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35 Years of Service

FINAL REPORT

Hornepayne Municipal Water Supply and Canadian National Rail (CNR) Yard Site

CONTAMINATION CLEAN-UP HISTORY

Prepared for:

Mr. George J. Collins
121 Fourth Street
P.O. Box 889
Nipigon, ON P0T 2J0

Prepared by:

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Our File No.: 22-407

September 24, 2025

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Mr. George J. Collins
121 Fourth Street
P.O. Box 889
Nipigon, ON P0T 2J0

Re: Hornepayne Municipal Water Supply and Canadian National Rail (CNR) Yard Site Contamination Clean-up History

Dear Mr. Collins:

As requested we have undertaken a desktop review of the Hornepayne Municipal Water Supply history and the Canadian National Railway Rail Yard site contamination history. The water supply area of interest is in the Highway 631 corridor primarily south of the Hornepayne Settlement and the CN Rail Yard contamination area generally north of the Hornepayne Settlement and west of Little Jackfish River.

The details of this work are described in Part A and B of this report respectively. A comprehensive Bibliography is enclosed as Part C summarizing the documents reviewed as part of this assignment. Fig H1.1 enclosed provides an overview of principal geographic features of the subject area in proximity to the Settlement.

An Overview Summary of the Hornepayne Water Supply History and the Canadian National Rail Yard petroleum contamination clean-up is provided below.

OVERVIEW SUMMARY

1.0 Hornepayne Water Supply History

The first Hornepayne municipal watermains were constructed in the mid-1970s and originally supplied by groundwater sources in the Marathon Rd / Riverside Rd area, southeast of the CN Rail Yard. This source was soon replaced by a groundwater wellfield development near Hwy 631 and Hornepayne Creek (Fig 1). This groundwater source was later replaced by a surface supply source from Moonlight Lake adjacent to Hornepayne Municipal Airport. The Moonlight Lake surface source required an extended length watermain 5.5 km from the then existing water supply network compared to the prior groundwater source closer to Town.

The best information available through the Ministry of Environment Conservation and Parks (MECP) water well information system indicate municipal well development for Hornepayne about 1971. Additional municipal well development was undertaken in late 1986 and described in a Report by International Water Supply. These wells were later described in the 'First Engineer's Report in January 2001, in a March 7, 2001 Permit To Take Water and in a September 2002 Hydrogeology Reports including a Groundwater Under Direct Influence (GUDI) Study.

The existing supply wells with well screens 6 or 11 m below ground were located within the flood plain of Little Hornepayne Creek and were determined by consultants in 2002 to be groundwater (wells) under the direct influence of surface water (GUDI). A Hydrogeological consultant advised that obtaining flows through the existing aquifer was difficult and that there were no other suitable aquifer sources available. It was recommended that the existing wells be shut down and decommissioned.

A Class Environmental Assessment Report was prepared for the Hornepayne Water Supply System and released in April 2004. This report after much local technical dialogue with consultants, staff and elected officials, recommended a new chemically assisted water filtration plant be constructed to serve the Township of Hornepayne. The water supply source for this plant was to be Moonlight Lake. Moonlight Lake Supply was considered to be a more dependable source for the future versus renovation and rehabilitation of the existing groundwater wells. The Moonlight Lake source did require a longer 5.5 km watermain transmission line to the settlement.

1.1 Conclusion

The decision process, 20 years later to convert from a groundwater source to a surface water source, cannot be reasonably challenged, especially since the community has enjoyed a dependable water supply over the subsequent period. However at the time, no negative weight was given to the presence of the Hornepayne Airport next to Moonlight Lake. The airport is a potential adverse source of fuel spills to the drinking water supply. This is a continuing source protection vulnerability threat.

Surprisingly, despite the Township and CN Rail sharing a common hydrogeological consultant, the entire document stack is silent on the significant Rail Yard hydrocarbon contamination existing at the time of the decision to convert to a surface water supply.

Part A of this report provides more detail on the Water Supply History of the Hornepayne settlement.

2.0 Canadian National Yard (CNR) Hornepayne Petroleum Clean-up

The CN Rail Yard over many years of rail equipment refueling and operational maintenance use accumulated Light Non-Aqueous Phase Liquids (LNAPL) – Diesel Fuel and Waste Oil- floating on the shallow water table beneath the site. Eventual (slow) discharge is towards the Little Jackfish River.

This ‘flat’ Rail Yard site is located over a bedrock valley up to 30 m in depth filled with glacial meltwater sediments as indicated by occasional water well records. The glacial meltwater valley under the Rail Yard site is likely continuous with the former Hornepayne municipal well sites and Hornepayne Creek.

Approximately 100 test and monitoring wells were installed over the Rail Yard site during the time period from 1994 to 2023. These monitor wells varied from 4 to 8 m in depth. Many borehole logs reported petroleum hydrocarbons odours, staining, sheens or free phase product in the upper intervals. The maximum depth of free phase floating product in monitor wells was about 3 m in the early 1990s.

In some boreholes hydrocarbon staining and odours were reported to extend to the depth of borehole termination (greater than 8 m). However CN and its consultants never investigated the deeper valley deposits for heavier hydrocarbon contaminants. The lower approximately 20 m depth of overburden beneath the CN Rail Yard site has never been explored.

During the late 1990s, CN Rail installed LNAPL / Diesel recovery systems including underdrains and collection lagoons. LNAPL recovery operations were determined to be completed based on the findings of an Assessment Study in 2015/2016. CN Rail and its consultants concluded that the groundwater impacts at the Site had been delineated by prior completed work, the impacts were contained on the property and did not present a risk of migration. Additionally LNAPL recovery volumes and efficiencies had dropped significantly and likely natural degradation is continuing on an ongoing basis independent of active processing events. Hydrocarbon recovery efforts ceased in 2017.

By 2023 only 5 observations at monitoring wells each with less than 0.148 m of LNAPL product were obtained compared to the nearly 3 m thickness in the early 1990s. The dissolved phase impacts were stable and not expanding spatially. However there continued to be sheens at 75% of the Little Jackfish River inspections during April to September 2023.

2.1 Conclusion

Clearly there has been a dramatic reduction in the water table floating LNAPL presence since the 1990s. However there still needs to be an investigation of the Rail Yard deeper bedrock valley hydrocarbon and other contaminants below about 8 m depth.

The Hydrocarbon sheen on Little Jackfish River is persistent, likely indicating contaminant presence in the groundwater discharge.

Part B of this Report provides more detail on the Hydrocarbon contamination clean-up history of the CN Hornepayne Rail Yard.

Yours truly,

Garry T. Hunter, M.A.Sc., P.Eng.
President
Hunter and Associates

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PART A: MUNICIPAL WATER SUPPLY (Hornepayne)

1.0 1971 Municipal Wells

Water Well Record #1101521 (Hole No. 2) for a municipal supply well (8-inch diameter) was completed July 29, 1971 in Wicksteed Township Lot 13, Concession 2. The well reported granular materials (sand, sand-gravel, gravel sand, fine sand to bedrock at 68 ft (20.7 m) depth. Water found and static level was reported at 3 ft. Recommended pump setting and top of screen was 35 ft (10.6 m). Water Quality was reported as sulphur.

Water Well Record #1101524 (Hole No. 5) reported as an observation well (6-inch diameter) was completed August 4, 1971 in Wicksteed Township Lot 13, Concession 2 at the sketched location of the Pump House. The Record reports granular materials were reported to 42 ft (12.8 m) depth. Water found and static water levels were reported at 3 ft depth.

2.0 Overburden Well Records

A search of the MECP Water Well Records database for overburden wells produced 11 records varying from 12 to 29 m deep. All these wells contained sand and /or gravel formations for the full depth interval or at depth. Seven (7) of these wells were drilled in 1971 suggesting a municipal exploration program.

One 22 m depth well (#1101521) with screen at 13.7 m was tested at 827 Litres/minute (1,190 m^3/day equivalent). The water was described as 'sulphuric'. The Final Water Use was described as Municipal.

Another 29 m depth well (#1101526) screened at 20.1 m was tested at 755 L/min (1,087 m^3/day). This well was reported as not used. The remaining overburden wells (only 4) have test rates between 27.3 and 227.3 L/min.

3.0 MECP Water Well Records

The MECP Water Well Record contains approximately 35 individual monitoring well records all listed under Borehole ID 100172439 drilled on September 27, 2007 with Common UTM Easting and Northing coordinates. All list the static water level at a common 1.5 m depth below ground.

An additional five wells all listed under Borehole ID 1001724349 were drilled on July 20, 2007 were listed as 29 m deep with static water level at 1.9 m depth below ground. These wells were assigned the same common UTM Easting and Northing coordinates.

The most recent record in this group had a completion date of October 31, 2000.

4.0 Well No. 3 (TW4/86) - November 28, 1986

International Water Supply (IWS) completed a groundwater investigation on November 28, 1986 and concluded that a properly constructed gravel walled well could be developed at TW4/86 (Well No. 3) location to produce a minimum of 30 L/sec (2,592 m^3/day). Well No. 3 at TW4/86 was described as approximately 65 m south of No. 2 well as shown on Drawing B-87005.

International Water Supply described the well construction as follows:

> *A 750 mm diameter surface casing was drilled to 4.26 meters below grade. The 600 mm diameter outer casing was drilled to 13.41 meters below grade to log the formation. The aquifer contained considerable fine material below 12.80 meters. A 300 mm diameter stainless steel screen was set from 7.92 to 12.66 meters with a plate bottom and attached to 300 mm diameter inner casing that extends to surface. The annular space was filled with selected silica gravel and the outer casing pulled back to 6.09 meters. The well was developed by hydraulically surging selected sections of the screen. A fine silt and clay was removed during surging, therefore several treatments with polyphosphates were applied to improve the well development. After the treatments were completed, the well would produce essentially "sand-free" at 30 litre/second under stop-start conditions.*

The aquifer test at No. 3 Well was conducted on December 9, 1986 at 30 L/sec (2,592 m^3/day). No. 2 well was operating on demand into the water supply system at 19 L/sec (1,642 m^3/day). Perhaps Well No. 2 is MECP #1101521 with test rate of 827 L/min (1,191 m^3/day) reported as completed July 29, 1971.

International Water Supply concluded:

> *No. 3 Well has been successfully developed to produce 30 litre/second essentially sand-free. The aquifer transmissibility ranged from 800 to 1370 m^2/day and water table conditions would prevail. The aquifer analysis indicated the following:*
>
> *(a) The aquifer will sustain a continuous yield of 30 litre/second.*
>
> *(b) No. 2 and No. 3 Well can be operated simultaneously to produce a total of 55 litre/second (4,752 m^3/day) for up to 30 days.*
>
> *(c) The offset distance between No. 2 and No. 3 Well will allow normal operation of either well if the well is out of service for rehabilitation.*
>
> *The water quality analysis is not available, but will be forwarded as soon as received. We anticipate the quality at No. 3 Well is similar to No. 2 Well and therefore sequestration should be considered in the permanent design in addition to precautionary disinfection.*

In addition to Well TW4/86, monitor wells TW1/86, TW2/86 were also installed. These wells do not appear in the MECP Water Well database.

5.0 Hornepayne Water Treatment Plant - First Engineer's Report (January 2001)

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This report constitutes the "First Engineer's Report" for the Hornepayne Water Treatment Plant (WTP) and storage system as required by Ontario's new DWPR (459/00).

In October 2000, The Corporation of The Township of Hornepayne retained the services of Engineering Northwest Ltd. to complete the "First Engineer's Report" on the Water System with the aim of assessing the system's compliance with the new regulations.

Hornepayne is a community of 1244 persons, located on Highway 631 in Northern Ontario, approximately 160 km north of Wawa. Figure 1 following illustrates the location of Hornepayne in a provincial setting. ***The name of the Township was changed from Wicksteed to Hornepayne in 1986.*** *The community is somewhat isolated and was originally established as a railway (CNR) community. The present economy is based on railway, forestry, and tourism.*

The water for Hornepayne's water treatment system is supplied by three wells. Two wells supply the normal demands of the municipality while the third well is a standby well. The water supply from the wells is chlorinated prior to entering the distribution system. A standpipe provides storage for emergency and fire usage, and a small booster pumping station is provided at the base of the standpipe to increase pressures in a separate pressure zone in an area to the east of the standpipe.

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The water supply source for Hornepayne is from three wells. The water is drawn from a shallow water table formation of sand, gravel and boulders. Wells 1 and 2 were constructed in 1976. The aquifer was tested in 1986 prior to the development of Well #3, and was determined to extend approximately 70 m south of Wells #1 and #2. The aquifer is located to the area of the wells, which is south of the development area of the Township.

The wells are located at the south end of Front Street. Land use immediately around the wells is residential to the north (approximately 100 m), railway to the east (approximately 200 m), and undeveloped to the south and west. ***Hornepayne Creek is located approximately 50 m east of the wells, and a pond is approximately 100 m west of the wells.***

International Water Supply Ltd. (IWS) reference the proximity of the Hornepayne Creek in a report dated February 9, 1987. An aquifer test was conducted, and IWS's analysis stated "The drawdown -time slope flattens after about 30 minutes pumping with small fluctuations thereafter caused by the operation of No. 2

Well. The apparent equilibrium is caused by drainage of the [aquifer] formation or the proximity of the creek east of TW 4/86."

The wells are located in a low area, and storm runoff from Front Street south of Herbert Avenue drains to this area and eventually to the pond to the west, and Hornepayne Creek to the east. *There is no agricultural or industrial land use uphill of the wells that would be contributing to the storm water runoff, but road salts and fuel drips from vehicles could be draining to this area.* ***The Township has discontinued the disposal of snow in this area, which should minimize the impact of road salts on the aquifer.*** *In addition, the use of road salts in the area uphill of the wells should be minimized.* ***Flooding in the area of the wells has occurred in the past****, but has been minimized since culverts causing a constriction under Highway 631 downstream of the Hornepayne Creek were removed 5 years ago and replaced by a bridge.*

There are a few trails that traverse the aquifer area that are used by off-road vehicles and snowmobiles. ***An accidental spill of fuel in this area could be a possible source of contamination of the aquifer.***

The municipal sewage is disposed of in a sewage treatment plant located on Honka Drive, north and east of the wells. The discharge from the plant is to the Little Jackfish River.....

6.0 March 7, 2001 - Permit to Take Water No. 01-P-6004

This Permit to Take Water was issued March 7, 2001 by the Ontario Ministry of the Environment to Township of Hornepayne for a Municipal Supply based on the following Terms and Conditions:

Source(s):	*1) Pumphouse 1 Well No. 1* *2) Pumphouse 1 Well No. 2* *3) Pumphouse 2 Well No. 3*
Purpose:	*Municipal Supply*
Taking to Commence:	*April 1, 2001*
Permit Expires:	*March 31, 2010*

Rate of Water Taking not to Exceed:

Source No. 1:	*1800 L/min and 1650 m^3/day (1800 L/min pumping for 15 hrs/day)*
Source No. 2:	*600 L/min and 864 m^3/day (600 L/min pumping for 24 hrs/day - standby)*
Source No. 3:	*1800 L/min and 1650 m^3/day (1800 L/min pumping for 15 hrs/day)*

7.0 Hydrogeological Study (September 2002)

KGS Group (September 2002) subsequently conducted a Hydrogeological Study and determined that the Township of Hornepayne Municipal Groundwater Wells and municipal groundwater wells and aquifers were under the direct influence of surface water (GUDI).

The Township of Hornepayne draws all municipal water supplies from 3 wells located within two pumping stations along the banks about 35 to 60 metres from Hornepayne Creek. The aquifer system for the wellfield is situated within the floodplain of Hornepayne Creek. *The aquifer follows the creek and, based on current data, extends about 75 metres beyond the creek banks, likely on both sides of the creek. The aquifer is relatively thin (13 m or less) and is composed of medium to coarse sand with gravel. Finer grained, silty deposits extend away from the creek and main aquifer core (pg i).*

This study has demonstrated that the Township of Hornepayne groundwater wells and aquifer are under the influence of surface water based on many of the GUDI criteria as follows (pg i):

a) The wells are within 100 metres of a surface water body.

b) The groundwater travel times are much less than 50 days, with time of travel estimates from Hornepayne Creek from 1.2 days to more than 50 days with an average of about 14 days.

c) The water enters the wells from less than 15 metres (6-11 m) below ground surface.

d) The wells regularly contain total coliform bacteria (over 20 percent of samples) and turbidity levels that fluctuate between approximately 0.1 to 0.8 NTU (within criteria of 1 NTU).

e) The wells are developed within the area designated as floodplain for Hornepayne Creek.

The current well systems can not be practically upgraded to mitigate the above GUDI concerns as the aquifer is within the floodplain of Hornepayne Creek and is relatively shallow and unconfined. *Also, the current wells do not provide adequate filtration to allow the option of providing an additional barrier such as ultra-violet disinfection in conjunction with upgraded chlorination to meet current requirements.*

The Township of Hornepayne will have to upgrade the existing well supply to include full treatment with chemically assisted filtration (or equivalent), or develop a new municipal water supply either from a new well field, or a surface water source.

8.0 KGS September 2002 (GUDI Study)

Surrounding this existing valley fill is bedrock and bedrock drift complex with shallow overburden less than 5 m deep. This bedrock valley also contains laminated fine grained silt and silty sand valley fill.

KGS Group in the GUDI Study (September 2002) described the municipal supply wells as follows:

The Township of Hornepayne has three wells available to supply water to the water treatment system, where it is chlorinated prior to re-entering the distribution system. The wells are located at the south end of Front Street approximately 100 m south of Cedar Street. UTM coordinates and construction information are shown on Table 2 (pg 26).

Well No. 3 is the main production well, and is currently in use. Well No. 1 is used infrequently as a standby to Well No. 3. Well No. 2 is a standby source and was not being used at the time of the

study. *A concrete pedestal standpipe is located in the northwest corner of Hornepayne, providing 1110 m^3 (242,000 Igal) storage for emergency and fire needs. A small booster station is located at the base of the standpipe to increase pressures, as required.* ***Wells 1 and 2 were constructed in 1976. Well 3 and the standpipe were constructed in 1988 (pg 26).***

The certificate of approval for May 20, 1975 was for the replacement of the existing well supply including a main production well (Well No. 1) and a standby well (well No. 2). Well construction information for Wells No. 1 and 2 is summarized in reports from International Water Supply in Appendix D. The well construction report and log for Well No. 3 is dated December 9, 1896 (pg 26).

Well No. 3 is housed in pumping station No. 2 while wells No. 1 and No. 2 are in Pumping Station No. 1. Wells No. 1 and No. 3 are designed to be operated simultaneously for a total of 55 L/sec, but are each capable of supplying 30 L/sec. Well No. 2 is designed to supply 11 L/sec (pg 26).

9.0 KGS Group September 2002 (GUDI Study)

An approximate one kilometre wide glaciofluvial outwash deposit fill is confined by bedrock valley topography extending from northwest of Hornepayne and extending southwest of Hornepayne to Spurline Lake. This bedrock valley includes the Little Jackfish River and Hornepayne Creek (after KGS Group 2002, pg 11). The CN Railyard is located on these glacial outwash deposits to the northwest of Hornepayne. The aquifers in this valley fill are mainly unconfined.

The few available water well logs in this valley fill indicate 'buried' bedrock valley depths to 30 m or more.

The well system consists of three wells. Well No. 3 is the only well in current use. It is located in Pumphouse 2 approximately 35 m west of Hornepayne Creek. Wells No. 1 and 2 are located in Pumphouse 1 approximately 60 m west of Hornepayne Creek. Both pumphouses lie within the floodplain of Hornepayne Creek. Disinfection is the only water treatment used. The water quality has generally been adequate, although there have been consistent exceedances of the Ontario Drinking Water Standard (ODWS) without treatment for colour, hardness, iron, manganese and organic nitrogen. Measurable coliform levels in the wells have also been reported particularly in the spring. (Page 1)

10.0 The Corporation of the Township of Hornepayne - Minutes, Regular Meeting of Council October 1st, 2002 - Resolution No. 7654 (page 4)

Whereas the hydrogeological study prepared by KGS has concluded that the three municipal wells are under the direct influence of surface water, and that the aquifer does not provide adequate filtration;

Whereas the Municipal Class Environmental Assessment is an established process that will lead the municipality through the identification and evaluation of all reasonable alternative ways to address this and other identified problems, including the items listed on the consolidated Certificate of Approval;

11.0 Notes of a Meeting Between J. Conlin, Don Gervais, Sam Veraldi and Jamie Vecchio 23 September 2003

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1. ***Don Gervais indicated that Well #3 is not operating. Well #1 is presently being used. The capacity is about 27 l/s (2,333 m^3/day) in Well #1.*** *The actual pumping rate is throttled to about 12 l/s for 9 to 11 hours/day.* ***Well #2 is only rated at 12 l/s, but has not been used in recent years.*** *D. Gervais, in his time, has never used this well.*

2. ***In the summer of 2003, Well #1 was pumped to a maximum of about 20 l/s (1,728 m^3/day) for about 13 hours.***

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8. *Well #1 is now being used. For 14 years, it was not used. On June 21, 2003, there was a problem that was characterized by the water being foamy or obviously containing air, together with a slimy deposit. The Township was notified, and a water restriction was announced by the Township Office. This helped to keep the water demand down, and OCWA was able to pump at a reduced rate out of Well #3 until they were able to get Well #1 approved by the MOE for operation on June 30th. At that time, Well #3 was shut down, and Well #1 has been used from that time on.* ***No repairs have been made, and no arrangements have been made, for rehabilitating Well #3 to this point.***

12.0 Project Meeting April 15, 2003

15. ***Don Gervais indicated that the pumps have been throttled to 10 or 15 l/s running 15-16 h/day. There could be a matter of concern that the wells do not have the capacity to meet the long term demand.*** *It is noted, however, that the population has not increased recently, nor is it expected to increase in the near future, and* ***to date there has been no difficulty with capacity of the existing wells****.*

25. *A review was made of the Draft Hydrogeologic Evaluation performed by Terraprobe, and it was agreed to accept the recommendations of Terraprobe that* ***no further exploration or funds should be spent on attempting to locate an alternative ground water source.*** *The chances of finding such a source are slim, very expensive, and would only be successful if a fault or crack in the bedrock of significant nature was to be located.* ***To that extent, it was agreed that the alternative for a new ground water source is considered to have been evaluated. AWS will recommend that further consideration will not be necessary.***

13.0 Class Environmental Assessment Study Report (AWS) - Township of Hornepayne Water Supply System (April 2004)

The Class Environmental Assessment Study Report for the Township of Hornepayne Water Supply System made the following observations and conclusions:

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2.3.4 Existing Wells

The aquifer is located in coarse sand or sand and gravel materials associated with glaciofluvial deposits in the southwest portion of the town site.

Well #'s 1 and 2 are located in existing Pumping Station #1. Well #3 is located in Pumping Station #2 about 70 m to the south. Well #'s 1 and 2 were constructed in 1976 and Well #1 had an original design capacity of 30 L/s. Well #2 is a smaller well with a capacity of 12 L/s and has not been used for many years. ***Well #1 was rehabilitated after it plugged in 1986. The rehabilitated capacity was 26 L/s.***

Well #3 was constructed in 1986, when difficulties were experienced at Well #1. Well #3 was designed to have a capacity of 30 L/s. It has been used from 1986 until June 2003, when it "broke suction" because of plugging. *At this time a water-use restriction was placed on the use of water in town and the operator of the pumping station was able to continue to supply water at a reduced rate from Well #3 until Well #1 could be tested and put back into service.* ***Well #1 has been used since early July 2003, but it is pumping at a relatively reduced rate of 16 L/s for approximately 12 hours per day.*** *The plant operator reported on January 2, 2004 that, even with this reduced rate of pumping and considering the time of year, the groundwater table as measured from the well head has dropped from 4.5 metres below the well head to 5.03 metres.*

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Where groundwater is used as the source of supply, a minimum level of treatment, consisting of disinfection, is required - if the supply is not under the direct influence of surface water.

Where surface water is used as the source, a minimum level of treatment, consisting of chemically-assisted filtration and disinfection, or other suitable treatment, depending on the quality of the water, is required. Water is not allowed to enter a distribution system unless it has been treated with chlorine or the equivalent. Under the new regulation, sampling requirements are mandatory, and these include stringent sampling for micro-biological parameters, chlorine residuals, turbidity, volatile organics and other health based parameters.

The existing groundwater source in Hornepayne has previously been determined to be under the direct influence of surface water (GUDI). The aquifer is a sand and gravel deposit located in a fault or valley in

the bedrock. It is unconfined, fairly shallow and derives its water from Hornepayne Creek that is located approximately 50 m east of the wells. The wells are located in a low area that has been subject to flooding in the past. Total coliforms have been detected in the raw water periodically during the spring/summer months.

