treatment plant.

Summary of Review

Mr. Gary Ritchey submitted an application dated October 27, 2017 and received by the Department of Environmental Protection (DEP) on October 31, 2017 to renew NPDES Permit No. PA0094064 for the Keystone Restaurant & Truck Stop located east of Ebensburg off Route 22 and Munster Road. The permit currently in effect was issued on May 30, 2013 with a June 1, 2013 effective date and a May 31, 2018 expiration date. The renewal application was received at least 180 days before the permit expired, so the terms and conditions of the 2013 permit were automatically continued and remain in effect. The October 2017 application was not reviewed at the time it was received.

On March 18, 2020, Environmental Treatment Services, LLC submitted an updated NPDES permit application. This fact sheet is based primarily on information from the updated application.

The Keystone Restaurant & Truck Stop operates an onsite sewage treatment plant (STP) that discharges through Outfall 001 to an unnamed tributary to Noels Creek, a high-quality cold-water fishery. The STP has an annual average design flow of 7,200 gpd, but annual average flows have ranged from just 633 gpd to 1,900 gpd over the last three years (2017 – 2019).

In 1983, the facility received a Social-Economic Justification to degrade the high-quality receiving stream. Effluent limits are based on 25 Pa. Code § 92a.47(a); case-by-case technology-based limits in accordance with the Antidegradation Best Available Combination of Technologies; and water quality-based effluent limits.

There were two reported violations in the last three years including a fecal coliform violation in May 2017 and an Ammonia-Nitrogen violation in June 2017. The STP's discharges have otherwise complied with the permit.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES

Approve	Deny	Signatures	Date
X		*Ryan C. Decker* Ryan C. Decker, P.E. / Environmental Engineer	November 6, 2020
X		*Donald J. Leone* Donald J. Leone, P.E. / Environmental Engineer Manager	November 10, 2020

Summary of Review
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	Design Flow (MGD)	0.0072
Latitude	40° 27' 53.94"	Longitude	-78° 39' 9.84"
Quad Name	Ebensburg	Quad Code	1516
Wastewater Description:	Sewage effluent		
Receiving Waters	Unnamed Tributary to Noels Creek (HQ-CWF)	Stream Code	46077 (Noels Creek)
NHD Com ID	123718283	RMI	4.45 (Noels Creek)
Drainage Area	0.07	Yield (cfs/mi^2)	0.025
Q_{7-10} Flow (cfs)	0.00175	Q_{7-10} Basis	DEP Hydrogeologist
Elevation (ft)	1920	Slope (ft/ft)	0.025
Watershed No.	18-E	Chapter 93 Class.	HQ-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 (01/29/2010)	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Saltsburg Municipal Waterworks (PWS ID 5320035)		
PWS Waters	Conemaugh River	Flow at Intake (cfs)	
PWS RMI	0.54	Distance from Outfall (mi)	

Changes Since Last Permit Issuance: None

Treatment Facility Summary

Treatment Facility: Keystone Restaurant & Truck Stop Sewage Treatment Plant. The wastewater flows through a gravity-fed collection system into the influent equalization tank. Two submersible pumps pump the wastewaters to an equalization distribution box and into the first aeration tank. There are three aeration tanks. Effluent from the MLSS effluent then flows to the clarifier consisting of two return lines and one skimmer. The clarifier effluent flows to a secondary sedimentation tank consisting of two return lines and one skimmer. Effluent from the secondary sedimentation tank flows to the sand filters beds then to the chlorine contact tank. The chlorine contact tank uses chlorine tablets for disinfection. Before discharge, the effluent is dechlorinated using sodium sulfate tablets.

