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Bio-Resources | Building Systems | Environmental | Geotechnical | Project Management

PHASE I / II ENVIRONMENTAL SITE ASSESSMENT

(BASELINE ASSESSMENT)

CN RAIL LINE AND DALHOUSIE PORT,
DALHOUSIE, NEW BRUNSWICK
(PID#S 50234251 & 50352038)

Prepared for:

CIMBEC
Attn: Rejean Carrier

FUNDY Engineering

Serving Our Clients' Needs First

November 2024

Project No: 17712

OFFICES IN SAINT JOHN AND CLYDE RIVER

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1.3			
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1.5			

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PROFESSIONAL SEAL:

ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA

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EXECUTIVE SUMMARY

Fundy Engineering & Consulting Ltd. (Fundy Engineering) was retained by CIMBEC to undertake a Phase I / II Environmental Site Assessment of two properties located in Dalhousie, NB. The properties are identified by the New Brunswick Geographic Information Corporation as Property Identification Numbers (PID) 50234251 and 50352038. The properties have been used as a rail line and port since at least the early 1940's with a port expansion occurring sometime prior to 1963.

A Phase I Environmental Site Assessment (ESA) is a preliminary evaluation, the purpose of which is to address overall environmental concerns and determine the risk of potential and actual liabilities of the property or properties. Fundy Engineering's investigation procedure is consistent with CSA Z768-01, and therefore consists of a records review of the current and historical conditions of the property, the completion of a site visit, site interviews with personal contacts and regulatory officials that are knowledgeable of the site, and the interpretation and documenting of the findings.

On August 12th, 2024, Mr. Greg Derrah, *P.Tech., CESA* of Fundy Engineering visited the site. A thorough walkover of the site was completed to gain an understanding of the property boundaries, potential environmental concerns from the subject site, and of the readily visible adjoining properties. A site representative was available during the visit.

The Phase I ESA determined that the properties do not contain any actual environmental concerns; however, there were potential concerns associated with current and historical land use of the subject site and adjacent property use.

Phase II Environmental Site Assessment

As a result of the historical and current land activities of the subject site and multiple adjacent properties, an environmental borehole / monitoring well investigation was completed between August 12th and 15th and August 19th and 23rd. All site work started after clearance of all underground services at the site with the local utilities (*i.e.*, NB Power, Aliant Telecom, Rogers Cable, and Liberty Utilities). A meeting with the subcontractors occurred prior to any sitework to describe the site activities and any potential health and safety hazards. The rationale for the borehole and monitoring well locations was to place the boreholes adjacent and downgradient to areas of concern.

The investigation was completed by Lantech Drilling Services, under the direction of Mr. Greg Derrah, *P.Tech., CESA* of Fundy Engineering. The work was completed using a track mounted drill and included the extension of thirty-one (31) boreholes. The boreholes were extended to a maximum depth of 19.51 m (65 feet) below ground surface. Soil samples were collected for the environmental study at each 0.6 m (2 foot) interval using a standard split spoon sampler until groundwater or bedrock was encountered. For the geotechnical study soil samples were collected beyond the groundwater elevation. Bedrock was cored in four of the boreholes for geotechnical purposes. The soil conditions may be generalized as being loose sand and gravel fill with cobbles and debris over dense silty clay till on the eastern portion of the site within the Dalhousie Port property. Within the CN rail line on the western section the soils that were encountered was Fill material that was placed for the rail bed that overlies bedrock at depths of 0.6 to 1.2 meters in much of the western section of the site.

It should be noted that the assessment was limited to only soil sampling in areas outside of the secured Dalhousie Port property due to the potential of vandalism to monitoring wells that were planned to be installed.

SAMPLE ANALYTICAL RESULTS

A total of forty-one (41) soil samples and six (6) groundwater were collected and submitted to RPC Laboratories in Fredericton, NB for Petroleum Hydrocarbons analysis. The soil samples were collected from locations where contaminants would be expected to concentrate and in proximity to property boundaries of adjacent properties of concern. Fifteen (15) of the soil samples were analyzed for metals, seventeen (17) were analyzed for petroleum hydrocarbon concentrations and nine (9) were analyzed for polyaromatic hydrocarbon constituents.