In accordance with O. Reg. 170/03, groundwater under the direct influence of surface water that does not have source water quality conditions suitable to avoid filtration, has to be considered 'surface water' for the purposes of assessing treatment requirements. Thus, the minimum level of treatment, consisting of chemically-assisted filtration and disinfection for surface water sources must be implemented.

The most significant problems with the Hornepayne Water Supply, which need to be addressed are:

- ***The well heads are subject to flooding. The regulatory flood elevation of the Hornepayne Creek is close to 322.795 m asl (the minimum elevation of structural members in a recently constructed bridge). The existing finished floor elevations of the pumping stations are at approximately 320.8 m (P.S.#1) and 319.1 m (P.S.#2) ASL.***

- *A KGS Hydrogeological Study, dated September 2002, concluded the natural filtration capacity of the sand and gravel aquifer was not adequate to deal with bacteria, Giardia or Cryptosporidium, and other contaminants, since the travel time from the creek to the wells was less than 50 days and possibly as short as one week.*

- ***Well screens are only 6 m or 11 m below the ground surface, versus the required minimum of 15 m.***

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It should be noted from the above that the filtration plant will be required regardless of whether the existing wells are improved and continue to be used, or new surface water sources are developed. It has been accepted that there is no suitable groundwater supply that is not under the direct influence of surface water that can be reasonably identified.

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Moonlight Lake - Moonlight Lake is located southeast of Hornepayne, east of the Hornepayne Airport. This is a fairly large lake that has road access in the vicinity. *There is a bay that runs southwest/northwest at the south end of the lake where an intake structure could be constructed.* ***There is 3-phase power along the roadway serving the airport that could be utilized to service the pumping station. A short section of road would be required to be built measuring about 350 m to 400 m in length.*** *Colour, hardness and DOC exceed the ODWQS (Ontario Drinking Water Standards) criteria. It will be seen that of the five lakes, Moonlight Lake has the lowest colour.*

The possible presence of parasites, such as Giardia and Cryptosporidium, has been taken into consideration because Ontario Regulation 170/03 requires that the plant be designed so as to insure the removal of these parasites from waters that would be obtained from a surface source. The nature of the water in the wells is

known. Giardia and Cryptosporidium are not issues for well water; however, because of O.Reg. 170/03 requirements ***it is our opinion that the design of the plant will be similar whether the existing wells are improved and used or a surface water source is used.***

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It can be seen that the difference in lifecycle costs is less than 14%, which is considered to be essentially insignificant in the context of this comparison.

Option	***Moonlight Lake***	***Existing Groundwater***
Capital Cost	*$7,693,900*	*$6,503,400*
Annualized Operating Costs	*$4,486,559*	*$4,205,818*
Present Value Life Cycle Costs	*$12,180,459*	*$10,709,218*

Based on the above analysis and the conclusions presented in this report, it is respectfully recommended that a new chemically assisted filtration plant be constructed to serve the Township of Hornepayne. The supply source of this water is recommended to be Moonlight Lake, and it is recommended that the existing groundwater wells be shut down, decommissioned and abandoned. This is based on the almost identical lifecycle costs between developing Moonlight Lake and the renovation and rehabilitation of the existing wells. It is felt that the Moonlight Lake supply is a more dependable source of water for the future than the existing wells. *It has been demonstrated that there is difficulty in maintaining flow through the aquifer that the wells are presently located in. It has been previously determined that there are no other suitable groundwater sources available.*

14.0 Sewage Treatment Plant 2021 Annual Report (March 23, 2016)

The Township of Hornepayne Certificate of Approval No. 4306-A8ANUC dated March 23, 2016 for the **Township of Hornepayne Service Area population of 980 specifies the Rated Capacity of the Works at 1,364 m^3/day. The effluent receiver is the Little Jackfish River.**

The total effluent flow in 2021 was 228,731 m^3 or 627 m^3/day and in 2020 255,278 m^3 or 699 m^3/day.

15.0 Drinking Water Source (July 28, 2016)

Permit to Take Water No. 7067-ABUHV5 was issued to The Corporation of the Township of Hornepayne on July 28, 2016. It authorizes the taking of water as a Municipal Supply from Moonlight Lake at Lot 10, Con 1, Geographic Township of Wicksteed, Hornepayne, District of Algoma.

16.0 The Maximum Taking per day (24 hours) is specified at 2,376 m^3 for 365 days/year.

The Township is required to monitor flows and lake levels. The lake water level monitoring has not been seen.

The Taking of water is to be carried out in such a manner that stream flow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the material functions of the stream.

The pumping station at Moonlight Lake pumps via a 5.5 km long watermain to the Herbert Avenue Water Treatment Plant in Hornepayne Village. The Herbert Avenue Treatment Plant is a surface water system providing coagulation, membrane filtration and primary / secondary disinfection. The treated water is then distributed throughout the Township (Hornepayne) water supply network.

17.0 Hornepayne Drinking Water System (July 20, 2021)

The Municipal Drinking Water Licence No. 226-101 issued to the Township of Hornepayne on July 20, 2021 reports that **the Herbert Avenue Water Treatment Plant has a rated capacity of 1,800 m^3/day**. The maximum daily volume of Treated Water that flows from the treatment system to the distribution system shall not exceed this volume.

Table: Monthly Water Treated Flow Rates from 2019 to 2021

	2019 (m^3/day)	2020 (m^3/day)	2021 (m^3/day)
Average Daily Flow Rate	507	578	553
Maximum Daily Flow Rate	1,258	1,397	1,048

Source: MFIPPA Request No. M2022-02 Response to George Collins, Dec 19, 2022

PART B: CN RAILYARD HYDROCARBON CONTAMINATION

The CNR Hornepayne Yard is located northeast and north of the Village of Hornepayne. Former West End, East End, Shop Track and Via Rail Fueling Areas, as well as Lagoon 2 and Round House Areas became contaminated with hydrocarbons over many years of railway refueling use. Fig H2.1 illustrates the many groundwater observation (OW) and pumping wells (PW) installed since the 1990s as well as little Jackfish River surface water quality monitoring locations (HOR).

Fig H2.2 provides an enlargement of the Lagoon 2 Area and Fig H2.3 an enlargement of the Roundhouse, Former Shop Track Fueling Area and the Former Via Rail Fueling Area with sampling locations.

CNR constructed more than 100 groundwater monitors during the period after about 1994 (Fig H2.1). These monitor wells were constructed in the overburden and varied from 4 to 8 m in depth despite overburden depths estimated at up to 30 m in depth within the Yard Area.

A further seven new boreholes were established during 2015.

Amended Certificate of Approval No 3528-83LQWT

CNR has an Amended Certificate of Approval for *the establishment of sewage works for the collection, transmission, treatment and disposal of stormwater, contact stormwater runoff from the CN Hornepayne Yard and industrial sewage generated from the Lagoon Light Non-Aqueous Phase Liquid (LNAPL) Containment System, the Shop Track LNAPL Recovery System, the Waste Oil Transfer Facility and melt water / seepage from the soil contaminated cell, discharging to Little Jackfish River*. This Certificate of Approval is enclosed as Appendix I.

Site Condition Standards

The Site Condition Standards (SCSs) for assessing the groundwater collected from the Site were previously established in accordance with Ontario Regulation 153/04 (as amended), and consist of two (2) categories based on sample location, as follows:

- *For samples within 30 metres (m) of the Little Jackfish River: Ministry of the Environment and Climate Change (MOECC) Table 9: Generic SCS for use within 30 m of a Water Body in a Non-Potable Ground Water Condition (MOECC Table 9 SCS); and*
- *For samples greater than 30 m from the Little Jackfish River: MOECC Table 3: Full Depth SCS in a Non-Potable Ground Water Condition with Medium to Fine Textured Soils (MOECC Table 3 SCS).*

Due to the fact that the Site is federally regulated, the MOECC criteria was applied for comparison purposes only (ARCADIS 2018 Site Monitoring Report – Hornepayne Yard, pg 5).

Surface Water Quality

Collected monthly (i.e. May to November) surface water samples at four (4) pre-determined locations along the Little Jackfish River for laboratory analysis of benzene, toluene, ethylbenzene and total xylenes (BTEX), petroleum hydrocarbon fractions F1 to F4 (PHC F1-F4), total purgeable hydrocarbons (TPH), total extractable hydrocarbons (TEH), total oil and grease, mineral oil and grease, methyl-t-butyl-ether (MTBE), pH, lead, alkalinity and hardness (ARCADIS 2018 Site Monitoring Report – Hornepayne Yard, pg 3).

1.0 January 11, 2013

KGS Group (Jan 11, 2013) documented installation of about 85 groundwater monitor wells at the Hornepayne CN Yard over the period 1994 to 2003 (FOI pg 1539 to 1625). These monitor wells varied from 4 m to 8 m in depth. Many logs reported petroleum hydrocarbon odours, staining, sheens and /or free phase product in the upper intervals. Free phase floating product was up to 3 m in thickness in a number of wells.

2.0 February 4, 2016

The KGS Group 2015 Environmental Program Report for the Hornepayne Yard, in Appendix 'D' Stratigraphic Soil Logs documents approximately 62 remaining monitor wells. These wells were reported as mainly 4 to 8 m deep and were installed over the period from November 1994 to September 2001. Only one well positively reported bedrock. Two more reported refusal (likely bedrock). However, auger refusal on a possible boulder was occasionally reported.

Many of the wells at the time of drilling reported petroleum hydrocarbon staining, hydrocarbon odours, sheens and free product. In some boreholes hydrocarbon staining and odours was reported to extend to the depth of borehole termination indicating downward movement of contaminants to greater depths (>8 m).

The KGS January 2016 Stratigraphic Cross Sections (Fig E2 and E4) imply a continuous silt deposit below the depth of borehole terminations. However, the absence of boreholes extended below about 318 m asl indicating the stratigraphy is unknown below this elevation. A number of water wells completed elsewhere in this glaciofluvial valley sequence are up to 30 m deep. **The lower estimated 20 m overburden depth of the CN Railyard glacial bedrock valley environment is unexplored.**

Some Boreholes (MW-101 - 6.1 m; MW102 - 6.1 m; MW-114 - 4.3 m; MW-140 - 4.6 m; MW-142 - 2.5 m depth) demonstrate granular materials to the base (end) of hole. Silt formations are also common in boreholes. **The upper parts of these deposits frequently contained hydrocarbon staining.**

3.0 Canadian National Railway CN Hornepayne Yard - 2015 Environmental Program - Final Report January 2016

3.1 Executive Summary (2015)

KGS Group was retained by Canadian National (CN) to provide environmental and engineering services for the 2015 Environmental Program at the CN Hornepayne Yard, located in Hornepayne, Ontario. ***This report details the operation and maintenance activities associated with remedial activities at the Yard.*** *The Hornepayne Yard operates under the Amended Certificate of Approval No. 3528-83LQWT (C of A).*

The following system descriptions is derived from CNR 2016 Annual Report (pg 1-3).

3.2 West End Diesel Recovery System

The West End Diesel Recovery System was constructed in 1998. This recovery system was composed of eleven underdrains placed below the former fueling area. Nine drains were functional in 2016. These drains discharged into a diesel recovery lagoon. Floating LNAPL is collected and transferred by pump to a 25,000 L waste oil recovery tank.

Effluent from the recovery lagoon is discharged via a trench to a concrete control structure and to the Little Jackfish River.

Since the commissioning of the west end Diesel Recovery System system during the spring of 1998, approximately 190,000 L of LNAPL waste effluent has been collected. However, during the 2016 operating year less than 2,000 L of LNAPL and oily water was recovered.

- *The West End Diesel Recovery System (DRS) continues to function as per design, passively collecting Light Non-Aqueous Phase Liquids (LNAPL) from the fuelling stand area.*
- ***Approximately 4,519 L of LNAPL was collected during the 2015 operating year.*** *Since commissioning in the fall of 1998, the system has recovered approximately 188,251 L.*

The DRS was inspected weekly from May to November 2015. Monthly DRS effluent samples met all criteria outlined in the C of A.

3.3 Lagoon No. 2 Containment System

System components are located both inside and outside of the oil / water separator building and compressor building. Nine pumping wells, a bentonite cutoff wall, an interception trench, collection sump and horizontal waste oil tank are located outside the buildings. Five submersible pumps transfer fluids from the pumping wells and interception trench into the oil / water separator for processing. LNAPL is pumped from the transfer tank into a 4,560 L double wall waste oil tank. Effluent water from the Oil / Water Separator is discharged directly into Lagoon 2.

Since LNAPL recovery operations were initiated in the spring of 1998 approximately 30,000 L of LNAPL was collected. During the 2016 operating year approximately 600 L of LNAPL and 6,500 L of Oily water was recovered.

The Lagoon No. 2 Containment System (CS) continued to operate as designed and contained impacts within the Lagoon No. 2 and Former Pump House areas.

The horizontal extent of the LNAPL plume has not changed from previous years, although the measured LNAPL thickness in monitoring wells fluctuates between years. ***The Lagoon No. 2 CS recovered approximately 1,840 L of LNAPL in 2015.*** *Since 1998, approximately 29,594 L of LNAPL has been collected from this area.*

In 2015, the Lagoon No. 2 CS was inspected weekly from May to November. Effluent sampled from the Lagoon No. 2 outlet met all criteria outlined in the C of A. Lagoon No. 2 continues to adequately attenuate impacted effluent from various Yard operations.

3.4 Former Shop Track Fuelling Area Diesel Recovery System

This diesel recovery system is composed of collection sump, a submersible pump, a skimmer unit and a 4,540 L waste oil recovery tank. Floating LNAPL is collected within the collection sump and transferred by gravity to the Oil Water Separator and to the waste oil recovery tank located at the Waste Oil Transfer Facility.

Since commissioning in the spring of 2004, approximately 19,000 L of LNAPL and waste oil has been recovered. Less than 300 L of LNAPL was recovered in the 2016 operating year.

The skimmer unit was operated for the majority of the 2015 operating year (May to September). In total, 326 L of LNAPL was collected from this area *between the operation of the skimmer unit and the collection of LNAPL from Yard operations by both KGS Group and local CN personnel. Since 2004, approximately 18,656 L of LNAPL / waste oil has been collected from this area.*

3.5 Waste Oil Transfer Facility

The Waste Oil Transfer Facility consists of a former fueling stand sump pit, submersible pump, holding tank, control panel, coalescing Oil Water Separator, LNAPL Transfer Pump and CN tanker car.

Total fluids are transferred by gravity from the holding tank to the coalescing oil water separator for processing. Collected LNAPL is pumped to the external CN tanker car. Effluent water from the Oil Water Separator is transferred by gravity to discharge into Lagoon No 2.

The Waste Transfer Facility did not operate in 2016 because of the absence of a CN tanker car. About 8,000 L of total fluids were transferred from various Yard LNAPL collection systems by a private contractor for off site processing and disposal.

The Waste Oil Transfer Facility did not operate in 2015. *A total of 15,000 L of total fluids collected by KGS Group led operations, were taken directly off-site for processing.*

3.6 Surface Water

The surface water programs continues to show that Yard effluent / surface water discharge has no visual evidence of petroleum hydrocarbon sheen. *All surface water results for target parameters were below the C of A criteria.*

Termination of LNAPL Recovery Operations (2016 to 2018)

In 2015/2016, significant assessment efforts were conducted across the Site……it was concluded that LNAPL impacts at the Site have been well-characterized, and the hydrocarbon (i.e. LNAPL) plumes and dissolved-phase groundwater impacts at the Site are: 1) delineated through previously completed work; 2) contained on CN property; and, 3) do not present a risk of migration. Additionally, LNAPL recovery volumes and efficiencies were noted to have dropped significantly, and continued recovery efforts were not having a meaningful impact on risks associated with LNAPL at the Site.

Based on the findings of the 2015/2016 Assessment Study and as part of the overall SMP, a decision was made to cease LNAPL recovery efforts at the Site in 2017 (ARCADIS 2017 Site Monitoring Report – Hornepayne Yard, pg 2).

In 2017, active light non-aqueous phase liquid (LNAPL) recovery operations at the Site were discontinued. The decision to cease LNAPL recovery operations was based on LNAPL mobility studies completed in 2015/2016....., which concluded that; LNAPL impacts at the Hornepayne Yard are characterized and stable and dissolved-phase groundwater impacts within the Site are stable, contained on CN property, and did not present a risk of migration (2016 Monitoring Report) (ARCADIS 2018 Site Monitoring Report – Hornepayne Yard, pg 1).

…..The results of the 2017 monitoring program generally supported the 2016 findings; in that, LNAPL and dissolved-phase impacts at the Site appear to be stable and/or decreasing in extent. *In addition, as part of the decision to cease LNAPL recovery operations, the eleven (11) underdrains associated with the West End remedial system were subsequently decommissioned in September 2017. The purpose of the West End underdrain decommissioning program was to eliminate preferential drainage pathways leading from the impacted area beneath the former fueling platform to the diesel recovery lagoon (ARCADIS 2018 Site Monitoring Report – Hornepayne Yard, pg 1).*

….during the May 2018 surface water sampling event, LNAPL sheen was observed on the surface of the Little Jackfish River (LJR), adjacent to the Lagoon #2 area. *LNAPL sheen has been observed intermittently at Lagoon #2 during recent surface water sampling events conducted in the spring, and historical observations of LNAPL discharge from the Lagoon #2 embankment into the LJR previously led to the installation of a bentonite cut-off wall. Observations since the wall was installed indicated that, the wall may have been an effective passive barrier for LNAPL migration toward the river; however the recent sheen observations at the Lagoon #2 area suggest that, the wall integrity has declined over time.*

An investigation of the Lagoon #2 area was conducted between June and July 2018. At the conclusion of the investigation, CN made a decision to implement additional remedial activities downgradient of the pre-existing bentonite wall (ARCADIS 2018 Site Monitoring Report – Hornepayne Yard, pg 1-2).

4.0 Ontario Ministry of the Environment, Conservation and Parks Letter to Mr. George Collins (September 17, 2020)

In your letter, you state your concern that groundwater contamination from the Canadian National (CN) yard in Hornepayne was a factor in the decision to change the town's water supply from wells to a surface water source. ***The ministry is aware of historical diesel and oil contamination at the Hornepayne yard and has an oversight in CN's ongoing remediation efforts to address this contamination.***

From the Ministry's perspective, the 2002 assessment of the well water supply as groundwater under the influence of surface water, also referred to as GUDI, was appropriate given the proximity of the wells to a local creek and the characteristics of the aquifer. *The GUDI assessment was completed as a Ministry*

requirement for an engineering evaluation of existing treatment systems at every municipal water system in Ontario and was not undertaken specifically in response to contamination at the CN yard.

With respect to municipal water treatment, the Ministry's role is to evaluate and approve the design and construction of any new facility and to ensure that the system is operated in compliance with our legislation. ***The decision on the preferred option for type of facility to be constructed rests with the municipality based on several factors including the technical information provided to them by their consulting engineers.*** *In this case the municipality made the decision to establish a surface water treatment plant rather than upgrading the existing wells that were determined to be GUDI.*

5.0 Email from G. Collins to Town of Hornepayne re: CN's Pollution & Moonlight Lake

12. On May 27, 2021 - I received from Environment and Climate Change Canada, or ECCC material which included an observation made by one of their Enforcement Officers, Sarah Cameron. ***On Nov 6, 2018, in Hornepayne, on CN property, she states "so much oil in ground here, migrates into lagoon and when it rains, the contaminated water runs over Railway Crescent into lagoon #2, lagoon #2 has a culvert out to the Jackfish River."*** *(Refer to attached doc. Numbered #19 and #20.*

Boom / River Inspection Program

A sheen was frequently observed during the April / May 2022 Inspection Programs. This sheen is attributed to residual LNAPL that had previously reached the river bed now being transported by gas bubbles generated by natural degradation processes (2022 Annual Report s4.2 pg 10).

Monitor Well Decommissioning (2018)

Eight wells were decommissioned in the Lagoon 2 Area during remedial activities in 2018. These wells included MW-21, OW5-2, PW-2, PW-3, PW-4, PW-5, PW-6 and PW-7. In addition, wells MW-51, MW-101, OW5-3 and MW-115 could not be located after completion of remedial work during September 2019 (2022 and 2019 Monitoring Report).

Post Remediation Monitoring Lagoon 2

Nine wells installed for post remediation monitoring at Lagoon 2 were available for monitoring in 2022 and later. These wells included MW-304 and MW-401 to MW-408 inclusive (2022 Monitoring Report).

Free Phase Product

Table H.1 provides a summary of monitor well Free Phase Product / Head Space Vapour as reported for monitor well logs available to this report. The Maximum LNAPL depth was 2.97 m at OW53 **(location - west end?)**.

Table H1.2 provides a summary of monitor wells with maximum observed LNAPL thickness greater than 0.5 m during the historic period from 1997 to 2009. LNAPL thickness exceeded 3 m at OW60, OW5-4 and MW126. By about 2015 NAPL thicknesses had decreased to 0.458 m at MW21, 0.621 m at OW5-2 and 0.585 m at MW110 R and lower where observations were available. During 2023, only five observations, each less than 0.148 m, were obtained at these former high LNAPL thickness sites.

Despite the limited recent measurements, it appears that the LNAPL thicknesses have decreased significantly from historical maximums as a result of remediation measures over the past nearly three decades. Therefore it is also unlikely that plumes are migrating beyond the historical extent as defined by the groundwater monitor well spatial extent. Natural NAPL degradation is also likely occurring on an ongoing basis independent of active recovery events.

Reported LNAPL densities varied from 0.853 to 0.863 g/ml.

In 2023 Arcadis Canada Inc completed for Canadian National Railway Company (CN):

- *Collected monthly (i.e., April to November) surface water samples at four (4) pre-determined locations along the LJR for laboratory analysis of benzene, toluene, ethylbenzene and total xylenes (BTEX), petroleum hydrocarbon fractions F1 to F4 (PHC F1-F4), total purgeable hydrocarbons (TPH), total extractable hydrocarbons (TEH), total oil and grease, minieral oil and grease, methyl-t-butyl-ether (MTBE), pH, lead, alkalinity and hardness;*

- *Completed two (2) groundwater monitoring events (i.e., spring and fall) at L2, FSTFA, and Roundhouse. The spring and fall events were completed at monitoring locations prescribed in the CoA for the Site, and at nine (9) select monitoring well locations (i.e., MW-304, MW-401 to MW-408) installed at L2 in conjunction with remedial efforts completed in 2018/2019;*

- *Completed two (2) groundwater sampling events (i.e. spring and fall) at L2, FSTFA and Roundhouse.....at nine (9) select monitoring well locations (i.e., MW-304, and MW-401 to MW-408) installed at L2 in conjunction with remedial efforts completed in 2018 / 2019. Groundwater samples were submitted for laboratory analysis of BTEX and petroleum hydrocarbon fraction F1 (BTEX/F1) and PHC F2-F4 constituents; and*

- *Completed eight (8) boom / river inspection events (April - November) to monitor conditions downgradient of L2, and to ensure no LNAPL seeps and/or sheens were discharged to the LJR.*

Four (4) study areas were included in the 2023 work program; these areas include, L2, the former track fuelling area (FSTFA), the Roundhouse, and the West End (i.e., surface water sampling only at this location).

Surface Water Sampling

In summary,.....all parameters analysed were below the applicable CoA comparison criteria at all surface water sampling locations during each sampling event, with the exception of lead, with a concentration of 0.009 milligrams per litre (mg/L), which exceeded the CoA comparison criterion of 0.005 mg/L during the April 2023 sampling event.

Fluid Level Monitoring

- *In the L2 area, twenty-two (22) wells were monitored during the spring monitoring event and twenty-three (23) during the fall monitoring event; two (2) wells contained LNAPL during the spring event, and four (4) wells contained LNAPL during the fall event.*
- *In the FSTFA and Roundhouse areas, six (6) wells were monitored during each of the spring and fall monitoring events; one (1) well contained LNAPL during the spring event and two (2) wells contained LNAPL during the fall event.*

.....Monitoring wells within the work area of the L2 that previously contained LNAPL were decommissioned during the L2 remedial program; however, impacts in and around these wells were removed. Upon completion of the L2 remedial program, eight (8) monitoring wells (MW-401 to MW-408) were installed in this area and monitored in 2023.....LNAPL was not detected within the cut-off wall enclosure installed as part of the remedial program completed in 2019. Furthermore, LNAPL was only detected in two (2) wells within 30 metres of the LJR and only during the fall monitoring event, i.e., two (2) millimetres (mm) at MW-401 and one (1) mm in MW-304.

