



Jody Crawford
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September 27, 2021

Bonnie Bergsma
Sahtu Land and Water Board
P.O. Box 1
Fort Good Hope, NT
X0E 0H0

**Re: Monthly Water Use Report for Aug 2021
Water Licence S13L1-007, Annex A, Part D, Condition 1
Imperial Oil Resources N.W.T. Limited (Imperial)**

Dear Ms. Bergsma,

Imperial is submitting this report as per Water Licence S13L1-007, Annex A, Part D, Condition 1. Water licence requirements were met for the month of July.

Elevated pH (pH > 9) was observed at the Refinery Impound Basin Surface Water Runoff Facility beginning in early August. Notification was provided to CIRNAC, discharge from the Basin was stopped, and an investigation commenced. The investigation confirmed that operational conditions did not contribute to the pH change (pH change was caused by excess vegetation growth). The pond was aerated to reduce the pH below 9. Approval was obtained from CIRNAC to release water.

If you require further information please contact Christine Wickens at 587-476-5007 or christine.a.wickens@exxonmobil.com.

Sincerely,

A handwritten signature in blue ink that reads "C Wickens".

Christine Wickens
Environment and Regulatory Advisor
Imperial

cc: D.Penney, CIRNAC, Yellowknife
T.Morton CIRNAC, Yellowknife

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF DAILY VOLUMES
August 2021

Date	VOLUMES (m ³)					TEMP (C)		CHLORINE (mg/L)
	S13L1-007-1 CPF Intake Water	S13L1-007-2 CPF Effluent Water	Fresh Water Injection	Produced Water Injection	Total Water Injection	S13L1-007-1 CPF Intake Water	S13L1-007-2 CPF Effluent Water	S13L1-007-2 CPF Effluent Water
1*	0	0	0	0	0	-	-	-
2*	0	0	0	0	0	-	-	-
3*	0	0	0	0	0	-	-	-
4*	0	0	0	0	0	-	-	-
5*	0	0	0	0	0	-	-	-
6*	0	0	0	0	0	-	-	-
7*	0	0	0	0	0	-	-	-
8*	0	0	0	0	0	-	-	-
9*	0	0	0	0	0	-	-	-
10*	0	0	0	0	0	-	-	-
11*	0	0	0	0	0	-	-	-
12*	0	0	0	0	0	-	-	-
13*	0	0	0	0	0	-	-	-
14*	0	0	0	0	0	-	-	-
15*	0	0	0	0	0	-	-	-
16*	0	0	0	0	0	-	-	-
17*	0	0	0	0	0	-	-	-
18*	0	0	0	0	0	-	-	-
19	316	316	0	0	0	-	-	-
20	3637	3636	0	0	0	-	-	-
21	4501	4500	0	0	0	-	-	-
22	4890	3911	978	0	978	16.4	16.4	0
23	5200	3499	1702	0	1702	15.7	15.8	0
24	5200	3601	1600	0	1600	16.4	16.9	0
25	5507	3939	1568	1708	3276	17.1	18.3	0
26	6000	5128	872	5360	6232	16.4	19.5	0
27	6452	6452	0	7117	7117	16.6	21.7	0
28	6900	6900	0	7398	7398	16.2	21.1	0
29	6901	6900	0	7260	7260	15.8	20.3	0
30	6900	6900	0	7029	7029	16.1	21.3	0
TOTAL	62,405	55,681	6,720	35,872	42,591			
AVG	0	1,856	224	1,196	1,420	16.3	19.0	0.00
HIGH	0	6,900	1,702	7,398	7,398			

*Norman Wells facility non-operational for planned maintenance shutdown

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY VOLUMES SUMMARY
August 2021

Water Injection Volumes (m³)

Total fresh water injected	6,720	
Total produced water injected	35,872	
Total Monthly	42,591	Total Injected

CPF Water Volumes (m³)

Total CPF intake water S13L1-007-01	62,405	
Total CPF effluent water S13L1-007-02	55,681	
Highest daily water intake S13L1-007-01	6,901	Max. Allow. 16,000 m3/day.
YTD water intake S13L1-007	1,093,192	Max. Allow. 3,500,000 m3/yr.

