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Undertaking U-1:

To advise what the phrase, “Transactions per labour hour” refers to in the report on the T&D WAM Phase II, dated May 2nd, 2025 (Matter M12253); also, to advise how that information is tracked; to explain how the numbers in the Year 1 benefits realized were in fact calculated.

Response U-1:

"Transactions per labour hour" is a productivity metric used to measure the efficiency of the Work and Asset Management (WAM) systems in completing work activities related to Auto-Scheduling & Optimization, and One View of Work. This metric compares the number of compatible units¹ (CU) completed per hour of productive labour time. Non-productive labour hours, including vacation, training, sick time, holidays, and storm response are excluded such that only hours spent on customer work are reflected.

The tracking methodology includes the following components:

- Work Orders: NS Power’s WAM system (Maximo) uses CUs to create and electronically dispatch work orders.
- Electronic Timesheets: As work is completed in the field, digital timesheets automatically capture labour hours against work orders and submit time entries to NS Power’s payroll system.

Year 1 benefits were calculated by comparing labour efficiency before and after implementation of WAM Phase 2. Specifically, the average labour hours per CU hour from calendar years 2021

¹ Compatible units (CUs) are standard work units used by NS Power. Each CU has a labour rate and a material rate, which defines all the individual tasks and materials to perform a unit or work.

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1 and 2022 (combined) were compared to the average labour hours per CU hour in 2024 - the first
2 full year after go-live. Data from 2023 was excluded because the Company was operating in a
3 temporary hyper care period following implementation. This elevated support environment was
4 not reflective of normal, steady-state operations.

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6 The reduction in labour hours per CU hour was then multiplied by the total CU hours completed
7 in 2024, and by the applicable 2024 blended IBEW hourly rate, including fringe benefits.

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Undertaking U-2:

Per Exhibit N-9, pdf pg. 11 (Wilson Evidence), to advise whether the data would be useful for improved cost allocation between rate classes and rate design.

Response U-2:

The categories of data referenced are as follows:

- (a) new customers by single-family, multi-unit, and residential addition categories;
- (b) increased load capacity at existing residential and commercial sites;
- (c) unmetered services, such as streetlights; and
- (d) external factors driving costs, including supply chain issues, shifts in the regular/overtime labour breakdown due to other utility programs.

Insight into this type of detailed annual work order data may, in principle, help inform the Company's understanding of cost drivers and emerging trends. However, given the high volume of transactions across the customer population and the extended period over which utility costs are accumulated, NS Power expects that, for the foreseeable future, cost allocation and rate design will continue to rely on established methodologies such as the Minimum System Study for allocating costs and class-level customer volumes for rate design. Accordingly, NS Power concludes that the proposed granular customer-type data would not materially improve cost allocation or rate design outcomes at this time and does not recommend implementing the proposed work order data collection.

2026 ACE Plan (NSEB M12619)
NSPI Responses to NSEB Undertakings

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Undertaking U-3:

To provide NS Power's Average Service Availability Index (ASAI) for 2020-2025 at a system level.

Response U-3:

The Average Service Availability Index (ASAI) (equation provided below) is calculated for 2016 to 2025 using all-in (including all event days and planned outages) outage data.

$$ASAI = 1 - \frac{SAIDI}{Annual\ Hours}$$

Year	SAIDI (All-In)	Annual Hours	ASAI
2016	11.90	8,784	99.86%
2017	8.57	8,760	99.90%
2018	16.26	8,760	99.81%
2019	43.88	8,760	99.50%
2020	6.57	8,784	99.93%
2021	5.60	8,760	99.94%
2022	74.87	8,760	99.15%
2023	23.03	8,760	99.74%
2024	6.34	8,784	99.93%
2025	10.19	8,760	99.88%

2026 ACE Plan (NSEB M12619)
NSPI Responses to NSEB Undertakings

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1 **Undertaking U-4:**

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3 **To provide a copy of the October 9, 2024 letter from the Minister with respect to directives**
4 **under the Synchronous Condenser Project.**

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6 Response U-4:

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8 Please refer to Attachment 1.



Natural Resources and Renewables
Office of the Minister

PO Box 698, Halifax, Nova Scotia, Canada B3J 2T9 • Telephone 902-424-4037 • Fax 902-424-0594 • novascotia.ca

October 9, 2024

Judith Ferguson
Nova Scotia Power
1223 Lower Water Street
Halifax, Nova Scotia B3J 3S8

Sent via email: Judith.Ferguson@nspower.ca

Dear Judith Ferguson:

Pursuant to the authority provided in Section 2B of the *Electricity Act*, the Minister directs Nova Scotia Power Inc. (NSP) to:

1. With respect to all wind generation facilities prescribed under the *Prescribed Generation Facilities and Energy-Storage Projects Regulations* (the “Regulations”), NSP must provide the equipment and systems necessary to maintain the stability, reliability, and power quality of the transmission system for interconnection by wind energy conversion systems.
2. In order to enable this requirement:
 - a. NSP may continue to set minimum technical requirements for the wind turbines. The minimum technical requirements set out by NSP must be guided by features and functionality that are integral to commercially available wind turbines.
 - b. NSP must provide this equipment and systems for any wind generation facility that is prescribed in the Regulations and subsequently issued a power purchase agreement by the Minister.
 - c. The owner of a prescribed wind generation facility must make a one-time payment to NSP of \$50,000/MW within 180 days of executing the Generator Interconnection Agreement, increasing annually starting on January 1, 2026 at the rate of the Consumer Price Index for “All Items excluding Energy” for Nova Scotia published or established by Statistics Canada, to provide a capital contribution towards Nova Scotia Power’s investment to maintain the stability, reliability, and power quality of the transmission system at the time NSP issues the Generator Interconnection Agreement, unless one of the following apply:

-2-

- i. The specified wind generation facility point of interconnection is within a 25 kilometre radius of the specified customer (as identified in the Regulations), and is less than 175MW,

or

- ii. NSP and the owner of the wind generation facility have reached an agreement on an alternative method or payment amount that maintains the stability, reliability, and power quality of the transmission system, within 150 days of executing the Generator Interconnection Agreement. NSP, acting reasonably, has final determination of whether the parties have come to this agreement.
- d. NSP shall only provide the equipment and systems when it is required to maintain the stability, reliability, and power quality of the entire transmission system and this capability is not typically provided by commercially available wind turbines.
- e. Any expenses reasonably incurred by NSP in ensuring compliance with subsection (1) will be allocated across all customer classes as a transmission network resource and shall remain subject to any otherwise applicable approvals under the *Public Utilities Act*.

Regards,



Tory Rushton
Minister

- c Karen Gatien, Deputy Minister
Peter Craig, Director, Electricity
Chris Milligan (Chris.Milligan@nspower.ca)

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Undertaking U-5:

Re Matter M12012, Exhibit N-8, IR-1, Attachment 1: to provide an update to the 2025 projects that were completed with the totals spent on each project, the total spent in 2025, as well as comparison to the budget number that was in 2025, what's carrying forward to 2026, and the total spend for 2026.

Response U-5:

Please refer to Attachment 1, which details the work completed in 2025 on the projects originally included in Year 1 of the Five-Year Reliability Plan, as well as work forecast to be completed in 2026 on that subset of projects.

CI/Project	Project Name	Investment Category	Project Type	2025 Forecast (ACE 2025)	2025 Actuals	2025 Variance	2026 Forecast (ACE 2026)
23158	D005 Unplanned Replace Deteriorated	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 21,246,256	\$ 21,501,960	\$ 255,704	22,418,590
C0011358	New Bridgewater Substation	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,385,538	\$ 2,221,567	\$ 836,029	-
C0022382	Susie Lake Substation Addition	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 5,149,415	\$ 2,897,753	\$ (2,251,662)	62,824
C0022140	98N-Stellarton Substation	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 3,187,370	\$ 3,239,354	\$ 51,984	5,084,736
23137	D095 - Planned Replacement Of Distr	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 10,620,862	\$ 21,980,684	\$ 11,359,822	15,000,016
C0061223	143H-Mount Unicksa Substation	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 2,122,576	\$ 6,618,512	\$ 4,495,936	1,000,000
23361	D098 Provincial Storm	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 8,923,375	\$ 3,579,779	\$ (4,443,596)	6,927,211
C0068952	2025 PCB Poleset Sampling and Repla	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 3,689,063	\$ 2,316,982	\$ (1,372,081)	2,777,749
C0031048	91H-111 Transformer Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 5,837,478	\$ 4,737,885	\$ (1,099,594)	2,329,053
C0068961	2025 PCB Substation Sampling and Re	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 4,680,871	\$ 52,462	\$ (4,628,409)	1,224,293
C0068638	D-Cogswell HRM Redevelopment Progra	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,667,138	\$ 1,722,793	\$ 55,655	537,430
23118	PROVINCIAL - PLANNED TRANS LINE REP	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 6,055,258	\$ 4,287,071	\$ (1,768,187)	5,680,154
C0041788	L6516 Replacements and Upgrades Ph2	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,928,774	\$ 464,621	\$ (1,464,153)	-
C0061545	L6006 Replacements and Upgrades	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,113,189	\$ 1,984,237	\$ 871,049	206,436
C0053699	Renewable to Retail Implementation	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,505,726	\$ 1,416,627	\$ (89,098)	1,229,332
26496	Meter Routine	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 4,876,834	\$ 3,733,502	\$ (1,143,331)	3,870,540
C0061550	L5031 - Hubbards to East Chester	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,274,730	\$ 3,691,729	\$ 2,416,999	1,898,274
C0068953	2025 PCB Light Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 3,900,672	\$ -	\$ (3,900,672)	-
23136	D007 Contractual Replacements (Joint	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 4,581,202	\$ 2,553,346	\$ (2,027,856)	3,723,004
23135	D006 Regulatory Replacements - Prov	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 4,124,211	\$ 3,894,283	\$ (229,928)	4,118,292
C0056240	2024-2025 Transmission Switch & Bre	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 270,595	\$ 629,971	\$ 359,376	1,049,910
C0055796	2023 EHV Breaker Replacements	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,541,182	\$ 1,414,369	\$ (126,814)	733,370
23120	PROVINCIAL-TRANS SUBSTATION PRIMARY	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 3,450,150	\$ 3,644,116	\$ 193,965	3,122,388
23115	PROVINCIAL TRANSMISSION LINE REPLAC	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 3,274,053	\$ 1,724,043	\$ (1,550,010)	3,322,385
C0069232	L6021 Replacements and Upgrades Ph1	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,080,940	\$ 1,536,155	\$ 455,215	1,953,732
C0061551	L7009 Replacements and Upgrades Ph2	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,389,540	\$ 1,151,297	\$ (238,243)	1,472,353
C0069227	L6516 Replacements and Upgrades Ph3	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 478,214	\$ 1,784,771	\$ 1,306,557	1,125,133
C0069231	L8002 Replacements and Upgrades Ph1	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 798,306	\$ 2,112,868	\$ 1,314,562	1,812,896
C0061525	ECC Facility Ratings	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 169,649	\$ 308,431	\$ 138,782	-
C0064583	NERC Standards Implementation	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 500,339	\$ 32,070	\$ (468,269)	-
C0070048	L50278 Replacements and Upgrades Ph	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,154,364	\$ 194,960	\$ (960,024)	2,130,943
C0031122	L6539-2021 Replacements and Upgrade	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,529,843	\$ 167,950	\$ (1,361,894)	2,780,796
C0022664	ECC Optimization Tools Project	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ (2,537,936)	\$ 3,144,359	\$ 5,682,295	690,093
C0022562	22C-404GA Lennox Passage Rebuild	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 259,698	\$ 854,299	\$ 594,601	-
C0061403	2024 2025 Sacrificial Anode Install	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 788,891	\$ 720,516	\$ (68,375)	142,517
C0053295	L5004 Keaney Lake Structure Replac	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,101,784	\$ 188,018	\$ (913,767)	1,090,202
C0069238	2025/2026 Steel Tower Refurbishment	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 715,698	\$ -	\$ (715,698)	1,391,030
C0057682	Spare Transformer Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 2,046,568	\$ 2,000,205	\$ (46,363)	-
C0053214	76W-T1 Transformer Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,938,848	\$ 2,036,355	\$ 97,507	614,732
C0052299	2023 2024 Steel Tower Life Extensio	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 898,085	\$ 1,215,244	\$ 317,160	469,206
C0050842	2024 Bulk Oil Breaker Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 950,241	\$ 579,228	\$ (371,014)	635,204
C0053696	ECC Wind Integration Project	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 135,662	\$ 94,081	\$ (41,581)	3,527,529
C0050852	10V-T1 Transformer Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,933,468	\$ 1,605,565	\$ (327,903)	-
C0061547	L7002 Replacements and Upgrades	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,015,898	\$ 861,441	\$ (154,458)	896,988
C0041791	L6551 Replacements and Upgrades	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 898,668	\$ 545,167	\$ (353,501)	241,491
C0050835	2023/2024 Steel Tower Refurbishment	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 875,812	\$ 520,295	\$ (355,517)	-
C0061546	L6514 Replacements and Upgrades	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 800,114	\$ 391,048	\$ (409,067)	484,426
C0041807	L5534 Replacements and Upgrades	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 277,404	\$ 2,946	\$ (274,458)	274,987
C0068954	2025 PCB Downline Device Sampling a	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,129,576	\$ -	\$ (1,129,576)	1,100,618
25260	PROV - TOOLS & EQP - SYS MAINTENANC	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 430,000	\$ 343,844	\$ (86,156)	900,000
C0062524	Damage Assessment Enhancements 5.0	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 307,139	\$ (387)	\$ (307,526)	-
C0068786	2025 Padmount Replacement Program	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,038,460	\$ 940,850	\$ (97,610)	-
C0061552	L6043 Replacements and Upgrades	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 796,677	\$ -	\$ (796,677)	1,626,537
C0057882	2024 Pennsylvania Breaker Replace	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 142,591	\$ 150,257	\$ 7,666	990,156
26757	PROVINCIAL LINE TOOLS & EQUIPMENT R	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 300,221	\$ 330,173	\$ 29,952	550,000
C0041830	Spare Power Prod Unit Transformer	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 1,258,324	\$ 1,250,532	\$ (7,792)	-
C0041804	2022 Line Retirement Program	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 910,874	\$ 730	\$ (911,611)	340,094
16145	SACK DEPOT - TOOLS & EQUIPMENT	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 158,410	\$ 307,946	\$ 149,536	175,000
12025	SYDNEY REGION - TOOLS AND EQUIPMENT	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 127,750	\$ 82,561	\$ (45,189)	175,000
C0050834	Spare EHV Breaker Replacements	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 317,190	\$ 11	\$ (317,180)	511,097
C0061387	2024 2025 Wood Pole Retirement Pro	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 511,730	\$ 5,591	\$ (506,139)	847,264
C0070787	91W-411 Labelle Road Phase Extensio	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 762,420	\$ -	\$ (762,420)	1,051,545
11541	Tools And Equipment - West	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 127,750	\$ 154,416	\$ 26,666	175,000
C0003678	P002-722 - NORTH-EAST TOOLS	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 127,750	\$ 164,715	\$ 36,965	175,000
C0031117	2H-411-Prospect Rd Phase Extension	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 410,157	\$ 156,074	\$ (254,083)	75,857
14841	PROTECTION MODIFICATIONS AND REPLAC	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 98,791	\$ 531,789	\$ (456,002)	862,088
C0067112	L5012 Replacements and Upgrades	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 112,598	\$ (300,282)	\$ (412,880)	-
16073	SCADA IMPROVEMENTS ROUTINE	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 50,596	\$ 64,797	\$ 14,201	120,428
23121	PROVINCIAL - SUBSTATION ADDITIONS &	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 925,361	\$ 600,202	\$ (325,159)	902,743
41350	16W-301 Helburn Rebuild Phase 2	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 268,429	\$ 583,716	\$ 315,287	-
C0052654	L5541 Water Crossing Upgrades	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 599,013	\$ -	\$ (599,013)	305,788
C0061544	L6536 Replacements and Upgrades	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 892,924	\$ -	\$ (892,924)	423,807
C0060749	2024 Padmount Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 272,486	\$ 341,203	\$ 68,717	-
52184	37N-412-Glooscap Trail Rebuild PH2	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 243,181	\$ 3,557	\$ (239,625)	49,303
C0070646	57C-426H-Stillwater Phase Extension	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 793,224	\$ 1,020,505	\$ 227,281	-
C0068955	2025 PCB Program - Underground Asse	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 780,075	\$ -	\$ (780,075)	-
C0061743	L6038 Realignment	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 468,823	\$ 980,449	\$ 511,626	-
C0070268	2025 Voltage Regulator Replacements	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 784,463	\$ 3,412	\$ (781,050)	547,973
C0070827	99V-314G-Lake George Line Extension	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 663,690	\$ 42,361	\$ (621,328)	672,694
C0067111	L5023 Rebuild	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 147,876	\$ 65,629	\$ (82,247)	-
C0033444	63V-312-Stronach Mountain Ph Ext	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 458,333	\$ 16,211	\$ (442,122)	-
C0068956	2025 PCB Program - Reclosers	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 82,553	\$ -	\$ (82,553)	926,007
C0061863	129H - Keaney Lake Substation Rebu	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 113,241	\$ 40,746	\$ (72,495)	946,245
49841	23H-Rockingham Voltage Conversion	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 96,791	\$ 8,056	\$ (88,735)	-
29038	System Performance Improvement Rout	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 729,719	\$ 842,427	\$ 112,709	1,099,867
C0070426	2025 Downline Recloser Additions	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 663,998	\$ 291,452	\$ (372,546)	147,822
C0041812	L6040 Replacements and Upgrades	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 445,437	\$ 400	\$ (445,037)	688,563
C0043490	2022 Downline Asset PCB Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 372,622	\$ 2,013	\$ (370,609)	-
C0043010	2022 2023 Wood Pole Retirement Pro	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 79,470	\$ -	\$ (79,470)	-
C0043930	1H-419 Targeted Underground Device	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 599,382	\$ -	\$ (599,382)	-
C0070347	2025 Hydraulic Regulator Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 584,157	\$ 360,439	\$ (223,719)	52,773
C0061384	512W-311-Lake Torment Loading Issue	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 512,051	\$ 696,973	\$ 184,922	-
C0071410	25W-301- Welshtown Phase Addition	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 322,774	\$ -	\$ (322,774)	770,654
C0042846	15C-211 - Deepdale Conversion	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 490,752	\$ 470,630	\$ (20,122)	-
C0011189	D-2H-411-Cowley Hill V system repl	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 315,834	\$ 18,180	\$ (297,654)	-
C0042186	100C-421 - Hanrie Boucher Rebuild	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 455,047	\$ 311,497	\$ (143,550)	-
C0072328	57S-401 Targeted Device Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 468,817	\$ 679,842	\$ 211,026	-
C0031402	559W-331-Molega Lake Rd Conversion	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 438,722	\$ 400,872	\$ (37,850)	-
C0072588	57S-402 Targeted Device Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 462,986	\$ 426,442	\$ (36,544)	-
C0051598	50V Kentville Aluminum Light Pole R	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 169,188	\$ 17,399	\$ (151,788)	-
C0068789	1H-403 Targeted Underground Dev Rep	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 458,350	\$ -	\$ (458,350)	-
C0041955	2022 Hydraulic Recloser Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 48,216	\$ 92,920	\$ 44,704	-
C0031268	AMO Critical Equipment Online Mon.	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 34,543	\$ 53,850	\$ 19,307	-
C0031044	67N-713 230 KV Breaker Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 430,000	\$ -	\$ (430,000)	-
C0070506	2025 Vault Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 382,690	\$ -	\$ (382,690)	349,585
C0041853	2022 Recloser Remote Connectivity	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 36,649	\$ 132,108	\$ 95,459	-
C0070366	2025 Tapwinder Additions	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 376,961	\$ 88,165	\$ (288,796)	-
C0061365	5N-301 Debert Stepdown Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 262,489	\$ 295,978	\$ 33,489	-
C0053855	1H-415-Reinsulate Marginal Rd	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 367,170	\$ 346,904	\$ (20,267)	-
C0061266	19C-204 - Durells Island Conversion	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 365,475	\$ 367,823	\$ 2,348	-
C0004138	50W-412GA Port Medway Line Extern	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 161,531	\$ 431,407	\$ 269,876	-
C0053517	9H-221 University Ave and Morris St	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 67,099	\$ 26,990	\$ (40,109)	36,643
C0060750	2024 Vault Replacement	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 90,706	\$ 101,689	\$ 10,984	-
C0071989	2025 Voltage Regulator Cap Spares	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 305,326	\$ 44	\$ (305,282)	-
14973	PRIMARY EQUIPMENT SPARES	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 300,000	\$ 14,422	\$ (285,578)	192,433
C0033507	Underground Switch Replacements	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 125,510	\$ (7)	\$ (125,516)	-
C0071990	2025 Step Down Transform Cap Spares	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 255,326	\$ -	\$ (255,326)	-
C0031300	9H-223 North St Conversion	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 226,688	\$ 225,556		

CI/Project	Project Name	Investment Category	Project Type	2025 Forecast (ACE 2025)	2025 Actuals	2025 Variance	2026 Forecast (ACE 2026)
C0068960	90H Farrell St Feeder Addition	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 188,842	\$ 35,715	\$ (153,127)	-
23511	Primary Equipment Spares - Distribu	Storm Hardening - Targeted Equipment Replacement and Upgrades	Routine Capital	\$ 160,000	\$ 12,725	\$ (147,275)	162,391
C0070508	2025 Manhole Automatic Pumps	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 150,938	\$ -	\$ (150,938)	-
C0070509	2025 Feeder Exit Replacements	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 109,639	\$ -	\$ (109,639)	-
C0060751	2024 Manhole Automatic Pumps	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 18,495	\$ 74,285	\$ 55,790	-
C0060003	AMO 855 Thermal Camera Upgrade	Storm Hardening - Targeted Equipment Replacement and Upgrades	Special Capital	\$ 74,885	\$ -	\$ (74,885)	-
C0061521	New Distribution ROW Phase 10	Storm Hardening - Vegetation Management	Special Capital	\$ 18,372,529	\$ 18,432,930	\$ 2,060,401	-
23127	D010 Provincial Distribution ROW	Storm Hardening - Vegetation Management	Routine Capital	\$ 12,502,942	\$ 11,944,226	\$ (558,716)	13,223,181
43827	Transmission ROW Widening Routine	Storm Hardening - Vegetation Management	Routine Capital	\$ 2,999,500	\$ 2,881,238	\$ (118,262)	3,314,050
47124	Advanced Meter Infrastructure	Advanced Grid Modernization	Special Capital	\$ 749,120	\$ 2,673	\$ (746,446)	294,212
C0053316	Transmission Customer Performance Regulations Compliance Project – Michelin Waterville Dy	Advanced Grid Modernization	Special Capital	\$ 654,117	\$ 2,828,005	\$ 2,173,888	-
C0071528	FLISR Project	Advanced Grid Modernization	Special Capital	\$ 1,578,360	\$ 100,400	\$ (1,477,960)	3,445,667
47751	ECC Dynamic Line Rating Implementat	Advanced Grid Modernization	Special Capital	\$ 716,102	\$ 1,606,374	\$ 890,272	-
C0069270	2025 SCADA/EMS Upgrade	Advanced Grid Modernization	Special Capital	\$ 749,671	\$ 342,040	\$ (407,631)	719,540
C0032143	GIS Underground Asset Modelling	Advanced Grid Modernization	Special Capital	\$ 433,399	\$ -	\$ (433,399)	-
C0021133	SCADA Mobile Application	Advanced Grid Modernization	Special Capital	\$ 56,120	\$ -	\$ (56,120)	428,330
C0021109	2020 RTU Deployment Project	Advanced Grid Modernization	Special Capital	\$ 342,065	\$ 894,109	\$ 552,044	-
C0011378	Route Network Upgrade	Advanced Grid Modernization	Special Capital	\$ 454,331	\$ 221,190	\$ (233,141)	-
C0051815	RTU Replacements Program Phase 6	Advanced Grid Modernization	Special Capital	\$ 1,893,167	\$ 1,288,620	\$ (604,548)	1,669,698
C0070907	MDR-8000 Microwave Radio Replacemen	Advanced Grid Modernization	Special Capital	\$ 511,996	\$ -	\$ (511,996)	526,010
16550	TELECOMMUNICATION SYSTEMS REPLACE A	Advanced Grid Modernization	Routine Capital	\$ 741,326	\$ 684,870	\$ (56,456)	852,510
C0070868	LEDR Radio Link Replacement	Advanced Grid Modernization	Special Capital	\$ 226,700	\$ 248,114	\$ 21,414	164,874
16365	MOBILE RADIO ROUTINE	Advanced Grid Modernization	Routine Capital	\$ 238,819	\$ 248,573	\$ 9,754	224,550
16551	TELECOMMUNICATION RADIO AND FIBRE O	Advanced Grid Modernization	Routine Capital	\$ 222,168	\$ 209,213	\$ (12,955)	222,400
38243	Telecommunications Spares	Advanced Grid Modernization	Routine Capital	\$ 184,700	\$ 204,639	\$ 19,939	208,261
Total				\$ 196,595,901	\$ 179,396,278	\$ (17,199,623)	\$ 152,056,417

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Undertaking U-6:

To provide examples of projects where the proposed new definition for a scope change would apply to past projects.

Response U-6:

Through a review of capital projects submitted to the NSEB over the last several years, NS Power did not identify any instances of a project's intent or choice of alternative changing after a project was filed with the NSEB. NS Power works to ensure that projects are filed with the NSEB once the most cost-effective approach is well understood, therefore a change in the project's intent or choice of alternative should be a rare occurrence. An example of a project that listed alternatives under "Why do the Project This Way" is C0021140 New 138KV – 25KV Substation Stellarton that had five alternatives defined in the planning study:

1. Build a new substation supplied via 138 kV line L-6507 in 2019 complete with a new 25/33/42 MVA , 138-25 kV transformer.
2. Use two new feeders to supply two existing 62N feeders.
3. Replace transformers 62N-T1 and 62N-T2 at end of life in 2026 with a single new 138/69-25 kV, 15/20/25 MVA unit.
4. Add a second 25/33/42 MVA transformer at the new substation in 2026 supplied via L-6508.
5. Replace transformer 50N-T13 at end of life in 2030 with a 138/69-25 kV, 25/33/42 MVA transformer supplied via the existing 69 kV system.

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- 1 The project application was based on alternative 1. In the hypothetical event that one of the other
2 alternatives became the selected approach, that project would require a scope change application,
3 regardless of project costs.
4
5 Additionally, NS Power maintains that any significant changes in the quantity of assets being
6 invested in can be adequately captured within the ATO / FIN financial thresholds.

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Undertaking U-7:

To provide a list of other reliability and resilience metrics that were considered by NS Power beyond the RCE method, understanding that there could be different metrics, depending on the type of asset.

Response U-7:

In NS Power's 2026 ACE Plan Application at page 100, NS Power noted that "[o]ne option for consideration in evaluating a particular reliability strategy and/or project is utilizing a measure of Reliability Cost Efficiency (RCE)".

The reliability cost efficiency (RCE) approach that was used is further explained in NSEB IR-50. The intended use of Reliability Cost Efficiency (RCE) would be to evaluate the application of different potential risk mitigation strategies to improve reliability once a risk has been identified using NS Power's Asset Management Mechanism. RCE would not be used as the sole measure to select a project, only to assist in refining the selection of risk mitigating interventions.

The metric of \$/Customer Hour of Interruption outlined in NSEB IR-50 would not be applicable to all asset classes managed by NS Power and could not be used alone in determining which asset risks should be prioritized.

As part of his testimony at the hearing, Mr. MacIntosh stated:

So we only apply the reliability cost efficiency once we've understood what the risk is on the system. If you put that in front of the decision-making process, that can create issues. That's why it's not one metric. We need to apply engineering judgment using our SMEs and our local knowledge to put forward the best mitigation for our customers.¹

¹ Transcript page 307

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1
2 Mr. MacIntosh stated that utilizing this particular metric could not be applied that same way across
3 all asset classes. For example, \$/Customer hour of interruption could not be used to compare
4 transmission line mitigations on the Bulk Energy system as an outage on that line would not
5 necessarily cause customer interruptions but would increase the overall risk of the transmission
6 system and could require additional generating fleet dispatch or transmission flow optimization.
7 In this case, the mitigations would be compared against overall cost and change in the asset
8 condition rating. Comparing the costs of alternatives with the change in asset condition or
9 probability of failure is the approach NS Power has used before landing on RCE for distribution-
10 related investments outlined in the Five-Year Reliability Plan.

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Undertaking U-8:

Re: C0053214 – 76W-T1 Transformer Replacement

To provide any information available re load growth forecast provided by the Mahone Bay Electric Utility

Response U-8:

It is NS Power's understanding that Mahone Bay is expecting steady load growth driven by small-scale developments.

The following information was provided by Strum Engineering Inc:

In 2027, the Town of Mahone Bay plans to add a fourth 4.16kV distribution circuit, 76W-214, to provide better load distribution on the existing three (3) circuits and to supply a proposed 1,000 kVA (maximum) development at Kedy's Landing. With the addition of Circuit 76W-214, the loading of existing Circuits 76W-212 and 76W-213 will be redistributed, resulting in the following anticipated loading profile:

Feeder	76W-211	76W-212	76W-213	76W-214
Load (kVa)	850	1,150	1,100	1,250

Additional residential developments and small commercial expansions within the Town of Mahone Bay Electric Utility's scope are expected to require an additional two (2), 4.16kV Distribution Circuits, 76W-215 and 76W-216, within the next ten (10) years. The expected loading of these two (2) Distribution Circuits is anticipated to be 550kVA each.

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1 Assuming minimal load growth within the existing three (3), 4.16kV distribution circuits,
2 continued redistribution of loads and the addition of the three (3) future distribution circuits, the
3 following maximum loading is anticipated within the next ten (10) years:
4

Feeder	76W-211	76W-212	76W-213	76W-214	76W-215	76W-216
Load (kVa)	900	1,000	1,000	1,250	550	550

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Undertaking U-9:

Re: C0053214 – 76W-T1 Transformer Replacement

(a) To provide a list of previous outages over the last five years for the existing transformer related to C0053214.

(b) To provide the feeder load values and number of feeders supplied by this transformer.

Response U-9:

(a) Events impacting the 76W-T1 transformer from 2021 to 2025 are found in the table below. No events originated within the substation (including as a result of the transformer itself) with all outages were a consequence of interruptions of transmission lines feeding the substation.

Date / Time	Momentary / Sustained Interruption	Cause
2021/05/17 15:18:14	MI	Adverse Weather
2022/02/07 17:46:54	SI	Adverse Weather
2023/03/02 22:35:54	SI	Failed Equipment
2023/03/03 01:44:27	SI	Failed Equipment
2023/03/14 17:41:45	MI	Adverse Weather
2023/06/02 22:49:56	SI	Foreign Interference
2023/06/02 22:58:17	SI	Foreign Interference
2023/06/03 06:17:14	SI	Foreign Interference
2023/06/03 06:50:04	SI	Foreign Interference
2023/08/09 04:35:26	MI	Adverse Weather
2023/08/14 01:41:14	MI	Adverse Weather
2023/09/16 08:05:18	SI	Adverse Weather

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Date / Time	Momentary / Sustained Interruption	Cause
2023/09/16 08:19:02	SI	Foreign Interference
2024/04/12 02:58:30	SI	Failed Equipment
2024/12/08 10:15:14	SI	System Condition
2025/05/02 21:28:26	SI	Foreign Interference
2025/06/03 16:52:39	SI	Foreign Interference
2025/07/04 15:48:18	SI	Unknown
2025/09/26 03:36:53	MI	Foreign Interference
2025/09/26 03:38:09	SI	Foreign Interference
2025/09/26 04:27:21	SI	Foreign Interference

(b) The information below was provided by Strum Engineering:

The maximum existing loading recorded on each of the existing three (3), 4.16kV distribution circuits during the past 12 months were as follows:

Feeder	76W-211	76W-212	76W-213
Load (kVa)	850	1,450	1,050

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Undertaking U-10:

To provide the inspection reports for the one-year period starting before August 2024 for Project C0053234, and to provide the two Strum site assessment reports, dated October 2024 and May 2025.

Response U-10:

Please refer to Attachment 1 for inspection reports from August 2023 – August 2024 and Attachment 2 for Environmental Site Assessment Reports.

The inspection reports note that the transformer had a pre-existing leaking condition. However, these leaks were identified as minor and the field resources considered the existing oil containment with the monthly checks acceptable to manage the risk.

Route Id	Route Description	Related Asset Id	Description	Checkpoint ID	Reading Taken Date	Reading Value Character	Reading Value Numeric	Action Taken	Comment
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	8/11/2023 10:41	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	8/11/2023 10:41	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	8/11/2023 10:41	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	8/11/2023 10:41	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	8/11/2023 10:41	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	8/11/2023 10:42	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	8/11/2023 10:42	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	8/11/2023 10:42	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	8/11/2023 10:42	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	8/11/2023 10:43		30		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	8/11/2023 10:43		45		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	8/11/2023 10:43	LEAKING			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	8/11/2023 10:43	2a. Dripping down equipment			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	8/11/2023 10:44	OFF			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	8/11/2023 10:44	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	8/11/2023 10:45	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	9/15/2023 10:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	9/15/2023 10:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	9/15/2023 10:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	9/15/2023 10:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	9/15/2023 10:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	9/15/2023 10:40	N/A			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	9/15/2023 10:40	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	9/15/2023 10:40	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	9/15/2023 10:40	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	9/15/2023 10:40	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	9/15/2023 10:40	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	9/15/2023 10:40	OFF			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	9/15/2023 13:26		40		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	9/15/2023 13:26		60		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	9/15/2023 13:26	LEAKING			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	9/15/2023 13:27	2b. To containment but dripping down equipment			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	10/17/2023 11:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	10/17/2023 11:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	10/17/2023 11:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	10/17/2023 11:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	10/17/2023 11:39	NOT OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Non functional/obstructed	Checkpoint-15004460	10/17/2023 11:39	YES			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Excessive Noise	Checkpoint-15004463	10/17/2023 11:39	NO			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	IR thermal anomaly	Checkpoint-15004464	10/17/2023 11:39	NO			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	10/17/2023 11:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	10/17/2023 11:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	10/17/2023 11:39	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	10/17/2023 11:40	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	10/17/2023 11:40	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	10/17/2023 11:40		30		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	10/17/2023 11:40		60		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Present Position	Checkpoint-15004545	10/17/2023 11:40	2			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	10/17/2023 11:40	OFF			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	10/17/2023 11:40	LEAKING			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	10/17/2023 11:41	2b. To containment but dripping down equipment			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	10/17/2023 12:04	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	11/20/2023 20:44	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	11/20/2023 20:44	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	11/20/2023 20:44	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	11/20/2023 20:44	OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	11/20/2023 20:44	NOT OK			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Non functional/obstructed	Checkpoint-15004460	11/20/2023 20:44	YES			
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Excessive Noise	Checkpoint-15004463	11/20/2023 20:44	NO			

96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	IR thermal anomaly	Checkpoint-15004464	11/20/2023 20:44	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	11/20/2023 20:44	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	11/20/2023 20:44	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	11/20/2023 20:44	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	11/20/2023 20:44	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	11/20/2023 20:44	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	11/20/2023 20:44	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	11/20/2023 20:45		32
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	11/20/2023 20:45		60
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Operations Count	Checkpoint-15004544	11/20/2023 20:45		61824
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Present Position	Checkpoint-15004545	11/20/2023 20:45	2	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	11/20/2023 20:45	OFF	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	11/20/2023 20:45	LEAKING	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	11/20/2023 20:45	2b. To containment but dripping down equipment	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	12/15/2023 13:38	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	12/15/2023 13:39		20
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	12/15/2023 13:39	OFF	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	12/15/2023 13:39	LEAKING	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	12/15/2023 13:39	2b. To containment but dripping down equipment	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	1/5/2024 13:02	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	1/5/2024 13:02	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	1/5/2024 13:02	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	1/5/2024 13:02	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	1/5/2024 13:02	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	1/5/2024 13:02	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	1/5/2024 13:02	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	1/5/2024 13:02	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	1/5/2024 13:02	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	1/5/2024 13:02	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	1/5/2024 13:02		20
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	1/5/2024 13:02		60
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Present Position	Checkpoint-15004545	1/5/2024 13:03	2	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	1/5/2024 13:03	OFF	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	1/5/2024 13:03	LEAKING	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	1/5/2024 13:04	2b. To containment but dripping down equipment	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	1/10/2024 12:40	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	1/10/2024 12:42	SAME AS LAST MONTH	leaking T/C
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	1/10/2024 12:42	OFF	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	2/14/2024 9:47	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	2/14/2024 9:47	OK	

96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	2/14/2024 9:47	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	2/14/2024 9:47	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	2/14/2024 9:47	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	2/14/2024 9:47	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	2/14/2024 9:47	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	2/14/2024 9:47	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	2/14/2024 9:47	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	2/14/2024 9:47	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	2/14/2024 9:47	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	2/14/2024 9:47		20
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	2/14/2024 9:47		60
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	2/14/2024 9:47	OFF	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	2/14/2024 9:48	LEAKING	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	2/14/2024 9:48	2b. To containment but dripping down equipment	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	3/3/2024 10:33	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	3/3/2024 10:33	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	3/3/2024 10:33	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	3/3/2024 10:33	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	3/3/2024 10:34	NOT OK	Supply wires need to be replaced
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Non functional/obstructed	Checkpoint-15004460	3/3/2024 10:34	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Excessive Noise	Checkpoint-15004463	3/3/2024 10:34	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	IR thermal anomaly	Checkpoint-15004464	3/3/2024 10:34	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	3/3/2024 11:48	NOT OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel has reached 50% saturation	Checkpoint-15004468	3/3/2024 11:48	YES	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Top column of Silica Gel is discoloured	Checkpoint-15004470	3/3/2024 11:48	YES	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	3/3/2024 11:48	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	3/3/2024 11:48	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	3/3/2024 11:48	NOT OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	3/3/2024 11:48	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	3/3/2024 11:48	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	3/3/2024 11:48		25
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	3/3/2024 11:49		40
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Chipped Paint	Checkpoint-15004497	3/3/2024 11:49	YES	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Surface Rust	Checkpoint-15004502	3/3/2024 11:49	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Corrosion/flaking	Checkpoint-15004506	3/3/2024 11:49	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Mechanical Deformation	Checkpoint-15004510	3/3/2024 11:49	YES	This TC leaks
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	3/3/2024 11:50	OFF	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	3/3/2024 11:50	LEAKING	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	3/3/2024 11:50	2a. Dripping down equipment	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	4/23/2024 10:28	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	4/23/2024 10:28	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	4/23/2024 10:28	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	4/23/2024 10:28	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Non functional/obstructed	Checkpoint-15004460	4/23/2024 10:28	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Excessive Noise	Checkpoint-15004463	4/23/2024 10:28	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	IR thermal anomaly	Checkpoint-15004464	4/23/2024 10:28	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	4/23/2024 10:29	NOT OK	Wiring needs to be replaced
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	4/23/2024 10:29	NOT OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel has reached 50% saturation	Checkpoint-15004468	4/23/2024 10:29	YES	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Top column of Silica Gel is discoloured	Checkpoint-15004470	4/23/2024 10:29	YES	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	4/23/2024 10:29	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	4/23/2024 10:29	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Chipped Paint	Checkpoint-15004497	4/23/2024 10:29	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	4/23/2024 10:30	NOT OK	Main tank is leaking into it
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Surface Rust	Checkpoint-15004502	4/23/2024 10:30	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Corrosion/flaking	Checkpoint-15004506	4/23/2024 10:30	NO	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Mechanical Deformation	Checkpoint-15004510	4/23/2024 10:30	YES	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	4/23/2024 10:30	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	4/23/2024 10:30	OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	4/23/2024 10:30		25

96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	4/23/2024 10:30	30	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	4/23/2024 10:31 LEAKING		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	4/23/2024 10:32 2b. To containment but dripping down equipment		Black tarp down
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	5/23/2024 10:13 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	5/23/2024 10:13 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	5/23/2024 10:13 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	5/23/2024 10:13 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	5/23/2024 10:13 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	5/23/2024 10:13 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	5/23/2024 10:15 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	5/23/2024 10:15 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	5/23/2024 10:15 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	5/23/2024 10:15 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	5/23/2024 10:15 OFF		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	5/23/2024 10:20	30	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	5/23/2024 10:20	60	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Present Position	Checkpoint-15004545	5/23/2024 10:20 2		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	5/23/2024 10:20 LEAKING		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	5/23/2024 10:21 2b. To containment but dripping down equipment		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	5/23/2024 10:33 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	6/14/2024 12:57 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	6/14/2024 12:57	30	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	6/14/2024 12:57	62	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Operations Count	Checkpoint-15004544	6/14/2024 12:57	61824	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	6/14/2024 12:58 OFF		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	6/14/2024 12:58 LEAKING		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	6/14/2024 12:58 2b. To containment but dripping down equipment		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	7/17/2024 13:24 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	7/17/2024 13:24 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	7/17/2024 13:24 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	7/17/2024 13:24 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Fans Condition	Checkpoint-15004458	7/17/2024 13:28 NOT OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Non functional/obstructed	Checkpoint-15004460	7/17/2024 13:28 YES		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Excessive Noise	Checkpoint-15004463	7/17/2024 13:28 NO		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	IR thermal anomaly	Checkpoint-15004464	7/17/2024 13:28 NO		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	7/17/2024 13:28 NOT OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel has reached 50% saturation	Checkpoint-15004468	7/17/2024 13:28 YES		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Top column of Silica Gel is discoloured	Checkpoint-15004470	7/17/2024 13:28 YES		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	7/17/2024 13:28 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	7/17/2024 13:28 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	7/17/2024 13:28 NOT OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Chipped Paint	Checkpoint-15004497	7/17/2024 13:28 NO		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Surface Rust	Checkpoint-15004502	7/17/2024 13:28 NO		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Corrosion/flaking	Checkpoint-15004506	7/17/2024 13:28 NO		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Mechanical Deformation	Checkpoint-15004510	7/17/2024 13:28 NO		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	7/17/2024 13:28 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	7/17/2024 13:28 OK		
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	7/17/2024 13:28	40	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	7/17/2024 13:29	60	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Present Position	Checkpoint-15004545	7/17/2024 13:29 2		

96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	7/17/2024 13:29 OFF	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	7/17/2024 13:29 LEAKING	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	7/17/2024 13:30 2b. To containment but dripping down equipment	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Condition	Checkpoint-15004428	8/24/2024 9:41 OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Radiators Condition	Checkpoint-15004446	8/24/2024 9:41 OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Bushing Condition	Checkpoint-15004453	8/24/2024 9:41 OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Silica Gel Condition	Checkpoint-15004465	8/24/2024 9:41 OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Arresters Condition	Checkpoint-15004472	8/24/2024 9:41 OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Neutral Conductor Condition	Checkpoint-15004486	8/24/2024 9:41 OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Tank Condition	Checkpoint-15004493	8/24/2024 9:41 OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Containment	Checkpoint-21470938	8/24/2024 9:41 OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Control Cabinet Condition	Checkpoint-15004512	8/24/2024 9:41 NOT OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Gauges/Indicators	Checkpoint-15004531	8/24/2024 9:41 OK	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Control Status	Checkpoint-15004548	8/24/2024 9:41 OFF	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks	Checkpoint-15005075	8/24/2024 10:49 LEAKING	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Oil Leaks - Rate of Leak	Checkpoint-15005093	8/24/2024 10:49 2. Leaking into containment	
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Present	Checkpoint-15004538	8/24/2024 10:50	30
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Main Tank Top Oil Temperature - Maximum	Checkpoint-15004539	8/24/2024 10:50	60
96H Ruth Falls Upper	96H Ruth Falls Upper (SMSTE)	96H-T1	Tapchanger Present Position	Checkpoint-15004545	8/24/2024 10:50 2	



PHASE II ENVIRONMENTAL SITE ASSESSMENT
116 Ruth Falls Road
Sheet Harbour, NS

October 22, 2024



NOVA SCOTIA

T: 902.835.5560 (24/7)

NEWFOUNDLAND
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October 22, 2024

Mr. Thomas Crane
Nova Scotia Power Incorporated
 1223 Lower Water Street
 Halifax, NS B3J 3S8

Dear Mr. Crane,

Re: Phase II Environmental Site Assessment
116 Ruth Falls Road, Sheet Harbour, NS

Attached is the Phase II Environmental Site Assessment (ESA) report prepared for the 116 Ruth Falls Road property in Sheet Harbour, NS. The site is currently occupied by a two-storey hydro-electric power plant on the central west portion of the site and two electrical transformer substations located east and southeast of the power plant. The Phase II ESA was completed to investigate a release originating from the transformer substation immediately east of the power plant.

Strum completed an initial site inspection while accompanied by NSPI personnel on August 30, 2024, to document site conditions and to investigate the manner of the transformer oil loss and impacts in order to recommend next steps. It was reported to Strum that evidence of the release was first observed by NSPI staff working in the hydro-electric power plant and substations at the site who noticed hydrocarbon staining at the base of the concrete retaining wall down-gradient of the transformer. The concrete secondary containment pad of the transformer was noted to be damaged with cracks on the concrete containment floor/walls which resulted in the escape of the released transformer oil into the underlying soils and bedrock. Hydrocarbon staining was observed on the concrete surface of the containment pad and in soils and gravels at the base of the down-gradient retaining wall. It was reported to Strum that the release likely occurred via a slow leak in the transformer oil circuit for an extended period; however, a larger loss of approximately 300 litres was suspected to have occurred within three to six months prior to the site inspection.

A soil sample was collected directly from the visibly impacted area at the base of the retaining wall and submitted for laboratory analysis of petroleum hydrocarbons (PHCs) and polychlorinated biphenyls (PCBs) which reported elevated PHC concentrations exceeding the applicable NS Tier I EQS criteria. Absorbent pads and booms were deployed along the base of the retaining wall to provide temporary containment of potential surficial migration of mineral oil from the base of the wall.

Based on the document site conditions and impacted areas, Strum completed a Phase II ESA to assess potential soil and groundwater impacts on the site in relation to the documented transformer oil release.

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The Phase II ESA included the completion of four test pits around the substation concrete pad, drilling of four boreholes with each completed as groundwater monitoring wells, and collection of soil and groundwater samples from the boreholes/monitoring wells. Soil and groundwater samples were submitted for laboratory analysis of PHCs and PCBs.

In summary, the Phase II ESA identified soil and groundwater PHC contamination present at the base of the retaining wall down-gradient of the transformer release. PHC impacts in soil were identified at the base of the down-gradient retaining wall near the visibly impacted area. The full extent of PHC impacts in soils has been fully delineated and inferred to be isolated to the soils underlying the footprint of the transformer infrastructure extending as far as the retaining wall west of the transformer. Additionally, elevated PHC concentrations in groundwater exceeding applicable criteria were identified in samples collected from the monitoring well installed nearest-to and down-gradient of the visibly impacted area at the base of the retaining wall. The full extent of PHC impacts in groundwater have not yet been fully delineated in the down-gradient direction (west and south).

Completion of an Ecological Screening Assessment identified potential ecological concerns related to the elevated PHC concentrations in soil and groundwater combined with the proximity sensitive ecological receptors to the site.

Based on these results, it is recommended that further assessment (i.e., a Phase III ESA) be completed at the site to further assess and delineate contamination in groundwater to the west (down-gradient) and south. The Phase III ESA should also include surface water and sediment sampling from the adjacent East River for PHC and PCB analysis. Continued monitoring for potential migration of contamination through surficial drainage and/or groundwater recharge to surface water (East River) should be completed. Should any evidence of impact migration be identified, the installation of additional containment measures may be required. Once delineation of the contamination is achieved, it is expected that impacts can be addressed via either remediation or a risk-based approach (i.e., managing the impacts in place), and then reports can be submitted for regulatory closure with Nova Scotia Environment and Climate Change.

Further details are included in the attached Phase II ESA report.

Thank you,



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EXECUTIVE SUMMARY

Strum Consulting was commissioned by Nova Scotia Power Inc. (NSPI) to complete a Phase II Environmental Site Assessment (ESA) at the industrial property located at 116 Ruth Falls Road located in Sheet Harbour, NS. The ESA details, findings, and recommendations are summarized below. Further details are presented throughout the report.

Background	
Civic Address	116 Ruth Falls Road, Sheet Harbour, NS
PID(s)	00583732
Site Owner	Nova Scotia Power Incorporated
Current Land Use	Industrial (active hydro-electric sub-station facility)
Expected Future Land Use	Industrial
Adjacent Land Use	Residential and agricultural (resource)
Local Groundwater Use	Potable
Predominant Soil Type	Coarse-grained
Field Investigation Summary	
Assessed Contaminants	• Soil: Petroleum hydrocarbons (PHC), polychlorinated biphenyls (PCBs) • Groundwater: PHCs and PCBs
Dates of Field Work	August 30 to September 26, 2024
Scope of Work	• Drilled four boreholes (BH1 – BH4) • Installed four monitoring wells (MW1 – MW4) • Completed four test pits (TP1 – TP4) • Collected soil and groundwater samples for laboratory analysis
Subsurface Conditions Summary	
Predominant Soil Type	Coarse-grained soil
Bedrock Depth	0.2 m to 0.4 m below surface grade
Depth to Groundwater	0.65 m to 3.30 m below surface grade
Groundwater Flow	West with a horizontal hydraulic gradient of 47%
Hydraulic Conductivity	3.2×10^{-7} cm/s
Free Product Observations	No free-phase petroleum or chemical liquid (i.e., free product) observed
Results Summary	
Contaminants Identified	PHC impacts in soil and groundwater identified at the base of the down-gradient retaining wall west of the transformer.
Delineation Status	Based on site topography and assessment completed to date, impacted soil and groundwater has been delineated to the north and east. Further assessment is required to delineate contamination in groundwater to the west (down-gradient) and south.
Ecological Screening	Completion of an Ecological Screening Assessment identified potential ecological concerns related to the elevated PHC concentrations in soil and groundwater in combined with the proximity sensitive ecological receptors to the site warrant further assessment.