Of the six water samples submitted, three (3) were analyzed for metals and three (3) were analyzed for petroleum hydrocarbon constituents. All of the sample concentrations were compared to the Atlantic Risk Based Corrective Action Ecological Tier I Environmental Quality Standards as well as the Human Health Tier I Environmental Quality Standards for commercial land use, with non-potable groundwater and course- grained soils.

Petroleum Hydrocarbons (PHCs)

Based on the (19) soil PHCs sample analyses, one of the samples was found to contain a concentration of Benzene that was above the Human Health Standards. One of the soil samples analyzed for petroleum hydrocarbon constituents (BH18) had a Benzene concentration of 0.58 mg/kg that was slightly above the guideline of 0.52 mg/kg. This sample was collected from adjacent to the Maritime Fuels Bulk Station at 475 Queen Street. The additional sixteen soil samples analyzed for hydrocarbon concentrations found to be **below** the allowable Human Health and Ecological criteria. The Benzene guideline is based on the site contaminants being in the vicinity of a building and the potential of inhalation of vapours. As there are no buildings planned for the subject site the concentration would be below Tier II Pathway Specific Target Levels and not considered a risk to human health. If this soil is required to be removed for any development on the site special consideration should be made for proper disposal of this material.

Three groundwater samples were collected from the monitoring wells that were extended on the secured Port of Dalhousie property which were submitted for PCHs. These samples were found to be **below** the allowable Human Health and Ecological standards for PHCs.

Polycyclic Aromatic Hydrocarbons (PAHs)

Based on the (9) soil PHCs sample analyses, all of the soil samples were found to be **below** the allowable Human Health and Ecological standards for PAHs. The three water samples that were collected from the Port of Dalhousie extended monitoring wells were all found to be **below** the allowable Human Health and Ecological standards for PAHs.

Heavy Metals

Each of the seventeen soil samples analyzed for metals contained at least one constituent above the allowable Ecological and Human Health guidelines. The following table

represents the constituent analyzed and the number of samples with results exceed the guideline.

Metals sample guideline exceedances.

Parameter	Ecological Tier I Standard Exceedance	Human Health Tier I Standard Exceedance
Arsenic	**7**	**5**
Cadmium	**9**	**-**
Chromium	**1**	**-**
Copper	**6**	**-**
Lead	**13**	**5**
Manganese	**-**	**1**
Thallium	**-**	**3**
Vanadium	**15**	**-**
Zinc	**15**	**-**

As a result of the work completed, the following is recommended:

- There was Benzene impacts found within one of the soil samples which were marginally above allowable guidelines. This sample was collected from adjacent to the Maritime Fuels Bulk Station at 475 Queen Street. The additional sixteen soil samples analyzed for hydrocarbon concentrations found to be below the allowable Human Health and Ecological criteria. The Benzene guideline is based on the site contaminants being in the vicinity of a building and the potential of inhalation of vapours. As there are no buildings planned for the subject site the concentration would be below Tier II Pathway Specific Target Levels and not considered a risk to human health. **If this soil is required to be removed for any development on the site special consideration should be made for proper disposal of this material**.

- The Human Health metal standards are based on Dermal Contact of the contaminants by humans. As all the samples were collected below ground surface there is no current risk to humans at the site. **If the soils are to be excavated for future development the metal impacts are required to be considered as a potential concern to the construction workers on-site and for the disposal facility if any of the material is required to be removed and disposed from the site.**

- **Although these contaminants are not a risk to the current or future human occupants of the subject site (*i.e.*, railroad and port) or the ecological receptors the Department of the Environment and Local Government should be notified of the findings of these assessments.**

- **These impacts are a result of former land activities at the site or from the adjacent properties and should be noted as a baseline prior to any site activities completed by CIMBEC.**

- **There are remaining potential risk of contaminants migrating onto the subject site from the adjacent properties from the current and historical land activities; and,**

- **It should be noted that the assessment was limited to only soil sampling in areas outside of the secured Dalhousie Port property due to the potential of vandalism to monitoring wells that were planned to be installed.**

It should be noted that the Executive Summary is subject to the same Limitations as presented in Section 6.0 of the report.