Groundwater Sampling

- *In the L2 area, eleven (11) of the fourteen (14) wells sampled during the spring sampling event and ten (10) of the nineteen (19) wells sampled during the fall sampling event exceeded the SCSs for PHC F2 and/or PHC F3.*
- *In the FSTFA area, two (2) of the three (3) wells sampled during the fall sampling event exceeded the applicable SCSs for PHC F2 and/or PHC F3.*
- *In the Roundhouse area, the one (1) well sampled during the fall sampling event met the SCSs for all parameters.*

In some instances, the dissolved phased impacts in groundwater have decreased in 2023, since 2020, e.g. MW-43, MW-108, MW-404, and MW-406. Dissolved phase impacts in groundwater notably increased at MW-402, MW-405, and MW-407 during the spring 2023 event.....Based on a comparison of the 2023 groundwater results with the historical groundwater data, it appears that the dissolved-phase impacts at the L2, FSTFA, and Roundhouse areas are stable and are not expanding spatially.

Boom / River Inspection Program

In summary, based on the eight (8) boom / river inspection events completed between April and November 2023, sheen [was] observed during six (6) of the eight (8) inspections, including April to September.....No PHC sheen was observed further downstream in proximity to the HOR 004 05 sampling location during any of the inspection programs.

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Town of Hornepayne

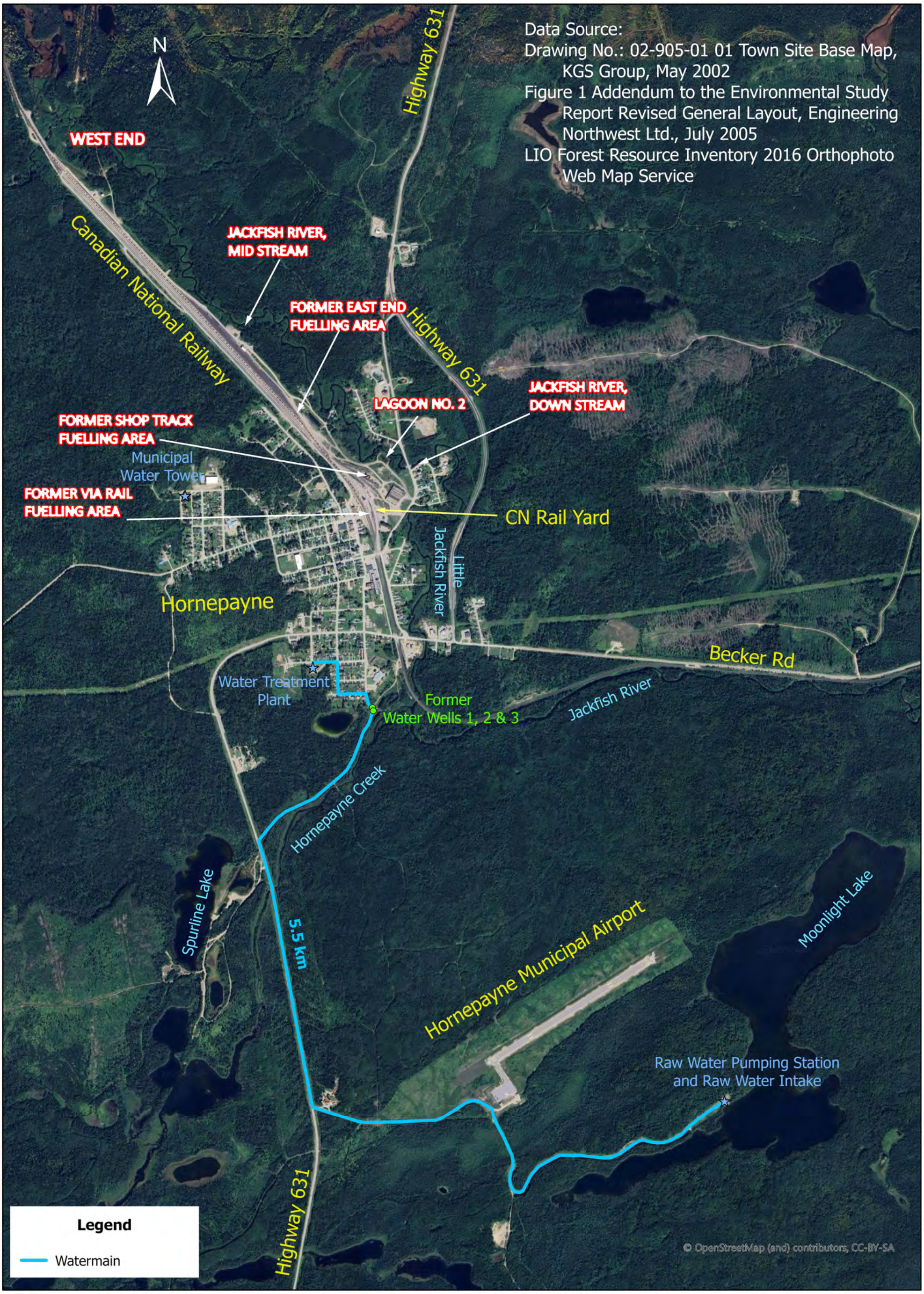

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Fig H.2.1

Town of Hornepayne
CN Rail Yard Contaminant Monitor Locations

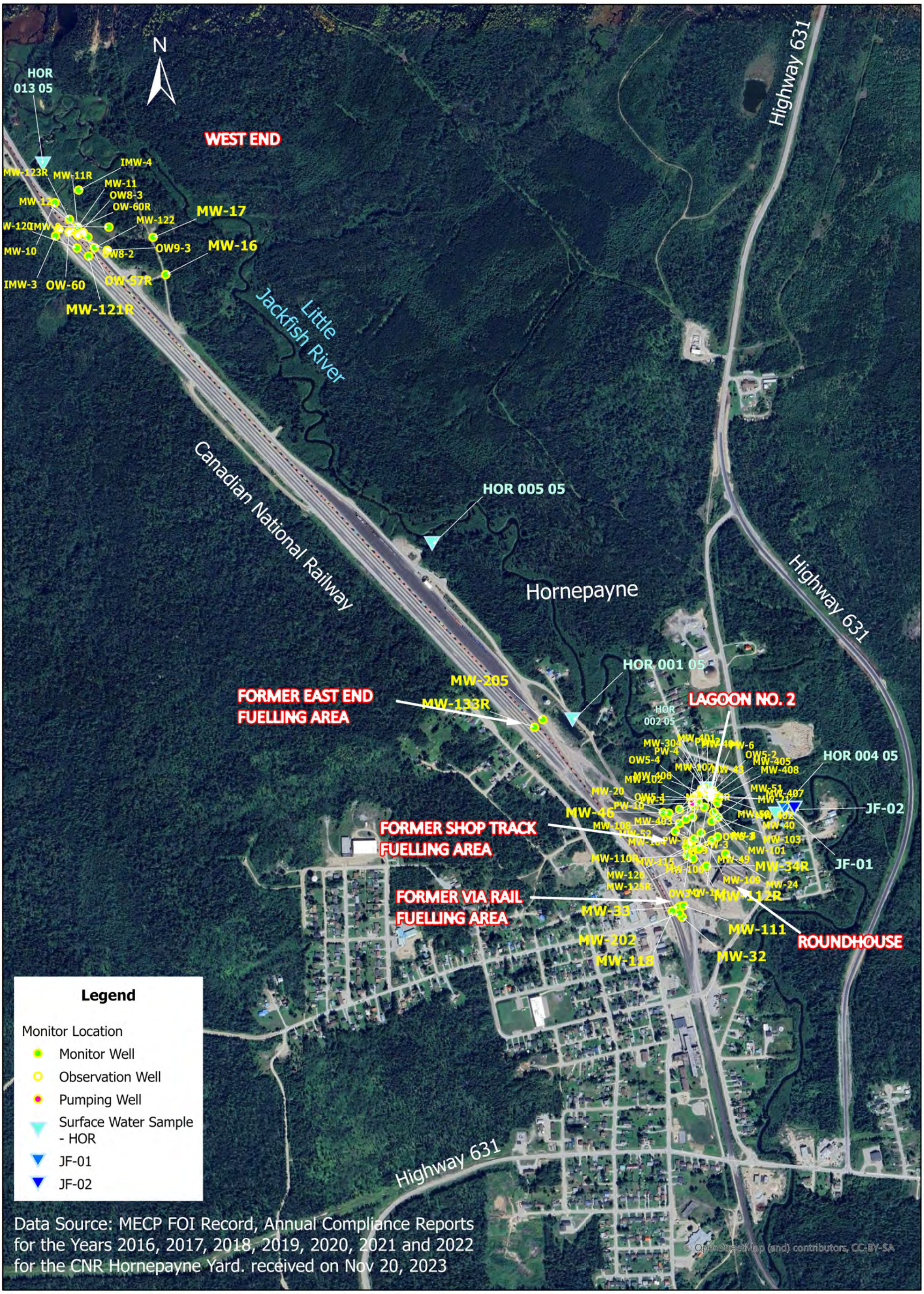

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Fig H.2.2

Town of Hornepayne
CN Rail Yard East End, Lagoon No. 2 Contaminant Monitor Locations

Orthophoto: Google Image (Aug 26, 2023)
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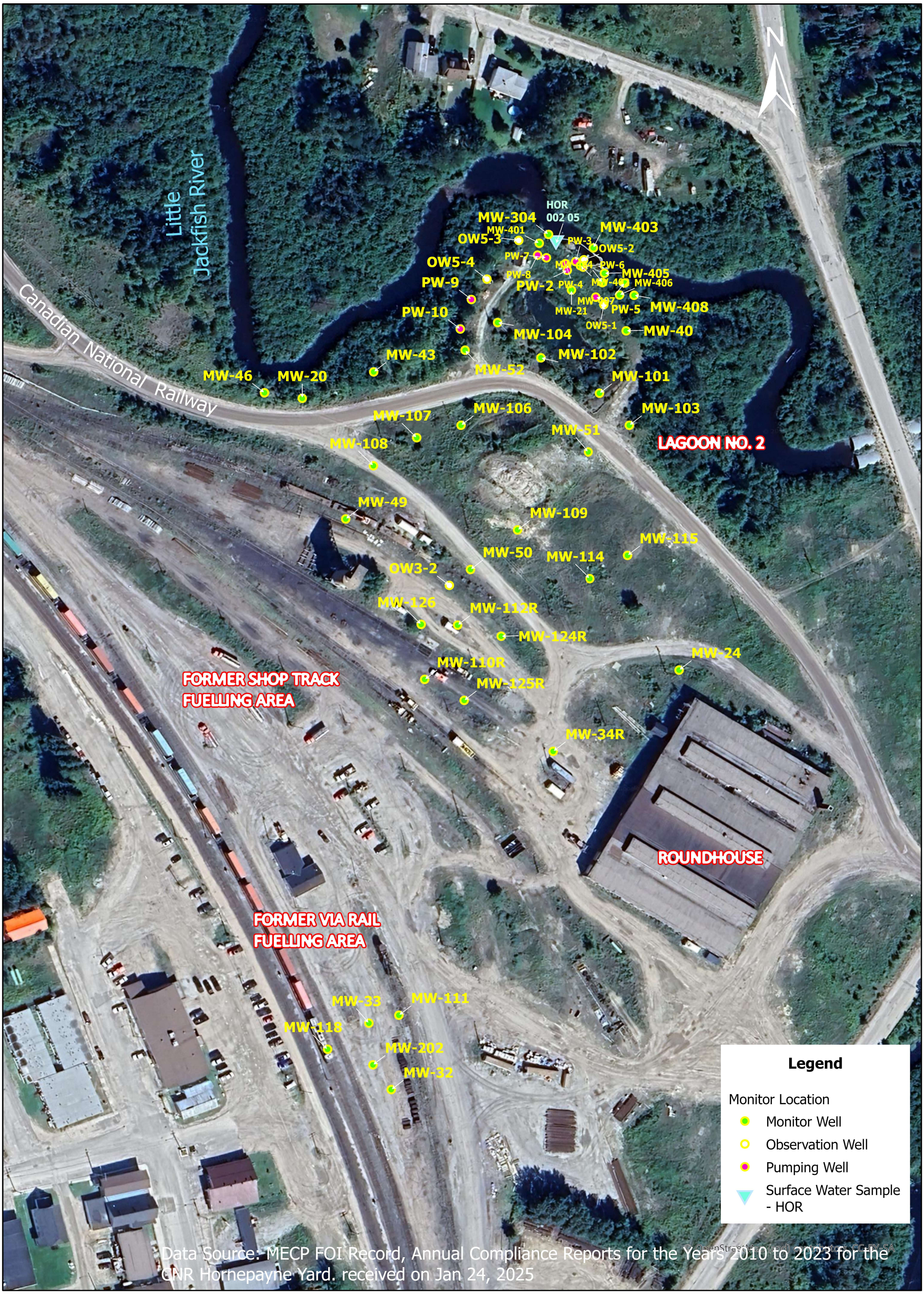
Fig H.2.3

Town of Hornepayne
CN Rail Yard East End, Contaminant Monitor Locations



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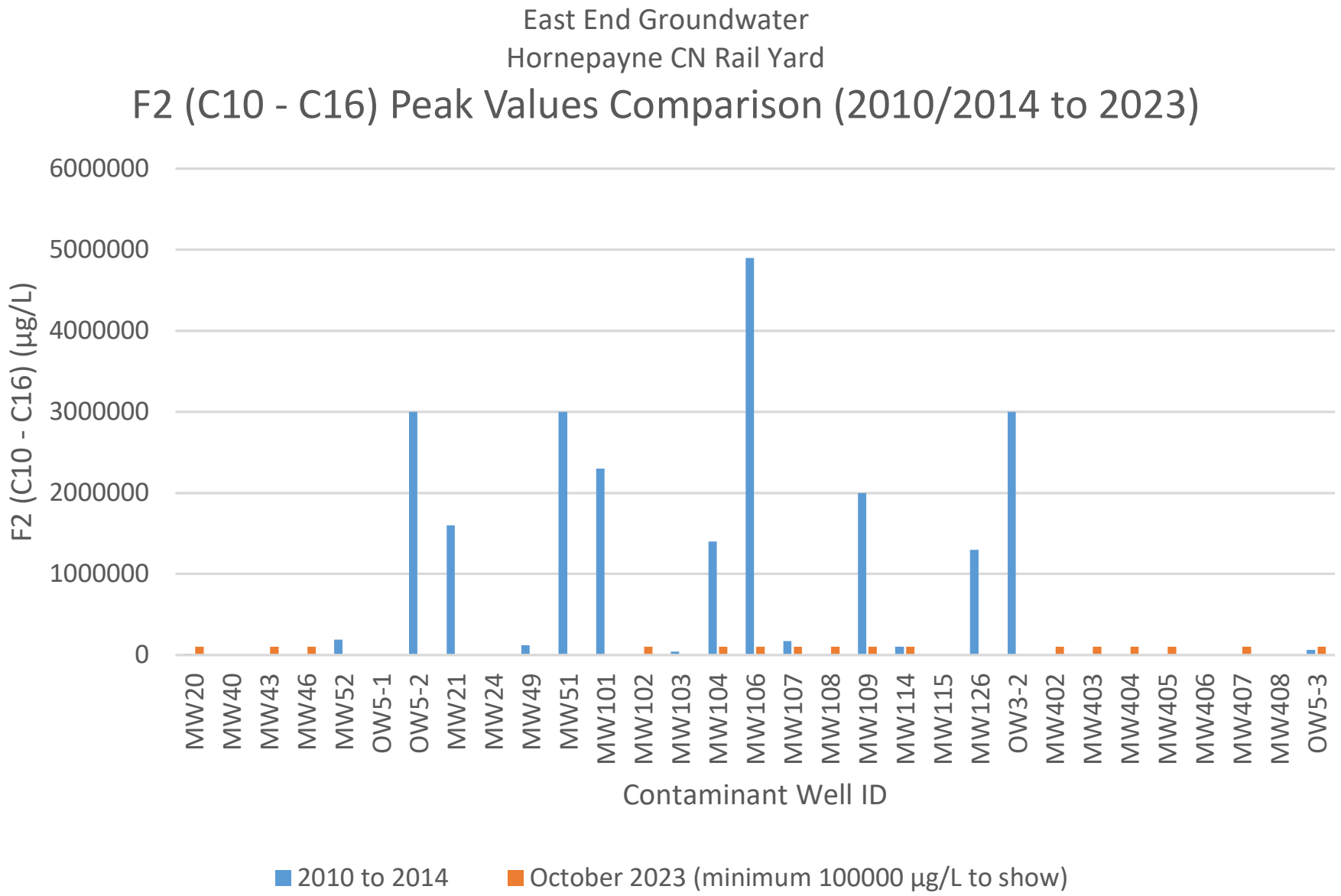

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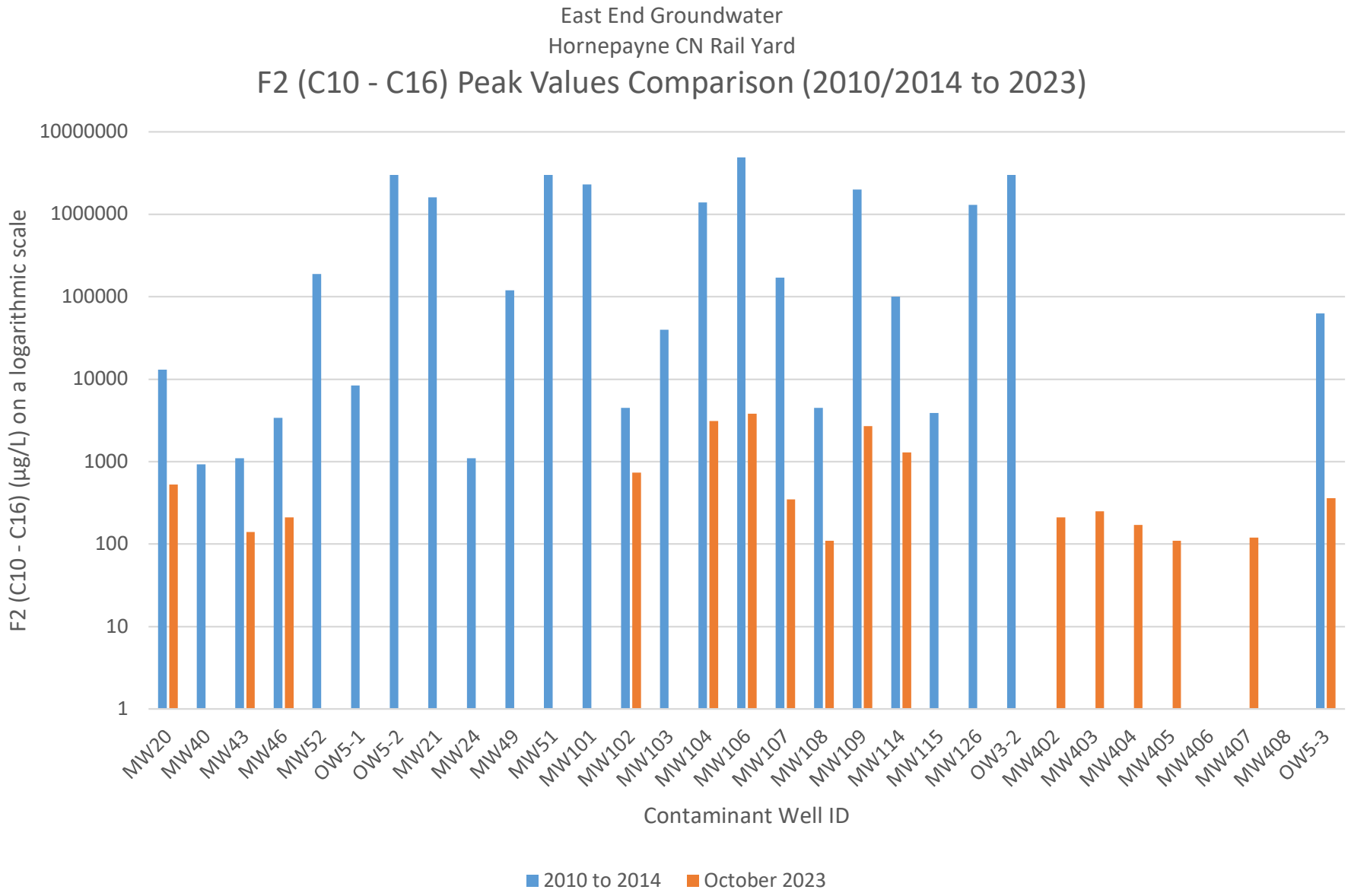

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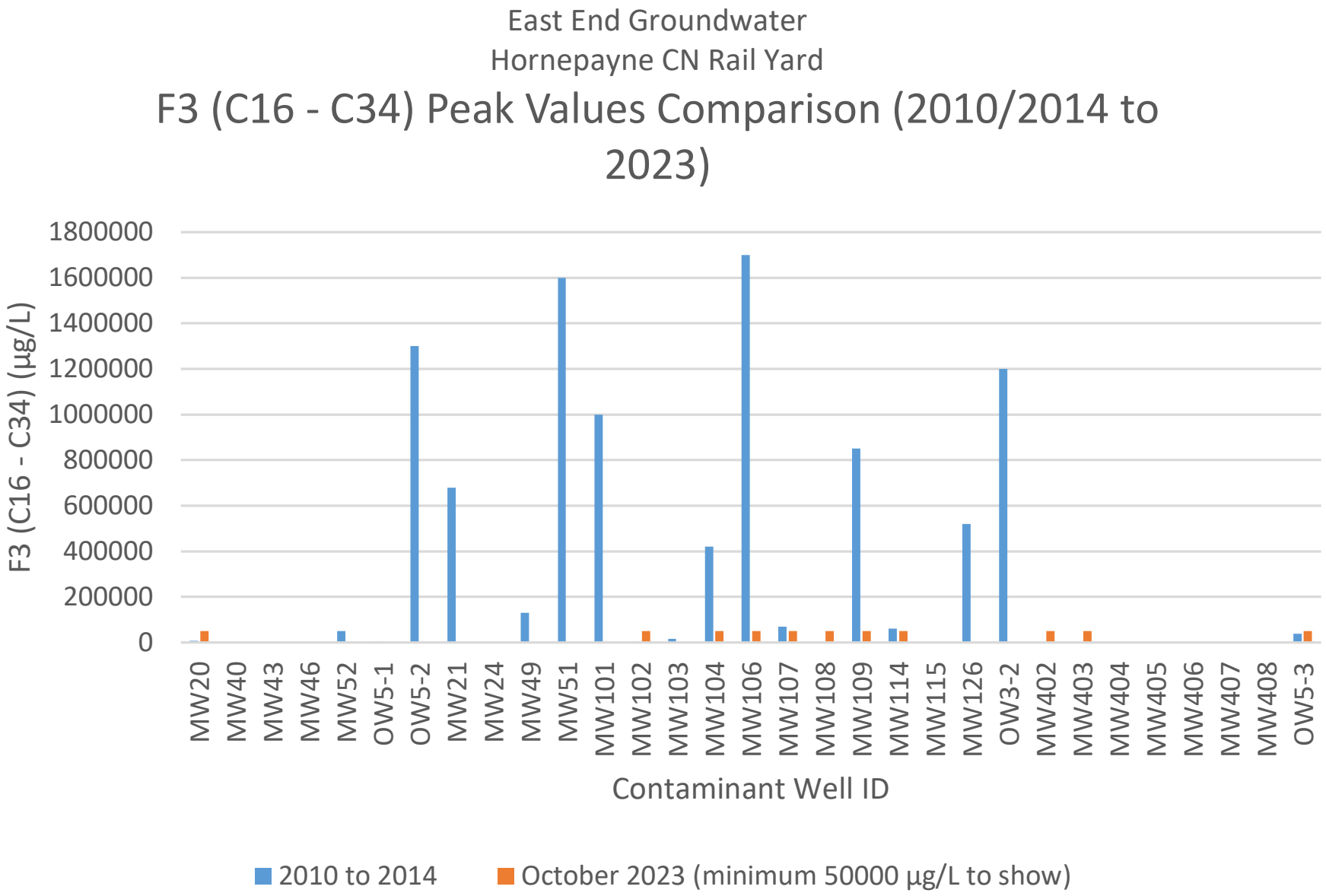