Recommendations

1. A Phase III ESA should be completed at the site to further assess and delineate contamination in groundwater to the west (down-gradient) and south. The Phase III ESA should also include surface water and sediment sampling from the adjacent East River for PHC and PCB analysis.
2. Following completion of delineation, contamination on the site will need to be addressed via remediation or a risk-based approach (i.e., managing the impacts on-site). When that work is completed, a regulatory closure submission can be made to NS Environment & Climate Change (NSECC).
3. Continued monitoring for potential migration of contamination through surficial drainage and/or groundwater recharge to surface water (East River) should be completed. Should any evidence of impact migration be identified, the installation of additional containment measures may be required.
4. Following acceptance of regulatory closure by NSECC, all monitoring wells should be decommissioned in accordance with Provincial requirements.

This Executive Summary provides a brief overview of the main findings and recommendations of the environmental site investigations. Complete details are provided in the report and the attached Appendices. The statements made in this Executive Summary are subject to the same limitations as described in Section 8.0.

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1.0 INTRODUCTION

In August 2024, Strum was retained by Nova Scotia Power Incorporated (NSPI) to investigate a release originating from the transformer substation on the central portion of 116 Ruth Falls Road, Sheet Harbour, Nova Scotia.

A polychlorinated biphenyl (PCB) containing transformer oil spill reportedly occurred at the NSPI hydro station located at 116 Ruth Falls Road, in Sheet Harbour, NS, originating from a transformer located east of the power plant building. The concrete secondary containment pad of the transformer was found to be damaged, resulting in the escape of the released transformer oil into the underlying soils and bedrock. Hydrocarbon staining was found to be present over the concrete surface of the containment pad and in soils and gravels at the base of the down-gradient retaining wall west of the transformer. It is anticipated that the transformer may have been slowly leaking for an extended period of time; however, a larger loss of approximately 300 litres is suspected to have occurred sometime in the last few months. The release was localized to an area below the transformer, with suspected migration west towards East River and into the underlying bedrock.

The objective of this report is to summarize the findings of the Phase II Environmental Site Assessment (ESA) activities completed at the site between August and September 2024, and to present recommendations for regulatory site closure as per the NS Contaminated Sites Regulations.

2.0 BACKGROUND

2.1 Site Description

The subject site is located 400 m west of the Ruth Falls Road and East River Road intersection in Sheet Harbour, NS. The site is currently occupied by a two-storey power plant, which consists of two industrial hydro-electric turbines and an office space. Two electrical substations are located east and southeast of the power plant. The remainder of the developed portion of the site generally consists of gravel/asphalt covered driveway and parking lot areas and undeveloped forested areas.

A Site Plan (Drawing 1) is provided in Appendix A. Further details about the site are provided in Table 2.1, below.

Table 2.1: Site Information Summary

Site Information	
Civic Address	116 Ruth Falls Road, Sheet Harbour, NS
PID(s)	00583732
Property Owner	Nova Scotia Power Incorporated
Current Land Use	Industrial/Commercial

Site Information	
Expected Future Land Use	Industrial/Commercial
Property Area	178,062 m ² (44 acres)
Buildings and Structures	- Hydro-electric power plant building. - Two electrical substations on cement pads.
Utilities	- Potable water is provided via the water supply from the river which flows into the hydro-electric power generating systems (penstock) within the power plant. - Underground and overhead utilities associated with the hydro-electric dam and substation.
Topography & Drainage	- Natural topography in the area of the site slopes steeply from east to west towards the banks of East River located along the western property boundary of the site. - Site topography is generally flat in the developed areas of the site (i.e., paved access road and location of power plant building) - Surficial surface water and run-off in the local area is primarily controlled by topography and is also directed through stormwater collection infrastructure with drainage towards East River. - Regional topography has an overall down-gradient trend from the northeast to the southwest.
Local Groundwater Flow	Groundwater in the local area is expected to flow to the west/southwest towards East River.
Regional Groundwater Flow	Regional groundwater is expected to flow to the south/southwest towards Sheet Harbour (i.e., Atlantic Ocean).
Closest Aquatic Receptor	East River, which is located immediately adjacent to the west/northwest of the site.
Surficial Geology	Stony glacial till plain and drumlins, ranging from 2-20 m in thickness (Stea et al, 1992)
Bedrock Geology	Meguma Group, Halifax Formation – slate (pyritic), greywacke, minor sandstone (Keppie, 2000)

2.2 Adjoining Properties

Land use on the properties adjacent to the site is designated as residential and resource.

Adjoining property land use is shown on Drawing 1 (Appendix A), and details on the adjoining property land use are provided in Table 2.2, below.

Table 2.2: Adjoining Property Land Use Summary

Boundary Side of Site	Site Use
North, (up/cross-gradient)	Resource – Undeveloped forest land (PID 41050550)
West, (down-gradient)	Commercial – Undeveloped river bank (PIDs 41208083 & 40221863) followed by East River
South (down/cross-gradient)	Residential & resource – single family dwellings and undeveloped forest land along Ruth Falls Road

Boundary Side of Site	Site Use
East (up-gradient)	Residential & resource – East River Road followed by single family dwellings and undeveloped land along East River Road

2.3 Potential Contaminants of Concern

Based on the details of the documented transformer loss, the Phase II ESA assessed the potential Contaminants of Concern (COCs) listed in Table 2.3, below:

Table 2.3: Potential Contaminants of Concern Summary

Media	Potential COCs
Soil	PHCs and PCBs
Groundwater	PHCs and PCBs

Notes:

1. PHC: Petroleum hydrocarbons
2. PCB: Polychlorinated biphenyls
3. PHC includes benzene, toluene, ethylbenzene, xylenes (BTEX), and modified Total Petroleum Hydrocarbons (mTPH).

2.4 Conceptual Site Model

To select appropriate site criteria, a Conceptual Site Model (CSM) approach was used that addresses both human and ecological health along with assessing potential contaminant exposure pathways. A summary of the CSM details is provided in Table 2.4, below.

Table 2.4: Conceptual Site Model Summary

Conceptual Site Model	
Current Land Use	Industrial
Expected Future Land Use	Industrial
Adjoining Land Use	Residential and agricultural (resource)
Land Use for Data Comparison	Industrial and Residential
Predominant Soil Type	Coarse-grained soil
Potable Water Source (on-site)	Via intakes from East River
Potable Water Source (local area)	Potable wells
Protected Water Areas	The site is not located within or near a known source water protection area.
Groundwater Use for Data Comparison	Potable
Potentially Operable Human Health Risk Pathways	• Direct contact (soil ingestion and dermal contact absorption) • Soil leaching to groundwater (ingestion of potable water) • Potable drinking water (ingestion of potable water supply)

Conceptual Site Model	
Potentially Operable Ecological Risk Pathways	Groundwater discharge to surface water.

Notes:

1. Soil type is assumed to be coarse-grained based on surficial soil mapping and field observations of soil sample gradation.
2. Source area protection mapping available from NS Government websites utilized for groundwater potability determination.

An Ecological Screening Assessment has been completed and is discussed in Section 5.4.

2.5 Assessment Criteria

Based on the results of the CSM, the selected assessment criteria used to evaluate the sample analytical results are outlined in Table 2.5, below.

Table 2.5: Assessment Criteria Summary

Media	Assessment Criteria
Soil & Groundwater	• NS Tier I EQS for industrial and residential land use, potable groundwater usage and coarse-grained soils (October 2022). • Atlantic RBCA ESLs (July 2022)

Notes:

1. EQS: Environmental Quality Standards
2. RBCA: Risk Based Corrective Action
3. ESL: Ecological Screening Levels

It should be noted that to use the NS Tier I EQS criteria and/or Atlantic RBCA Tier I criteria for assessment of PHCs, the RBCA Site Assessment Tier I/II Table Checklist must be completed. Strum has completed the checklist, which is included in Appendix B. The following deviations from RBCA default conditions were noted during completion of the checklist.

- Groundwater at the site is shallower than 3 m below grade (1.3 m – 3.3 m below surface grade). However, shallow groundwater is common across Nova Scotia, and is not expected to represent a concern for the assessment.

3.0 SCOPE AND OBJECTIVES

The scope of work for the Phase II ESA consisted of the following:

- Completion of an initial site inspection to document the manner of the transformer oil loss and to collect a representative surface soil source sample from the visual impacted area.
- Completion of four exterior test pit locations around the transformer concrete pad to inspect subsurface conditions and collect representative soil samples.

- Drilling of four boreholes at select locations on the site to inspect subsurface conditions and collect representative soil samples.
- Following borehole drilling, groundwater monitoring wells were installed in each of the boreholes to inspect groundwater conditions and collect representative groundwater samples.
- Submission of select samples to Bureau Veritas Laboratories in Bedford, NS and ALS Environmental in Dartmouth, NS for laboratory analysis of the parameters listed in Section 2.3.
- Comparison of the sample analytical results to applicable assessment criteria to determine if contamination is present on the site.
- Completion of a report outlining the results of the assessment and providing recommendations for appropriate next steps.

The objective of the Phase II ESA was to assess current subsurface environmental conditions at the site in relation to the reported transformer hydrocarbon release, and to present recommendations for containment measures and ultimately for regulatory site closure as per the NS Contaminated Sites Regulations.

The Phase II ESA was completed in accordance with the requirements of the most recent version of the Canadian Standards Association (CSA) Phase II Environmental Site Assessment Standard (Z769-00), and the Nova Scotia Environment Phase II Environmental Site Assessment Protocol document (July 2013).

4.0 INVESTIGATION ACTIVITIES

The Phase II ESA activities are described in the following sections.

Additional details of the field investigation and sampling methodologies are provided in Appendix C. A photo log of the initial site inspection and Phase II ESA field program are provided in Appendix D. Borehole/Monitoring Well Logs are provided in Appendix E. The results of the Phase II ESA are detailed in Section 5.

4.1 Utility Locates

Prior to conducting the drilling investigation at the site, subsurface and overhead utilities were located and reviewed in accordance with Strum's occupational health and safety program, and also to identify potential migration pathways for contaminants that may be present at the site. A utility review was completed by R.L. Dennis Associated Limited of Lakeside, NS with Strum personnel on September 11, 2024.

The approximate locations of identified site utilities are shown on Drawing 1 (Appendix A).

4.2 Initial Site Inspection

On August 30, 2024, a site visit was completed by Strum and NSPI personnel to document site conditions and to investigate the manner of the transformer oil loss and impacts in order to recommend next steps.

During the site inspection, the concrete secondary containment pad of the transformer was noted to be damaged with cracks on the concrete containment floor/walls which resulted in the escape of the released transformer oil into the underlying soils and bedrock. Hydrocarbon staining was observed on the concrete surface of the containment pad and in soils and gravels at the base of the down-gradient retaining wall. It was reported to Strum that the release likely occurred via a slow leak in the transformer oil circuit for an extended period; however, a larger loss of approximately 300 litres was suspected to have occurred within three to six months prior to the site inspection.

A soil sample [S1(AU30)] was collected directly from the visibly impacted area at the base of the retaining wall and submitted to the laboratory (Bureau Veritas Laboratories in Bedford, NS) for analysis of PHCs and PCBs. The sampling location is shown on Drawing 2 (Appendix A).

Based on the document site conditions and field observations in the impacted area, it was determined that an intrusive investigation (i.e., Phase II ESA) should be completed to assess potential soil and groundwater impacts on the site in relation to the documented transformer oil release.

4.3 Test Pits

Four test pits (TP1 – TP4) were completed at the site on September 9, 2024, around the base of the substation transformer concrete pad where the mineral oil release was observed. Strum personnel were on the site to log subsurface conditions and collect representative soil samples from the test pits. The test pits were completed using a hydro-excavation owned and operated by GFL Environmental of Dartmouth, NS. No groundwater or bedrock was encountered. Original soil was not encountered during the test pit program as the concrete pad foundation was backfilled with gravel fill.

The test pit locations are shown on Drawing 2 (Appendix A). A summary of the test pit details is provided in Table 4.1, below. Photos taken during the investigation are included in the attached Photo Log (Appendix D).

Table 4.1: Test Pit Investigation Summary

ID	Total Depth (m) ¹	Depth to Groundwater (mbTOC) ²	Evidence of Potential Contamination	Notes	No. of Soil Samples Analyzed
TP1	0.8	-	No	No evidence of impacts.	1
TP2	0.8	-	No	No evidence of impacts.	1
TP3	0.9	-	No	No evidence of impacts.	1

ID	Total Depth (m) ¹	Depth to Groundwater (mbTOC) ²	Evidence of Potential Contamination	Notes	No. of Soil Samples Analyzed
TP4	0.8	-	No	No evidence of impacts.	1

Notes:

1. Total depth is measured in metres below surface grade.
2. Depth to groundwater measured in metres below top of well PVC casing (mbTOC) on September 23, 2024.

Select samples collected from the test pits were submitted to the laboratory (ALS Environmental in Dartmouth, NS) for analysis of the parameters listed in Table 2.3 in Section 2.4.

4.4 Borehole Drilling & Monitoring Well Installation

Four boreholes (identified as BH1 to BH4) were completed at the site between September 11 to 16, 2024, using a CME-45 drill rig owned and operated by Q-Drilling of Fall River, NS. All drilling was completed under the inspection of Strum field staff, who logged the subsurface conditions in the boreholes and collected representative soil samples for subsequent selection for laboratory analysis.

Groundwater monitoring wells were installed in all four boreholes and were identified as MW1 to MW4. The monitoring well IDs correspond with the borehole IDs in which they were installed.

The borehole/monitoring well locations are shown on Drawing 2 (Appendix A). A summary of the borehole details is provided in Table 4.2, below.

Table 4.2: Borehole/Monitoring Well Investigation Summary

ID	Total Depth (m) ¹	Depth to Groundwater (mbTOC) ²	Evidence of Potential Contamination	Notes	No. of Soil Samples Analyzed
BH/MW1	4.5	1.12	No	No evidence of impacts.	1
BH/MW2	3.0	0.96	<u>Yes</u>	Visual evidence of impacts in groundwater.	1
BH/MW3	4.5	3.3	No	No evidence of impacts.	1
BH/MW4	5.0	0.65	No	No evidence of impacts.	1

Notes:

1. Total depth is measured in metres below surface grade.
2. Depth to groundwater measured in metres below top of well PVC casing (mbTOC) on September 23, 2024.
3. Boreholes that were completed as monitoring wells are identified as BH/MW.

Select soil samples collected from the boreholes were submitted to ALS Environmental in Dartmouth, NS for analysis of the parameters listed in Table 2.3 in Section 2.4.

4.5 Groundwater Sampling

Groundwater samples were collected on September 23, 2024, from the newly installed monitoring wells (identified as MW1- MW4).

Select groundwater samples collected from the monitoring wells were submitted to ALS Environmental in Dartmouth, NS for analysis of the parameters listed in Table 2.3 in Section 2.4.

5.0 INVESTIGATION RESULTS

The results of the Phase II ESA are summarized in the following sections.

Further details are available in the attached Drawings (Appendix A), Photo Log (Appendix D), Borehole/Monitoring Well Logs (Appendix E), data summary tables (Appendix F), laboratory certificates of analysis (Appendix G), and the Groundwater Static Levels summary table (Appendix H).

5.1 Site Conditions

A summary of the subsurface soil/bedrock conditions, groundwater flow, and other relevant site conditions determined during the assessment is provided in Table 5.1, below.

Table 5.1: Site Conditions Summary

Conditions	Details
Soil Stratigraphy	Medium brown silty sand with some gravel and slate cobbles, overlying bedrock. Sand and gravel fill on developed portions of the site.
Bedrock Type & Depth	Halifax Formation slate – 0.3 m below grade
Groundwater Depths	0.65 m to 3.3 m below surface grade (September 23, 2024)
Groundwater Flow Direction	West (Drawing 3, Appendix A)
Groundwater Horizontal Hydraulic Gradient	46%
Hydraulic Conductivity (K)	3.2×10^{-7} cm/s
Evidence of Contamination in Soil	None.
Evidence of Contamination in Groundwater	Mineral oil sheen in MW2.
Free Product Observations	None.

Notes:

1. Hydraulic gradient determination is based on triangulation of groundwater elevations recorded on September 23, 2024 (Appendix H).
2. Hydraulic conductivity determined using the Hvorslev method on drawdown test data recorded in MW3 on September 23, 2024.

5.2 Sample Analytical Results

Following completion of the field sampling program, Strum submitted select samples to both Bureau Veritas Laboratories in Bedford, NS and ALS Environmental in Dartmouth, NS for

analysis. Further details on how samples were collected and selected for laboratory analysis are provided in the Assessment Methodology provided in Appendix C. The number of samples and requested analyses are listed in Table 5.2, below.

Following receiving the sample results from the laboratory, the analytical results were compared to the following assessment criteria:

- Soil and groundwater – NS Tier I EQS for industrial and residential land usage, potable groundwater usage and coarse-grained soils (October 2022).

A summary of the samples that reported exceedances of applicable criteria is provided in Table 5.2, below. Further details are provided on the analytical tables in Appendix F, and sample locations where exceedances were reported are highlighted on Drawings 4-5 (Appendix A).

Table 5.2: Sample Analyses & Exceedances Summary

Media	Contaminant Type	No. of Samples Submitted for Lab Analysis	Applicable Criteria Exceeded	No. of Samples that Exceed Criteria	Table Reference in Appendix F
Soil	PHC	9	NS Tier I EQS (industrial)	1	1
			NS Tier I EQS (residential)	1	
	PCBs	9	NS Tier I EQS (industrial)	None	2
			NS Tier I EQS (residential)	None	
Groundwater	PHCs	4	NS Tier I EQS (industrial)	1	3
			NS Tier I EQS (residential)	1	
	PCBs	4	NS Tier I EQS (industrial)	None	4
			NS Tier I EQS (residential)	None	

Notes:

1. Further details on sample duplicate analysis and assessment of QA/QC are provided in Section 5.3.
2. The IDs of samples that were submitted for analysis are shown on the data summary tables in Appendix F.
3. The initial site visit soil sample [S1(AU30)] was submitted to Bureau Veritas Laboratories in Bedford, NS for analysis. All remaining samples were submitted to ALS Environmental in Dartmouth, NS for analysis.

PHCs

In summary, hydrocarbon contaminated soil in concentrations exceeding the applicable NS Tier I EQS was identified in one sample [S1(AU30)] collected from surface soil present within the fractures of exposed bedrock at the base of the retaining wall. No other soil samples

collected from test pit or borehole locations were found to contain hydrocarbons exceeding the Tier I EQS. Based on the ESA findings, hydrocarbons contaminated soil has been fully delineated and inferred to be isolated to soils underlying the footprint of the transformer infrastructure extending as far as the retaining wall west of the transformer. It should be noted that the maximum depth reached in test pits completed along the inside of the retaining wall and under the transformer containment pad was limited due to the presence of the infrastructure in the area and may not have been deep enough to fully assess subsurface conditions. Therefore, it has conservatively been assumed that contaminated soils may be present in the areas of TP2 – TP4.

Hydrocarbon contaminated groundwater in concentrations exceeding the Tier I EQS was identified in one monitoring well (MW2) located immediately down-gradient of the loss location. All other samples collected from the installed monitoring wells reported hydrocarbon concentrations to be non-detectable. Based on these results, further assessment will be necessary to delineate the full extent of hydrocarbon contamination in groundwater down-gradient of MW2.

PCBs

All soil and groundwater samples were reported to contain PCB concentrations that comply with the Tier I EQS.

The areas of identified soil and groundwater contamination are shown on Drawings 4-5 in Appendix A. Further discussion of the areas of identified contamination is provided in Section 6.

5.3 Quality Assurance/Quality Control (QA/QC)

To maintain appropriate QA/QC for the assessment, all samples were collected while wearing dedicated nitrile gloves and using either dedicated or decontaminated sampling supplies/equipment. All samples were placed in sealed laboratory-supplied containers, and were kept in cool storage pending transport to the laboratory for analysis.

No soil or groundwater field duplicate samples were collected during the Phase II ESA program due to insufficient sample media from the boreholes/monitoring wells. However, laboratory duplicate analyses were completed by Bureau Veritas and ALS Environmental on several samples analyzed for various parameters to confirm laboratory QA/QC. The duplicate sample results are summarized on the analytical data tables in Appendix F and in the laboratory certificates of analysis (Appendix G).

To evaluate the duplicate sample results, relative percent differences (RPDs) were calculated between the results of the original samples and the duplicates. All RPDs were calculated to be less than 20%, which indicates that all duplicate sample results were within acceptable QA/QC limits.

Further details on how RPDs are calculated and evaluation of calculated RPDs are provided in Appendix C.

5.4 Ecological Screening Assessment

Strum has also completed an ecological screening of the site conditions and sample results to determine if there are any potential concerns to ecological receptors on or near the site.

The ecological screening assessment process includes comparing shallow soil data (i.e., <1.5 m depth) and shallow groundwater data (i.e., water table < 3 m depth) to applicable ecological screening criteria. Upon completion of that process, any potential ecological receptors in the vicinity of the site are identified, and then an assessment of any potential contaminant migration pathways to those ecological receptors is completed.

All applicable shallow soil and groundwater sample data were compared to the Ecological Screening Levels (ESLs) listed in Table 5.3, below. The number of samples that exceeded the applicable ecological criteria are also listed in Table 5.3.

Further details on the sample data comparison to applicable ESLs are provided on the analytical data tables in Appendix F. Additionally, an Atlantic RBCA Ecological Screening Assessment is included in Appendix I.

Table 5.3: Ecological Screening Level Exceedances Summary

Media	Contaminant of Concern	Ecological Screening Criteria	No. of Samples that Exceed Criteria	Table Reference in Appendix F
Soil	PHCs	Atlantic RBCA Tier I PHC ESLs for Protection of Plants & Soil Invertebrates (Direct Soil Contact), and Protection of Wildlife & Livestock (Soil Ingestion)	1	1A
Groundwater	PHCs	Atlantic RBCA Tier I PHC ESLs for Plant & Invertebrate Direct Contact with Shallow Groundwater	1	3A
		Atlantic RBCA Tier I PHC Groundwater ESLs for the Protection of Freshwater & Marine Aquatic Life (adjusted for distance to aquatic environment)	1	3B
	PCBs	Atlantic RBCA Tier I EQS for Groundwater Discharge to Fresh Surface Water (adjusted for distance to aquatic environment).	None	4A

As shown in Table 5.3 above, PHC concentrations in one soil sample collected at the site exceeded the applicable ESL criteria. This soil sample was collected directly from soil materials

in fractures of exposed bedrock in an area with observed mineral oil staining [S1(AU30)]. All other soil samples collected from the test pit and borehole programs complied with the applicable ESL criteria. It should be noted that ESL criteria are not available for PCB parameters and therefore are not assessed as part of the Ecological Screening.

Groundwater samples collected from the monitoring well nearest to and down-gradient from the area of observed mineral oil staining (MW2) reported elevated PHC concentrations exceeding the applicable ESLs criteria.

Although the site itself is not considered to be a sensitive ecological habitat since it is fully a developed industrial property, potentially sensitive ecological receptors have been identified within 200 m of the site, including significant forested land immediately adjacent to north/east of the site, and East River approximately 20 m west (down-gradient) of the site.

The combined proximity of these receptors to the site and the identified elevated PHC concentrations in soil and groundwater represent a potential ecological concern on the site. As such, further assessment is warranted to investigate the potential ecological concerns at the site. The additional assessment activities should consist of additional borehole drilling/groundwater monitoring well installation to further delineate the extent of soil/groundwater PHC impacts, and additional groundwater sampling should be completed from all monitoring wells on the site for PHC analysis. Additionally, surface water and sediment sampling for PHC should be completed along the shoreline of the East River.

6.0 DISCUSSION

Based on the results of the Phase II ESA, the following areas of contamination have been identified at the site:

- Mineral oil staining has been observed on shallow soils and bedrock along the base of the retaining wall down-gradient (west) from where the mineral oil release occurred on the transformer pad. A confirmatory soil sample [S1(AU30)] collected directly from the stained area reported elevated PHC concentrations exceeding the applicable NS Tier I EQS criteria. The area of hydrocarbon contaminated soil has been fully delineated and inferred to be isolated to soils underlying the footprint of the transformer infrastructure extending as far as the retaining wall west of the transformer. It is anticipated that contaminated soils reach the depth of the underlying bedrock estimated to be present at 0.5 to 1 m below grade.
- Elevated PHC concentrations in groundwater exceeding applicable NS Tier I EQS criteria were identified in MW2 located nearest to the area of observed mineral oil staining. Mineral oil sheen was observed in groundwater at MW2. The full extent of groundwater PHC contamination has not yet been delineated to the west (down-gradient) and south directions.

- While trace PCB contamination was identified in soil samples, no soil or groundwater samples were reported to contain PCB concentrations exceeding the Tier I EQS.

The inferred areas of PHC contamination identified at the site are shown on Drawings 4 and 5 (Appendix A).

Potentially sensitive ecological receptors have been identified within 200 m of the site, including significant forested land immediately adjacent to north/east of the site, and East River approximately 20 m west (down-gradient) of the site. Soil and groundwater samples collected nearest to the area of observed mineral oil staining on the site [i.e., S1(AU30) and MW2] reported elevated PHC concentrations exceeding the applicable Ecological Screening criteria and represent an ecological concern to the site and adjacent receptors. Given the proximity of these receptors and the identified PHC impacts in soil and groundwater on the site, further assessment is required.

Further assessment is also required to delineate the extent of PHC impacts in soil/groundwater that were identified on the site. The additional assessment activities should include surface water and sediment sampling for PHC along the shoreline of the East River. Following completion of delineation, the impacts will need to be addressed via either remediation or a risk-based approach (i.e., managing the contamination in place) in order to submit for regulatory closure with Nova Scotia Environment and Climate Change (NSECC).

7.0 CONCLUSIONS & RECOMMENDATIONS

As requested by NSP), Strum completed a Phase II ESA at the industrial 116 Ruth Falls Road site in Sheet Harbour, NS to investigate a transformer oil release originating from the electrical substation on the central portion of the site.

On August 30, 2024, Strum completed an initial site inspection while accompanied by NSPI personnel to document site conditions and to investigate the manner of the transformer oil loss and impacts in order to recommend next steps. It was reported to Strum that evidence of the release was first observed by NSPI staff working in the hydro-electric power plant and substations at the site who noticed hydrocarbon staining at the base of the concrete retaining wall down-gradient of the transformer. During the site inspection, the concrete secondary containment pad of the transformer was noted to be damaged with cracks on the concrete containment floor/walls which resulted in the escape of the released transformer oil into the underlying soils and bedrock. Hydrocarbon staining was observed on the concrete surface of the containment pad and in soils and gravels at the base of the down-gradient retaining wall. The exact volume of the release is currently unknown but likely occurred via a slow leak in the transformer oil circuit for an extended period; however, a larger loss of approximately 300 litres was suspected to have occurred within three to six months prior to the site inspection.

A soil sample was collected directly from the visibly impacted area at the base of the retaining wall and submitted for laboratory analysis of PHCs and PCBs which reported elevated PHC

concentrations exceeding the applicable NS Tier I EQS criteria. Absorbent pads and booms were deployed along the base of the retaining wall to provide temporary containment of potential surficial migration of mineral oil from the base of the wall.

Based on the document site conditions and impacted areas, Strum completed a Phase II ESA to assess potential soil and groundwater impacts on the site in relation to the documented transformer oil release. The Phase II ESA included the completion of four test pits around the substation concrete pad, drilling of four boreholes with each completed as groundwater monitoring wells, and collection of soil and groundwater samples from the boreholes/monitoring wells. Soil and groundwater samples were submitted for laboratory analysis of PHCs and PCBs.

Based on the results of the Phase II ESA, the following conclusions are presented:

- Site soils primarily consisted of silty sand in the undeveloped areas of the site and sandy gravel fill in the developed portions, overlying Halifax Formation pyritic slate bedrock. Bedrock depths ranged from approximately 0.3 m to 0.4 m below grade on the site. Groundwater was encountered from approximately 0.65 m to 3.3 m below surface grade in the monitoring wells.
- No free-phase petroleum or chemical liquid (i.e., free product) was identified in soil or groundwater during the assessment. Mineral oil sheen was observed in soil at the base of the down-gradient retaining wall and in groundwater at MW2.
- The following areas of soil and groundwater contamination have been identified at the site:
 - PHC impacts in soil were identified at the base of the down-gradient retaining wall near the visibly impacted area. The full extent of PHC impacts in soil has been fully delineated and inferred to be isolated to the soils underlying the footprint of the transformer infrastructure extending as far as the retaining wall west of the transformer.
 - Elevated PHC concentrations in groundwater exceeding applicable criteria were identified in samples collected from the monitoring well installed nearest-to and down-gradient of the visibly impacted area at the base of the retaining wall (MW2). The full extent of PHC impacts in groundwater have not yet been fully delineated in the down-gradient direction (west and south).
- All reported concentrations of PCBs in soil and groundwater complied with the applicable Tier I EQS criteria.
- Completion of an Ecological Screening Assessment identified potential ecological concerns related to the elevated PHC concentrations in soil and groundwater combined with the proximity sensitive ecological receptors to the site warrant further assessment.

Based on the results of the Phase II ESA, the following recommendations are forwarded:

1. A Phase III ESA should be completed at the site to further assess and delineate contamination in groundwater to the west (down-gradient) and south. The Phase III ESA should also include surface water and sediment sampling from the adjacent East River for PHC and PCB analysis.
2. Following completion of delineation, contamination on the site will need to be addressed via remediation or a risk-based approach (i.e., managing the impacts on-site). When that work is completed, a regulatory closure submission can be made to NSECC.
3. Continued monitoring for potential migration of contamination through surficial drainage and/or groundwater recharge to surface water (East River) should be completed. Should any evidence of impact migration be identified, the installation of additional containment measures may be required.
4. Following acceptance of regulatory closure by NSECC, all monitoring wells should be decommissioned in accordance with Provincial requirements.

8.0 STATEMENT OF QUALIFICATIONS & LIMITATIONS

This Report (the “Report”) has been prepared by Strum Consulting (“Consultant”) for the benefit of Nova Scotia Power Incorporated (“Client”) in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the “Agreement”).

The information, data, recommendations, and conclusions contained in the Report (collectively, the “Information”):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the “Limitations”)
- represents Consultant’s professional judgement in light of the Limitations and industry standards for the preparation of similar reports
- may be based on information provided to Consultant which has not been independently verified
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued
- must be read as a whole and sections thereof should not be read out of such context
- was prepared for the specific purposes described in the Report and the Agreement
- in the case of subsurface, environmental, or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time

Consultant shall be entitled to rely upon the accuracy and completeness of information that was provided and has no obligation to update such information. Consultant accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental, or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

Consultant agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement, but Consultant makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Report, the Information or any part thereof.

The Report is to be treated as confidential and may not be used or relied upon by third parties, except:

- as agreed in writing by Consultant and Client
- as required by law
- for use by governmental reviewing agencies

Consultant accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Report or the Information for any injury, loss, or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information ("improper use of the Report"), except to the extent those parties have obtained the prior written consent of Consultant to use and rely upon the Report and the Information. Any damages arising from improper use of the Report or parts thereof shall be borne by the party making such use.

This Statement of Qualifications and Limitations forms part of the Report and any use of the Report is subject to the terms hereof.

Should additional information become available, Strum requests that this information be brought to our attention immediately so that we can re-assess the conclusions presented in this report. This report was prepared by Mauricio Lopez, MREM, MIT, Junior Environmental Geoscientist, and was reviewed by Jeff Faulkner, P.Geo. Senior Environmental Geoscientist.

9.0 REFERENCES

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Atlantic RBCA, December 2016 with April 2019 update. Guidance for Vapour Intrusion Assessments.

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Nova Scotia Environment & Climate Change, July 6, 2013. Contaminated Sites Regulations & Protocols.

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Strum Consulting. Phase I Environmental Site Assessment, 138 Wyse Road, Dartmouth, NS. September 9, 2021. Project No. 21-8099.

Website References

Atlantic RBCA Tier I EQS & Tier II PSS Tables
https://atlanticrbca.com/wp-content/files_mf/1627923620Atlantic_RBCA_EQS_and_PSS_Tables_July_2021.pdf?622599262

Nova Scotia Department of Natural Resources (NSDNR) Mineral Resources Branch
<http://gov.ns.ca/natr/meb/pubs/pubs3.htm>

Nova Scotia Provincial Landscape Viewer
<https://www.arcgis.com/apps/webappviewer/index.html?id=7bf89d16ec0940d0a130301b51ad401f>

Nova Scotia Sulphide Bearing Material Disposal Regulations (NS Reg 57/1995)
[https://novascotia.ca/just/regulations/regs/env5795.htm#:~:text=4%20\(1\)%20Subject%20to%20subsection,approval%20issued%20under%20these%20regulations.](https://novascotia.ca/just/regulations/regs/env5795.htm#:~:text=4%20(1)%20Subject%20to%20subsection,approval%20issued%20under%20these%20regulations.)

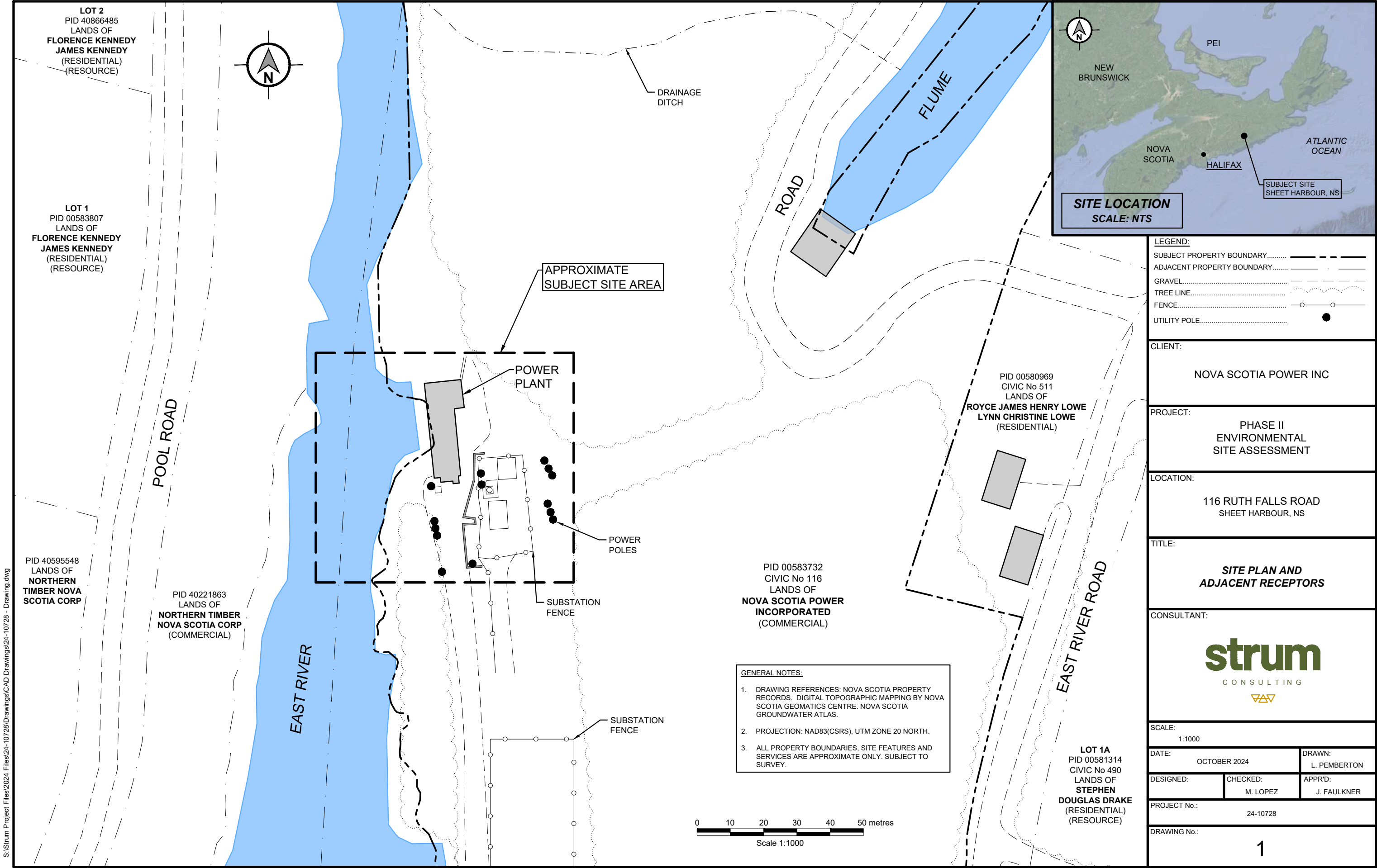
Municipal Drinking Water Supplies of Nova Scotia
<https://novascotia.ca/nse/water/docs/municipal.drinking.water.supplies.map.pdf>

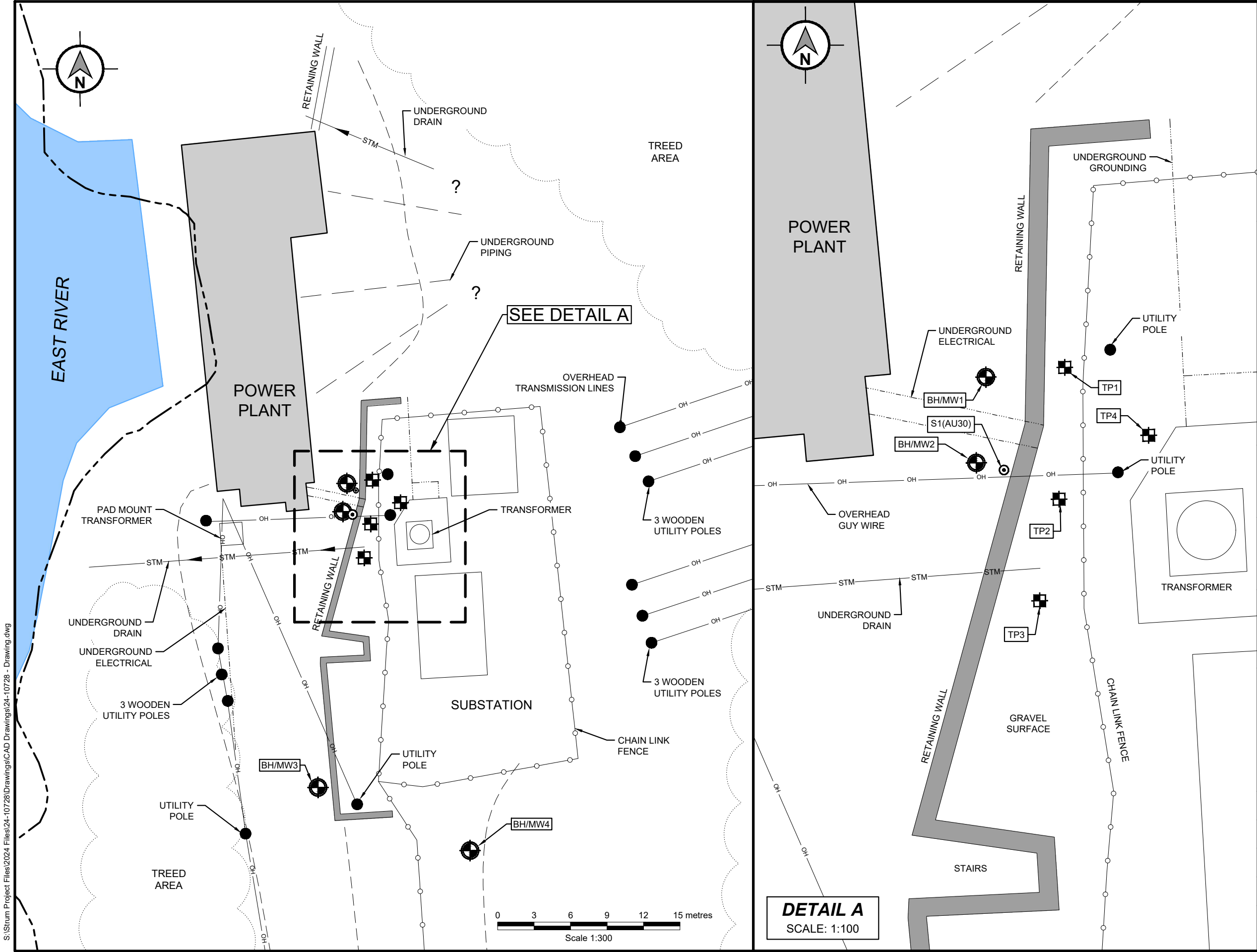
Port of Halifax – Disposal of Pyritic Slate or Inert Construction Material Agreement
<https://www.portofhalifax.ca/wp-content/uploads/2022/02/Disposal-of-Pyritic-Slate-or-Inert-Construction-Material-Agreement-July-2020.pdf>

Protected Water Areas of Nova Scotia
<https://www.novascotia.ca/nse/water/docs/protected.water.areas.map.pdf>

Service Nova Scotia and Municipal Relations Property Online Database
www.novascotia.ca/sns/access/land/property-online.asp

APPENDIX A
SITE DIAGRAMS





LEGEND:	
SUBJECT PROPERTY BOUNDARY.....	-----
ADJACENT PROPERTY BOUNDARY.....	-----
GRAVEL.....	-----
TREE LINE.....	-----
FENCE.....	-----
OVERHEAD LINE.....	OH
STORM PIPING.....	STM
UNDERGROUND ELECTRICAL.....	-----
UTILITY POLE.....	●
SOIL SAMPLE.....	○
BOREHOLE/MONITORING WELL.....	⊕
TEST PIT.....	⊞

- GENERAL NOTES:
- DRAWING REFERENCES: NOVA SCOTIA PROPERTY RECORDS. DIGITAL TOPOGRAPHIC MAPPING BY NOVA SCOTIA GEOMATICS CENTRE. NOVA SCOTIA GROUNDWATER ATLAS.
 - PROJECTION: NAD83(CSRS), UTM ZONE 20 NORTH.
 - ALL PROPERTY BOUNDARIES, SITE FEATURES AND SERVICES ARE APPROXIMATE ONLY. SUBJECT TO SURVEY.

CLIENT:

NOVA SCOTIA POWER INC

PROJECT:

PHASE II
ENVIRONMENTAL
SITE ASSESSMENT

LOCATION:

116 RUTH FALLS ROAD
SHEET HARBOUR, NS

TITLE:

**INVESTIGATION
LOCATIONS**

CONSULTANT:

strum
CONSULTING
VAV

SCALE:

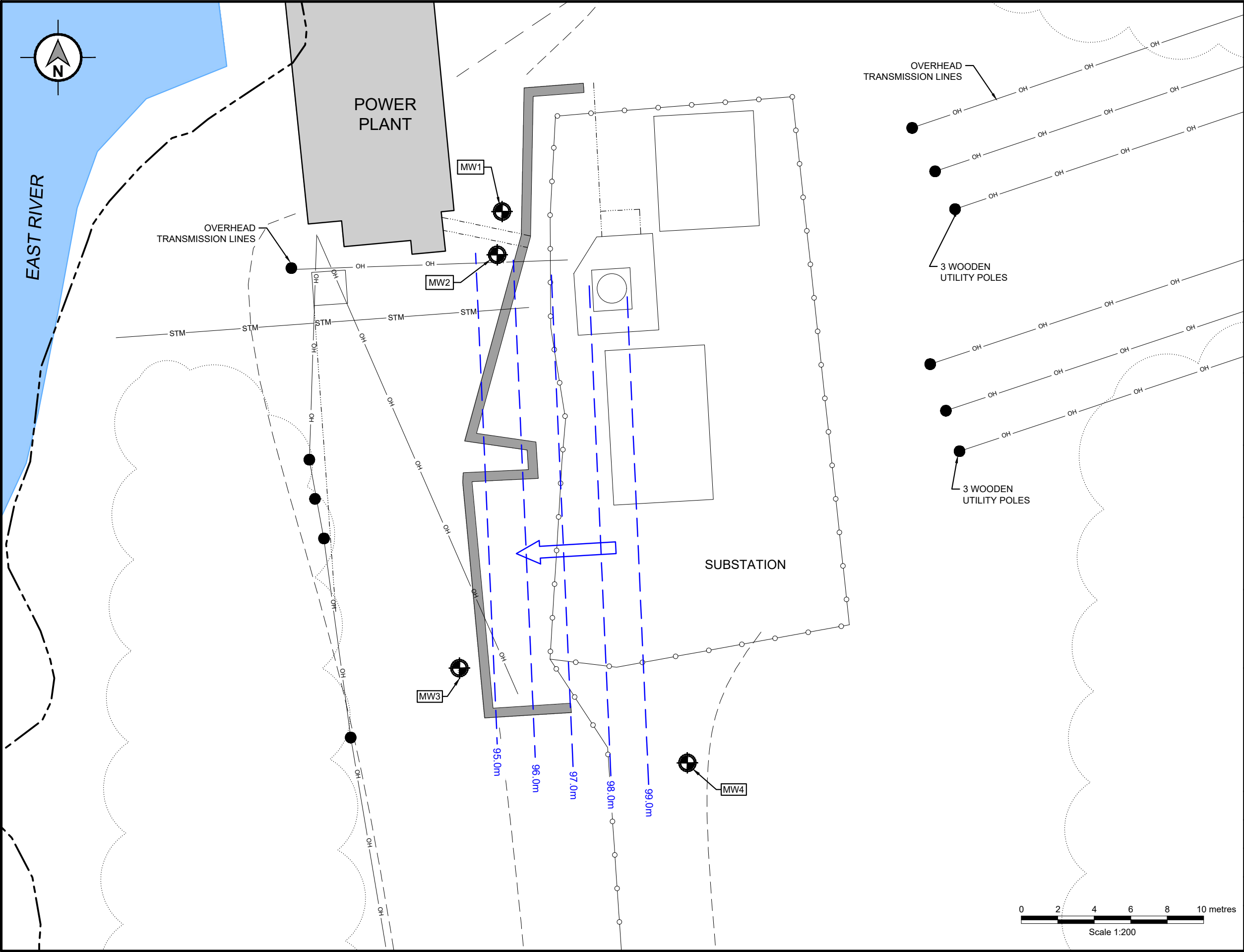
AS NOTED

DATE:	OCTOBER 2024	DRAWN:	L. PEMBERTON
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DESIGNED:	CHECKED:	APPR'D:
	M. LOPEZ	J. FAULKNER

PROJECT No.:	24-10728
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DRAWING No.:	2
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LEGEND:

SUBJECT PROPERTY BOUNDARY..... — — — — —

ADJACENT PROPERTY BOUNDARY..... — — — — —

GRAVEL..... — — — — —

TREE LINE..... — — — — —

FENCE..... — — — — —

OVERHEAD LINE..... — — — — —

STORM PIPING..... — — — — —

UNDERGROUND ELECTRICAL..... — — — — —

UTILITY POLE..... ●

GROUNDWATER CONTOUR..... 0m

GROUNDWATER FLOW..... →

MONITORING WELL..... ⊕

GENERAL NOTES:

- DRAWING REFERENCES: NOVA SCOTIA PROPERTY RECORDS. DIGITAL TOPOGRAPHIC MAPPING BY NOVA SCOTIA GEOMATICS CENTRE. NOVA SCOTIA GROUNDWATER ATLAS.
- PROJECTION: NAD83(CSRS), UTM ZONE 20 NORTH.
- ALL PROPERTY BOUNDARIES, SITE FEATURES AND SERVICES ARE APPROXIMATE ONLY. SUBJECT TO SURVEY.
- GROUNDWATER CONTOURS AND FLOW DIRECTION BASED ON STATIC WATER ELEVATIONS MEASURED ON 23-SEPTEMBER-2024, AND ARE APPROXIMATE ONLY

CLIENT:

NOVA SCOTIA POWER INC

PROJECT:

PHASE II
ENVIRONMENTAL
SITE ASSESSMENT

LOCATION:

116 RUTH FALLS ROAD
SHEET HARBOUR, NS

TITLE:

GROUNDWATER FLOW

CONSULTANT:

strum
CONSULTING

SCALE:

1:200

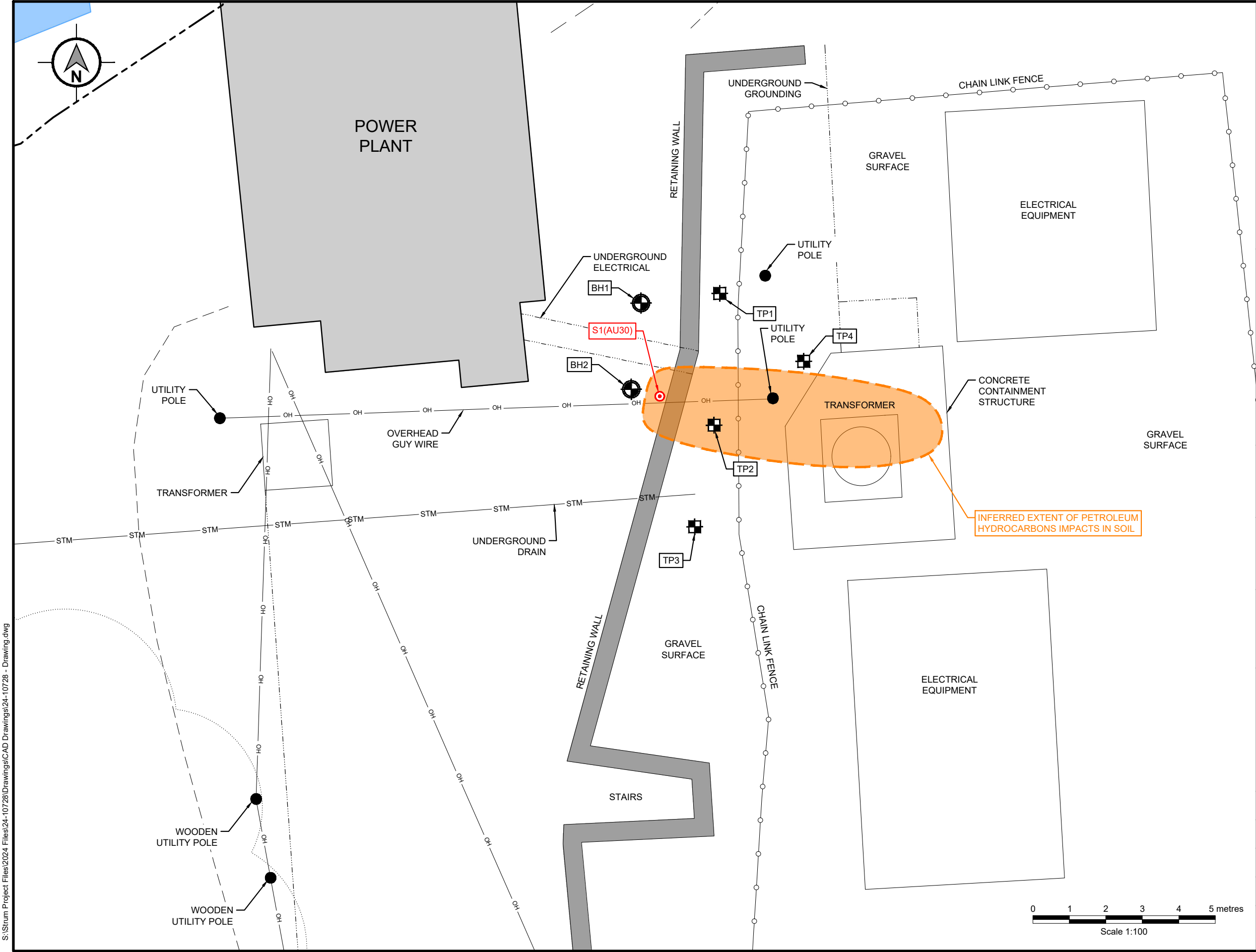
DATE:		DRAWN:
OCTOBER 2024		L. PEMBERTON
DESIGNED:	CHECKED:	APPR'D:
	M. LOPEZ	J. FAULKNER

PROJECT No.:

24-10728

DRAWING No.:

3



LEGEND:

SUBJECT PROPERTY BOUNDARY..... — — — — —

ADJACENT PROPERTY BOUNDARY..... — — — — —

GRAVEL..... — — — — —

TREE LINE..... — — — — —

FENCE..... — — — — —

OVERHEAD LINE..... — OH —

STORM PIPING..... — STM —

UNDERGROUND ELECTRICAL..... — — — — —

UTILITY POLE..... ●

SOIL SAMPLE..... ●

BOREHOLE..... ●

TEST PIT..... ■

RED SYMBOL INDICATES EXCEEDENCE OF APPLICABLE TIER I EQS CRITERIA

- GENERAL NOTES:**
- DRAWING REFERENCES: NOVA SCOTIA PROPERTY RECORDS. DIGITAL TOPOGRAPHIC MAPPING BY NOVA SCOTIA GEOMATICS CENTRE. NOVA SCOTIA GROUNDWATER ATLAS.
 - PROJECTION: NAD83(CSRS), UTM ZONE 20 NORTH.
 - ALL PROPERTY BOUNDARIES, SITE FEATURES AND SERVICES ARE APPROXIMATE ONLY. SUBJECT TO SURVEY.