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EQUIVALENTS

1 Litre (L)	=	0.264 US gallons (gal)
1 L	=	0.220 Imperial gallons (Igal)
1 centimetre (cm)	=	0.394 inches (in)
1 metre (m)	=	3.281 feet (ft)
1 m^2	=	10.765 ft^2
1 m^2	=	2.471×10^{-4} acres
1 m^2	=	10^{-4} hectares (ha)
1 000 L	=	1 m^3
1 part per million (ppm)	=	1 milligram (mg) · L^{-1}

ACRONYMS

a.k.a.:	*also known as*
Ab:	Absent
AMSL:	Above Mean Sea Level
cm:	centimetre
e.g.:	(*exempli gratia*) for example
EIA:	Environmental Impact Assessment
EP:	Environmental Professional
et al.:	(*et alii*) and others
etc.:	*et cetera*
ha:	hectare
i.e.:	(*id est*) namely / that is
ID:	IDentification
Inc.:	Incorporated
kg:	kilogram
km:	kilometre
L:	Litre
Ltd.:	Limited
m:	metre
m^2:	metres squared
m^3:	metres cubed
MAC:	Maximum Acceptable Concentration
mg:	milligram
min:	minute
n:	statistical value that refers to the number of observations
n.b.:	(*nota bene*) note well / take note
NB:	New Brunswick
NBDELG:	New Brunswick Environment and Local Government
ND:	Non-Detect
NG:	No Guideline
P.Geo.:	Professional Geoscientist
P.Tech.:	Professional Technologist
Ph.D.:	Doctorate of Philosophy
PID:	Property Identification number
Pr:	Present
RPC:	Research and Productivity Council
%:	Care Of
° C:	degrees Celsius
%:	percent
~:	approximately
±:	plus / minus

1.0 INTRODUCTION

Fundy Engineering & Consulting Ltd. (Fundy Engineering) was retained by CIMBEC to undertake a Phase I / II Environmental Site Assessment of two industrial properties located in Dalhousie, NB. The properties are identified by the New Brunswick Geographic Information Corporation as Property Identification Numbers (PIDs) 50234251 and 50352038. The properties have been used as a rail line and port since the early 1940's with a port expansion occurring sometime before 1963.

1.1 SCOPE OF WORK

Fundy Engineering's investigation procedure is consistent with CSA Z768-01 and CSA Z769-00 (Phase II ESA) guidelines, and therefore consists of a records review of the current and historical conditions of the property, the completion of a site visit, site interviews with personnel and regulatory officials that are knowledgeable of the site, and the interpretation and documenting of the findings. In agreement with CIMBEC, Fundy Engineering has completed the following work:

- a site visit for visual inspection of the subject property and surrounding properties and interviewed persons with knowledge of the site.
- a records review that included aerial photographs, property maps, previous reports to determine if further areas required investigation. A records review from the New Brunswick Department of Environment and Local Government databases.
- clearance of all underground services prior to completing this work plan, which included the extension of multiple boreholes and monitoring wells in order to determine the deeper soil and groundwater conditions at each site.
- a total of forth-one (41) soil samples and six (6) groundwater samples were submitted for analysis; and,
- project reporting including all details of the work completed, figures, borehole investigation for ecological receptors, analytical results, etc. to serve as a permanent record for environmental work completed. The purpose of the assessment was to determine if contaminants are present within the subsurface soils and / or groundwater contamination, potential migration pathways and determine which receptors are at risk (human and / or ecological).

Any special terms and / or conditions (*i.e.*, limited access to certain areas or limited sampling) for this project, outside of the standard scope of services, are detailed in Section 5.1.

2.0 SITE DESCRIPTION

2.1 SITE CONDITIONS

The property ownership is listed according to the Service New Brunswick database as Canadian National Railway Company (PID# 50234251) and Port of Dalhousie Inc. (PID 50352038). The properties are in Restigouche County, in the Parish of Dalhousie. The subject properties are irregular in shape. The total assessed area measures approximately 23.2 Ha. Much of the assessed property area borders Heron Bay to the north and west. The surrounding residential properties rely on the Town of Dalhousie municipal water and sewage treatment. The property was found to be free of any standing water. There are no buildings on the assessed areas of the properties. The property is not located within a wellfield protected zone. The Service New Brunswick records are in Appendix I.

2.2 SURROUNDING LAND USE

Information regarding adjacent properties directly surrounding the subject site is listed below. It should be noted that the historical information is based on available aerial photograph, city directory, and fire insurance review.

