pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0113280**
Facility Type	**Industrial**	APS ID	**1026595**
Major / Minor	**Minor**	Authorization ID	**1332868**

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

Applicant and Facility Information

Applicant Name	**The Pennsylvania State University**	Facility Name	**Breazeale Nuclear Reactor Facility**
Applicant Address	Room 139J Office of Physical Plant	Facility Address	100 Breazeale Reactor
	University Park, PA 16802-1118		University Park, PA 16802-2304
Applicant Contact	Andrew Gutberlet	Facility Contact	Kenan Unlu
Applicant Phone	(814) 865-0545	Facility Phone	(814) 865-6351
Client ID	81628	Site ID	545486
SIC Code	8221	Municipality	State College Borough
SIC Description	Services - Colleges And Universities	County	Centre
Date Application Received	November 3, 2020	EPA Waived?	Yes
Date Application Accepted	November 25, 2020	If No, Reason	
Purpose of Application	Renewal of an existing NPDES permit for the discharge of industrial waste.		

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		*Derek S. Garner* Derek S. Garner / Project Manager	March 22, 2021
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	March 22, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.72
Latitude	40º 48' 9.23"	Longitude	-77º 50' 46.53"
Quad Name	State College	Quad Code	1223
Wastewater Description:	Noncontact Cooling Water (NCCW)		

Receiving Waters	Unnamed Tributary of Slab Cabin Run, ("Thompson Run")	Stream Code	23037
NHD Com ID	67180134	RMI	0.63
Drainage Area	1.16	Yield (cfs/mi^2)	0.393
Q_{7-10} Flow (cfs)	0.46	Q_{7-10} Basis	Streamgage No. 01546500
Elevation (ft)	1020	Slope (ft/ft)	0.021
Watershed No.	9-C	Chapter 93 Class.	HQ-CWF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation		
Source(s) of Impairment	Urban runoff/storm sewers		
TMDL Status	Pending	Name	n/a

Nearest Downstream Public Water Supply Intake	Pennsylvania-American Water Company		
PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	679.73
PWS RMI	10.65	Distance from Outfall (mi)	100

Internal Monitoring Point Information

IMPl No.	101	Design Flow (MGD)	0.5
Latitude	40º 48' 9.23"	Longitude	-77º 50' 46.53"
Quad Name	State College	Quad Code	1223
Wastewater Description:	Non-contact cooling water (NCCW) from reactor heat exchanger		

IMP No.	103	Design Flow (MGD)	0.086
Latitude	40º 48' 11.25"	Longitude	-77º 50' 14.5"
Quad Name	State College	Quad Code	1223
Wastewater Description:	Non-contact cooling water (NCCW) from Combustion Lab		

Treatment Facility Summary

Water is pumped from the Thompson Spring to the non-contact heat exchanger at the Breazeale Nuclear Reactor at a rate of 0.5 MGD. Immediately downstream of this heat exchanger is IMP 101. A portion of this flow is directed to the Combustion Lab heat exchanger, monitored at IMP 103.

Flows from the Breazeale Nuclear Reactor heat exchanger and Combustion Lab are discharged to the storm sewer where they are combined back together at Manhole 306 prior to discharging to an Unnamed Tributary to Slab Cabin Run, locally known as Thompson Run.

No facility or operational changes from the previous renewal application were noted.

Compliance History

The facility was most recently inspected by DEP on June 17, 2019. No violations were noted during the inspection.

A review of eDMR submissions indicates that there have been no effluent violations during the existing permit's term.

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.086
Latitude	40º 48' 5.77"	**Longitude**	-77º 50' 52.32"

Wastewater Description: Noncontact Cooling Water (NCCW)

Technology-Based Limitations

Technology-based limitations have been applied at the upstream internal monitoring points 101 and 103.

Water Quality-Based Limitations

Per 25 PA Code § 95.2(5), "When surface waters are used in the industrial plant, the quality of the effluent need not exceed the quality of the raw water supply in the source supply would normally drain to the point of effluent discharge, unless otherwise required under the act or Federal Act or regulations promulgated thereunder." Since the permittee pulls intake water from Thompson Spring which would ultimately drain to the Unnamed Tributary of Slab Cabin Run (locally known as Thompson Run), IMP sampling results generally match those of the intake, and the non-contact cooling water system does not have the ability to introduce new pollutants to the water, water quality-based effluent limitations are not necessary.