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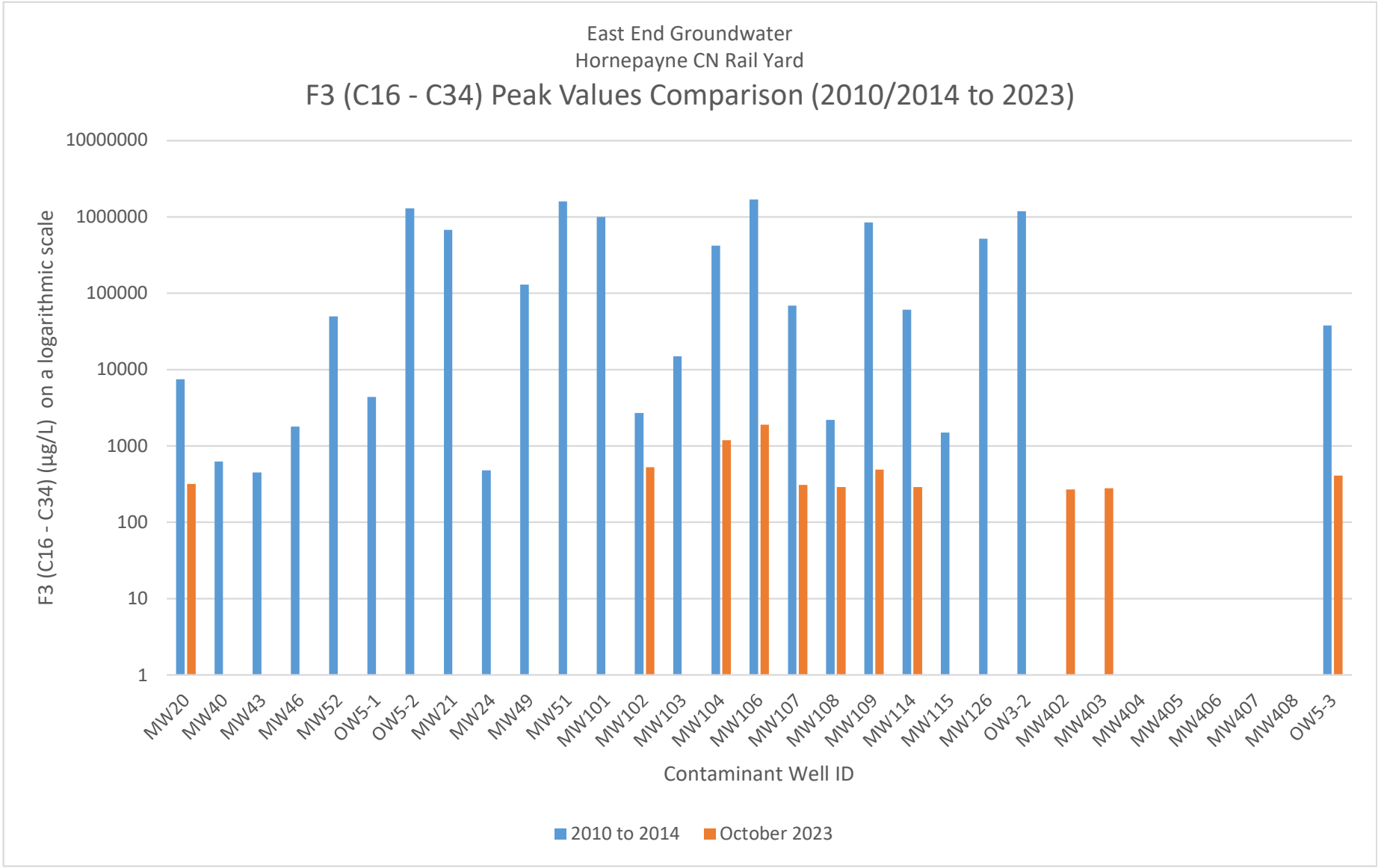

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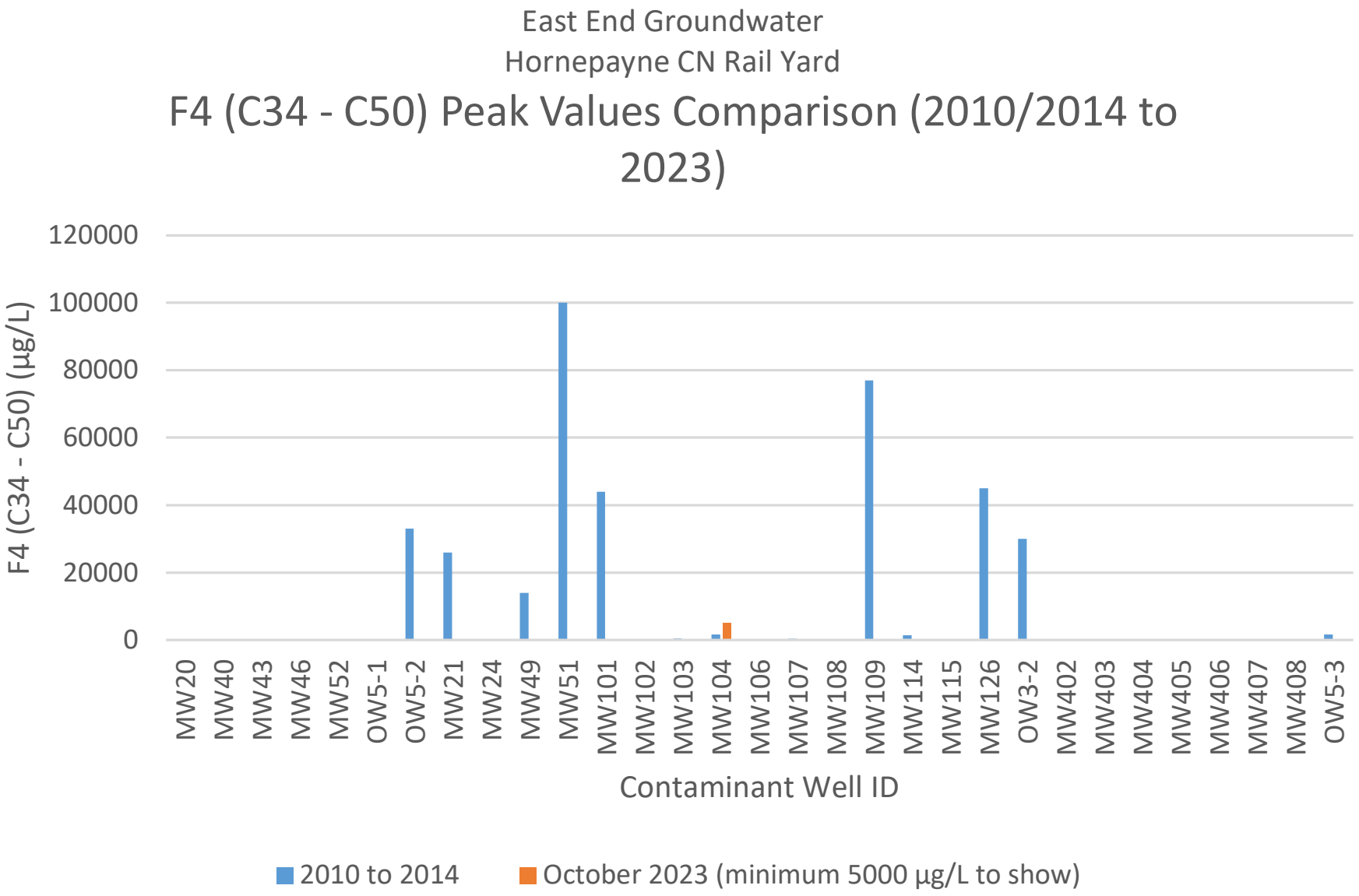

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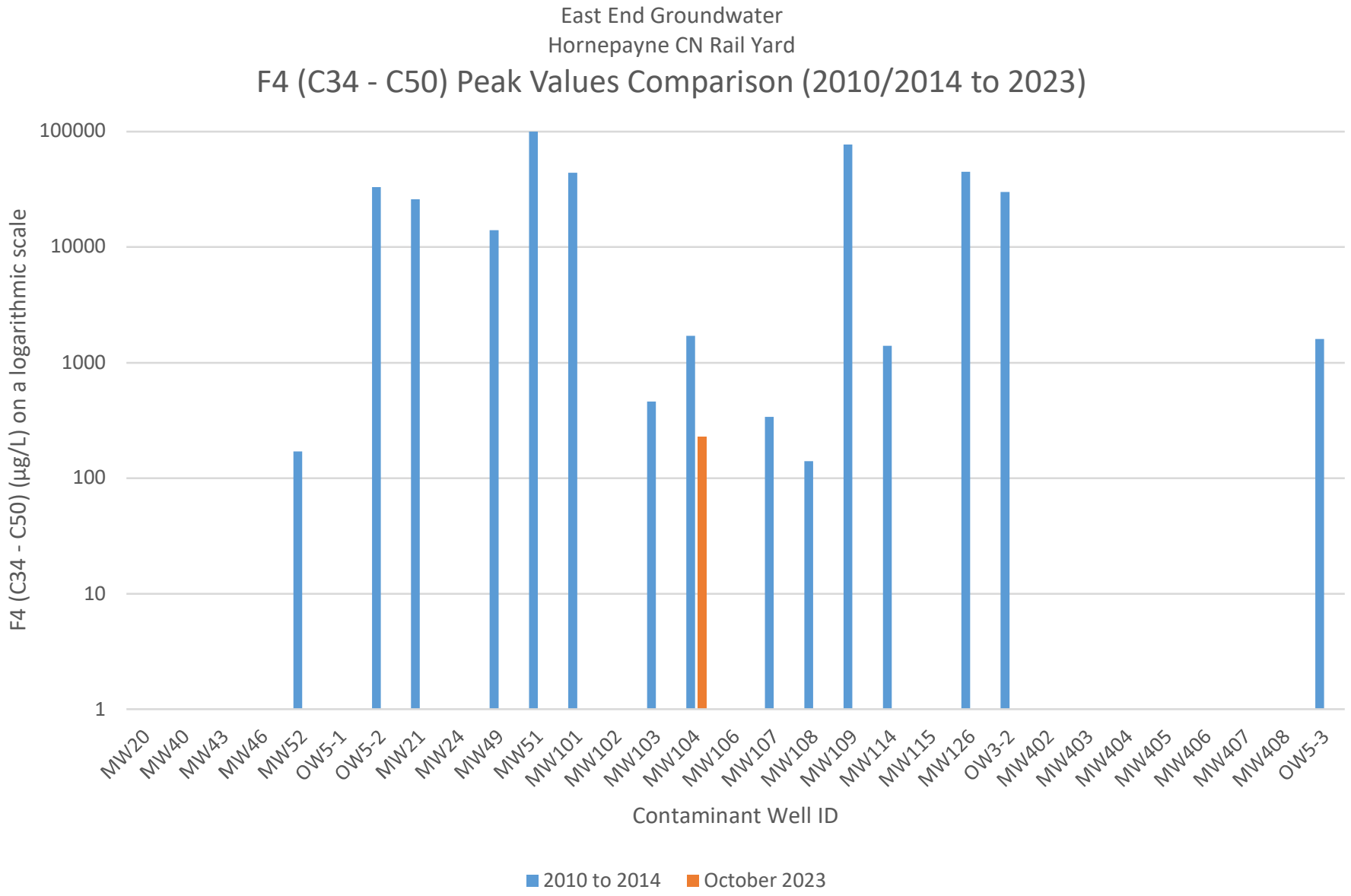

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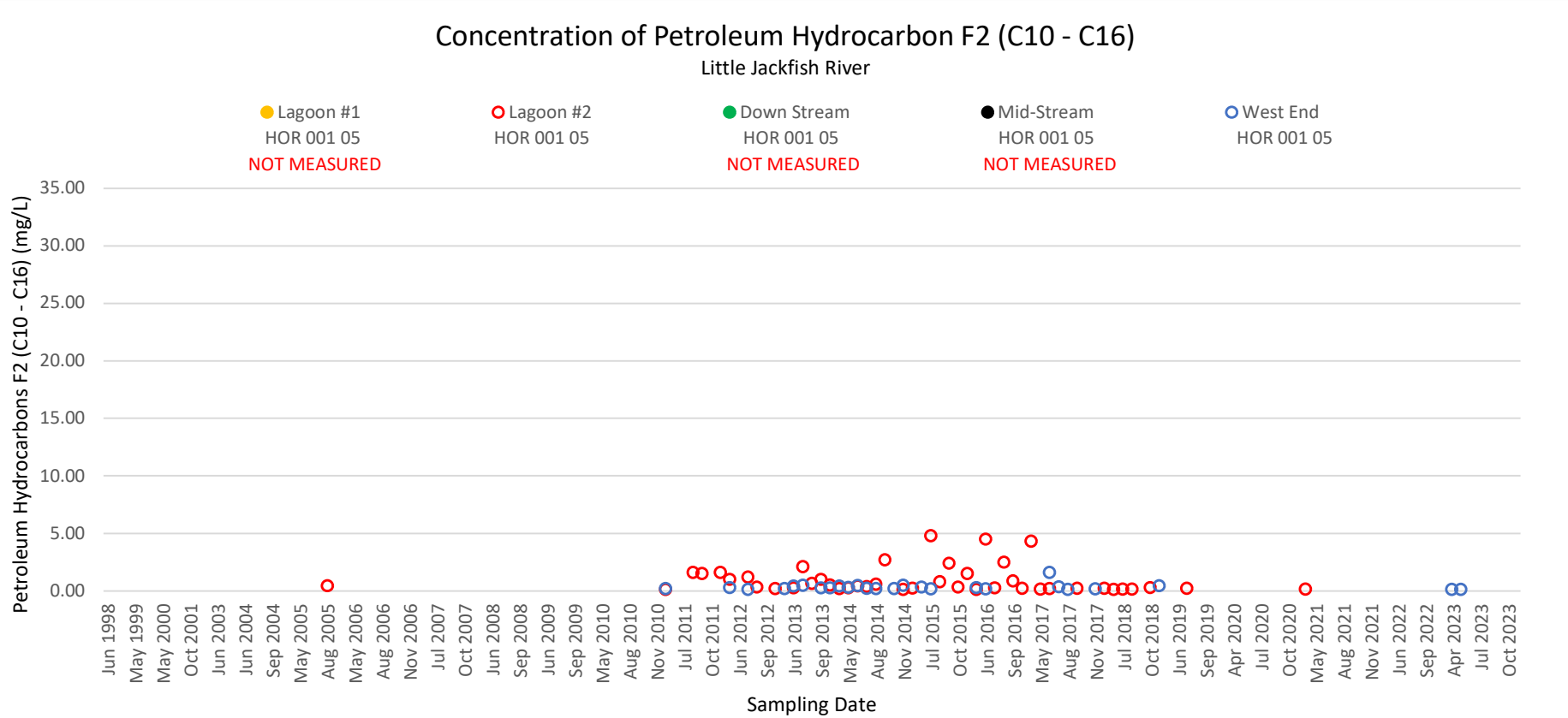

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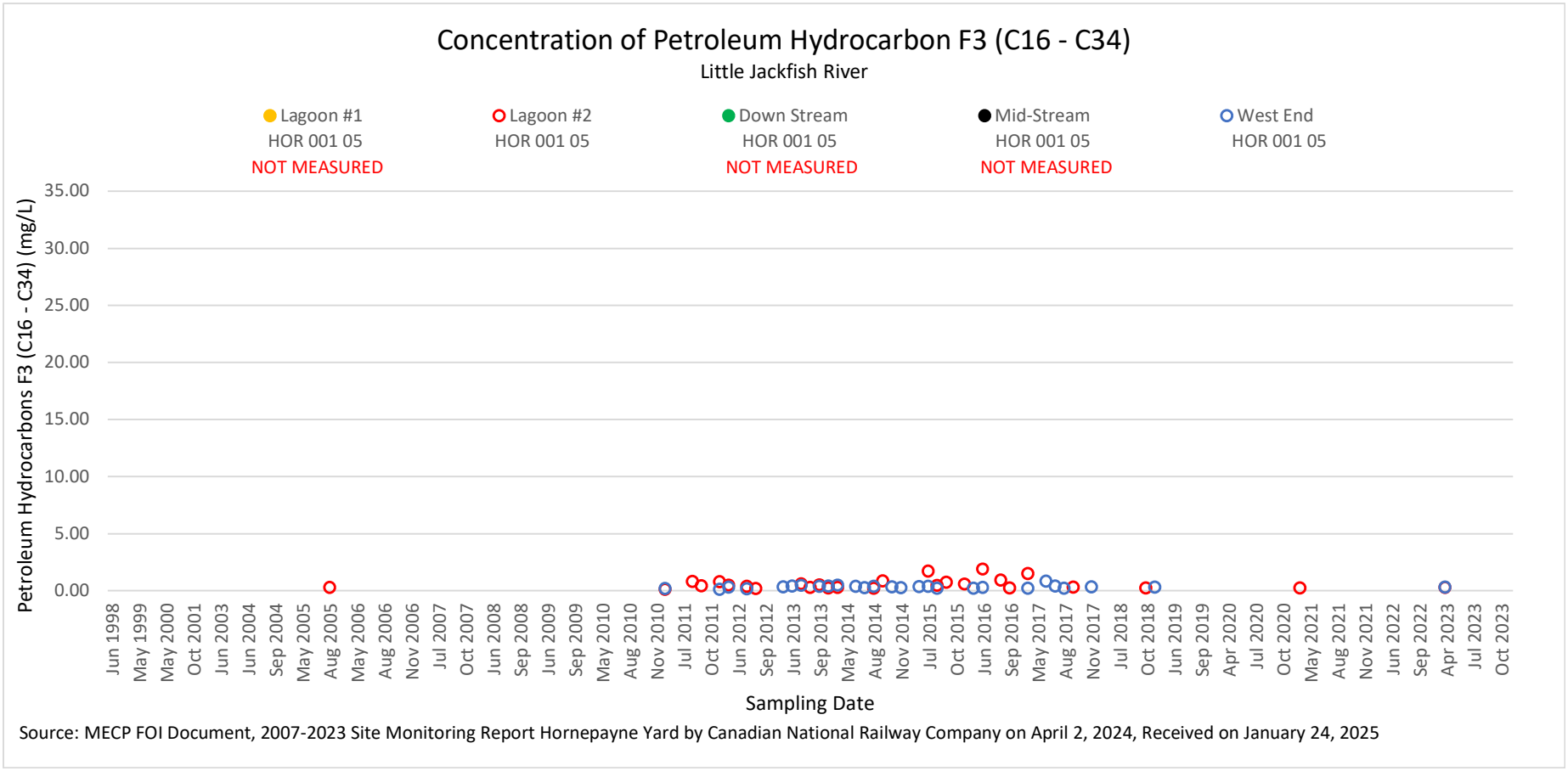

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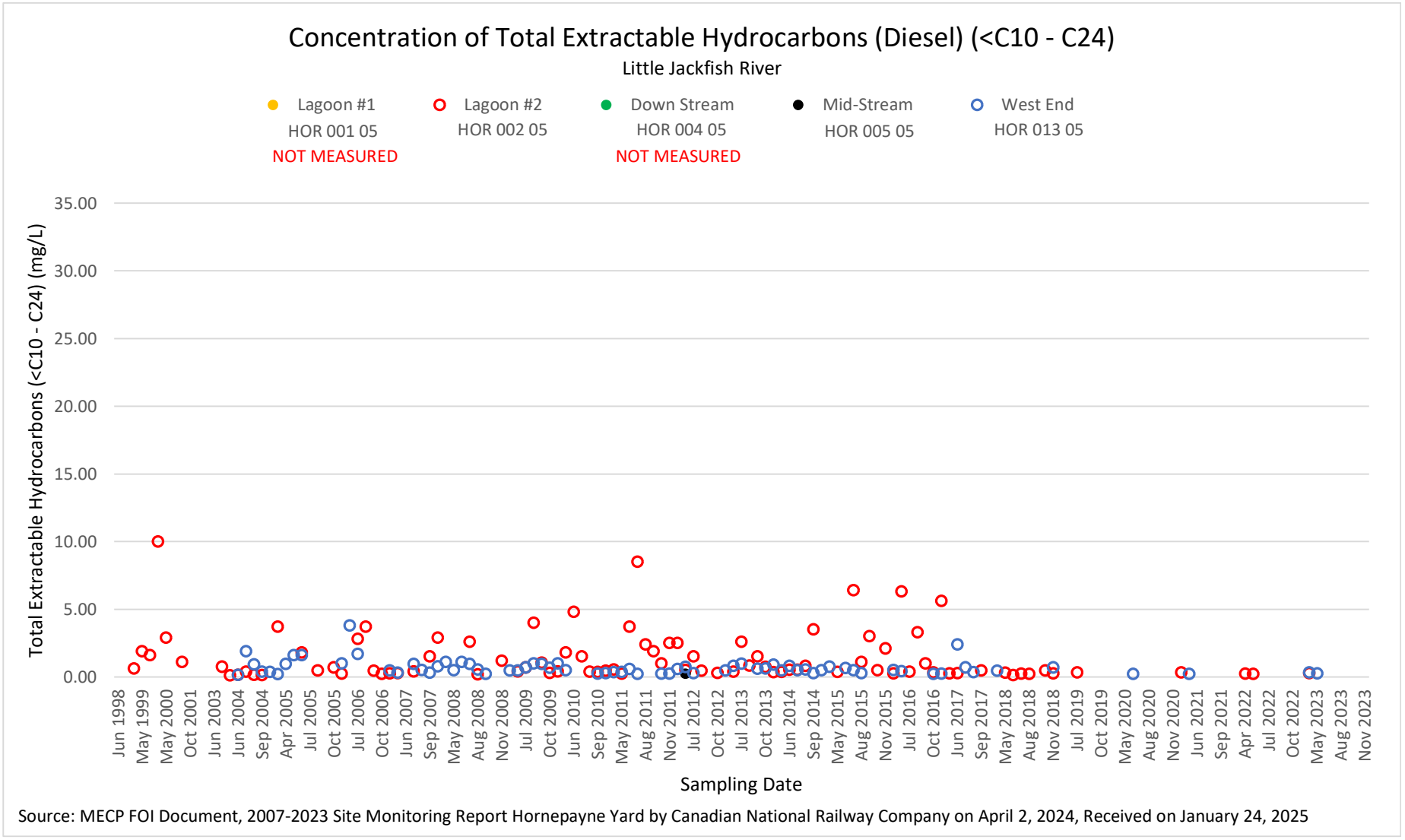

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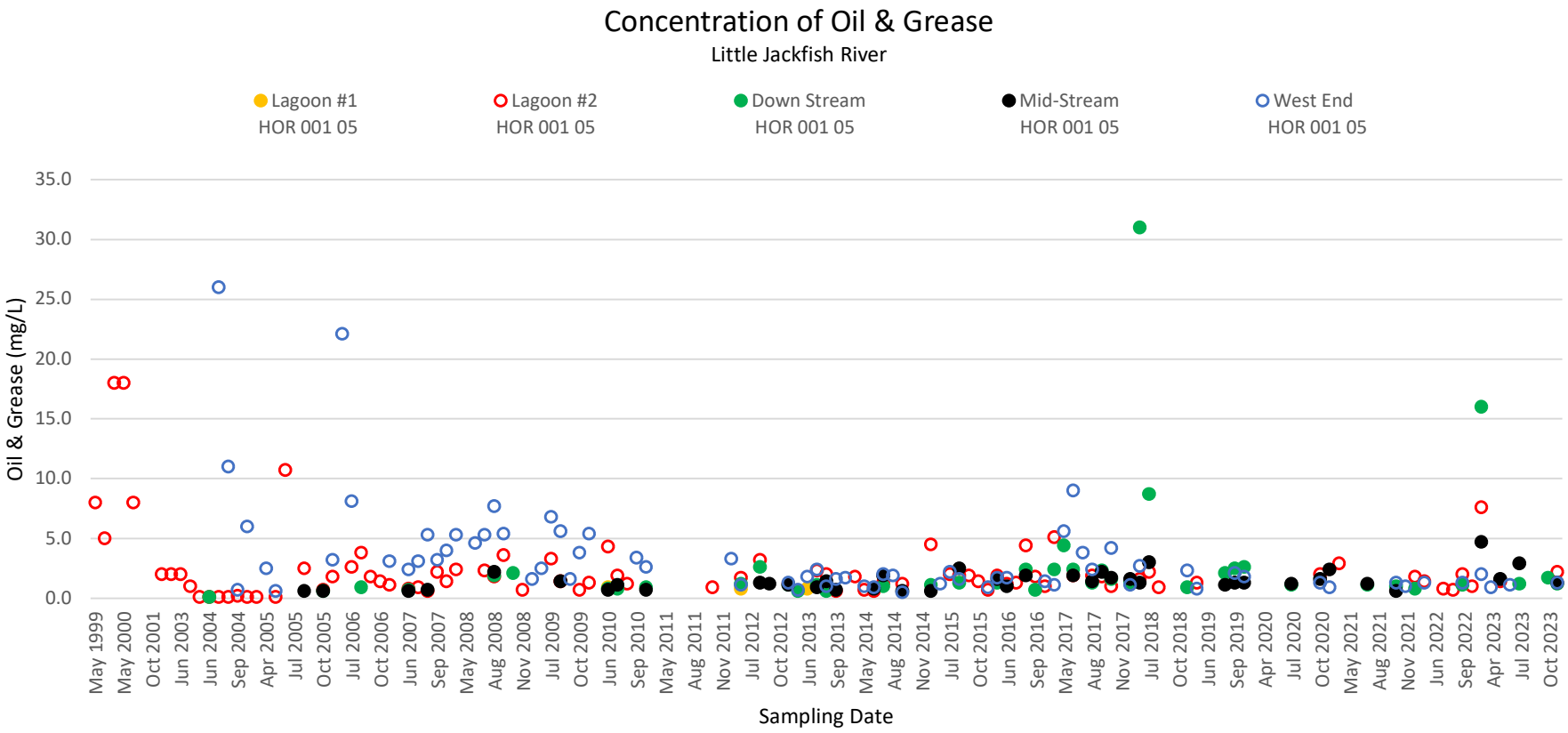