WQM Permit No.	Issuance Date	Purpose
1184404	May 10, 1985	Permit issued to Gary Ritchey & Jay Ritchey for a sewage treatment plant for sewage from the Keystone Restaurant & Truck Stop.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Biological treatment – flow equalization, extended aeration, clarification, chlorination, and dechlorination	Chlorine	0.0072

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0072	1.2	Not Overloaded	No sludge hauled in 2019	

Changes Since Last Permit Issuance: None

Compliance History

DMR Data for Outfall 001 (from September 1, 2019 to August 31, 2020)

Parameter	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19
Flow (MGD) Average Monthly	0.000569	0.000742	0.000442	0.000215	0.000317	0.000747	0.00065	0.000616	0.000669	0.000732	0.000597	0.000452
Flow (MGD) Daily Maximum	0.000612	0.000952	0.00063	0.000287	0.00075	0.001261	0.000847	0.000755	0.000808	0.00159	0.00061	0.000698
pH (S.U.) Minimum	6.99	6.99	7.01	7.01	7.0	7.01	7.01	7.01	7.0	6.99	6.96	7.01
pH (S.U.) Maximum	7.03	7.02	7.05	7.04	7.09	7.06	7.06	7.07	7.06	7.06	7.06	7.09
DO (mg/L) Minimum	10.1	10.02	10.16	9.81	10.19	10.11	10.44	10.98	10.81	10.02	10.32	10.17
TRC (mg/L) Average Monthly	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TRC (mg/L) Instantaneous Maximum	0.01	< 0.01	0.01	0.01	< 0.01	< 0.01	< 0.01	0.01	0.01	< 0.01	0.01	0.01
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 6.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
TSS (mg/L) Average Monthly	2.0	< 3.0	< 1.0	< 1.0	< 2.0	< 3.0	< 0.08	< 2.0	< 1.0	< 1.0	3.0	< 1.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1	< 1	< 1	< 1	< 1.0	< 1	< 1.0	< 1	1.0	< 1.0	< 1	< 1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	< 1	< 1	< 1	< 1	< 1.0	< 1	< 1.0	< 1	< 1.0	< 1.0	< 1	< 1
Total Nitrogen (mg/L) Average Monthly									< 29.29			
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Phosphorus (mg/L) Average Monthly									0.146			

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0072
Latitude 40º 27' 54.00" **Longitude** -78º 39' 10.00"
Wastewater Description: Sewage effluent

The STP consists of flow equalization, extended aeration, final clarification, chlorination, and dechlorination.

Technology-Based Effluent Limitations (TBELs)

25 Pa. Code § 92a.47 – Sewage Permits

Regulations at 25 Pa. Code § 92a.47 specify TBELs and effluent standards that are applicable to sewage discharges. Section 92a.47(a) requires that sewage be given a minimum of secondary treatment with significant biological treatment that achieves the following:

Table 1. Regulatory TBELs for Sanitary Wastewaters

Parameter	Average Monthly (mg/L)	Instant. Maximum (mg/L)	Basis
$CBOD_5$	25	50†	25 Pa. Code § 92a.47(a)(1) & 40 CFR § 133.102(a)(4)(i)
Total Suspended Solids	30	60†	25 Pa. Code § 92a.47(a)(1) & 40 CFR § 133.102(b)(1)
Fecal Coliform (No./100 mL) May 1 – September 30	200 (Geometric Mean)	1,000	25 Pa. Code § 92a.47(a)(4)
Fecal Coliform (No./100 mL) October 1 – April 30	2,000 (Geometric Mean)	10,000	25 Pa. Code § 92a.47(a)(5)
Total Residual Chlorine	0.5 (or facility-specific)	1.25 (or facility-specific)	25 Pa. Code § 92a.47(a)(8) & § 92a.48(b)(2)
pH (s.u.)	not less than 6.0 and not greater than 9.0		25 Pa. Code § 92a.47(a)(7) & § 95.2(1), & 40 CFR § 133.102(c)

†Value is calculated as two times the monthly average in accordance with Chapter 2 of DEP's *Technical Guidance for the Development and Specification of Effluent Limitations. and Other Permit Conditions in NPDES Permits*.

The $CBOD_5$, TSS, and pH limits are the same as those specified in EPA's secondary treatment regulation (40 CFR § 133.102).