CLIENT:

NOVA SCOTIA POWER INC

PROJECT:

PHASE II ENVIRONMENTAL SITE ASSESSMENT

LOCATION:

116 RUTH FALLS ROAD
SHEET HARBOUR, NS

TITLE:

HYDROCARBON IMPACTS IN SOIL

CONSULTANT:

strum
CONSULTING

SCALE:

1:100

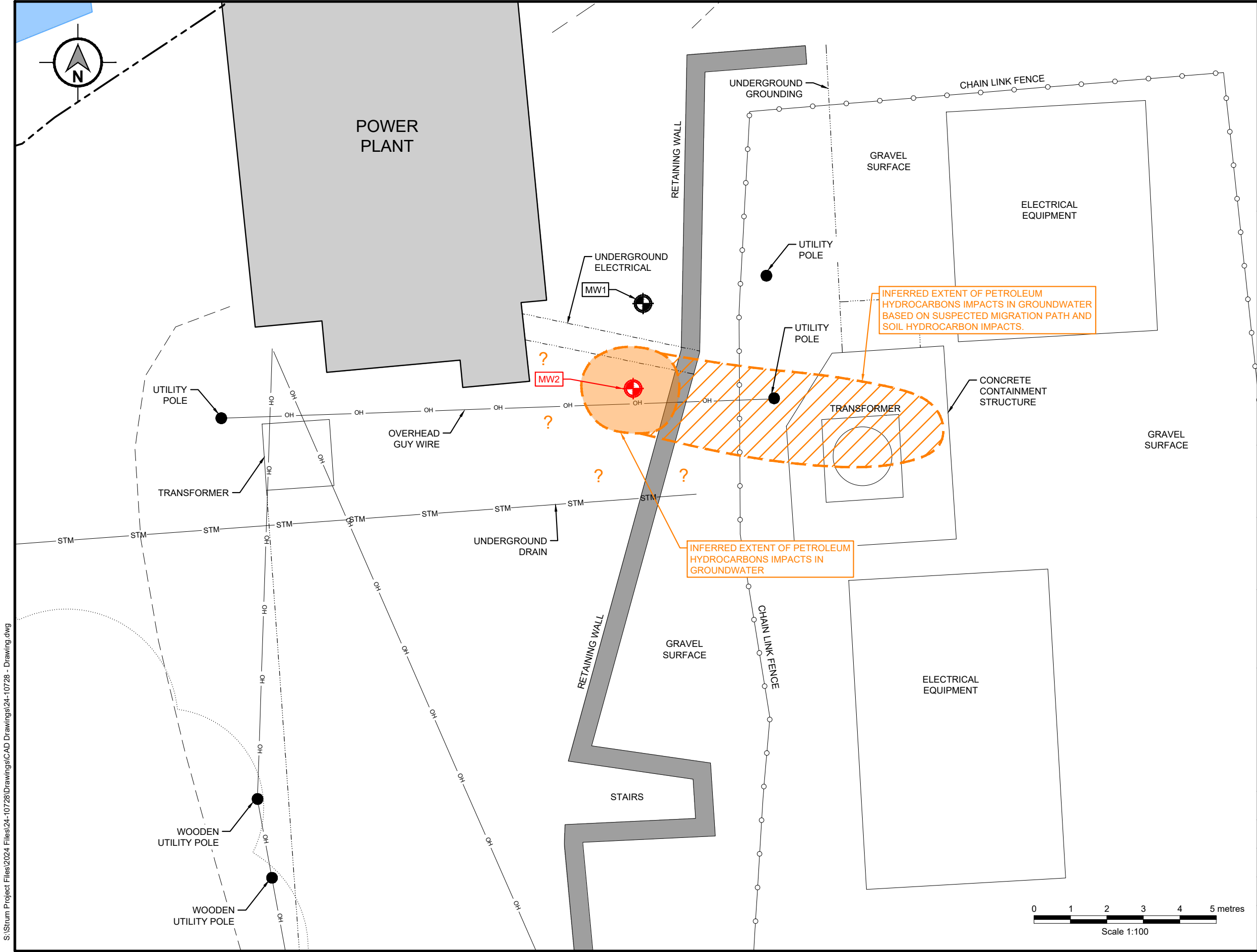
DATE: OCTOBER 2024

DRAWN: L. PEMBERTON

DESIGNED: CHECKED: M. LOPEZ APPR'D: J. FAULKNER

PROJECT No.: 24-10728

DRAWING No.: 4



LEGEND:

SUBJECT PROPERTY BOUNDARY..... — — — — —

ADJACENT PROPERTY BOUNDARY..... — — — — —

GRAVEL..... — — — — —

TREE LINE..... — — — — —

FENCE..... — — — — —

OVERHEAD LINE..... — OH —

STORM PIPING..... — STM —

UNDERGROUND ELECTRICAL..... — — — — —

UTILITY POLE..... — — — — —

MONITORING WELL..... — — — — —

RED SYMBOL INDICATES EXCEEDENCE OF APPLICABLE TIER I EQS CRITERIA

GENERAL NOTES:

- DRAWING REFERENCES: NOVA SCOTIA PROPERTY RECORDS. DIGITAL TOPOGRAPHIC MAPPING BY NOVA SCOTIA GEOMATICS CENTRE. NOVA SCOTIA GROUNDWATER ATLAS.
- PROJECTION: NAD83(CSRS), UTM ZONE 20 NORTH.
- ALL PROPERTY BOUNDARIES, SITE FEATURES AND SERVICES ARE APPROXIMATE ONLY. SUBJECT TO SURVEY.

CLIENT:

NOVA SCOTIA POWER INC

PROJECT:

PHASE II ENVIRONMENTAL SITE ASSESSMENT

LOCATION:

116 RUTH FALLS ROAD
SHEET HARBOUR, NS

TITLE:

HYDROCARBON IMPACTS IN GROUNDWATER

CONSULTANT:

strum
CONSULTING

SCALE:

1:100

DATE:	OCTOBER 2024	DRAWN:	L. PEMBERTON
DESIGNED:	CHECKED:	APPR'D:	
	M. LOPEZ	J. FAULKNER	

PROJECT No.:

24-10728

DRAWING No.:

5

APPENDIX B
SITE ASSESSMENT & TIER I/II TABLE CHECKLIST

SITE ASSESSMENT & TIER I/II TABLE CHECKLIST

		Method Used	
Site Location:	116 Ruth Falls Road, Sheet Harbour, NS	Tier I RBSL	☒
Site Professional:	Jeff Faulkner, P. Geo.	Tier II PSSL	☐
Date:	October 15, 2024	Tier II SSTL	☐
Contaminants of Concern at site:			
Minimum Site Assessment Requirements		Other	
Issue	Yes or No*	Comment	
PID, owner, location identified	Yes	Phase II ESA Section 2.1	
Current and anticipated future land use identified	Yes	Phase II ESA Section 2.1	
Review of underground services as conduits	Yes	Phase II ESA Section 4.3	
Historical review completed	N/A	Not assessed as part of Phase II ESA	
Local groundwater use identified	Yes	Phase II ESA Section 2.1	
Adjacent land uses and receptors identified	Yes	Phase II ESA Section 2.2	
Ecological screening completed	Yes	Phase II ESA Section 5.4	
Soil and groundwater samples from all source areas obtained	Yes	Phase II ESA Section 4.1	
For CVOCs, all hydrogeologic units assessed (i.e., shallow/deep)	N/A	CVOCs not assessed	
Impacts delineated to acceptable levels (Refer to Section 2.2.2 of guidance document), vertically and horizontally, for potential receptors (adjacent property receptor may have lower screening levels)	No	Further delineation required	
Groundwater flow direction and gradient established	Yes	Phase II ESA Section 5.1	
Combination of surface and sub-surface soil samples analysed	Yes	Phase II ESA Section 4.0	
Vapour samples collected and analysed, if applicable	N/A	Not assessed as part of Phase II ESA	
Free product observations made in soil and groundwater	Yes	No observed free product	
Low lab detection level for benzene in soil if potable water area	No	Phase II ESA Section 5.2	
Grain size and organic carbon analysis completed on soil	N/A	Not calculating SSTLs.	
TPH fractionation done on soil and water if calculating Tier II SSTL for TPH	N/A	Not calculating SSTLs.	
All CVOCs (including parent and biodegradation (daughter) products) assessed	N/A	CVOCs not assessed.	
Scaled site plan showing all relevant site features	Yes	Phase II ESA Appendix A	
Receptor building characteristics obtained (e.g., stories, floor condition, ceiling height, building size)	Yes	Phase II ESA Section 2.1	
Mandatory Conditions			
Issue	Yes or No*	Comment	
Non-aqueous phase liquids not present in groundwater	No	Phase II ESA Section 6.0	
Potable water free of objectionable taste and odour	N/A	Not assessed as part of Phase II ESA	
Soils do not contain liquid and/or free petroleum product	Yes	No free product observed	
Residual hydrocarbons do not create objectionable odours or explosive conditions in indoor or outdoor air	Yes		
Surface soils are not stained	No	Phase II ESA Section 4.1	
No dirt basement floors, sumps with dirt bottoms, etc.	Yes		
Confirmed that correct TPH type selected in RBSL or PSSL Table	Yes		
Confirmed that correct soil type selected in RBSL or PSSL Tables	Yes		
Default Site Characteristics and Exposure Scenarios			
Issue	Yes or No*	Comment	
Depth to groundwater approximately 3.0 metres	No	Depth to groundwater less than 3.0m	
Impacted soil thickness is less than 3.0 metres	Yes		
Default foundation crack fraction is appropriate	N/A		
Default foundation thickness is appropriate	N/A		
Two floors exist if using a residential scenario	Yes	Site is industrial	
PHC impacts in soil above Tier I RBSL and detectable concentrations of CVOCs in soil, are not within 0.3 m of foundation walls or floor slab	No	Further delineation required removed	
Confirmed that RBSL or PSSL Table values is correct for adjacent property receptors (i.e. use residential at property line if adjacent property is residential)	Yes		
Where exposure pathways have been eliminated at Tier II, detailed explanation provided in report explain why pathways are not relevant	N/A	No pathways eliminated	
Where PSSLs tables are used based on elimination or control of a pathway that could be reopened by changes in site use, this condition is specified as a limitation in the report	N/A	PSSLs not used.	
Where Tier II SSTLs have been calculated by changing default values, the report includes the parameter changed, the default value, the site-specific value used, and the rationale and/or detailed written justification	N/A	Tier II not calculated.	

* If No, indicate in comment section if and where in report the issue is addressed. Consult the Best Management Practices (Appendix 1) for additional details.

APPENDIX C

ASSESSMENT METHODOLOGY

Assessment Methodology

Utility Clearance

Prior to conducting the field investigation at the site, subsurface and overhead utilities were reviewed in accordance with Strum's occupational health and safety program, and to determine if preferential pathways for contaminant migration are potentially present on the site.

Utilities were located by a private utility clearance contractor, and also through consultation with local utility providers. All identified utilities were marked on the ground with marking paint, and proposed investigation locations were based on maintaining appropriate safe distances from the identified utilities. Utility locations were recorded in the field, and the approximate locations are provided on the drawings attached to the report.

Borehole Drilling

All boreholes completed during the assessment were drilled using either a truck-mounted or track-mounted geotechnical drill rig owned and operated by an experienced drilling subcontractor. Advancement in overburden soils was achieved with standard flight augers or hollow-stem augers. Where encountered, advancement into boulders or bedrock was achieved via diamond coring, wet rotary, and/or air hammer.

Representative soil samples were collected in the boreholes using decontaminated 50 mm outer diameter split-spoon samplers on a continuous basis (where possible), in accordance with industry standard practices. When applicable, bedrock cores were also collected on a continuous basis (where possible) using diamond coring equipment.

Subsurface conditions were logged in detail by a Strum field representative during the drilling program. This included recording the depth of each collected sample, the number of blow counts required to drive the split-spoon samplers over a one-foot depth interval (i.e., SPT N-Values), and noting the soil/rock type and colour, soil density (based on N-value), soil moisture content, rock core recovery and Rock Quality Designations (RQDs), and any evidence of potential contamination (e.g., staining, odour, free-phase chemical product, debris, etc.).

Monitoring Well Installation

Upon completion of the drilling, 50 mm diameter Schedule 40 PVC monitoring wells were installed in select boreholes by the drilling subcontractor under the supervision of Strum field personnel. The monitoring well IDs correspond with the borehole IDs in which they were installed.

All monitoring wells consisted of a 0.05 m well point installed at the base of the borehole, followed by a section of slotted well screen, followed by a length of solid pipe that extends to surface grade. The solid pipe was sealed with a fitted plug/cap. A bentonite plug was installed in each monitoring well above the screened interval to prevent surface water from entering each well. Either flush-mount or stick-up well covers were installed at the surface over the monitoring wells to protect the wellhead.

Assessment Methodology

Monitoring Well Development

Following installation, each well was developed by purging a minimum of five casing volumes (or to dryness) using a decontaminated submersible pump to develop the filter pack around the well screen, and to minimize the amount of sediment in water samples subsequently collected from the wells.

Monitoring Well Decommissioning

When no longer needed for site assessment purposes, the monitoring wells will require decommissioning. The protective cover and any equipment including tubing will be removed from the well. Each well will be cut to at least 0.3 m below grade prior to grouting. The monitoring well will then be filled entirely with bentonite by slow placement. This process will prevent vertical movement of water throughout the well, and will prevent surface run-off from potentially contaminating the aquifer. The surface at the location of the former monitoring wells will be covered with appropriate topsoil, paving, or gravel, and will be graded to eliminate surface water ponding.

Test Pit Excavation

Test pits were completed using a hydro-excavator owned and operated by an experienced subcontractor. All test pits were completed to the depth of the water table, to refusal on boulders or inferred bedrock, or to the limit of the excavator's reach. Upon completion of each test pit, the ground surface was graded by hand-shovel using surrounding gravel fill material.

Representative soil samples were collected from each test pit using hand-operated equipment (i.e., for test pits depths less than 1.2 m below grade). The samples were collected at appropriate intervals depending on the subsurface conditions encountered in the test pit, such as observed soil types, the depth of water seepage, any zones of potential contamination, and at the base of the test pit.

Subsurface conditions in each test pit were logged in detail by a Strum field representative. This included noting the soil type/colour, soil density, soil moisture content, any evidence of potential contamination (e.g., staining, odour, free-phase chemical product, debris, etc.), the depth of encountered water seepage, the depth of inferred bedrock (if encountered), the depths that samples were collected, and the total depth of the test pit in metres below surface grade.

Elevation Survey and Groundwater Level Measurement

Ground surface (i.e., "grade point") elevations and the top of the well PVC casing (i.e., "measured point") elevations were recorded at each monitoring well location by a Strum field representative. All elevations were surveyed relative to a nearby temporary benchmark with an assumed elevation of 100 metres above sea level, which was set on a nearby stationary object.

Assessment Methodology

Static water level measurements were recorded in the available wells by a Strum field representative. Depth to water was measured from the measured point elevation on the top of each well head using an electronic interface probe.

Free Product Monitoring

The monitoring wells were also inspected for any evidence of free-phase petroleum or chemical product (i.e., “free product”) using an electronic oil/water interface probe. Free product in groundwater is defined as a thickness of visible petroleum/chemical product recorded to be greater than 1 mm.

For assessments of contaminants less dense than water (e.g., most petroleum hydrocarbon products), the free product measurements were completed with the interface probe at the top of the water column in the well. For assessments of contaminants that are denser than water (e.g., VOCs, PCBs, some Bunker C products, etc.), the probe was lowered to near the bottom of the well where those types of free product would be expected to accumulate.

Determination of Groundwater Flow Conditions

The groundwater flow direction was estimated at the site based on a triangulation of groundwater level elevations recorded in the monitoring wells following completion of the drilling program. This triangulation was used to produce and evaluate groundwater elevation contours on a site plan. A minimum of three monitoring wells were used for the flow determination; however, typically most of the monitoring well water level elevations were utilized. If water levels were determined to be unusual outliers (e.g., artesian well conditions, anomalous due to fractured bedrock conditions, etc.), they were excluded from the groundwater flow determination.

Following determination of the groundwater elevation contours and flow direction at the site, the groundwater horizontal hydraulic gradient was calculated by drawing an intersecting line perpendicular to the groundwater elevation contours, from the highest elevation contour to the lowest elevation contour. The slope of that line was then determined using the difference in groundwater elevation over the distance between the highest and lowest groundwater elevation contours. The hydraulic gradient is expressed as a percentage.

The groundwater hydraulic conductivity (K) was determined by completing a drawdown test on at least one selected monitoring well at the site. This involved recording the initial water level below the top of the well casing using an electronic interface probe, purging water to near the bottom of the well, and then measuring the increasing water level below the top of the well casing at designated time intervals until the water had recovered to near its initial level. Water levels were recorded initially at short time intervals (e.g., 15 seconds), but as the water levels recovered, the levels were recorded as longer time intervals (e.g., 15 minutes). For monitoring wells with a significant recovery period, a groundwater level logger was installed in the well to record the water level recovery over a longer time period. This drawdown water level data was then interpreted using the Hvorslev method to provide an estimate of hydraulic conductivity.

Assessment Methodology

Sampling

Soil Sample Collection and Screening

Representative soil samples were collected at continuous intervals (where possible) at all test locations by a Strum field representative. All soil samples were collected and sealed in glass containers in the field (1-60 mL jar, 1-250 mL jar, and two 40 mL vials that contained methanol preservative per sample), and the 250 mL sample jar headspace was then aspirated for VOCs using an RKI Eagle II Gas Detector. VOC headspace measurements were reported in ppm (parts per million).

Based on the VOC screening results and field observations, soil samples were selected for submission to Bureau Veritas Laboratories in Bedford, NS, or to ALS Environmental in Dartmouth, NS for the chosen analyses. All samples were kept in cool storage pending submission to the laboratory. Bureau Veritas and ALS are accredited to ISO 17025 by the Standards Council of Canada (SCC).

Groundwater Sample Collection

Prior to collection of groundwater samples, each well was purged of at least three well volumes (or to dryness) using a decontaminated submersible pump in order to remove any standing water from the well, and to ensure that the samples were representative of the surrounding groundwater. Groundwater samples were then collected using new, dedicated bailers for each well.

When sampling groundwater for contaminants that are less dense than water (e.g., most petroleum hydrocarbons), the sample was collected from near the top of the water column in the well with the bailer. When sampling for contaminants that are denser than water (e.g., VOCs, PCBs, some Bunker C products, etc.), the bailer was allowed to sink to near the bottom of the well where any dense contaminants would be expected to concentrate.

All groundwater samples were collected using the appropriate laboratory issued glassware (varying bottle types depending on contaminant type), and were placed in cool storage prior to being submitted to ALS Environmental in Dartmouth, NS for analysis.

Unless otherwise indicated in the report, all groundwater samples collected from monitoring wells for analysis of metals parameters were filtered in the field using laboratory-supplied 0.45-micron filters (i.e., were analyzed for dissolved metals).

Quality Assurance & Quality Control (QA/QC)

To obtain representative samples and avoid potential cross-contamination, all samples were collected by Strum field staff while wearing dedicated nitrile gloves, and while using either dedicated or decontaminated sampling supplies and equipment. All samples were placed in sealed laboratory-supplied containers and kept in cool storage pending submission with a completed Chain of Custody (COC) form to Bureau Veritas Laboratories for analysis.

Assessment Methodology

Sample duplicate analyses were completed during the assessment in order to evaluate QA/QC of the investigation. This included the collection/analysis of field duplicate samples (FD), and analysis of laboratory duplicates. Evaluation of the QA/QC results was completed by calculating the Relative Percent Difference (RPD) between the duplicate sample results and the original sample results, and then comparing the calculated RPDs to acceptable tolerance limits. The RPDs between all the duplicates and original samples were calculated using the following equation:

$$RPD = \left| \frac{\frac{(X_1 - X_2)}{(X_1 + X_2)}}{2} \right| \times 100$$

It should be noted that to obtain reliable calculations, the RPDs were only calculated when the reported concentrations of the duplicate samples and original samples were at least five times the reportable detection limit (RDL). Concentrations of less than five times the RDL are too low to use for QA/QC evaluation, as only slight concentration differences can lead to significant RPD values.

For calculated RPDs, the duplicate sample results are considered to be consistent with the results of the original sample when the RPD is less than or equal to 20%.

RPDs calculated to be between 20% and 50% indicate that the duplicate sample results are slightly out of QA/QC tolerance limits, which can often be associated with minor deviations in the collected samples, such as sample heterogeneity, high parameter concentrations, high moisture content in soil/sediment or air samples, or sediment inclusion in water samples. RPDs in this range are evaluated by the Site Professional, but don't necessarily indicate a significant limitation in the reliability of the data.

RPDs calculated to be above 50% indicate a significant exceedance of QA/QC tolerance limits, and warrant further evaluation. A review of site conditions encountered during the field program and sampling details is conducted, and a consultation with the analytical laboratory is also conducted to attempt to identify the potential cause(s) of the deviation in the duplicate sample results. In this circumstance, sample data is typically not relied upon for determining plume boundaries, remedial excavation limits or confirming acceptable site conditions, and resampling may be recommended.

APPENDIX D
PHOTOGRAPH LOG



Photo 1: View of gravel driveway entry to the site and hydro-power plant building, looking north. Photo taken on September 5, 2024.



Photo 2: View of hydro-power plant and transformer substation on north side of the site, looking south. Photo taken on September 11, 2024.



Photo 3: View of transformer substation on north side of the site, looking east. Photo taken on September 11, 2024.



Photo 4: View of transformer substation on south side of the property, looking southeast. Photo taken on September 11, 2024.



Photo 5: Transformer substation area of release and oil staining on concrete containment floor. Photo taken on August 30, 2024.



Photo 6: Hydrocarbon impacts in shallow soils/bedrock at base of substation retaining wall. Photo taken on September 11, 2024.

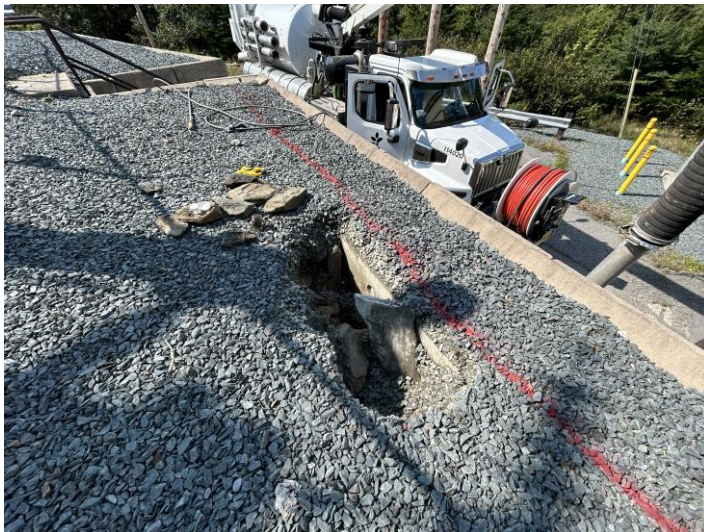


Photo 7: Completed test pit on transformer pad area using hydro-excavator. Photo taken on September 5, 2024.



Photo 8: Drilling of borehole using CME-45 rig prior to monitoring well installation. Photo taken on September 11, 2024.

APPENDIX E
BOREHOLE LOGS



BOREHOLE LOG

BH/MW1



PROJECT: Phase II ESA - 116 Ruth Falls Rd., Sheet Harbour, NS

DRILLING DATE: September 18, 2024

DRILLER: Q-Drilling

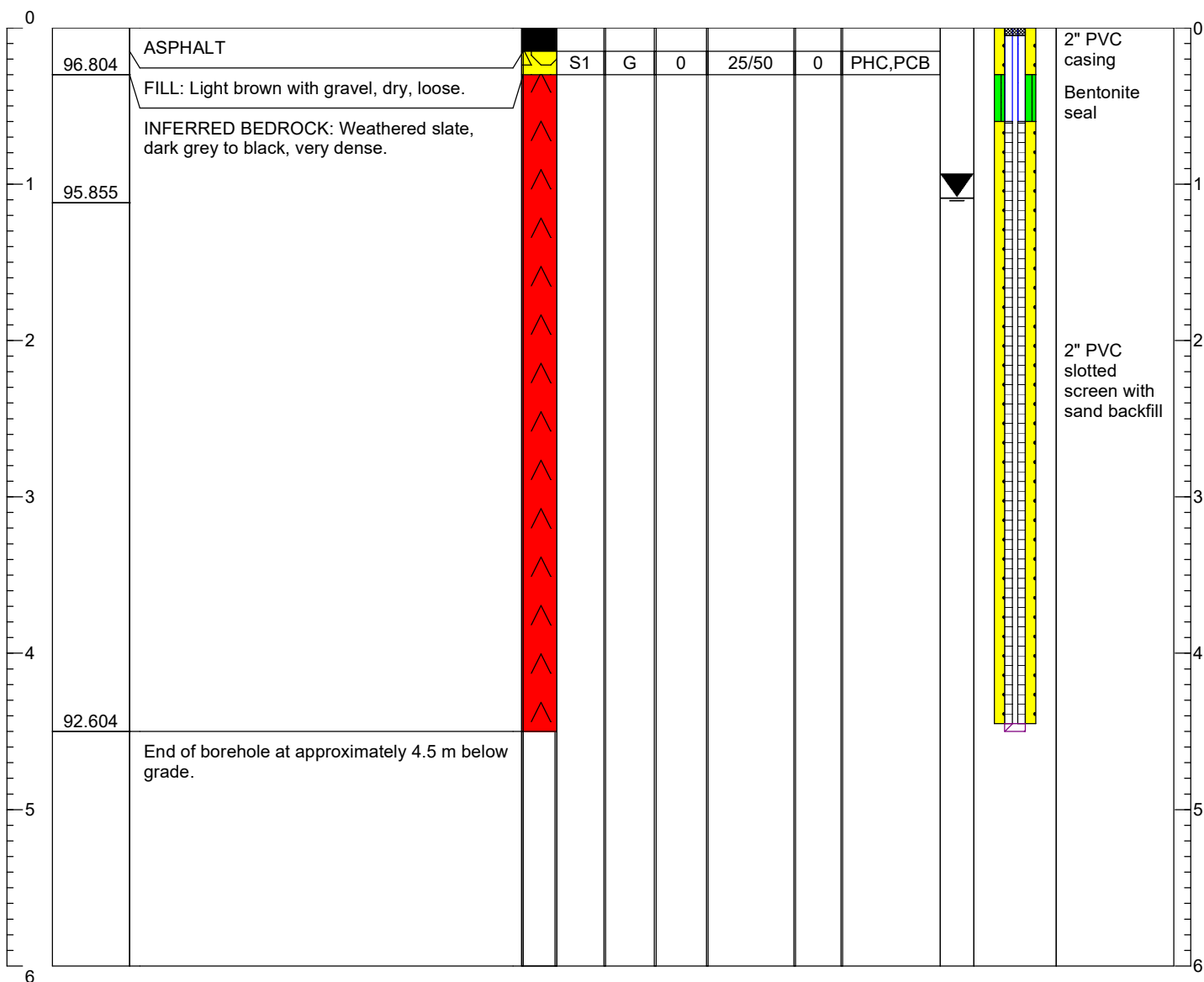
DRILL TYPE: CME-45

ELEVATION DATUM:Assumed

DRILLING METHOD: Auger & Case/Core**WATER LEVEL DATE:** September 23, 2024

WATER LEVEL (m): 1.12 m (below top of casing)

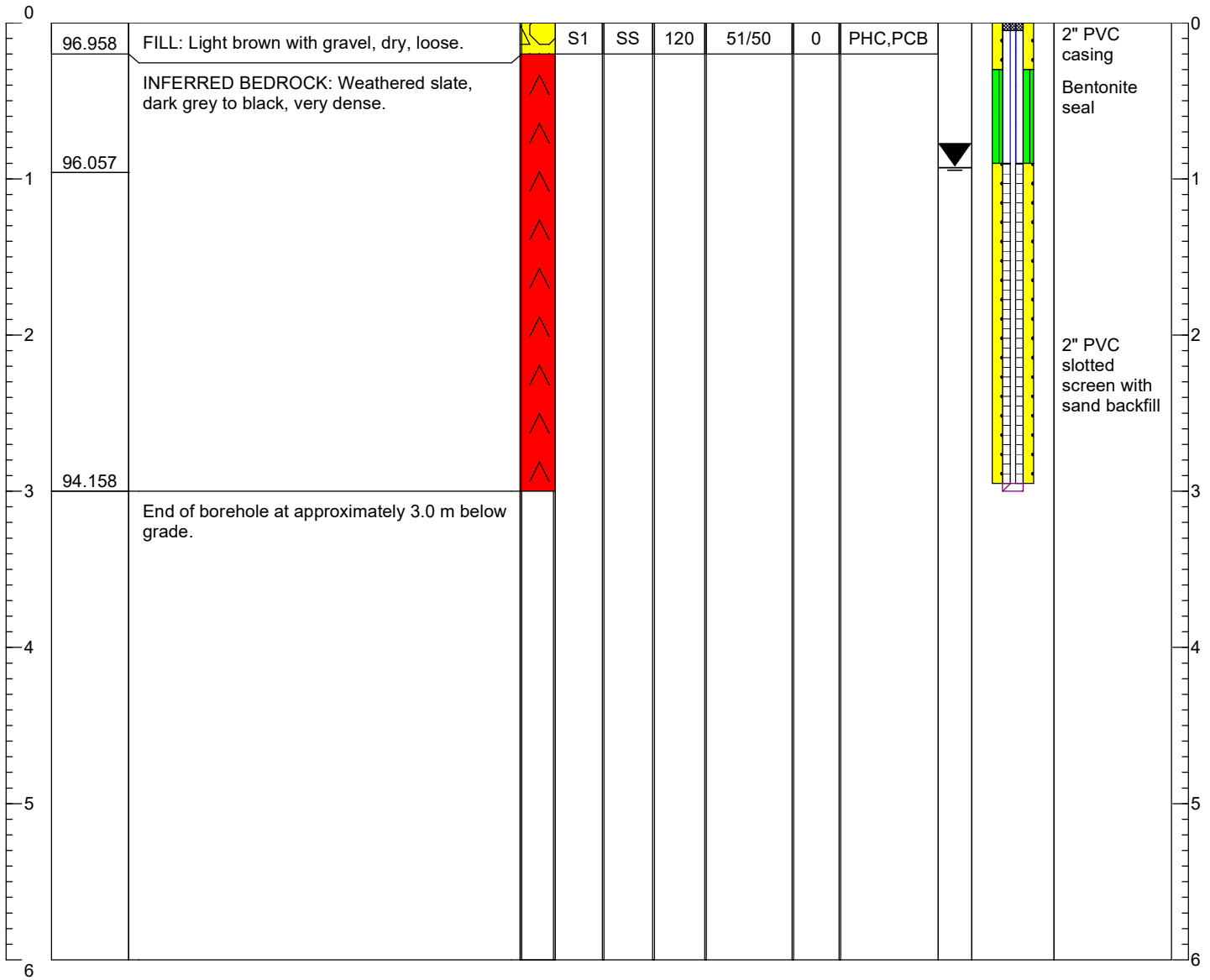
DEPTH (m)	Elevation (m)	SOIL DESCRIPTION	STRATA	SAMPLES					WELL INFO		
				NUMBER	TYPE	RECOVERY (mm)	N-VALUE/RQD	VOC (ppm)	ANALYSIS	WATER LEVEL	WELL CONSTRUCTION
97.10											



LOGGED BY: Mauricio Lopez

PROJECT NUMBER: 24-10728

strum CONSULTING 			BOREHOLE LOG					BH/MW2			
PROJECT: Phase II ESA - 116 Ruth Falls Rd., Sheet Harbour, NS											
DRILLING DATE: September 16, 2024				DRILLER: Q-Drilling				DRILL TYPE: CME-45			
ELEVATION DATUM: Assumed				DRILLING METHOD: Auger & Case/Core							
WATER LEVEL DATE: September 23, 2024				WATER LEVEL (m): 0.96 m (below top of casing)							
DEPTH (m)	Elevation (m)	SOIL DESCRIPTION	STRATA	SAMPLES					WELL INFO		
				NUMBER	TYPE	RECOVERY (mm)	N-VALUE/RQD	VOC (ppm)	ANALYSIS	WATER LEVEL	WELL CONSTRUCTION
	97.16										



LOGGED BY: Mauricio Lopez	PROJECT NUMBER: 24-10728
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BOREHOLE LOG

BH/MW3

PROJECT: Phase II ESA - 116 Ruth Falls Rd., Sheet Harbour, NS

DRILLING DATE: September 18, 2024

DRILLER: Q-Drilling

DRILL TYPE: CME-45

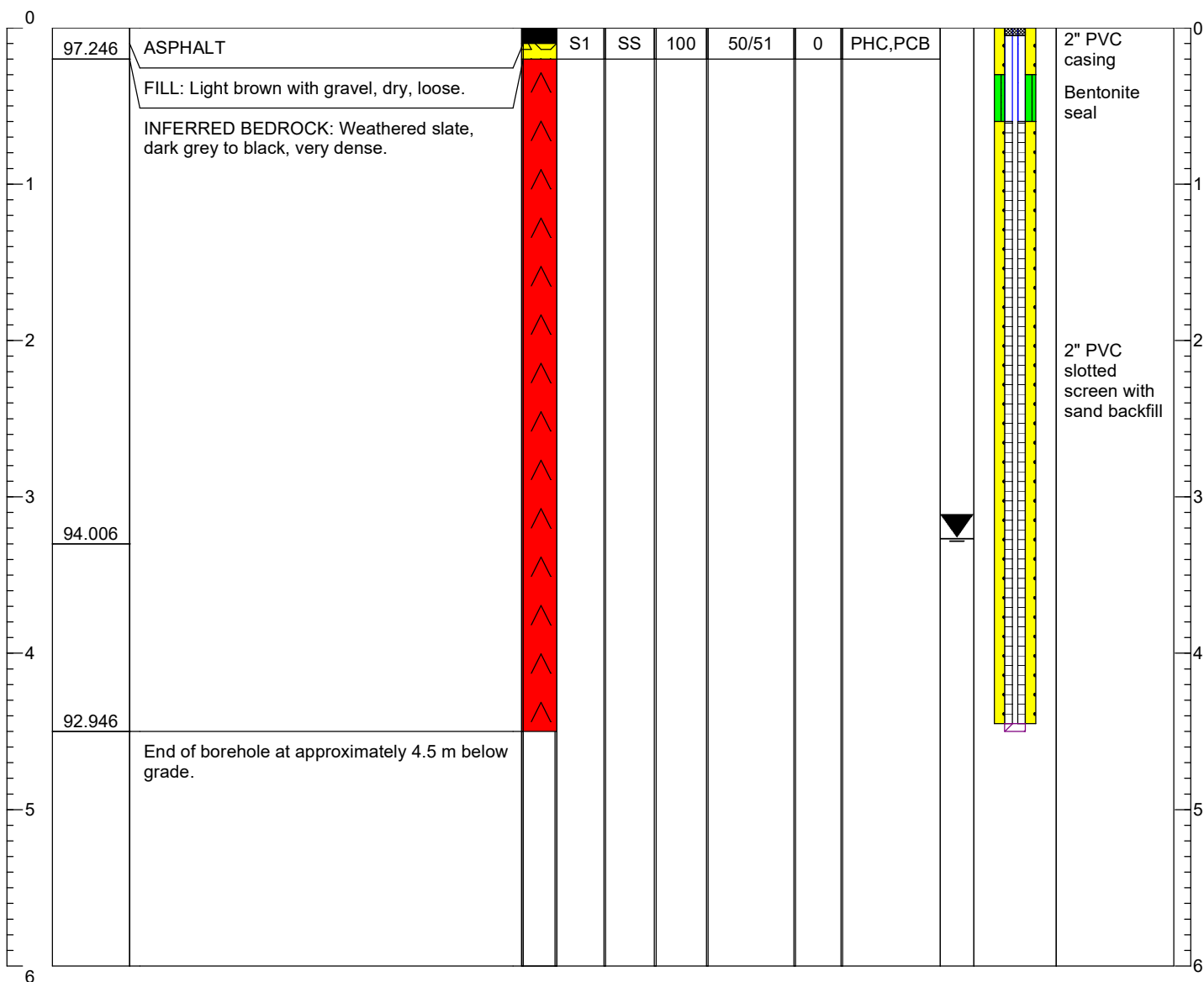
ELEVATION DATUM:Assumed

DRILLING METHOD: Auger & Case/Core

WATER LEVEL DATE: September 23, 2024

WATER LEVEL (m): 3.3 m (below top of casing)

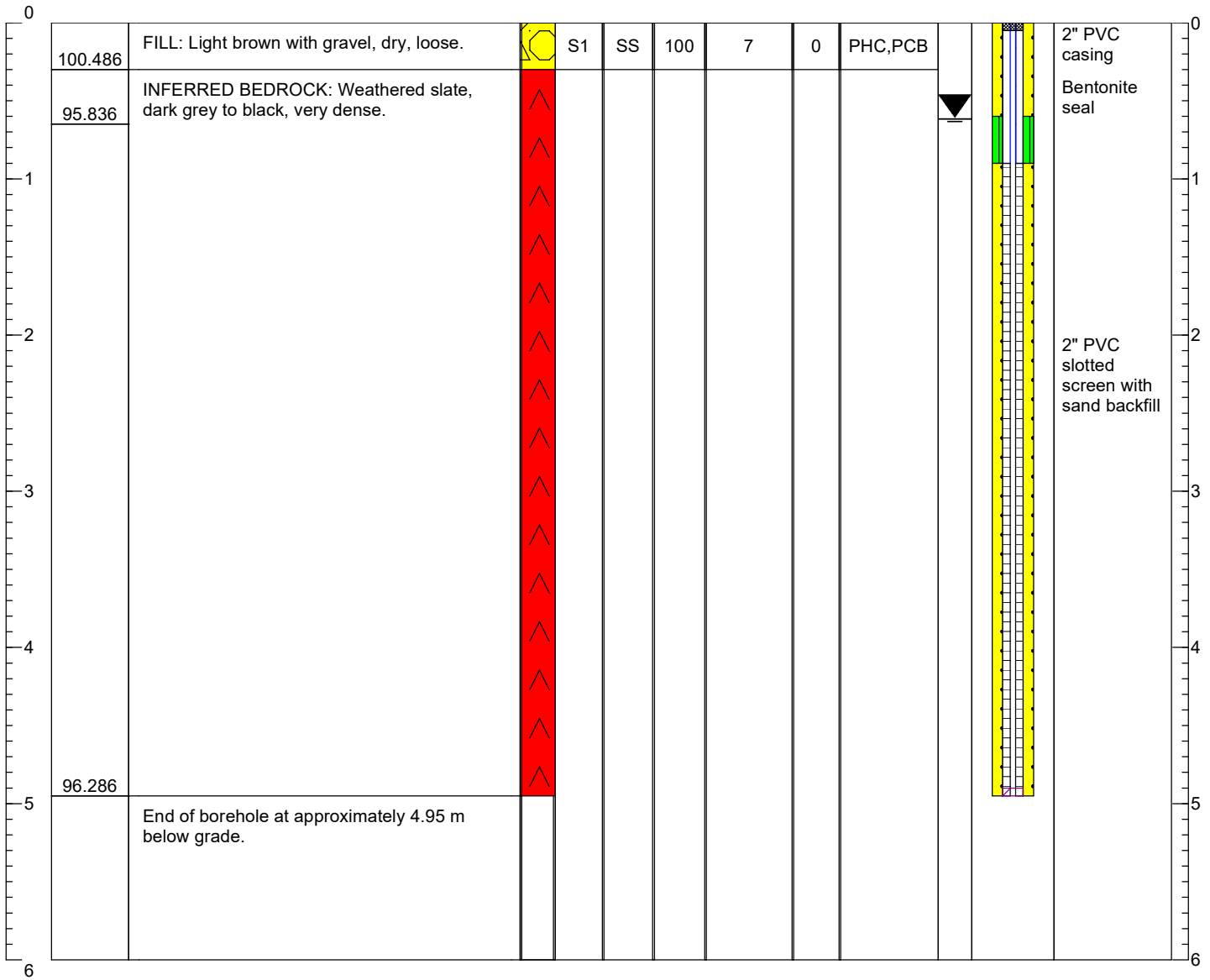
DEPTH (m)	Elevation (m)	SOIL DESCRIPTION	STRATA	SAMPLES					WELL INFO		
				NUMBER	TYPE	RECOVERY (mm)	N-VALUE/RQD	VOC (ppm)	ANALYSIS	WATER LEVEL	WELL CONSTRUCTION
97.45											



LOGGED BY: Mauricio Lopez

PROJECT NUMBER: 24-10728

strum CONSULTING 			BOREHOLE LOG					BH/MW4			
PROJECT: Phase II ESA - 116 Ruth Falls Rd., Sheet Harbour, NS											
DRILLING DATE: September 16, 2024				DRILLER: Q-Drilling			DRILL TYPE: CME-45				
ELEVATION DATUM: Assumed				DRILLING METHOD: Auger & Case/Core							
WATER LEVEL DATE: September 23, 2024				WATER LEVEL (m): 0.65 m (below top of casing)							
DEPTH (m)	Elevation (m)	SOIL DESCRIPTION	STRATA	SAMPLES					WELL INFO		
				NUMBER	TYPE	RECOVERY (mm)	N-VALUE/RQD	VOC (ppm)	ANALYSIS	WATER LEVEL	WELL CONSTRUCTION
	100.79										



LOGGED BY: Mauricio Lopez	PROJECT NUMBER: 24-10728
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APPENDIX F

ANALYTICAL RESULTS

TABLE 1: Soil Analytical Results - Petroleum Hydrocarbons - NSPI Substation, 116 Ruth Falls Road, Sheet Harbour, NS

Project # 24-10728

Sample ID	Lab ID	Date	Depth	VOC	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbon Fractions					Modified TPH	Type	Comments
					B	T	E	X	F1	F2	F3		F4			
					(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	C ₆ -C ₁₀	C ₁₀ -C ₁₆	C ₁₆ -C ₂₁	C ₂₁ -C ₃₂	C ₃₂ -C ₅₀			
		(yy/mm/dd)	(m)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)		
Initial Site Assessment - Source Sample																
S1(AU30)	ABTK93	24/08/30	-	0	nd	nd	nd	nd	nd	9500	78000	45000	-	130000	L	One product in fuel lube range.
S1(AU30) Lab-Dup					nd	nd	nd	nd	nd	-	-	-	-	-	-	Laboratory duplicate from S1(AU30).
Test Pit Soil Samples																
TP1-S1	HA2402172-001	24/09/09	0.8	0	nd	nd	nd	nd	nd	nd	38	62	-	35	L	Lube oil fraction and fuel oil fraction.
TP2-S1	HA2402172-005	24/09/09	0.8	0	nd	nd	nd	nd	nd	nd	40	60	-	88	L	Lube oil fraction and fuel oil fraction.
TP3-S1	HA2402172-006	24/09/09	0.9	0	nd	nd	nd	nd	nd	nd	35	65	-	173	L	Lube oil fraction and fuel oil fraction.
TP4-S1	HA2402172-007	24/09/09	0.8	0	nd	nd	nd	nd	nd	6	42	52	-	189	L	Lube oil fraction and fuel oil fraction.
Borehole Soil Samples																
BH1-S1	HA2402273-001	24/09/12	0.3	0	nd	nd	nd	nd	nd	nd	59	41	-	221	L	Lube oil fraction and fuel oil fraction.
BH2-S1	HA2402273-002	24/09/13	0.4	0	0.0052	nd	nd	nd	nd	6	31	63	-	413	L	Lube oil fraction and fuel oil fraction.
BH3-S1	HA2402273-003	24/09/13	0.3	0	nd	nd	nd	nd	nd	nd	38	62	-	110	L	Lube oil fraction and fuel oil fraction.
BH4-S1	HA2402273-004	24/09/13	0.3	0	nd	nd	nd	nd	nd	nd	15	85	-	60	L	Lube oil fraction and fuel oil fraction.
RDL					0.005	0.05	0.025	0.05	2.5	10	10	15	-	15	-	
Guideline Criteria	Atlantic RBCA Tier I EQS - Industrial, Potable, Coarse-grained (July 2022)				0.042	0.35	0.043	0.73	-	-	-	-	-	940	G	
														1800	F	
														10000	L	
	NS Tier I EQS - Residential, Potable, Coarse-grained (Oct. 2022)				0.021	0.35	0.043	0.73	-	-	-	-	-	75	G	
														320	F	
														1800	L	

Notes: **Value** Shading/bold indicates exceedance of: Atlantic RBCA Tier I EQS - Industrial, Potable, Coarse-grained (July 2022)Value Underline/bold indicates exceedance of: NS Tier I EQS - Residential, Potable, Coarse-grained (Oct. 2022)

m = metres below grade	mbfl = metres below floor	mbf = metres below footing
nd = non-detect	nd() = non-detect at elevated detection limit	- = no established value or not analyzed
ppm = parts per million	mg/kg = milligrams per kilogram	TPH = Total Petroleum Hydrocarbons
RDL = Reportable Detection Limit	%LEL = Percentage of Lower Explosive Limit	VOC = Volatile Organic Compound screening results in sample headspace
RBCA = Atlantic Risk Based Corrective Action	EQS = Environmental Quality Standards	PSS = Pathway Specific Standards
>RES = Concentration greater than the residual saturation limits (i.e., free product present in soil).		
Type = hydrocarbon resemblance based on lab comments and/or distribution of hydrocarbon ranges. G = gasoline; F = fuel oil/diesel; L = lube oil		
Hydrocarbon concentrations in RBCA fraction format can be combined to be reported as the CCME F1 to F4 fractions and compared directly to the values in this table.		
Analysis of CCME F4 fraction C32-C50 is not part of standard RBCA lab analysis package. Where provided, analysis of F4 fraction specifically requested.		
For comparison purposes the combined RBCA fractions C16-C21 and C21-C32 are equivalent to CCME F3 fraction C16-C34.		
For comparison purposes RBCA fraction C32-C50 is equivalent to CCME F4 fraction C34-C50.		
Samples collected on the dates indicated (yy/mm/dd)		
Lab analysis by Bureau Veritas, Bedford, NS		

Table 1A: Tier I Soil Ecological Screening for the Protection of Plants and Soil Invertebrates; Direct Soil Contact and the Protection of Wildlife and Livestock; Soil Ingestion, 116 Ruth Falls Road, Sheet Harbour, NS

Project # 24-10728

Sample ID	Date	Depth	VOC	Benzene	Toluene	Ethylbenzene	Xylene	Hydrocarbon Ranges				Did Sample Reach Baseline at C32 (Yes/No)?
	(yy/mm/dd)	(m)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	C ₆ -C ₁₀ (F1)	C ₁₀ -C ₁₆ (F2)	C ₁₆ -C ₃₄ (F3)	C ₃₄ -C ₅₀ (F4)	
								(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
Initial Site Assessment - Source Sample												
S1(AU30)	24/08/30	-	0	nd	nd	nd	nd	nd	9500	123000	-	Yes
S1(AU30) Lab-Dup				nd	nd	nd	nd	nd	-	-	-	-
Test Pit Soil Samples												
TP1-S1	24/09/09	0.8	0	nd	nd	nd	nd	nd	nd	100	-	No
TP2-S1	24/09/09	0.8	0	nd	nd	nd	nd	nd	nd	100	-	No
TP3-S1	24/09/09	0.9	0	nd	nd	nd	nd	nd	nd	100	-	No
TP4-S1	24/09/09	0.8	0	nd	nd	nd	nd	nd	6	94	-	No
Borehole Soil Samples												
BH1-S1	24/09/12	0.3	0	nd	nd	nd	nd	nd	nd	100	-	No
BH2-S1	24/09/13	0.4	0	0.0052	nd	nd	nd	nd	6	94	-	No
BH3-S1	24/09/13	0.3	0	nd	nd	nd	nd	nd	nd	100	-	Yes
BH4-S1	24/09/13	0.3	0	nd	nd	nd	nd	nd	nd	100	-	No
Atlantic RBCA ESLs - Industrial/Coarse-grained Criteria				180	250	300	350	320	260	1700	3300	
Atlantic RBCA ESLs - Residential/Coarse-grained Criteria				31	75	55	95	210	150	300	2800	

Notes: Bold/shaded values indicate exceedance of the Atlantic RBCA ESLs - Industrial/Coarse-grained Criteria
 Bold/underlined values indicated exceedance of the Atlantic RBCA ESLs - Residential/Coarse-grained Criteria

Source: CCME Canadian Environmental Quality Guidelines (CCME 1999) and CCME Canada-wide Standards (CCME 2008).