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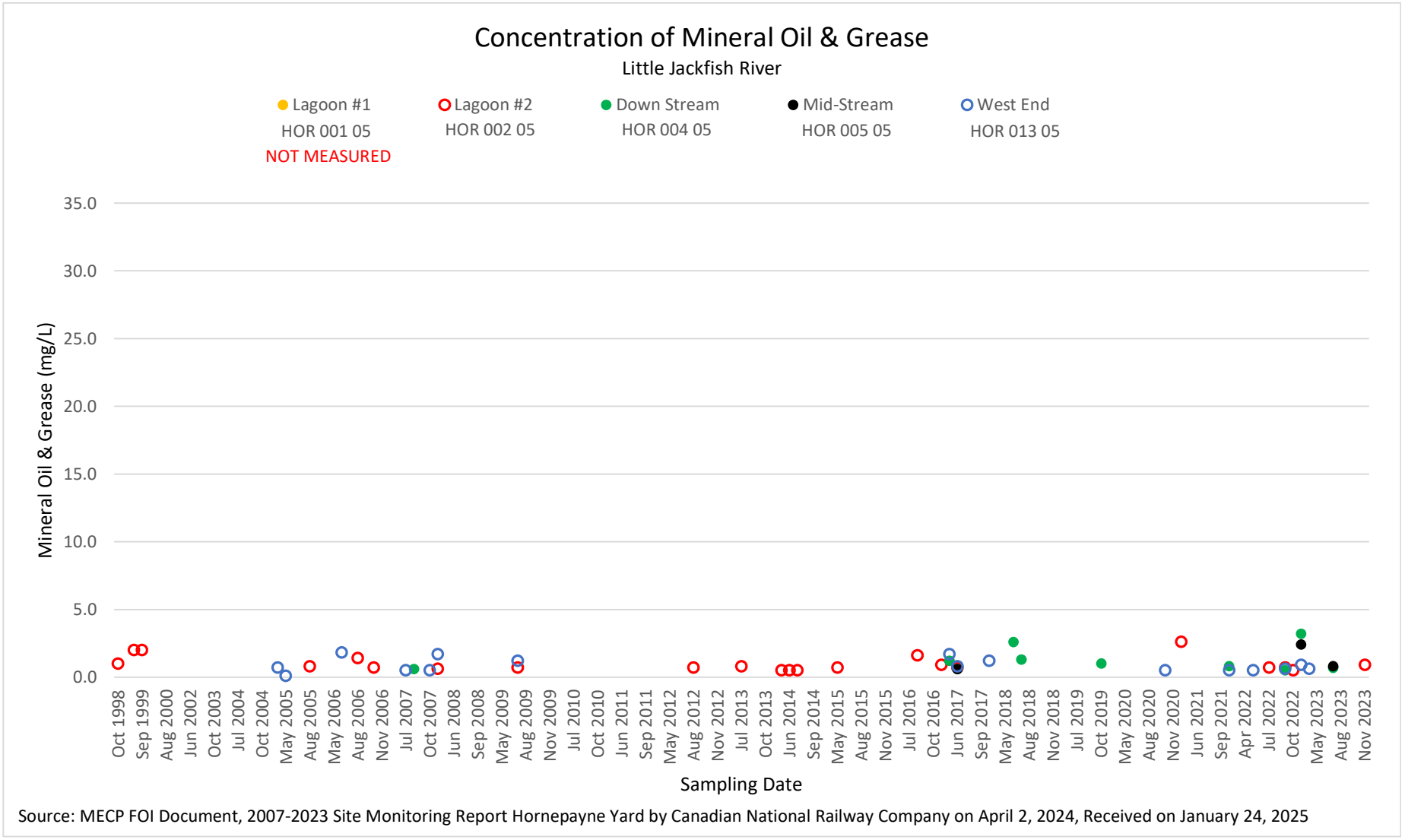

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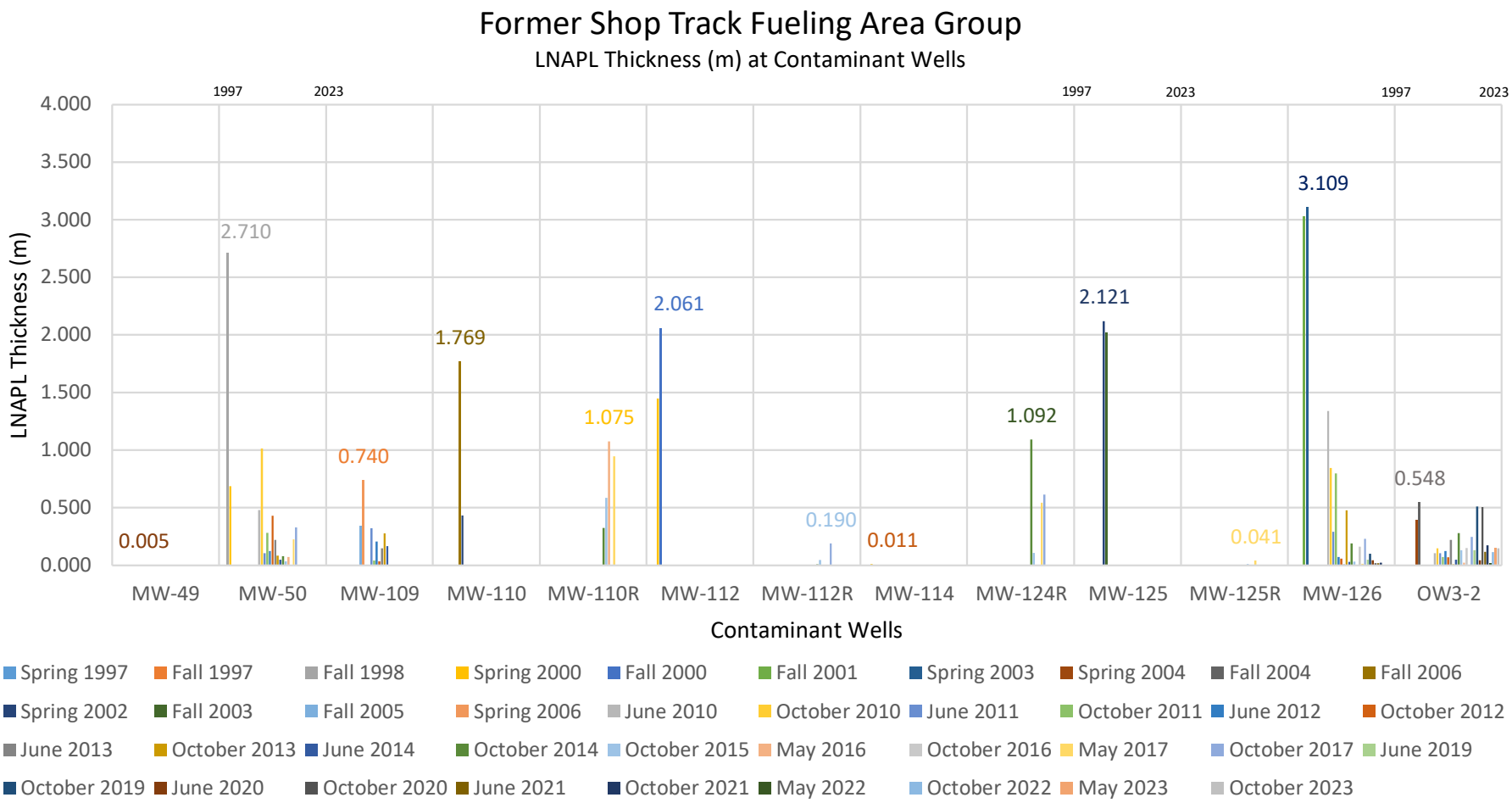
File: 22-407

Fig H.5.1



Source: MECP FOI Document, 2007-2023 Site Monitoring Report Hornepayne Yard by Canadian National Railway Company on April 2, 2024, Received on January 24, 2025

Date: June 10, 2025
File: 22-407

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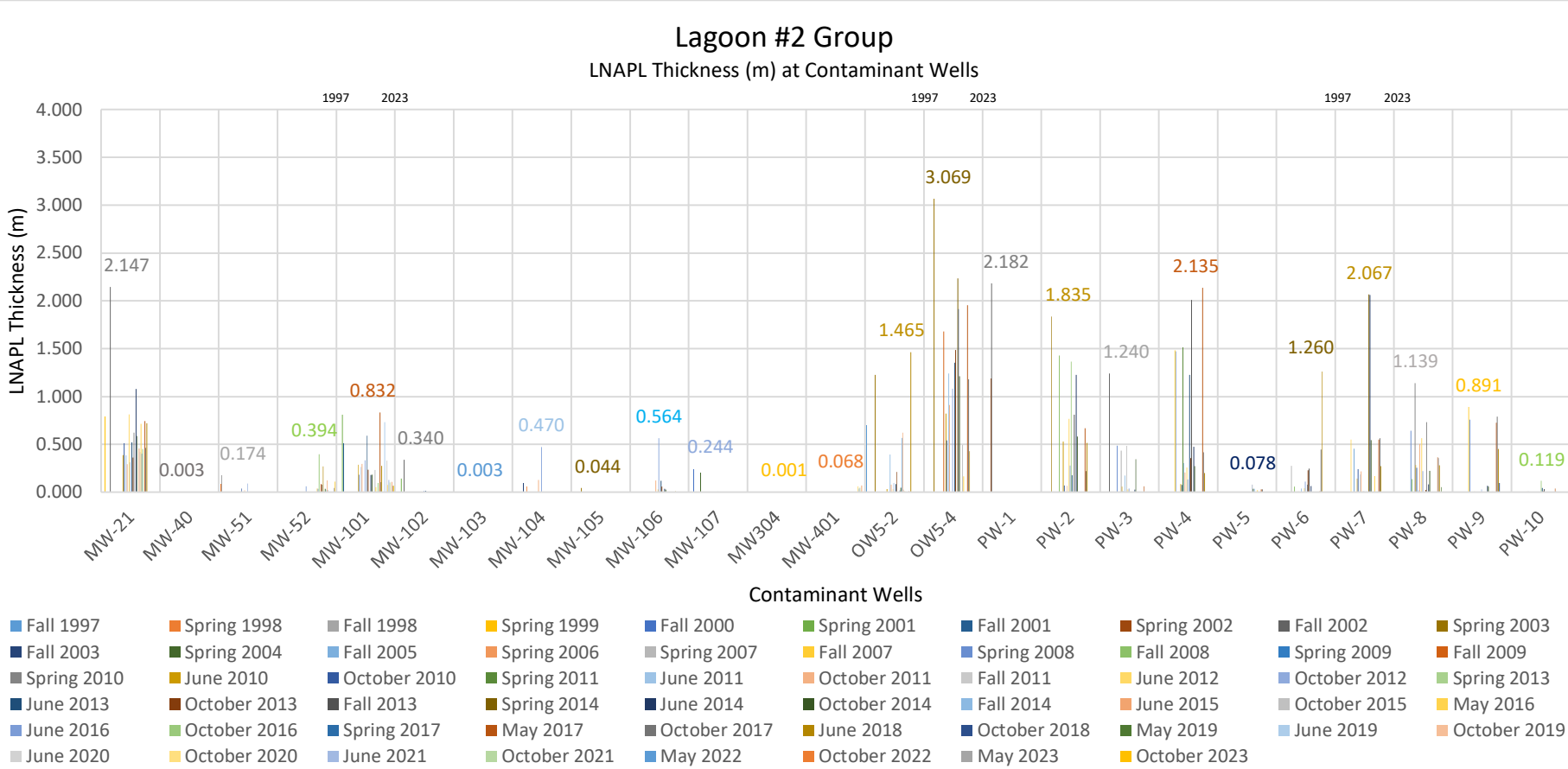
Fig H.5.2



Source: MECP FOI Document, 2007-2023 Site Monitoring Report Hornepayne Yard by Canadian National Railway Company on April 2, 2024, Received on January 24, 2025

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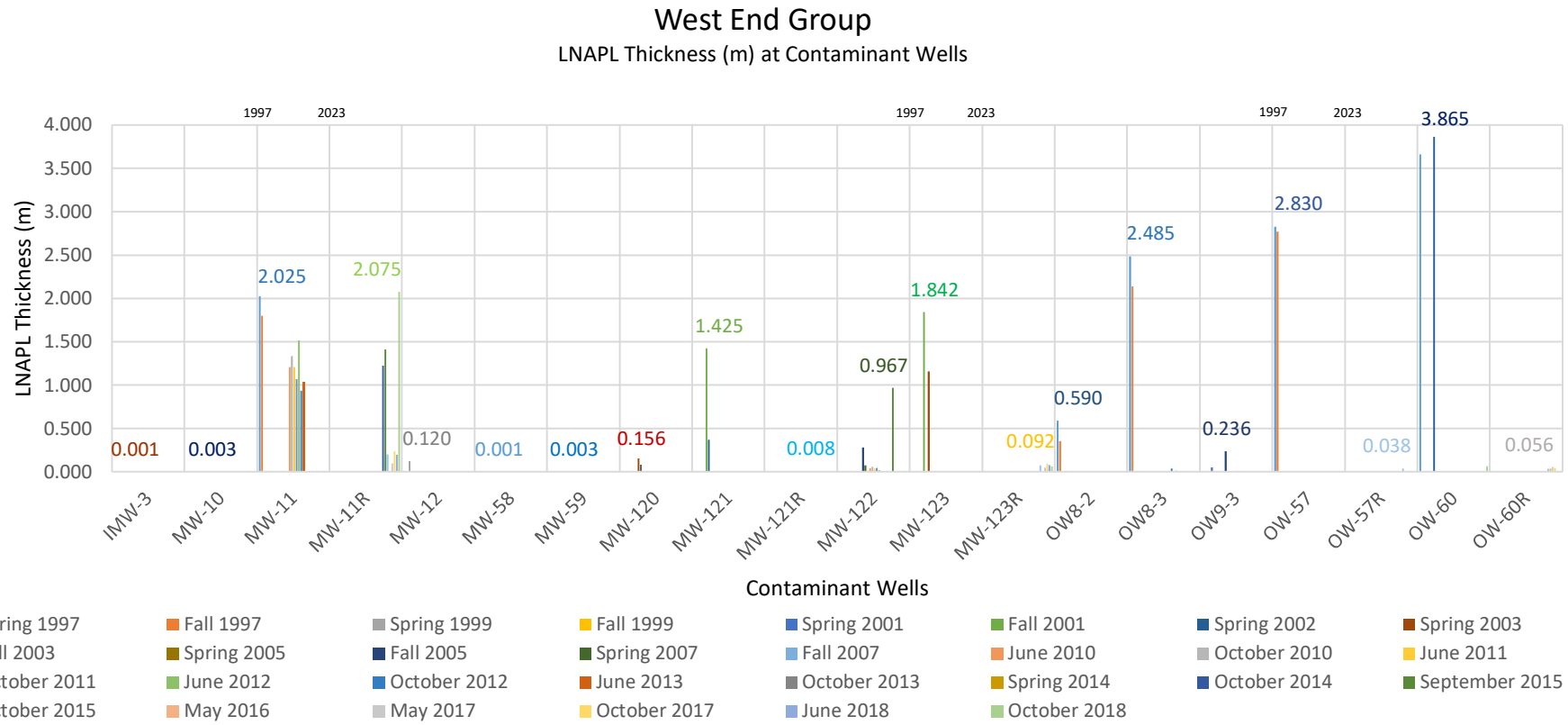
Fig H.5.3



Source: MECP FOI Document, 2007-2023 Site Monitoring Report Hornepayne Yard by Canadian National Railway Company on April 2, 2024, Received on January 24, 2025

Date: June 10, 2025
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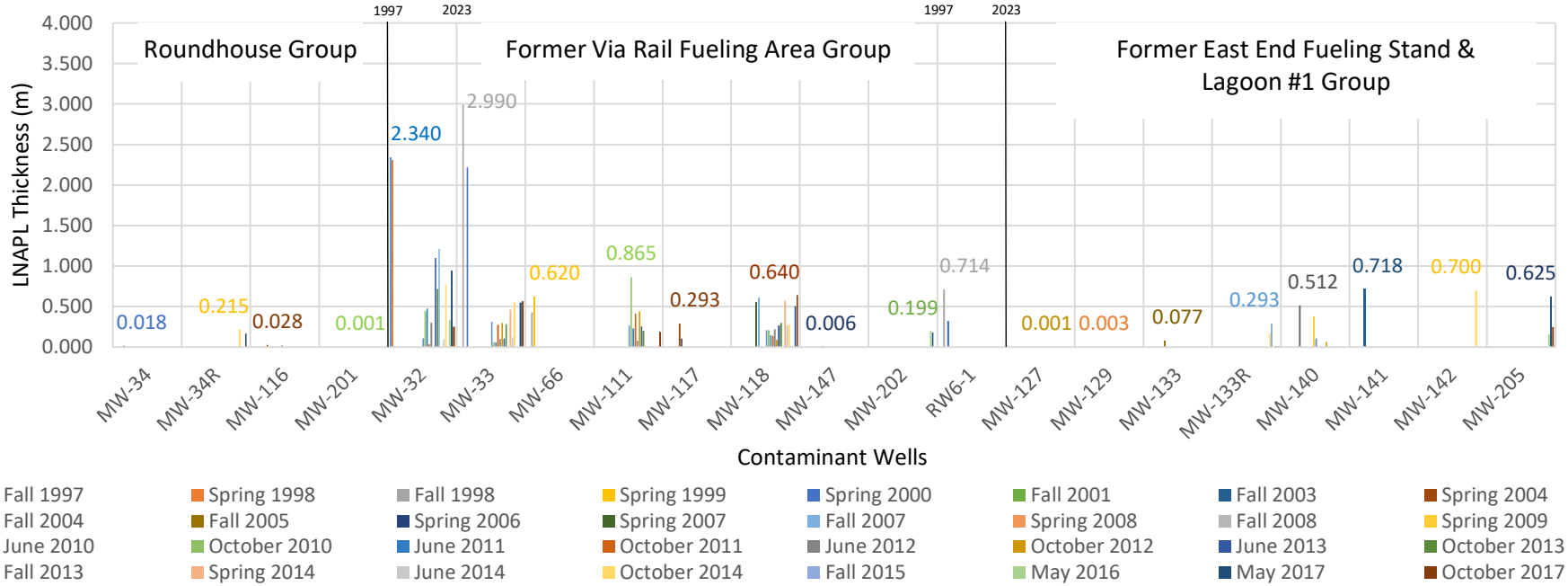
Fig H.5.4



Source: MECP FOI Document, 2007-2023 Site Monitoring Report Hornepayne Yard by Canadian National Railway Company on April 2, 2024, Received on January 24, 2025

Date: June 10, 2025
File: 22-407

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Table H.1: Borehole Free-phase Product / Head Space Vapour Hornepayne

Monitor Well (Borehole)	Date of Observation	LNAPL Depth (m)	Head Space Vapour (ppm)	Diesel Fuel [1] (ppm)	Consultant
MW10	Nov 10, 1994				XCG
MW11	Nov 11, 1994	FP			XCG
MW12	Nov 11, 1994				XCG
MW16	Nov 10, 1994				XCG
MW17	Nov 12, 1994				XCG
MW20	Nov 12, 1994				XCG
MW21	Nov 12, 1994	FP			XCG
MW24	Nov 12, 1994				XCG
MW32	Nov 14, 1994				XCG
MW33	Nov 14, 1994				XCG
MW-34(R)	Nov 14, 1994	FP			XCG
MW36	Nov 14, 1994				XCG
MW40	Sept 7, 1995				XCG
MW43	Sept 8, 1995				XCG
MW46	Sept 8, 1995				XCG
MW49	Sept 8, 1995				XCG
MW/PW-50	Sept 9, 1995				XCG
MW51	Sept 9, 1995				XCG
MW/PW-52	Sept 9, 1995				XCG
MW58					
MW59	May 15, 1996				XCG
MW-66	May 16, 1996	FP			XCG
OW3-2	28-09-96				Biogénie
OW5-1	01-10-96				Biogénie

1. Field Soil test (Petroflag) Diesel Fuel (ppm) (Values Rounded)

2. Reference Source: KGS Group, January 31, 2013. Canadian Nation Railway - Hornepayne Yard - 2012 Environmental Activities Final Report - Appendix C: Drill Logs

Monitor Well (Borehole)	Date of Observation	LNAPL Depth (m)	Head Space Vapour (ppm)	Diesel Fuel [1] (ppm)	Consultant
OW5-2	02-10-96	0.22			Biogénie
OW5-3	28-09-96				Biogénie
OW5-4	08-10-96	0.29			Biogénie
OW5-6	28-09-96				Biogénie
OW6-1	30-09-96				Biogénie
OW6-3	30-09-96				Biogénie
OW6-4	30-09-96				Biogénie
OW8-1	27-09-96				Biogénie
OW8-2	29-09-96	0.34			Biogénie
OW8-3	29-09-96	**2.22**			Biogénie
OW8-4	29-09-96	**1.84**			Biogénie
OW8-5	29-09-96	0.17			Biogénie
OW9-1	27-09-96				Biogénie
OW9-3	29-09-96				Biogénie
OW53	12-10-96	**2.97**			Biogénie
OW57	12-10-96	**2.80**			Biogénie
OW60	12-10-96	**2.29**			Biogénie
RW6-1	06-10-96	0.09			Biogénie
RW8-1	12-10-96	**2.59**			Biogénie
RW8-2	12-10-96	**1.83**			Biogénie
RW8-3	12-10-96	**1.51**			Biogénie
MW101	09/05/00		500		KGS
MW102	09/05/00		500		KGS
MW103	10/05/00				KGS
MW104	10/05/00		100		KGS
MW105	10/05/00		100		KGS
MW106	10/05/00		100		KGS
MW107	10/05/00		800		KGS

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1. Field Soil test (Petroflag) Diesel Fuel (ppm) (Values Rounded)

2. Reference Source: KGS Group, January 31, 2013. Canadian Nation Railway - Hornepayne Yard - 2012 Environmental Activities Final Report - Appendix C: Drill Logs

Monitor Well (Borehole)	Date of Observation	LNAPL Depth (m)	Head Space Vapour (ppm)	Diesel Fuel [1] (ppm)	Consultant
MW108	10/05/00		100		KGS
MW109	10/05/00		>2,000		KGS
MW110	11/05/00		>2,000		KGS
MW111	11/05/00				KGS
MW-112	11/05/00		80		KGS
MW-113	11/05/00		100		KGS
MW-114	12/05/00		25		KGS
MW-115	12/05/00		25		KGS
MW-116	12/05/00		>2,000		KGS
MW-117	25/07/01		300	600	KGS
MW-118	25/07/01		350	700	KGS
MW-119	26/07/01				KGS
MW-120	26/07/01		>2,000	>4,000	KGS
MW-121	26/07/01		200	400	KGS
MW-122	26/07/01		400	800	KGS
MW-123(R)	26/07/01		300	600	KGS
MW-124	27/07/01		80	160	KGS
MW-125	27/07/01		200	400	KGS
MW-126	27/07/01		350	700	KGS
MW127	01/08/02				KGS
MW128	01/08/02				KGS
MW129	01/08/02				KGS
MW-130	01/08/02		160	320	KGS
MW-131	01/08/02		400	800	KGS
MW-132	01/08/02		180	360	KGS
MW-133	01/08/02		330	660	KGS
MW-140	23 Sept 03		350	700	KGS
MW-141	23 Sept 03		240	480	KGS
MW-142	23 Sept 03		640	1,280	KGS

1. Field Soil test (Petroflag) Diesel Fuel (ppm) (Values Rounded)

2. Reference Source: KGS Group, January 31, 2013. Canadian Nation Railway - Hornepayne Yard - 2012 Environmental Activities Final Report - Appendix C: Drill Logs

Monitor Well (Borehole)	Date of Observation	LNAPL Depth (m)	Head Space Vapour (ppm)	Diesel Fuel [(1)] (ppm)	Consultant
MW-143	23 Sept 03		300	600	KGS
MW-144	23 Sept 03		330	660	KGS
MW-145	23 Sept 03		130	260	KGS
MW-146	23 Sept 03		140	280	KGS
MW-147	23 Sept 03		220	440	KGS

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1. Field Soil test (Petroflag) Diesel Fuel (ppm) (Values Rounded)

2. Reference Source: KGS Group, January 31, 2013. Canadian Nation Railway - Hornepayne Yard - 2012 Environmental Activities Final Report - Appendix C: Drill Logs

Table H.2: Hydrocarbon Peak Values (2010 to 2023) (µg/L)
East End Groundwater
Hornepayne CN Rail Yard

		2010 to 2014				October 2023		
Groundwater Monitor	**Date**	**F1 (C6 - C10)**	**F2 (C10 - C16)**	**F3 (C16 - C34)**	**F4 (C34 - C50)**	**F2 (C10 - C16)**	**F3 (C16 - C34)**	**F4 (C34 - C50)**
Criteria		420	150	500	500	150	500	500
MW20	Oct 3, 2012	-	**13,000**	**7,500**	<100	**530**	320	<200
MW40	Oct 5, 2012		**930**	**630**	<100	<100	<200	<200
MW43	Oct 8, 2013		**1,100**	450	<200	140	<200	<200
MW46	Oct 8, 2013		**3,400**	**1,800**	<200	**210**	<200	<200
MW52	Oct 3, 2012		**190,000**	**50,000**	170			
OW5-1	Oct 3, 2012		**8,400**	**4,400**	<100	<100	<200	<200
OW5-2	Jun 22, 2010	**18,000**	**3,000,000**	**1,300,000**	**33,000**			
MW21	Oct 3, 2012		**1,600,000**	**680,000**	**26,000**			
MW24	Oct 3, 2012		**1,100**	480	<100	<100	<200	<200
MW49	Oct 5, 2011		**120,000**	**130,000**	**14,000**	<100	<200	<200
MW51	Oct 5, 2011		**3,000,000**	**1,600,000**	**100,000**			
MW101	Oct 5, 2011		**2,300,000**	**1,000,000**	**44,000**			
MW102	Oct 16, 2014		**4,500**	**2,700**	<200	**740**	**530**	<200
MW103	Oct 9, 2013		**40,000**	**15,000**	460	<100	<200	<200
MW104	Oct 3, 2012		**1,400,000**	**420,000**	**1,700**	**3,100**	**1,200**	230
MW106	Oct 5, 2011		**4,900,000**	**1,700,000**	<100	**3,800**	**1,900**	<200
MW107	Oct 6, 2012		**170,000**	**69,000**	340	**350**	310	<200
MW108	Oct 5, 2011		**4,500**	**2,200**	140	110	290	<200
MW109	Oct 8, 2013		**2,000,000**	**850,000**	**77,000**	**2,700**	490	<200
MW114	Oct 8, 2013		**100,000**	**61,000**	**1,400**	**1,300**	290	<200
MW115	Oct 3, 2012		**3,900**	**1,500**	<100			
MW126	Oct 5, 2011		**1,300,000**	**520,000**	**45,000**			

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1. Reference Source: KGS Group, February 4, 2016. Hornepayne Yard 2015 ECA Compliance Monitoring Report.