Other Effluent Limits and Monitoring Requirements

Flow must be reported pursuant to 25 Pa. Code § 92a.61(d)(1). The average annual design flow of the STP, 7,200 gpd, will be imposed as the average monthly limit for flow. Also, annual reporting requirements for Total Nitrogen and Total Phosphorus will be maintained pursuant to 25 Pa. Code § 92a.61(b). Department policy is to require Total Nitrogen and Total Phosphorus reporting for sewage discharges with design flows greater than 2,000 gallons per day to help evaluate treatment effectiveness and to monitor nutrient loading to the receiving watershed.

Antidegradation Best Available Combination of Technologies (ABACT)

Discharges to high quality streams are subject to the Department's antidegradation regulations and policies. In accordance with the Department's *Water Quality Antidegradation Implementation Guidance*, November 29, 2003 (Doc. No. 391-0300-002) (p.3):

> If a nondischarge alternative is not cost-effective and environmentally sound, a proposed discharger must utilize the best available combination of cost-effective treatment, land disposal, pollution prevention, and wastewater reuse technologies. This process, known as the antidegradation best available combination of technologies (ABACT) analysis, establishes a minimum level of performance for dischargers in HQ and EV waters based upon the more stringent of water quality-based effluent limits (WQBEL) or ABACT.

> If ABACT produces a non-degrading discharge, the discharge can be approved in either HQ or EV waters. If implementation of ABACT would produce a degrading discharge, it cannot be used, without supplemental treatment, to ensure protection of existing quality in EV waters and could only be applied to HQ waters after approval of SEJ…

The Department approved a Social-Economic Justification for the Keystone Restaurant STP in 1983 and determined that a direct stream discharge from the Keystone Restaurant and Truck Stop was an acceptable option for sewage management (see the attached Department memos). Per Appendix B of the Department's *Water Quality Antidegradation Implementation Guidance*:

> The final technology option is the year-round discharge of treated wastes. […] Where this technology is employed, a discharger must provide, as a minimum, the more stringent of ABACT or treatment technology that will achieve water quality-based effluent limitations (WQBELs).

The Department determined that the following effluent limits were applicable as technology-based requirements or the equivalent of ABACT at the time the permit was issued.

Table 2. ABACT TBELs for Keystone Restaurant STP

Parameter	Average Monthly (mg/L)	Instant. Maximum (mg/L)
$CBOD_5$	10	20
Total Suspended Solids	25	30

The limits in Table 2 were maintained in every renewal of the NPDES permit and will be maintained in this renewal pursuant to EPA's antibacksliding requirements in 40 CFR § 122.44(l).[1]

Water Quality-Based Effluent Limitations (WQBELs)

Pursuant to 25 Pa. Code §§ 93.4c(b)(1)(iii) and 93.4c(c) and a Social-Economic Justification approved in 1983, the permittee is authorized to reduce the quality of unnamed tributary 46077 to Noels Creek to levels less than high quality water quality objectives. That is, non-degrading discharges are not required. However, state water quality standards still must be achieved. The WQBELs in Table 3 were previously imposed at Outfall 001.

Table 3. ABACT TBELs for Keystone Restaurant STP

Parameter	Average Monthly (mg/L)	Instant. Maximum (mg/L)
Ammonia-Nitrogen May 1 – October 31	2.0	4.0
Ammonia-Nitrogen November 1 – April 30	4.0	8.0
Total Residual Chlorine	0.1	0.2
Dissolved Oxygen	7.0 (Minimum)	—

There have been no substantive modifications to the facility, the STP, the receiving water, or to state water quality criteria that warrant a reexamination of the WQBELs. On average, discharge flows from the STP are more than three times less than the flow used to develop WQBELs. Therefore, the existing WQBELs are protective of human health and aquatic life and will remain in effect.

[1] (l) *Reissued permits.*(1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62.)

