pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

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

Application Type	**Amendment, Major**	Application No.	**PA0050431 A-1**
Facility Type	**Industrial**	APS ID	**1029490**
Major / Minor	**Minor**	Authorization ID	**1337967**

Applicant and Facility Information

Applicant Name	**Refresco North America**	Facility Name	**Refresco Beverages IWTP**
Applicant Address	20 Aldan Avenue	Facility Address	20 Aldan Avenue
	Concordville, PA 19342		Concordville, PA 19342-2278
Applicant Contact	Mark DiGiacomo	Facility Contact	Mark DiGiacomo
Applicant Phone	(484) 840-4800	Facility Phone	(484) 840-4800
Client ID	239242	Site ID	451596
SIC Code	2086	Municipality	Concord Township
SIC Description	Manufacturing - Bottled and Canned Soft Drinks	County	Delaware
Date Application Received	December 22, 2020	EPA Waived?	Yes
Date Application Accepted		If No, Reason	

Purpose of Application: Relocate discharge from Refresco further downstream in the West Branch Chester Creek.

Summary of Review

The applicant submits a permit amendment application to relocate the discharge of treated process wastewater, reverse osmosis (RO) reject water and Non-contact cooling water.

Currently the discharge is into an unnamed tributary to West Branch Chester Creek.

The current permit was issued with a compliance schedule to meet the final effluent limits starting from the beginning of the fourth year of the permit term. Permit was effective from August 1, 2019 and will be expiring July 31, 2024.
The facility has ongoing non-compliance issues with the Total Nitrogen (TN) limits. Refresco has been pursuing different alternatives since permit issuance to comply with the TN limit. No reasonable solutions could be found.

This amendment request includes relocation of the facility's discharge further downstream in the West Branch Chester Creek. No change in the effluent quality or quantity is proposed. The relocation of the discharge provides for greater stream assimilative capacity, and compliance with the NPDES permit limits in a cost-effective manner while protecting instream water quality.

Wastewater treatment plant effluent, RO concentrate and NCCW from the AMBEC unit would be conveyed to the newly proposed Outfall 002 via the existing monitoring points MP201 and MP101. Existing Outfall 001 will remain for stormwater runoff from the site.

Refresco is committed to construction of the effluent line to the new outfall location and the design portion of the project is underway. Originally the construction was scheduled to be completed by August 1, 2022 in consistent with the compliance schedule requirement of the current permit. However the following delays have been encountered during the initial design phases: (i) Covid pandemic during 2020 and continuing through 2021, delaying all phases of the permitting and design work

Approve	Deny	Signatures	Date
X		*Sara Abraham* Sara Reji Abraham, E.I.T. / Project Manager	April 20, 2021
X		*Pravin Patel* Pravin C. Patel, P.E. / Environmental Engineer Manager	04/21/2021

Summary of Review

as well as meetings and permit review (ii) permitting requirements with concord township, Delaware county conservation district and Penn DOT (iii) local groups objecting to construction on their property and relocation of the discharge. Based on the work performed, the ongoing discussions and the realistic projections, Refresco requests an additional 12 months to finish the project. Accordingly, a schedule to complete the construction and start discharging to the new outfall location by end of the fourth year of the current permit term is incorporated in this amended permit.

Currently the discharge from MP 201 (via Outfall 001) is into an unnamed tributary to West Branch Chester Creek and the limits are based on the dry stream guidance. Amended permit will have new limits based on the flow of West Branch Chester Creek after the relocation of the discharge.

The final TN limit of 10 mg/l at Outfall 001 was established in the current permit according to the recommendation of our hydrogeologist and was based on drinking water standard. Since the proposed Outfall 002 located on West Branch Chester Creek, (not impaired for Nitrogen) it is not necessary to include a limit for TN at Outfall 002.

MP 101 (via Outfall 001) is also discharging to the unnamed tributary to West Branch of Chester Creek, however the current limits are historically based on the Q7-10 flow of West Branch Chester Creek.

The amended permit is prepared in two tiers with interim limits established before the completion of relocation of the discharge and final limits established after completion of relocation of the discharge.

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.

Act 14 Notifications:

Concord Township	-	December 1, 2020
Delaware County	-	December 1, 2020

Proof of newspaper notification was also submitted with the application.

Permit Conditions:

A. Acquire Necessary Property Rights
B. Proper Sludge Disposal
C. WQM Permit Conditions
D. BAT/ELG Reopener
E. Chlorine Minimization
F. Small Stream Discharge
G. 2° Change in the Temperature
H. Chemical Additives Condition
I. Stormwater Requirements
J. Schedule for Discharge Relocation