MECP April 15, 2011 Table 9 Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground water Condition.

Groundwater Monitor	Date	2010 to 2014 F1 (C6 - C10)	F2 (C10 - C16)	F3 (C16 - C34)	F4 (C34 - C50)	October 2023 F2 (C10 - C16)	F3 (C16 - C34)	F4 (C34 - C50)
OW3-2	Oct 5, 2011		**3,000,000**	**1,200,000**	**30,000**			
MW402						**210**	270	<200
MW403						**250**	280	<200
MW404						**170**	<200	<200
MW405						110	<200	<200
MW406						<100	<200	<200
MW407						120	<200	<200
MW408						<100	<200	<200
OW5-3	June 12, 2013	240	**63,000**	**38,000**	**1,600**	**360**	410	<200

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1. Reference Source: KGS Group, February 4, 2016. Hornepayne Yard 2015 ECA Compliance Monitoring Report.

MECP April 15, 2011 Table 9 Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground water Condition.

Table H.3

Contaminant Site Monitoring
Canadian National Railway Company - Hornepayne Yard

Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Table 2: Potable Ground Water Condition [1]	**CRITERIA**	**15-Apr-11**	**0.15**	**0.50**	**0.50**	**NS**	**NS**	**NS**	**NS**
Table 3: Non-Potable Ground Water Condition [2]	**CRITERIA**	**15-Apr-11**	**0.15**	**0.50**	**0.50**	**NS**	**NS**	**NS**	**NS**
Table 8: Within 30 m of a Potable Water Body [3]	**CRITERIA**	**15-Apr-11**	**0.15**	**0.50**	**0.50**	**NS**	**NS**	**NS**	**NS**
Table 9: Within 30 m of a Non-Potable Water Body [4]	**CRITERIA**	**15-Apr-11**	**0.15**	**0.50**	**0.50**	**NS**	**NS**	**NS**	**NS**
MOE CofA [5]	**CRITERIA**	**29-Apr-10**	**1000 (F1 + F2)**	**1000 (F3 + F4)**		**NS**	**NS**	**NS**	**NS**
Little Jackfish River Lagoon #2 Surface Water	HOR 002 05	June 1998	-	-	-	-	1.0	<0.5	
		October 1998	-	-	-	<0.2	2.0	1.0	
		November 1998	-	-	-	0.62	-	-	
		May 1999	-	-	-	1.90	8.0	2.0	
		September 1999	-	-	-	1.60	5.0	2.0	
		April 2000	-	-	-	10.00	18.0	-	
		May 2000	-	-	-	2.90	18.0	-	
		August 2000	-	-	-	<0.2	8.0	-	
		June 2001	-	-	-	1.10	-	-	
		October 2001	-	-	-	<0.2	-	-	
		June 2002	-	-	-	<0.2	2.0	-	
		May 2003	-	-	-	<0.2	2.0	-	
		June 2003	-	-	-	<0.2	2.0	-	
		October 2003	-	-	-	0.75	1.0	-	
		May 2004	-	-	-	0.11	0.1	<0.1	
		June 2004	-	-	-	0.15	0.1	<0.1	
		July 2004	-	-	-	0.38	0.1	<0.1	
		August 2004	-	-	-	0.15	0.1	<0.1	
		September 2004	-	-	-	0.13	0.2	<0.1	
		October 2004	-	-	-	<0.1	0.1	<0.1	
		November 2004	-	-	-	3.70	0.1	<0.1	
		May 2005	-	-	-	<0.1	0.1	<0.1	
		June 2005	-	-	-	1.80	10.7	<0.1	
		July 2005	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2005	0.45	0.29	<0.1	0.48	2.5	0.8	
		September 2005	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2005	-	-	-	0.70	0.7	<0.5	
		May 2006	-	-	-	0.24	1.8	<0.5	
		June 2006	-	-	-	<0.1	<0.5	<0.5	
		July 2006	-	-	-	2.80	2.6	<0.5	
		August 2006	-	-	-	3.70	3.8	1.4	
		September 2006	-	-	-	0.46	1.8	<0.5	
		October 2006	-	-	-	0.22	1.4	0.7	
		November 2006	-	-	-	0.25	1.1	<0.5	
		May 2007	-	-	-	0.27	<0.5	<0.5	
		June 2007	-	-	-	<0.1	0.8	<0.5	
		July 2007	-	-	-	0.40	0.9	<0.5	
		August 2007	-	-	-	<0.1	0.6	<0.5	
		September 2007	-	-	-	1.50	2.2	<0.5	
		October 2007	-	-	-	2.90	1.4	<0.5	
		November 2007	-	-	-	<0.1	2.4	0.6	
		May 2008	-	-	-	<0.1	<0.5	<0.5	
		June 2008	-	-	-	<0.1	<0.5	<0.5	
		July 2008	-	-	-	2.60	2.3	<0.5	
		August 2008	-	-	-	0.18	1.8	<0.5	
		September 2008	-	-	-	<0.1	3.6	<0.5	
		October 2008	-	-	-	<0.1	<0.5	<0.5	
		November 2008	-	-	-	1.20	0.7	<0.5	
		June 2009	-	-	-	0.40	<0.5	<0.5	
		July 2009	-	-	-	0.69	3.3	0.7	
		August 2009	-	-	-	4.00	1.4	<0.5	
		September 2009	-	-	-	1.05	<0.5	<0.5	
		October 2009	-	-	-	0.29	0.7	<0.5	
		November 2009	-	-	-	0.40	1.3	<0.5	
		May 2010	-	-	-	1.80	<0.5	<0.5	
		June 2010	-	-	-	4.80	4.3	<0.5	

Contaminant Site Monitoring

Canadian National Railway Company - Hornepayne Yard

Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Lagoon #2 Surface Water	HOR 002 05	July 2010	-	-	-	1.50	1.9	<0.5	
		August 2010	-	-	-	0.39	1.2	<0.5	
		September 2010	-	-	-	0.37	<0.5	<0.5	
		October 2010	-	-	-	0.45	<0.5	<0.5	
		November 2010	-	-	-	0.54	<0.5	<0.5	
		May 2011	0.12	0.12	<0.1	0.24	<0.5	<0.5	
		June 2011	-	-	-	3.70	<0.5	<0.5	
		July 2011	-	-	-	8.50	<0.5	<0.5	
		August 2011	1.60	0.82	<0.1	2.40	<0.5	<0.5	
		September 2011	1.50	0.42	<0.1	1.90	<0.5	<0.5	
		October 2011	-	-	-	1.00	0.9	<0.5	
		November 2011	1.60	0.78	<0.1	2.50	<0.5	<0.5	
		May 2012	1.00	0.50	<0.1	2.50	<0.5	<0.5	
		June 2012	-	-	-	0.52	1.7	<0.5	
		July 2012	1.20	0.38	<0.1	1.50	<0.5	<0.5	
		August 2012	0.33	0.18	<0.1	0.46	3.2	0.7	
		September 2012	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2012	0.20	<0.1	<0.1	0.29	<0.5	<0.5	
		November 2012	<0.1	<0.1	<0.1	<0.1	1.2	<0.5	
		June 2013	0.26	<0.2	<0.2	0.38	<0.5	<0.5	
		July 2013	2.10	0.61	<0.2	2.60	2.3	0.8	
		August 2013	0.65	0.29	<0.2	0.82	2.0	<0.5	
		September 2013	1.00	0.51	<0.2	1.50	0.6	<0.5	
		October 2013	0.51	0.24	<0.2	0.73	<0.5	<0.5	
		November 2013	0.18	0.29	<0.2	0.35	1.8	<0.5	
		May 2014	0.26	<0.2	<0.2	0.37	0.7	0.5	
		June 2014	0.41	<0.2	<0.2	0.53	0.6	0.5	
		July 2014	0.37	<0.2	<0.2	0.53	1.3	0.5	
		August 2014	0.58	0.21	<0.2	0.80	<0.5	<0.5	
		September 2014	2.70	0.85	<0.2	3.50	1.2	<0.5	
		October 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2014	0.12	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2015	0.24	<0.2	<0.2	0.37	4.5	0.7	
		June 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2015	4.80	1.70	<0.2	6.40	2.0	<0.5	
		August 2015	0.79	0.46	<0.2	1.10	1.9	<0.5	
		September 2015	2.40	0.74	<0.2	3.00	1.9	<0.5	
		October 2015	0.33	<0.2	<0.2	0.49	1.4	<0.5	
		November 2015	1.50	0.58	<0.2	2.10	0.7	<0.5	
		May 2016	0.13	<0.2	<0.2	0.25	1.9	<0.5	
		June 2016	4.50	1.90	<0.2	6.30	1.2	<0.5	
		July 2016	0.25	<0.2	<0.2	0.38	1.3	<0.5	
		August 2016	2.50	0.92	<0.2	3.30	4.4	1.6	
		September 2016	0.85	0.23	<0.2	1.00	1.8	<0.5	
		October 2016	0.21	<0.2	<0.2	0.32	1.0	<0.5	
		November 2016	4.30	1.50	<0.2	5.60	5.1	0.9	
		May 2017	0.15	<0.2	<0.2	0.26	<0.5	<0.5	
		June 2017	0.18	<0.2	<0.2	0.28	1.9	0.7	
		July 2017	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2017	<0.1	<0.2	<0.2	<0.2	1.9	<0.5	
		September 2017	0.22	0.30	<0.2	0.48	1.8	<0.5	
		October 2017	<0.1	<0.2	<0.2	<0.2	1.0	<0.5	
		November 2017	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2018	0.21	<0.2	<0.2	0.31	1.4	<0.5	
		June 2018	0.13	<0.2	<0.2	0.13	1.6	<0.5	
		July 2018	0.14	<0.2	<0.2	0.24	2.2	<0.5	
		August 2018	0.14	<0.2	<0.2	0.22	0.9	<0.5	
		September 2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2018	0.28	0.24	<0.2	0.48	<0.5	<0.5	
		November 2018	<0.2	<0.2	<0.2	0.25	<0.5	<0.5	
		May 2019	<0.1	<0.2	<0.2	<0.2	1.3	<0.5	
		June 2019	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2019	0.21	<0.2	<0.2	0.33	<0.5	<0.5	
		August 2019	REMEDIAL	REMEDIAL	REMEDIAL	REMEDIAL	REMEDIAL	REMEDIAL	REMEDIAL
		September 2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		November 2019	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN
		April 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY

Contaminant Site Monitoring

Canadian National Railway Company - Hornepayne Yard

Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Lagoon #2 Surface Water	HOR 002 05	June 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2020	<0.1	<0.2	<0.2	<0.2	2.0	<0.5	
		November 2020	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN
		April 2021	0.14	0.23	<0.2	0.33	2.9	2.6	
		May 2021	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		June 2021	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		July 2021	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2021	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2021	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2021	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN
		April 2022	<0.1	<0.2	<0.2	0.24	1.8	<0.5	
		May 2022	<0.1	<0.2	<0.2	0.21	1.4	<0.5	
		June 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2022	<0.1	<0.2	<0.2	<0.2	0.8	0.7	
		August 2022	<0.1	<0.2	<0.2	<0.2	0.7	<0.5	
		September 2022	<0.1	<0.2	<0.2	<0.2	2.0	0.7	
		October 2022	<0.1	<0.2	<0.2	<0.2	1.0	0.5	
		November 2022	<0.1	<0.2	<0.2	<0.2	7.6	<0.5	
		April 2023	<0.1	0.29	<0.2	0.27	<0.5	<0.5	
		May 2023	<0.1	<0.2	<0.2	<0.2	1.4	<0.5	
		June 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2023	<0.1	<0.2	<0.2	<0.2	2.2	0.9	
Little Jackfish River Lagoon #2 Groundwater	MW-20	June 2010	2.60	1.10	<0.1				-
		October 2010	3.60	1.70	<0.1				-
		June 2011	2.20	0.92	<0.1				-
		October 2011	2.90	1.50	<0.1				-
		June 2012	5.80	3.30	0.18				-
		October 2012	13.00	7.50	<0.1				-
		June 2013	10.00	5.50	<0.2				-
		October 2013	3.90	2.00	<0.2				-
		June 2014	11.00	4.20	<0.2				-
		October 2014	2.50	1.30	<0.2				-
		June 2015	1.60	0.53	<0.2				-
		October 2015	0.82	0.22	<0.2				-
		June 2016	2.10	0.65	<0.2				-
		October 2016	0.71	0.23	<0.2				-
		May 2017	0.73	0.34	<0.2				-
		October 2017	2.20	0.86	<0.2				-
		June 2018	3.60	1.10	<0.2				-
		October 2018	3.10	1.10	<0.2				-
		June 2019	1.10	0.36	<0.2				-
		October 2019	1.00	0.33	<0.2				-
		June 2020	0.40	0.30	<0.2				-
		October 2020	0.92	0.62	<0.2				-
		June 2021	0.63	0.26	<0.2				-
		October 2021	0.66	0.32	<0.2				-
		May 2022	0.15	0.23	<0.2				-
		October 2022	0.35	<0.2	<0.2				-
		May 2023	0.37	0.21	<0.2				-
		October 2023	0.53	0.32	<0.2				-
	MW-21	Spring 1999							0.795
		Fall 2002							2.147
		June 2010							0.387
		October 2010	1600.00	610.00	11.00				0.512
		June 2011							0.385
		October 2011	1600.00	680.00	26.00				0.290
		June 2012							0.814
		October 2012	560.00	240.00	8.80				0.312
		June 2013							0.520
		October 2013	380.00	140.00	0.73				0.362
		Fall 2013							0.620

Contaminant Site Monitoring

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Lagoon #2 Groundwater	MW-21	June 2014							1.078
		October 2014	-	-	-				0.587
		June 2015							0.458
		October 2015	-	-	-				0.418
		May 2016							0.713
		June 2016	-	-	-				0.402
		October 2016	-	-	-				0.453
		May 2017							0.741
		October 2017							0.463
		June 2018							0.719
	MW-40	Spring 2007							0.003
		June 2010	<0.1	<0.1	<0.1				-
		October 2010	<0.1	<0.1	<0.1				-
		June 2011	<0.1	<0.1	<0.1				-
		October 2011	0.93	0.63	<0.1				-
		June 2012	<0.1	<0.1	<0.1				-
		October 2012	0.41	0.28	<0.1				-
		June 2013	0.52	0.25	<0.2				-
		October 2013	0.48	0.31	<0.2				-
		June 2014	0.13	<0.2	<0.2				-
		October 2014	0.15	<0.2	<0.2				-
		June 2015	<0.1	<0.2	<0.2				-
		October 2015	0.10	<0.2	<0.2				-
		June 2016	<0.1	<0.2	<0.2				-
		October 2016	<0.1	<0.2	<0.2				-
		Spring 2017							0.003
		May 2017	<0.1	<0.2	<0.2				-
		October 2017	<0.1	<0.2	<0.2				-
		June 2018	<0.1	<0.2	<0.2				-
		October 2018	<0.1	<0.2	<0.2				-
		June 2019	0.14	<0.2	<0.2				-
		October 2019	0.13	<0.2	<0.2				-
		June 2020	<0.1	<0.2	<0.2				-
		October 2020	0.58	0.38	<0.2				-
		June 2021	<0.1	<0.2	<0.2				-
		October 2021	<0.1	<0.2	<0.2				-
		May 2022	<0.1	<0.2	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		May 2023	<0.1	<0.2	<0.2				-
		October 2023	<0.1	<0.2	<0.2				-
	MW-43	June 2010	0.74	0.40	<0.1				-
		October 2010	0.66	0.17	<0.1				-
		June 2011	0.83	0.30	<0.1				-
		October 2011	0.30	0.11	<0.1				-
		June 2012	0.23	<0.1	<0.1				-
		October 2012	0.27	<0.1	<0.1				-
		June 2013	0.64	<0.2	<0.2				-
		October 2013	1.10	0.45	<0.2				-
		June 2014	0.94	0.38	<0.2				-
		October 2014	0.74	0.26	<0.2				-
		June 2015	<0.1	<0.2	<0.2				-
		October 2015	0.29	<0.2	<0.2				-
		June 2016	<0.1	<0.2	<0.2				-
		October 2016	0.16	<0.2	<0.2				-
		May 2017	0.14	<0.2	<0.2				-
		October 2017	0.20	<0.2	<0.2				-
		June 2018	0.22	<0.2	<0.2				-
		October 2018	0.74	0.38	<0.2				-
		June 2019	1.90	1.00	<0.2				-
		October 2019	0.17	0.20	<0.2				-
		June 2020	0.14	<0.2	<0.2				-
		October 2020	0.80	0.53	<0.2				-
		June 2021	0.14	0.21	<0.2				-
		October 2021	0.46	0.28	<0.2				-
		May 2022	0.18	<0.2	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		May 2023	0.21	<0.2	<0.2				-
		October 2023	0.14	<0.2	<0.2				-
	MW-46	June 2010	<0.1	<0.1	<0.1				-

Contaminant Site Monitoring

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Lagoon #2 Groundwater	MW-46	October 2010	<0.1	<0.1	<0.1				-
		June 2011	<0.1	<0.1	<0.1				-
		October 2011	0.62	0.35	<0.1				-
		June 2012	<0.1	<0.1	<0.1				-
		October 2012	1.40	2.00	0.55				-
		June 2013	0.45	0.21	<0.2				-
		October 2013	3.40	1.80	<0.2				-
		June 2014	0.23	<0.2	<0.2				-
		October 2014	0.26	<0.2	<0.2				-
		June 2015	<0.1	<0.2	<0.2				-
		October 2015	0.32	<0.2	<0.2				-
		June 2016	<0.1	<0.2	<0.2				-
		October 2016	0.26	<0.2	<0.2				-
		May 2017	0.14	<0.2	<0.2				-
		October 2017	0.26	<0.2	<0.2				-
		June 2018	<0.1	<0.2	<0.2				-
		October 2018	<0.1	<0.2	<0.2				-
		June 2019	0.13	<0.2	<0.2				-
		October 2019	0.19	<0.2	<0.2				-
		June 2020	0.13	<0.2	<0.2				-
		October 2020	0.13	<0.2	<0.2				-
		June 2021	0.20	<0.2	<0.2				-
		October 2021	0.14	<0.2	<0.2				-
		May 2022	0.19	0.22	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		May 2023	0.18	<0.2	<0.2				-
		October 2023	0.21	<0.2	<0.2				-
	MW-51	Spring 1998							0.084
		Fall 1998							0.174
		June 2010							0.006
		October 2010	230.00	96.00	5.50				0.038
		October 2011	3000.00	1600.00	100.00				0.020
		October 2012	600.00	310.00	21.00				0.091
		October 2013	1200.00	580.00	41.00				-
		October 2014	290.00	180.00	13.00				-
		October 2015	90.00	49.00	3.70				-
		October 2016	2.50	0.98	<0.2				-
		May 2017							0.002
		October 2017	7.50	3.60	0.27				-
		October 2018	0.58						-
		October 2019	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]
	MW-52	June 2010	0.56	<0.1	<0.1				-
		October 2010	0.60	0.15	<0.1				-
		June 2011	5.50	1.40	<0.1				-
		October 2011	33.00	10.00	<0.1				-
		June 2012	54.00	16.00	0.12				-
		October 2012	190.00	50.00	0.17				0.059
		June 2013	37.00	11.00	<0.2				-
		October 2013	130.00	36.00	<0.2				-
		June 2014	54.00	17.00	<0.2				-
		October 2014	27.00	8.80	<0.2				-
		June 2015							0.007
		October 2015	13.00	31.00	<0.2				-
		May 2016							0.037
		June 2016	-	-	-				0.035
		October 2016	-	-	-				0.394
		May 2017							0.081
		October 2017							0.078
		June 2018							0.268
		October 2018	0.26						0.006
		May 2019							0.034
		June 2019							0.026
		October 2019							0.122
		June 2020							0.023
		October 2020							0.002
		June 2021							0.001
		October 2021							0.001
		May 2022							0.004
		October 2022							0.004

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Lagoon #2 Groundwater	MW-52	May 2023							0.042
		October 2023							0.110
	MW-101	Spring 2001							0.810
		Fall 2001							0.509
		June 2010							0.285
		October 2010	1800.00	620.00	13.00				0.182
		June 2011							0.263
		October 2011	2300.00	1000.00	44.00				0.295
		October 2012	380.00	160.00	6.50				0.334
		June 2013							0.590
		October 2013	280.00	120.00	4.90				0.235
		June 2014							0.178
		October 2014	-	-	-				0.182
		October 2015	-	-	-				0.231
		May 2016							0.050
		October 2016	-	-	-				0.097
		May 2017							0.832
		October 2017							0.105
		June 2018							0.274
		October 2018							0.004
		June 2019							0.731
		October 2019	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]
		June 2020							0.330
		October 2020							0.075
		June 2021							0.128
		October 2021							0.102
		October 2022							0.108
		May 2023							0.065
		October 2023							0.065
	MW-102	Spring 2001							0.142
		Fall 2002							0.340
		October 2010	1.70	0.76	<0.1				-
		October 2011	1.80	0.84	<0.1				-
		October 2012	1.50	0.69	<0.1				0.014
		June 2013							0.016
		October 2013	3.10	1.90	<0.2				-
		October 2014	4.50	2.70	<0.2				-
		October 2015	0.42	0.21	<0.2				-
		October 2016	0.36	<0.2	<0.2				-
		October 2017							0.001
		October 2018	0.88	0.57	<0.2				-
		October 2019	0.64	0.31	<0.2				-
		October 2020	0.99	0.64	<0.2				-
		October 2021	3.20	2.00	<0.2				-
		October 2022	1.10	0.81	<0.2				-
		October 2023	0.74	0.53	<0.2				-
	MW-103	Spring 2008							0.003
		October 2010	0.10	0.19	<0.1				-
		October 2011	2.10	1.20	<0.1				-
		October 2012	0.57	0.47	<0.1				-
		October 2013	40.00	15.00	0.46				-
		October 2014	5.60	2.50	<0.2				-
		October 2015	0.18	<0.2	<0.2				-
		October 2016	<0.1	<0.2	<0.2				-
		October 2017	0.19	<0.2	<0.2				-
		October 2019	0.44	0.28	<0.2				-
		October 2020	1.00	0.98	<0.2				-
		October 2021	<0.1	<0.2	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		October 2023	<0.1	<0.2	<0.2				-
	MW-104	Fall 2003							0.097
		Spring 2006							0.060
		October 2010	17.00	4.60	<0.1				-
		October 2011	1100.00	340.00	3.20				0.128
		October 2012	1400.00	420.00	1.70				0.470
		October 2013	150.00	45.00	0.38				-
		October 2014	56.00	19.00	0.39				-
		October 2015	5.10	1.40	<0.2				-
		October 2016	3.90	1.00	<0.2				-