(2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

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	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	0.0072	Report	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	7.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.1	XXX	0.2	1/day	Grab
CBOD5	XXX	XXX	XXX	10.0	XXX	20.0	2/month	Grab
Total Suspended Solids (TSS)	XXX	XXX	XXX	25.0	XXX	50.0	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	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	4.0	XXX	8.0	2/month	Grab
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.0	XXX	4.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☒	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

POLLUTION REPORT

(I) Project Description — New Discharge / Existing Discharge — Change / Preliminary

A. NPDES Application/Permit No. PA0094064
Part II Permit Nos. _____

B. Applicant, Case Name or Permittee: KEYSTONE RESTAURANT & TRUCK STOP
Municipality: WINSTER TOWNSHIP
County: CAMBRIA

C. Type Waste
[X] Sewage
[ ] Industrial
[ ] Mine

D. Source and characteristics
TREATED DOMESTIC SEWAGE & RESTAURANT WASTE WATER

E. USGS Quad: EBENSBURG

F. Latitude (or in. N) 40° 27' 54"
Longitude (or in. W) 78° 39' 10"

(II) Water Uses and Criteria

A. Receiving waters NOELS CREEK Stream code 46077
Chapter 93 classification HQ-CWF R.M.I. _____
D.A. .07 sq.mi. Yield .075 cfs/sq.mi.
Flow .00175 cfs. Based on data from ON SITE FIELD INSPECTION CONDUCTED AUG 19, 1983 BY HYDROGEOLOGIST, BEST ESTIMATE
Elevation 1920 ft. SPRING FED REFER APPENDIX A of POLLUTION REPORT

Exceptions to standard water use lists: None
Add _____
Delete _____

Water Quality Criteria-Exceptions to Specific Criteria: None
Add _____
Delete _____

Impoundment _____
Special Downstream Uses: _____

B. Secondary Waters LITTLE CONEMAUGH RIVER R.M.I. _____
Distance from discharge _____ mi. Ch. 93 classification _____
D.A. _____ sq.mi. Yield _____ cfs/sq.mi.
Flow _____ cfs. Based on data from _____
_____
Elevation _____ ft. Stream Code _____

Exceptions to standard water use lists:
Add _____
Delete _____

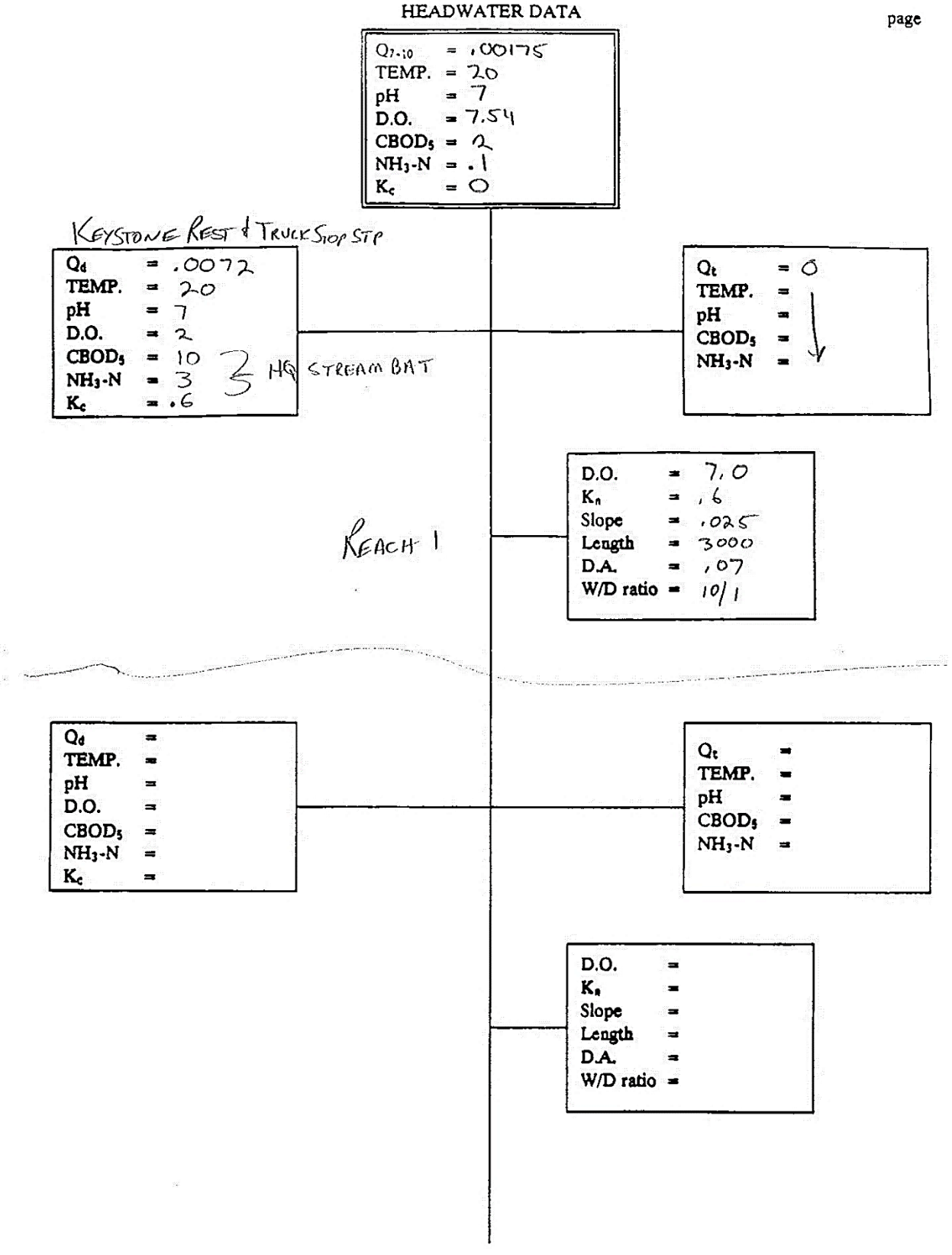
Water Quality Criteria-Exceptions to Specific Criteria:
Add _____
Delete _____