All screening levels are for surface soils (i.e. shallower than 1.5 m depth).

CCME fractions (F1 to F4) vary from the RBCA fractions (Gas, Diesel/#2, and #6 Oil/Lube); however, direct comparison acceptable for screening purposes.

Hydrocarbon concentrations in RBCA fraction format can be combined to be reported as the CCME fractions and compared directly to the values in this table.

For comparison purposes the combined RBCA fractions C16-C21 and C21-C32 are equivalent to CCME fraction C16-C34.

For comparison purposes RBCA fraction C32-C50 is equivalent to CCME fraction C34-C50.

Analysis of fraction C32-C50 is not part of standard RBCA lab analysis package.

VOC = Volatile Organic Compounds in sample headspace	m = metres below grade	nd = not detected
mg/kg = milligrams per kilogram	ppm = parts per million	- indicates no established value
n/c = analysis not completed	nd () = not detected at elevated detection limit	EQS = Environmental Quality Standards
Lab analysis by Bureau Veritas, Bedford, NS		

TABLE 2: Soil Analytical Results - Polychlorinated Biphenyls - 116 Ruth Falls Rd., Sheet Harbour, NS

Project #24-10728

Parameter	Units	RDL	Criteria		Sample ID								
			NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)	NS Tier I EQS - Residential, Potable, Coarse-grained (Oct. 2022)	S1(AU30)	TP1-S1	TP2-S1	TP3-S1	TP4-S1	BH1-S1	BH2-S1	BH3-S1	BH4-S1
					-	0.8	0.8	0.9	0.8	0.3	0.4	0.3	0.3
					ABTK93	HA2402172-001	HA2402172-005	HA2402172-006	HA2402172-007	HA2402273-001	HA2402273-002	HA2402273-003	HA2402273-004
					24/08/30	24/09/09	24/09/09	24/09/09	24/09/09	24/09/12	24/09/13	24/09/13	24/09/13
Aroclor 1016	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1221	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1232	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1248	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1242	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1254	mg/kg	0.05	-	-	0.47	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1260	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	0.073	0.019	nd	nd
Calculated Total PCB	mg/kg	0.05	160	22	0.47	nd	nd	nd	nd	0.073	nd	nd	nd

Notes:

Shading/bold indicates exceedance of:
 Underlining/bold indicates exceedance of:
 m = metres below grade
 mbf = metres below floor
 mbf = metres below footing
 nd = non-detect
 nd() = non-detect at elevated detection limit
 - = no established value or not analyzed
 RDL = Reportable Detection Limit
 mg/kg = milligrams per kilogram
 RBCA = Risk Based Corrective Action
 EQS = Environmental Quality Standards
 PSS = Pathway Specific Standards
 GW = Groundwater
 Lab analysis by Bureau Veritas, Bedford, NS
 Samples collected on the dates indicated (yy/mm/dd)

NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)
 NS Tier I EQS - Residential, Potable, Coarse-grained (Oct. 2022)

TABLE 3: Groundwater Analytical Results - Petroleum Hydrocarbons - 116 Ruth Falls Road, Sheet Harbour, NS

Project # 24-10728

Sample ID	Lab ID	Date	Sample Type (GW/DW)	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbon Fractions					Modified TPH	Type	Comments
		B		T	E	X	F1	F2	F3		F4				
		(yy/mm/dd)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	C ₆ -C ₁₀	C ₁₀ -C ₁₆	C ₁₆ -C ₂₁			
Groundwater Samples															
MW1	HA2402307-001	24/09/23	GW	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	-	Lube oil fraction and fuel oil fraction.
MW2	HA2402307-002	24/09/23	GW	nd	nd	nd	nd	nd	8	59	33	-	32.7	L	
MW3	HA2402307-003	24/09/23	GW	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	-	
MW4	HA2402307-004	24/09/23	GW	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	-	
RDL				0.001	0.001	0.001	0.002	0.09	0.05	0.05	0.09	-	0.09	-	
Criteria	NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)			0.005	0.024	0.0016	0.02	-	-	-	-	-	4.4	G	
													3.2	F	
													7.8	L	
	NS Tier I EQS - Residential, Potable, Coarse-grained (Oct. 2022)			0.005	0.024	0.0016	0.02	-	-	-	-	-	4.4	G	
													3.2	F	
													7.8	L	

Notes: **Value** Shading/bold indicates exceedance of: NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)

Value Underline/bold indicates exceedance of: NS Tier I EQS - Residential, Potable, Coarse-grained (Oct. 2022)

GW = groundwater
 nd() = non-detect at elevated detection limit
 TPH = Total Petroleum Hydrocarbons
 EQS = Environmental Quality Standards
 >SOL = Greater than solubility limit (i.e., free product present in groundwater).
 Type = hydrocarbon resemblance based on lab comments and/or distribution of hydrocarbon ranges. G = gasoline; F = fuel oil/diesel; L = lube oil
 Hydrocarbon concentrations in RBCA fraction format can be combined to be reported as the CCME F1 to F4 fractions and compared directly to the values in this table.
 Analysis of CCME F4 fraction C32-C50 is not part of standard RBCA lab analysis package. Where provided, analysis of F4 fraction specifically requested.
 For comparison purposes the combined RBCA fractions C16-C21 and C21-C32 are equivalent to CCME F3 fraction C16-C34.
 For comparison purposes RBCA fraction C32-C50 is equivalent to CCME F4 fraction C34-C50.
 Samples collected on the dates indicated (yy/mm/dd).
 Lab analysis by Bureau Veritas, Bedford, NS.

DW = drinking water
 - = no established value or not analyzed
 RDL = Reportable Detection Limit
 PSS = Pathway Specific Standards

nd = non-detect
 mg/L = milligrams per litre
 RBCA = Atlantic Risk Based Corrective Action

Table 3A: Tier I Groundwater Ecological Screening for the Protection of Plants and Soil Invertebrates (Direct Contact with Shallow Groundwater), 116 Ruth Falls Road, Sheet Harbour, NS

Project # 24-10728

Sample ID	Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	Hydrocarbon Ranges	
	(yy/mm/dd)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	F1 (C ₆ -C ₁₀)	F2 (C ₁₀ -C ₁₆)
							(mg/L)	(mg/L)
Groundwater Samples								
MW1	24/09/23	GW	nd	nd	nd	nd	nd	nd
MW2	24/09/23	GW	nd	nd	nd	nd	nd	8
MW3	24/09/23	GW	nd	nd	nd	nd	nd	nd
MW4	24/09/23	GW	nd	nd	nd	nd	nd	nd
Atlantic RBCA ESLs - Industrial/Coarse-grained Criteria			350	200	110	120	11	3.1
Atlantic RBCA ESLs - Residential/Coarse-grained Criteria			61	59	20	31	7.1	1.8

Notes: Bold/shaded values indicate exceedance of the Atlantic RBCA ESLs - Industrial/Coarse-grained Criteria
 Bold/underlined values indicated exceedance of the Atlantic RBCA ESLs - Residential/Coarse-grained Criteria
 Source: Alberta Environment (AENV, 2010).

Fractions F1 and F2 vary slightly from the RBCA fractions of Gas, Diesel/#2, and #6 Oil/Lube; however, direct comparison acceptable for screening purposes.

Hydrocarbon concentrations in RBCA fraction format can be combined to be reported as the CCME fractions and compared directly to the values in this table.

These screening levels are applicable only if groundwater is present within 3 meters of ground surface.

There is no screening level for F3 and F4 as these fractions are considered insufficiently soluble to migrate to groundwater from soil.

mg/L = milligrams per litre	nd = not detected	nd () = not detected at elevated detection limit
n/c = analysis not completed	- indicates no established value	ESLs = Ecological Screening Levels
Lab analysis by Bureau Veritas, Bedford, NS		

Table 3B: Tier I Surface Water and Groundwater Ecological Screening for the Protection of Freshwater and Marine Aquatic Life, 116 Ruth Falls Road, Sheet Harbour, NS

Project # 24-10728

Sample ID	Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	Modified TPH		
	(yy/mm/dd)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	Gasoline (mg/L)	Diesel/Fuel (mg/L)	Lube Oil (mg/L)
Groundwater Samples									
MW1	24/09/23	GW	nd	nd	nd	nd	-	-	nd
MW2	24/09/23	GW	nd	nd	nd	nd	-	-	32.7
MW3	24/09/23	GW	nd	nd	nd	nd	-	-	nd
MW4	24/09/23	GW	nd	nd	nd	nd	-	-	nd
Groundwater			4.6	4.2	3.2	2.8	13	0.84	0.48

Notes:

Bold/shaded values indicate exceedance of the Atlantic RBCA Ecological Screening Levels for Groundwater

Bold/underlined values indicate exceedance of the Atlantic RBCA Ecological Screening Levels for No Guidelines

Source: PETROTOX Ver 3.06.

Groundwater screening levels can be used for evaluating groundwater quality at locations greater than 10 meters from a freshwater or marine water body.

It is recommended that surface water screening levels should be applied directly (or unadjusted) when evaluating groundwater quality at locations within 10 m of a water body.

The screening level for mTPH (lube oil) set to RDL, actual dervied screening level = 0.06 mg/L

mTPH = Modified Total Petroleum Hydrocarbons

mg/L = milligrams per litre

nd = not detected

n/c = analysis not completed

- indicates no established value

nd () = not detected at elevated detection limit

Lab analysis by Bureau Veritas, Bedford, NS

TABLE 4: Groundwater Analytical Results - Polychlorinated Biphenyls - 116 Ruth Falls Road, Sheet Harbour, NS

Project #24-10728

Parameter	Units	RDL	Criteria		Sample ID			
			NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)	NS Tier I EQS - Residential, Potable, Coarse-grained (Oct. 2022)	MW1	MW2	MW3	MW4
					GW	GW	GW	GW
					HA2402307-001	HA2402307-002	HA2402307-003	HA2402307-004
					24/09/23	24/09/23	24/09/23	24/09/23
Aroclor 1016	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1221	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1232	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1248	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1242	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1254	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1260	µg/L	0.05	-	-	nd	nd	nd	nd
Calculated Total PCB	µg/L	0.05	9.4	9.4	nd	nd	nd	nd

Notes:

Shading/bold indicates exceedance of:
 Underlining/bold indicates exceedance of:

NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)
 NS Tier I EQS - Residential, Potable, Coarse-grained (Oct. 2022)

GW = groundwater

DW = drinking water

nd = non-detect

nd() = non-detect at elevated detection limit

- = no established value or not analyzed

RDL = Reportable Detection Limit

mg/L = milligrams per litre

µg/L = micrograms per litre

RBCA = Risk Based Corrective Action

EQS = Environmental Quality Standards

PSS = Pathway Specific Standards

>SOL = Greater than solubility limit in water (i.e., presence of free-phase chemical product)

Samples collected on the dates indicated (yy/mm/dd).

Lab analysis by Bureau Veritas, Bedford, NS

TABLE 4: Groundwater Analytical Results - Polychlorinated Biphenyls - 116 Ruth Falls Rd., Sheet Harbour, NS

Project #24-10728

Parameter	Units	RDL	Criteria		Sample ID			
			Atlantic RBCA Ecological Tier I EQS - Groundwater Discharge to Fresh Water (<10 m from receptor) (July 2022)	Atlantic RBCA Ecological Tier I EQS - Groundwater Discharge to Fresh Water (>10 m from receptor) (July 2022)	MW1	MW2	MW3	MW4
					GW HA2402307-001 24/09/23	GW HA2402307-002 24/09/23	GW HA2402307-003 24/09/23	GW HA2402307-004 24/09/23
Aroclor 1016	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1221	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1232	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1248	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1242	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1254	µg/L	0.05	-	-	nd	nd	nd	nd
Aroclor 1260	µg/L	0.05	-	-	nd	nd	nd	nd
Calculated Total PCB	µg/L	0.05	0.001	0.01	nd	nd	nd	nd

Notes:

Shading/bold indicates exceedance of:
Underlining/bold indicates exceedance of:

GW = groundwater

DW = drinking water

nd = non-detect

nd() = non-detect at elevated detection limit

- = no established value or not analyzed

RDL = Reportable Detection Limit

mg/L = milligrams per litre

µg/L = micrograms per litre

RBCA = Risk Based Corrective Action

EQS = Environmental Quality Standards

PSS = Pathway Specific Standards

>SOL = Greater than solubility limit in water (i.e., presence of free-phase chemical product)

Samples collected on the dates indicated (yy/mm/dd).

Lab analysis by Bureau Veritas, Bedford, NS

Atlantic RBCA Ecological Tier I EQS - Groundwater Discharge to Fresh Water (<10 m from receptor) (July 2022)

Atlantic RBCA Ecological Tier I EQS - Groundwater Discharge to Fresh Water (>10 m from receptor) (July 2022)

APPENDIX G
LABORATORY CERTIFICATES OF ANALYSIS

BUREAU
VERITAS

Bureau Veritas Job #: C4R4285

Report Date: 2024/09/13

Strum Environmental

Client Project #: 24-10728

Sampler Initials: PA

ATLANTIC RBCA HYDROCARBONS (SOIL)

Bureau Veritas ID		ABTK93			ABTK93		
Sampling Date		2024/08/30			2024/08/30		
COC Number		N/A			N/A		
	UNITS	S1(AU30)	RDL	QC Batch	S1(AU30) Lab-Dup	RDL	QC Batch
Petroleum Hydrocarbons							
Benzene	mg/kg	ND	0.0050	9630429	ND	0.0050	9630429
Toluene	mg/kg	ND	0.050	9630429	ND	0.050	9630429
Ethylbenzene	mg/kg	ND	0.010	9630429	ND	0.010	9630429
Total Xylenes	mg/kg	ND	0.050	9630429	ND	0.050	9630429
C6 - C10 (less BTEX)	mg/kg	ND	2.5	9630429	ND	2.5	9630429
>C10-C16 Hydrocarbons	mg/kg	9500	200	9627613			
>C16-C21 Hydrocarbons	mg/kg	78000	200	9627613			
>C21-<C32 Hydrocarbons	mg/kg	45000	300	9627613			
Modified TPH (Tier1)	mg/kg	130000	300	9616086			
Reached Baseline at C32	mg/kg	Yes	N/A	9627613			
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	9627613			
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	108		9627613			
n-Dotriacontane - Extractable	%	90 (2)		9627613			
Isobutylbenzene - Volatile	%	37 (3)		9630429	31 (3)		9630429
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate ND = Not Detected at a concentration equal or greater than the indicated Detection Limit. N/A = Not Applicable (1) One product in fuel / lube range. (2) Elevated TEH RDL(s) due to sample dilution. (3) VPH surrogate not within acceptance limits. Analysis was repeated with similar results.							



CERTIFICATE OF ANALYSIS

Work Order	: HA2402172	Page	: 1 of 4
Amendment	: 3		
Client	: Nova Scotia Power Incorporated	Laboratory	: ALS Environmental - Halifax
Contact	: Mauricio Lopez	Account Manager	: Abby van der Jagt
Address	: PO Box 910 1223 Lower Water Street Halifax NS Canada B3J 2W5	Address	: 13-100 Wright Ave Dartmouth NS Canada B3B 1L2
Telephone	: ----	Telephone	: +1 902 707 4888
Project	: ----	Date Samples Received	: 10-Sep-2024 15:30
PO	: 2141622	Date Analysis Commenced	: 12-Sep-2024
C-O-C number	: ----	Issue Date	: 01-Oct-2024 12:08
Sampler	: ----		
Site	: ----		
Quote number	: 2024 SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Niral Patel		Centralized Prep, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario



Page : 2 of 4
 Work Order : HA2402172 Amendment 3
 Client : Nova Scotia Power Incorporated
 Project : ----

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	no units
%	percent
mg/kg	milligrams per kilogram
none	none

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Sample Comments

Sample	Client Id	Comment
HA2402172-001	TP1-S1	LOF+FOF: Fuel Oil + Lube Oil Fractions
HA2402172-005	TP2-S1	LOF+FOF: Fuel Oil + Lube Oil Fractions
HA2402172-006	TP3-S1	LOF+FOF: Fuel Oil + Lube Oil Fractions
HA2402172-007	TP4-S1	LOF+FOF: Fuel Oil + Lube Oil Fractions

Qualifiers

Qualifier	Description
SHMI	Surrogate recovery was outside ALS DQO (High) due to Matrix Interference



Page : 3 of 4
 Work Order : HA2402172 Amendment 3
 Client : Nova Scotia Power Incorporated
 Project : ----

Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

(Matrix: Soil/Solid)

					TP1-S1	TP2-S1	TP3-S1	TP4-S1	----
Client sampling date / time					09-Sep-2024 09:15	09-Sep-2024 09:30	09-Sep-2024 09:45	09-Sep-2024 10:00	----
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2402172-001	HA2402172-005	HA2402172-006	HA2402172-007	-----
					Result	Result	Result	Result	----
Physical Tests									
Moisture	----	E144/WT	0.25	%	9.70	11.7	9.71	15.6	----
Hydrocarbon Distribution of RBCA mTPH (Tier I) Fractions									
C6-C10 fraction of mTPH	n/a	EC581D/WT	1	%	<1	<1	<1	<1	----
>C10-C16 fraction of mTPH	n/a	EC581D/WT	1	%	<1	<1	<1	6	----
>C16-C21 fraction of mTPH	n/a	EC581D/WT	1	%	38	40	35	42	----
>C21-C32 fraction of mTPH	n/a	EC581D/WT	1	%	62	60	65	52	----
Hydrocarbons									
Benzene	71-43-2	E611A/WT	0.0050	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	----
Toluene	108-88-3	E611A/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	----
Ethylbenzene	100-41-4	E611A/WT	0.015	mg/kg	<0.015	<0.015	<0.015	<0.015	----
Xylenes, total	1330-20-7	E611A/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	----
Xylene, o-	95-47-6	E611A/WT	0.030	mg/kg	<0.030	<0.030	<0.030	<0.030	----
Xylene, m+p-	179601-23-1	E611A/WT	0.030	mg/kg	<0.030	<0.030	<0.030	<0.030	----
VPH C6-C10	n/a	E581.VPH/WT	5.0	mg/kg	<5.0	<5.0	<5.0	<5.0	----
VPH C6-C10 (less BTEX)	n/a	EC580C/WT	5.0	mg/kg	<5.0	<5.0	<5.0	<5.0	----
EPH >C10-C16	n/a	E601F/WT	5.0	mg/kg	<5.0	<5.0	<5.0	10.7	----
EPH >C16-C21	n/a	E601F/WT	5.0	mg/kg	13.4	35.0	60.8	79.9	----
EPH >C21-C32	n/a	E601F/WT	5.0	mg/kg	21.7	52.8	112	98.0	----
EPH >C34-C50	n/a	E601F/WT	20	mg/kg	52	100	484	40	----
hydrocarbon resemblance	n/a	E601F/WT	-	none	LOF+FOF	LOF+FOF	LOF+FOF	LOF+FOF	----
mTPH (Tier I)	n/a	EC581D/WT	10	mg/kg	35	88	173	189	----
return to baseline at C32	n/a	E601F/WT	-	-	No	No	No	No	----
TEH >C10-C32	n/a	E601F/WT	10	mg/kg	35	88	173	189	----
Hydrocarbons Surrogates									
dotriacontane, n- (EPH)	n/a	E601F/WT	1.0	%	97.0	82.4	172 ^{SHMI}	172 ^{SHMI}	----
isobutylbenzene (EPH)	538-93-2	E601F/WT	1.0	%	79.8	80.9	76.9	85.4	----
isobutylbenzene (VPH)	538-93-2	E581.VPH/WT	1.0	%	120	95.7	101	96.1	----
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/WT	0.10	%	128	102	103	103	----



CERTIFICATE OF ANALYSIS

Work Order	: HA2402273	Page	: 1 of 4
Client	: Nova Scotia Power Incorporated	Laboratory	: ALS Environmental - Halifax
Contact	: Callum Drever	Account Manager	: Abby van der Jagt
Address	: PO Box 910 1223 Lower Water Street Halifax NS Canada B3J 2W5	Address	: 13-100 Wright Ave Dartmouth NS Canada B3B 1L2
Telephone	: ----	Telephone	: +1 902 707 4888
Project	: 24-10728	Date Samples Received	: 19-Sep-2024 15:06
PO	: 2141622	Date Analysis Commenced	: 23-Sep-2024
C-O-C number	: ----	Issue Date	: 27-Sep-2024 20:43
Sampler	: Mauricio Lopez		
Site	: ----		
Quote number	: 2024 SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amanda Ganouri-Lumsden	Department Manager - Microbiology and Prep	Centralized Prep, Waterloo, Ontario
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario



Page : 2 of 4
 Work Order : HA2402273
 Client : Nova Scotia Power Incorporated
 Project : 24-10728

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	no units
%	percent
mg/kg	milligrams per kilogram
none	none

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Sample Comments

Sample	Client Id	Comment
HA2402273-001	BH1-S1	LOF+FOF: Fuel Oil + Lube Oil Fractions
HA2402273-002	BH2-S1	LOF+FOF: Fuel Oil + Lube Oil Fractions
HA2402273-003	BH3-S1	LOF+FOF: Fuel Oil + Lube Oil Fractions
HA2402273-004	BH4-S1	LOF: Lube oil fraction

Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DUPH	Duplicate results outside ALS DQO, due to sample heterogeneity.



Page : 3 of 4
 Work Order : HA2402273
 Client : Nova Scotia Power Incorporated
 Project : 24-10728

Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

(Matrix: Soil/Solid)

					BH1-S1	BH2-S1	BH3-S1	BH4-S1	----
Client sampling date / time					12-Sep-2024 13:30	13-Sep-2024 16:15	13-Sep-2024 15:45	13-Sep-2024 10:00	----
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2402273-001	HA2402273-002	HA2402273-003	HA2402273-004	-----
					Result	Result	Result	Result	----
Physical Tests									
Moisture	----	E144/WT	0.25	%	5.03	7.37	7.75	12.8	----
Hydrocarbon Distribution of RBCA mTPH (Tier I) Fractions									
C6-C10 fraction of mTPH	n/a	EC581D/WT	1	%	<1	<1	<1	<1	----
>C10-C16 fraction of mTPH	n/a	EC581D/WT	1	%	<1	6	<1	<1	----
>C16-C21 fraction of mTPH	n/a	EC581D/WT	1	%	59	31	38	15	----
>C21-C32 fraction of mTPH	n/a	EC581D/WT	1	%	41	63	62	85	----
Hydrocarbons									
Benzene	71-43-2	E611A/WT	0.0050	mg/kg	<0.0050	0.0052	<0.0050	<0.0050	----
Toluene	108-88-3	E611A/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	----
Ethylbenzene	100-41-4	E611A/WT	0.015	mg/kg	<0.015	<0.015	<0.015	<0.015	----
Xylenes, total	1330-20-7	E611A/WT	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	----
Xylene, o-	95-47-6	E611A/WT	0.030	mg/kg	<0.030	<0.030	<0.030	<0.030	----
Xylene, m+p-	179601-23-1	E611A/WT	0.030	mg/kg	<0.030	<0.030	<0.030	<0.030	----
VPH C6-C10	n/a	E581.VPH/WT	5.0	mg/kg	<5.0	<5.0	<5.0	<5.0	----
VPH C6-C10 (less BTEX)	n/a	EC580C/WT	5.0	mg/kg	<5.0	<5.0	<5.0	<5.0	----
EPH >C10-C16	n/a	E601F/WT	5.0	mg/kg	<12.6 ^{DLM}	24.8	<13.0 ^{DLM}	<5.0	----
EPH >C16-C21	n/a	E601F/WT	5.0	mg/kg	130	128	41.4	8.8	----
EPH >C21-C32	n/a	E601F/WT	5.0	mg/kg	91.0 ^{DUPH}	260	68.8	51.1	----
EPH >C34-C50	n/a	E601F/WT	20	mg/kg	2070	107	461	52	----
hydrocarbon resemblance	n/a	E601F/WT	-	none	LOF+FOF	LOF+FOF	LOF+FOF	LOF	----
mTPH (Tier I)	n/a	EC581D/WT	10	mg/kg	221	413	110	60	----
return to baseline at C32	n/a	E601F/WT	-	-	No	No	Yes	No	----
TEH >C10-C32	n/a	E601F/WT	10	mg/kg	221	413	110	60	----
Hydrocarbons Surrogates									
dotriacontane, n- (EPH)	n/a	E601F/WT	1.0	%	92.4	99.9	81.4	65.6	----
isobutylbenzene (EPH)	538-93-2	E601F/WT	1.0	%	72.0	77.6	92.2	81.5	----
isobutylbenzene (VPH)	538-93-2	E581.VPH/WT	1.0	%	84.2	93.6	98.2	88.8	----
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/WT	0.10	%	93.4	94.7	102	94.5	----



Bureau Veritas Job #: C4R4285
Report Date: 2024/09/13

Strum Environmental
Client Project #: 24-10728
Sampler Initials: PA

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Bureau Veritas ID		ABTK93		
Sampling Date		2024/08/30		
COC Number		N/A		
	UNITS	S1(AU30)	RDL	QC Batch
PCBs				
Aroclor 1016	ug/g	ND	0.10	9629025
Aroclor 1221	ug/g	ND	0.10	9629025
Aroclor 1232	ug/g	ND	0.10	9629025
Aroclor 1242	ug/g	ND	0.10	9629025
Aroclor 1248	ug/g	ND	0.10	9629025
Aroclor 1254	ug/g	0.47	0.10	9629025
Aroclor 1260	ug/g	ND	0.10	9629025
Total PCB	ug/g	0.47	0.10	9629025
Surrogate Recovery (%)				
Decachlorobiphenyl	%	117		9629025
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				

Page : 4 of 4
 Work Order : HA2402172 Amendment 3
 Client : Nova Scotia Power Incorporated
 Project : ----



Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

					TP1-S1	TP2-S1	TP3-S1	TP4-S1	----
					09-Sep-2024 09:15	09-Sep-2024 09:30	09-Sep-2024 09:45	09-Sep-2024 10:00	----
					HA2402172-001	HA2402172-005	HA2402172-006	HA2402172-007	-----
					Result	Result	Result	Result	----
Volatile Organic Compounds Surrogates									
Difluorobenzene, 1,4-	540-36-3	E611A/WT	0.10	%	135	109	111	110	----
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1221	11104-28-2	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1232	11141-16-5	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1242	53469-21-9	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1248	12672-29-6	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1254	11097-69-1	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1260	11096-82-5	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1262	37324-23-5	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1268	11100-14-4	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Polychlorinated biphenyls [PCBs], total	----	E687/WT	0.030	mg/kg	<0.030	<0.030	<0.030	<0.030	----
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%	104	105	102	95.2	----
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%	86.3	85.0	81.8	78.2	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Page : 4 of 4
 Work Order : HA2402273
 Client : Nova Scotia Power Incorporated
 Project : 24-10728



Analytical Results

Sub-Matrix: Soil/Solid

Client sample ID

(Matrix: Soil/Solid)

					BH1-S1	BH2-S1	BH3-S1	BH4-S1	----
Client sampling date / time					12-Sep-2024 13:30	13-Sep-2024 16:15	13-Sep-2024 15:45	13-Sep-2024 10:00	----
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2402273-001	HA2402273-002	HA2402273-003	HA2402273-004	-----
					Result	Result	Result	Result	----
Volatile Organic Compounds Surrogates									
Difluorobenzene, 1,4-	540-36-3	E611A/WT	0.10	%	99.4	102	108	99.9	----
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1221	11104-28-2	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1232	11141-16-5	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1242	53469-21-9	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1248	12672-29-6	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1254	11097-69-1	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1260	11096-82-5	E687/WT	0.010	mg/kg	0.073	0.019	<0.010	<0.010	----
Aroclor 1262	37324-23-5	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Aroclor 1268	11100-14-4	E687/WT	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	----
Polychlorinated biphenyls [PCBs], total	----	E687/WT	0.030	mg/kg	0.073	<0.030	<0.030	<0.030	----
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%	140	139	131	140	----
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%	113	110	97.0	115	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



CERTIFICATE OF ANALYSIS

Work Order	: HA2402307	Page	: 1 of 4
Client	: Nova Scotia Power Incorporated	Laboratory	: ALS Environmental - Halifax
Contact	: Mauricio Lopez	Account Manager	: Abby van der Jagt
Address	: PO Box 910 1223 Lower Water Street Halifax NS Canada B3J 2W5	Address	: 13-100 Wright Ave Dartmouth NS Canada B3B 1L2
Telephone	: ----	Telephone	: +1 902 707 4888
Project	: 24-10728	Date Samples Received	: 24-Sep-2024 12:30
PO	: 2141622	Date Analysis Commenced	: 26-Sep-2024
C-O-C number	: 20-1021719	Issue Date	: 01-Oct-2024 20:49
Sampler	: Mauricio Lopez		
Site	: ----		
Quote number	: 2024 SOA		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Amaninder Dhillon	Team Lead - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario



Page : 2 of 4
 Work Order : HA2402307
 Client : Nova Scotia Power Incorporated
 Project : 24-10728

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	no units
%	percent
µg/L	micrograms per litre
mg/L	milligrams per litre
none	none

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Sample Comments

Sample	Client Id	Comment
HA2402307-001	MW1	N/A: Resemblance Not Applicable (mTPH < LOR)
HA2402307-002	MW2	LOF+FOF: Fuel Oil + Lube Oil Fractions
HA2402307-003	MW3	N/A: Resemblance Not Applicable (mTPH < LOR)
HA2402307-004	MW4	N/A: Resemblance Not Applicable (mTPH < LOR)

Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
SUR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.



Page : 3 of 4
 Work Order : HA2402307
 Client : Nova Scotia Power Incorporated
 Project : 24-10728

Analytical Results

Sub-Matrix: Water

Client sample ID

(Matrix: Water)

					MW1	MW2	MW3	MW4	----
Client sampling date / time					23-Sep-2024 10:05	23-Sep-2024 10:35	23-Sep-2024 10:45	23-Sep-2024 11:30	----
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2402307-001	HA2402307-002	HA2402307-003	HA2402307-004	-----
					Result	Result	Result	Result	----
Hydrocarbon Distribution of RBCA mTPH (Tier I) Fractions									
C6-C10 fraction of mTPH	n/a	EC581D/WT	1	%	<1	<1	<1	<1	----
>C10-C16 fraction of mTPH	n/a	EC581D/WT	1	%	<1	8	<1	<1	----
>C16-C21 fraction of mTPH	n/a	EC581D/WT	1	%	<1	59	<1	<1	----
>C21-C32 fraction of mTPH	n/a	EC581D/WT	1	%	<1	33	<1	<1	----
Hydrocarbons									
Benzene	71-43-2	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
Toluene	108-88-3	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
Ethylbenzene	100-41-4	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
Xylenes, total	1330-20-7	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
Xylene, o-	95-47-6	E611A/WT	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----
Xylene, m+p-	179601-23-1	E611A/WT	0.00040	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	----
VPH C6-C10	n/a	E581.VPH/WT	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	----
VPH C6-C10 (less BTEX)	n/a	EC580C/WT	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	----
EPH >C10-C16	n/a	E601F/WT	0.050	mg/L	<0.050	2.62	<0.050	<0.050	----
EPH >C16-C21	n/a	E601F/WT	0.050	mg/L	<0.050	19.4	<0.050	<0.050	----
EPH >C21-C32	n/a	E601F/WT	0.050	mg/L	<0.050	10.7	<0.050	<0.050	----
EPH >C34-C50	n/a	E601F/WT	0.10	mg/L	<0.10	0.38	<0.10	<0.10	----
hydrocarbon resemblance	n/a	E601F/WT	-	none	N/A	LOF+FOF	N/A	N/A	----
mTPH (Tier I)	n/a	EC581D/WT	0.090	mg/L	<0.090	32.7	<0.090	<0.090	----
return to baseline at C32	n/a	E601F/WT	-	-	Yes	Yes	Yes	Yes	----
TEH >C10-C32	n/a	E601F/WT	0.100	mg/L	<0.100	32.7	<0.100	<0.100	----
Hydrocarbons Surrogates									
dotriacontane, n- (EPH)	n/a	E601F/WT	1.0	%	71.3	74.5	78.4	69.2	----
isobutylbenzene (EPH)	538-93-2	E601F/WT	1.0	%	51.1 ^{SUR-ND}	72.4	52.6 ^{SUR-ND}	54.1 ^{SUR-ND}	----
isobutylbenzene (VPH)	538-93-2	E581.VPH/WT	1.0	%	111	101	112	109	----
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/WT	1.0	%	104	100	101	103	----
Difluorobenzene, 1,4-	540-36-3	E611A/WT	1.0	%	95.3	94.0	95.4	94.4	----
Polychlorinated Biphenyls									

Page : 4 of 4
 Work Order : HA2402307
 Client : Nova Scotia Power Incorporated
 Project : 24-10728



Analytical Results

Sub-Matrix: Water

Client sample ID

					MW1	MW2	MW3	MW4	----
					23-Sep-2024 10:05	23-Sep-2024 10:35	23-Sep-2024 10:45	23-Sep-2024 11:30	----
Client sampling date / time									
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2402307-001	HA2402307-002	HA2402307-003	HA2402307-004	-----
					Result	Result	Result	Result	----
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1221	11104-28-2	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1232	11141-16-5	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1242	53469-21-9	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1248	12672-29-6	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1254	11097-69-1	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1260	11096-82-5	E687/WT	0.020	µg/L	<0.020	<0.033 ^{DLM}	<0.020	<0.020	----
Aroclor 1262	37324-23-5	E687/WT	0.020	µg/L	<0.020	<0.033 ^{DLM}	<0.020	<0.020	----
Aroclor 1268	11100-14-4	E687/WT	0.020	µg/L	<0.020	<0.033 ^{DLM}	<0.020	<0.020	----
Polychlorinated biphenyls [PCBs], total	----	E687/WT	0.060	µg/L	<0.060	<0.075 ^{DLM}	<0.060	<0.060	----
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%	109	136	104	104	----
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%	93.9	79.5	83.2	81.4	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

APPENDIX H

GROUNDWATER STATIC MEASUREMENTS

Water Statics Results - 116 Ruth Falls Rd., Sheet Harbour, NS**Project # 24-10728**

Well Number	Grade Point Elevation (metres)	Measured Point Elevation (metres)	Depth to Water 24/09/23 (metres)	Static Elevation 24/09/23 (metres)
MW4	100.79	100.71	0.65	100.06
MW3	97.45	97.38	3.30	94.08
MW2	97.16	97.09	0.96	96.13
MW1	97.10	97.04	1.12	95.92

Measured on indicated dates using electronic interface probe

Depth to water measured from Measured Point Elevation on well head

All elevations referenced from a TBM located at corner of boiler room, nearest MW1.

APPENDIX I

ATLANTIC RBCA ECOLOGICAL SCREENING ASSESSMENT

SUMMARY TABLE - RESULTS OF ECOLOGICAL SCREENING PROTOCOL FOR PETROLEUM IMPACTED SITES

Instructions to Practitioners: This table is intended to summarize the results of the Ecological Screening Protocol and must be completed in consultation with guidance provided in the protocol. Users should include this completed table in their Environmental Assessment or Closure Report. Details and explanations are to be provided in the body of the Report.

Ecological Screening Component	Yes or No	Report name and location of details and explanations
Part I - Identification of petroleum hydrocarbons in media		
1. Do site characterization data indicate the presence of petroleum hydrocarbons and/or CVOCs in site <u>surface soil</u> (depth < 1.5 m) above the appropriate screening levels in Tables 1a and 1b?	Yes	Phase II ESA Report, Section 5.4
2. Do site characterization data indicate the presence of PHC in shallow site <u>groundwater</u> (depth < 3.0 m) above appropriate ecological screening levels that were derived for the protection of terrestrial plants and soil invertebrates in contact with site <u>groundwater</u> in Table 2?	Yes	Phase II ESA Report, Section 5.4
3. Do existing site characterization data indicate the presence of PHC and/or CVOCs in site <u>groundwater</u> above appropriate ecological screening levels derived for the protection of aquatic receptors in Table 2a/2b/2c?	Yes	Phase II ESA Report, Section 5.4
4. Do site characterization data indicate the presence of PHC and/or CVOCs in site <u>surface water</u> above the appropriate screening levels in Table 2a/2b?	N/A	Surface water not present on site.
5. Does site characterization indicate the presence of PHC and or CVOCs in on-site or adjacent <u>sediments</u> above the appropriate screening levels in Table 4a/4b?	N/A	Sediment not present on site.
IF ALL ANSWERS IN PART I ARE "NO" THEN NO FURTHER ACTION IS REQUIRED		
Part II - Identification of habitat and ecological receptors		
1. Are the following habitat types or conditions present on the site or proximate to site within a minimum of 200 metres? • wetland habitats • aquatic habitats • forested habitats • grassland habitats • provincial/national parks or ecological reserves • known rare, threatened or endangered species, • other known critical or sensitive habitat • other local or regional receptor or habitat concerns	Yes	Phase II ESA Report, Section 5.4

Ecological Screening Component	Yes or No	Report name and location of details and explanations
2a. Are there visible indications of stressed vegetation on the site?	No	Phase II ESA Report, Section 5.4
2b. Is there evidence that the site vegetation community differs from what would be expected?	No	Phase II ESA Report, Section 5.4
2c. Are there indications that the site soil cannot support a soil invertebrate community?	No	Phase II ESA Report, Section 5.4
3. Is there evidence that terrestrial plants in the habitats above are likely to be in root contact with site groundwater above screening levels?	No	Phase II ESA Report, Section 5.4
4. Would wildlife receptors be expected to forage on or near the contaminated areas of the site?	No	Phase II ESA Report, Section 5.4
Part III - Identification of exposure pathways for ecological receptors		
1a. Is it reasonable to conclude that site hydrocarbons and/or CVOCs in surface soil with concentrations exceeding applicable screening levels, will come into contact with terrestrial plants and invertebrates in a suitable habitat?	No	Phase II ESA Report, Section 5.4
1b. Is it reasonable to conclude that site hydrocarbons and/or CVOCs in surface soil with concentrations exceeding applicable screening levels, will come into contact with mammalian, avian or herptile terrestrial receptors within an agricultural land use in a suitable habitat?	No	Phase II ESA Report, Section 5.4
2. Is it reasonable to conclude that dissolved hydrocarbons and/or CVOCs in site groundwater with concentrations exceeding applicable screening levels will come into contact with plants or soil invertebrates in a suitable habitat?	No	Phase II ESA Report, Section 5.4
3. Is it reasonable to conclude that dissolved hydrocarbons and/or CVOCs in site groundwater with concentrations exceeding applicable screening levels will come into contact with aquatic receptors or aquatic receptor habitat?	Yes	Phase II ESA Report, Section 5.4
4. Is it reasonable to conclude that site petroleum hydrocarbon and/or CVOCs contamination could impact aquatic receptors or aquatic habitat in surface water bodies via the following: a. surface runoff (e.g. erosion, windblown contaminants) b. groundwater flow c. preferential overland flow pathways (e.g. drainage ditch, slope, swale) d. preferential subsurface flow pathways (e.g. culvert, trench, sewer line, pipelines, swales) such that aqueous media concentrations would potentially exceed surface water and/or sediment quality screening levels?	Yes	Phase II ESA Report, Section 5.4
Are there site specific conditions present, which were not considered in any section above that should require further ecological assessment?	No	
IF ALL ANSWERS IN PART III ARE "NO" THEN NO FURTHER ACTION IS REQUIRED		



PHASE III ENVIRONMENTAL SITE ASSESSMENT
116 Ruth Falls Road
Sheet Harbour, NS

May 23, 2025



NOVA SCOTIA

T: 902.835.5560 (24/7)

NEWFOUNDLAND
& LABRADOR

T: 709.738.8478 (24/7)

NEW BRUNSWICK

T: 506.799.9300 (24/7)

May 23, 2025

Mr. Thomas Crane
Nova Scotia Power Incorporated
1223 Lower Water Street
Halifax, NS B3J 3S8

Dear Mr. Crane,

Re: Phase III Environmental Site Assessment
116 Ruth Falls Road, Sheet Harbour, NS

Attached is the Phase III Environmental Site Assessment (ESA) report prepared for the 116 Ruth Falls Road property in Sheet Harbour, NS. The site is currently occupied by a two-storey hydro-electric power plant on the central west portion of the site and two electrical transformer substations located east and southeast of the power plant. The Phase III ESA was completed to further assess and delineate soil and groundwater petroleum hydrocarbon (PHC) and Polychlorinated Biphenyl (PCB) impacts at the site that was identified during Strum's Phase II ESA (dated October 11, 2024).

The Phase III ESA scope of work included the drilling of two additional boreholes with each completed as groundwater monitoring wells. Soil samples were collected from the new boreholes and groundwater samples from the new and existing groundwater monitoring wells at the site. A surface water sample was collected from the adjoining East River shoreline. Soil, groundwater and surface water samples were submitted for laboratory analysis of PHCs, as well as groundwater samples for (polychlorinated biphenyls) PCBs.

In summary, the Phase III ESA combined with the results of the previous assessment work identified elevated PHC impacts in soil at the base of the down-gradient retaining wall. The Phase III ESA did not identify any new areas of PHC soil contamination. Soils beneath the transformer concrete containment pad extending towards the retaining wall have been conservatively inferred to be impacted with PHCs based on the suspected migration path of mineral oil from the transformer spill to the visually impacted areas. Groundwater PHC impacts were identified during previous assessment work in a monitoring well installed nearest-to and down-gradient of the visibly impacted area at the base of the retaining wall. Two subsequent rounds of groundwater sampling completed between October and December 2024 reported groundwater PHC results that complied with the applicable Tier I EQS criteria in all monitoring wells at the site. However, based on the anticipated migration of PHC impacts following the transformer oil release, it has been conservatively assumed that groundwater PHC impacts are present in the area below the transformer concrete containment pad extending west (down-gradient) towards the retaining wall.

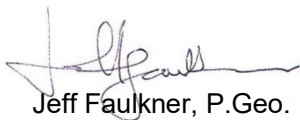
Completion of an Ecological Screening Assessment identified potential ecological concerns related to the elevated PHC concentrations in soil and groundwater combined with the proximity sensitive ecological receptors. However, all areas of soil and groundwater contamination have been delineated (inferred) to be isolated within the site and are not expected to interact with potentially sensitive ecological receptors. As such, further assessment to address the associated ecological concerns is not warranted at this time.

Based on these results and the site conditions, it is Strum's opinion that all of the areas of PHC impacts in soil and groundwater at the site have been sufficiently delineated at this time. However, long-term groundwater monitoring should be completed at the site to assess the stability of the inferred area of groundwater contamination and to confirm acceptable PHC groundwater concentrations over seasonal fluctuations. Following completion of the long-term monitoring activities, it is anticipated that the contamination remaining on the site can be addressed via a risk-based approach (i.e., Qualitative Risk Assessment, managing the impacts on-site). When that work is completed, a regulatory closure submission can be made to NSECC.

A Risk Management Plan (RMP) should be developed and implemented at the site to limit potential exposure to remaining contamination and to monitor site conditions. As part of the RMP, continued monitoring for potential migration of contamination through surficial drainage and/or groundwater recharge to surface water (East River) should be completed. Should any evidence of impact migration be identified, additional assessment activities and/or the installation of containment measures may be required. Following acceptance of regulatory closure by NSECC and completion of long-term monitoring activities, all monitoring wells should be decommissioned in accordance with Provincial requirements.

Further details are included in the attached Phase III ESA report.

Thank you,



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EXECUTIVE SUMMARY

Strum Consulting was commissioned by Nova Scotia Power Inc. (NSPI) to complete a Phase III Environmental Site Assessment (ESA) at the industrial property located at 116 Ruth Falls Road located in Sheet Harbour, NS. The ESA details, findings, and recommendations are summarized below. Further details are presented throughout the report.

Background	
Civic Address	116 Ruth Falls Road, Sheet Harbour, NS
PID(s)	00583732
Site Owner	Nova Scotia Power Incorporated
Current Land Use	Industrial (active hydro-electric sub-station facility)
Expected Future Land Use	Industrial
Adjacent Land Use	Residential, commercial and agricultural (resource)
Local Groundwater Use	Potable
Predominant Soil Type	Coarse-grained
Field Investigation Summary	
Assessed Contaminants	• Soil: Petroleum hydrocarbons (PHC) and polychlorinated biphenyls (PCBs) • Groundwater: PHCs and PCBs • Surface Water: PHCs
Dates of Field Work	October 24 and December 12 to 17, 2024
Scope of Work	• Drilled two boreholes (BH5 – BH6) • Installed two monitoring wells (MW5 – MW6) • Collected soil samples from boreholes and groundwater samples from new and previously installed monitoring wells for laboratory analysis • Collected one surface water sample from the adjacent East River [SW1(DE17)] for laboratory analysis
Subsurface Conditions Summary	
Predominant Soil Type	Coarse-grained soil
Bedrock Depth	0.2 m to 1.0 m below surface grade
Depth to Groundwater	0.43 m to 1.53 m below surface grade
Groundwater Flow	West with a horizontal hydraulic gradient of 26%
Hydraulic Conductivity	3.2×10^{-7} cm/s
Free Product Observations	No free-phase petroleum or chemical liquid (i.e., free product) observed

Results Summary	
Contaminants Identified	PHC impacts in soil and groundwater identified during previous assessment work at the base of the down-gradient retaining wall west of the transformer.
Delineation Status	Based on site topography and assessment completed to date, impacted soil and groundwater has been fully delineated (inferred) to the area below the transformer concrete pad extending west to the edge of the retaining wall. Further assessment work to delineate the inferred areas of contamination is not warranted at this time.
Ecological Screening	Completion of an Ecological Screening Assessment identified potential ecological concerns related to the elevated PHC concentrations in soil and groundwater in combined with the proximity sensitive ecological receptors. However, based on the delineated areas of contamination at the site further assessment to address the potential ecological concerns is not warranted at this time.
Recommendations	
1. Long-term groundwater monitoring (LTM) should be completed at the site to assess the stability of the inferred area of contamination and to confirm acceptable PHC groundwater concentrations over seasonal fluctuations. 2. It is anticipated that the contamination remaining on the site can be addressed via a risk-based approach [i.e., Qualitative Risk Assessment (QRA), managing the impacts on-site], which will evaluate all potential risk pathways to receptors including dermal contact, ingestion via potable groundwater, and particulate/vapour inhalation. 3. A Risk Management Plan (RMP) should be developed and implemented at the site to limit potential exposure to remaining contamination and to monitor site conditions. As part of the RMP, the area of remaining contamination in soil and groundwater should remain capped with an appropriately thick layer of surficial fill materials and the transformer infrastructure. 4. Routine monitoring for potential migration of contamination through surficial drainage and/or groundwater recharge to surface water (East River) should be completed. Should any evidence of impact migration be identified, additional assessment activities and/or the installation of containment measures may be required. 5. Following completion of an appropriate period of LTM, QRA an implementation of the RMP, a regulatory closure submission can be made to NS Environment & Climate Change (NSECC). 6. Following acceptance of regulatory closure by NSECC and completion of long-term monitoring activities, all monitoring wells should be decommissioned in accordance with Provincial requirements.	

This Executive Summary provides a brief overview of the main findings and recommendations of the environmental site investigations. Complete details are provided in the report and the attached Appendices. The statements made in this Executive Summary are subject to the same limitations as described in Section 8.0.

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1.0 INTRODUCTION

Strum was retained by Nova Scotia Power Incorporated (NSPI) to complete a Phase III Environmental Site Assessment (ESA) at the industrial power plant located at 116 Ruth Falls Road, Sheet Harbour, Nova Scotia.

Strum recently completed site inspection and Phase II ESA activities to investigate potential petroleum hydrocarbon (PHC), and polychlorinated biphenyl (PCB) impacts related to a documented transformer mineral oil release at the site which occurred in August 2024. The Phase II ESA identified soil and groundwater PHC contamination present at the base of the retaining wall down-gradient to the west of the transformer release. The Phase III ESA was completed to further delineate the areas of PHC contamination at the site. An attempt to assess surface water and sediment conditions at the site was made to evaluate potential contamination concerns to the adjoining East River.