Direction from Site:	North (Adjoining)
Current Use:	Mainly vacant wood lots and Heron Bay with the exception of a former chemical plant, trailer park and marina.
Historical Land Use:	Similar land use since the early 1970s.
Topography in relation to subject site:	Down-gradient
Potential Environmental Concern:	No

Direction from Site:	South (Adjoining and Across Roadways)
Current Use:	Mainly residential land use except for a graveyard, bulk petroleum plant and a former service garage
Historical Land Use:	Similar land use since the 1960s.
Topography in relation to subject site:	Up-gradient
Potential Environmental Concern:	Yes. More details are provided in Section 5.2.1.

Direction from Site:	East (Adjoining)
Current Use:	The properties to the east are used as a car dealership with service garage, former paper mill and a NB Power Plant
Historical Land Use:	Similar land activities since the 1970s.
Topography in relation to subject site:	Cross-gradient
Potential Environmental Concern:	Yes. More details are provided in Section 5.2.1.

Direction from Site:	West (Adjoining)
Current Use:	Vacant woodlot and residential land use
Historical Land Use:	Similar land use since the 1970s.
Topography in relation to subject site:	Cross-gradient
Potential Environmental Concern:	No

A site plan showing the location of the subject site and the adjacent properties of concern are shown on Figure 1, below.

2.3 LOCALIZED SOIL AND GEOLOGY

The localized bedrock geology is part of the Dalhousie Group and the Gaspe Sandstones Group with portions of the subject sites classified as both the Val D'Amour Formation and the Campbellton Formation. The Val D'Amour Formation is defined as "greyish-green to greyish maroon aphyric to feldsparphyric dactic to andesitic flows: minor intercalated volcaniclastic rocks". (Wilson et al. 2003. (*NTS 21 O/15E), Geology of the Campbellton area (NTS 21 O/15), Restigouche County, New Brunswick).* The Campbellton Formation is defined as "light grey to light green, arkosic, fine to very coarse-grained sandstone, medium to dark grey, thin to medium bedded mudstone and dark grenn or maroon volcaniclastic conglomerate". (Ami 1900a. (*NTS 22 B/02E), Synopsis of the geology of Canada).*

The overburden soil material is classified as; Marine Sediments: blankets and plains, sand, silt and minor clay and gravel generally 0.5 to 3.0 meters thick "deposited in shallow marine water, locally deep, which submerged coastal areas and sections of many valleys during and following Late Wisconsinan deglaciation".generally 0.5 to 3.0 meters thick *(Rampton, V.N. 1984. Generalized Surficial Geology Map of New Brunswick Department of Natural Resources and Energy, Minerals, Policy and Planning Division, NR-8 (scale 1: 500,000).*

2.4 SITE TOPOGRAPHY / INFERRED GROUNDWATER FLOW DIRECTION

The site topography is sloped in a north-westerly direction. This was found by reviewing a topographic map (1: 50,000) and confirmed during the site visit. The inferred groundwater flow direction would be expected to be in a north westerly direction based on the site topography.