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.364 / 0
Latitude	39º 53' 38.19"	Longitude	-75º 31' 49.30"
Quad Name	West Chester	Quad Code	1941
Wastewater Description:	IW Process Effluent without ELG, RO reject water, Noncontact Cooling Water (NCCW) and Stormwater/ Entirely stormwater after the relocation of the discharge.		
Receiving Waters	UNT to West Branch Chester Creek (TSF, MF)	Stream Code	00542
NHD Com ID	25621496	RMI	0.24
Drainage Area	0.1 sq. mi.		
Q_{7-10} Flow (cfs)	00849	Q_{7-10} Basis	Usgs streamstats
Elevation (ft)	339		
Watershed No.	3-G	Chapter 93 Class.	TSF, MF
Assessment Status	Impaired		
Cause(s) of Impairment	cause unknown, flow regime modification, habitat alterations, siltation		
Source(s) of Impairment	habitat modification - other than hydromodification, urban runoff/storm sewers		

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	.364
Latitude	39º 53' 20.32"	Longitude	-75º 30' 40.85"
Quad Name	West Chester	Quad Code	1941
Wastewater Description:	IW Process Effluent without ELG, RO reject water, Noncontact Cooling Water (NCCW)		
Receiving Waters	West Branch Chester Creek (TSF, MF)	Stream Code	00542
NHD Com ID	25621448	RMI	5.53
Drainage Area	4.85		
Q_{7-10} Flow (cfs)	0.637	Q_{7-10} Basis	Usgs streamstats
Elevation (ft)	239		
Watershed No.	3-G	Chapter 93 Class.	TSF, MF
Assessment Status	Impaired		
Cause(s) of Impairment	cause unknown, flow regime modification, habitat alterations, siltation		
Source(s) of Impairment	habitat modification - other than hydromodification, urban runoff/storm sewers		

Treatment Facility Summary

Treatment Facility Name: Refresco Beverages IWTP

WQM Permit No.	Issuance Date
2307201 A-1	12-18-2011
2307201 A1-T1	02-22-2019

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Biological (Industrial Waste), Physical (Industrial Waste)	Flotation, Post Aeration	No Disinfection	0.07

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.08	4665			

Compliance History

DMR Data for Outfall 001 (from February 1, 2020 to January 31, 2021)

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
pH (S.U.) Instantaneous Minimum	7.51	7.58	7.75	7.72	7.1	7.5	7.4	6.3	6.3	6.3	6.3	7.3
pH (S.U.) Instantaneous Maximum	8.48	8.19	8.46	8.70	8.1	8.3	8.5	7.6	8.2	7.6	7.6	7.7
DO (mg/L) Instantaneous Minimum	7.60	7.70	7.50	7.40	7.0	6.1	6.0	6.03	6.6	7.2	7.4	9.0
Temperature (ºF) Instantaneous Maximum	48.40	58.60	68.30	72.10	88	93.1	89.4	87.4	70.3	72.6	71.0	60
Total Dissolved Solids (lbs/day) Average Monthly	821.32	802.81	1357.91	1764.61	1177.29	1190.87	91.77	1009.16	767.86	924.49	985.96	834
Total Dissolved Solids (lbs/day) Daily Maximum	821.32	802.81	1357.91	1764.61	1177.29	1190.87	91.77	1009.16	767.86	924.49	985.96	834
Total Dissolved Solids (mg/L) Average Monthly	463	546	790	760	703	741	560	602	558	500	512	510
Total Dissolved Solids (mg/L) Daily Maximum	463	546	790	7.60	703	741	560	602	558	500	512	510
Oil and Grease (lbs/day) Average Monthly	< 9.14	< 9.50	< 8.63	< 9.01	< 8.59	< 7.84	< 5.35	< 7.81	< 7.81	8.24	< 6.88	9.13
Oil and Grease (lbs/day) Instantaneous Maximum	< 9.94	< 13.82	< 9.24	< 11.61	< 9.65	< 8.04	< 9.24	< 8.49	< 8.39	9.24	< 9.63	11.45
Oil and Grease (mg/L) Average Monthly	< 5	< 6	< 5	< 5.0	< 5	< 5	< 5	< 5	< 5	5.00	< 5.00	5.50
Oil and Grease (mg/L) Instantaneous Maximum	< 5	< 8	< 5	< 5.0	< 5	< 5	< 5	< 5	< 5	5.00	< 5.00	7.0

Total Nitrogen (lbs/day) Average Monthly	< 16.25	< 16.03	< 26.86	< 19.56	< 16.62	< 15.04	< 12.90	< 20.70	< 17.56	< 31.12	18.68	< 19.6
Total Nitrogen (lbs/day) Daily Maximum	< 20.51	< 19.42	< 30.83	< 27.12	< 19.21	< 27.85	< 22.02	< 24.29	< 20.14	< 31.92	30.73	< 36.9
Total Nitrogen (mg/L) Average Monthly	< 9.07	< 9.29	< 15.6	< 10.86	< 9.80	< 9.53	< 10.0	< 12.91	< 12.34	< 17.28	18.81	< 16.0
Total Nitrogen (mg/L) Daily Maximum	< 12.28	< 11.80	< 19.16	< 12.57	< 10.72	< 17.33	< 15.52	< 18.18	< 14.04	< 18.20	20.62	< 18.7
Total Phosphorus (lbs/day) Average Monthly	0.63	< 0.40	0.70	0.87	< 1.31	0.90	0.12	< 0.16	0.15	0.13	0.14	0.74
Total Phosphorus (lbs/day) Daily Maximum	0.77	< 0.78	0.74	1.35	< 2.78	1.44	0.20	< 0.18	0.18	0.14	0.16	0.78
Total Phosphorus (mg/L) Average Monthly	0.35	< 0.42	0.41	0.47	< 0.82	0.57	0.37	< 0.45	0.44	0.39	0.42	0.40
Total Phosphorus (mg/L) Daily Maximum	0.41	< 0.47	0.45	0.58	< 1.66	0.93	0.51	< 0.50	0.48	0.44	0.45	0.43