The objective of this report is to combine and summarize the findings of the previous assessment work and the current Phase III ESA activities completed at the site to date, and to present recommendations for regulatory site closure as per the NS Contaminated Sites Regulations.

2.0 BACKGROUND

2.1 Site Description

The subject site is located 400 m west of the Ruth Falls Road and East River Road intersection in Sheet Harbour, NS. The site is currently occupied by a two-storey power plant, which consists of two industrial hydro-electric turbines and an office space. Two electrical substations are located east and southeast of the power plant. The remainder of the developed portion of the site generally consists of gravel/asphalt covered driveway and parking lot areas and undeveloped forested areas.

A Site Plan (Drawing 1) is provided in Appendix A. Further details about the site are provided in Table 2.1, below.

Table 2.1: Site Information Summary

Site Information	
Civic Address	116 Ruth Falls Road, Sheet Harbour, NS
PID(s)	00583732
Property Owner	Nova Scotia Power Incorporated
Current Land Use	Industrial
Expected Future Land Use	Industrial
Property Area	178,062 m ² (44 acres)

Site Information	
Buildings and Structures	- Hydro-electric power plant building. - Two electrical substations on cement pads atop a retaining wall.
Utilities	- Potable water is provided via the water supply from the river which flows into the hydro-electric power generating systems (penstock) within the power plant. - Underground and overhead utilities associated with the hydro-electric dam and substation.
Topography & Drainage	- Natural topography in the area of the site slopes steeply from east to west towards the banks of East River located along the western property boundary of the site. - Site topography is generally flat in the developed areas of the site (i.e., paved access road and location of power plant building) - Surficial surface water and run-off in the local area is primarily controlled by topography and is also directed through stormwater collection infrastructure with drainage towards East River. - Regional topography has an overall down-gradient trend from the northeast to the southwest.
Local Groundwater Flow	Groundwater in the local area is expected to flow to the west/southwest towards East River.
Regional Groundwater Flow	Regional groundwater is expected to flow to the south/southwest towards Sheet Harbour (i.e., Atlantic Ocean).
Closest Aquatic Receptor	East River, which is located immediately adjacent to the west/northwest of the site.
Surficial Geology	Stony glacial till plain and drumlins, ranging from 2-20 m in thickness (Stea et al, 1992)
Bedrock Geology	Meguma Group, Halifax Formation – slate (pyritic), greywacke, minor sandstone (Keppie, 2000)

2.2 Adjoining Properties

Land use on the properties adjacent to the site is designated as residential, commercial and resource. Adjoining property land use is shown on Drawing 1 (Appendix A), and details on the adjoining property land use are provided in Table 2.2, below.

Table 2.2: Adjoining Property Land Use Summary

Boundary Side of Site	Site Use
North, (up/cross-gradient)	Resource – Undeveloped forest land (PID 41050550)
West, (down-gradient)	Commercial – Undeveloped river bank (PID 41208083) followed by East River
South (down/cross-gradient)	Residential – single family dwellings along Ruth Falls Road (PIDs 40211658, 41212325, 00580910, 00581280, 41142647)
East (up-gradient)	Residential & resource –single family dwellings and undeveloped land along East River Road

2.3 Previous Assessments

As requested by NSPI, Strum completed initial site inspection and Phase II ESA activities in the fall of 2024 to document site conditions and to assess potential impacts following a transformer oil release that occurred in August 2024, originating from the transformer substation situated to the east of the hydroelectric power plant.

Between August 27 to 30, 2024, Strum and NSPI personnel completed initial site assessment activities to inspect the manner of the transformer oil release. It was reported to Strum by NSPI staff that a mineral oil release of approximately 300-litres was discovered at the site in August 2024, originated from the electrical transformer infrastructure. The release was first observed during a routine inspection of the transformer oil circuit, where a minor weeping of mineral oil had previously been identified and was being managed using absorbent materials. During the routine inspection, hydrocarbon staining was observed in fill materials surrounding the transformer pad and in soils/gravels within fractures in bedrock at the base of the retaining wall. NSPI subsequently conducted emergency repairs and inspections of the transformer infrastructure, identifying cracks in the concrete secondary containment pad floor and walls, which likely resulted in the escape of the transformer mineral oil into the underlying fill materials and bedrock. NSPI collected three soil samples (T-1627A, T-1627B, T-1627C) from surficial fill materials in the vicinity of the transformer release which were submitted for laboratory analysis of PHCs and PCBs. All NSPI surface soil samples reported elevated PHC concentrations which complied with the industrial Tier I EQS (applicable to the site land usage); however, the concentrations exceeded the Tier I EQS criteria for agricultural sites (applicable to most sensitive adjacent land use). The samples reported PCB concentrations ranging from 0.045 to 0.079 mg/kg, which complied with all applicable Tier I EQS criteria.

Based on the observed areas of PHC impacts, NSPI requested that Strum complete a site inspection (completed on August 30, 2024) while accompanied by NSPI to further document the site conditions and to provide recommendations for next steps. Strum collected a surface soil sample [S1(AU30)] from the visibly impacted area at the base of the retaining wall and submitted for laboratory analysis of PHCs and PCBs. The surface soil sample reported elevated PHC concentrations exceeding all applicable NS Tier I EQS criteria, and PCB concentrations that complied with all applicable Tier I EQS criteria.

Based on the documented site conditions and impacted areas, Strum recommended and completed (at NSPI's request) a Phase II ESA in October 2024 to assess the potential soil and groundwater impacts on the site following the transformer oil loss. The Phase II ESA included the completion of four hydro-excavated test pits around the substation concrete pad, drilling of four boreholes with each completed as groundwater monitoring wells, and collection of soil and groundwater samples from the test pits and boreholes/monitoring wells.

The Phase II ESA identified soil and groundwater PHC contamination present at the base of the retaining wall down-gradient (west) of the transformer release. Based on the Phase II ESA findings, the extent of PHC impacts in soil was determined to be fully delineated to industrial Tier I EQS, and to the applicable Tier I EQS for adjacent land uses (agricultural, residential and commercial), and inferred to be isolated to the soils underlying the footprint of the transformer infrastructure, extending as far as the retaining wall west of the transformer. Elevated PHC concentrations in groundwater exceeding applicable criteria were identified in a sample collected from the monitoring well (MW2) installed nearest-to and down-gradient of the visibly impacted area at the base of the retaining wall. Based on this, the full extent of PHC impacts in groundwater were not yet fully delineated in the down-gradient direction (west and south). All soil and groundwater samples reported PCBs to be non-detectable or otherwise in concentrations that complied with the applicable Tier I EQS.

The Phase II ESA also identified potential ecological concerns related to the elevated PHC concentrations in soil and groundwater combined with the proximity sensitive ecological receptors to the site.

Based on the results of the Phase II ESA, Strum recommended that a Phase III ESA be completed at the site to further assess and delineate the groundwater PHC impacts and to assess whether hydrocarbon impacts from the transformer loss were present in sediment and surface water from the adjoining East River. The Phase III ESA work and results are documented throughout this report.

The October 2024 Phase II ESA report was provided to the client on October 22, 2024, and is documented under a separate cover. The following sections of this report combine the results of the Phase II ESA as part of the Phase III ESA and presents the results of the Phase III ESA.

2.4 Potential Contaminants of Concern

Based on the details of the documented transformer loss, the Phase II ESA assessed the potential Contaminants of Concern (COCs) listed in Table 2.3, below:

Table 2.3: Potential Contaminants of Concern Summary

Media	Potential COCs
Soil	PHCs
Groundwater	PHCs, PCBs
Surface Water	PHCs

Notes:

1. PHC: Petroleum hydrocarbons
2. PCB: Polychlorinated biphenyls
3. PHC includes benzene, toluene, ethylbenzene, xylenes (BTEX), and modified Total Petroleum Hydrocarbons (mTPH).

2.5 Conceptual Site Model

To select appropriate site criteria, a Conceptual Site Model (CSM) approach was used that addresses both human and ecological health along with assessing potential contaminant exposure pathways. A summary of the CSM details is provided in Table 2.4, below.

Table 2.4: Conceptual Site Model Summary

Conceptual Site Model	
Current Land Use	Industrial
Expected Future Land Use	Industrial
Adjoining Land Use	Residential, commercial and agricultural (resource)
Land Use for Data Comparison	Industrial and agricultural
Predominant Soil Type	Coarse-grained soil
Potable Water Source (on-site)	Via intakes from East River
Potable Water Source (local area)	Potable wells
Protected Water Areas	The site is not located within or near a known source water protection area.
Groundwater Use for Data Comparison	Potable
Potentially Operable Human Health Risk Pathways	• Direct contact (soil ingestion and dermal contact absorption) • Soil leaching to groundwater (ingestion of potable water) • Potable drinking water (ingestion of potable water supply) • Particulate/vapour inhalation (vapour migration from soil and/or groundwater)
Potentially Operable Ecological Risk Pathways	• Direct contact with shallow soil and groundwater • Groundwater discharge to surface water • Direct contact/ingestion with surface water

Notes:

1. Soil type is assumed to be coarse-grained based on surficial soil mapping and field observations of soil sample gradation.
2. Source area protection mapping available from NS Government websites utilized for groundwater potability determination.

An Ecological Screening Assessment has been completed and is discussed in Section 5.4.

2.6 Assessment Criteria

Based on the results of the CSM, the selected assessment criteria used to evaluate the sample analytical results are outlined in Table 2.5, below.

Table 2.5: Assessment Criteria Summary

Media	Assessment Criteria
Soil & Groundwater	- NS Tier I EQS for industrial and agricultural land use, potable groundwater usage and coarse-grained soils (October 2022). - Atlantic RBCA ESLs (July 2022)
Surface Water	- NS Tier I EQS for surface water (October 2022) - Atlantic RBCA ESLs – for PHC (July 2022)

Notes:

1. EQS: Environmental Quality Standards
2. RBCA: Risk Based Corrective Action
3. ESL: Ecological Screening Levels

It should be noted that to use the NS Tier I Environmental Quality Standards (EQS) criteria and/or Atlantic Risk Based Corrective Action (RBCA) Tier I criteria for assessment of PHCs, the RBCA Site Assessment Tier I/II Table Checklist must be completed. Strum has completed the checklist, which is included in Appendix B. The following deviations from RBCA default conditions were noted during completion of the checklist.

- Groundwater at the site is shallower than 3 m below grade (0.4 m – 3.3 m below surface grade). However, shallow groundwater is common across Nova Scotia, and is not expected to represent a concern for the assessment.

3.0 SCOPE AND OBJECTIVES

The scope of work for the Phase III ESA consisted of the following:

- Drilling of two boreholes at select locations on the site to inspect subsurface conditions and to collect representative soil samples.
- Following borehole drilling, groundwater monitoring wells were installed in each of boreholes to inspect groundwater conditions and collect representative groundwater samples from the newly and previously installed monitoring wells.
- Collection of sediment and surface water samples from the adjoining East River shoreline, where safety and access restrictions permit.
- Submission of select samples to ALS Environmental in Dartmouth, NS for laboratory analysis of the parameters listed in Section 2.4.
- Comparison of the sample analytical results to applicable assessment criteria to delineate the extent of contamination on the site.
- Completing a report outlining the results of the assessment and providing recommendations for appropriate next steps.

The objective of the Phase III ESA was to further assess and delineate the extent of PHC contamination (transformer mineral oil) identified in soil and groundwater at the base of the retaining wall to the west (down-gradient) and south, to determine if impacts are present in the sediment and/or surface water along the adjoining East River, and to present recommendations for further assessment and/or for regulatory site closure as per the NS Contaminated Sites Regulations.

The Phase III ESA was completed in accordance with the requirements of the most recent version of the Canadian Standards Association (CSA) Phase II Environmental Site Assessment Standard (Z769-00), and the Nova Scotia Environment Phase II Environmental Site Assessment Protocol document (July 2013).

4.0 INVESTIGATION ACTIVITIES

The Phase III ESA activities are described in the following sections.

Additional details of the field investigation and sampling methodologies are provided in Appendix C. A photo log of the Phase III ESA field program are provided in Appendix D. Borehole/Monitoring Well Logs are provided in Appendix E. The results of the Phase III ESA are detailed in Section 5.

4.1 Utility Locates

Prior to conducting the drilling investigation at the site, subsurface and overhead utilities were located and reviewed in accordance with Strum's occupational health and safety program, and also to identify potential migration pathways for contaminants that may be present at the site. A utility review was completed by R.L. Dennis Associated Limited of Lakeside, NS with Strum personnel on September 11, 2024. NSPI was also consulted prior to the start of the field program and substation staff cleared the investigation locations.

The approximate locations of identified site utilities are shown on Drawing 1 (Appendix A).

4.2 Initial Site Assessment

As previously mentioned, NSPI and Strum completed initial site assessment activities in the fall 2024 to assess site conditions following a 300-litre transformer oil release on August 24, 2024, from the substation east of the hydroelectric plant.

Between August 27 and 30, 2024, Strum and NSPI personnel visited the site to document the site conditions and to assess the manner of the transformer mineral oil release. It was reported to Strum, that NSPI staff first identified the release during a routine substation inspection. During the inspection, hydrocarbon staining was observed on the concrete surface of the containment pad of the transformer and in soils and gravels at the base of the down-gradient retaining wall. The containment pad was found to be damaged with cracks on the concrete. Only minor evidence of mineral oil impacts was found to be present within the oil/water separator of the containment. An outage was immediately scheduled to repair the source of the leak/release and containment pad.

NSPI collected three surficial soil samples (T-1627A, T-1627B and T-1627C) around the transformer concrete pad and in the vicinity of the visibly impacted areas for laboratory analysis of PHCs and PCBs. All NSPI surface soil samples reported elevated PHC concentrations which complied with the industrial Tier I EQS (applicable to the site land usage); however, the concentrations exceeded the Tier I EQS criteria for agricultural sites (applicable to most sensitive adjacent land use). The samples reported PCB concentrations ranging from 0.045 to 0.079 mg/kg, which complied with all applicable Tier I EQS criteria.

Strum collected a surface soil sample [S1(AU30)] directly from the visibly impacted area at the base of the retaining wall and submitted to the laboratory (Bureau Veritas Laboratories in Bedford, NS) for analysis of PHCs and PCBs which reported elevated PHC concentrations exceeding the applicable NS Tier I EQS criteria for both industrial and agricultural potable sites, and PCB concentrations that complied with the applicable Tier I EQS criteria. Refer to Tables 1 and 2 (Appendix F) for soil analytical results.

Based on the document site conditions and field observations in the impacted area, it was determined that an intrusive investigation (i.e., Phase II ESA) should be completed to assess potential soil and groundwater impacts on the site in relation to the documented transformer oil release.

Further details are provided on the analytical tables in Appendix F, and the initial site assessment sample locations are presented on Drawing 2 (Appendix A).

4.3 Phase II ESA Test Pits

Four test pits (TP1 – TP4) were completed at the site during the previous Phase II ESA on September 9, 2024, around the base of the substation transformer concrete pad where the mineral oil release was observed. Strum personnel were on the site to log subsurface conditions and collect representative soil samples from the test pits. Due to safety limitations associated with excavating around the active substation infrastructure, the test pits were completed using a hydro-excavation owned and operated by GFL Environmental of Dartmouth, NS. No groundwater or bedrock was encountered. Original soil was not encountered during the test pit program as the concrete pad foundation was backfilled with gravel fill.

It should be noted that the test pit program was completed during the previous Phase II ESA. However, the results of the test pit assessment are combined and discussed here for completion purposes.

The test pit locations are shown on Drawing 2 (Appendix A). A summary of the test pit details is provided in Table 4.1, below. Further details on the test pit program are documented under Strum's Phase II ESA report (dated October 11, 2024).

Table 4.1: Phase II ESA Test Pit Investigation Summary

ID	Total Depth (m) ¹	Evidence of Potential Contamination	Notes	No. of Soil Samples Analyzed
TP1	0.8	No	No evidence of impacts.	1
TP2	0.8	No	No evidence of impacts.	1
TP3	0.9	No	No evidence of impacts.	1
TP4	0.8	No	No evidence of impacts.	1

Notes:

1. Total depth is measured in metres below surface grade.

Select samples collected from the test pits were submitted to the laboratory (ALS Environmental in Dartmouth, NS) for analysis of the parameters listed in Table 2.3 in Section 2.4.

4.4 Borehole Drilling & Monitoring Well Installation

Four boreholes (identified as BH1-BH4) were completed at the site during the previous Phase II ESA between September 12 and 23, 2024, using a CME-45 drill rig owned and operated by Q-Drilling of Fall River, NS. Two additional boreholes (identified as BH5 and BH6) were completed at the site between December 12 and 13, 2024. All drilling was completed under the inspection of Strum field staff, who logged the subsurface conditions in the boreholes and collected representative soil samples for subsequent selection for laboratory analysis. Soil was not encountered in BH5 due to encountered shallow bedrock.

Groundwater monitoring wells were installed in each of boreholes and were identified as MW1 to MW6. The monitoring well IDs correspond with the borehole IDs in which they were installed.

The borehole/monitoring well locations are shown on Drawing 2 (Appendix A). A summary of the boreholes and monitoring wells (including both Phase II and Phase III ESA boreholes/monitoring wells) details is provided in Table 4.2, below.

Table 4.2: Borehole/Monitoring Well Investigation Summary

ID	Total Depth (m) ¹	Depth to Groundwater (mbTOC) ²	Evidence of Potential Contamination	Notes	No. of Soil Samples Analyzed
Phase II ESA Boreholes/Monitoring Wells					
BH/MW1	4.5	1.12	No	No evidence of impacts.	1
BH/MW2	3.0	0.62	<u>Yes</u>	Visual evidence (sheen) of impacts in groundwater.	1
BH/MW3	4.5	0.55	No	No evidence of impacts.	1
BH/MW4	5.0	0.43	No	No evidence of impacts.	1

ID	Total Depth (m) ¹	Depth to Groundwater (mbTOC) ²	Evidence of Potential Contamination	Notes	No. of Soil Samples Analyzed
Phase III ESA Boreholes/Monitoring Wells					
BH/MW5	5.2	0.50	<u>Yes</u>	Very minor visual evidence (sheen) of impacts in groundwater. Bedrock encountered at grade. No soil encountered in borehole.	None
BH/MW6	6.7	1.53	No	No evidence of impacts.	1

Notes:

1. Total depth is measured in metres below surface grade.
2. Depth to groundwater measured in metres below top of well PVC casing (mbTOC) on December 16, 2024.
3. Boreholes that were completed as monitoring wells are identified as BH/MW.

Select soil samples collected from the boreholes were submitted to ALS Environmental in Dartmouth, NS for analysis of the parameters listed in Table 2.3 in Section 2.4.

4.5 Groundwater Sampling

Three rounds of groundwater sampling were completed between September 23 and December 17, 2024, from the two newly installed and the four previously installed monitoring wells (identified as MW1- MW6).

Select groundwater samples collected from the monitoring wells were submitted to ALS Environmental in Dartmouth, NS for analysis of the parameters listed in Table 2.3 in Section 2.4. The monitoring well locations are shown on Drawing 2 (Appendix A).

4.6 Surface Water Sampling

One surface water sample [SW1(DE17)] was collected from East River by a Strum field technician using hand-held equipment and collected directly into designated sampling supplies on December 17, 2024.

The surface water sample was submitted to ALS for analysis of the parameters listed in Table 2.3 in Section 2.4. The surface water sample location is shown on Drawing 2 (Appendix A).

It should be noted that sampling was limited to only one sample [SW1(DE17)] due to safety and accessibility restrictions. Additionally, sediment sampling for PHC analysis recommended as part of the previous Phase II ESA was also not completed for the same reasons.

5.0 INVESTIGATION RESULTS

The results of the Phase III ESA are summarized in the following sections.

Further details are available in the attached Drawings (Appendix A), Photo Log (Appendix D), Borehole/Monitoring Well Logs (Appendix E), data summary tables (Appendix F), laboratory certificates of analysis (Appendix G), and the Groundwater Static Levels summary table (Appendix H).

5.1 Site Conditions

A summary of the subsurface soil/bedrock conditions, groundwater flow, and other relevant site conditions determined during the assessment is provided in Table 5.1, below.

Table 5.1: Site Conditions Summary

Conditions	Details
Soil Stratigraphy	Medium brown silty sand with some gravel and slate cobbles, overlying bedrock. Sand and gravel fill on developed portions of the site.
Bedrock Type & Depth	Halifax Formation slate – 0.3 m below grade
Groundwater Depths	0.43 m to 1.53 m below surface grade (December 17, 2024)
Groundwater Flow Direction	West (Drawing 3, Appendix A)
Groundwater Horizontal Hydraulic Gradient	26%
Hydraulic Conductivity (K)	3.2×10^{-7} cm/s
Evidence of Contamination in Soil	None.
Evidence of Contamination in Groundwater	Mineral oil sheen in MW2 and MW5.
Free Product Observations	None.

Notes:

1. Hydraulic gradient determination is based on triangulation of groundwater elevations recorded on December 16, 2024 (Appendix H).
2. Hydraulic conductivity determined using the Hvorslev method on drawdown test data recorded in MW3 on September 23, 2024.

5.2 Sample Analytical Results

Following completion of the field sampling program, Strum submitted select samples to ALS Environmental in Dartmouth, NS for analysis of parameters listed in Table 2.3 in Section 2.4. Further details on how samples were collected and selected for laboratory analysis are provided in the Assessment Methodology provided in Appendix C. The number of samples and requested analyses are listed in Table 5.2, below.

Following receiving the sample results from the laboratory, the analytical results were compared to the following assessment criteria:

- Soil and groundwater – NS Tier I EQS for industrial and agricultural land usage, potable groundwater usage and coarse-grained soils (October 2022).
- Surface water – NS Tier I EQS for fresh surface water (July 2022).

A summary of the samples collected and submitted for PHC and PCB analysis during the initial site inspections (completed by NSPI and Strum) and the Phase II/III ESAs that reported exceedances of applicable criteria is provided in Table 5.2, below. Further details are provided on the analytical tables in Appendix F, and sample locations where exceedances were reported are highlighted on Drawings 4 – 5 (Appendix A).

Table 5.2: Sample Analyses & Exceedances Summary

Media	Contaminant Type	No. of Samples Submitted for Lab Analysis	Applicable Criteria Exceeded	No. of Samples that Exceed Criteria	Table Reference in Appendix F
Soil	PHC	13	NS Tier I EQS (industrial)	1	1
			NS Tier I EQS (agricultural)	6	
Groundwater	PHC ¹	16	NS Tier I EQS (industrial)	1	3
			NS Tier I EQS (agricultural)	1	
	PCB ¹	9	NS Tier I EQS (industrial)	None	4
			NS Tier I EQS (agricultural)	None	
Surface Water	PHC	1	NS Tier I EQS (fresh surface water)	None	5

Notes:

1. Indicates that number of samples analyzed includes field duplicates to assess QA/QC.
2. Further details on sample duplicate analysis and assessment of QA/QC are provided in Section 5.3.
3. The IDs of samples that were submitted for analysis are shown on the data summary tables in Appendix F.
4. All samples were submitted to ALS Environmental in Dartmouth, NS for analysis.

5.2.1 Hydrocarbon Analytical Results

Soil

In summary, PHC soil concentrations exceeding the applicable NS Tier I EQS criteria (industrial and agricultural) were identified in one sample [S1(AU30)] collected directly from the visibly impacted soils within the fractures of exposed bedrock at the base of the retaining wall during the initial site assessment completed by Strum. Sample S1(SU30) reported the highest mTPH concentration at 130,000 mg/kg which exceeded the Tier I EQS guidelines for

both industrial (applicable to the subject site land usage) and agricultural sites (applicable to the most sensitive adjoining property land usage). No other soil samples collected from the test pits or boreholes completed during the Phase II/III ESAs at the site reported PHC concentrations exceeding the industrial Tier I EQS. Six soil samples were reported to contain hydrocarbon concentrations that exceed the agricultural Tier I EQS; however, all agricultural exceedances have been delineated in the direction of adjacent resource properties. As such, the PHC impacted soils exceeding all applicable NS Tier I EQS have been delineated to the subject site and inferred to be isolated to the general area of the transformer.

It should be noted that the maximum depth reached in the Phase II ESA test pits completed along the inside of the retaining wall and under the transformer containment pad was limited due to the presence of the infrastructure in the area and may not have been deep enough to fully assess subsurface conditions. Therefore, it has conservatively been assumed that contaminated soils may be present in the areas of TP2 – TP4.

Groundwater

PHC contaminated groundwater in concentrations exceeding the applicable NS Tier I EQS criteria (industrial and agricultural) was previously identified in MW2 during the first round of groundwater sampling on September 23, 2024. However, two subsequent groundwater monitoring events, completed on October 24 and December 17, 2024, reported groundwater PHC concentrations that complied with the applicable NS Tier I EQS criteria in all monitoring wells, including MW2. As such, groundwater PHC impacts are no longer anticipated to be present in MW2.

Surface Water

The surface water sample collected from East River west (downgradient) of the transformer reported PHC concentrations that complied with the applicable NS Tier I EQS criteria.

It should be noted that sampling was limited to only one sample [SW1(DE17)] due to safety and accessibility restrictions. Additionally, sediment sampling for PHC analysis recommended as part of the previous Phase II ESA was also not completed for the same reasons. Given the findings of groundwater assessment activities completed to date and no evidence to suggest impacts may have migrated to riverbank, no further assessment of surface water or sediment is considered to be warranted at this time.

Hydrocarbon Analytical Results Discussion

Based on the combined results of the ESAs, PHC impacted soil has been fully delineated and inferred to be isolated to soils underlying the footprint of the transformer pad, extending to the edge of the retaining wall west of the transformer. PHC impacted groundwater has also been fully delineated at the site. While PHC impacts have not been identified in the two most recent groundwater sampling events at the site, an area of PHC impacted groundwater is conservatively inferred to be present in the same area as the inferred plume of soil contamination (ie. underlying the footprint of the transformer pad, extending to the edge of the retaining wall west of the transformer). This determination is based on the suspected migration path of hydrocarbons from the transformer oil release to the areas of observed impacts in soil and groundwater.

The areas of inferred soil and groundwater contamination are shown on Drawings 4-5 in Appendix A. Further discussion of the areas of inferred contamination is provided in Section 6.0.

5.2.2 Polychlorinated Biphenyls Analytical (PCB) Results

All soil and groundwater samples collected at the site reported non-detectable concentrations of PCBs or otherwise in concentrations that comply with the applicable NS Tier I EQS criteria. As such, no further assessment of PCBs is considered to be necessary.

5.3 Quality Assurance/Quality Control (QA/QC)

To maintain appropriate QA/QC for the assessment, all samples were collected while wearing dedicated nitrile gloves and using either dedicated or decontaminated sampling supplies/equipment. All samples were placed in sealed laboratory-supplied containers and were kept in cool storage pending transport to the laboratory for analysis.

Strum collected one groundwater field duplicate sample from MW4 (identified as MW4-FD101) during the most recent sampling event. The groundwater field duplicate was submitted to ALS for analysis of PHCs. Additionally, laboratory duplicate analysis was completed by ALS Environmental on several samples analyzed for various parameters to confirm laboratory QA/QC. The duplicate sample results are summarized on the analytical data tables in Appendix F and in the laboratory certificates of analysis (Appendix G).

To evaluate the duplicate sample results, relative percent differences (RPDs) were calculated between the results of the original samples and the duplicates. All RPDs were calculated to be less than 20%, which indicates that all duplicate sample results were within acceptable QA/QC limits.

Further details on how RPDs are calculated and evaluation of calculated RPDs are provided in Appendix C.

5.4 Ecological Screening Assessment

Strum has also completed an ecological screening of the site conditions and sample results to determine if there are any potential concerns to ecological receptors on or near the site.

The ecological screening assessment process includes comparing shallow soil data (i.e., <1.5 m depth) and shallow groundwater data (i.e., water table < 3 m depth) to applicable ecological screening criteria. Upon completion of that process, any potential ecological receptors in the vicinity of the site are identified, and then an assessment of any potential contaminant migration pathways to those ecological receptors is completed.

All applicable shallow soil and groundwater sample data were compared to the Ecological Screening Levels (ESLs) listed in Table 5.3, below. The number of samples that exceeded the applicable ecological criteria are also listed in Table 5.3.

Further details on the sample data comparison to applicable ESLs are provided on the analytical data tables in Appendix F. Additionally, an Atlantic RBCA Ecological Screening Assessment is included in Appendix I.

Table 5.3: Ecological Screening Level Exceedances Summary

Media	Contaminant of Concern	Ecological Screening Criteria	No. of Samples that Exceed Criteria	Table Reference in Appendix F
Soil	PHCs	Atlantic RBCA Tier I PHC ESLs for Protection of Plants & Soil Invertebrates (Direct Soil Contact), and Protection of Wildlife & Livestock (Soil Ingestion)	6	1A
Groundwater	PHCs	Atlantic RBCA Tier I PHC ESLs for Plant & Invertebrate Direct Contact with Shallow Groundwater	1	2A
		Atlantic RBCA Tier I PHC Groundwater ESLs for the Protection of Freshwater & Marine Aquatic Life (adjusted for distance to aquatic environment)	3	2B
	PCBs	Atlantic RBCA Tier I EQS for Groundwater Discharge to Fresh Surface Water (adjusted for distance to aquatic environment)	None	3A
Surface Water	PHCs	Atlantic RBCA Ecological Tier I EQS for Surface Water	None	4A

As shown in Table 5.3, PHC concentrations in six soil samples collected at the site exceeded the applicable ESL criteria. Three of these samples, collected during initial site inspections by NSPI and Strum, exceeded the ESLs for both industrial and agricultural sites. These samples were collected from fill material around the base of the transformer containment pad (T-1627A and T-1627C) and from soils in fractures of exposed bedrock in an area with observed mineral oil staining [S1(AU30)]. Additionally, one surface soil sample from fill material around the base of the transformer containment pad (T-1627B), collected by NSPI during the initial inspection, and two borehole soil samples (BH2-S1 and BH6-S1), collected by Strum during the Phase II/III ESA, exceeded the agricultural ESL criteria.

Groundwater samples collected from the monitoring well nearest to and down-gradient from the area of observed mineral oil staining (MW2) reported elevated PHC concentrations exceeding the ESLs criteria for the directed contact with shallow groundwater pathway. However, subsequent groundwater samples from MW2, collected on October 24 and December 17, 2024, complied with the ESL criteria; therefore, ecological concerns via direct contact with shallow groundwater are not expected to be present at the site. MW2 also reported PHC concentrations exceeding the ESL criteria for the groundwater discharge to freshwater pathway during all sampling events. However, as exceedances were limited to MW2 and no exceedances of the ESL criteria were reported in the down-gradient monitoring well (MW6), ecological concerns via the groundwater discharge pathway are not expected at the site. All other groundwater samples collected from the other monitoring wells complied with the applicable ESL criteria.

It should be noted that ESL criteria are not available for PCB parameters, however, the groundwater PCB concentrations have been compared to the Atlantic RBCA Tier I EQS criteria as part of the Ecological Screening. No exceedances of the applicable RBCA Tier I EQS were reported in any of the groundwater sample PCB concentrations. However, one sample reported elevated laboratory detection limit results above the RBCA Tier I EQS reportable detection limits (RDL), which could indicate an exceedance of PCBs in that monitoring well. However, subsequent groundwater sampling from MW2 (completed on October 24, 2024) reported non-detectable PCB concentrations and therefore, do not warrant further groundwater sampling to assess PCB concentrations in that monitoring well.

The surface water sample collected along the shoreline of East River and downstream from the spill location [SW1(DE17)] reported non-detect concentrations which complied with the applicable ESL criteria. No visual evidence of mineral oil contamination in surface waters of the river have been observed to date.

Although the site itself is not considered to be a sensitive ecological habitat since it is a fully developed industrial property, potentially sensitive ecological receptors have been identified within 200 m of the site, including significant forested land immediately adjacent to north/east of the site, and East River approximately 20 m west (down-gradient) of the site.

The proximity of these receptors to the site, combined with the identified elevated PHC concentrations in soil and groundwater may represent a potential ecological concern on the site and the adjacent East River. However, the soil/groundwater impacts have been fully delineated to be isolated within the site in the area directly below the transformer spill and down-gradient to monitoring well MW2. As such, further assessment is not warranted to investigate the potential ecological concerns at the site; however, it is anticipated that the identified PHC impacts will be routinely monitored as part of future risk management measures and long-term monitoring (LTM) in order to confirm stable conditions.

6.0 DISCUSSION

Based on the results of the Phase III ESA, the following areas of contamination have been identified at the site:

- Mineral oil staining and elevated PHC concentrations exceeding the applicable NS Tier I EQS (industrial and/or agricultural) were identified in shallow soils and bedrock along the base of the retaining wall, downgradient (west) of the mineral oil release location on the transformer containment pad, during ESA work conducted by NSPI and Strum (i.e., initial site inspections and Phase II ESA). PHC concentrations exceeding the applicable NS Tier I EQS (industrial and agricultural) criteria were identified in surface soils [S1(AU30)] collected along the base of the retaining wall down-gradient (west) of the mineral oil release location. Additionally, PHC concentrations exceeding the Tier I EQS agricultural criteria were identified in fill materials around the base of the transformer containment pad (T-1627A and T-1627C) and in two borehole soil samples (BH2-S1 and BH6-S1) collected downgradient (west) of the transformer release. The full extent of soil PHC concentrations exceeding the agricultural Tier I EQS has not been delineated to the west; however, as the adjoining downgradient property (PID 41208083) is designated for commercial land use, these concentrations do not exceed the less stringent commercial Tier I EQS. The area of soil PHC contamination exceeding NS Tier I EQS criteria for the site's land use (industrial) has been fully delineated and inferred to be isolated to soils beneath the transformer infrastructure, extending westward to the retaining wall. It should be noted that test pits within the transformer containment pad were limited in depth due to the presence of infrastructure and may not have fully assessed subsurface conditions. Therefore, it is conservatively assumed that contaminated soils in the area directly below the transformer containment pad remain on-site, extending to the underlying bedrock at approximately 0.5 to 1.0 m below grade.
- Elevated PHC concentrations in groundwater exceeding applicable NS Tier I EQS criteria was identified during the September 2024 sampling event in MW2 located nearest to the area of observed mineral oil staining. Mineral oil sheen was observed in groundwater at MW2 and MW5 in the recent groundwater sampling events. However, two subsequent rounds of groundwater sampling from both existing and newly installed monitoring wells at the site, including MW2, reported PHC concentrations compliant with the applicable Tier I EQS criteria. As such, it is anticipated that groundwater PHC contamination is no longer present in the vicinity of MW2. However, as soil PHC impacts are assumed to remain in the area of the spill and down to the depth of bedrock, it has been conservatively assumed that groundwater PHC impacts are present in the same area based on the suspected migration path of the mineral oil contamination from the spill location to the visually impacted areas at the site, specifically within shallow soils and bedrock along the base of the transformer retaining wall.

- The surface water sample collected from East River west (downgradient) of the transformer reported PHC concentrations that complied with the applicable NS Tier I EQS criteria. Given the findings of groundwater assessment activities completed to date and no evidence to suggest impacts may have migrated to riverbank, no further assessment of surface water or sediment is considered to be warranted at this time.
- All soil and groundwater samples collected at the site reported non-detectable concentrations of PCBs or otherwise in concentrations that comply with the applicable NS Tier I EQS criteria. As such, no further assessment of PCBs is considered to be necessary.
- No free-phase petroleum (i.e., free product) was identified in soil or groundwater during the assessment.

The inferred areas of PHC contamination identified at the site are shown on Drawings 4 and 5 (Appendix A).

Potentially sensitive ecological receptors have been identified within 200 m of the site, including significant forested land immediately adjacent to north/east of the site, and East River approximately 20 m west (down-gradient) of the site. Soil and groundwater samples collected nearest to the area of observed mineral oil staining on the site [i.e., S1(AU30) and MW2] reported elevated PHC concentrations exceeding the applicable ESL criteria and may represent an ecological concern to the site and adjacent receptors. Given that the identified PHC soil and groundwater impacts have been fully delineated within the site and that down-gradient land use (commercial) at the adjoining PID 41208083 property would not be expected to report exceedances of the ESL criteria, it is not anticipated that the impacted areas represent an ecological concern on the site and/or to nearby receptors. As such, further assessment activities to address potential ecological concerns at the site are not warranted at this time.

It is Strum's opinion that the areas of PHC impacts in soil and groundwater at the site have been sufficiently delineated at this time. However, to confirm the stability of the inferred areas of PHC contamination on the site, LTM of groundwater should be completed to assess seasonal fluctuations in groundwater PHC concentrations at the site.

Following completion of LTM activities, it is anticipated that the impacts will be addressed via a risk-based approach (i.e., managing the contamination in place) in order to submit for regulatory closure with Nova Scotia Environment and Climate Change (NSECC).

7.0 CONCLUSIONS & RECOMMENDATIONS

As requested by NSPI, Strum completed a Phase III ESA at the industrial 116 Ruth Falls Road site in Sheet Harbour, NS. The Phase III ESA was completed to further assess and to

delineate the areas of PHC impacts related to a transformer oil release from the electrical substation on that site that were identified during the previous assessments (i.e., initial site assessment and Phase II ESA).

The Phase III ESA included the drilling of two additional boreholes with each completed as groundwater monitoring wells. Soil samples were collected from the new boreholes and groundwater samples from the new and existing groundwater monitoring wells at the site. A surface water sample was collected from the adjoining East River. Soil, groundwater and surface water samples were submitted for laboratory analysis of PHCs, as well as for groundwater samples from the monitoring wells were also analyzed for PCBs.

Based on the results of the Phase III ESA, the following conclusions are presented:

Site soils primarily consisted of silty sand in the undeveloped areas of the site and sandy gravel fill in the developed portions, overlying Halifax Formation pyritic slate bedrock. Bedrock depths ranged from approximately 0.3 m to 0.4 m below grade on the site. Groundwater was encountered from approximately 0.43 m to 1.53 m below surface grade in the monitoring wells during the Phase III ESA activities.

- No free-phase petroleum or chemical liquid (i.e., free product) was identified in soil or groundwater during the assessment. Mineral oil sheen was observed in groundwater at MW2 and MW5, located closet to the delineated areas of groundwater and soil PHC impacts.
- Previous assessment work completed by Strum identified PHC impacts in soil at the base of the down-gradient retaining wall. The extent of soil PHC impacts has been fully delineated within the site and conservatively inferred to be isolated to soils underlying the footprint of the transformer infrastructure extending as far as the retaining wall. The Phase III ESA did not identify any new areas of PHC soil contamination.
- Previous assessment work completed by Strum identified elevated PHC concentrations in groundwater exceeding applicable NS Tier I EQS criteria in samples collected from the monitoring well installed nearest-to and down-gradient of the visibly impacted area at the base of the retaining wall (MW2). Two subsequent rounds of groundwater sampling completed between October and December 2024, reported groundwater PHC results that complied with the applicable criteria in all monitoring wells at the site, including in MW2. However, based on the anticipated migration of the mineral oil following the transformer oil release, it has been conservatively inferred that groundwater PHC impacts may be present in the area below the transformer containment pad extending west (down-gradient) towards the retaining wall.

- The surface water sample collected from East River west (downgradient) of the transformer reported PHC concentrations that complied with the applicable NS Tier I EQS criteria. Given the findings of groundwater assessment activities completed to date and no evidence to suggest impacts may have migrated to riverbank, no further assessment of surface water or sediment is considered to be warranted at this time.
- It is Strum's opinion that all of the areas of PHC impacts in soil and groundwater at the site have been sufficiently delineated at this time. However, long-term groundwater monitoring should be completed to confirm the stability of the groundwater PHC impacted plume as part of on-going risk management measures related to contamination left to remain in place at the site.
- Completion of an Ecological Screening Assessment identified potential ecological concerns related to the elevated PHC concentrations in soil and groundwater combined with the proximity sensitive ecological receptors. However, all areas of soil and groundwater contamination have been delineated (inferred) to be isolated within the site and are not expected to interact with potentially sensitive ecological receptors. As such, further assessment to address the associated ecological concerns is not warranted at this time.

Based on the results of the Phase III ESA, the following recommendations are forwarded:

1. Long-term groundwater monitoring should be completed at the site to assess the stability of the inferred area of contamination and to confirm acceptable PHC groundwater concentrations over seasonal fluctuations.
2. It is anticipated that the contamination remaining on the site can be addressed via a risk-based approach (i.e., Qualitative Risk Assessment, managing the impacts on-site), which will evaluate all potential risk pathways to receptors including dermal contact, ingestion via potable groundwater, and particulate/vapour inhalation.
3. A RMP should be developed and implemented at the site to limit potential exposure to remaining contamination and to monitor site conditions. As part of the RMP, the area of remaining contamination in soil and groundwater should remain capped with an appropriately thick layer of surficial fill materials and the transformer infrastructure.
4. Routine monitoring for potential migration of contamination through surficial drainage and/or groundwater recharge to surface water (East River) should be completed. Should any evidence of impact migration be identified, additional assessment activities and/or the installation of containment measures may be required.
5. Following completion of an appropriate period of LTM, QRA an implementation of the RMP, a regulatory closure submission can be made to NSECC.

6. Following acceptance of regulatory closure by NSECC and completion of long-term monitoring activities, all monitoring wells should be decommissioned in accordance with Provincial requirements.

8.0 STATEMENT OF QUALIFICATIONS & LIMITATIONS

This Report (the “Report”) has been prepared by Strum Consulting (“Consultant”) for the benefit of Nova Scotia Power Incorporated (“Client”) in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the “Agreement”).

The information, data, recommendations, and conclusions contained in the Report (collectively, the “Information”):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the “Limitations”)
- represents Consultant’s professional judgement in light of the Limitations and industry standards for the preparation of similar reports
- may be based on information provided to Consultant which has not been independently verified
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued
- must be read as a whole and sections thereof should not be read out of such context
- was prepared for the specific purposes described in the Report and the Agreement
- in the case of subsurface, environmental, or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time

Consultant shall be entitled to rely upon the accuracy and completeness of information that was provided and has no obligation to update such information. Consultant accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental, or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

Consultant agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement, but Consultant makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Report, the Information or any part thereof.

The Report is to be treated as confidential and may not be used or relied upon by third parties, except:

- as agreed in writing by Consultant and Client
- as required by law
- for use by governmental reviewing agencies

Consultant accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Report or the Information for any injury, loss, or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information ("improper use of the Report"), except to the extent those parties have obtained the prior written consent of Consultant to use and rely upon the Report and the Information. Any damages arising from improper use of the Report or parts thereof shall be borne by the party making such use.

This Statement of Qualifications and Limitations forms part of the Report and any use of the Report is subject to the terms hereof.

Should additional information become available, Strum requests that this information be brought to our attention immediately so that we can re-assess the conclusions presented in this report. This report was prepared by Mauricio Lopez, MREM, MIT, Junior Environmental Geoscientist, and was reviewed by Jeff Faulkner, P.Geo. Senior Environmental Geoscientist.

9.0 REFERENCES

Atlantic Risk Based Corrective Action (RBCA), July 2022 Revision. User Guidance for Petroleum Impacted Sites in Atlantic Canada, Version 4.

Atlantic RBCA, December 2016 with April 2019 update. Guidance for Vapour Intrusion Assessments.

Canadian Standards Association (CSA) Phase II Environmental Site Assessment Standard (Z769-00). July 2002 (reaffirmed 2023).

Keppie, J.D. 2000. DP ME 43, Version 2, 2006, Digital Version of Nova Scotia Department of Natural Resources Map ME 2000-1, Geological Map of the Province of Nova Scotia, scale 1:500,000. Digital product compiled by B.E. Fisher. (Formerly DP ME D00-01).

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Stea, R.R., Conley, H. and Brown, Y. 1992. DP ME 36 Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, 1:500,000. Digital product compiled by B. E. Fisher. (Formerly DP ME D92-03).

Strum Consulting. Phase II Environmental Site Assessment, 116 Ruth Falls Road, Sheet Harbour, NS . May 14, 2025. Project No. 24-10728.

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Atlantic RBCA Tier I EQS & Tier II PSS Tables

https://atlanticrbca.com/wp-content/files_mf/1627923620Atlantic_RBCA_EQS_and_PSS_Tables_July_2021.pdf?622599262

Nova Scotia Department of Natural Resources (NSDNR) Mineral Resources Branch

<http://gov.ns.ca/natr/meb/pubs/pubs3.htm>

Nova Scotia Provincial Landscape Viewer

<https://www.arcgis.com/apps/webappviewer/index.html?id=7bf89d16ec0940d0a130301b51ad401f>

Municipal Drinking Water Supplies of Nova Scotia

<https://novascotia.ca/nse/water/docs/municipal.drinking.water.supplies.map.pdf>

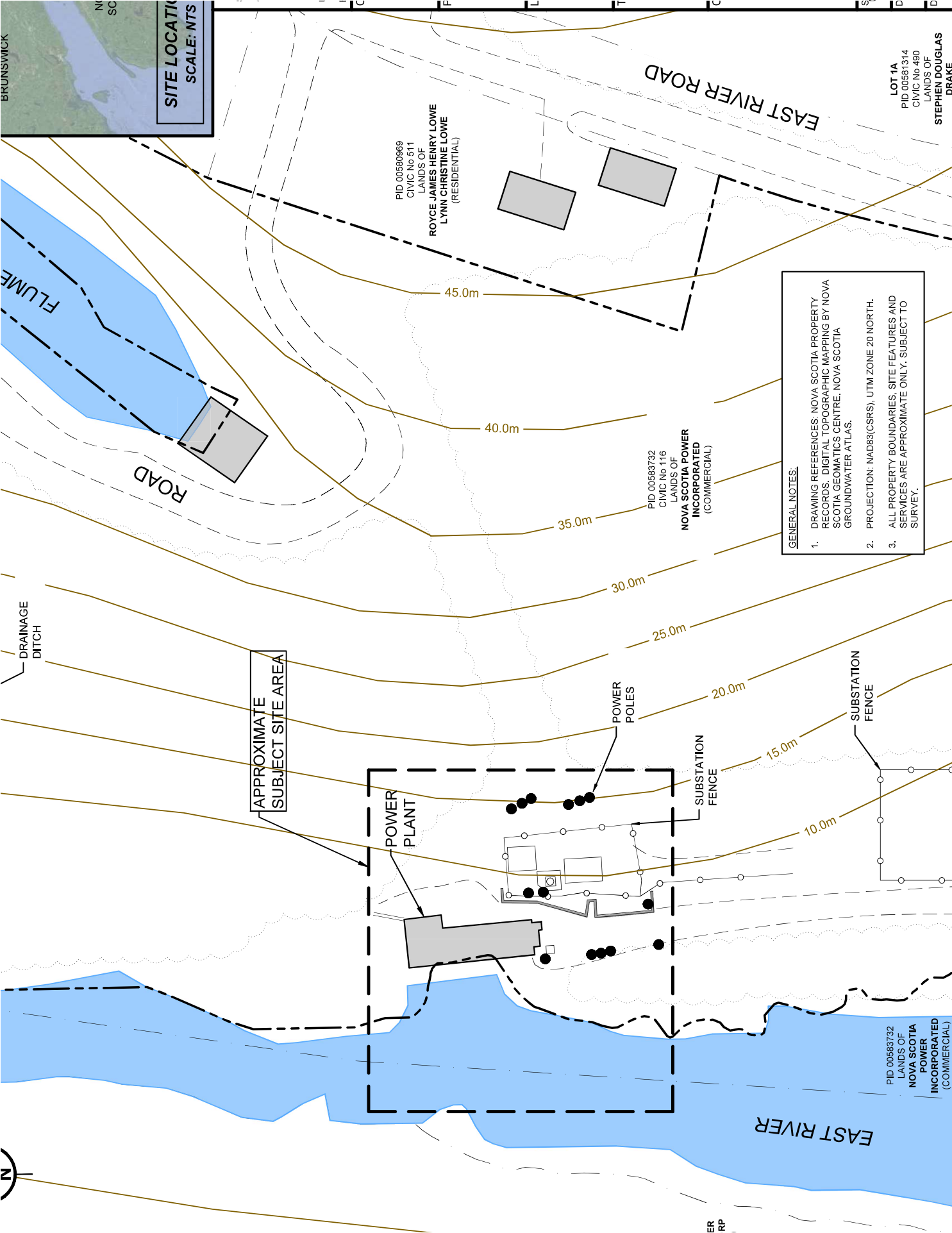
Protected Water Areas of Nova Scotia

<https://www.novascotia.ca/nse/water/docs/protected.water.areas.map.pdf>

Service Nova Scotia and Municipal Relations Property Online Database

www.novascotia.ca/sns/access/land/property-online.asp

APPENDIX A SITE DIAGRAMS



SITE LOCATION
SCALE: NTS

- GENERAL NOTES:**
1. DRAWING REFERENCES: NOVA SCOTIA PROPERTY RECORDS. DIGITAL TOPOGRAPHIC MAPPING BY NOVA SCOTIA GEOMATICS CENTRE. NOVA SCOTIA GROUNDWATER ATLAS.
 2. PROJECTION: NAD83(CSRs), UTM ZONE 20 NORTH.
 3. ALL PROPERTY BOUNDARIES, SITE FEATURES AND SERVICES ARE APPROXIMATE ONLY. SUBJECT TO SURVEY.