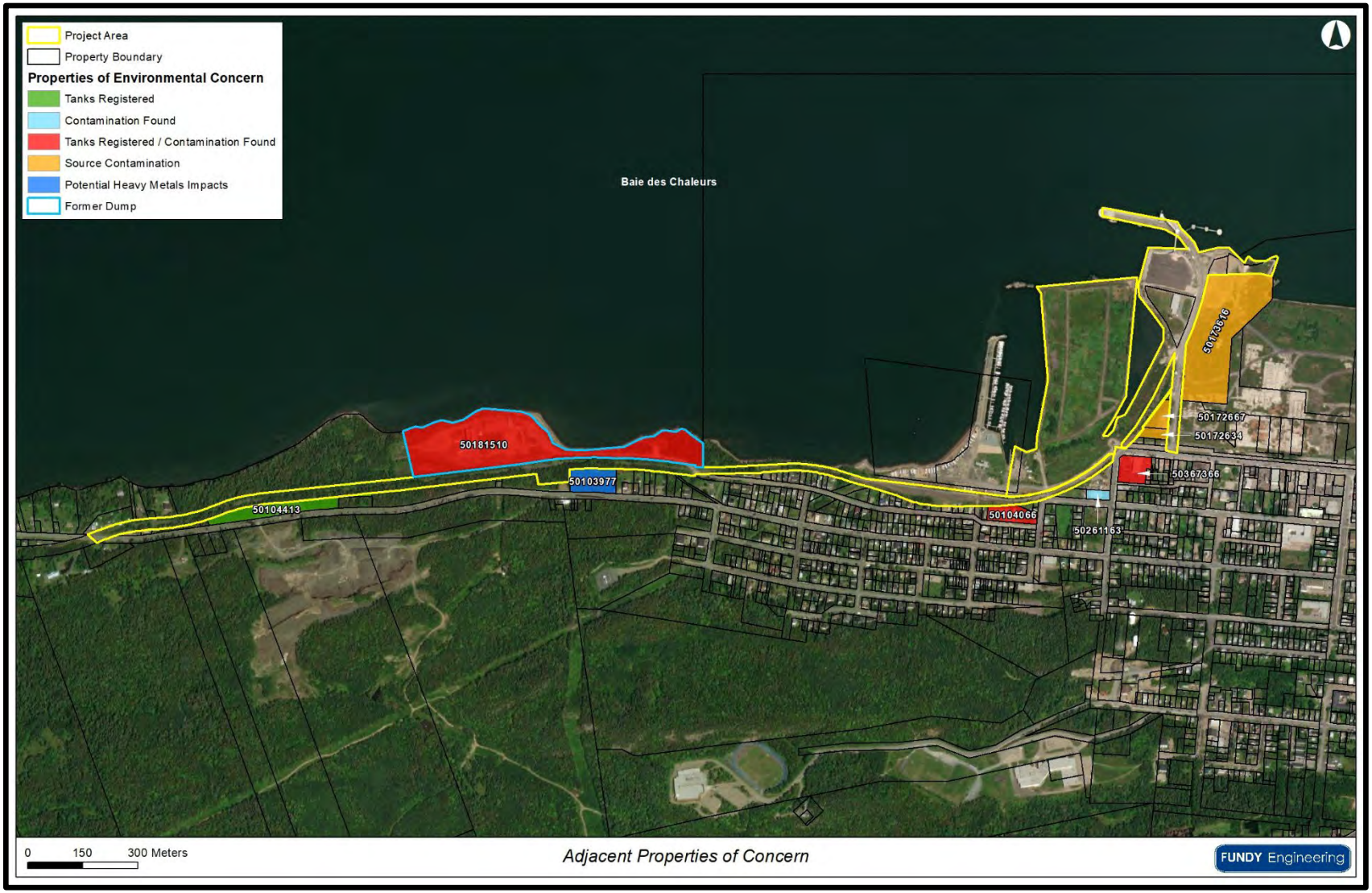


Figure 1. Aerial photograph showing the subject site and the adjacent properties of concern.

3.0 REGULATORY FRAMEWORK

The management of the environment, with respect to the most frequently encountered environmental concerns, is regulated by agencies of the Provincial and Federal Government. A listing of the potential environmental concerns, regulatory agency, and the appropriate guideline document are as shown in Table 1.

Table 1. Regulatory framework used to note potential environmental concerns, regulatory agency / agencies, and applicable guideline.

Potential Environmental Concern	Regulatory Agency / Agencies	Applicable Guideline
Asbestos	Work Safe NB	A Code for Working with Materials Containing Asbestos in New Brunswick
Petroleum Hydrocarbons Storage	NB Department of the Environment and Local Government	Construction Standards for Installation and Removal of Petroleum Storage Systems
Petroleum Hydrocarbons Release into Subsurface	NB Department of the Environment and Local Government	Guideline for the Management of Contaminated Sites
Heavy Metals and Hazardous Wastes	Environment Canada and NB Department of the Environment and Local Government	CCME: Interim Canadian Environmental Quality Criteria for Contaminated Sites
Mold and Fungi (Air Quality Concerns)	Work Safe NB	Standards: American Society of Heating, Refrigeration, and Air Conditioning Engineers
Polychlorinated Biphenyls (PCBs)	Environment Canada and NB Department of the Environment and Local Government	CCME: Guidelines for the Management of Wastes Containing Polychlorinated Biphenyls
Drinking Water Guidelines	Environment Canada	Canadian Drinking Water Quality Guidelines