Contaminant Site Monitoring

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Lagoon #2 Groundwater	MW-104	October 2017							0.002
		October 2018	4.30	1.10	<0.2				-
		October 2019	25.00	8.30	<0.2				-
		October 2020	2.80	0.71	<0.2				-
		October 2021							0.002
		October 2022	14.00	4.60	<0.2				-
		October 2023	3.10	1.20	0.23				-
	MW-105	Spring 2003							0.044
	MW-106	Fall 2005							0.008
		October 2010	220.00	79.00	0.21				-
		October 2011	4900.00	1700.00	<0.1				0.122
		June 2012							0.028
		October 2012	280.00	90.00	0.63				0.564
		June 2013							0.118
		October 2013	220.00	69.00	<0.2				0.057
		June 2014							0.034
		October 2014	-	-	-				0.026
		October 2015	8.80	3.40	<0.2				-
		October 2016	4.00	1.50	<0.2				-
		October 2017	7.20	4.40	<0.2				-
		June 2018							0.010
		October 2019	7.70	3.40	<0.2				-
		October 2020	3.10	1.50	<0.2				-
		October 2021	0.89	0.30	<0.2				-
		October 2022	2.30	0.93	<0.2				-
		October 2023	3.80	1.90	<0.2				-
	MW-107	Fall 2000							0.244
		Spring 2004							0.197
		October 2010	43.00	19.00	<0.1				-
		October 2011	65.00	31.00	0.17				-
		October 2012	170.00	69.00	0.34				0.007
		October 2013	27.00	12.00	<0.2				-
		October 2014	15.00	67.00	<0.2				-
		October 2015	2.10	1.10	<0.2				-
		October 2016	2.10	0.99	<0.2				-
		October 2017	2.60	1.60	<0.2				-
		October 2019	<0.1	<0.2	<0.2				-
		October 2020	1.80	1.30	<0.2				-
		October 2021	0.35	0.22	<0.2				-
		October 2022	0.26	<0.2	<0.2				-
		October 2023	0.35	0.31	<0.2				-
	MW-108	October 2010	1.60	0.40	<0.1				-
		October 2011	4.50	2.20	0.14				-
		October 2012	1.40	0.69	<0.1				-
		October 2013	3.20	1.60	<0.2				-
		October 2014	1.40	0.78	<0.2				-
		October 2015	0.53	0.38	<0.2				-
		October 2016	0.35	0.27	<0.2				-
		October 2017	1.10	0.83	<0.2				-
		October 2019	0.53	0.44	<0.2				-
		October 2020	1.70	1.40	<0.2				-
		October 2021	0.40	0.40	<0.2				-
		October 2022	0.29	0.35	<0.2				-
		October 2023	0.11	0.29	<0.2				-
	MW-304	October 2019	0.24	<0.2	<0.2				-
		June 2020	0.24	<0.2	<0.2				-
		October 2020							0.001
		June 2021	0.52	0.33	<0.2				-
		October 2021	0.33	0.23	<0.2				-
		October 2022							0.001
		May 2023	SUBMERGED	SUBMERGED	SUBMERGED	SUBMERGED	SUBMERGED	SUBMERGED	SUBMERGED
		October 2023							0.001
	MW-401	June 2020	1.90	0.52	<0.2				-
		October 2020							0.059
		June 2021							0.037
		October 2021							0.045
		May 2022							0.001
		October 2022							0.068
		May 2023	31.00	14.00	0.43				-

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Lagoon #2 Groundwater	MW-401	October 2023							0.002
	MW-402	June 2020	0.57	<0.2	<0.2				-
		October 2020	<0.1	<0.2	<0.2				-
		June 2021	<0.1	<0.2	<0.2				-
		October 2021	<0.1	<0.2	<0.2				-
		May 2022	0.25	<0.2	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		May 2023	0.60	<0.2	<0.2				-
		October 2023	0.21	0.27	<0.2				-
	MW-403	June 2020	0.77	0.21	<0.2				-
		October 2020	<0.1	<0.2	<0.2				-
		June 2021	0.23	<0.2	<0.2				-
		October 2021	<0.1	<0.2	<0.2				-
		May 2022	0.25	<0.2	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		May 2023	0.52	<0.2	<0.2				-
		October 2023	0.25	0.28	<0.2				-
	MW-404	June 2020	0.98	<0.2	<0.2				-
		October 2020	0.56	<0.2	<0.2				-
		June 2021	0.55	<0.2	<0.2				-
		October 2021	0.23	<0.2	<0.2				-
		May 2022	0.49	<0.2	<0.2				-
		October 2022	0.24	<0.2	<0.2				-
		May 2023	0.42	<0.2	<0.2				-
		October 2023	0.17	<0.2	<0.2				-
	MW-405	June 2020	0.56	<0.2	<0.2				-
		October 2020	0.20	<0.2	<0.2				-
		June 2021	0.13	<0.2	<0.2				-
		October 2021	<0.1	<0.2	<0.2				-
		May 2022	0.20	<0.2	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		May 2023	0.40	<0.2	<0.2				-
		October 2023	0.11	<0.2	<0.2				-
	MW-406	June 2020	0.58	<0.2	<0.2				-
		October 2020	0.41	<0.2	<0.2				-
		June 2021	0.19	<0.2	<0.2				-
		October 2021	0.15	<0.2	<0.2				-
		May 2022	0.15	<0.2	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		May 2023	0.17	<0.2	<0.2				-
		October 2023	<0.1	<0.2	<0.2				-
	MW-407	June 2020	0.34	<0.2	<0.2				-
		October 2020	0.30	<0.2	<0.2				-
		June 2021	0.21	<0.2	<0.2				-
		October 2021	0.21	<0.2	<0.2				-
		May 2022	0.23	<0.2	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		May 2023	0.51	<0.2	<0.2				-
		October 2023	0.12	<0.2	<0.2				-
	MW-408	June 2020	<0.1	<0.2	<0.2				-
		October 2020	<0.1	<0.2	<0.2				-
		June 2021	<0.1	<0.2	<0.2				-
		October 2021	<0.1	<0.2	<0.2				-
		May 2022	<0.1	<0.2	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		May 2023	<0.1	<0.2	<0.2				-
		October 2023	<0.1	<0.2	<0.2				-
	OW5-1	June 2010	1.80	0.87	<0.1				-
		October 2010	0.86	0.59	<0.1				-
		June 2011	0.21	0.12	<0.1				-
		October 2011	3.10	1.80	0.12				-
		June 2012	0.33	0.16	<0.1				-
		October 2012	6.00	3.30	<0.1				-
		June 2013	0.77	0.47	<0.2				-
		October 2013	0.85	0.52	<0.2				-
		June 2014	1.10	0.94	<0.2				-
		October 2014	<0.1	<0.2	<0.2				-
		June 2015	0.54	0.37	<0.2				-
		October 2015	0.52	0.29	<0.2				-

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Lagoon #2 Groundwater	OW5-1	June 2016	<0.1	<0.2	<0.2				-
		October 2016	0.70	0.46	<0.2				-
		May 2017	<0.1	<0.2	<0.2				-
		October 2017	0.33	0.26	<0.2				-
		June 2018	<0.1	<0.2	<0.2				-
		October 2018	0.58	0.43	<0.2				-
		June 2019	0.46	0.32	<0.2				-
		October 2019	0.25	<0.2	<0.2				-
		June 2020	<0.1	<0.2	<0.2				-
		October 2020	<0.1	<0.2	<0.2				-
		June 2021	0.21	0.21	<0.2				-
		October 2021	0.21	<0.2	<0.2				-
		May 2022	<0.1	<0.2	<0.2				-
		October 2022	0.21	<0.2	<0.2				-
		May 2023	<0.1	<0.2	<0.2				-
		October 2023	<0.1	<0.2	<0.2				-
	OW5-2	Fall 1997							0.970
		Spring 2003							1.223
		June 2010	3000.00	1300.00	33.00				0.031
		October 2010	720.00	290.00	<10.0				-
		June 2011	390.00	160.00	6.70				0.392
		October 2011	700.00	340.00	13.00				0.078
		June 2012	-	-	-				0.031
		October 2012	470.00	210.00	7.70				0.095
		June 2013	1300.00	620.00	24.00				0.081
		October 2013	1100.00	470.00	17.00				0.213
		June 2014	-	-	-				0.017
		October 2014	-	-	-				0.046
		Fall 2014							0.567
		June 2015							0.621
		October 2015	-	-	-				0.026
		May 2016							0.010
		June 2016	-	-	-				0.004
		October 2016	-	-	-				0.002
		May 2017							0.009
		October 2017							0.002
		June 2018							1.465
	OW5-3	June 2010	10.00	4.40	<0.1				-
		October 2010	3.30	1.90	<0.1				-
		June 2011	5.90	3.10	0.19				-
		October 2011	11.00	7.00	0.54				-
		June 2012	15.00	8.10	0.44				-
		October 2012	15.00	9.50	0.69				-
		June 2013	63.00	38.00	1.60				-
		October 2013	20.00	12.00	0.77				-
		June 2014	6.60	3.40	<0.2				-
		October 2014	8.10	5.10	0.22				-
		June 2015	2.00	0.42	<0.2				-
		October 2015	1.10	0.34	<0.2				-
		June 2016	0.94	<0.2	<0.2				-
		October 2016	0.91	0.22	<0.2				-
		May 2017	0.75	<0.2	<0.2				-
		October 2017	0.98	0.29	<0.2				-
		June 2018	0.95	0.22	<0.2				-
		October 2018	0.26	<0.2	<0.2				-
		June 2019	1.70	0.56	<0.2				-
		October 2019	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]
		June 2020	1.30	0.35	<0.2				-
		October 2020	0.72	<0.2	<0.2				-
		June 2021	1.40	0.96	<0.2				-
		October 2021	0.19	<0.2	<0.2				-
		May 2022	1.00	0.25	<0.2				-
		October 2022	0.15	<0.2	<0.2				-
		May 2023	1.50	<0.2	<0.2				-
		October 2023	0.36	0.41	<0.2				-
	OW5-4	Spring 2003							3.069
		Fall 2009							1.682
		June 2010							0.822
		October 2010							0.538

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Lagoon #2 Groundwater	OW5-4	June 2011							1.241
		October 2011							0.910
		June 2012							0.002
		October 2012							1.080
		June 2013							1.355
		October 2013							1.487
		June 2014							1.916
		Spring 2014							2.235
		October 2014							1.210
		October 2015							0.493
		May 2016							0.165
		May 2017							1.956
		October 2017							1.179
		June 2018							0.425
		October 2018							0.004
	PW-1	Spring 2002							1.186
		Fall 2002							2.182
	PW-2	Spring 2003							1.835
		Fall 2008							1.428
		June 2010							0.528
		October 2010							0.068
		June 2011							0.005
		October 2011							0.065
		June 2012							0.765
		October 2012							0.277
		Spring 2013							1.364
		June 2013							0.175
		Fall 2013							0.811
		June 2014							1.225
		October 2014							0.580
		May 2017							0.670
		October 2017							0.221
		June 2018							0.513
	PW-3	Fall 2002							1.240
		Spring 2008							0.485
		Spring 2010							0.435
		June 2010							0.057
		October 2010							0.010
		June 2011							0.172
		October 2011							0.002
		Fall 2011							0.485
		June 2012							0.028
		October 2012							0.038
		June 2014							0.025
		October 2014							0.345
		May 2017							0.060
	PW-4	Fall 2007							1.485
		Spring 2008							1.472
		June 2010							0.082
		October 2010							0.075
		Spring 2011							1.510
		June 2011							0.302
		October 2011							0.205
		June 2012							0.257
		October 2012							0.133
		June 2013							1.225
		Fall 2013							2.009
		October 2013							0.355
		June 2014							0.475
		October 2014							0.272
		May 2017							2.135
		October 2017							0.415
		June 2018							0.200
	PW-5	Spring 2009							0.004
		Fall 2009							0.004
		June 2010							0.002
		June 2014							0.078
		October 2014							0.034
		Fall 2014							0.035

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Lagoon #2 Groundwater	PW-5	May 2016							0.020
		May 2017							0.030
		October 2017							0.030
	PW-6	Spring 2007							0.274
		Fall 2008							0.058
		June 2010							0.005
		June 2011							0.036
		June 2012							0.041
		October 2012							0.110
		June 2013							0.078
		October 2013							0.230
		Fall 2013							0.247
		June 2014							0.062
		May 2017							0.008
		October 2017							0.445
		June 2018							1.260
	PW-7	Fall 2007							0.551
		Spring 2009							0.455
		June 2010							0.141
		October 2010							0.239
		June 2011							0.185
		October 2011							0.218
		June 2012							0.009
		October 2012							0.010
		June 2013							0.005
		Spring 2014							2.067
		June 2014							2.061
		October 2014							0.545
		May 2016							0.167
		May 2017							0.550
		October 2017							0.565
		June 2018							0.270
	PW-8	Spring 2008							0.642
		Fall 2008							0.135
		Spring 2010							1.139
		June 2010							0.282
		October 2010							0.255
		June 2011							0.019
		October 2011							0.502
		June 2012							0.565
		October 2012							0.221
		October 2013							0.023
		Fall 2013							0.732
		June 2014							0.080
		October 2014							0.222
		May 2017							0.365
		October 2017							0.357
		June 2018							0.280
		May 2019							0.050
	PW-9	Fall 2007							0.891
		Spring 2008							0.755
		June 2010							0.007
		October 2011							0.002
		October 2012							0.030
		June 2014							0.065
		October 2014							0.058
		May 2016							0.006
		May 2017							0.725
		October 2017							0.790
		June 2018							0.453
		October 2018							0.095
	PW-10	Fall 2007							0.005
		Spring 2008							0.006
		Spring 2013							0.119
		June 2013							0.044
		Fall 2013							0.031
		October 2013							0.009
		May 2017							0.038
		October 2017							0.005

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Down Stream Surface Water	HOR 004 05	June 2004	-	-	-	<0.1	0.1	<0.1	
		September 2004	-	-	-	<0.1	<0.1	<0.1	
		May 2005	-	-	-	<0.1	<0.1	<0.1	
		August 2005	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		October 2005	-	-	-	<0.1	0.6	<0.5	
		June 2006	-	-	-	<0.1	<0.5	<0.5	
		August 2006	-	-	-	<0.1	0.9	<0.5	
		October 2006	-	-	-	<0.1	<0.5	<0.5	
		June 2007	-	-	-	<0.1	0.7	<0.5	
		August 2007	-	-	-	<0.1	<0.5	0.6	
		October 2007	-	-	-	<0.1	<0.5	<0.5	
		May 2008	-	-	-	<0.1	<0.5	<0.5	
		August 2008	-	-	-	<0.1	1.9	<0.5	
		October 2008	-	-	-	<0.1	2.1	<0.5	
		June 2009	-	-	-	<0.1	<0.5	<0.5	
		August 2009	-	-	-	<0.1	<0.5	<0.5	
		October 2009	-	-	-	<0.1	<0.5	<0.5	
		May 2010	-	-	-	<0.1	<0.5	<0.5	
		June 2010	-	-	-	<0.1	0.8	<0.5	
		July 2010	-	-	-	<0.1	0.8	<0.5	
		August 2010	-	-	-	<0.1	<0.5	<0.5	
		September 2010	-	-	-	<0.1	<0.5	<0.5	
		October 2010	-	-	-	<0.1	0.9	<0.5	
		November 2010	-	-	-	<0.1	<0.5	<0.5	
		May 2011	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		June 2011	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		July 2011	-	-	-	<0.1	<0.5	<0.5	
		August 2011	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		September 2011	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		October 2011	-	-	-	<0.1	<0.5	<0.5	
		November 2011	-	-	-	<0.1	<0.5	<0.5	
		May 2012	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		June 2012	-	-	-	<0.1	1.2	<0.5	
		July 2012	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		August 2012	<0.1	<0.1	<0.1	<0.1	2.6	<0.5	
		September 2012	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		October 2012	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		November 2012	<0.1	<0.1	<0.1	<0.1	1.1	<0.5	
		May 2013	<0.1	<0.2	<0.2	<0.2	0.6	<0.5	
		June 2013	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2013	<0.1	<0.2	<0.2	<0.2	1.1	<0.5	
		August 2013	<0.1	<0.2	<0.2	<0.2	0.6	<0.5	
		September 2013	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2013	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2013	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2014	<0.1	<0.2	<0.2	<0.2	1.0	<0.5	
		August 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2015	<0.1	<0.2	<0.2	<0.2	1.1	<0.5	
		June 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2015	<0.1	<0.2	<0.2	<0.2	1.3	<0.5	
		September 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2016	<0.1	<0.2	<0.2	<0.2	1.3	<0.5	
		June 2016	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2016	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2016	<0.1	<0.2	<0.2	<0.2	2.4	<0.5	
		September 2016	<0.1	<0.2	<0.2	<0.2	0.7	<0.5	
		October 2016	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2016	<0.1	<0.2	<0.2	<0.2	2.4	<0.5	
		May 2017	<0.1	<0.2	<0.2	<0.2	4.4	1.2	
		June 2017	<0.1	<0.2	<0.2	<0.2	2.4	0.6	
		July 2017	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	

Contaminant Site Monitoring

Canadian National Railway Company - Hornepayne Yard

Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Down Stream Surface Water	HOR 004 05	August 2017	<0.1	<0.2	<0.2	<0.2	1.3	<0.5	
		September 2017	<0.1	<0.2	<0.2	<0.2	2.3	<0.5	
		October 2017	<0.1	<0.2	<0.2	<0.2	1.6	<0.5	
		November 2017	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2018	<0.1	<0.2	<0.2	<0.2	1.3	<0.5	
		June 2018	<0.1	<0.2	<0.2	<0.2	31.0	2.6	
		July 2018	<0.1	<0.2	<0.2	<0.2	8.7	1.3	
		August 2018	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2018	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2018	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2018	<0.1	<0.2	<0.2	<0.2	0.9	<0.5	
		May 2019	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2019	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2019	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2019	<0.1	<0.2	<0.2	<0.2	2.1	<0.5	
		September 2019	<0.1	<0.2	<0.2	<0.2	2.5	<0.5	
		October 2019	<0.1	<0.2	<0.2	<0.2	2.6	1.0	
		November 2019	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN
		April 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2020	<0.1	<0.2	<0.2	<0.2	1.1	<0.5	
		August 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		April 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2021	<0.1	<0.2	<0.2	<0.2	1.1	<0.5	
		August 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2021	<0.1	<0.2	<0.2	<0.2	1.0	0.8	
		November 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		April 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2022	<0.1	<0.2	<0.2	<0.2	0.8	<0.5	
		June 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2022	<0.1	<0.2	<0.2	<0.2	1.1	0.5	
		October 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2022	<0.1	<0.2	<0.2	<0.2	16.0	3.2	
		April 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2023	<0.1	<0.2	<0.2	<0.2	1.2	0.7	
		August 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2023	<0.1	<0.2	<0.2	<0.2	1.7	<0.5	
		November 2023	<0.1	<0.2	<0.2	<0.2	1.2	<0.5	
Little Jackfish River Mid-Stream Surface Water	HOR 005 05	June 2004	-	-	-	<0.1	<0.1	<0.1	
		September 2004	-	-	-	<0.1	<0.1	<0.1	
		May 2005	-	-	-	<0.1	<0.1	<0.1	
		August 2005	<0.1	<0.1	<0.1	<0.1	0.6	<0.5	
		October 2005	-	-	-	<0.1	0.6	<0.1	
		June 2006	-	-	-	<0.1	<0.5	<0.5	
		August 2006	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2006	-	-	-	<0.1	<0.5	<0.5	
		June 2007	-	-	-	<0.1	0.6	<0.5	
		August 2007	-	-	-	<0.1	0.7	<0.5	
		October 2007	-	-	-	<0.1	<0.5	<0.5	
		May 2008	-	-	-	<0.1	<0.5	<0.5	
		August 2008	-	-	-	<0.1	2.2	<0.5	
		October 2008	-	-	-	<0.1	<0.5	<0.5	
		June 2009	-	-	-	<0.1	<0.5	<0.5	
		August 2009	-	-	-	<0.1	1.4	<0.5	
		October 2009	-	-	-	<0.1	<0.5	<0.5	
		May 2010	-	-	-	<0.1	<0.5	<0.5	
		June 2010	-	-	-	<0.1	0.7	<0.5	

Contaminant Site Monitoring

Canadian National Railway Company - Hornepayne Yard

Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
		July 2010	-	-	-	<0.1	1.1	<0.5	
		August 2010	-	-	-	<0.1	<0.5	<0.5	
		September 2010	-	-	-	<0.1	<0.5	<0.5	
		October 2010	-	-	-	<0.1	0.7	<0.5	
		November 2010	-	-	-	<0.1	<0.5	<0.5	
		May 2011	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		June 2011	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		July 2011	-	-	-	<0.1	<0.5	<0.5	
		August 2011	-	-	-	<0.1	<0.5	<0.5	
		September 2011	-	-	-	<0.1	<0.5	<0.5	
		October 2011	-	-	-	<0.1	<0.5	<0.5	
		November 2011	-	-	-	<0.1	<0.5	<0.5	
		May 2012	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		June 2012	-	-	-	0.24	<0.5	<0.5	
		July 2012	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		August 2012	<0.1	<0.1	<0.1	<0.1	1.3	<0.5	
		September 2012	<0.1	<0.1	<0.1	<0.1	1.2	<0.5	
		October 2012	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	
		November 2012	<0.1	<0.1	<0.1	<0.1	1.1	<0.5	
		May 2013	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2013	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2013	<0.1	<0.2	<0.2	<0.2	0.9	<0.5	
		August 2013	<0.1	<0.2	<0.2	<0.2	1.4	<0.5	
		September 2013	<0.1	<0.2	<0.2	<0.2	0.7	<0.5	
		October 2013	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2013	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2014	<0.1	<0.2	<0.2	<0.2	0.8	<0.5	
		July 2014	<0.1	<0.2	<0.2	<0.2	1.9	<0.5	
		August 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2014	<0.1	<0.2	<0.2	<0.2	0.6	<0.5	
		October 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2014	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
Little Jackfish River		May 2015	<0.1	<0.2	<0.2	<0.2	0.6	<0.5	
Mid-Stream	HOR 005 05	June 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
Surface Water		July 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2015	<0.1	<0.2	<0.2	<0.2	2.5	<0.5	
		September 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2016	<0.1	<0.2	<0.2	<0.2	1.6	<0.5	
		June 2016	<0.1	<0.2	<0.2	<0.2	1.0	<0.5	
		July 2016	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2016	<0.1	<0.2	<0.2	<0.2	1.9	<0.5	
		September 2016	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2016	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2016	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2017	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2017	<0.1	<0.2	<0.2	<0.2	1.9	0.6	
		July 2017	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2017	<0.1	<0.2	<0.2	<0.2	1.4	<0.5	
		September 2017	<0.1	<0.2	<0.2	<0.2	2.2	<0.5	
		October 2017	<0.1	<0.2	<0.2	<0.2	1.7	<0.5	
		November 2017	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2018	<0.1	<0.2	<0.2	<0.2	1.6	<0.5	
		June 2018	<0.1	<0.2	<0.2	<0.2	1.3	<0.5	
		July 2018	<0.1	<0.2	<0.2	<0.2	3.0	<0.5	
		August 2018	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2018	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2018	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2018	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2019	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2019	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2019	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2019	<0.1	<0.2	<0.2	<0.2	1.1	<0.5	
		September 2019	<0.1	<0.2	<0.2	<0.2	1.3	<0.5	
		October 2019	<0.1	<0.2	<0.2	<0.2	1.3	<0.5	
		November 2019	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN
		April 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	