PID 00583732
LANDS OF
NOVA SCOTIA
POWER
INCORPORATED
(COMMERCIAL)

BRUNSWICK

FLUME

ROAD

EAST RIVER ROAD

PID 00580969
CIVIC No 511
LANDS OF
ROYCE JAMES HENRY LOWE
LYNN CHRISTINE LOWE
(RESIDENTIAL)

LOT 1A
PID 00581314
CIVIC No 480
LANDS OF
STEPHEN DOUGLAS
DRAKE

APPROXIMATE
SUBJECT SITE AREA

POWER
PLANT

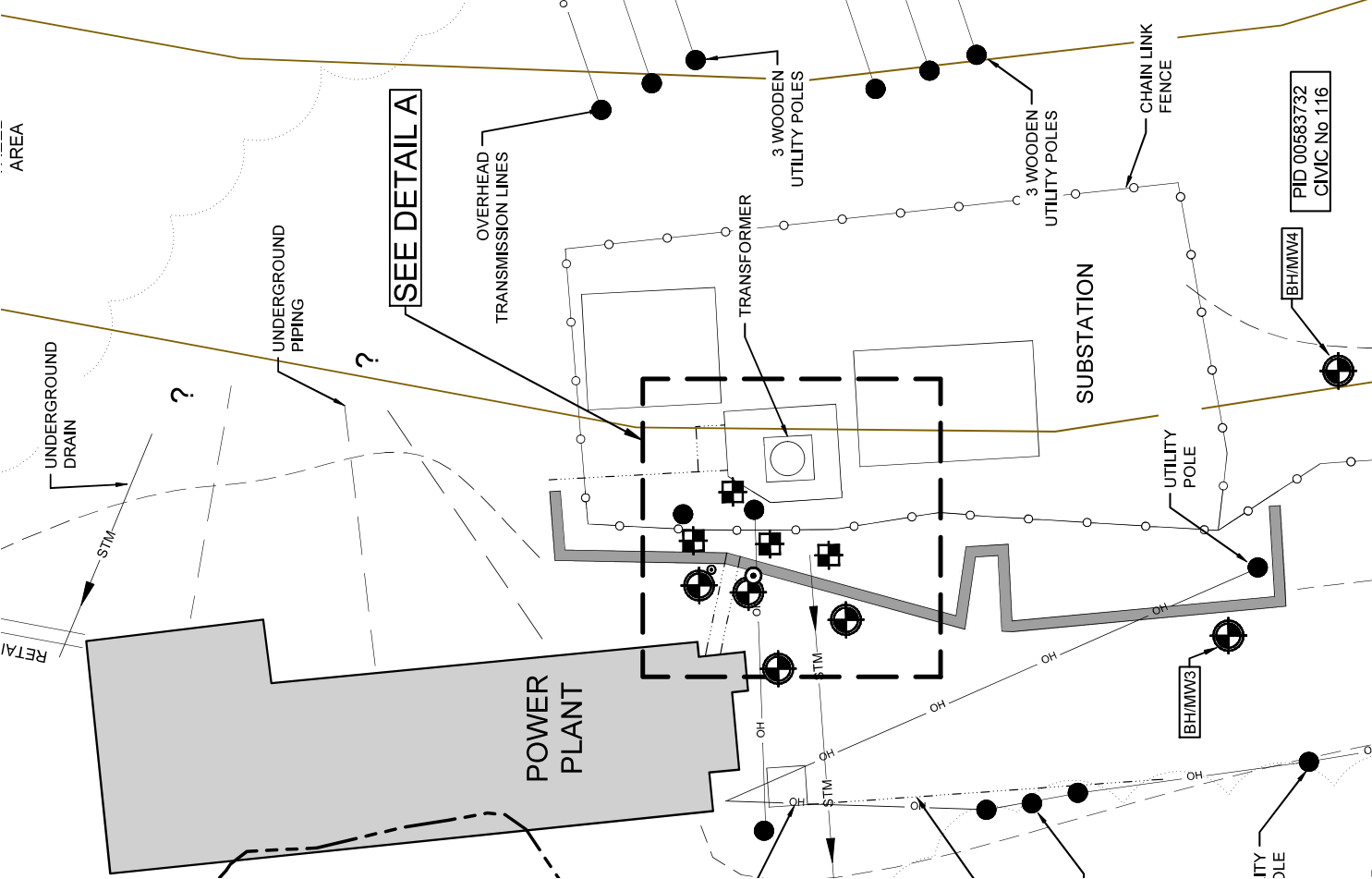
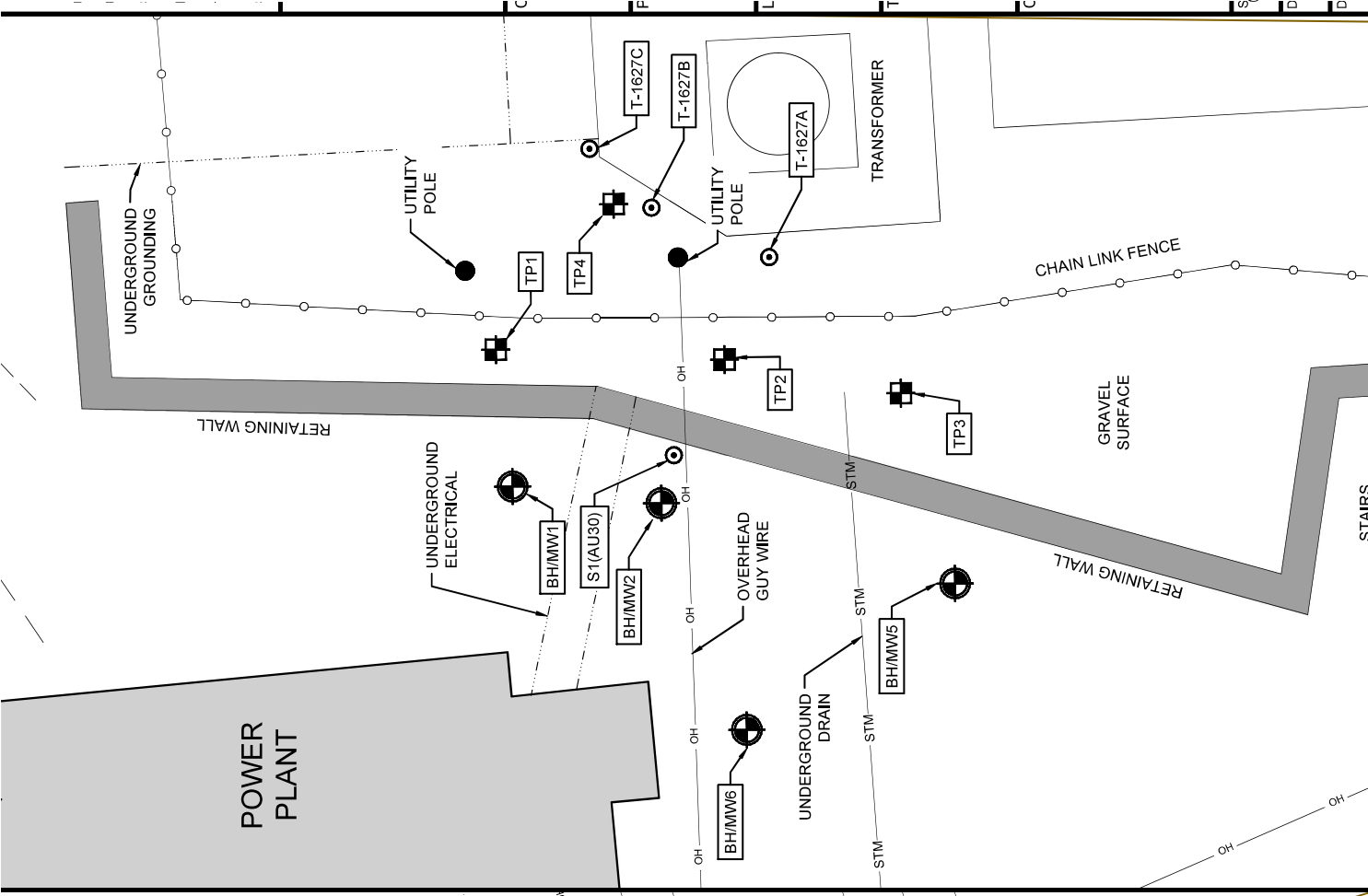
POWER
POLES

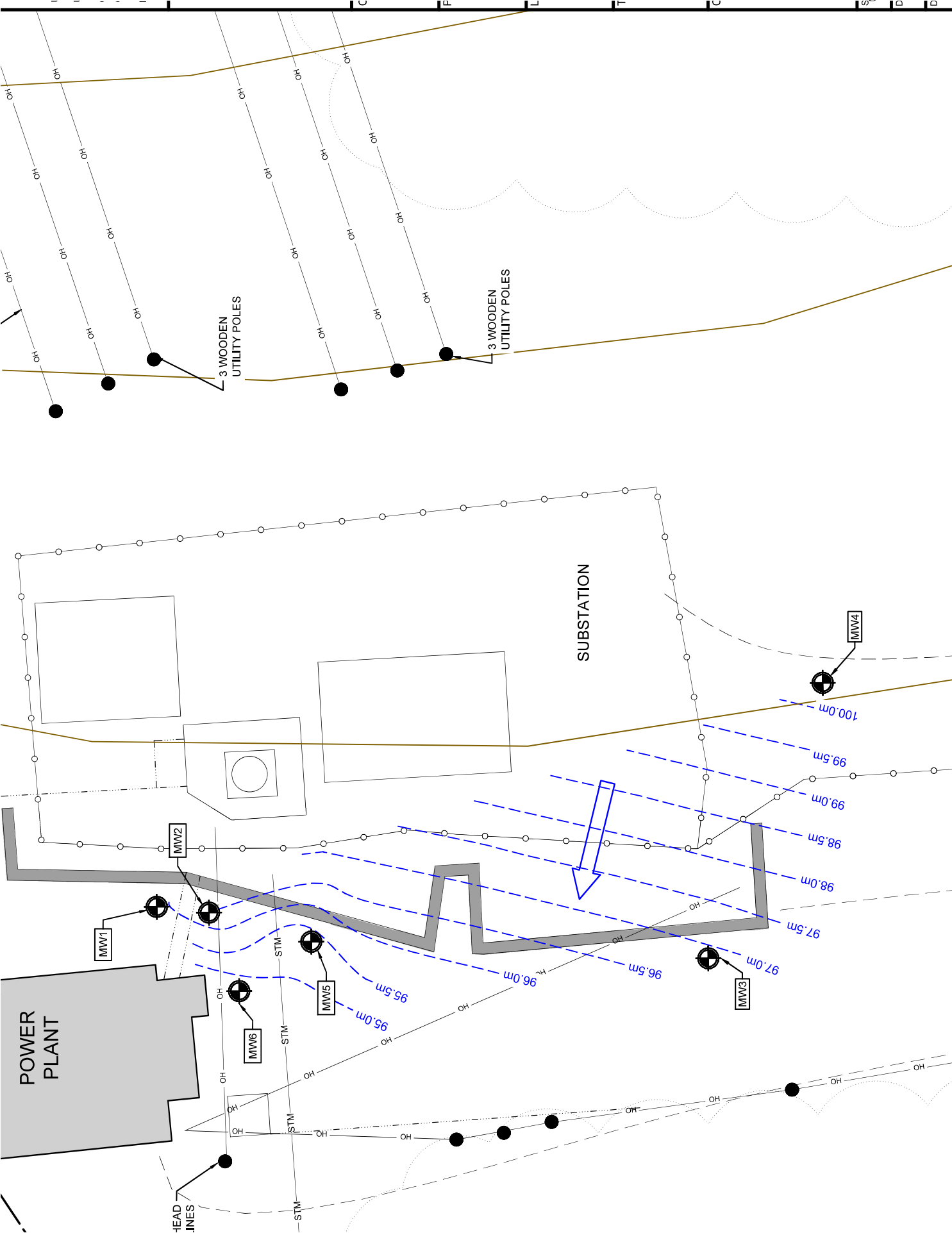
SUBSTATION
FENCE

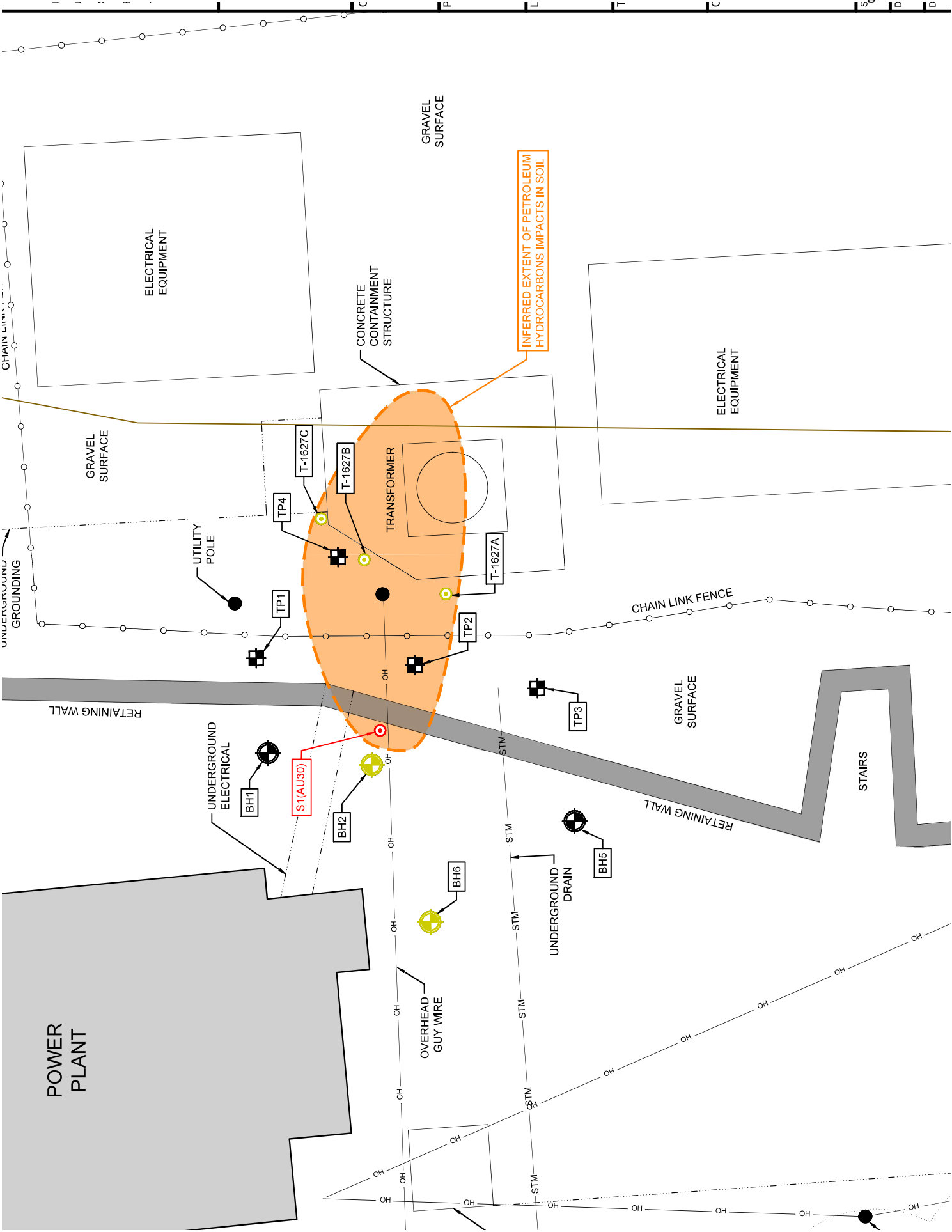
SUBSTATION
FENCE

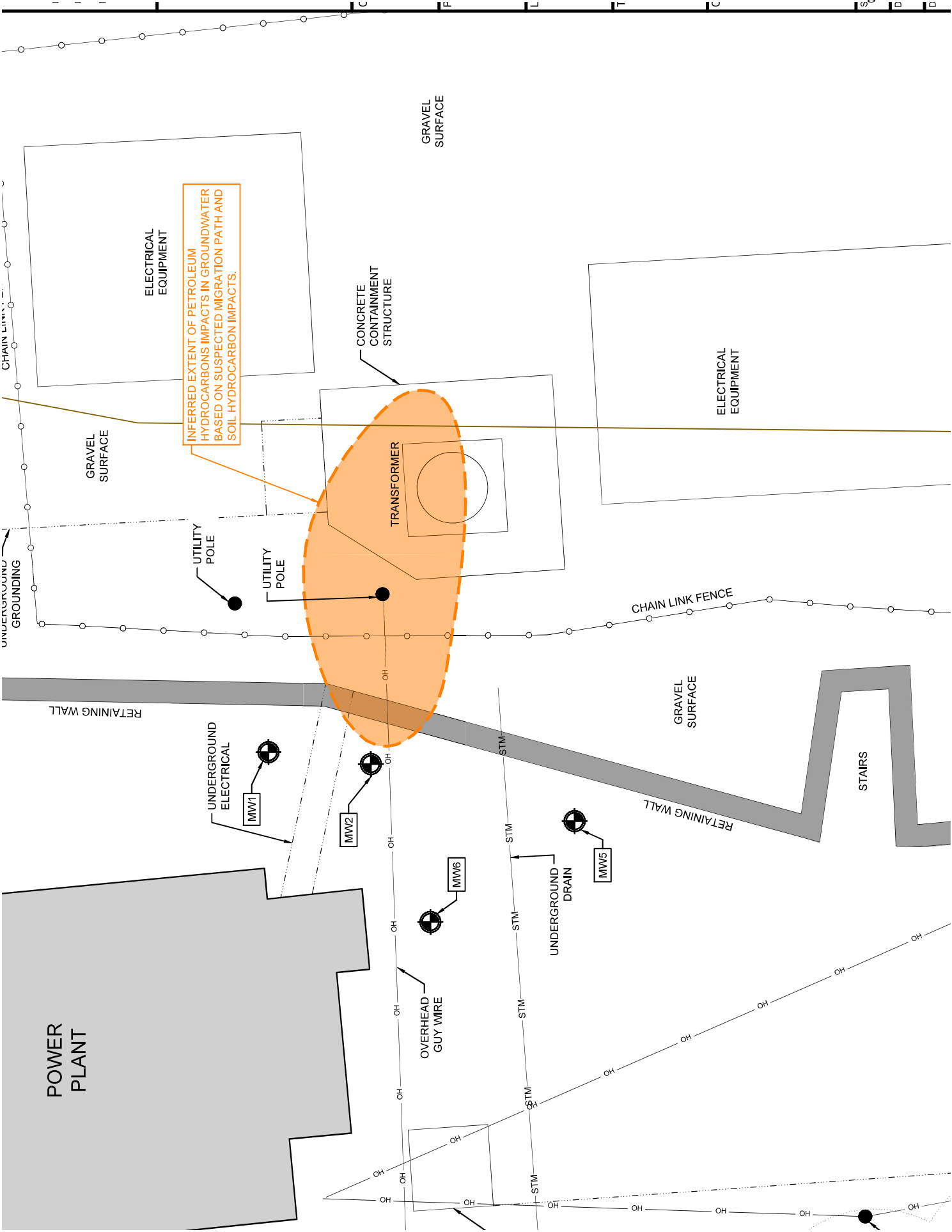
EAST RIVER

ER
RP









APPENDIX B

SITE ASSESSMENT & TIER I/II TABLE CHECKLIST

SITE ASSESSMENT & TIER I/II TABLE CHECKLIST

		Method Used	
Site Location:	116 Ruth Falls Road, Sheet Harbour, NS	Tier I RBSL	☒
Site Professional:	Jeff Faulkner, P. Geo.	Tier II PSSL	☐
Date:	March 7, 2025	Tier II SSTL	☐
Contaminants of Concern at site:			
Minimum Site Assessment Requirements		Other	
Issue	Yes or No*	Comment	
PID, owner, location identified	Yes	Phase III ESA Section 2.1	
Current and anticipated future land use identified	Yes	Phase III ESA Section 2.1	
Review of underground services as conduits	Yes	Phase III ESA Section 4.3	
Historical review completed	N/A	Not assessed as part of Phase II ESA	
Local groundwater use identified	Yes	Phase III ESA Section 2.1	
Adjacent land uses and receptors identified	Yes	Phase III ESA Section 2.2	
Ecological screening completed	Yes	Phase III ESA Section 5.4	
Soil and groundwater samples from all source areas obtained	Yes	Phase III ESA Section 4.0	
For CVOCs, all hydrogeologic units assessed (i.e., shallow/deep)	N/A	CVOCs not assessed	
Impacts delineated to acceptable levels (Refer to Section 2.2.2 of guidance document), vertically and horizontally, for potential receptors (adjacent property receptor may have lower screening levels)	Yes	Phase III ESA Section 6.0	
Groundwater flow direction and gradient established	Yes	Phase III ESA Section 5.1	
Combination of surface and sub-surface soil samples analysed	Yes	Phase II ESA Section 4.0	
Vapour samples collected and analysed, if applicable	N/A	Not assessed as part of Phase II ESA	
Free product observations made in soil and groundwater	Yes	No observed free product	
Low lab detection level for benzene in soil if potable water area	No	Phase II ESA Section 5.2	
Grain size and organic carbon analysis completed on soil	N/A	Not calculating SSTLs.	
TPH fractionation done on soil and water if calculating Tier II SSTL for TPH	N/A	Not calculating SSTLs.	
All CVOCs (including parent and biodegradation (daughter) products) assessed	N/A	CVOCs not assessed.	
Scaled site plan showing all relevant site features	Yes	Phase III ESA Appendix A	
Receptor building characteristics obtained (e.g., stories, floor condition, ceiling height, building size)	Yes	Phase III ESA Section 2.1	
Mandatory Conditions			
Issue	Yes or No*	Comment	
Non-aqueous phase liquids not present in groundwater	Yes	Phase III ESA Section 6.0.	
Potable water free of objectionable taste and odour	Yes	Phase III ESA Section 4.0.	
Soils do not contain liquid and/or free petroleum product	Yes	No free product observed	
Residual hydrocarbons do not create objectionable odours or explosive conditions in indoor or outdoor air	Yes		
Surface soils are not stained	No	Phase III ESA Section 2.3	
No dirt basement floors, sumps with dirt bottoms, etc.	Yes		
Confirmed that correct TPH type selected in RBSL or PSSL Table	Yes		
Confirmed that correct soil type selected in RBSL or PSSL Tables	Yes		
Default Site Characteristics and Exposure Scenarios			
Issue	Yes or No*	Comment	
Depth to groundwater approximately 3.0 metres	No	Depth to groundwater less than 3.0m	
Impacted soil thickness is less than 3.0 metres	Yes		
Default foundation crack fraction is appropriate	N/A		
Default foundation thickness is appropriate	N/A		
Two floors exist if using a residential scenario	Yes	Site is industrial	
PHC impacts in soil above Tier I RBSL and detectable concentrations of CVOCs in soil, are not within 0.3 m of foundation walls or floor slab	Yes	Phase III ESA Section 6.0	
Confirmed that RBSL or PSSL Table values is correct for adjacent property receptors (i.e. use residential at property line if adjacent property is residential)	Yes		
Where exposure pathways have been eliminated at Tier II, detailed explanation provided in report explain why pathways are not relevant	N/A	No pathways eliminated	
Where PSSLs tables are used based on elimination or control of a pathway that could be reopened by changes in site use, this condition is specified as a limitation in the report	N/A	PSSLs not used.	
Where Tier II SSTLs have been calculated by changing default values, the report includes the parameter changed, the default value, the site-specific value used, and the rationale and/or detailed written justification	N/A	Tier II not calculated.	

* If No, indicate in comment section if and where in report the issue is addressed. Consult the Best Management Practices (Appendix 1) for additional details.

APPENDIX C

ASSESSMENT METHODOLOGY

Assessment Methodology

Utility Clearance

Prior to conducting the field investigation at the site, subsurface and overhead utilities were reviewed in accordance with Strum's occupational health and safety program, and to determine if preferential pathways for contaminant migration are potentially present on the site.

Utilities were located by a private utility clearance contractor, and also through consultation with local utility providers. All identified utilities were marked on the ground with marking paint, and proposed investigation locations were based on maintaining appropriate safe distances from the identified utilities. Utility locations were recorded in the field, and the approximate locations are provided on the drawings attached to the report.

Borehole Drilling

All boreholes completed during the assessment were drilled using either a truck-mounted or track-mounted geotechnical drill rig owned and operated by an experienced drilling subcontractor. Advancement in overburden soils was achieved with standard flight augers or hollow-stem augers. Where encountered, advancement into boulders or bedrock was achieved via diamond coring, wet rotary, and/or air hammer.

Representative soil samples were collected in the boreholes using decontaminated 50 mm outer diameter split-spoon samplers on a continuous basis (where possible), in accordance with industry standard practices. When applicable, bedrock cores were also collected on a continuous basis (where possible) using diamond coring equipment.

Subsurface conditions were logged in detail by a Strum field representative during the drilling program. This included recording the depth of each collected sample, the number of blow counts required to drive the split-spoon samplers over a one-foot depth interval (i.e., SPT N-Values), and noting the soil/rock type and colour, soil density (based on N-value), soil moisture content, rock core recovery and Rock Quality Designations (RQDs), and any evidence of potential contamination (e.g., staining, odour, free-phase chemical product, debris, etc.).

Monitoring Well Installation

Upon completion of the drilling, 50 mm diameter Schedule 40 PVC monitoring wells were installed in select boreholes by the drilling subcontractor under the supervision of Strum field personnel. The monitoring well IDs correspond with the borehole IDs in which they were installed.

All monitoring wells consisted of a 0.05 m well point installed at the base of the borehole, followed by a section of slotted well screen, followed by a length of solid pipe that extends to surface grade. The solid pipe was sealed with a fitted plug/cap. A bentonite plug was installed in each monitoring well above the screened interval to prevent surface water from entering each well. Either flush-mount or stick-up well covers were installed at the surface over the monitoring wells to protect the wellhead.

Assessment Methodology

Monitoring Well Development

Following installation, each well was developed by purging a minimum of five casing volumes (or to dryness) using a decontaminated submersible pump to develop the filter pack around the well screen, and to minimize the amount of sediment in water samples subsequently collected from the wells.

Monitoring Well Decommissioning

When no longer needed for site assessment purposes, the monitoring wells will require decommissioning. The protective cover and any equipment including tubing will be removed from the well. Each well will be cut to at least 0.3 m below grade prior to grouting. The monitoring well will then be filled entirely with bentonite by slow placement. This process will prevent vertical movement of water throughout the well, and will prevent surface run-off from potentially contaminating the aquifer. The surface at the location of the former monitoring wells will be covered with appropriate topsoil, paving, or gravel, and will be graded to eliminate surface water ponding.

Test Pit Excavation

Test pits were completed using a hydro-excavator owned and operated by an experienced subcontractor. All test pits were completed to the depth of the water table, to refusal on boulders or inferred bedrock, or to the limit of the excavator's reach. Upon completion of each test pit, the ground surface was graded by hand-shovel using surrounding gravel fill material.

Representative soil samples were collected from each test pit using hand-operated equipment (i.e., for test pits depths less than 1.2 m below grade). The samples were collected at appropriate intervals depending on the subsurface conditions encountered in the test pit, such as observed soil types, the depth of water seepage, any zones of potential contamination, and at the base of the test pit.

Subsurface conditions in each test pit were logged in detail by a Strum field representative. This included noting the soil type/colour, soil density, soil moisture content, any evidence of potential contamination (e.g., staining, odour, free-phase chemical product, debris, etc.), the depth of encountered water seepage, the depth of inferred bedrock (if encountered), the depths that samples were collected, and the total depth of the test pit in metres below surface grade.

Elevation Survey and Groundwater Level Measurement

Ground surface (i.e., "grade point") elevations and the top of the well PVC casing (i.e., "measured point") elevations were recorded at each monitoring well location by a Strum field representative. All elevations were surveyed relative to a nearby temporary benchmark with an assumed elevation of 100 metres above sea level, which was set on a nearby stationary object.

Assessment Methodology

Static water level measurements were recorded in the available wells by a Strum field representative. Depth to water was measured from the measured point elevation on the top of each well head using an electronic interface probe.

Free Product Monitoring

The monitoring wells were also inspected for any evidence of free-phase petroleum or chemical product (i.e., “free product”) using an electronic oil/water interface probe. Free product in groundwater is defined as a thickness of visible petroleum/chemical product recorded to be greater than 1 mm.

For assessments of contaminants less dense than water (e.g., most petroleum hydrocarbon products), the free product measurements were completed with the interface probe at the top of the water column in the well. For assessments of contaminants that are denser than water (e.g., VOCs, PCBs, some Bunker C products, etc.), the probe was lowered to near the bottom of the well where those types of free product would be expected to accumulate.

Determination of Groundwater Flow Conditions

The groundwater flow direction was estimated at the site based on a triangulation of groundwater level elevations recorded in the monitoring wells following completion of the drilling program. This triangulation was used to produce and evaluate groundwater elevation contours on a site plan. A minimum of three monitoring wells were used for the flow determination; however, typically most of the monitoring well water level elevations were utilized. If water levels were determined to be unusual outliers (e.g., artesian well conditions, anomalous due to fractured bedrock conditions, etc.), they were excluded from the groundwater flow determination.

Following determination of the groundwater elevation contours and flow direction at the site, the groundwater horizontal hydraulic gradient was calculated by drawing an intersecting line perpendicular to the groundwater elevation contours, from the highest elevation contour to the lowest elevation contour. The slope of that line was then determined using the difference in groundwater elevation over the distance between the highest and lowest groundwater elevation contours. The hydraulic gradient is expressed as a percentage.

The groundwater hydraulic conductivity (K) was determined by completing a drawdown test on at least one selected monitoring well at the site. This involved recording the initial water level below the top of the well casing using an electronic interface probe, purging water to near the bottom of the well, and then measuring the increasing water level below the top of the well casing at designated time intervals until the water had recovered to near its initial level. Water levels were recorded initially at short time intervals (e.g., 15 seconds), but as the water levels recovered, the levels were recorded as longer time intervals (e.g., 15 minutes). For monitoring wells with a significant recovery period, a groundwater level logger was installed in the well to record the water level recovery over a longer time period. This drawdown water level data was then interpreted using the Hvorslev method to provide an estimate of hydraulic conductivity.

Assessment Methodology

Sampling

Soil Sample Collection and Screening

Representative soil samples were collected at continuous intervals (where possible) at all test locations by a Strum field representative. All soil samples were collected and sealed in glass containers in the field (1-60 mL jar, 1-250 mL jar, and two 40 mL vials that contained methanol preservative per sample), and the 250 mL sample jar headspace was then aspirated for VOCs using an RKI Eagle II Gas Detector. VOC headspace measurements were reported in ppm (parts per million).

Based on the VOC screening results and field observations, soil samples were selected for submission to Bureau Veritas Laboratories in Bedford, NS, or to ALS Environmental in Dartmouth, NS for the chosen analyses. All samples were kept in cool storage pending submission to the laboratory. Bureau Veritas and ALS are accredited to ISO 17025 by the Standards Council of Canada (SCC).

Groundwater Sample Collection

Prior to collection of groundwater samples, each well was purged of at least three well volumes (or to dryness) using a decontaminated submersible pump in order to remove any standing water from the well, and to ensure that the samples were representative of the surrounding groundwater. Groundwater samples were then collected using new, dedicated bailers for each well.

When sampling groundwater for contaminants that are less dense than water (e.g., most petroleum hydrocarbons), the sample was collected from near the top of the water column in the well with the bailer. When sampling for contaminants that are denser than water (e.g., VOCs, PCBs, some Bunker C products, etc.), the bailer was allowed to sink to near the bottom of the well where any dense contaminants would be expected to concentrate.

All groundwater samples were collected using the appropriate laboratory issued glassware (varying bottle types depending on contaminant type), and were placed in cool storage prior to being submitted to ALS Environmental in Dartmouth, NS for analysis.

Grab Surface Water Sampling

Surface water samples were collected at select locations by a Strum representative during the field program. All surface water samples were collected directly into laboratory supplied bottles (varying bottle types depending on contaminant type) and were placed in cool storage prior to being submitted to ALS Environmental in Dartmouth, NS for selected analyses.

Quality Assurance & Quality Control (QA/QC)

To obtain representative samples and avoid potential cross-contamination, all samples were collected by Strum field staff while wearing dedicated nitrile gloves, and while using either dedicated or decontaminated sampling supplies and equipment. All samples were placed in sealed laboratory-supplied containers and kept in cool storage pending submission with a completed Chain of Custody (COC) form to Bureau Veritas Laboratories for analysis.

Assessment Methodology

Sample duplicate analyses were completed during the assessment in order to evaluate QA/QC of the investigation. This included the collection/analysis of field duplicate samples (FD), and analysis of laboratory duplicates. Evaluation of the QA/QC results was completed by calculating the Relative Percent Difference (RPD) between the duplicate sample results and the original sample results, and then comparing the calculated RPDs to acceptable tolerance limits. The RPDs between all the duplicates and original samples were calculated using the following equation:

$$RPD = \left| \frac{\frac{(X_1 - X_2)}{(X_1 + X_2)}}{2} \right| \times 100$$

It should be noted that to obtain reliable calculations, the RPDs were only calculated when the reported concentrations of the duplicate samples and original samples were at least five times the reportable detection limit (RDL). Concentrations of less than five times the RDL are too low to use for QA/QC evaluation, as only slight concentration differences can lead to significant RPD values.

For calculated RPDs, the duplicate sample results are considered to be consistent with the results of the original sample when the RPD is less than or equal to 20%.

RPDs calculated to be between 20% and 50% indicate that the duplicate sample results are slightly out of QA/QC tolerance limits, which can often be associated with minor deviations in the collected samples, such as sample heterogeneity, high parameter concentrations, high moisture content in soil/sediment or air samples, or sediment inclusion in water samples. RPDs in this range are evaluated by the Site Professional, but don't necessarily indicate a significant limitation in the reliability of the data.

RPDs calculated to be above 50% indicate a significant exceedance of QA/QC tolerance limits, and warrant further evaluation. A review of site conditions encountered during the field program and sampling details is conducted, and a consultation with the analytical laboratory is also conducted to attempt to identify the potential cause(s) of the deviation in the duplicate sample results. In this circumstance, sample data is typically not relied upon for determining plume boundaries, remedial excavation limits or confirming acceptable site conditions, and resampling may be recommended.

APPENDIX D

PHOTOGRAPH LOG



Photo 1: Drilling of borehole/monitoring well (BH/MW5).
Photo taken on December 12, 2024.

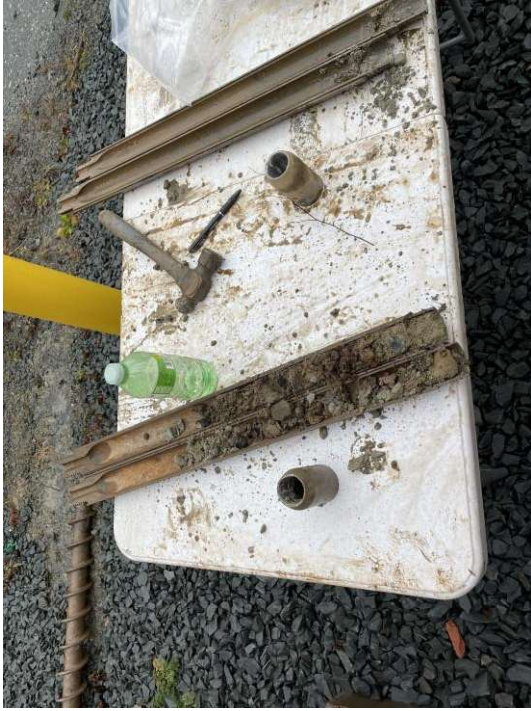


Photo 2: Soil sampling from split spoon retrieved from borehole BH5.
Photo taken on December 12, 2024.



Photo 3: Observed mineral oil sheen in groundwater from monitoring well MW5.
Photo taken on December 12, 2024.



Photo 4: Approximate location of surface water sample SW1 (DE17).
Photo taken on October 23, 2024.

APPENDIX E

BOREHOLE LOGS



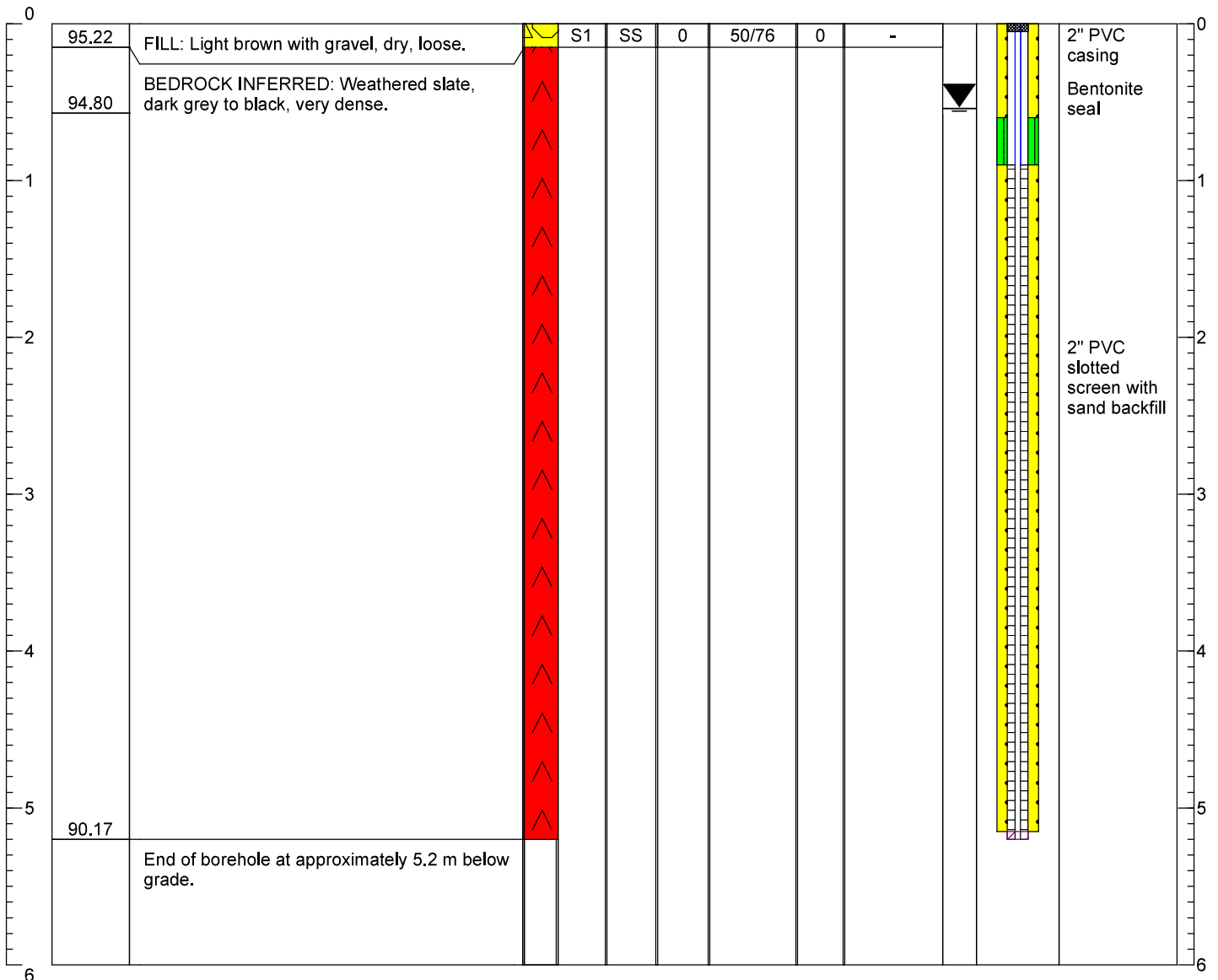
BOREHOLE LOG

BH/MW5

PROJECT: Phase III ESA - 116 Ruth Falls Rd., Sheet Harbour, NS**DRILLING DATE:** December 12-13, 2024**DRILLER:** Q-Drilling**DRILL TYPE:** CME-45**ELEVATION DATUM:** Assumed**DRILLING METHOD:** Auger & Case/Core**WATER LEVEL DATE:** December 16, 2024**WATER LEVEL (m):** 0.50 m (below top of casing)

DEPTH (m)	Elevation (m)	SOIL DESCRIPTION	STRATA	SAMPLES					WELL INFO			
				NUMBER	TYPE	RECOVERY (mm)	N-VALUE/RQD	VOC (ppm)	ANALYSIS	WATER LEVEL	WELL CONSTRUCTION	WELL MATERIALS
	95.37											

95.37



LOGGED BY: Mauricio Lopez

PROJECT NUMBER: 24-10728



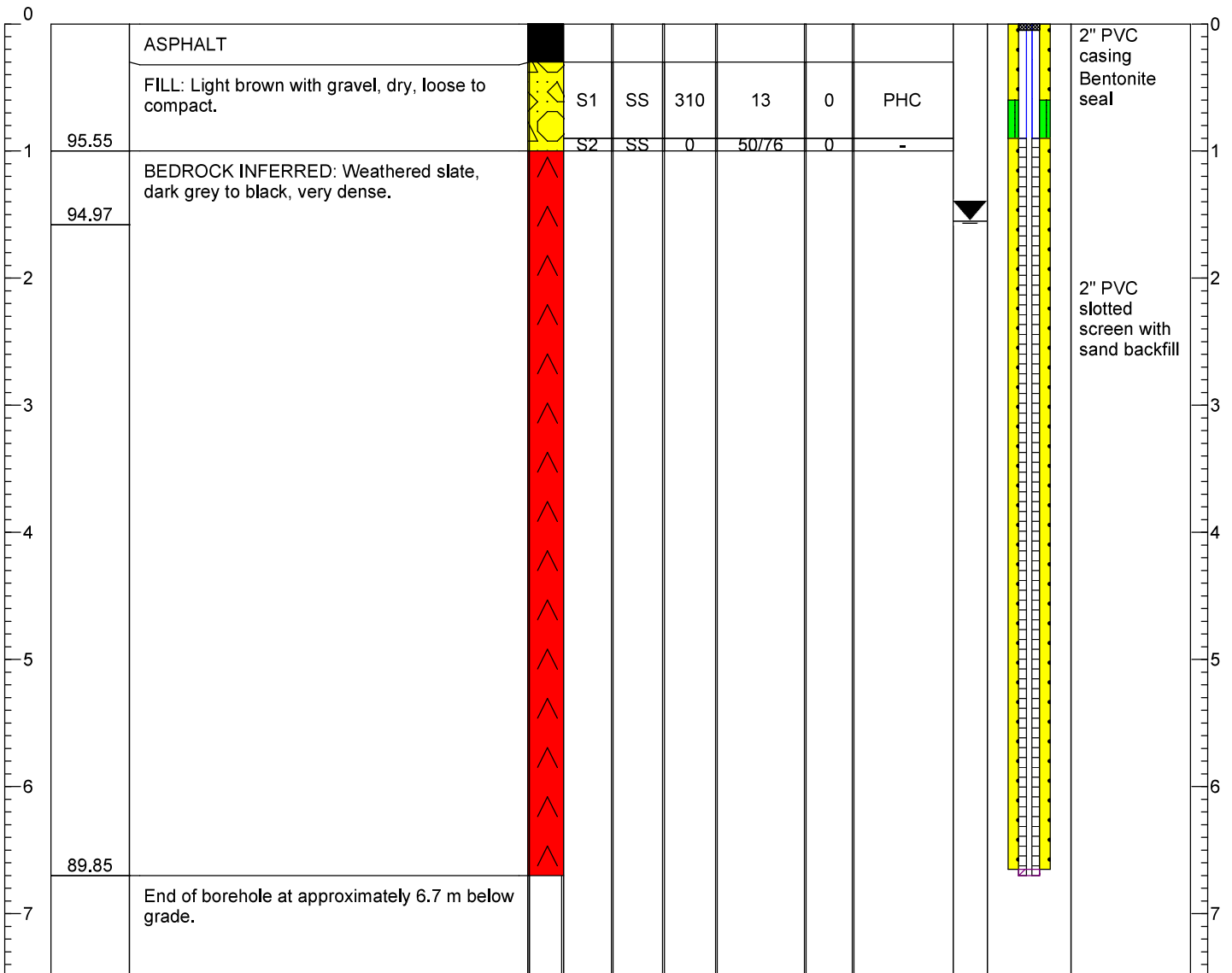
BOREHOLE LOG

BH/MW6

PROJECT: Phase III ESA - 116 Ruth Falls Rd., Sheet Harbour, NS**DRILLING DATE:** December 12, 2024**DRILLER:** Q-Drilling**DRILL TYPE:** CME-45**ELEVATION DATUM:** Assumed**DRILLING METHOD:** Auger & Case/Core**WATER LEVEL DATE:** December 16, 2024**WATER LEVEL (m):** 1.53 m (below top of casing)

DEPTH (m)	Elevation (m)	SOIL DESCRIPTION	STRATA	SAMPLES					WELL INFO			
				NUMBER	TYPE	RECOVERY (mm)	N-VALUE/RQD	VOC (ppm)	ANALYSIS	WATER LEVEL	WELL CONSTRUCTION	WELL MATERIALS
	96.55											

96.55



LOGGED BY: Mauricio Lopez

PROJECT NUMBER: 24-10728

APPENDIX F

ANALYTICAL RESULTS

TABLE 1: Soil Analytical Results - Petroleum Hydrocarbons - NSPI Substation, 116 Ruth Falls Rd, Sheet Harbour, NS

Project # 24-10728

Sample ID	Lab ID	Date	Depth	VOC	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbon Fractions					Modified TPH	Type	Comments
					B	T	E	X	F1	F2	F3		F4			
		(yy/mm/dd)	(m)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	C ₆ -C ₁₀	C ₁₀ -C ₁₆	C ₁₆ -C ₂₁		
NSPI Collected Surface Soil Samples																
T-1627A	ABLW19	24/08/27	-	-	nd	nd	nd	nd	nd (5.0)	32	1100	1000	-	2100	L	One product in fuel / lube oil range.
T-1627B	ABLW20	24/08/27	-	-	nd	nd	nd	nd	nd	29	760	780	-	1600	L	One product in fuel / lube oil range.
T-1627B Lab-Dup					nd	nd	nd	nd	nd	-	-	-	-	-	-	
T-1627C	ABLW21	24/08/27	-	-	nd	nd	nd	nd	nd (5.0)	56	1200	1400	-	2600	L	One product in fuel / lube oil range.
Initial Site Assessment - Surface Soil Sample																
S1(AU30)	ABTK93	24/08/30	-	0	nd	nd	nd	nd	nd	9500	78000	45000	-	130000	L	One product in fuel / lube range.
S1(AU30) Lab-Dup					nd	nd	nd	nd	nd	-	-	-	-	-	-	-
Test Pit Soil Samples																
TP1-S1	HA2402172-001	24/09/09	0.8	0	nd	nd	nd	nd	nd	nd	13	22	52	35	L	Lube oil fraction and fuel oil fraction. Did not return to baseline.
TP2-S1	HA2402172-005	24/09/09	0.8	0	nd	nd	nd	nd	nd	nd	35	53	100	88	L	Lube oil fraction and fuel oil fraction. Did not return to baseline.
TP3-S1	HA2402172-006	24/09/09	0.9	0	nd	nd	nd	nd	nd	nd	61	112	484	173	L	Lube oil fraction and fuel oil fraction. Did not return to baseline.
TP4-S1	HA2402172-007	24/09/09	0.8	0	nd	nd	nd	nd	nd	11	80	98	40	189	L	Lube oil fraction and fuel oil fraction. Did not return to baseline.
Borehole Soil Samples																
BH1-S1	HA2402273-001	24/09/12	0.3	0	nd	nd	nd	nd	nd	nd (12.6)	130	91	2070	221	L	Lube oil fraction and fuel oil fraction. Did not return to baseline.
BH2-S1	HA2402273-002	24/09/13	0.4	0	0.0052	nd	nd	nd	nd	25	128	260	107	413	L	Lube oil fraction and fuel oil fraction. Did not return to baseline.
BH3-S1	HA2402273-003	24/09/13	0.3	0	nd	nd	nd	nd	nd	nd	41	69	461	110	L	Lube oil fraction and fuel oil fraction. Returned to baseline.
BH4-S1	HA2402273-004	24/09/13	0.3	0	nd	nd	nd	nd	nd	nd	9	51	52	60	L	Lube oil fraction and fuel oil fraction. Did not return to baseline.
BH6 - S1	HA2403336-008	24/12/17	0.3	0	0.0105	nd	nd	nd	nd (5.0)	11	206	149	159	366	L	Lube oil fraction and fuel oil fraction. Returned to baseline.
RDL					0.005	0.05	0.025	0.05	2.5	10	10	15	-	15	-	
Guideline Criteria	NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)				0.042	0.35	0.043	0.73	-	-	-	-	-	940	G	
														1800	F	
														10000	L	
	NS Tier I EQS - Agricultural, Potable, Coarse-grained (Oct. 2022)				0.021	0.35	0.043	0.73	-	-	-	-	-	75	G	
														150	F	
														300	L	

Notes: Value Shading/bold indicates exceedance of: NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)
Value Underline/bold indicates exceedance of: NS Tier I EQS - Agricultural, Potable, Coarse-grained (Oct. 2022)

m = metres below grade	mbfl = metres below floor	mbf = metres below footing
nd = non-detect	nd() = non-detect at elevated detection limit	- = no established value or not analyzed
ppm = parts per million	mg/kg = milligrams per kilogram	TPH = Total Petroleum Hydrocarbons
RDL = Reportable Detection Limit	%LEL = Percentage of Lower Explosive Limit	VOC = Volatile Organic Compound screening results in sample headspace
RBCA = Atlantic Risk Based Corrective Action	EQS = Environmental Quality Standards	PSS = Pathway Specific Standards
>RES = Concentration greater than the residual saturation limits (i.e., free product present in soil).		
Type = hydrocarbon resemblance based on lab comments and/or distribution of hydrocarbon ranges. G = gasoline; F = fuel oil/diesel; L = lube oil		
Hydrocarbon concentrations in RBCA fraction format can be combined to be reported as the CCME F1 to F4 fractions and compared directly to the values in this table.		
Analysis of CCME F4 fraction C32-C50 is not part of standard RBCA lab analysis package. Where provided, analysis of F4 fraction specifically requested.		
For comparison purposes the combined RBCA fractions C16-C21 and C21-C32 are equivalent to CCME F3 fraction C16-C34.		
For comparison purposes RBCA fraction C32-C50 is equivalent to CCME F4 fraction C34-C50.		
Samples collected on the dates indicated (yy/mm/dd)		
Lab analysis by Bureau Veritas, Bedford, NS		

Table 1A: Tier I Soil Ecological Screening for the Protection of Plants and Soil Invertebrates; Direct Soil Contact and the Protection of Wildlife and Livestock; Soil Ingestion, 116 Ruth Falls Road, Sheet Harbour, NS

Project # 24-10728

Sample ID	Date	Depth	VOC	Benzene	Toluene	Ethylbenzene	Xylene	Hydrocarbon Ranges				Did Sample Reach Baseline at C32 (Yes/No)?
								C ₆ -C ₁₀ (F1)	C ₁₀ -C ₁₆ (F2)	C ₁₆ -C ₃₄ (F3)	C ₃₄ -C ₅₀ (F4)	
	(yy/mm/dd)	(m)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
NSPI Collected Surface Soil Samples												
T-1627A	24/08/27	-	-	nd	nd	nd	nd	nd (5.0)	32	2100	-	-
T-1627B	24/08/27	-	-	nd	nd	nd	nd	nd	29	1440	-	-
T-1627B Lab-Dup				nd	nd	nd	nd	nd	-	-	-	-
T-1627C	24/08/27	-	-	nd	nd	nd	nd	nd (5.0)	56	2600	-	-
Initial Site Assessment - Surface Soil Sample												
S1(AU30)	24/08/30	-	0	nd	nd	nd	nd	nd	9500	123000	-	Yes
S1(AU30) Lab-Dup				nd	nd	nd	nd	nd	-	-	-	-
Test Pit Soil Samples												
TP1-S1	24/09/09	0.8	0	nd	nd	nd	nd	nd	nd	35	-	No
TP2-S1	24/09/09	0.8	0	nd	nd	nd	nd	nd	nd	88	-	No
TP3-S1	24/09/09	0.9	0	nd	nd	nd	nd	nd	nd	173	-	No
TP4-S1	24/09/09	0.8	0	nd	nd	nd	nd	nd	11	178	-	No
Borehole Soil Samples												
BH1-S1	24/09/12	0.3	0	nd	nd	nd	nd	nd	nd (12.6)	221	-	No
BH2-S1	24/09/13	0.4	0	0.0052	nd	nd	nd	nd	25	388	-	No
BH3-S1	24/09/13	0.3	0	nd	nd	nd	nd	nd	nd	110	-	Yes
BH4-S1	24/09/13	0.3	0	nd	nd	nd	nd	nd	nd	59	-	No
BH6 - S1	24/12/17	0.3	0	0.0105	nd	nd	nd	nd (5.0)	11	355	159	Yes
Atlantic RBCA ESLs - Industrial/Coarse-grained Criteria				180	250	300	350	320	260	1700	3300	
Atlantic RBCA ESLs - Agricultural/Coarse-grained Criteria				18	75	55	95	210	150	300	2800	

Notes: Bold/shaded values indicate exceedance of the Atlantic RBCA ESLs - Industrial/Coarse-grained Criteria
 Bold/underlined values indicated exceedance of the Atlantic RBCA ESLs - Agricultural/Coarse-grained Criteria

Source: CCME Canadian Environmental Quality Guidelines (CCME 1999) and CCME Canada-wide Standards (CCME 2008).