3.1 GUIDELINE FOR THE MANAGEMENT OF CONTAMINATED SITES

The management of sites in New Brunswick, with respect to environmental concerns of petroleum hydrocarbons, is documented in the *Guideline for the Management of Contaminated Sites Guidelines, Version 4.0*. The Guideline utilizes the Atlantic Risk Based Correction Action (RBCA) as a scientific tool for determining site specific remedial outlines. Atlantic RBCA is a three-tiered approach, with each tier more specific to the site and less reliant on generic assumptions. The first two tiers are defined as Tier I (or generic) and Tier II (Site Specific). Tier I remedial criteria are contained on a look-up table that is derived from conservative default assumptions about typical Atlantic Canadian site conditions. Tier II remedial criteria are derived using increasing amounts of site-specific information in place of generic, Tier I default information. The third tier is completed with more sophisticated computer models for complex sites.

The Petroleum Guideline determines acceptable limits under certain site conditions that relate to potential receptors (residential or commercial), groundwater use (potable or non-potable), and soil type encountered (coarse-grained or fine-grained). The results are provided for individual petroleum hydrocarbon parameters that include Benzene, Toluene, Ethyl-benzene, and Xylene (BTEX). The sum of all petroleum hydrocarbons detected, as there may be in excess of two hundred parameters, is collectively reported as Total Petroleum Hydrocarbons (TPH). Laboratory analyses are reported for BTEX and TPH constituents.

For the purpose of evaluating the properties, the Tier I criteria were used. The property's land use is classified as industrial land use with municipal potable water and coarse-grained soils. The table below lists the criteria that were used.

Table 2. Petroleum criteria used for the subject site (industrial land use, municipal potable water and coarse-grained soils).

Constituent	Atlantic Risk Based Corrective Action Tier I Guideline	
	Soil (mg/kg)	Groundwater (mg/L)
Benzene	0.52	6.3
Toluene	4700	20
Ethyl benzene	10,000	20
Xylene	60	20
Gasoline	2000	20
Diesel #2	10,000	20
#6 Oil	10,000	20

Table 3. Polycyclic Aromatic Hydrocarbons (PAHs) criteria used for the subject site (industrial land use, municipal potable water and coarse-grained soils).

Constituent	Tier I Guideline	
	Soil (mg/kg)	Groundwater (ug/L)
Naphthalene	25	7000
1-Methylnaphthalene	560	-
2 -Methylnaphthalene	560	-
Acenaphthene	43,000	-
Acenaphthylene	66	7500
Anthracene	300,000	-
Fluoranthene	50,000	-
Fluorene	39,000	-
Pyrene	30,000	-
PAP Total Potency Equivalents	5.3	-

Table 4. Metal criteria used for the subject site (industrial land use, municipal potable water and coarse-grained soils).

Constituent	Tier I Guideline	
	Soil (mg/kg)	Groundwater (ug/L)
Aluminum	222,000	-
Antimony	63	-
Arsenic	31	-
Barium	96,000	-
Beryllium	1,100	-
Boron (Total)	24,000	-
Cadmium	192	-
Chromium (hexavalent)	1,300	-
Chromium (Total)	2,300	-
Cobalt	250	-
Cooper	16,000	-
Cyanide	420	-
Iron	164,000	-
Lead	740	-
Manganese	5,200	-
Mercury (Total)	99	-
Molybdenum	1,200	-
Nickel	2,500	-
Selenium	1,135	-
Silver	490	-
Strontium	140,000	-
Thallium	1	-
Tin	140,000	-
Uranium	300	-
Vanadium	169	-
Zinc	140,000	-

4.0 RECORDS REVIEW

4.1 INTERVIEWS COMPLETED

An interview was conducted with the individuals with the Port of Dalhousie, local residences, and representatives with the Town of Dalhousie.

4.2 SITE MAPPING

Prior to the site visit, property maps and aerial photographs were retrieved from the Service New Brunswick database. The property boundaries were found by super-imposing the property lines onto 1944, 1963, 1974, 1985, 1997, and 2007 aerial photographs. The rail line is shown as early as 1944 as well as the early development of the port. An expansion of the port is shown in the aerial from 1963. The 1974 aerial shows the addition of industrial fuel tanks to the east of the port property. Further surrounding developments are shown in the 1885 aerial, including the beginning construction of a containment cell for dredge material to the immediate west of the port. The infilling of the cell is shown in the 1997 aerial. The remainder of the aerials show the existing conditions of the properties. The most recent aerial photograph has been included below as Figure 3. The historical aerials are included in Appendix II.