Impoundment _____
Special Downstream Uses: _____
Downstream PWS: location _____
distance from discharge _____ mi. intake _____ mgd.
stream flow at intake _____ cfs.

PA0094064
KEYSTONE RESTAURANT AND TRUCK STOP STP

REACH #1 FROM PT OF DISCHARGE TO SECOND DOWNSTREAM UNNAMED TRIBUTARY
LENGTH = 3000'
ELEVATION AT PT OF DISCHARGE = 1920'
ELEVATION AT END OF REACH = 1845'
Δ ELEVATION = 75'
SLOPE = .025 ft/ft
WASTEFLOW = .0072 MGD

A REVIEW OF THE STREAM CODE REPORTS WAS CONDUCTED TO DETERMINE IF THERE ARE OTHER DISCHARGES IN THE NOELS CREEK WATERSHED THAT COULD INTERACT WITH THIS DISCHARGE. THE STREAM CODE REPORTS LISTS NPDES PERMIT PA0094064 AS THE ONLY DISCHARGE TO NOELS CREEK. SINGLE DISCHARGE MODELING WILL, THEREFORE, BE CONDUCTED.


HEADWATER DATA
page
Q_{7-10} = .00175
TEMP. = 20
pH = 7
D.O. = 7.54
$CBOD_5$ = 2
NH_3-N = .1
K_c = 0
KEYSTONE REST & TRUCK STOP STP
Q_d = .0072
TEMP. = 20
pH = 7
D.O. = 2
$CBOD_5$ = 10
NH_3-N = 3
K_c = .6
HQ STREAM BAT
Q_t = 0
TEMP. =
pH =
$CBOD_5$ =
NH_3-N =
REACH 1
D.O. = 7.0
K_a = .6
Slope = .025
Length = 3000
D.A. = .07
W/D ratio = 10/1
Q_d =
TEMP. =
pH =
D.O. =
$CBOD_5$ =
NH_3-N =
K_c =
Q_t =
TEMP. =
pH =
$CBOD_5$ =
NH_3-N =
D.O. =
K_a =
Slope =
Length =
D.A. =
W/D ratio =

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE REST STP.WQM6.3

SUMMER

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 1	1.75E-20 0		7.7	7.54	2	.1