DMR Data for Outfall 101 (from February 1, 2020 to January 31, 2021)

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
Flow (MGD) Average Monthly	0.0401	0.0380	0.043	0.0396	0.0456	0.0477	0.0452	0.0423	0.0395	0.0415	0.0402	0.0406
Flow (MGD) Daily Maximum	0.0498	0.0510	0.053	0.0548	0.0623	0.0573	0.0527	0.0482	0.0460	0.0526	0.0477	0.0491
TRC (mg/L) Average Monthly	0.09	0.09	0.10	0.09	0.07	0.08	0.11	0.08	0.08	0.12	0.13	0.15
TRC (mg/L) Instantaneous Maximum	0.23	0.21	0.41	0.23	0.18	0.32	0.26	0.14	0.20	0.35	0.34	0.48
CBOD5 (lbs/day) Average Monthly	< 0.8	< 0.8	< 0.8	< 0.7	< 0.8	< 0.8	< 0.8	< 0.7	< 0.7	< 1.1	< 0.9	< 0.8
CBOD5 (lbs/day) Daily Maximum	< 1.0	< 0.9	< 0.8	< 0.9	< 0.9	< 0.9	< 0.8	< 0.7	< 0.8	< 2.0	< 1.5	< 1.0
CBOD5 (mg/L) Average Monthly	< 2.2	< 2.2	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.6	< 2.4
CBOD5 (mg/L) Daily Maximum	< 2.8	< 2.6	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 3.0	< 3.9	< 3.4

TSS (lbs/day) Average Monthly	< 0.4	< 0.4	0.9	< 1.7	< 0.5	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3	< 0.7
TSS (lbs/day) Daily Maximum	< 0.4	< 0.4	1.5	< 5.4	< 0.9	< 0.4	< 0.4	< 0.7	< 0.4	< 0.4	0.4	< 1.8
TSS (mg/L) Average Monthly	< 1.0	< 1.0	2.3	< 4.3	< 1.33	< 1.0	< 1.0	< 1.3	< 1.0	< 1.0	< 1.0	< 2.3
TSS (mg/L) Daily Maximum	< 1.0	< 1.0	4.0	< 13.0	< 2.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 6.0
Ammonia (lbs/day) Average Monthly	< 0.04	< 0.07	< 0.04	< 0.04	< 0.04	< 0.04	0.04	< 0.03	< 1.7	< 0.18	< 0.03	< 0.04
Ammonia (lbs/day) Daily Maximum	< 0.04	< 0.21	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 6.8	< 0.74	< 0.04	< 0.04
Ammonia (mg/L) Average Monthly	< 0.10	< 0.10	< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 6.0	< 0.54	< 0.10	< 0.10
Ammonia (mg/L) Daily Maximum	< 0.10	< 0.10	< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 17.80	< 1.86	< 0.10	< 0.10

DMR Data for Outfall 201 (from February 1, 2020 to January 31, 2021)

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
Flow (MGD) Average Monthly	0.1224	0.1281	0.1432	0.1226	0.1197	0.1177	0.1238	0.1040	0.1201	0.1536	0.1194	0.1051
Flow (MGD) Daily Maximum	0.1931	0.1802	0.1911	0.2290	0.1795	0.1750	0.1749	0.1628	0.1785	0.1751	0.1935	0.2115
CBOD5 (lbs/day) Average Monthly	< 2.9	< 2.6	< 2.7	< 2.9	< 2.6	< 3.0	< 2.8	< 2.4	< 2.4	< 4.7	< 2.8	< 2.6
CBOD5 (lbs/day) Daily Maximum	< 3.2	2.8	< 2.9	< 3.8	< 3.0	< 5.1	< 3.9	< 2.7	< 2.7	< 7.0	< 4.0	< 3.2
CBOD5 (mg/L) Average Monthly	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.6	< 2.2	< 2.0	< 2.0	< 4.3	< 2.4	< 2.0
CBOD5 (mg/L) Daily Maximum	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.3	< 2.7	< 2.0	< 2.0	< 6.0	< 3.6	< 2.0
TSS (lbs/day) Average Monthly	< 2.9	< 2.3	< 2.7	< 3.6	< 1.3	< 1.2	< 1.3	< 1.2	< 1.2	< 1.6	< 2.8	< 1.3
TSS (lbs/day) Daily Maximum	< 3.2	< 5.0	< 2.9	< 5.7	< 1.5	< 1.2	< 1.5	< 1.4	< 1.3	< 2.9	< 4.0	< 1.6
TSS (mg/L) Average Monthly	< 1.3	< 1.8	< 2.8	< 2.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TSS (mg/L) Daily Maximum	< 2.0	< 4.0	< 6.0	< 4.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ammonia (lbs/day) Average Monthly	< 0.15	< 0.13	< 0.13	< 0.14	< 0.13	< 0.12	< 0.13	< 0.12	< 0.12	< 0.13	< 0.26	< 0.13
Ammonia (lbs/day) Daily Maximum	< 0.16	< 0.14	< 0.14	< 0.19	< 0.15	< 0.12	< 0.15	< 0.14	< 0.13	< 0.15	< 0.69	< 0.16