All screening levels are for surface soils (i.e. shallower than 1.5 m depth).

CCME fractions (F1 to F4) vary from the RBCA fractions (Gas, Diesel/#2, and #6 Oil/Lube); however, direct comparison acceptable for screening purposes.

Hydrocarbon concentrations in RBCA fraction format can be combined to be reported as the CCME fractions and compared directly to the values in this table.

For comparison purposes the combined RBCA fractions C16-C21 and C21-C32 are equivalent to CCME fraction C16-C34.

For comparison purposes RBCA fraction C32-C50 is equivalent to CCME fraction C34-C50.

Analysis of fraction C32-C50 is not part of standard RBCA lab analysis package.

VOC = Volatile Organic Compounds in sample headspace	m = metres below grade	nd = not detected
mg/kg = milligrams per kilogram	ppm = parts per million	- indicates no established value
n/c = analysis not completed	nd () = not detected at elevated detection limit	EQS = Environmental Quality Standards
Lab analysis by Bureau Veritas, Bedford, NS		

TABLE 2: Soil Analytical Results - Polychlorinated Biphenyls - 116 Ruth Falls Rd., Sheet Harbour, NS

Project #24-10728

Parameter	Units	RDL	Criteria		Sample ID								
					S1(AU30)	TP1-S1	TP2-S1	TP3-S1	TP4-S1	BH1-S1	BH2-S1	BH3-S1	BH4-S1
			NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)	NS Tier I EQS - Agricultural, Potable, Coarse-grained (Oct. 2022)	-	0.8	0.8	0.9	0.8	0.3	0.4	0.3	0.3
					ABTK93	HA2402172-001	HA2402172-005	HA2402172-006	HA2402172-007	HA2402273-001	HA2402273-002	HA2402273-003	HA2402273-004
					24/08/30	24/09/09	24/09/09	24/09/09	24/09/09	24/09/12	24/09/13	24/09/13	24/09/13
Aroclor 1016	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1221	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1232	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1242	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1248	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1254	mg/kg	0.05	-	-	0.47	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1260	mg/kg	0.05	-	-	nd	nd	nd	nd	nd	0.073	0.019	nd	nd
Calculated Total PCB	mg/kg	0.05	160	1.3	0.47	nd	nd	nd	nd	0.073	nd	nd	nd

Notes:

Shading/bold indicates exceedance of:
 Underlining/bold indicates exceedance of:
 m = metres below grade
 mbfl = metres below floor
 mbf = metres below footing
 nd = non-detect
 nd() = non-detect at elevated detection limit
 - = no established value or not analyzed
 RDL = Reportable Detection Limit
 mg/kg = milligrams per kilogram
 RBCA = Risk Based Corrective Action
 EQS = Environmental Quality Standards
 PSS = Pathway Specific Standards
 GW = Groundwater
 Lab analysis by Bureau Veritas, Bedford, NS
 Samples collected on the dates indicated (yy/mm/dd)

NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)
 NS Tier I EQS - Agricultural, Potable, Coarse-grained (Oct. 2022)

TABLE 3: Groundwater Analytical Results - Petroleum Hydrocarbons - 116 Ruth Falls Road, Sheet Harbour, NS

Project # 24-10728

Sample ID	Lab ID	Date	Sample Type (GW/DW)	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbon Fractions					Modified TPH	Type	Comments
				B	T	E	X	C ₆ -C ₁₀	C ₁₀ -C ₁₆	C ₁₆ -C ₂₁	C ₂₁ -C ₃₂	C ₃₂ -C ₅₀			
		(yy/mm/dd)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		
Groundwater Samples															
MW1	HA2402307-001	24/09/23	GW	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	-	
MW1	HA2402673-001	24/10/24	GW	nd	nd	nd	nd	nd	nd (0.125)	nd (0.125)	nd	-	nd (0.184)	-	Returned to baseline.
MW1	HA2403336-001	24/12/17	GW	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	Returned to baseline.
MW2	HA2402307-002	24/09/23	GW	nd	nd	nd	nd	nd	2.62	19.40	10.70	-	32.70	L	Fuel Oil + Lube Oil Fractions.
MW2	HA2402673-002	24/10/24	GW	nd	nd	nd	nd	nd	0.16	0.40	0.16	-	0.72	L	Fuel oil fraction. Returned to baseline.
MW2	HA2403336-002	24/12/17	GW	nd	nd	nd	nd	nd	0.12	0.69	0.28	nd	1.08	L	Fuel oil fraction. Returned to baseline.
MW3	HA2402307-003	24/09/23	GW	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	-	
MW3	HA2402673-003	24/10/24	GW	nd	nd	nd	nd	nd	nd (0.100)	nd (0.100)	nd	-	nd (0.150)	-	Returned to baseline.
MW3	HA2403336-003	24/12/17	GW	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	Returned to baseline.
MW4	HA2402307-004	24/09/23	GW	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	-	
MW4	HA2402673-004	24/10/24	GW	nd	nd	nd	nd	nd	nd (0.100)	nd (0.100)	nd	-	nd (0.150)	-	Returned to baseline.
MW4 - FD1	HA2402673-005			nd	nd	nd	nd	nd	nd (0.100)	nd (0.100)	nd	-	nd (0.150)	-	Returned to baseline.
MW4	HA2403336-004			nd	nd	nd	nd	nd	nd	nd	-	nd	-	Returned to baseline.	
MW4 - FD101	HA2403336-007	24/12/17	GW	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	Returned to baseline.
MW5	HA2403336-005	24/12/17	GW	nd	nd	nd	nd	nd	nd	0.068	nd	nd	nd	L	Fuel oil fraction. Returned to baseline.
MW6	HA2403336-006	24/12/17	GW	nd	nd	nd	nd	nd	0.16	0.21	0.06	nd	0.42	L	Fuel oil fraction. Returned to baseline.
RDL				0.001	0.001	0.001	0.002	0.09	0.05	0.05	0.09	-	0.09	-	
Criteria	NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)			0.005	0.024	0.0016	0.02	-	-	-	-	-	4.4	G	
													3.2	F	
													7.8	L	
	NS Tier I EQS - Agricultural, Potable, Coarse-grained (Oct. 2022)			0.005	0.024	0.0016	0.02	-	-	-	-	-	4.4	G	
													3.2	F	
													7.8	L	

Notes: **Value** Shading/bold indicates exceedance of: NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)

Value Underline/bold indicates exceedance of: NS Tier I EQS - Agricultural, Potable, Coarse-grained (Oct. 2022)

GW = groundwater
 nd() = non-detect at elevated detection limit
 TPH = Total Petroleum Hydrocarbons
 EQS = Environmental Quality Standards
 >SOL = Greater than solubility limit (i.e., free product present in groundwater).
 Type = hydrocarbon resemblance based on lab comments and/or distribution of hydrocarbon ranges. G = gasoline; F = fuel oil/diesel; L = lube oil
 Hydrocarbon concentrations in RBCA fraction format can be combined to be reported as the CCME F1 to F4 fractions and compared directly to the values in this table.
 Analysis of CCME F4 fraction C32-C50 is not part of standard RBCA lab analysis package. Where provided, analysis of F4 fraction specifically requested.
 For comparison purposes the combined RBCA fractions C16-C21 and C21-C32 are equivalent to CCME F3 fraction C16-C34.
 For comparison purposes RBCA fraction C32-C50 is equivalent to CCME F4 fraction C34-C50.
 Samples collected on the dates indicated (yy/mm/dd).
 Lab analysis by Bureau Veritas, Bedford, NS.

Table 3A: Tier I Groundwater Ecological Screening for the Protection of Plants and Soil Invertebrates (Direct Contact with Shallow Groundwater) - 116 Ruth Falls Road, Sheet Harbour, NS

Project # 24-10728

Sample ID	Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	Hydrocarbon Ranges	
	(yy/mm/dd)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	F1 (C ₆ -C ₁₀)	F2 (C ₁₀ -C ₁₆)
							(mg/L)	(mg/L)
Groundwater Samples								
MW1	24/09/23	GW	nd	nd	nd	nd	nd	nd
MW1	24/10/24	GW	nd (0.125)	nd (0.125)	nd	nd	nd	nd (0.125)
MW1	24/12/17	GW	nd	nd	nd	nd	nd	nd
MW2	24/09/23	GW	nd	nd	nd	nd	nd	<u>2.62</u>
MW2	24/10/24	GW	nd	nd	nd	nd	nd	0.16
MW2	24/12/17	GW	nd	nd	nd	nd	nd	0.12
MW3	24/09/23	GW	nd	nd	nd	nd	nd	nd
MW3	24/10/24	GW	nd	nd	nd	nd	nd	nd (0.100)
MW3	24/12/17	GW	nd	nd	nd	nd	nd	nd
MW4	24/09/23	GW	nd	nd	nd	nd	nd	nd
MW4	24/10/24	GW	nd	nd	nd	nd	nd	nd (0.100)
MW4 - FD1	24/10/24	GW	nd	nd	nd	nd	nd	nd (0.100)
MW4	24/12/17	GW	nd	nd	nd	nd	nd	nd
MW4 - FD101	24/12/17	GW	nd	nd	nd	nd	nd	nd
MW5	24/12/17	GW	nd	nd	nd	nd	nd	nd
MW6	24/12/17	GW	nd	nd	nd	nd	nd	0.16
Atlantic RBCA ESLs - Industrial/Coarse-grained Criteria			350	200	110	120	11	3.1
Atlantic RBCA ESLs - Agricultural/Coarse-grained Criteria			61	59	20	31	7.1	1.8

Notes: Bold/shaded values indicate exceedance of the Atlantic RBCA ESLs - Industrial/Coarse-grained Criteria

Bold/underlined values indicated exceedance of the Atlantic RBCA ESLs - Agricultural/Coarse-grained Criteria

Source: Alberta Environment (AENV, 2010).

Fractions F1 and F2 vary slightly from the RBCA fractions of Gas, Diesel/#2, and #6 Oil/Lube; however, direct comparison acceptable for screening purposes.

Hydrocarbon concentrations in RBCA fraction format can be combined to be reported as the CCME fractions and compared directly to the values in this table.

These screening levels are applicable only if groundwater is present within 3 meters of ground surface.

There is no screening level for F3 and F4 as these fractions are considered insufficiently soluble to migrate to groundwater from soil.

mg/L = milligrams per litre	nd = not detected	nd () = not detected at elevated detection limit
n/c = analysis not completed	- indicates no established value	ESLs = Ecological Screening Levels
Lab analysis by Bureau Veritas, Bedford, NS		

Table 3B: Tier I Surface Water and Groundwater Ecological Screening for the Protection of Freshwater and Marine Aquatic Life, 116 Ruth Falls Road, Sheet Harbour, NS

Project # 24-10728

Sample ID	Date	Sample Type	Benzene	Toluene	Ethylbenzene	Xylenes	Modified TPH		
	(yy/mm/dd)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	Gasoline (mg/L)	Diesel/Fuel (mg/L)	Lube Oil (mg/L)
Groundwater Samples									
MW1	24/09/23	GW	nd	nd	nd	nd	-	-	nd
MW1	24/10/24	GW	nd	nd	nd	nd	-	-	nd (0.184)
MW1	24/12/17	GW	nd	nd	nd	nd	-	-	nd
MW2	24/09/23	GW	nd	nd	nd	nd	-	-	32.7
MW2	24/10/24	GW	nd	nd	nd	nd	-	-	0.717
MW2	24/12/17	GW	nd	nd	nd	nd	-	-	1.08
MW3	24/09/23	GW	nd	nd	nd	nd	-	-	nd
MW3	24/10/24	GW	nd	nd	nd	nd	-	-	nd (0.150)
MW3	24/12/17	GW	nd	nd	nd	nd	-	-	nd
MW4	24/09/23	GW	nd	nd	nd	nd	-	-	nd
MW4	24/10/24	GW	nd	nd	nd	nd	-	-	nd (0.150)
MW4 - FD1			nd	nd	nd	nd	-	-	nd (0.150)
MW4	24/12/17	GW	nd	nd	nd	nd	-	-	nd
MW4 - FD101			nd	nd	nd	nd	-	-	nd
MW5	24/12/17	GW	nd	nd	nd	nd	-	-	nd
MW6	24/12/17	GW	nd	nd	nd	nd	-	-	0.423
Groundwater			4.6	4.2	3.2	2.8	13	0.84	0.48

Notes: Bold/shaded values indicate exceedance of the Atlantic RBCA Ecological Screening Levels for Groundwater
 Bold/underlined values indicate exceedance of the Atlantic RBCA Ecological Screening Levels for No Guidelines

Source: PETROTOX Ver 3.06.

Groundwater screening levels can be used for evaluating groundwater quality at locations greater than 10 meters from a freshwater or marine water body.

It is recommended that surface water screening levels should be applied directly (or unadjusted) when evaluating groundwater quality at locations within 10 m of a water body.

The screening level for mTPH (lube oil) set to RDL, actual derived screening level = 0.06 mg/L

mTPH = Modified Total Petroleum Hydrocarbons	mg/L = milligrams per litre	nd = not detected	n/c = analysis not completed
- indicates no established value	nd () = not detected at elevated detection limit		
Lab analysis by Bureau Veritas, Bedford, NS			

TABLE 4: Groundwater Analytical Results - Polychlorinated Biphenyls - 116 Ruth Falls Rd., Sheet Harbour, NS

Project #24-10728

Parameter	Units	RDL	Criteria		Sample ID								
			NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)	NS Tier I EQS - Agricultural, Potable, Coarse-grained (Oct. 2022)	MW1	MW1	MW2	MW2	MW3	MW3	MW4	MW4	FD1
					GW	GW	GW	GW	GW	GW	GW	GW	GW
					HA2402307-001	HA2402673-001	HA2402307-002	HA2402673-002	HA2402307-003	HA2402673-003	HA2402307-004	HA2402673-004	HA2402673-005
					24/09/23	2024/10/24	24/09/23	2024/10/24	24/09/23	2024/10/24	24/09/23	2024/10/24	
Aroclor 1016	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1221	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1232	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1248	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1242	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1254	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1260	µg/L	0.05	-	-	nd	nd	nd (0.033)	nd	nd	nd	nd	nd	nd
Calculated Total PCB	µg/L	0.05	9.4	9.4	nd	nd	nd (0.075)	nd	nd	nd	nd	nd	nd

Notes:

Shading/bold indicates exceedance of:
 Underlining/bold indicates exceedance of:

NS Tier I EQS - Industrial, Potable, Coarse-grained (Oct. 2022)
 NS Tier I EQS - Agricultural, Potable, Coarse-grained (Oct. 2022)

GW = groundwater
 DW = drinking water
 nd = non-detect
 nd() = non-detect at elevated detection limit
 - = no established value or not analyzed
 RDL = Reportable Detection Limit
 mg/L = milligrams per litre
 µg/L = micrograms per litre
 RBCA = Risk Based Corrective Action
 EQS = Environmental Quality Standards
 PSS = Pathway Specific Standards
 >SOL = Greater than solubility limit in water (i.e., presence of free-phase chemical product)

Samples collected on the dates indicated (yy/mm/dd).
 Lab analysis by Bureau Veritas, Bedford, NS

TABLE 4A: Groundwater Ecological Screening for Groundwater Discharge to Surface Water - Polychlorinated Biphenyls - 116 Ruth Falls Rd., Sheet Harbour, NS Project #24-10728

Parameter	Units	RDL	Criteria		Sample ID									
			Atlantic RBCA Ecological Tier I EQS - Groundwater Discharge to Fresh Water (<10 m from receptor) (July 2022)	Atlantic RBCA Ecological Tier I EQS - Groundwater Discharge to Fresh Water (>10 m from receptor) (July 2022)	MW1	MW1	MW2	MW2	MW3	MW3	MW4	MW4		FD1
					GW	GW	GW	GW	GW	GW	GW	GW		
					HA2402307-001	HA2402673-001	HA2402307-002	HA2402673-002	HA2402307-003	HA2402673-003	HA2402307-004	HA2402673-004	HA2402673-005	HA2402673-005
					24/09/23	2024/10/24	24/09/23	2024/10/24	24/09/23	2024/10/24	24/09/23	2024/10/24		
Aroclor 1016	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1221	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1232	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1242	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1248	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1254	µg/L	0.05	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aroclor 1260	µg/L	0.05	-	-	nd	nd	nd (0.033)	nd	nd	nd	nd	nd	nd	nd
Calculated Total PCB	µg/L	0.05	0.001	0.01	nd	nd	nd (0.075)	nd	nd	nd	nd	nd	nd	nd

Notes:

Shading/bold indicates exceedance of:

Underlining/bold indicates exceedance of:

Atlantic RBCA Ecological Tier I EQS - Groundwater Discharge to Fresh Water (<10 m from receptor) (July 2022)

Atlantic RBCA Ecological Tier I EQS - Groundwater Discharge to Fresh Water (>10 m from receptor) (July 2022)

GW = groundwater
DW = drinking water
nd = non-detect
nd() = non-detect at elevated detection limit
- = no established value or not analyzed
RDL = Reportable Detection Limit
mg/L = milligrams per litre
µg/L = micrograms per litre
RBCA = Risk Based Corrective Action
EQS = Environmental Quality Standards
PSS = Pathway Specific Standards
>SOL = Greater than solubility limit in water (i.e., presence of free-phase chemical product)
Samples collected on the dates indicated (yy/mm/dd).
Lab analysis by Bureau Veritas, Bedford, NS

Table 5: Surface Water Analytical Results - Petroleum Hydrocarbons - NSPI Substation, 116 Ruth Falls Rd, Sheet Harbour, NS

Project # 24-10728

Sample ID	Lab ID	Date	Sample Type (SW/PW)	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbon Fractions					Modified TPH	Type	Comments
				B	T	E	X	C ₆ -C ₁₀	C ₁₀ -C ₁₆	C ₁₆ -C ₂₁	C ₂₁ -C ₃₂	C ₃₂ -C ₅₀			
		(yy/mm/dd)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		
Phase III ESA - Surface Water Samples															
SW1 (DE17)	HA2403336-009	24/12/17	SW	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	-	
RDL				0.001	0.001	0.001	0.002	0.09	0.05	0.05	0.09	-	0.09	-	
Criteria	NS Tier I EQS - Fresh Surface Water (Oct. 2022)			2.1	0.77	0.32	0.33	-	-	-	-	-	1.5	G	
													0.1	F	
													0.1	L	

Notes: **Value** Shading/bold indicates exceedance of: NS Tier I EQS - Fresh Surface Water (Oct. 2022)Value Underline/bold indicates exceedance of: No Guidelines

SW = Surface Water PW = Pore Water nd = non-detect
 nd() = non-detect at elevated detection limit - = no established value or not analyzed mg/L = milligrams per litre
 TPH = Total Petroleum Hydrocarbons RDL = Reportable Detection Limit RBCA = Atlantic Risk Based Corrective Action
 EQS = Environmental Quality Standards PSS = Pathway Specific Standards
 Type = hydrocarbon resemblance based on lab comments and/or distribution of hydrocarbon ranges. G = gasoline; F = fuel oil/diesel; L = lube oil
 Hydrocarbon concentrations in RBCA fraction format can be combined to be reported as the CCME F1 to F4 fractions and compared directly to the values in this table.
 Analysis of CCME F4 fraction C32-C50 is not part of standard RBCA lab analysis package. Where provided, analysis of F4 fraction specifically requested.
 For comparison purposes the combined RBCA fractions C16-C21 and C21-C32 are equivalent to CCME F3 fraction C16-C34.
 For comparison purposes RBCA fraction C32-C50 is equivalent to CCME F4 fraction C34-C50.
 Samples collected on the dates indicated (yy/mm/dd).
 Lab analysis by Bureau Veritas, Bedford, NS.

Table 5A: Surface Water Analytical Results - Petroleum Hydrocarbons - NSPI Substation, 116 Ruth Falls Rd, Sheet Harbour, NS

Project # 24-10728

Sample ID	Lab ID	Date	Sample Type (SW/PW)	Benzene	Toluene	Ethylbenzene	Xylenes	Petroleum Hydrocarbon Fractions					Modified TPH	Type	Comments
		B		T	E	X	F1	F2	F3		F4				
		(yy/mm/dd)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	C ₆ -C ₁₀	C ₁₀ -C ₁₆	C ₁₆ -C ₂₁	C ₂₁ -C ₃₂			
Phase III ESA - Surface Water Samples															
SW1 (DE17)	HA2403336-009	24/12/17	SW	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	-	
RDL				0.001	0.001	0.001	0.002	0.09	0.05	0.05	0.09	-	0.09	-	
Criteria	Atlantic RBCA Tier I EQS - Fresh Surface Water (July 2022)			2.1	0.77	0.32	0.33	-	-	-	-	-	1.5	G	
													0.1	F	
													0.1	L	

Notes: **Value** Shading/bold indicates exceedance of: Atlantic RBCA Tier I EQS - Fresh Surface Water (July 2022)

Value Underline/bold indicates exceedance of: No Guidelines

SW = Surface Water PW = Pore Water nd = non-detect
 nd() = non-detect at elevated detection limit - = no established value or not analyzed mg/L = milligrams per litre
 TPH = Total Petroleum Hydrocarbons RDL = Reportable Detection Limit RBCA = Atlantic Risk Based Corrective Action
 EQS = Environmental Quality Standards PSS = Pathway Specific Standards
 Type = hydrocarbon resemblance based on lab comments and/or distribution of hydrocarbon ranges. G = gasoline; F = fuel oil/diesel; L = lube oil
 Hydrocarbon concentrations in RBCA fraction format can be combined to be reported as the CCME F1 to F4 fractions and compared directly to the values in this table.
 Analysis of CCME F4 fraction C32-C50 is not part of standard RBCA lab analysis package. Where provided, analysis of F4 fraction specifically requested.
 For comparison purposes the combined RBCA fractions C16-C21 and C21-C32 are equivalent to CCME F3 fraction C16-C34.
 For comparison purposes RBCA fraction C32-C50 is equivalent to CCME F4 fraction C34-C50.
 Samples collected on the dates indicated (yy/mm/dd).
 Lab analysis by Bureau Veritas, Bedford, NS.

APPENDIX G

LABORATORY CERTIFICATES OF ANALYSIS

Work Order : HA2403336 Amendment 1
 Client : Nova Scotia Power Incorporated
 Project : 24-10728



Analytical Results

Sub-Matrix: Soil/Solid
 (Matrix: Soil/Solid)

Client sample ID

BH6 - S1	----	----	----	----
Client sampling date / time	12-Dec-2024 12:10	----	----	----
HA2403336-008	----	----	----	----
Result	----	----	----	----

Analyte	CAS Number	Method/Lab	LOR	Unit
---------	------------	------------	-----	------

Physical Tests

Moisture	----	E144/WT	0.25	%	18.2	----	----	----	----
----------	------	---------	------	---	------	------	------	------	------

Hydrocarbon Distribution of RBCA mTPH (Tier I) Fractions

C6-C10 fraction of mTPH	n/a	EC581D/WT	1	%	<1	----	----	----	----
>C10-C16 fraction of mTPH	n/a	EC581D/WT	1	%	3	----	----	----	----
>C16-C21 fraction of mTPH	n/a	EC581D/WT	1	%	56	----	----	----	----
>C21-C32 fraction of mTPH	n/a	EC581D/WT	1	%	41	----	----	----	----

Hydrocarbons

Benzene	71-43-2	E611A/WT	0.0050	mg/kg	0.0105	----	----	----	----
Toluene	108-88-3	E611A/WT	0.050	mg/kg	<0.050	----	----	----	----
Ethylbenzene	100-41-4	E611A/WT	0.015	mg/kg	<0.015	----	----	----	----
Xylenes, total	1330-20-7	E611A/WT	0.050	mg/kg	<0.050	----	----	----	----
Xylene, o-	95-47-6	E611A/WT	0.030	mg/kg	<0.030	----	----	----	----
Xylene, m+p-	179601-23-1	E611A/WT	0.030	mg/kg	<0.030	----	----	----	----
VPH C6-C10	n/a	E581.VPH/WT	5.0	mg/kg	<5.0	----	----	----	----
VPH C6-C10 (less BTEX)	n/a	EC580C/WT	5.0	mg/kg	<5.0	----	----	----	----
EPH >C10-C16	n/a	E601F/WT	5.0	mg/kg	10.6	----	----	----	----
EPH >C16-C21	n/a	E601F/WT	5.0	mg/kg	206	----	----	----	----
EPH >C21-C32	n/a	E601F/WT	5.0	mg/kg	149	----	----	----	----
EPH >C34-C50	n/a	E601F/WT	20	mg/kg	159	----	----	----	----
hydrocarbon resemblance	n/a	E601F/WT	-	none	LOF+FOF	----	----	----	----
mTPH (Tier I)	n/a	EC581D/WT	10	mg/kg	366	----	----	----	----

Work Order : HA2403336 Amendment 1
 Client : Nova Scotia Power Incorporated
 Project : 24-10728



Analytical Results

Sub-Matrix: Soil/Solid
 (Matrix: Soil/Solid)

Client sample ID					BH6 - S1	----	----	----	----
Client sampling date / time					12-Dec-2024 12:10	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2403336-008	----	----	----	----
Result					Result	----	----	----	----
Hydrocarbons									
return to baseline at C32	n/a	E601F/WT	-	-	Yes	----	----	----	----
TEH >C10-C32	n/a	E601F/WT	10	mg/kg	366	----	----	----	----
Hydrocarbons Surrogates									
dotriacontane, n- (EPH)	n/a	E601F/WT	1.0	%	70.9	----	----	----	----
isobutylbenzene (EPH)	538-93-2	E601F/WT	1.0	%	62.6	----	----	----	----
isobutylbenzene (VPH)	538-93-2	E581.VPH/WT	1.0	%	80.8	----	----	----	----
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/WT	0.10	%	91.8	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/WT	0.10	%	83.2	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Analytical Results

Sub-Matrix: Surface Water
 (Matrix: Water)

Client sample ID					SW1 (DE17)	----	----	----	----
Client sampling date / time					17-Dec-2024 11:50	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2403336-009	----	----	----	----
Result					Result	----	----	----	----
Hydrocarbon Distribution of RBCA mTPH (Tier I) Fractions									
C6-C10 fraction of mTPH	n/a	EC581D/WT	1	%	<1	----	----	----	----
>C10-C16 fraction of mTPH	n/a	EC581D/WT	1	%	<1	----	----	----	----
>C16-C21 fraction of mTPH	n/a	EC581D/WT	1	%	<1	----	----	----	----
>C21-C32 fraction of mTPH	n/a	EC581D/WT	1	%	<1	----	----	----	----
Hydrocarbons									
Benzene	71-43-2	E611A/WT	0.00050	mg/L	<0.00050	----	----	----	----

Work Order : HA2402673
Client : Nova Scotia Power Incorporated
Project : 24-10728



Analytical Results

Sub-Matrix: Groundwater
(Matrix: Water)

Client sample ID

					MW1	MW2	MW3	MW4	FD1
Client sampling date / time					24-Oct-2024 09:30	24-Oct-2024 09:40	24-Oct-2024 10:10	24-Oct-2024 09:10	24-Oct-2024 00:00
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	HA2402673-001	HA2402673-002	HA2402673-003	HA2402673-004	HA2402673-005
					Result	Result	Result	Result	Result
Hydrocarbon Distribution of RBCA mTPH (Tier I) Fractions									
C6-C10 fraction of mTPH	n/a	EC581D/WT	1	%	<1	<1	<1	<1	<1
>C10-C16 fraction of mTPH	n/a	EC581D/WT	1	%	<1	22	<1	<1	<1
>C16-C21 fraction of mTPH	n/a	EC581D/WT	1	%	<1	56	<1	<1	<1
>C21-C32 fraction of mTPH	n/a	EC581D/WT	1	%	<1	22	<1	<1	<1
Hydrocarbons									
Benzene	71-43-2	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	108-88-3	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	100-41-4	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Xylenes, total	1330-20-7	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Xylene, o-	95-47-6	E611A/WT	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Xylene, m+p-	179601-23-1	E611A/WT	0.00040	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
VPH C6-C10	n/a	E581.VPH/WT	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025
VPH C6-C10 (less BTEX)	n/a	EC580C/WT	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025
EPH >C10-C16	n/a	E601F/WT	0.050	mg/L	<0.125 ^{RRR}	0.159	<0.100 ^{RRR}	<0.100 ^{RRR}	<0.100 ^{RRR}
EPH >C16-C21	n/a	E601F/WT	0.050	mg/L	<0.125 ^{RRR}	0.399	<0.100 ^{RRR}	<0.100 ^{RRR}	<0.100 ^{RRR}
EPH >C21-C32	n/a	E601F/WT	0.050	mg/L	<0.050	0.159	<0.050	<0.050	<0.050
EPH >C34-C50	n/a	E601F/WT	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10
hydrocarbon resemblance	n/a	E601F/WT	-	none	N/A	FOF	N/A	N/A	N/A
mTPH (Tier I)	n/a	EC581D/WT	0.090	mg/L	<0.184	0.717	<0.150	<0.150	<0.150
return to baseline at C32	n/a	E601F/WT	-	-	Yes	Yes	Yes	Yes	Yes
TEH >C10-C32	n/a	E601F/WT	0.100	mg/L	<0.184 ^{RRR}	0.717	<0.150 ^{RRR}	<0.150 ^{RRR}	<0.150 ^{RRR}

Work Order : HA2402673
 Client : Nova Scotia Power Incorporated
 Project : 24-10728



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

Client sample ID					MW1	MW2	MW3	MW4	FD1
Client sampling date / time					24-Oct-2024 09:30	24-Oct-2024 09:40	24-Oct-2024 10:10	24-Oct-2024 09:10	24-Oct-2024 00:00
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	HA2402673-001	HA2402673-002	HA2402673-003	HA2402673-004	HA2402673-005
					Result	Result	Result	Result	Result
Hydrocarbons Surrogates									
dotriacontane, n- (EPH)	n/a	E601F/WT	1.0	%	84.9	94.5	88.3	88.5	78.6
isobutylbenzene (EPH)	538-93-2	E601F/WT	1.0	%	35.6 ^{RRR}	60.2	41.1 ^{RRR}	40.5 ^{RRR}	40.1 ^{RRR}
isobutylbenzene (VPH)	538-93-2	E581.VPH/WT	1.0	%	98.8	77.3	96.5	102	95.8
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/WT	1.0	%	96.9	93.6	95.0	96.7	94.5
Difluorobenzene, 1,4-	540-36-3	E611A/WT	1.0	%	91.9	89.3	90.0	89.1	90.8
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1221	11104-28-2	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1232	11141-16-5	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1242	53469-21-9	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1248	12672-29-6	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1254	11097-69-1	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1260	11096-82-5	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1262	37324-23-5	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Aroclor 1268	11100-14-4	E687/WT	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Polychlorinated biphenyls [PCBs], total	----	E687/WT	0.060	µg/L	<0.060	<0.060	<0.060	<0.060	----
Polychlorinated Biphenyls Surrogates									
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%	118	95.1	122	97.9	----
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%	109	106	120	108	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Work Order : HA2403336 Amendment 1
 Client : Nova Scotia Power Incorporated
 Project : 24-10728



Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

Client sample ID

Client sampling date / time

					MW 1	MW 2	MW 3	MW 4	MW 5
					17-Dec-2024 11:30	17-Dec-2024 11:00	17-Dec-2024 10:30	17-Dec-2024 10:00	17-Dec-2024 11:45
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2403336-001	HA2403336-002	HA2403336-003	HA2403336-004	HA2403336-005
					Result	Result	Result	Result	Result
Hydrocarbon Distribution of RBCA mTPH (Tier I) Fractions									
C6-C10 fraction of mTPH	n/a	EC581D/WT	1	%	<1	<1	<1	<1	<1
>C10-C16 fraction of mTPH	n/a	EC581D/WT	1	%	<1	11	<1	<1	<1
>C16-C21 fraction of mTPH	n/a	EC581D/WT	1	%	<1	64	<1	<1	100
>C21-C32 fraction of mTPH	n/a	EC581D/WT	1	%	<1	26	<1	<1	<1
Hydrocarbons									
Benzene	71-43-2	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	108-88-3	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	100-41-4	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Xylenes, total	1330-20-7	E611A/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Xylene, o-	95-47-6	E611A/WT	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Xylene, m+p-	179601-23-1	E611A/WT	0.00040	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
VPH C6-C10	n/a	E581.VPH/WT	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025
VPH C6-C10 (less BTEX)	n/a	EC580C/WT	0.025	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025
EPH >C10-C16	n/a	E601F/WT	0.050	mg/L	<0.050	0.115	<0.050	<0.050	<0.050
EPH >C16-C21	n/a	E601F/WT	0.050	mg/L	<0.050	0.688	<0.050	<0.050	0.068
EPH >C21-C32	n/a	E601F/WT	0.050	mg/L	<0.050	0.276	<0.050	<0.050	<0.050
EPH >C34-C50	n/a	E601F/WT	0.10	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10
hydrocarbon resemblance	n/a	E601F/WT	-	none	N/A	FOF	N/A	N/A	FOF
mTPH (Tier I)	n/a	EC581D/WT	0.090	mg/L	<0.090	1.08	<0.090	<0.090	<0.090
return to baseline at C32	n/a	E601F/WT	-	-	Yes	Yes	Yes	Yes	Yes
TEH >C10-C32	n/a	E601F/WT	0.100	mg/L	<0.100	1.08	<0.100	<0.100	<0.100

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Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

					Client sample ID	MW 1	MW 2	MW 3	MW 4	MW 5
					Client sampling date / time	17-Dec-2024 11:30	17-Dec-2024 11:00	17-Dec-2024 10:30	17-Dec-2024 10:00	17-Dec-2024 11:45
Analyte	CAS Number	Method/Lab	LOR	Unit		HA2403336-001	HA2403336-002	HA2403336-003	HA2403336-004	HA2403336-005
						Result	Result	Result	Result	Result
Hydrocarbons Surrogates										
dotriacontane, n- (EPH)	n/a	E601F/WT	1.0	%		81.6	93.6	91.9	86.5	90.6
isobutylbenzene (EPH)	538-93-2	E601F/WT	1.0	%		50.2 ^{SUR-ND}	71.7	51.0 ^{SUR-ND}	58.3 ^{SUR-ND}	61.3
isobutylbenzene (VPH)	538-93-2	E581.VPH/WT	1.0	%		97.2	92.2	91.4	89.7	94.9
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/WT	1.0	%		86.0	85.2	84.2	84.4	86.1
Difluorobenzene, 1,4-	540-36-3	E611A/WT	1.0	%		89.4	90.0	89.3	88.5	88.7

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

					Client sample ID	MW 6	FD101	----	----	----
					Client sampling date / time	17-Dec-2024 12:00	17-Dec-2024 00:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		HA2403336-006	HA2403336-007	----	----	----
						Result	Result	----	----	----
Hydrocarbon Distribution of RBCA mTPH (Tier I) Fractions										
C6-C10 fraction of mTPH	n/a	EC581D/WT	1	%		<1	<1	----	----	----
>C10-C16 fraction of mTPH	n/a	EC581D/WT	1	%		37	<1	----	----	----
>C16-C21 fraction of mTPH	n/a	EC581D/WT	1	%		49	<1	----	----	----
>C21-C32 fraction of mTPH	n/a	EC581D/WT	1	%		14	<1	----	----	----
Hydrocarbons										
Benzene	71-43-2	E611A/WT	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Toluene	108-88-3	E611A/WT	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Ethylbenzene	100-41-4	E611A/WT	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Xylenes, total	1330-20-7	E611A/WT	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Work Order : HA2403336 Amendment 1
 Client : Nova Scotia Power Incorporated
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Analytical Results

Sub-Matrix: Groundwater
 (Matrix: Water)

					Client sample ID	MW 6	FD101	----	----	----
					Client sampling date / time	17-Dec-2024 12:00	17-Dec-2024 00:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2403336-006	HA2403336-007	----	----	----	----
					Result	Result	----	----	----	----
Hydrocarbons										
Xylene, o-	95-47-6	E611A/WT	0.00030	mg/L	<0.00030	<0.00030	----	----	----	----
Xylene, m+p-	179601-23-1	E611A/WT	0.00040	mg/L	<0.00040	<0.00040	----	----	----	----
VPH C6-C10	n/a	E581.VPH/WT	0.025	mg/L	<0.025	<0.025	----	----	----	----
VPH C6-C10 (less BTEX)	n/a	EC580C/WT	0.025	mg/L	<0.025	<0.025	----	----	----	----
EPH >C10-C16	n/a	E601F/WT	0.050	mg/L	0.158	<0.050	----	----	----	----
EPH >C16-C21	n/a	E601F/WT	0.050	mg/L	0.206	<0.050	----	----	----	----
EPH >C21-C32	n/a	E601F/WT	0.050	mg/L	0.059	<0.050	----	----	----	----
EPH >C34-C50	n/a	E601F/WT	0.10	mg/L	<0.10	<0.10	----	----	----	----
hydrocarbon resemblance	n/a	E601F/WT	-	none	FOF	N/A	----	----	----	----
mTPH (Tier I)	n/a	EC581D/WT	0.090	mg/L	0.423	<0.090	----	----	----	----
return to baseline at C32	n/a	E601F/WT	-	-	Yes	Yes	----	----	----	----
TEH >C10-C32	n/a	E601F/WT	0.100	mg/L	0.423	<0.100	----	----	----	----
Hydrocarbons Surrogates										
dotriacontane, n- (EPH)	n/a	E601F/WT	1.0	%	92.8	88.2	----	----	----	----
isobutylbenzene (EPH)	538-93-2	E601F/WT	1.0	%	76.4	60.2	----	----	----	----
isobutylbenzene (VPH)	538-93-2	E581.VPH/WT	1.0	%	90.6	96.3	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/WT	1.0	%	84.7	85.7	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/WT	1.0	%	87.5	89.2	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Work Order : HA2403336 Amendment 1
 Client : Nova Scotia Power Incorporated
 Project : 24-10728



Analytical Results

Sub-Matrix: Surface Water
 (Matrix: Water)

Client sample ID

Client sampling date / time

					SW1 (DE17)	----	----	----	----
					17-Dec-2024 11:50	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2403336-009	----	----	----	----
					Result	----	----	----	----
Hydrocarbons									
Toluene	108-88-3	E611A/WT	0.00050	mg/L	<0.00050	----	----	----	----
Ethylbenzene	100-41-4	E611A/WT	0.00050	mg/L	<0.00050	----	----	----	----
Xylenes, total	1330-20-7	E611A/WT	0.00050	mg/L	<0.00050	----	----	----	----
Xylene, o-	95-47-6	E611A/WT	0.00030	mg/L	<0.00030	----	----	----	----
Xylene, m+p-	179601-23-1	E611A/WT	0.00040	mg/L	<0.00040	----	----	----	----
VPH C6-C10	n/a	E581.VPH/WT	0.025	mg/L	<0.025	----	----	----	----
VPH C6-C10 (less BTEX)	n/a	EC580C/WT	0.025	mg/L	<0.025	----	----	----	----
EPH >C10-C16	n/a	E601F/WT	0.050	mg/L	<0.050	----	----	----	----
EPH >C16-C21	n/a	E601F/WT	0.050	mg/L	<0.050	----	----	----	----
EPH >C21-C32	n/a	E601F/WT	0.050	mg/L	<0.050	----	----	----	----
EPH >C34-C50	n/a	E601F/WT	0.10	mg/L	<0.10	----	----	----	----
hydrocarbon resemblance	n/a	E601F/WT	-	none	N/A	----	----	----	----
mTPH (Tier I)	n/a	EC581D/WT	0.090	mg/L	<0.090	----	----	----	----
return to baseline at C32	n/a	E601F/WT	-	-	Yes	----	----	----	----
TEH >C10-C32	n/a	E601F/WT	0.100	mg/L	<0.100	----	----	----	----
Hydrocarbons Surrogates									
dotriacontane, n- (EPH)	n/a	E601F/WT	1.0	%	93.8	----	----	----	----
isobutylbenzene (EPH)	538-93-2	E601F/WT	1.0	%	71.4	----	----	----	----
isobutylbenzene (VPH)	538-93-2	E581.VPH/WT	1.0	%	94.7	----	----	----	----
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/WT	1.0	%	83.8	----	----	----	----

Work Order : HA2403336 Amendment 1
Client : Nova Scotia Power Incorporated
Project : 24-10728



Analytical Results

Sub-Matrix: Surface Water
(Matrix: Water)

Sub-Matrix: Surface Water (Matrix: Water)					Client sample ID	SW1 (DE17)	----	----	----	----
					Client sampling date / time	17-Dec-2024 11:50	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	HA2403336-009	----	----	----	----	
					Result	----	----	----	----	
Volatile Organic Compounds Surrogates										
Difluorobenzene, 1,4-	540-36-3	E611A/WT	1.0	%	88.9	----	----	----	----	

Please refer to the General Comments section for an explanation of any result qualifiers detected.

APPENDIX H

GROUNDWATER STATIC MEASUREMENTS

*Water Statics Results - 116 Ruth Falls Rd., Sheet Harbour, NS**Project # 24-10728*

Well Number	Grade Point Elevation (metres)	Measured Point Elevation (metres)	Depth to Water 24/09/23 (metres)	Static Elevation 24/09/23 (metres)	Depth to Water 24/10/24 (metres)	Static Elevation 24/10/24 (metres)	Depth to Water 24/10/24 (metres)	Static Elevation 24/10/24 (metres)	Depth to Water 24/12/16 (metres)	Static Elevation 24/12/16 (metres)
MW6	96.55	96.500	-	-	-	-	-	-	1.530	94.970
MW5	95.37	95.30	-	-	-	-	-	-	0.500	94.800
MW4	100.79	100.71	0.65	100.06	0.58	100.13	0.86	99.85	0.430	100.28
MW3	97.45	97.38	3.30	94.08	2.51	94.87	2.58	94.80	0.550	96.83
MW2	97.16	97.09	0.96	96.13	0.83	96.26	0.65	96.44	0.620	96.47
MW1	97.10	97.04	1.12	95.92	1.02	96.02	1.13	95.91	1.120	95.92

Measured on indicated dates using electronic interface probe

Depth to water measured from Measured Point Elevation on well head

All elevations referenced from a TBM located at corner of boiler room, nearest MW1.

APPENDIX I

ATLANTIC RBCA ECOLOGICAL SCREENING ASSESSMENT

SUMMARY TABLE - RESULTS OF ECOLOGICAL SCREENING PROTOCOL FOR PETROLEUM IMPACTED SITES

Instructions to Practitioners: This table is intended to summarize the results of the Ecological Screening Protocol and must be completed in consultation with guidance provided in the protocol. Users should include this completed table in their Environmental Assessment or Closure Report. Details and explanations are to be provided in the body of the Report.

Ecological Screening Component	Yes or No	Report name and location of details and explanations
Part I - Identification of petroleum hydrocarbons in media		
1. Do site characterization data indicate the presence of petroleum hydrocarbons and/or CVOCs in site <u>surface soil</u> (depth < 1.5 m) above the appropriate screening levels in Tables 1a and 1b?	Yes	Phase III ESA Report, Section 5.4
2. Do site characterization data indicate the presence of PHC in <u>shallow site groundwater</u> (depth < 3.0 m) above appropriate ecological screening levels that were derived for the protection of terrestrial plants and soil invertebrates in contact with site groundwater in Table 2?	Yes	Phase III ESA Report, Section 5.4
3. Do existing site characterization data indicate the presence of PHC and/or CVOCs in site <u>groundwater</u> above appropriate ecological screening levels derived for the protection of aquatic receptors in Table 2a/2b/2c?	Yes	Phase III ESA Report, Section 5.4
4. Do site characterization data indicate the presence of PHC and/or CVOCs in site <u>surface water</u> above the appropriate screening levels in Table 2a/2b?	No	Phase III ESA Report, Section 5.4
5. Does site characterization indicate the presence of PHC and or CVOCs in on-site or adjacent <u>sediments</u> above the appropriate screening levels in Table 4a/4b?	N/A	Sediment sampling not possible. Phase III ESA Report, Section 6.0.
IF ALL ANSWERS IN PART I ARE "NO" THEN NO FURTHER ACTION IS REQUIRED		
Part II - Identification of habitat and ecological receptors		
1. Are the following habitat types or conditions present on the site or proximate to site within a minimum of 200 metres? - wetland habitats - aquatic habitats - forested habitats - grassland habitats - provincial/national parks or ecological reserves - known rare, threatened or endangered species, - other known critical or sensitive habitat - other local or regional receptor or habitat concerns	Yes	Phase III ESA Report, Section 5.4

Ecological Screening Component	Yes or No	Report name and location of details and explanations
2a. Are there visible indications of stressed vegetation on the site?	No	Phase III ESA Report, Section 5.4
2b. Is there evidence that the site vegetation community differs from what would be expected?	No	Phase III ESA Report, Section 5.4
2c. Are there indications that the site soil cannot support a soil invertebrate community?	No	Phase III ESA Report, Section 5.4
3. Is there evidence that terrestrial plants in the habitats above are likely to be in root contact with site groundwater above screening levels?	No	Phase III ESA Report, Section 5.4
4. Would wildlife receptors be expected to forage on or near the contaminated areas of the site?	No	Phase III ESA Report, Section 5.4
Part III - Identification of exposure pathways for ecological receptors		
1a. Is it reasonable to conclude that site hydrocarbons and/or CVOCs in surface soil with concentrations exceeding applicable screening levels, will come into contact with terrestrial plants and invertebrates in a suitable habitat?	No	Phase III ESA Report, Section 5.4
1b. Is it reasonable to conclude that site hydrocarbons and/or CVOCs in surface soil with concentrations exceeding applicable screening levels, will come into contact with mammalian, avian or herptile terrestrial receptors within an agricultural land use in a suitable habitat?	No	Phase III ESA Report, Section 5.4
2. Is it reasonable to conclude that dissolved hydrocarbons and/or CVOCs in site groundwater with concentrations exceeding applicable screening levels will come into contact with plants or soil invertebrates in a suitable habitat?	No	Phase III ESA Report, Section 5.4
3. Is it reasonable to conclude that dissolved hydrocarbons and/or CVOCs in site groundwater with concentrations exceeding applicable screening levels will come into contact with aquatic receptors or aquatic receptor habitat?	No	Phase III ESA Report, Section 5.4
4. Is it reasonable to conclude that site petroleum hydrocarbon and/or CVOCs contamination could impact aquatic receptors or aquatic habitat in surface water bodies via the following: a. surface runoff (e.g. erosion, windblown contaminants) b. groundwater flow c. preferential overland flow pathways (e.g. drainage ditch, slope, swale) d. preferential subsurface flow pathways (e.g. culvert, trench, sewer line, pipelines, swales) such that aqueous media concentrations would potentially exceed surface water and/or sediment quality screening levels?	No	Phase III ESA Report, Section 5.4
Are there site specific conditions present, which were not considered in any section above that should require further ecological assessment?	No	
IF ALL ANSWERS IN PART III ARE "NO" THEN NO FURTHER ACTION IS REQUIRED		

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Undertaking U-11:

To verify if an update is available to the response to NSEB IR 127(a), specifically the reference to the impacts of the cyber incidence.