Contaminant Site Monitoring

Canadian National Railway Company - Hornepayne Yard

Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Mid-Stream Surface Water	HOR 005 05	May 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2020	<0.1	<0.2	<0.2	<0.2	1.2	<0.5	
		August 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2020	<0.1	<0.2	<0.2	<0.2	1.6	<0.5	
		November 2020	<0.1	<0.2	<0.2	<0.2	2.4	<0.5	
		April 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2021	<0.1	<0.2	<0.2	<0.2	1.2	<0.5	
		August 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2021	<0.1	<0.2	<0.2	<0.2	0.6	<0.5	
		November 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		April 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2022	<0.1	<0.2	<0.2	<0.2	4.7	2.4	
		April 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2023	<0.1	<0.2	<0.2	<0.2	1.6	<0.5	
		June 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2023	<0.1	<0.2	<0.2	<0.2	2.9	0.8	
		August 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		September 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2023	<0.1	<0.2	<0.2	<0.2	1.3	<0.5	
Little Jackfish River West End Surface Water	HOR 013 05	May 2004	-	-	-	-	-	-	
		June 2004	-	-	-	0.14	<0.1	<0.1	
		July 2004	-	-	-	1.90	26.0	<0.1	
		August 2004	-	-	-	0.91	11.0	<0.1	
		September 2004	-	-	-	0.38	0.7	<0.1	
		October 2004	-	-	-	0.37	6.0	<0.1	
		November 2004	-	-	-	0.20	-	-	
		April 2005	-	-	-	0.95	2.5	0.7	
		May 2005	-	-	-	1.60	0.6	0.1	
		June 2005	-	-	-	1.60	<0.1	<0.1	
		July 2005	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2005	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2005	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2005	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		May 2006	-	-	-	1.00	3.2	<0.5	
		June 2006	-	-	-	3.80	22.1	1.8	
		July 2006	-	-	-	1.70	8.1	<0.5	
		August 2006	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2006	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2006	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		November 2006	-	-	-	0.47	3.1	<0.5	
		May 2007	-	-	-	0.31	<0.5	<0.5	
		June 2007	-	-	-	<0.1	2.4	<0.5	
		July 2007	-	-	-	0.96	3.1	0.5	
		August 2007	-	-	-	0.51	5.3	<0.5	
		September 2007	-	-	-	0.30	3.2	<0.5	
		October 2007	-	-	-	0.77	4.0	0.5	
		November 2007	-	-	-	1.10	5.3	1.7	
		May 2008	-	-	-	0.49	-	-	
		June 2008	-	-	-	1.10	4.6	<0.5	
		July 2008	-	-	-	0.96	5.3	<0.5	
		August 2008	-	-	-	0.55	7.7	<0.5	
		September 2008	-	-	-	0.21	5.4	<0.5	
		October 2008	-	-	-	<0.1	<0.5	<0.5	
		November 2008	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN
		May 2009	-	-	-	0.48	1.6	<0.5	
		June 2009	-	-	-	0.48	2.5	<0.5	
		July 2009	-	-	-	0.70	6.8	1.2	

Contaminant Site Monitoring

Canadian National Railway Company - Hornepayne Yard

Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River West End Surface Water	HOR 013 05	August 2009	-	-	-	1.00	5.6	<0.5	
		September 2009	-	-	-	0.95	1.6	<0.5	
		October 2009	-	-	-	0.67	3.8	<0.5	
		November 2009	-	-	-	0.99	5.4	<0.5	
		May 2010	-	-	-	0.50	<0.5	<0.5	
		June 2010	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		July 2010	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2010	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2010	-	-	-	0.23	3.4	<0.5	
		October 2010	-	-	-	0.28	2.6	<0.5	
		November 2010	-	-	-	0.34	<0.5	<0.5	
		May 2011	0.18	0.20	<0.1	0.36	<0.5	<0.5	
		June 2011	-	-	-	0.58	<0.5	<0.5	
		July 2011	-	-	-	0.22	<0.5	<0.5	
		August 2011	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2011	-	-	-	0.24	<0.5	<0.5	
		November 2011	<0.1	0.11	<0.1	0.24	<0.5	<0.5	
		May 2012	0.28	0.30	<0.1	0.58	3.3	<0.5	
		June 2012	-	-	-	0.73	1.1	<0.5	
		July 2012	0.13	0.17	<0.1	0.27	<0.5	<0.5	
		August 2012	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2012	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2012	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		November 2012	0.19	0.32	<0.1	0.48	1.3	<0.5	
		May 2013	<0.1	<0.2	<0.2	<0.2	0.7	<0.5	
		June 2013	0.42	0.40	<0.2	0.81	1.8	<0.5	
		July 2013	0.50	0.47	<0.2	0.97	2.4	<0.5	
		August 2013	<0.1	<0.2	<0.2	<0.2	1.0	<0.5	
		September 2013	0.25	0.38	<0.2	0.60	1.6	<0.5	
		October 2013	0.25	0.40	<0.2	0.63	1.7	<0.5	
		November 2013	0.41	0.48	<0.2	0.89	<0.5	<0.5	
		May 2014	0.30	<0.2	<0.2	0.48	1.0	<0.5	
		June 2014	0.46	0.37	<0.2	0.80	0.9	<0.5	
		July 2014	0.22	0.27	<0.2	0.49	2.0	<0.5	
		August 2014	0.18	0.38	<0.2	0.54	1.9	<0.5	
		September 2014	<0.1	<0.2	<0.2	0.28	0.5	<0.5	
		October 2014	0.20	0.33	<0.2	0.50	<0.5	<0.5	
		November 2014	0.48	0.27	<0.2	0.75	<0.5	<0.5	
		May 2015	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2015	0.32	0.35	<0.2	0.66	1.2	<0.5	
		July 2015	0.16	0.38	<0.2	0.49	2.2	<0.5	
		August 2015	<0.1	0.21	<0.2	0.27	1.6	<0.5	
		September 2015	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2015	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		November 2015	<0.1	<0.2	<0.2	<0.2	0.9	<0.5	
		May 2016	0.29	0.22	<0.2	0.52	1.7	<0.5	
		June 2016	0.16	0.28	<0.2	0.41	1.7	<0.5	
		July 2016	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2016	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2016	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2016	<0.1	<0.2	<0.2	0.21	1.4	<0.5	
		November 2016	<0.1	0.21	<0.2	0.23	1.1	<0.5	
		May 2017	<0.1	<0.2	<0.2	<0.2	5.6	1.7	
		June 2017	1.60	0.84	<0.2	2.40	9.0	0.8	
		July 2017	0.36	0.39	<0.2	0.70	3.8	<0.5	
		August 2017	0.13	0.22	<0.2	0.34	2.4	<0.5	
		September 2017	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2017	<0.1	<0.2	<0.2	<0.2	4.2	1.2	
		November 2017	0.16	0.32	<0.2	0.45	<0.5	<0.5	
		May 2018	<0.1	<0.2	<0.2	<0.2	1.1	<0.5	
		June 2018	<0.1	<0.2	<0.2	<0.2	2.7	<0.5	
		July 2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2018	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2018	<0.025	<0.1	<0.2	<0.2	<0.5	<0.5	
		October 2018	<0.025	<0.1	<0.2	<0.2	<0.5	<0.5	
		November 2018	0.44	0.31	<0.2	0.70	2.3	<0.5	
		May 2019	<0.1	<0.2	<0.2	<0.2	0.8	<0.5	
		June 2019	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River West End Surface Water	HOR 013 05	August 2019	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2019	<0.1	<0.2	<0.2	<0.2	2.1	<0.5	
		October 2019	<0.1	<0.2	<0.2	<0.2	1.8	<0.5	
		November 2019	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN
		April 2020	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN
		May 2020	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		June 2020	<0.1	<0.2	<0.2	0.21	<0.5	<0.5	
		July 2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2020	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2020	<0.1	<0.2	<0.2	<0.2	1.3	0.5	
		November 2020	<0.1	<0.2	<0.2	<0.2	0.9	<0.5	
		April 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2021	<0.1	<0.2	<0.2	0.21	<0.5	<0.5	
		June 2021	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		July 2021	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2021	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2021	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		October 2021	<0.1	<0.2	<0.2	<0.2	1.3	0.5	
		November 2021	<0.1	<0.2	<0.2	<0.2	1.0	<0.5	
		April 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		May 2022	<0.1	<0.2	<0.2	<0.2	1.3	0.5	
		June 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		July 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		August 2022	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2022	<0.1	<0.2	<0.2	<0.2	1.3	0.6	
		October 2022	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2022	<0.1	<0.2	<0.2	<0.2	2.0	0.9	
		April 2023	0.12	0.31	<0.2	0.32	0.9	0.6	
		May 2023	0.11	<0.2	<0.2	0.25	<0.5	<0.5	
		June 2023	<0.1	<0.2	<0.2	<0.2	1.1	<0.5	
		July 2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		August 2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		September 2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2023	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
		November 2023	<0.1	<0.2	<0.2	<0.2	1.3	<0.5	
Little Jackfish River West End Groundwater	IMW-3	Spring 2005							0.001
	IMW-4	May 2016	<0.1	<0.2	<0.2				-
		May 2017	<0.1	<0.2	<0.2				-
		October 2017	<0.1	<0.2	<0.2				-
	IMW-8	October 2012	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2015	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		May 2016	1.30	0.27	<0.2				-
		May 2017	0.12	<0.2	<0.2				-
	MW-10	Spring 2007							0.003
		Fall 2007							0.001
		May 2016	<0.1	<0.2	<0.2				-
		May 2017	<0.1	<0.2	<0.2				-
		October 2017	<0.1	<0.2	<0.2				-
		June 2018	<0.1	0.30	<0.2				-
		October 2018	<0.1	<0.2	<0.2				-
	MW-11	Spring 1997							2.025
		Fall 1997							1.800
		June 2010							1.211
		October 2010							1.334
		June 2011							1.210
		October 2011							1.070
		June 2012							1.514
		October 2012							0.936
		June 2013							1.038
		October 2013	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]
	MW-11R	October 2014							1.227
		September 2015							1.411
		October 2015							0.200
		May 2016							0.001
		May 2017							0.100
		October 2017							0.236
		June 2018							0.197
		October 2018							2.075

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River West End Groundwater	MW-12	Spring 1999							0.120
		Fall 1999							0.001
		May 2016	<0.1	<0.2	<0.2				-
		May 2017	<0.1	<0.2	<0.2				-
		October 2017	1.30	0.68	<0.2				-
		June 2018	0.84	0.65	<0.2				-
		October 2018	0.42	0.23	<0.2				-
	MW-16	October 2015	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		May 2016	<0.1	<0.2	<0.2				-
		May 2017	<0.1	<0.2	<0.2				-
		October 2017	<0.1	<0.2	<0.2				-
	MW-17	October 2012	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		May 2016	<0.1	<0.2	<0.2				-
		May 2017	<0.1	<0.2	<0.2				-
		October 2017	<0.1	<0.2	<0.2				-
	MW-58	Spring 2001							0.001
	MW-59	Spring 2001							0.003
	MW-120	Spring 2003							0.156
		Fall 2003							0.073
	MW-121	Fall 2001							1.425
		Spring 2002							0.370
	MW-121R	October 2015							0.008
		May 2016							0.003
		May 2017							0.004
	MW-122	Fall 2005							0.282
		Spring 2007							0.074
		June 2010							0.042
		October 2010							0.058
		June 2011							0.039
		October 2011							0.043
		June 2012							0.019
		October 2012							0.007
		October 2013							0.002
		October 2014							0.001
		September 2015							0.967
		May 2016							0.001
		May 2017							0.003
		June 2018							0.008
		October 2018							0.004
	MW-123	Fall 2001							1.842
		Spring 2003							1.158
		Spring 2014							0.002
	MW-123R	October 2015							0.073
		May 2017							0.047
		October 2017							0.092
		June 2018							0.078
		October 2018							0.060
	OW8-2	Spring 1997							0.590
		Fall 1997							0.355
		May 2016	0.34	0.27	<0.2				-
		May 2017	1.50	1.10	<0.2				-
		October 2017	3.60	2.70	<0.2				-
		June 2018	0.62	0.51	<0.2				-
		October 2018	1.90	1.30	<0.2				-
	OW8-3	Spring 1997							2.485
		Fall 1997							2.140
		June 2010							0.005
		June 2011							0.004
		June 2012							0.002
		October 2012							0.037
		October 2013							0.011
		October 2014							0.006
	OW9-3	Spring 2001							0.050
		Fall 2005							0.236
		May 2016	0.38	<0.2	<0.2				-
		May 2017	0.58	0.29	<0.2				-
		October 2017	2.30	1.50	<0.2				-
		June 2018	1.10	0.95	<0.2				-
		October 2018	0.81	0.43	<0.2				-

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River West End Groundwater	OW-57	Spring 1997							2.830
		Fall 1997							2.770
	OW-57R	October 2015							0.038
	OW-60	Spring 1997							3.660
		Fall 2002							3.865
		October 2014							0.007
		May 2016							0.009
		May 2017							0.002
		October 2017							0.008
		June 2018							0.003
		October 2018							0.062
	OW-60R	October 2015							0.035
		May 2016							0.037
		May 2017							0.056
		October 2017							0.045
Little Jackfish River Former East End Fueling Stand & Lagoon #1 Surface Water	HOR 001 05	June 2010	-	-	-	<0.1	0.9	<0.5	
		August 2010	-	-	-	<0.1	<0.5	<0.5	
		October 2010	-	-	-	<0.1	<0.5	<0.5	
		June 2011	-	-	-	<0.1	<0.5	<0.5	
		August 2011	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2011	<0.1	-	-	<0.1	<0.5	<0.5	
		June 2012	-	-	-	<0.1	0.8	<0.5	
		August 2012	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2012	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		June 2013	<0.1	<0.2	<0.2	<0.2	0.8	<0.5	
		August 2013	<0.1	<0.2	<0.2	<0.2	1.1	<0.5	
		October 2013	<0.1	<0.2	<0.2	<0.2	<0.5	<0.5	
Little Jackfish River Former East End Fueling Stand & Lagoon #1 Groundwater	MW-127	October 2012							0.001
	MW-129	Spring 2008							0.003
	MW-133	Fall 2005							0.077
	MW-133R	October 2014							0.171
		Fall 2015							0.293
		May 2017							0.012
		October 2017							0.012
	MW-140	Fall 2004							0.512
		Spring 2009							0.377
		June 2010							0.105
		October 2010							0.002
		October 2012							0.067
	MW-141	Fall 2003							0.718
		Spring 2004							0.007
	MW-142	October 2014							0.700
		May 2016							0.009
	MW-205	May 2016							0.162
		May 2017							0.625
		October 2017							0.247
Little Jackfish River Former Shop Track Fueling Area Groundwater	MW-49	Spring 1997							0.005
		Fall 1997							0.005
		October 2010	1.50	1.20	<0.1				-
		October 2011	120.00	130.00	14.00				-
		October 2012	3.30	4.50	0.51				-
		October 2013	8.40	3.40	<0.2				-
		October 2014	1.50	1.40	<0.2				-
		October 2015	<0.1	0.21	<0.2				-
		October 2016	0.12	<0.2	<0.2				-
		October 2017	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]	CNL[6]
		October 2019	<0.1	<0.2	<0.2				-
		October 2020	<0.1	<0.2	<0.2				-
		October 2021	3.10	1.90	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		October 2023	<0.1	<0.2	<0.2				-
	MW-50	Fall 1998							2.710
		Spring 2000							0.686
		June 2010							0.480
		October 2010							1.015
		June 2011							0.104
		October 2011							0.283
		June 2012							0.125
		October 2012							0.431

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Former Shop Track Fueling Area Groundwater	MW-50	June 2013							0.220
		October 2013							0.083
		June 2014							0.049
		October 2014							0.079
		October 2015							0.033
		May 2016							0.074
		May 2017							0.226
		October 2017							0.330
	MW-109	Fall 2005							0.342
		Spring 2006							0.740
		October 2010	42.00	14.00	<0.1				-
		June 2011							0.321
		October 2011	150.00	58.00	1.30				0.042
		June 2012							0.208
		October 2012	560.00	210.00	6.40				0.033
		June 2013							0.148
		October 2013	2000.00	850.00	77.00				0.277
		June 2014							0.166
		October 2014	20.00	6.50	<0.2				-
		October 2015	4.30	1.00	<0.2				-
		October 2016	3.60	0.87	<0.2				-
		October 2017	6.90	2.20	<0.2				-
		October 2019	4.80	0.93	<0.2				-
		October 2020	3.40	0.50	<0.2				-
		October 2021	2.40	0.46	<0.2				-
		October 2022	3.50	0.68	<0.2				-
		October 2023	2.70	0.49	<0.2				-
	MW-110	Fall 2000							1.769
		Spring 2002							0.433
	MW-110R	October 2014							0.324
		October 2015							0.585
		May 2016							1.075
		May 2017							0.944
		October 2017	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]
	MW-112	Spring 2000							1.446
		Fall 2000							2.061
	MW-112R	October 2014							0.007
		October 2015							0.046
		May 2017							0.001
		October 2017							0.190
	MW-114	Spring 2000							0.011
		October 2010	87.00	37.00	1.10				-
		October 2011	77.00	44.00	1.10				-
		October 2012	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2013	100.00	61.00	1.40				-
		October 2014	45.00	28.00	0.81				-
		October 2015	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2016	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		October 2017	2.40	0.86	<0.2				-
		October 2019	1.50	0.25	<0.2				-
		October 2020	3.40	1.50	<0.2				-
		October 2021	1.60	0.71	<0.2				-
		October 2022	1.20	0.50	<0.2				-
		October 2023	1.30	0.29	<0.2				-
	MW-115	October 2010	<0.1	<0.1	<0.1				-
		October 2011	0.41	0.13	<0.1				-
		October 2012	3.90	1.50	<0.1				-
		October 2013	0.38	0.22	<0.2				-
		October 2014	<0.1	<0.2	<0.2				-
		October 2015	<0.1	<0.2	<0.2				-
		October 2016	<0.1	<0.2	<0.2				-
		October 2017	<0.1	<0.2	<0.2				-
		October 2019	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]
	MW-124R	October 2014							1.092
		October 2015							0.107
		May 2017							0.545
		October 2017							0.615
	MW-125	Spring 2002							2.121
		Fall 2003							2.020

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Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Former Shop Track Fueling Area Groundwater	MW-125R	October 2015							0.011
		May 2017							0.041
		October 2017	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]
	MW-126	Fall 2001							3.028
		Spring 2003							3.109
		June 2010							1.338
		October 2010	690.00	260.00	21.00				0.843
		June 2011							0.290
		October 2011	1300.00	520.00	45.00				0.798
		June 2012							0.074
		October 2012	1000.00	440.00	32.00				0.057
		June 2013							0.008
		October 2013	420.00	150.00	5.00				0.477
		June 2014							0.030
		October 2014	-	-	-				0.190
		October 2015	-	-	-				0.031
		October 2016	-	-	-				0.160
		May 2017							0.013
		October 2017							0.231
		June 2019							0.050
		October 2019							0.102
		June 2020							0.045
		October 2020							0.019
		June 2021							0.018
		October 2021							0.023
		October 2022							0.002
		October 2023							0.002
	OW3-2	Spring 2004							0.395
		Fall 2004							0.548
		June 2010							0.103
		October 2010	1000.00	390.00	11.00				0.147
		June 2011							0.104
		October 2011	3000.00	1200.00	30.00				0.072
		June 2012							0.125
		October 2012	190.00	81.00	1.90				0.071
		June 2013							0.220
		October 2013	1100.00	430.00	15.00				0.007
		June 2014							0.049
		October 2014	-	-	-				0.281
		October 2015	-	-	-				0.130
		May 2016							0.023
		October 2016	-	-	-				0.151
		October 2017							0.245
		June 2019							0.129
		October 2019							0.509
		June 2020							0.045
		October 2020							0.506
		June 2021							0.118
		October 2021							0.173
		May 2022							0.021
		October 2022							0.113
		May 2023							0.148
		October 2023							0.148
Little Jackfish River Roundhouse Groundwater	MW-24	October 2010	<0.1	<0.1	<0.1				-
		October 2011	0.29	0.12	<0.1				-
		October 2012	1.10	0.48	<0.1				-
		October 2013	<0.1	<0.2	<0.2				-
		October 2014	<0.1	<0.2	<0.2				-
		October 2015	<0.1	<0.2	<0.2				-
		October 2016	<0.1	<0.2	<0.2				-
		October 2017	<0.1	<0.2	<0.2				-
		October 2019	<0.1	<0.2	<0.2				-
		October 2020	0.15	<0.2	<0.2				-
		October 2021	<0.1	<0.2	<0.2				-
		October 2022	<0.1	<0.2	<0.2				-
		October 2023	<0.1	<0.2	<0.2				-
	MW-34	Spring 2000							0.018
		Fall 2001							0.002
	MW-34R	October 2014							0.215

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Contaminant Site Monitoring

Canadian National Railway Company - Hornepayne Yard

Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Roundhouse Groundwater	MW-34R	October 2015	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]
		May 2017							0.168
	MW-116	Spring 2004							0.028
		Fall 2008							0.017
		October 2012							0.002
	MW-201	May 2016							0.001
		May 2017	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]
Little Jackfish River Former Via Rail Fueling Area Groundwater	MW-32	Fall 1997							2.340
		Spring 1998							2.303
		June 2010							0.109
		October 2010							0.444
		June 2011							0.477
		October 2011							0.038
		June 2012							0.301
		October 2012	DRY	DRY	DRY	DRY	DRY	DRY	DRY
		June 2013							1.101
		Fall 2013							1.207
		October 2013							0.719
		June 2014							0.092
		October 2014							0.767
		May 2016							0.334
		May 2017							0.944
		October 2017							0.252
	MW-33	Fall 1998							2.990
		Spring 2000							2.219
		June 2010							0.315
		October 2010							0.063
		June 2011							0.058
		October 2011							0.276
		June 2012							0.099
		October 2012							0.300
		June 2013							0.106
		October 2013							0.283
		Spring 2014							0.462
		June 2014							0.121
		October 2014							0.554
		May 2016							0.001
		May 2017							0.549
		October 2017							0.570
	MW-66	Fall 1998							0.429
		Spring 1999							0.620
	MW-111	June 2010							0.265
		October 2010							0.865
		June 2011							0.229
		October 2011							0.412
		June 2012							0.078
		October 2012							0.443
		June 2013							0.254
		October 2013							0.205
		October 2014							0.006
		May 2017							0.006
		October 2017							0.190
	MW-117	Spring 2004							0.293
		Fall 2004							0.106
	MW-118	Spring 2007							0.549
		Fall 2007							0.615
		June 2010							0.210
		October 2010							0.213
		June 2011							0.147
		October 2011							0.139
		June 2012							0.219
		October 2012							0.089
		June 2013							0.267
		October 2013							0.298
		Spring 2014							0.572
		June 2014							0.265
		October 2014							0.280
		May 2017							0.503
		October 2017							0.640

Contaminant Site Monitoring

Canadian National Railway Company - Hornepayne Yard

Site Area	Sample Location	Date	Petroleum Hydrocarbons F2 (C10-C16) (mg/L)	Petroleum Hydrocarbons F3 (C16-C34) (mg/L)	Petroleum Hydrocarbons F4 (C34-C50) (mg/L)	Total Extractable Hydrocarbons (Diesel) (<C10/C24) (mg/L)	Oil & Grease (mg/L)	Mineral Oil & Grease (mg/L)	LNAPL Thickness (m)
Little Jackfish River Former Via Rail Fueling Area Groundwater	MW-147	Spring 2006							0.006
	MW-202	May 2016							0.199
		May 2017							0.184
		October 2017	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]	CNL [6]
	RW6-1	Fall 1998							0.714
		Spring 2000							0.324

References:

MECP FOI Document, 2007-2022 Site Monitoring Report Hornepayne Yard by Canadian National Railway Company on March 3, 2023, Received on August 8, 2024

Criteria from Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Evironmental Protection Act by Ministry of the Environment on April 15, 2011

Criteria from Canadian National Railway Certificate of Approval No. 3528-83LQWT by Ministry of the Environment on April 29, 2010

Notes:

1 Table 2: Stratified Site Condition Standards in a Potable Ground Water Condition in Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Evironmental Protection Act

2 Table 3: Stratified Site Condition Standards in a Non-Potable Ground Water Condition in Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Evironmental Protection Act

3 Table 8: Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition in Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Evironmental Protection Act

4 Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition in Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Evironmental Protection Act

5 Table 2: Effluent Limits in Canadian National Railway Certificate of Approval No.3528-83LQWT, Ministry of Environment, April 29, 2010

6 CNL = Could not Locate