Ammonia (mg/L) Average Monthly	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.21	< 0.10
Ammonia (mg/L) Daily Maximum	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.52	< 0.10
Total Antimony (mg/L) Average Monthly	0.003	< 0.0030	< 0.0030	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Total Cadmium (lbs/day) Average Monthly	< 0.0002	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0002	< 0.0003	< 0.0002	< 0.0002	< 0.0003	0.0002	< 0.0003
Total Cadmium (lbs/day) Daily Maximum	< 0.0003	< 0.0003	< 0.0003	< 0.0004	< 0.0003	< 0.0002	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.0003	0.0003
Total Cadmium (mg/L) Average Monthly	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Total Cadmium (mg/L) Daily Maximum	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Total Selenium (lbs/day) Average Monthly	< 0.001	< 0.001	< 0.001	< 0.0014	< 0.0013	< 0.0012	< 0.0013	< 0.001	< 0.001	< 0.0013	< 0.0008	< 0.002
Total Selenium (lbs/day) Daily Maximum	0.002	< 0.001	< 0.001	< 0.0019	< 0.0015	< 0.0012	< 0.0015	< 0.001	< 0.001	< 0.0015	0.0015	< 0.001
Total Selenium (mg/L) Average Monthly	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Total Selenium (mg/L) Daily Maximum	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Total Thallium (lbs/day) Average Monthly	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0002	< 0.0003	< 0.0002	< 0.0002	< 0.0003	< 0.0002	< 0.0003
Total Thallium (lbs/day) Daily Maximum	< 0.0003	< 0.0003	< 0.0003	< 0.0004	< 0.0003	< 0.0002	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Total Thallium (mg/L) Average Monthly	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Total Thallium (mg/L) Daily Maximum	< 0.00020	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002

Compliance History

Effluent Violations for Outfall 001, from: March 1, 2020 To: January 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Total Nitrogen	11/30/20	Avg Mo	< 15.6	mg/L	15.0	mg/L
Total Nitrogen	03/31/20	Avg Mo	18.81	mg/L	15.0	mg/L
Total Nitrogen	04/30/20	Avg Mo	< 17.28	mg/L	15.0	mg/L

Effluent Violations for Outfall 101, from: March 1, 2020 To: January 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Ammonia	05/31/20	Avg Mo	< 1.7	lbs/day	1.2	lbs/day
Ammonia	05/31/20	Daily Max	< 6.8	lbs/day	2.4	lbs/day
Ammonia	05/31/20	Avg Mo	< 6.0	mg/L	2.0	mg/L
Ammonia	05/31/20	Daily Max	< 17.80	mg/L	4.0	mg/L

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.364 / 0
Latitude 39º 53' 28.00" **Longitude** -75º 31' 50.00"
Wastewater Description: IW Process Effluent without ELG, RO reject water Noncontact Cooling Water (NCCW) and Stormwater

Before the completion of relocation of the discharge to Outfall 002 the current limits in the existing permit will continue into the amended permit.

After the relocation of the discharge to Outfall 002, only stormwater will be discharged through Outfall 001. Previous record shows the production process is housed inside and there is no storage of potential pollutants in the drainage area. No monitoring for stormwater required similar to the current permit.

Outfall No. 201 **Design Flow (MGD)** 0.288
Latitude 39º 53' 21.00" **Longitude** -75º 30' 41.00"
Wastewater Description: RO reject water

Parameter	Limit (mg/l)	SBC	Basis
CBOD5**	10	Monthly Average	Existing limit
Total Suspended** Solids	10	Monthly Average	Existing limit
Oil and Grease*	15	Monthly Average	Chapter 95
NH3-N (05-1 to 10-31)	2.0	Monthly Average	WQM
NH3-N (11-1 to 04-30)	6.0	Monthly Average	Seasonal limits
Total Nitrogen*	Monitor	Monthly Average	Data Collection
Total Dissolved* Solids	1000	Monthly Average	DRBC
Total Phosphorus*	1.0	Monthly Average	Existing limit***
Dissolved Oxygen*	6.0	Inst. Min.	WQM
Temperature*	110	Inst.Min.	DRBC
pH*	6.0 to 9.0 SU at all times		Chapter 95

* currently these parameters are monitored at Outfall 001. After the relocation of the discharge these will be monitored at Outfall 002.