↑
FROM PREVIOUS POLLUTION REPORT
1983 SAMPLE ANALYSIS of Stream

STREAM CHARACTERISTICS

RCH	Q7-10 CFS	T (C)	PH	DO MG/L	CBOD5 MG/L	NH3-N MG/L
1	0	20	7.7	7.54	2	.1

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

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE REST STP.WQM6.3

DISCHARGER DATA
Q7-10 DESIGN CONDITIONS

RH	Q MGD	T (C)	PH	DO MG/L	CBOD5 MG/L	NH3-N MG/L	KC
1	7.2E-0320	7		2	10	3	.6

HQ DISCHARGE STARTING POINT

REACH CHARACTERISTICS

RH	D.O. GOAL	KN (/D)	RCH. SL. (FT/FT)	RCH. LEN. (FT.)	DRAIN AREA (MI^2)	W/D
1	7	.6	.025	3000	.07	10

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE REST STP.WQM6.3

REACH CHARACTERISTICS

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

NH3-N DISCHARGE ALLOCATIONS AT Q30-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	7.2E-03	2.22	2.22	0	0

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE REST STP.WQM6.3

NH3-N DISCHARGE ALLOCATIONS AT Q1-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	7.2E-03	6	6	0	0

MULTIPLE DISCHARGE LIMITATIONS
(TOTAL) DISCHARGE = 7.2E-03 MGD
TEMP = 20 PH = 7
CBOD-5= 8.91 NH3-N= 1.93 D.O. = 7.07
KC'= .576 KN= .6 D.O.GOAL = 7
KR= 54.777 (OWENS)
DIS. 1 RCH. 1 TRVL TIME:.921

TR.TM. (DAYS)	CBOD-5 (MG/L)	NH3-N (MG/L)	D.O. (MG/L)
.092	8.45	1.83	7.54
.184	8.02	1.73	7.54
.276	7.6	1.63	7.54
.369	7.21	1.55	7.54
.461	6.84	1.46	7.54
.553	6.48	1.38	7.54
.645	6.15	1.31	7.54
.737	5.83	1.24	7.54
.829	5.53	1.17	7.54
.921	5.24	1.11	7.54

$K_R > 20$
Regional Policy
Reduce K_R to 20

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE REST STP.WQM6.3

REACH CHARACTERISTICS

RH	D.O. GOAL	KN (/D)	RCH. SL. (FT/FT)	RCH. LEN. (FT.)	DRAIN AREA (MI^2)	W/D
1	7	.6	.025	3000	.07	10

REACH CHARACTERISTICS

RH	KR (/D)	TT (DAYS)
1	20	0

$K_R = 20$

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE REST STP.WQM6.3

MULTIPLE DISCHARGE LIMITATIONS

(TOTAL) DISCHARGE = 7.2E-03 MGD
TEMP = 20 PH = 7
CBOD-5= 8.91 NH3-N= 1.91 D.O. = 7.07
KC'= .576 KN= .6 D.O.GOAL = 7
KR= 20 (USR DEF.)
DIS. 1 RCH. 1 TRVL. TIME=.921

TR.TM. (DAYS)	CBOD-5 (MG/L)	NH3-N (MG/L)	D.O. (MG/L)
.092	8.45	1.81	7.54
.184	8.02	1.71	7.54
.276	7.6	1.62	7.54
.369	7.21	1.54	7.54
.461	6.84	1.45	7.54
.553	6.48	1.37	7.54
.645	6.15	1.3	7.54
.737	5.83	1.23	7.54
.829	5.53	1.16	7.54
.921	5.24	1.1	7.54

