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April 30, 2016

SLWB File: S13L1-007

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

Re: Water Licence S13L1-007 Monthly Water Use Report for March 2016

Dear Ms. Bergsma,

Imperial Oil Resources (Imperial) N.W.T. Limited is submitting the March 2016 monthly results for the Surveillance Network Program under Water Licence S13L1-007.

On December 4, 2015 the chlorine injection system was shut off and remained inoperable throughout the month of March. The system was restarted on April 21, 2016 but for the month of March, chlorine sampling was not conducted.

Any questions or concerns please contact me at (867) 587-3215.

Sincerely,

Lindsay Hollands, B.ASc
Regulatory and Environmental Advisor

cc: T. Morton, INAC, Yellowknife

Circulate: A. Phelps Environment and Regulatory Lead, Cold Lake

IMPERIAL OIL RESOURCES - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF DAILY VOLUMES
March 2016

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	5,551	3,464	2,087	7,632	9,719	2	13	*
2	5,551	3,465	2,086	7,745	9,831	2	13	*
3	5,550	3,456	2,095	7,676	9,771	2	12	*
4	5,551	3,448	2,102	7,679	9,781	2	11	*
5	5,551	3,442	2,109	7,719	9,827	2	11	*
6	5,551	3,446	2,105	7,712	9,817	2	11	*
7	5,551	3,448	2,103	7,700	9,803	2	11	*
8	5,551	3,450	2,101	7,812	9,913	2	12	*
9	5,550	3,463	2,087	7,865	9,952	2	13	*
10	5,551	3,465	2,086	8,015	10,100	2	13	*
11	5,551	3,465	2,085	8,026	10,111	2	13	*
12	5,551	3,462	2,089	7,976	10,065	2	14	*
13	5,551	3,450	2,100	7,914	10,014	2	13	*
14	5,551	3,443	2,107	7,975	10,082	2	12	*
15	5,551	3,441	2,110	7,858	9,968	2	13	*
16	5,551	3,448	2,102	7,710	9,812	2	13	*
17	5,551	3,440	2,110	7,520	9,631	2	13	*
18	5,551	3,439	2,112	7,488	9,600	2	13	*
19	5,551	3,532	2,019	7,544	9,563	2	13	*
20	5,550	3,470	2,080	7,506	9,587	2	13	*
21	5,551	3,454	2,097	7,540	9,636	2	14	*
22	5,551	3,460	2,090	7,560	9,650	2	13	*
23	5,551	3,516	2,035	7,516	9,551	2	13	*
24	5,551	3,532	2,018	7,483	9,502	2	14	*
25	5,551	3,517	2,034	7,470	9,503	2	15	*
26	5,678	3,626	2,052	7,492	9,544	2	15	*
27	5,920	3,867	2,054	7,490	9,544	2	15	*
28	5,911	3,858	2,053	7,429	9,482	2	14	*
29	5,951	3,899	2,051	7,467	9,518	2	12	*
30	5,951	3,886	2,064	7,293	9,357	2	13	*
31	5,951	3,892	2,059	7,327	9,386	2	11	*
TOTAL	174,126	109,644	64,481	237,139	301,620			
AVG	5,617	3,537	2,080	7,650	9,730	2	13	-
HIGH	5,951	3,899	2,112	8,026	10,111			

*Chlorine system inoperable therefore no samples were taken during this time

IMPERIAL OIL RESOURCES - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY VOLUMES SUMMARY
March 2016

Water Injection Volumes (m³)

Total fresh water injected	64,481	
Total produced water injected	237,139	
Total Monthly	301,620	Total Injected

CPF Water Volumes (m³)

Total CPF intake water S13L1-007-01	174,126	
Total CPF effluent water S13L1-007-02	109,644	
Highest daily water intake S13L1-007-01	5,951	Max. Allow. 16,000 m3/day.
YTD water intake S13L1-007	507,118	Max. Allow. 3,500,000 m3/yr.

Alternate Water Usage Volumes (m³)

Alternate surface water usage	0
YTD Alternate surface water usage	0

Surface Runoff Water Release Volumes (m³)

Refinery Impound Basin	0
LT 11 Impound Basin	0
Refinery Water flood Basin	0
CPF Impound Basin	0
Misc. Mainland Impound Areas	0
Misc. Bear Island Impound Areas	0
Misc. Goose Island Impound Areas	0
Total - YTD Surface Runoff	0

IMPERIAL OIL RESOURCES - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY WATER DATA
March 2016

SNP S13L1-007-1 (Intake Water)			
	Suspended Solids (mg/L)	pH	Specific Conductivity uS/cm
Max. Grab Limit			
Feb 29 - Mar 3	21.0	8.09	300
Mar 3 - 7	29.0	8.11	280
Mar 7 - 10	54.0	7.97	270
Mar 10 - 14	<1.0	8.06	270
Mar 14 - 17	23.0	8.06	270
Mar 17 - 21	1.3	8.08	280
Mar 21 - 24	29.0	8.10	280
Mar 24 - 28	2.0	7.97	270
Mar 28 - 31	3.3	7.93	280