**Since the current limits are achievable based on the existing treatment technology, the current limits are recommended to continue. WQM model recommends a CBOD5 limit of 20 mg/l and DRBC guidance recommends a TSS limit of 30 mg/l.

***The existing limit for TP is achievable and can be continued to protect the future impairment of the stream. It is also consistent with the requirements of other similar dischargers.

See the below WQM report:

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
03G	542	WEST BRANCH CHESTER CREEK	5.531	239.00	4.85	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	0.64	0.000	0.000	0.0	0.00	0.00	20.00	7.00	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Refresco Bevera	PA0050431	0.0000	0.0000	0.2880	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	20.00	2.00	0.00	1.50
Dissolved Oxygen	6.00	8.24	0.00	0.00
NH3-N	2.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
03G	542	WEST BRANCH CHESTER CREEK	4.680	215.00	10.29	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	1.85	0.000	0.000	0.0	0.00	0.00	20.00	7.00	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
03G	542	WEST BRANCH CHESTER CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
5.531	0.64	0.00	0.64	.4455	0.00534	.51	13.6	26.67	0.16	0.333	20.00	7.00
Q1-10 Flow												
5.531	0.41	0.00	0.41	.4455	0.00534	NA	NA	NA	0.14	0.381	20.00	7.00
Q30-10 Flow												
5.531	0.87	0.00	0.87	.4455	0.00534	NA	NA	NA	0.17	0.299	20.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
03G	542	WEST BRANCH CHESTER CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
5.531	Refresco Bevera	9.67	4	9.67	4	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
5.531	Refresco Bevera	1.92	2	1.92	2	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
5.53	Refresco Bevera	20	20	2	2	6	6	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03G	542	WEST BRANCH CHESTER CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
5.531	0.288	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
13.603	0.510	26.670	0.156
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
9.41	1.266	0.82	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.320	7.920	Tsivoglou	6
Reach Travel Time (days)			
0.333			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.033	9.02	0.80	7.16
0.067	8.65	0.79	7.06
0.100	8.29	0.77	7.00
0.133	7.95	0.75	6.98
0.167	7.62	0.73	6.98
0.200	7.30	0.72	7.01
0.233	7.00	0.70	7.04
0.267	6.71	0.68	7.09
0.300	6.44	0.67	7.14
0.333	6.17	0.65	7.20

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03G	542	WEST BRANCH CHESTER CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
5.531	Refresco Bevera	PA0050431	0.000	CBOD5	20		
				NH3-N	2	4	
				Dissolved Oxygen			6

New model, Toxic Management Spreadsheet (TMS) is used to establish the effluent limits for the potential toxic pollutants based on the flow of West Branch Chester Creek. The information from the renewal application (from 2018) is used to run the model. The following are the limits after the completion of the relocation of the discharge.

Parameter	Limit (mg/l)	SBC	Model
*Total Antimony	0.0136	Monthly Average	TMS version.1.2
Total Cadmium	0.0012	Monthly Average	TMS version.1.2
Total Selenium	0.012	Monthly Average	TMS version.1.2
Total Thallium	0.00058	Monthly Average	TMS version.1.2

* This is a new effluent limit based on the new model and the facility is able to comply with this limit easily based on the review of the edmr data.

The following existing limits are in effect before completion of the relocation of the discharge:

Parameter	Limit (mg/l)	SBC	Model
Total Antimony	Report	Monthly Average	Existing, previous Pentox
Total Cadmium	0.0008	Monthly Average	Existing, previous Pentox
Total Selenium	0.005	Monthly Average	Existing, previous Pentox
Total Thallium	0.0002	Monthly Average	Existing, previous Pentox

See the below TMS report:

Discharge Information

Instructions | Discharge | Stream

Facility: **Refresco Beverages IWTP** NPDES Permit No.: **PA0050431** Outfall No.: **MP 201**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **RO reject water**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.288	410	7						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc	0 if left blank: Stream Conc	0.5 if left blank: Daily CV	0.5 if left blank: Hourly CV	0 if left blank: Strea m CV	0 if left blank: Fate Coeff	0 if left blank: FOS	1 if left blank: Criteri a Mod	1 if left blank: Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L		2.3									
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L		10									
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L		2									
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L											
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L											
	Total Manganese	µg/L											
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L		27									
	Total Selenium	µg/L		10									
	Total Silver	µg/L											
	Total Thallium	µg/L		10									
	Total Zinc	µg/L											
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										
	Carbon Tetrachloride	µg/L	<										
	Chlorobenzene	µg/L											
	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										

Group 3	Chloroform	µg/L	<										
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<										
	1,2-Dichloroethane	µg/L	<										
	1,1-Dichloroethylene	µg/L	<										
	1,2-Dichloropropane	µg/L	<										
	1,3-Dichloropropylene	µg/L	<										
	1,4-Dioxane	µg/L	<										
	Ethylbenzene	µg/L	<										
	Methyl Bromide	µg/L	<										
	Methyl Chloride	µg/L	<										
	Methylene Chloride	µg/L	<										
	1,1,2,2-Tetrachloroethane	µg/L	<										
	Tetrachloroethylene	µg/L	<										
	Toluene	µg/L	<										
	1,2-trans-Dichloroethylene	µg/L	<										
	1,1,1-Trichloroethane	µg/L	<										
	1,1,2-Trichloroethane	µg/L	<										