EFFLUENT LIMITATIONS DISPLAY

DIS #	Q MGD	NH3-N TOX. 1 DAY	30 DAY	C-BOD5 30-DAY	DISS. OXYGEN NH3-N 30-DAY	EFF. D.O.
1	7.2E-03	4.4	2.2	10	2.2	7

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE WINTER.WQM6.3

WINTER

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	3.5E-05		7.7	10.2	2	.1
1	0					

STREAM CHARACTERISTICS

RCH	Q7-10 CFS	T (C)	PH	DO MG/L	CBOD5 MG/L	NH3-N MG/L
1	0	5	7.7	10.2	2	.1

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

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE WINTER.WQM6.3

WINTER

DISCHARGER DATA
Q7-10 DESIGN CONDITIONS

RH	Q MGD	T (C)	PH	DO MG/L	CBOD5 MG/L	NH3-N MG/L	KC
1	7.2E-0315		7	2	10	9	.6

REACH CHARACTERISTICS

RH	D.O. GOAL	KN (/D)	RCH. SL. (FT/FT)	RCH. LEN. (FT.)	DRAIN AREA (MI^2)	W/D
1	7	.6	.025	3000	.07	10

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE WINTER.WQM6.3

WINTER

REACH CHARACTERISTICS

RH	KR (/D)	TT (DAYS)
1	20	0

K_R Set = $20 d^{-1}$

NH3-N DISCHARGE ALLOCATIONS AT Q30-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	7.2E-03	4.6	4.6	0	0

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE WINTER.WQM6.3

WINTER

NH3-N DISCHARGE ALLOCATIONS AT Q1-10

DIS	Q (MGD)	IND. CONC. (MG/L)	ALL. CONC. (MG/L)	CRIT. RCH.	PCT. RED. (%)
1	7.2E-03	18	18	0	0

MULTIPLE DISCHARGE LIMITATIONS
(TOTAL) DISCHARGE = 7.2E-03 MGD
TEMP = 12.6 PH = 7.1
CBOD-5= 8.09 NH3-N= 3.52 D.O. = 7
KC'= .558 KN= .6 D.O.GOAL = 7
KR= 20 (USR DEF.)
DIS. 1 RCH. 1 TRVL. TIME:.858

TR.TM. (DAYS)	CBOD-5 (MG/L)	NH3-N (MG/L)	D.O. (MG/L)
.086	7.82	3.42	9.56
.172	7.55	3.32	10.03
.257	7.3	3.23	10.13
.343	7.06	3.14	10.16
.429	6.82	3.05	10.18
.515	6.59	2.96	10.19
.601	6.37	2.87	10.2
.686	6.16	2.79	10.2
.772	5.95	2.71	10.2
.858	5.75	2.63	10.2

KEYSTONE RESTAURANT AND TRUCK STOP STP
FILE: KEYSTONE WINTER.WQM6.3

WINTER

EFFLUENT LIMITATIONS DISPLAY

DIS #	Q MGD	NH3-N TOX. 1 DAY	30 DAY	DISS. OXYGEN C-BOD5 30-DAY	NH3-N 30-DAY	EFF. D.O.
1	7.2E-03	9.2	4.6	10	4.6	6

PA0094064

NITRATE - NITRITE

Q_s = .00175 cfs Criteria = 10 mg/l at point of discharge
Q_w = .01116 C_w = ?
C_s = 4.3 mg/l From Previous Pollution Report

$(.00175)(4.3) + (.01116)(C_w) = (.0129)(10)$
$C_w = 10.89$ mg/l
Impose 10.0 mg/l Limit

WINTER FECAL COLIFORM

Impose 2000/100 ml Limitation
Since Stream is a HQ-CWF
and is Trout Stocked.

APPENDIX A

August 15, 1983

SUBJECT: Social and Economic Justification Statement
NPDES Application No. PA0094064
Keystone Restaurant STP
Munster Township
Cambria County

TO: Kenneth A. Bartal, Chief
Comprehensive Planning Section
Division of Water Quality
Bureau of Water Quality Managment

THROUGH: Hugh V. Archer, Ph.D., P.E.
Regional Water Quality Manager
Bureau of Water Quality Management
Pittsburgh Regional Office

FROM: Peter J. Niederberger
Sanitary Engineer
Planning Section
Pittsburgh Regional Office

Our office has completed its review of the Social-Economic Justification (SEJ) submitted for the above referenced sewerage application. The justification was submitted in response to the requirements of Chapter 95 relative to proposed discharges to High Quality Waters. Based on our review, we find the SEJ acceptable. The following are our comments regarding this decision and our recommended effluent limitations:

1. There appears to be adequate economic justification for this application. Cambria County is an extremely depressed economic area, and this operation will call for the employment of 38 people, which should prove to be of great benefit to the area. The proposed location for this restaurant appears to be ideal, being right off of the new routing of Route 22.