SNP S13L1-007-2 (Effluent Water)			
	Suspended Solids (mg/L)	pH	Specific Conductivity uS/cm
Max. Grab Limit		6.0 - 9.0	
Feb 29 - Mar 3	2.7	8.07	280
Mar 3 - 7	1.3	8.09	280
Mar 7 - 10	15	8.04	270
Mar 10 - 14	<1.0	8.06	270
Mar 14 - 17	3.3	8.06	280
Mar 17 - 21	<1.0	8.13	280
Mar 21 - 24	2.00	8.06	280
Mar 24 - 28	2.7	8.01	270
Mar 28 - 31	1.3	8.00	280

SNP S13L1-007-1 (Intake Water)		
	Total Petroleum Hydrocarbons (mg/L)	Phenol (mg/L)
Max. Grab Limit		
Feb 29 - Mar 7	<2.0	<0.0020
Mar 7 - 14	<2.0	<0.0020
Mar 14 - 21	<2.0	<0.0020
Mar 21 - 28	<2.0	<0.0020

SNP S13L1-007-2 (Effluent Water)				
	Total Petroleum Hydrocarbons (mg/L)	Phenol (mg/L)	Daily Chlorine (mg/L)	Temp (C)
Max. Grab Limit	5	0.14		
Feb 29 - Mar 7	<2.0	<0.0020	*	12
Mar 7 - 14	<2.0	<0.0020	*	13
Mar 14 - 21	<2.0	<0.0020	*	13
Mar 21 - 28	<2.0	<0.0020	*	14

*Chlorine system inoperable therefore no samples were taken during this time

IMPERIAL OIL RESOURCES - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
CPF MONTHLY WATER DATA
March 2016

SNP S13L1-007-2 (Effluent Water) - FOUR WEEK AVERAGE CONCENTRATION							
Parameter	Total Petroleum Hydrocarbons (mg/L)	Phenol (mg/L)	Suspend Solids (mg/L)	pH	Specific Conduct. (uS/cm)	Daily Chlorine (mg/L)	Temp (C)
Max. Average Limit	3.00	0.070		6.0 - 9.0			
Feb 8 - Mar 7	<2.0	<0.0020	3.1	8.06	273	*	11
Feb 15 - Mar 14	<2.0	<0.0020	4.6	8.06	273	*	12
Feb 22 - Mar 21	<2.0	<0.0020	3.7	8.06	275	*	12
Feb 29 - Mar 28	<2.0	<0.0020	3.5	8.07	276	*	13

*Chlorine system inoperable therefore no samples were taken during this time

IMPERIAL OIL RESOURCES - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
QUARTERLY CPF WATER INLET DATA
March 2016

SNP S13L1-007-1 (Intake Water)					
Date	January 2016 (mg/L)	April 2016 (mg/L)	July 2016 (mg/L)	October 2016 (mg/L)	YTD Avg. (mg/L)
pH	7-Jan				7.92
Phenols	<0.0020				<0.0020
Dissolved Sodium	9.0				9.0
Total Sodium	9.8				9.8
Dissolved Potassium	0.84				0.84
Total Potassium	0.94				0.94
Dissolved Sulphate	36.0				36.0
Dissolved Chloride	11.0				11.0
Dissolved Calcium	26.0				26.0
Total Calcium	28.0				28.0
Dissolved Magnesium	10.0				10.0
Total Magnesium	11.0				11.0
Total Alkalinity	80.0				80.0
Specific Conductivity	270.0				270.0
Total Suspended Solids	<1.0				<1.0
Total Dissolved Solids	120.0				120.0
Total Petroleum	<2.0				<2.0
Total Phosphorus	0.13				0.13
Total Hardness	110.0				110.0

SNP S13L1-007-2 (Effluent Water)					
Date	January 2016 (mg/L)	April 2016 (mg/L)	July 2016 (mg/L)	October 2016 (mg/L)	YTD Avg. (mg/L)
pH	7.99				7.99
Phenols	<0.0020				<0.0020
Dissolved Sodium	9.4				9.4
Total Sodium	9.6				9.6
Dissolved Potassium	0.91				0.91
Total Potassium	0.93				0.93
Dissolved Sulphate	36.0				36.0
Dissolved Chloride	11.0				11.0
Dissolved Calcium	28.0				28.0
Total Calcium	28.0				28.0
Dissolved Magnesium	11.0				11.0
Total Magnesium	11.0				11.0
Total Alkalinity	83.0				83.0
Specific Conductivity	270.0				270.0
Total Suspended Solids	<1.0				<1.0
Total Dissolved Solids	150.0				150.0
Total Petroleum	<2.0				<2.0
Total Phosphorus	0.11				0.11
Total Hardness	110.0				110.0

QUARTERLY CPF EFFLUENT DATA
QUARTERLY ACUTE LETHALITY
March 2016

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

IMPERIAL OIL RESOURCES - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
SURFACE WATER RUNOFF RELEASE REPORT
March 2016

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	Suspend 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										
			0							
Misc. Mainland Impound Areas										
			0							

IMPERIAL OIL RESOURCES - NORMAN WELLS OPERATIONS
WATER LICENCE S13L1-007
SURFACE WATER RUNOFF RELEASE REPORT
March 2016

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					
		0			
Bear Island					
		0			
Goose Island					
		0			