Temperature limits are not recommended based on the reported maximum temperatures of the NCCW measured at IMPs 101 and 103 of 59 ºF and 66 ºF, respectively, and the fact the discharge is to a storm sewer at least 0.5 miles prior to entering Thompson Run.

Anti-Backsliding

No limits or monitoring requirements are proposed to be made less stringent. Anti-backsliding regulations should not impact the development of effluent limitations.

IMP No. 101 **Design Flow (MGD)** 0.5
Latitude 40º 48' 11.95" **Longitude** -77º 51' 12.08"
Wastewater Description: Noncontact cooling water from reactor heat exchanger

Technology-Based Limitations

Parameter	Limit (mg/l)	SBC	State Regulation
pH	6.0	Minimum	95.2(1)
	9.0	IMAX	95.2(1)
Oil & Grease	15	Monthly Average	95.2(2)
	30	IMAX	95.2(2)
Dissolved Iron	7.0	IMAX	95.2(4)

Oil and Grease and Dissolved Iron were not detected at IMP 101. Since these pollutants do not show a reasonable potential to exceed the technology limits established in 25 PA Code Section 95 it is not necessary to establish limits or monitoring requirements.

Water Quality-Based Limitations

It is not appropriate to assign water quality-based limitations to an internal monitoring point. Water quality-based limits were evaluated at Outfall 001.

Best Professional Judgment (BPJ) Limitations

Existing monitoring requirements for alpha and beta emitters are appropriate to ensure the cooling water used at the nuclear reactor shows no radioactivity. To yield accurate results the permit will continue to require alpha and beta emitter grab samples be taken from residual water in the heat exchanger several hours after the cooling water pump has been turned off.

Anti-Backsliding

No limits or monitoring requirements are proposed to be made less stringent. Anti-backsliding regulations should not impact the development of effluent limitations.

Outfall No. 103 **Design Flow (MGD)** 0.086
Latitude 40º 48' 11.26" **Longitude** -77º 51' 14.50"
Wastewater Description: Noncontact cooling water from Combustion Lab heat exchanger

Technology-Based Limitations

Parameter	Limit (mg/l)	SBC	State Regulation
pH	6.0	Minimum	95.2(1)
	9.0	IMAX	95.2(1)
Oil & Grease	15	Monthly Average	95.2(2)
	30	IMAX	95.2(2)
Dissolved Iron	7.0	IMAX	95.2(4)

Oil and Grease and Dissolved Iron are not expected to be present in detectable concentrations at IMP 103. Since these pollutants do not show a reasonable potential to exceed the technology limits established in 25 PA Code Section 95 it is not necessary to establish limits or monitoring requirements.

Water Quality-Based Limitations

It is not appropriate to assign water quality-based limitations to an internal monitoring point. Water quality-based limits were evaluated at Outfall 001.

Best Professional Judgment

No radioactive material is involved for the heat exchanger in the Combustion Lab; therefore, no monitoring is required for radioactivity.

Anti-Backsliding

No limits or monitoring requirements are proposed to be made less stringent. Anti-backsliding regulations should not impact the development of effluent limitations.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

IMP 101, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/month	Grab
Gross Alpha (pCi/L)	XXX	XXX	XXX	Report	XXX	XXX	1/month	See Permit (1)
Total Beta (pCi/L)	XXX	XXX	XXX	Report	XXX	XXX	1/month	See Permit (1)

(1) Grab sample to be taken from residual water in heat exchanger several hours after cooling water pump has been turned off.

Compliance Sampling Location: IMP 101

IMP 103, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/month	Grab

Compliance Sampling Location: IMP 103

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.

IMP 101, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/month	Grab
Gross Alpha (pCi/L)	XXX	XXX	XXX	Report	XXX	XXX	1/month	See Permit (1)
Total Beta (pCi/L)	XXX	XXX	XXX	Report	XXX	XXX	1/month	See Permit (1)

(1) Grab sample to be taken from residual water in heat exchanger several hours after cooling water pump has been turned off.

Compliance Sampling Location: IMP 101

IMP 103, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/month	Grab

Compliance Sampling Location: IMP 103