Alternate Water Usage Volumes (m³)

Alternate surface water usage	0
YTD Alternate surface water usage	0

YTD Surface Runoff Water Release Volumes (m³)

Refinery Impound Basin	23,437
LT 11 Impound Basin	812
Refinery Water flood Basin	0
CPF Impound Basin	3,500
Misc. Mainland Impound Areas	2182
Misc. Bear Island Impound Areas	27
Misc. Goose Island Impound Areas	99
Total - YTD Surface Runoff	30,057

**IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-1
QUARTERLY CPF WATER INLET DATA
August 2021**

SNP S13L1-007-1 (Intake Water)					
Parameter	Q1 2021 (mg/L)	Q2 2021 (mg/L)	Q3 2021 (mg/L)	Q4 2021 (mg/L)	YTD Avg. (mg/L)
pH	7.65	8.13			
Phenols	<0.0015	<0.0015			
Dissolved Sodium	7.0	5.8			
Total Sodium	7.5	5.7			
Dissolved Potassium	0.78	0.86			
Total Potassium	0.95	1.4			
Dissolved Sulphate	29	34			
Dissolved Chloride	10	5.6			
Dissolved Calcium	23	30			
Total Calcium	26	32			
Dissolved Magnesium	7.6	8.2			
Total Magnesium	9.1	9.1			
Total Alkalinity	75	76			
Specific Conductivity	240	250			
Total Suspended Solids	3.3	33			
Total Dissolved Solids	150	120			
Total Petroleum	<2.0	<2.0			
Total Phosphorus	<0.1	<0.1			
Total Hardness	88	110			

**IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-2
QUARTERLY CPF WATER EFFLUENT DATA
August 2021**

SNP S13L1-007-2 (Effluent Water)					
Parameter	Q1 2021 (mg/L)	Q2 2021 (mg/L)	Q3 2021 (mg/L)	Q4 2021 (mg/L)	YTD Avg. (mg/L)
pH	7.39	7.93			
Phenols	<0.0015	<0.0015			
Dissolved Sodium	6.7	5.8			
Total Sodium	7.6	6.1			
Dissolved Potassium	0.78	0.86			
Total Potassium	1.0	1.0			
Dissolved Sulphate	29	34			
Dissolved Chloride	10	6.9			
Dissolved Calcium	22	30			
Total Calcium	27	31			
Dissolved Magnesium	7.3	7.8			
Total Magnesium	9.6	8.7			
Total Alkalinity	76	83			
Specific Conductivity	240	250			
Total Suspended Solids	9.1	11			
Total Dissolved Solids	130	88			
Total Petroleum	<2.0	<2.0			
Total Phosphorus	<0.10	<0.10			
Total Hardness	84	110			

**IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007-2
QUARTERLY ACUTE LETHALITY
August 2021**

SNP S13L1-007-2 (Effluent Water)		
Date	Rainbow Trout (% Survival)	Daphnia Magna (% Survival)
Licence Criteria	> 50% Survival	> 50% Survival
Q1	100%	100%
Q2	100%	100%
Q3	100%	100%
Q4		

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
SURFACE WATER RUNOFF RELEASE REPORT
August 2021

Discharge Where Contamination Suspected										
	Date	Start/ Middle/ End	Total Discharge Volume (m ³)	Total Petroleum Hydrocarbons (mg/L)	Phenols (mg/L)	Chlorides (mg/L)	pH	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Specific Conduct. (uS/cm)
Max Grab Sample Limit				5	0.14	<500	6.0-9.0			
Mainland Areas										
CPF Impound Basin	3-Aug			<2.0	<0.0015	9.3	7.54	3.5	1300	1600
	10-Aug			<2.3	<0.0015	8.3	7.71	5.5	1000	1400
	17-Aug			<2.0	<0.0015	9.0	7.66	3.2	1100	1400
	30-Aug			<2.0	<0.0015	9.9	7.43	33	1300	1500
Refinery Impound Basin	3-Aug		237**	<2.0	0.0026	34	9.18*	<1.0	430	710
	10-Aug			<2.0	<0.0015	33	9.02*	5.3	380	690
	12-Aug			<2.0	<0.0015	33	9.20*	3.2	470	690
	17-Aug			<2.0	0.0023	33	8.41	<1.0	410	680
	20-Aug			<2.0	<0.0015	33	9.21*	2.9	520	680
	23-Aug			<2.0	<0.0015	33	9.15*	1.8	480	680
	30-Aug			<2.0	0.0075	37	8.5	3.5	470	820
Refinery Waterflood Basin	3-Aug			<2.0	0.0019	32	8.64	<1.0	500	940
	10-Aug			<2.0	0.0015	34	8.30	<1.0	460	990
	17-Aug			<2.0	<0.0015	34	8.50	1.4	560	980
	30-Aug			<2.0	<0.0015	35	8.62	58	1300	1000
Misc. Mainland Impound Areas										

**Pumping occurred on Aug 2 prior to elevated pH analytical result.

*Notification of elevated pH provided to CIRNAC. Investigation completed. No water release occurred while pH was >9.

IMPERIAL - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
SURFACE WATER RUNOFF RELEASE REPORT
August 2021

Discharge Where No Contamination Suspected					
	Date	Total Discharge Volume (m ³)	Chlorides (mg/L)	pH	Sheen Y/N
Sample Limits			< 500	6.0-9.0	N
Mainland					
Bear Island					
Goose Island					