	Trichloroethylene	µg/L	<											
	Vinyl Chloride	µg/L	<											
Group 4	2-Chlorophenol	µg/L	<											
	2,4-Dichlorophenol	µg/L	<											
	2,4-Dimethylphenol	µg/L	<											
	4,6-Dinitro-o-Cresol	µg/L	<											
	2,4-Dinitrophenol	µg/L	<											
	2-Nitrophenol	µg/L	<											
	4-Nitrophenol	µg/L	<											
	p-Chloro-m-Cresol	µg/L	<											
	Pentachlorophenol	µg/L	<											
	Phenol	µg/L	<											
	2,4,6-Trichlorophenol	µg/L	<											
Group 5	Acenaphthene	µg/L	<											
	Acenaphthylene	µg/L	<											
	Anthracene	µg/L	<											
	Benzidine	µg/L	<											
	Benzo(a)Anthracene	µg/L	<											
	Benzo(a)Pyrene	µg/L	<											
	3,4-Benzofluoranthene	µg/L	<											
	Benzo(ghi)Perylene	µg/L	<											
	Benzo(k)Fluoranthene	µg/L	<											
	Bis(2-Chloroethoxy)Methane	µg/L	<											
	Bis(2-Chloroethyl)Ether	µg/L	<											
	Bis(2-Chloroisopropyl)Ether	µg/L	<											
	Bis(2-Ethylhexyl)Phthalate	µg/L	<											
	4-Bromophenyl Phenyl Ether	µg/L	<											
	Butyl Benzyl Phthalate	µg/L	<											
	2-Chloronaphthalene	µg/L	<											
	4-Chlorophenyl Phenyl Ether	µg/L	<											
	Chrysene	µg/L	<											
	Dibenzo(a,h)Anthrancene	µg/L	<											
	1,2-Dichlorobenzene	µg/L	<											
	1,3-Dichlorobenzene	µg/L	<											
	1,4-Dichlorobenzene	µg/L	<											
	3,3-Dichlorobenzidine	µg/L	<											
	Diethyl Phthalate	µg/L	<											
	Dimethyl Phthalate	µg/L	<											
	Di-n-Butyl Phthalate	µg/L	<											
	2,4-Dinitrotoluene	µg/L	<											
	2,6-Dinitrotoluene	µg/L	<											
	Di-n-Octyl Phthalate	µg/L	<											
	1,2-Diphenylhydrazine	µg/L	<											
	Fluoranthene	µg/L	<											
	Fluorene	µg/L	<											
	Hexachlorobenzene	µg/L	<											
	Hexachlorobutadiene	µg/L	<											
	Hexachlorocyclopentadiene	µg/L	<											
	Hexachloroethane	µg/L	<											
	Indeno(1,2,3-cd)Pyrene	µg/L	<											

	Isophorone	µg/L	<											
	Naphthalene	µg/L	<											
	Nitrobenzene	µg/L	<											
	n-Nitrosodimethylamine	µg/L	<											
	n-Nitrosodi-n-Propylamine	µg/L	<											
	n-Nitrosodiphenylamine	µg/L	<											
	Phenanthrene	µg/L	<											
	Pyrene	µg/L	<											
	1,2,4-Trichlorobenzene	µg/L	<											
Group 6	Aldrin	µg/L	<											
	alpha-BHC	µg/L	<											
	beta-BHC	µg/L	<											
	gamma-BHC	µg/L	<											
	delta BHC	µg/L	<											
	Chlordane	µg/L	<											
	4,4-DDT	µg/L	<											
	4,4-DDE	µg/L	<											
	4,4-DDD	µg/L	<											
	Dieldrin	µg/L	<											
	alpha-Endosulfan	µg/L	<											
	beta-Endosulfan	µg/L	<											
	Endosulfan Sulfate	µg/L	<											
	Endrin	µg/L	<											
	Endrin Aldehyde	µg/L	<											
	Heptachlor	µg/L	<											
	Heptachlor Epoxide	µg/L	<											
	PCB-1016	µg/L	<											
	PCB-1221	µg/L	<											
	PCB-1232	µg/L	<											

	PCB-1242	µg/L	<											
	PCB-1248	µg/L	<											
	PCB-1254	µg/L	<											
	PCB-1260	µg/L	<											
	PCBs, Total	µg/L	<											
	Toxaphene	µg/L	<											
	2,3,7,8-TCDD	ng/L	<											
Group 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

Stream / Surface Water Information

Refresco Beverages IWTP, NPDES Permit No. PA0050431, Outfall MP 201

Instructions | Discharge | Stream

Receiving Surface Water Name: West Branch Chester Creek

No. Reaches to Model: 1

- (•) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	000542	5.53	239	4.85			Yes
End of Reach 1	000542	4.68	215	10.29			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	5.53	0.1	0.637									100	7		
End of Reach 1	4.68	0.1	1.85												