2. Noels Creek is trout-stocked downstream of the proposed discharge by the Pennsylvania Fish Commission (PFC). Enclosed are comments by the PFC concerning the status of Noels Creek. We feel that the proposed discharge, if in keeping with the effluent limitations we have established, should not have an adverse impact on the existing stream uses.

3. In establishing effluent limitations for this proposal, the Apple computer model was used. Two on-site inspections of Noels Creek showed a small stream channel, and an apparent all-year flow. There are springs, approximately 300 feet upstream of the discharge location, which feed the stream. An estimated yield of 0.025 cfs/mi^2 and Q_{7-10} flow of 0.001 cfs were used. The EPA velocity equation and the Tsivoglou reaeration rates were employed. These equations give more conservative results than the

August 19, 1983

SUBJECT: Sewage Dry Stream Discharge
Keystone Restaurant
Munster Township
Cambria County

TO: Peter Niederberger
Sanitary Engineer
Bureau of Water Quality Management

FROM: Thomas Callaghan TC
Hydrogeologist
Bureau of Water Quality Management

A field inspection was conducted on July 14, 1983 at the above referenced site. Present were J. Ritchey (co-owner of Keystone Restaurant) and I.

The stream valley proposed as the discharge point is fed by a spring approximately 200 feet north of new Route 22. Immediately below the point of emergence, the flow is ponded (used for fire fighting). The outlet from this pond feeds a rip rapped ditch which leads to a culvert that takes the flow beneath new Route 22.

The proposed discharge will be to a stream with year round flow, therefore the requirements spelled out for discharge to a dry stream beds should not apply.

TC:ps: r t

cc: Groundwater Unit - Hbg.
Permits and Compliance Section - Hbg.

PA0094064

Trc_calc.xls

1A	B	C	D	E	F	G
2	**TRC EVALUATION**			**Enter Facility Name in E3**		
3	Input appropriate values in B4:B8 and E4:E7					
4	0.00175	= Q stream (cfs)		0.5	= CV Daily	
5	0.0072	= Q discharge (MGD)		0.5	= CV Hourly	
6	4	= no. samples		1	= AFC_Partial Mix Factor	
7	0.8	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
		= % Factor of Safety (FOS)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 0.148		1.3.2.iii	WLA cfc = 0.138
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 0.055		5.1d	LTA_cfc = 0.080
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.720			ROUNDED
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.095		AFC	0.1
18			INST MAX LIMIT (mg/l) = 0.222			0.2

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)

SINCE EXISTING DISCHARGE USE MAXIMUM STREAM DEMAND OF 0.8

III. Effluent Limitations:

A. Outfall 001 B. Discharge Volume .0072 MGD

Parameter (Sewage) / (Industrial Waste)	lbs/day Monthly Avg. / Daily Avg.	Weekly Avg.	Daily Max. / Daily Max.	mg/l Monthly Avg. / Daily Avg.	Weekly Avg. / Daily Max.	Instan. Max. / Instan. Max.
1. CBOD5				10		20
2. TSS				25		50
3. NH3-N (5/1 to 10/31)				2.0		4.0
4. NH3-N (11/1 to 4/30)				4.0		8.0
5. D.O.				Minimum of		7.0
6. pH				6.0	to	9.0
7. ~~NO2-NO3~~ (Removed Ref)				~~10~~		~~20~~
8. TRC				0.1		0.2
9. Fecal Coliform	5/1 to 9/30			200/100mL		
10. Fecal Coliform	10/1 to 4/30			2000/100mL		
11.						
12.						

Effluent Limitation Rational

1. EPA Guidelines Std Methods
2. Regulation: HQ Stream Policy
3. Water Quality Criteria CitAPT 93

Approvals RENEWAL Ref 03/29/02

Reviewer Planning/WQ [signature] Renewal Ref 2/7/13 Date 1/3/97

Geologist or Aquatic Biologist ____ Date ____

Chief Planning/WQ [signature] [initials] 4/29/02 Date 1/15/97

PL-27
(Rev. 7/22/92)