Response U-11:

Please refer to Attachment 1 for an updated version of NSEB IR-127 Attachment 1.

The “% of Line Completed” of Attachment 1 has been updated to include information for the lines that originally included an “N/A”. Information on the vegetation management costs per transmission line remain unrecovered due to the impacts of the 2025 cyber incident.

The original response to this IR assumed the question was asking specifically about the 69kV widening program, and not the work completed under T010 (which occurs on voltages of 138kV and above); therefore, the transmission lines with a voltage of 138kV and above were marked as N/A. This information has been included in Attachment 1.

Attachment 1. Transmission Corridor Widening (2016 to 2025)

Line	Total Line Length (km)	Voltage (kV)	% of Line completed (2016-2024)	Vegetation Mangement Cost	NERC Vegetation Management Requirement
L-5003	13.5	69	28%	N/A	No
L-5004	12.1	69	10%	N/A	No
L-5010	0.5	69	0%	N/A	No
L-5011	9.3	69	18%	N/A	No
L-5012	10.4	69	7%	N/A	No
L-5014	10.8	69	100%	N/A	No
L-5015	19	69	80%	N/A	No
L-5016	6.7	69	67%	N/A	No
L-5017	18.4	69	63%	N/A	No
L-5019	3.4	69	60%	N/A	No
L-5020	9.2	69	56%	N/A	No
L-5021	7.2	69	59%	N/A	No
L-5022	15	69	32%	N/A	No
L-5023	1.2	69	100%	N/A	No
L-5024	4.7	69	99%	N/A	No
L-5025	30.2	69	67%	N/A	No
L-5026	47.5	69	65%	N/A	No
L-5027	104.5	69	49%	N/A	No
L-5028	29	69	86%	N/A	No
L-5029	20.2	69	74%	N/A	No
L-5030	2.9	69	95%	N/A	No
L-5031	19.8	69	96%	N/A	No
L-5032	0.8	69	0%	N/A	No
L-5033	12.2	69	14%	N/A	No
L-5035	0.8	69	59%	N/A	No
L-5036	3.4	69	95%	N/A	No
L-5037	3.7	69	19%	N/A	No
L-5039	9.52	69	5%	N/A	No
L-5040	42.3	69	99%	N/A	No
L-5041	0.6	69	55%	N/A	No
L-5042	1.9	69	0%	N/A	No
L-5044	3.8	69	95%	N/A	No
L-5046	2.7	69	43%	N/A	No
L-5047	3.1	69	95%	N/A	No
L-5048	5.5	69	78%	N/A	No
L-5049	0.5	69	100%	N/A	No
L-5050	15.9	69	53%	N/A	No
L-5053	25.7	69	78%	N/A	No
L-5054	23.4	69	50%	N/A	No
L-5055	20.8	69	69%	N/A	No
L-5056	4	69	20%	N/A	No
L-5057	2.2	69	95%	N/A	No
L-5058	39.3	69	66%	N/A	No
L-5500	12.5	69	84%	N/A	No
L-5501	7.6	69	95%	N/A	No
L-5502	6.1	69	68%	N/A	No
L-5505	11.5	69	47%	N/A	No
L-5506	8.4	69	36%	N/A	No
L-5508	1.7	69	0%	N/A	No
L-5510	71.1	69	87%	N/A	No
L-5511	31.7	69	57%	N/A	No
L-5512	6.5	69	88%	N/A	No
L-5521	4.5	69	7%	N/A	No
L-5524	35.4	69	27%	N/A	No
L-5527A	17.4	69	75%	N/A	No
L-5530	67.5	69	95%	N/A	No
L-5531	23.9	69	81%	N/A	No
L-5532	96.3	69	78%	N/A	No
L-5533	13.1	69	84%	N/A	No
L-5534	8.4	69	34%	N/A	No
L-5535	64.3	69	92%	N/A	No
L-5536	20.2	69	55%	N/A	No
L-5537	3.4	69	26%	N/A	No
L-5538	7.5	69	89%	N/A	No
L-5539	8.4	69	95%	N/A	No
L-5540	2	69	30%	N/A	No
L-5541	14.2	69	95%	N/A	No
L-5544	6.7	69	100%	N/A	No
L-5545	5.2	69	63%	N/A	No
L-5546	12.5	69	95%	N/A	No
L-5547	19.5	69	100%	N/A	No
L-5548	17.1	69	15%	N/A	No
L-5549	11.9	69	2%	N/A	No
L-5550	33.7	69	98%	N/A	No
L-5551	9.7	69	100%	N/A	No
L-5555	15.5	69	44%	N/A	No
L-5559	38.7	69	83%	N/A	No
L-5560	6.6	69	0%	N/A	No

Attachment 1. Transmission Corridor Widening (2016 to 2025)

Line	Total Line Length (km)	Voltage (kV)	% of Line completed (2016-2024)	Vegetation Mangement Cost	NERC Vegetation Management Requirement
L-5561A	15	69	88%	N/A	No
L-5563	7.1	69	100%	N/A	No
L-5564	19.1	69	66%	N/A	No
L-5565	18.9	69	89%	N/A	No
L-5569	1.7	69	0%	N/A	No
L-5571	6.4	69	0%	N/A	No
L-5572	13.6	69	68%	N/A	No
L-5573	15.8	69	3%	N/A	No
L-5575	12.6	69	78%	N/A	No
L-5576	21.1	69	85%	N/A	No
L-5579	41.1	69	19%	N/A	No
L-5581	16.2	69	31%	N/A	No
L-6001	81.34	138	4%	N/A	No
L-6002	88.17	138	16%	N/A	No
L-6003	14.37	138	0%	N/A	No
L-6004	47.38	138	0%	N/A	No
L-6005	16.37	138	0%	N/A	No
L-6006	41.46	138	0%	N/A	No
L-6007	5.62	138	0%	N/A	No
L-6008	18.05	138	0%	N/A	No
L-6009	9.94	138	0%	N/A	No
L-6010	16.1	138	0%	N/A	No
L-6011	30.04	138	0%	N/A	No
L-6012	40.48	138	7%	N/A	No
L-6013	42.5	138	0%	N/A	No
L-6014	4.61	138	0%	N/A	No
L-6015	42.51	138	0%	N/A	No
L-6016A	11.01	138	0%	N/A	No
L-6016B	17.12	138	0%	N/A	No
L-6020	57.4	138	0%	N/A	No
L-6021	58.63	138	0%	N/A	No
L-6024	111.62	138	0%	N/A	No
L-6025	42.28	138	0%	N/A	No
L-6033	12.22	138	0%	N/A	No
L-6035	10.59	138	0%	N/A	No
L-6038	5.49	138	0%	N/A	No
L-6040	9.55	138	0%	N/A	No
L-6042	17.1	138	0%	N/A	No
L-6043	28.89	138	0%	N/A	No
L-6044	8.07	138	0%	N/A	No
L-6047	9.39	138	0%	N/A	No
L-6048	10.3	138	0%	N/A	No
L-6050	3.82	138	0%	N/A	No
L-6051	27.45	138	0%	N/A	No
L-6052	3.75	138	0%	N/A	No
L-6053	17.72	138	0%	N/A	No
L-6054	25.15	138	7%	N/A	No
L-6055	6.17	138	0%	N/A	No
L-6503	66.11	138	21%	N/A	Yes
L-6507	21.81	138	0%	N/A	No
L-6508	21.86	138	0%	N/A	No
L-6510	12.49	138	12%	N/A	No
L-6511	36.22	138	24%	N/A	Yes
L-6512	2.16	138	0%	N/A	No
L-6514	19.93	138	18%	N/A	No
L-6515	49.25	138	0%	N/A	Yes
L-6516	127.19	138	0%	N/A	No
L-6517	11.37	138	0%	N/A	No
L-6518	11.1	138	0%	N/A	No
L-6521	1.6	138	0%	N/A	No
L-6523	2.11	138	0%	N/A	No
L-6527	1.66	138	25%	N/A	No
L-6531	41.23	138	0%	N/A	No
L-6533	13.79	138	0%	N/A	No
L-6534	13.84	138	0%	N/A	No
L-6535	0	138	2%	N/A	No
L-6536	59.17	138	27%	N/A	No
L-6537	94.27	138	23%	N/A	No
L-6538	35.45	138	0%	N/A	No
L-6539	35.28	138	6%	N/A	No
L-6543	0.2	138	0%	N/A	No
L-6545	45.16	138	0%	N/A	No
L-6548	0.46	138	0%	N/A	No
L-6549	45.21	138	0%	N/A	No
L-6551	12.83	138	6%	N/A	No
L-6552	18.92	138	17%	N/A	Yes
L-6613	65	138	9%	N/A	No
L-7001	73.4	230	3%	N/A	Yes

Attachment 1. Transmission Corridor Widening (2016 to 2025)

Line	Total Line Length (km)	Voltage (kV)	% of Line completed (2016-2024)	Vegetation Mangement Cost	NERC Vegetation Management Requirement
L-7002	75.05	230	12%	N/A	Yes
L-7003	159.95	230	19%	N/A	Yes
L-7004	130.34	230	25%	N/A	Yes
L-7005	159.5	230	4%	N/A	Yes
L-7008	85.43	230	4%	N/A	Yes
L-7009	92.45	230	14%	N/A	Yes
L-7011	102.93	230	0%	N/A	Yes
L-7012	103	230	0%	N/A	Yes
L-7014	36.86	230	0%	N/A	Yes
L-7015	46.86	230	0%	N/A	Yes
L-7018	73.81	230	0%	N/A	Yes
L-7019	29.59	230	8%	N/A	Yes
L-7021	36.42	230	0%	N/A	Yes
L-7022	36.46	230	0%	N/A	Yes
L-8001	120.83	345	3%	N/A	Yes
L-8002	105.86	345	2%	N/A	Yes
L-8003	54.42	345	9%	N/A	Yes
L-8004	209.82	345	0%	N/A	Yes

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1 **Undertaking U-12:**

2

3 **To provide the vegetation management costs for the lines listed at Attachment 1 of the**
4 **response to NSEB IR-127(a).**

5

6 Response U-12:

7

8 Please refer to U-11.

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1 **Undertaking U-13:**

2

3 **To provide an explanation of “N/A” on the chart on Attachment 1 of the response to NSEB**
4 **IR-127(a).**

5

6 Response U-13:

7

8 Please refer to U-11.

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Undertaking U-14:

To provide the annual data on tree contacts on the 69kV lines after the Vegetation Management Program started.

Response U-14:

All tree contact events (momentary and sustained) on the 69kV Transmission system for the period 2009-2025 (including periods prior to Post Tropical Storm Arthur) are provided as Attachment 1.

Event Date	Line	Voltage kV	Cause
8/23/2009	L-5011	69	Tree Contact
9/9/2009	L-5555	69	Tree Contact
2/26/2010	L-5532	69	Tree Contact
2/26/2010	L-5031	69	Tree Contact
3/1/2010	L-5530	69	Tree Contact
3/25/2010	L-5535	69	Tree Contact
5/4/2010	L-5565	69	Tree Contact
7/28/2010	L-5040	69	Tree Contact
9/4/2010	L-5510	69	Tree Contact
10/15/2010	L-5017	69	Tree Contact
11/5/2010	L-5531	69	Tree Contact
12/13/2010	L-5017	69	Tree Contact
12/13/2010	L-5053	69	Tree Contact
12/13/2010	L-5020	69	Tree Contact
12/13/2010	L-5033	69	Tree Contact
12/13/2010	L-5532	69	Tree Contact
12/14/2010	L-5015	69	Tree Contact
12/14/2010	L-5549	69	Tree Contact
12/14/2010	L-5548	69	Tree Contact
12/27/2010	L-5053	69	Tree Contact
12/27/2010	L-5033	69	Tree Contact
12/27/2010	L-5033	69	Tree Contact
1/21/2011	L-5024	69	Tree Contact
4/5/2011	L-5535	69	Tree Contact
5/22/2011	L-5053	69	Tree Contact
8/29/2011	L-5017	69	Tree Contact
10/5/2011	L-5549	69	Tree Contact
10/30/2011	L-5531	69	Tree Contact
10/30/2011	L-5053	69	Tree Contact
11/11/2011	L-5028	69	Tree Contact
12/8/2011	L-5028	69	Tree Contact
1/13/2012	L-5535	69	Tree Contact
2/25/2012	L-5533	69	Tree Contact
6/25/2012	L-5053	69	Tree Contact
9/13/2012	L-5053	69	Tree Contact
12/18/2012	L-5040	69	Tree Contact
1/17/2013	L-5511	69	Tree Contact
2/18/2013	L-5017	69	Tree Contact
4/26/2013	L-5535	69	Tree Contact
11/27/2013	L-5544	69	Tree Contact
11/28/2013	L-5531	69	Tree Contact
12/27/2013	L-5021	69	Tree Contact

1/12/2014	L-5531	69	Tree Contact
1/19/2014	L-5549	69	Tree Contact
1/26/2014	L-5501	69	Tree Contact
3/26/2014	L-5535	69	Tree Contact
3/15/2014	L-5581	69	Tree Contact
3/29/2014	L-5537	69	Tree Contact
3/31/2014	L-5532	69	Tree Contact
7/5/2014	L-5535	69	Tree Contact
7/5/2014	L-5536	69	Tree Contact
7/5/2014	L-5537	69	Tree Contact
7/5/2014	L-5530	69	Tree Contact
7/5/2014	L-5541	69	Tree Contact
7/5/2014	L-5015	69	Tree Contact
7/5/2014	L-5026	69	Tree Contact
7/11/2014	L-5544	69	Tree Contact
10/3/2014	L-5028	69	Tree Contact
10/27/2014	L-5016	69	Tree Contact
1/27/2015	L-5581	69	Tree Contact
5/23/2015	L-5033	69	Tree Contact
10/29/2025	L-5524	69	Tree Contact
1/11/2016	L-5053	69	Tree Contact
1/13/2016	L-5535	69	Tree Contact
1/13/2016	L-5547	69	Tree Contact
1/29/2016	L-5512	69	Tree Contact
2/16/2016	L-5055	69	Tree Contact
2/28/2016	L-5541	69	Tree Contact
3/2/2016	L-5055	69	Tree Contact
3/3/2016	L-5532	69	Tree Contact
4/3/2016	L-5539	69	Tree Contact
10/18/2016	L-5033	69	Tree Contact
12/18/2016	L-5532	69	Tree Contact
1/24/2017	L-5535	69	Tree Contact
2/13/2017	L-5530	69	Tree Contact
2/13/2017	L-5545	69	Tree Contact
2/13/2017	L-5547	69	Tree Contact
3/14/2017	L-5031	69	Tree Contact
3/15/2017	L-5014	69	Tree Contact
3/31/2017	L-5547	69	Tree Contact
9/7/2017	L-5031	69	Tree Contact
9/20/2017	L-5033	69	Tree Contact
10/26/2017	L-5536	69	Tree Contact
11/17/2017	L-5033	69	Tree Contact
11/17/2017	L-5547	69	Tree Contact
11/23/2017	L-5028	69	Tree Contact

11/23/2017	L-5505	69	Tree Contact
12/25/2017	L-5541A	69	Tree Contact
12/25/2017	L-5547	69	Tree Contact
1/4/2018	L-5544	69	Tree Contact
1/8/2018	L-5031	69	Tree Contact
3/8/2018	L-5031	69	Tree Contact
3/8/2018	L-5532	69	Tree Contact
3/13/2018	L-5530	69	Tree Contact
3/13/2018	L-5541	69	Tree Contact
3/13/2018	L-5547	69	Tree Contact
3/14/2018	L-5547	69	Tree Contact
10/16/2018	L-5546	69	Tree Contact
10/21/2018	L-5561A	69	Tree Contact
11/3/2018	L-5533	69	Tree Contact
11/21/2018	L-5531	69	Tree Contact
11/29/2018	L-5040	69	Tree Contact
11/29/2018	L-5549	69	Tree Contact
6/21/2019	L-5016	69	Tree Contact
8/13/2019	L-5015	69	Tree Contact
9/7/2019	L-5011	69	Tree Contact
9/7/2019	L-5015	69	Tree Contact
9/7/2019	L-5017	69	Tree Contact
9/7/2019	L-5026	69	Tree Contact
9/7/2019	L-5027	69	Tree Contact
9/7/2019	L-5501	69	Tree Contact
9/7/2019	L-5505	69	Tree Contact
9/7/2019	L-5512	69	Tree Contact
9/7/2019	L-5530	69	Tree Contact
9/7/2019	L-5532	69	Tree Contact
9/7/2019	L-5535	69	Tree Contact
9/7/2019	L-5544	69	Tree Contact
9/7/2019	L-5545	69	Tree Contact
9/7/2019	L-5564	69	Tree Contact
9/8/2019	L-5029	69	Tree Contact
9/8/2019	L-5533	69	Tree Contact
10/17/2019	L-5535	69	Tree Contact
11/1/2019	L-5533	69	Tree Contact
11/29/2019	L-5551	69	Tree Contact
12/10/2019	L-5538	69	Tree Contact
4/10/2020	L-5532	69	Tree Contact
9/30/2020	L-5532	69	Tree Contact
12/5/2020	L-5544	69	Tree Contact
7/15/2021	L-5532	69	Tree Contact
7/22/2021	L-5040	69	Tree Contact

8/24/2021	L-5017	69	Tree Contact
12/11/2021	L-5536	69	Tree Contact
1/7/2022	L-5533	69	Tree Contact
2/8/2022	L-5541	69	Tree Contact
3/8/2022	L-5028	69	Tree Contact
4/19/2022	L-5532	69	Tree Contact
9/23/2022	L-5003	69	Tree Contact
9/24/2022	L-5003	69	Tree Contact
9/24/2022	L-5029	69	Tree Contact
9/24/2022	L-5040	69	Tree Contact
9/24/2022	L-5501	69	Tree Contact
9/24/2022	L-5548	69	Tree Contact
9/24/2022	L-5561A	69	Tree Contact
9/24/2022	L-5576	69	Tree Contact
11/8/2022	L-5549	69	Tree Contact
11/20/2022	L-5026	69	Tree Contact
12/13/2022	L-5563	69	Tree Contact
12/13/2022	L-5576	69	Tree Contact
12/23/2022	L-5028	69	Tree Contact
12/23/2022	L-5501	69	Tree Contact
12/23/2022	L-5535	69	Tree Contact
9/16/2023	L-5547	69	Tree Contact
12/11/2023	L-5050	69	Tree Contact
12/18/2023	L-5026	69	Tree Contact
12/18/2023	L-5027	69	Tree Contact
1/13/2024	L-5535	69	Tree Contact
3/24/2024	L-5544	69	Tree Contact
6/19/2024	L-5539	69	Tree Contact
6/20/2024	L-5011	69	Tree Contact
8/8/2024	L-5053	69	Tree Contact
1/10/2025	L-5508	69	Tree Contact

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Undertaking U-15:

To provide a revised Figure 35 from Exhibit N-1 to show 2025 actuals rather than 2025 forecast.

Response U-15:

Please refer to Attachment 1.

U-15 Attachment 1

Project #	CI #	Project Title	2024 Actual	2025 Budget	2025 Actuals	2026 ACE Plan
G001	10634	CT - Routine Equipment Replacements	319,592	305,936	131,672	301,648
H001	11622	HYD - Routine Equipment Replacement	1,000,346	951,549	1,261,532	223,356
H004	27867	HYD - Roofing Routine	146,615	132,189	199,434	241,392
S001	10645	POT - Routine Equipment Replacement	202,363	227,451	990,578	223,262
	10673	TRE - Routine Equipment Replacement	523,902	385,427	464,408	322,170
	43646	PHB - Routine Equipment Replacement	274,519	232,603	138,728	230,940
	10621	TUC - Routine Equipment Replacement	(1,058,413)	378,649	487,338	349,897
	10626	LIN - Routine Equipment Replacement	335,953	397,910	563,401	397,319
S004	27856	TRE - Roofing Routine	95,993	269,732	62,737	122,842
	27855	POT - Roofing Routine	145,501	134,857	258,867	132,813
	27854	TUC - Roofing Routine	32,082	50,571	26,342	50,709
	C0068934	PHB - Roofing Routine	-	125,774	-	167,434
	27857	LIN - Roofing Routine	143,056	176,095	-	189,111
W001	41830	Wind - Routine Equipment Replacement	957,304	1,548,773	1,543,958	1,512,669
		Generation Equipment Replacements Total	3,118,815	5,317,515	6,128,958	4,465,562
H005	35583	HYD - Oil Release Risk Assessment	401,047	459,164	395,195	472,672
H006	35584	HYD - Gate Refurbishment	193,592	208,428	217,905	227,557
	C0053718	HYD - Dam Safety Routine	608,240	684,627	486,803	690,547
		Generation Hydro Total	1,202,879	1,352,219	1,099,903	1,390,776
S005	C0068935	PHB - Heat Rate Routine	-	125,023	-	126,799
	33871	TUC - Heat Rate Routine	85,150	87,482	31,575	87,489
	33867	POT - Heat Rate Routine	58,413	107,264	72,810	104,395
	33869	TRE - Heat Rate Routine	167,447	79,311	28,882	66,212
	33863	LIN - Heat Rate Routine	225,786	76,863	66,560	80,705
		Generation Thermal Total	536,796	475,944	199,826	465,600
T003	23120	Provincial - Trans Substation Primary	3,298,931	3,450,150	3,644,116	3,122,388
T004	23121	Provincial - Substation Additions & Replacements	1,028,268	925,361	600,202	902,743
		Transmission Subs Replace, Adds/Mods Total	4,327,200	4,375,511	4,244,318	4,025,131
T018	14973	Primary Equipment Spares	91,829	300,000	14,422	192,433
		Primary Equipment Spares Total	91,829	300,000	14,422	192,433
T016	14841	Protection Modification & Replacement	1,006,327	987,791	531,789	862,088
		Protection Modification & Replacement Total	1,006,327	987,791	531,789	862,088
T001	23115	Provincial Transmission Line Replace	3,135,399	3,274,053	1,724,043	3,322,385
T011	23118	Provincial Planned Trans Line Replacement	6,193,581	6,055,258	4,287,071	5,680,154
T020		Transmission Switch & Breaker Replacements	-	-	-	2,326,441
T030*		Transmission Tower Life Extension / Replacement	-	-	-	2,266,774
		Transmission Line Replacements Total	9,328,980	9,329,311	6,011,114	13,595,755
T010	43827	Transmission Right of Way Widening	610,491	2,999,500	2,881,238	3,314,050
		Transmission Right-of-Way Widening Total	610,491	2,999,500	2,881,238	3,314,050
D009	26496	Meter Routine	4,243,038	4,876,834	3,733,502	3,870,540
		Meters Total	4,243,038	4,876,834	3,733,502	3,870,540
D005	23158	Unplanned Replace Deteriorated	26,385,283	21,246,256	21,501,960	22,418,590
D006	23135	Regulatory Replacements - Province	3,984,809	4,124,211	3,894,283	4,118,292
D008	23361	Provincial Storm	1,254,914	8,023,575	3,579,779	6,927,211
D051	29038	System Performance Improvement Routine	788,225	729,719	842,427	1,099,867
D055	23137	Planned Replacement Of Distribution	12,512,179	10,620,862	21,980,684	15,000,016
D020*		2026 Padmount Replacement Program	-	-	-	2,278,256
		Distribution Upgrades and Replacement Total	44,925,409	44,744,622	51,799,132	51,842,231
D004	26716	New Customer Upgrades	20,888,924	17,342,537	17,940,203	19,283,936
D018	23511	Primary Equipment Spares - Distribution	86,160	160,000	12,725	162,391
D061	39766	New Customers - Residential	40,528,401	39,490,277	35,169,382	36,063,099
D062	39770	New Customers - Commercial	13,455,991	12,451,243	11,977,397	12,328,071
		New Customers Total	74,959,476	69,444,057	65,099,707	67,837,497
D007	23136	Contractual Replacements (Joint Use)	3,579,613	4,581,202	2,553,346	3,723,004
		Joint Use Total	3,579,613	4,581,202	2,553,346	3,723,004
D010	23127	Provincial Widening	9,945,185	12,502,942	11,944,226	13,223,181
		Right of Way Widening Total	9,945,185	12,502,942	11,944,226	13,223,181
P006	20945	Replacement and Additional Work Vehicles	472,697	1,098,000	969,843	417,500
P063	39304	Class 3 Work Vehicle Replacements	339,902	300,000	452,503	740,000
P062	39305	Work Vehicle Replacements	1,318,804	11,590,824	11,756,540	15,452,790
P061	40236	Transportation Vehicle Replacements	5,617,771	6,210,205	6,494,116	6,568,400
		Work Vehicles Total	7,749,175	19,199,029	19,673,002	23,178,690
P002/P016		Meter Shop - Tools and Equipment	2,139,286	1,794,409	1,919,787	2,597,197
P015	11611	Hydro Production Tools, Test Equipment	9,542	127,517	144,473	131,343
		Tools and Test Equipment Total	2,148,827	1,921,927	2,064,260	2,728,540
P025	16365	Mobile Radio Routine	234,110	238,819	248,573	224,550
P027	16551	Telecommunication Radio and Fibre Optics	189,831	222,168	209,213	222,400
P028	16550	Telecommunication Systems Replace & Modifications	994,759	741,326	684,870	852,510
P814	38243	Telecommunications Spares	178,899	184,700	204,639	208,261
		Telecommunications Total	1,597,599	1,387,013	1,347,295	1,507,720
P010	16073	SCADA Improvements Routine	66,249	50,596	64,797	120,428
P031	29114	NS Power IT Infrastructure	280,976	2,568,500	3,463,930	2,528,500
	C0061443	IT - WAM Capital Enhancement Routine	1,732,283	1,677,413	1,183,356	1,625,040
P040	28522	CT's DCMS Routine	53,212	20,229	4,618	21,177
	25667	POT - DCMS Equipment Replacement Routine	69,274	35,000	14,595	29,250
	25626	TRE - DCMS Equipment Replacement Routine	7,737	28,750	7,778	32,551
	25646	TUC - DCMS Equipment Replacement Routine	81,230	56,000	26,144	57,000

25668	LIN - DCMS Equipment Replacement Routine	23,274	34,992	15,112	39,973
	Computing Asset Management Total	2,314,236	4,471,479	4,780,329	4,453,919
P001/P03C 11744	Property Improvement and Furniture	3,393,573	4,882,004	4,125,290	4,797,200
	Property Improvement and Furniture Total	3,393,573	4,882,004	4,125,290	4,797,200
P012/P04120706	Other (HYD - Security Improvement & FAC - Land Acquisition)	528,890	600,720	365,226	590,100
P018 48158	Environment Equipment Replacement Routine	117,146	100,000	60,130	100,000
P816 38897	FAC Enviro Property Remed Routine	259,842	325,000	128,314	325,000
P815 38896	FAC Environment Site Assess Routine	189,390	325,000	293,753	325,000
P032 38848	Purchasing Equip & Warehouse Routine	203,374	100,000	120,097	100,000
	Other Total	1,298,642	1,450,720	967,520	1,440,100
Routine Capital Spending		176,378,090	194,599,619	189,199,211	206,914,017

*The table above includes three new Routine Categories; Transmission Tower Refurbishment / Life Extension, Transmission Switch & Breaker Replacement and Padmount Replacement Program. These have been added to the Routine Program as they are investments that occur year over year, with no planned end date at this time. Including these as routines as opposed to stand-alone projects for approval improves regulatory efficiency, while still providing a similar level of transparency on project costs.

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Undertaking U-16:

To determine what caused the variance between the \$6 million shown in N-18 and the \$9.5 million forecast; to indicate whether any of the 2025 line transmission replacement work has been deferred to 2026.

Response U-16:

T001 – Transmission Line Replacements was ultimately underspent because there were fewer storm impacts and reactive events on transmission lines than originally forecast and compared to previous years.

T011 – Provincial Planned Transmission Line was underspent due to outage availability impacting the ability of planned work to take place as well as engineering which requires additional reviews of scope before execution. Any work originally planned but not completed in 2025 was carried forward to 2026 and is included in the 2026 budget.

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Undertaking U-17:

Regarding Figure 2 in Exhibit N-1: to confirm which numbers are correct for 2024 – the numbers in Figure 2 Exhibit N-1 or the numbers in Exhibit N-6(i) response to NSEB IR-3.

Response U-17:

IR-3 Attachment 1 is correct. Figure 2 of the 2026 ACE Plan Application incorrectly included the 2024 ACE Plan budget total of \$433.1M, and should have included the 2024 actuals of \$487.2M.

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Undertaking U-18:

To review the IR response to the revised CA IR-19 (Exhibit N-8) and provide the number of outage events by year and tree contact outage events by year for each feeder listed in Attachment 1 of the application for C0080266 (Exhibit N-1, pdf pg. 413). Also to add the 2025 condition ratings for the same feeders.

Response U-18:

The “feeders” listed in C0080266 Attachment 1 (Exhibit N-1, pdf pg. 413), are defined at the feeder section level. Please refer to Attachment 1 where outage data is aggregated and reported at the feeder source level. Outage event data includes all events, including Major Event Days. In 2025, vegetation condition assessments were enhanced through the integration of satellite imagery, improving data accuracy, visibility, and overall condition evaluation quality.

Feeder Section	Feeder Source	# of Kms Completed	2023 Condition	2024 Condition	Change*	2025 Condition	Change*
103W-312	103W-312	15	5	3	2	3	0
10C-211	22C-404	7	3	2	1	2	0
126H-313	126H-313	7	4	3	1	3	0
127H-411	127H-411	12	5	3	2	3	0
12V-302G	12V-302	6	5	3	2	3	0
16N-301	16N-301	8	5	3	2	3	0
16V-315	16V-315	10	3	3	0	3	0
16V-315G	16V-315	8	5	3	2	5	-2
16W-302J	16W-302	9	3	3	0	3	0
18V-412	18V-412	22	3	3	0	3	0
1N-402	1N-402	5	5	3	2	3	0
1N-402G	1N-402	8	3	3	0	3	0
1N-402GA	1N-402	10	3	2	1	2	0
1N-402GB	1N-402	11	4	3	1	3	0
1V-443	1V-443	13	5	3	2	3	0
20V-311	20V-311	6	3	3	0	3	0
22C-404	22C-404	15	3	3	0	3	0
22N-403	22N-403	7	3	3	0	3	0
22N-403G	22N-403	15	2	2	0	2	0
23W-301	23W-301	11	3	2	1	2	0
24C-442	24C-442	9	3	1	2	1	0
24C-442G	24C-442	6	5	3	2	3	0
24C-442GA	24C-442	7	5	2	3	2	0
24C-443	24C-443	41	3	2	1	2	0
25W-301	25W-301	7	3	3	0	4	-1
36W-304	36W-304	7	5	3	2	3	0
3N-412	3N-412	9	3	2	1	2	0
4C-424	4C-424	8	3	3	0	3	0
4C-430	4C-430	9	5	3	2	3	0
4C-432	4C-432	12	3	3	0	3	0
4C-432G	4C-432	9	3	3	0	3	0
4N-313G	4N-313	32	3	2	1	2	0
4N-313GB	4N-313	8	2	1	1	2	-1
4N-313H	4N-313	7	2	2	0	2	0
503N-311	56N-414	5	2	1	1	1	0
503N-321	56N-414	17	3	1	2	1	0
509N-301	56N-414	19	3	1	2	1	0
516C-311G	24C-442	12	5	2	3	2	0
516N-311	62N-415	9	3	2	1	2	0
517C-301	24C-443	6	3	3	0	3	0
518N-311	62N-416	17	5	1	4	1	0
528C-301	4C-430	8	3	2	1	2	0
55V-313JB	55V-313	6	3	3	0	3	0
568C-311	58C-405	11	5	3	2	5	-2
56N-414	56N-414	11	3	2	1	2	0
56N-414G	56N-414	9	3	3	0	3	0

Feeder Source	All Outages						Tree Contacts					
	2020	2021	2022	2023	2024	2025	2020	2021	2022	2023	2024	2025
103W-312	46	39	128	127	46	53	16	15	63	55	15	21
22C-404	129	118	204	132	105	91	11	12	28	10	14	7
126H-313	20	22	62	44	26	34	1	5	24	11	9	4
127H-411	43	41	114	126	48	64	9	14	57	47	7	20
12V-302	76	35	112	60	38	36	12	7	23	13	13	6
16N-301	31	51	128	44	29	34	6	16	39	8	2	4
16V-315	29	19	45	38	16	22	10	4	7	7	1	2
16W-302	67	34	83	109	73	47	34	12	20	39	23	15
18V-412	35	26	48	35	10	28	10	4	19	6	2	8
1N-402	47	75	132	106	67	104	9	19	33	29	11	19
1V-443	60	54	218	149	57	67	32	24	134	61	25	28
20V-311	27	50	73	43	23	27	4	4	16	12	6	6
22N-403	20	25	59	53	32	22	3	5	11	16	4	3
23W-301	15	15	16	18	12	11	6	1	3	4	6	3
24C-442	71	45	60	32	38	42	7	9	14	5	2	2
24C-443	65	46	125	91	78	52	10	9	39	16	21	9
25W-301	55	52	57	70	33	34	24	15	23	27	12	5
36W-304	20	30	16	23	11	11	6	6	4	3	2	1
3N-412	19	19	55	45	21	37	5	9	21	9	5	7
4C-424	35	31	122	87	51	51	4	6	62	29	13	12
4C-430	101	105	379	153	124	158	18	24	225	64	23	42
4C-432	48	54	140	61	59	70	4	10	78	14	11	17
4N-313	44	49	255	149	64	54	17	16	100	65	19	18
56N-414	141	166	472	325	142	209	43	29	176	133	27	48
62N-415	68	41	228	87	27	75	14	18	108	30	3	15
62N-416	55	51	184	104	67	76	7	6	67	35	7	13
55V-313	81	53	103	79	42	55	21	8	31	24	5	14
58C-405	84	119	118	92	103	141	12	28	27	30	19	54
57C-426	62	104	207	93	111	63	11	23	75	28	28	15
57S-401	112	133	292	158	101	155	22	46	59	34	19	16
100C-421	85	91	100	76	64	57	17	21	10	11	6	5
59C-402	91	119	251	118	119	74	23	24	64	24	31	9
22C-402	33	50	104	44	37	25	3	11	25	12	8	5
62N-413	64	94	332	168	89	81	8	29	159	66	16	29
79V-401	56	71	119	142	49	81	11	25	60	58	13	38
30N-412	33	17	41	41	23	37	4	2	7	9	3	5
6N-301	7	12	33	24	14	9	1	1	6	6	0	1
70V-312	44	28	84	49	33	59	19	11	13	15	5	7
70W-313	84	71	107	137	71	71	27	17	30	24	12	14
73W-411	254	188	557	533	238	312	85	60	181	189	70	96
74N-412	20	32	77	46	24	29	5	9	19	14	3	3
88H-402	75	90	315	190	85	103	28	21	73	74	21	35
91W-411	81	50	114	159	74	83	30	15	28	38	28	30

Feeder Section	Feeder Source	# of Kms Completed	2023 Condition	2024 Condition	Change*	2025 Condition	Change*
57C-426G	57C-426	11	3	2	1	2	0
57S-401	57S-401	11	2	2	0	2	0
580C-311	4C-430	7	5	1	4	1	0
583C-211	100C-421	10	3	1	2	1	0
585C-311	4C-424	12	5	3	2	5	-2
585C-311G	4C-424	14	5	3	2	5	-2
587C-311G	59C-402	7	3	1	2	1	0
59C-402G	59C-402	19	2	1	1	1	0
605C-311	22C-402	10	3	1	2	1	0
62N-413	62N-413	7	3	3	0	3	0
62N-413J	62N-413	6	2	3	-1	2	1
62N-416G	62N-416	6	1	3	-2	2	1
642V-311	79V-401	7	5	3	2	3	0
644N-311	62N-416	10	5	1	4	1	0
65N-201	30N-412	6	3	1	2	1	0
6N-301	6N-301	6	3	3	0	3	0
70V-312H	70V-312	18	3	3	0	3	0
70W-313G	70W-313	5	5	5	0	5	0
73W-411	73W-411	8	5	3	2	3	0
73W-411GB	73W-411	7	5	3	2	3	0
73W-411GCA	73W-411	8	4	3	1	3	0
74N-412	74N-412	16	3	2	1	1	1
74N-412G	74N-412	18	5	1	4	1	0
88H-402G	88H-402	9	3	2	1	2	0
91W-411	91W-411	9	3	2	1	3	-1

** In some cases, the overall condition average condition (combined vegetation assessment and reliability indicators) for the of the feeder was satisfactory prior to completing the work, but there were localized sections on small parts of the feeder that required mitigation. This resulted in the overall condition rating of the feeder to remain the same but the rating of the individual section would see an improvement.*

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Undertaking U-19:

Regarding the response to NSEB IR-128(a): To provide more detail explaining why the cost per kilometre for 2024 and 2025 on the “D010 and New ROW Spend” went up by so much from 2023 to 2024 and 2024 to 2025.

Response U-19:

The work complete information included in NSEB IR-128(a) was incorrect for 2024 and 2025 due to a section feeders from the New ROW program not being included, and showed an inflated cost per kilometre than actually spent. Please refer to the table below with updated Spans Complete, Kilometres Complete, and % of System columns updated for 2024 and 2025.

NS Power recognizes that the cost per kilometer increased in 2024 and 2025 and continues to work with contractors to manage costs and leverage opportunities to reduce these costs wherever feasible. Multiple factors contribute to this increase, including the continued focus on removing hazard trees from beyond the ROW edge, the fire restrictions that were in place throughout a large portion of 2025 which required work to stop earlier in the day to allow for a fire watch to take place at the end of each day, contractor labour costs increasing as retention remains a significant challenge in this industry, and increases to traffic control costs across the entire vegetation program.

2026 ACE Plan (NSEB M12619)
NSPI Responses to NSEB Undertakings

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Table 1. Distribution Capital Widening Data (2019-2025)				
Year	D010 and New ROW Spend	Spans Complete	Kilometers Complete	% of System
2018	\$12,906,941	2,880	160	0.6
2019	\$8,155,355	3,582	199	0.7
2020	\$7,558,203	2,988	166	0.6
2021	\$9,790,894	5,310	295	1.1
2022	\$10,425,938	4,986	277	1.0
2023	\$15,842,568	5,094	283	1.0
2024	\$30,862,374	8,856	492	1.7
2025	\$30,451,009	8,226	457	1.6

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Undertaking U-20:

Regarding the response to NSEB IR-128 Attachment 1: to provide the total number of customer interruptions and the number of customer hours interruption for each year from 2018 to 2025 on the lines on which vegetation management work was completed.

Response U-20:

Please refer to Attachment 1 for total number of customer interruptions and number of customer hours of interruption, inclusive of all events (Major and Extreme Event Days) on feeders on which vegetation management work was completed. For analysis of the impacts and effectiveness of the totality of NS Power's vegetation management programs from 2020 to 2025, please refer to NSEB IR-184, which evaluates performance standards data excluding Major and Extreme Events across all feeders.

Year										Year									
	CEA Description	2018	2019	2020	2021	2022	2023	2024	2025		CEA Description	2018	2019	2020	2021	2022	2023	2024	2025
% Total Customer Hours of Interrupts (CHI)	Adverse Environment	0.6%	0.4%	0.2%	0.3%	0.1%	7.6%	0.5%	0.0%	CH	Adverse Environment	28,221	43,814	4,248	4,293	22,088	523,852	9,856	428
	Adverse Weather	36.3%	57.3%	23.7%	23.6%	47.3%	29.8%	14.6%	10.6%		Adverse Weather	1,581,023	6,823,122	448,261	394,965	9,627,402	2,044,001	267,785	332,051
	Defective Equipment	7.9%	4.0%	12.7%	13.9%	3.2%	4.4%	15.0%	7.9%		Defective Equipment	344,926	470,534	239,919	233,047	651,893	303,009	273,994	249,237
	Foreign Interference	2.8%	1.0%	5.7%	8.6%	0.7%	2.1%	9.7%	4.1%		Foreign Interference	123,399	119,403	106,840	143,036	143,059	146,302	176,887	128,123
	Human Element	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%		Human Element	2,483	105	281	1,703	1,202	773	89	140
	Lightning	0.0%	0.3%	1.2%	2.2%	0.2%	3.5%	1.0%	0.3%		Lightning	1,744	34,720	22,410	37,583	40,288	241,288	19,190	9,612
	Loss of Supply	17.1%	11.0%	16.2%	15.5%	10.0%	10.7%	18.0%	21.8%		Loss of Supply	745,306	1,305,649	306,192	259,067	2,036,516	733,330	329,165	682,210
	Scheduled Outage	1.0%	0.6%	3.1%	2.4%	0.4%	1.5%	9.5%	8.0%		Scheduled Outage	42,686	76,433	58,903	40,112	75,200	103,980	174,017	249,820
	Tree Contacts	27.0%	24.4%	31.9%	29.2%	37.3%	36.9%	27.7%	42.6%		Tree Contacts	1,177,132	2,910,515	602,624	488,299	7,596,775	2,528,104	506,728	1,336,878
	Unknown	7.2%	1.1%	5.3%	4.2%	0.8%	3.4%	4.0%	4.7%		Unknown	311,808	126,783	100,746	70,190	159,538	235,582	72,429	147,852
% Total Customer Interruptions (CI)	Adverse Environment	1.2%	0.8%	0.2%	0.9%	0.2%	0.7%	0.9%	0.0%	CI	Adverse Environment	12,208	9,232	1,195	5,483	3,148	8,936	6,660	206
	Adverse Weather	25.3%	28.1%	16.2%	13.8%	29.4%	18.5%	6.3%	7.3%		Adverse Weather	256,945	305,330	107,193	85,389	440,181	239,002	47,837	60,442
	Defective Equipment	14.0%	12.9%	16.8%	14.7%	11.8%	11.0%	15.1%	9.8%		Defective Equipment	142,379	140,167	110,786	91,218	176,148	142,711	113,676	80,938
	Foreign Interference	4.4%	3.9%	6.7%	7.8%	4.1%	5.1%	9.7%	6.4%		Foreign Interference	44,410	42,005	44,260	48,074	61,551	66,191	73,005	53,368
	Human Element	0.0%	0.0%	0.3%	0.1%	0.2%	0.1%	0.1%	0.0%		Human Element	112	440	1,809	753	2,652	968	978	69
	Lightning	0.1%	1.5%	1.2%	2.3%	1.0%	3.9%	1.0%	0.2%		Lightning	675	16,666	8,024	14,182	14,417	51,014	7,598	1,911
	Loss of Supply	20.9%	18.6%	23.9%	23.2%	16.3%	19.2%	26.9%	22.3%		Loss of Supply	212,137	202,293	157,994	143,291	244,303	248,152	202,901	185,474
	Scheduled Outage	2.9%	4.7%	5.6%	6.0%	2.7%	5.7%	13.9%	18.4%		Scheduled Outage	29,579	50,696	36,753	37,049	39,790	74,258	105,051	152,555
	Tree Contacts	24.4%	25.4%	23.9%	25.8%	31.1%	29.1%	22.0%	29.1%		Tree Contacts	247,746	276,518	157,884	159,800	466,022	375,838	165,741	241,373
	Unknown	6.9%	4.0%	5.2%	5.4%	3.2%	6.6%	4.1%	6.5%		Unknown	69,970	43,321	34,065	33,446	48,375	85,903	30,693	53,564
% Total Event Count	Adverse Environment	0.8%	0.4%	0.7%	0.5%	0.3%	1.0%	0.7%	0.7%		Adverse Environment								
	Adverse Weather	17.1%	38.2%	11.0%	9.4%	34.6%	20.3%	9.2%	13.9%		Adverse Weather								
	Defective Equipment	22.8%	16.0%	30.0%	26.0%	11.7%	14.3%	19.8%	15.0%		Defective Equipment								
	Foreign Interference	13.1%	7.4%	15.1%	15.0%	6.4%	8.9%	15.5%	11.2%		Foreign Interference								
	Human Element	0.1%	0.1%	0.2%	0.3%	0.1%	0.2%	0.2%	0.2%		Human Element								
	Lightning	1.3%	2.1%	3.9%	4.2%	0.9%	6.7%	3.7%	1.6%		Lightning								
	Loss of Supply	1.6%	1.5%	1.1%	1.2%	2.1%	1.4%	1.6%	1.4%		Loss of Supply								
	Scheduled Outage	1.6%	1.4%	2.9%	3.3%	1.2%	6.7%	12.7%	11.2%		Scheduled Outage								
	Tree Contacts	30.2%	25.4%	24.2%	23.7%	33.2%	29.2%	20.3%	22.6%		Tree Contacts								
	Unknown	11.4%	7.5%	10.8%	16.4%	9.5%	11.3%	16.3%	22.4%		Unknown								
Event Count	Adverse Environment	67	50	48	32	50	113	44	50		Adverse Environment								
	Adverse Weather	1,417	4,522	727	617	5,608	2,227	600	1,044		Adverse Weather								
	Defective Equipment	1,881	1,899	1,973	1,714	1,892	1,562	1,292	1,121		Defective Equipment								
	Foreign Interference	1,080	871	995	991	1,034	980	1,012	836		Foreign Interference								
	Human Element	11	11	12	19	18	18	13	14		Human Element								
	Lightning	104	248	259	280	149	730	240	118		Lightning								
	Loss of Supply	132	181	74	79	345	156	102	105		Loss of Supply								
	Scheduled Outage	136	167	194	219	194	738	830	836		Scheduled Outage								
	Tree Contacts	2,497	3,003	1,592	1,562	5,375	3,193	1,322	1,690		Tree Contacts								
	Unknown	941	883	712	1,080	1,537	1,236	1,063	1,675		Unknown								

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Undertaking U-21:

Regarding the response to NSEB IR-132: To provide an updated response to the IR, providing the cost of vegetation management work performed in 2024 on the 23 feeders that maintained or worsened their respective condition rating in 2024 compared to 2023.

Response U-21:

As noted in U-11, the specific costs per distribution feeder have not been recovered due to the impacts of the 2025 cyber incident. However, please refer to Attachment 1 for an updated C0080266 Attachment 1 which shows the estimated cost per feeder using the average cost per kilometer experienced in 2024. Details on the actual cost to complete the total capital program can be found in U-19.

The overall condition rating of a feeder can remain unchanged or even worsen if a small section of a feeder has vegetation management completed, as the improvement on that section can be offset by the condition of the remainder of the feeder causing the condition rating to become worse throughout the year being analyzed.

Feeder	# of Kms Completed	2023 Condition	2024 Condition	Change*	Estimated Capital Cost
103W-312	15	5	3	2	944,066
10C-211	7	3	2	1	446,731
126H-313	7	4	3	1	433,666
127H-411	12	5	3	2	743,401
12V-302G	6	5	3	2	390,746
16N-301	8	5	3	2	496,152
16V-315	10	3	3	0	656,913
16V-315G	8	5	3	2	479,427
16W-302J	9	3	3	0	564,951
18V-412	22	3	3	0	1,358,985
1N-402	5	5	3	2	326,852
1N-402G	8	3	3	0	473,830
1N-402GA	10	3	2	1	598,209
1N-402GB	11	4	3	1	677,967
1V-443	13	5	3	2	842,380
20V-311	6	3	3	0	403,552
22C-404	15	3	3	0	932,324
22N-403	7	3	3	0	465,437
22N-403G	15	2	2	0	926,245
23W-301	11	3	2	1	702,840
24C-442	9	3	1	2	534,027
24C-442G	6	5	3	2	394,468
24C-442GA	7	5	2	3	434,625
24C-443	41	3	2	1	2,584,284
25W-301	7	3	3	0	434,108
36W-304	7	5	3	2	444,107
3N-412	9	3	2	1	560,843
4C-424	8	3	3	0	528,602
4C-430	9	5	3	2	593,769
4C-432	12	3	3	0	726,585
4C-432G	9	3	3	0	540,882
4N-313G	32	3	2	1	1,999,896
4N-313GB	8	2	1	1	503,474
4N-313H	7	2	2	0	418,643
503N-311	5	2	1	1	315,269
503N-321	17	3	1	2	1,048,781
509N-301	19	3	1	2	1,179,017
516C-311G	12	5	2	3	775,071
516N-311	9	3	2	1	590,271
517C-301	6	3	3	0	360,799
518N-311	17	5	1	4	1,038,481

Feeder	# of Kms Completed	2023 Condition	2024 Condition	Change*	Estimated Capital Cost
528C-301	8	3	2	1	501,114
55V-313JB	6	3	3	0	392,934
568C-311	11	5	3	2	664,814
56N-414	11	3	2	1	678,346
56N-414G	9	3	3	0	577,574
57C-426G	11	3	2	1	701,531
57S-401	11	2	2	0	691,713
580C-311	7	5	1	4	463,925
583C-211	10	3	1	2	629,060
585C-311	12	5	3	2	722,839
585C-311G	14	5	3	2	849,861
587C-311G	7	3	1	2	449,947
59C-402G	19	2	1	1	1,209,624
605C-311	10	3	1	2	645,832
62N-413	7	3	3	0	440,399
62N-413J	6	2	3	-1	357,193
62N-416G	6	1	3	-2	348,529
642V-311	7	5	3	2	424,696
644N-311	10	5	1	4	627,749
65N-201	6	3	1	2	359,388
6N-301	6	3	3	0	357,857
70V-312H	18	3	3	0	1,140,146
70W-313G	5	5	5	0	325,834
73W-411	8	5	3	2	510,014
73W-411GB	7	5	3	2	441,562
73W-411GCA	8	4	3	1	479,530
74N-412	16	3	2	1	1,016,570
74N-412G	18	5	1	4	1,111,834
88H-402G	9	3	2	1	584,513
91W-411	9	3	2	1	581,959

** In some cases, the overall condition average condition (combined vegetation assessment and reliability indicators) for the of the feeder was satisfactory prior to completing the work, but there were localized sections on small parts of the feeder that required mitigation. This resulted in the overall condition rating of the feeder to remain the same but the rating of the individual section would see an improvement.*