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	5.53														
End of Reach 1	4.68														

Model Results

Refresco Beverages IWTP, NPDES Permit No. PA0050431, Outfall MP 201

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | (•) All ( ) Inputs ( ) Results ( ) Limits

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 3.296 PMF: 1 Analysis Hardness (mg/l): 227.59 Analysis pH: 7.00

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	1,100	1,100	2,673	
Total Cadmium	0	0		0	4.477	4.92	12.0	Chem Translator of 0.91 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Thallium	0	0		0	65	65.0	158	

☑ *CFC* CCT (min): 3.296 PMF: 1 Analysis Hardness (mg/l): 227.59 Analysis pH: 7.00

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	535	
Total Cadmium	0	0		0	0.435	0.5	1.21	Chem Translator of 0.875 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	12.1	Chem Translator of 0.922 applied
Total Thallium	0	0		0	13	13.0	31.6	

☑ *THH* CCT (min): 3.296 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Antimony	0	0		0	5.6	5.6	13.6	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.58	

☑ ***CRL*** CCT (min): 2.761 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

Pollutants	*Mass Limits* AML (lbs/day)	*Mass Limits* MDL (lbs/day)	*Concentration Limits* AML	*Concentration Limits* MDL	*Concentration Limits* IMAX	*Concentration Limits* Units	Governing WQBEL	WQBEL Basis	Comments
Total Antimony	0.033	0.051	13.6	21.2	34.0	µg/L	13.6	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Cadmium	0.003	0.005	1.21	1.89	3.02	µg/L	1.21	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Selenium	0.029	0.045	12.1	18.9	30.3	µg/L	12.1	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Thallium	0.001	0.002	0.58	0.91	1.46	µg/L	0.58	THH	Discharge Conc ≥ 50% WQBEL (RP)

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Phenols (Phenolics) (PWS)	N/A	N/A	PWS Not Applicable

*The Concord Twp Central STP, PA0055212 discharges about a mile downstream and considered as the downstream node for the model run.

Anti-Backsliding

Total Nitrogen, Total Cadmium, Total Selenium and Total Thallium limits are relaxed based on the relocation of the discharge to a bigger stream.

Development of Effluent Limitations

Outfall No. 101 **Design Flow (MGD)** 0.07
Latitude 39º 53' 21.00" **Longitude** -75º 30' 41.00"
Wastewater Description: IWTP effluent

No ELGs apply to this discharge.

Parameter	Limit (mg/l)	SBC	Basis
CBOD5	20	Monthly Average	WQM modeling
Total Suspended Solids	30	Monthly Average	DRBC
Oil and Grease*	15	Monthly Average	Chapter 95
NH3-N (05-1 to 10-31)	2.0	Monthly Average	WQM modeling
NH3-N (11-1 to 04-30)	6.0	Monthly Average	Seasonal limits
Total Phosphorus*	1.0	Monthly Average	Existing limit
TRC	0.5/1.17	Mon.Ave./I Max.	Spreadsheet
Total Dissolved Solids*	1000	Monthly Average	DRBC
Temperature (ºF)*	110	I Max.	DRBC
Dissolved* Oxygen	6.0	Inst. Min.	WQM modeling
pH*	6.0 to 9.0 SU at all times		Chapter 95

* currently these parameters are monitored at Outfall 001. After the relocation these will be monitored at Outfall 002.

The limits for MP101 in the current permit were previously calculated based on the flow of West Branch Chester Creek.

See the below WQM report and TRC spreadsheet:

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
03G	542	WEST BRANCH CHESTER CREEK	5.531	239.00	4.85	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	0.64	0.000	0.000	0.0	0.00	0.00	20.00	7.00	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Refresco Bevera	PA0050431	0.0000	0.0000	0.0700	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	20.00	2.00	0.00	1.50
Dissolved Oxygen	6.00	8.24	0.00	0.00
NH3-N	2.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
03G	542	WEST BRANCH CHESTER CREEK	4.680	215.00	10.29	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	1.85	0.000	0.000	0.0	0.00	0.00	20.00	7.00	20.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
03G	542	WEST BRANCH CHESTER CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
5.531	0.64	0.00	0.64	.1083	0.00534	.483	12.18	25.19	0.13	0.411	20.00	7.00
Q1-10 Flow												
5.531	0.41	0.00	0.41	.1083	0.00534	NA	NA	NA	0.10	0.505	20.00	7.00
Q30-10 Flow												
5.531	0.87	0.00	0.87	.1083	0.00534	NA	NA	NA	0.15	0.353	20.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
03G	542	WEST BRANCH CHESTER CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
5.531	Refresco Bevera	9.67	4	9.67	4	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
5.531	Refresco Bevera	1.92	2	1.92	2	0	0

Dissolved Oxygen Allocations

		CBOD5		NH3-N		Dissolved Oxygen			
RMI	Discharge Name	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Critical Reach	Percent Reduction
5.53	Refresco Bevera	20	20	2	2	6	6	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
03G	542	WEST BRANCH CHESTER CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
5.531	0.070	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
12.178	0.483	25.193	0.127
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.62	0.832	0.29	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.917	20.851	Owens	6
Reach Travel Time (days)			
0.411			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.041	4.46	0.28	8.24
0.082	4.31	0.27	8.24
0.123	4.17	0.27	8.24
0.164	4.03	0.26	8.24
0.205	3.89	0.25	8.24
0.246	3.76	0.24	8.24
0.288	3.63	0.24	8.24
0.329	3.51	0.23	8.24
0.370	3.39	0.22	8.24
0.411	3.28	0.22	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03G	542	WEST BRANCH CHESTER CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
5.531	Refresco Bevera	PA0050431	0.000	CBOD5	20		
				NH3-N	2	4	
				Dissolved Oxygen			6

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.637	= Q stream (cfs)	0.5	= CV Daily
0.07	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
	= 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)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 1.895	1.3.2.iii	WLA cfc = 1.840
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.706	5.1d	LTA_cfc = 1.070

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	

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)**

(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....
....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** .364
Latitude 39º 53' 21.00" **Longitude** -75º 30' 41.00"
Wastewater Description: IW Process Effluent without ELG, RO reject water and Noncontact Cooling Water (NCCW) from AMBEC unit

Parameter	Limit (mg/l)	SBC	Basis
pH	6.0 to 9.0 std units at all times		See above MP101 and MP201 limit tables
DO	6.0	Inst.Min.	
TDS	1000	Monthly Average	
Oil and Grease	15.0	Monthly Average	
Total Phosphorus	1.0	Monthly Average	
Temperature(ºF)	110	Inst.Max.	

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 Startup of New or Upgraded Facilities.

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		
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Temperature (ºF)	XXX	XXX	XXX	XXX	XXX	110	1/week	I-S
Total Dissolved Solids	3036.0	6072.0 Daily Max	XXX	1000.0	2000.0 Daily Max	2500	1/month	24-Hr Composite
Oil and Grease	45.5	91.1 IMAX	XXX	15.0	XXX	30.0	1/week	Grab
Total Nitrogen	45.5	91.1 Daily Max	XXX	15.0	30.0 Daily Max	37.5	1/week	24-Hr Composite
Total Phosphorus	3.0	6.1 Daily Max	XXX	1.0	2.0 Daily Max	2.5	1/week	24-Hr Composite

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 002, Effective Period: Startup of New or Upgraded Facilities 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		
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Temperature (ºF)	XXX	XXX	XXX	XXX	XXX	110	1/week	I-S
Total Dissolved Solids	3036.0	6072.0 Daily Max	XXX	1000.0	2000.0 Daily Max	2500	1/month	24-Hr Composite
Oil and Grease	45.5	91.1 IMAX	XXX	15.0	XXX	30.0	1/week	Grab
Total Nitrogen	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	1/week	24-Hr Composite
Total Phosphorus	3.0	6.1 Daily Max	XXX	1.0	2.0 Daily Max	2.5	1/week	24-Hr Composite

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 101, 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	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
TRC	XXX	XXX	XXX	0.5	XXX	1.17	1/day	Grab
CBOD5	12.0	24.0	XXX	20.0	40.0	50	1/week	24-Hr Composite
TSS	18.0	36.0	XXX	30.0	60.0	75	1/week	24-Hr Composite
Ammonia Nov 1 - Apr 30	3.5	7.0	XXX	6.0	12.0	15	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	1.2	2.4	XXX	2.0	4.0	5	1/week	24-Hr Composite

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 201, 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	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
CBOD5	24.0	48.0	XXX	10.0	20.0	25	1/week	24-Hr Composite
TSS	24.0	48.0	XXX	10.0	20.0	25	1/week	24-Hr Composite
Ammonia Nov 1 - Apr 30	14.4	28.8	XXX	6.0	12.0	15	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	4.8	9.6	XXX	2.0	4.0	5	1/week	24-Hr Composite

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 201, Effective Period: Startup of New or Upgraded Facilities 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	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Antimony	0.033	0.051	XXX	0.014	0.021	0.034	1/week	24-Hr Composite
Total Cadmium	0.003	0.005	XXX	0.0012	0.0019	0.003	1/week	24-Hr Composite
Total Selenium	0.029	0.045	XXX	0.012	0.019	0.03	1/week	24-Hr Composite
Total Thallium	0.001	0.002	XXX	0.0006	0.0009	0.0015	1/week	24-Hr Composite

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 201, Effective Period: Permit Effective Date through Startup of New or Upgraded Facilities.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Antimony	XXX	XXX	XXX	Report	Report	XXX	1/month	24-Hr Composite
Total Cadmium	0.0019	0.0038	XXX	0.0008	0.0016	0.002	1/week	24-Hr Composite
Total Selenium	0.012	0.024	XXX	0.005	0.01	0.013	1/week	24-Hr Composite
Total Thallium	0.0005	0.0010	XXX	0.0002	0.0004	0.0005	1/week	24-Hr Composite