4.3 FORMER LAND USE

According to interviews and review of historical aerial photographs, fire insurance mapping and the property deed, the properties have been used as a rail line and port since at least the early 1940's.

4.4 PREVIOUS REPORTS

There were no previous reports provided by the owner of the property.

4.5 FUNDY ENGINEERING RECORDS

No previous investigations were conducted by Fundy Engineering on the subject site.

4.6 OPTA ENVIRONMENTAL SEARCH

An OPTA Environmental Scan was submitted for this project which included at 1952 Fire Insurance Map. This map identified multiple areas of former aboveground and underground storage tanks located on adjacent properties along the subject site.

4.7 REGULATORY INFORMATION

A record search was sent to the New Brunswick Department of the Environment and Local Government (NBDELG) for the subject sites and adjacent properties. The record search was done to determine if there was any record of Ministerial Orders, Administrative Orders, Certificates of Approvals, or environmental information Listed with the NBDELG: According to their records, the file status of this property is:

> *"There is no record of Ministerial Orders or Remediation Orders related to these PID numbers, using our current search process.*
>
> *Petroleum storage tank information related to **PID# 50352038** is attached. With respect to the remaining PID number, our records indicate that there are no petroleum storage tanks registered with the Department, under the Petroleum Product Storage and Handling Regulation.*
>
> *Our records indicate that there has been contamination found at:*
>
> *1.) **451 William St., Dalhousie, NBIP Forest Products - Mill Site (PID# 50352038)**. See attached information report.*
>
> *2.) **Van Horne St., Dalhousie, Former Concentrate Handling Facility (PID# 50352038)**. See attached information report.*
>
> *These PID numbers are not registered with the Department as a PCB Storage site.*
>
> *Our records indicate that **retired PID#s 50105477 & 50171974 (related PID# 50352038)** are identified by the Department as dumpsite# **69200113**, **Dalhousie**. Dumpsite is closed and no longer accepts waste.".*

A copy of the NBDELG correspondence can be found in Appendix III.

5.0 SITE WORK COMPLETED

5.1 DATES AND STAFF

On August 12th, 2024, Mr. Greg Derrah, *P.Tech, CESA* of Fundy Engineering visited the site. A thorough walkover of the site was completed to gain an understanding of the property boundaries, potential environmental concerns from the subject site, and of the readily visible adjoining properties. A site representative was available during the site visit. The site visit was documented with field notes and photographs. Additional site photographs that are not provided within the body of the report are included within Appendix IV.

5.2 SITE FINDINGS

The procedure followed by Fundy Engineering for completing a Phase I ESA is to evaluate potential sources of environmental impacts as either actual, potential, or low. If an actual environmental concern is noted, it is typically that known contaminants are present without requiring analysis to confirm. This normally results in further intrusive investigations being conducted to confirm / deny the potential source or extent of the concern. If a potential environmental concern is noted, this is typically an observation by Fundy Engineering of an area for improvement, recognition for special future consideration, or a best management practice suggestion. A potential concern can also result in further investigation to determine if contaminants or hazardous materials are present. Low indicates no observations for the specific area of interest were noted. The table below includes a summary of the site findings.

Table 5. Summary of site findings observed on August 12th, 2024.

Potential Source of Environmental Impact	Environmental Concern			Findings	Recommendations
	Actual	Potential	Low		
• Current Land Use		✓		➢ The assessed properties contain the CN rail line and the Dalhousie Port. ➢ More details are provided in Section 5.2.1.	Conduct a subsurface investigation to confirm or deny impacts.
• Historical Land Use		✓		➢ The assessed properties have contained a rail line and port since at least the 1940's ➢ More details in Section 5.2.1.	Conduct a subsurface investigation to confirm or deny impacts.
• Adjacent Properties		✓		➢ The surrounding properties are undeveloped wood lots, residential, commercial and industrial land use. There were historically and currently are multiple operations adjacent to the subject site which have are a potential of contaminants migrating onto the subject site. ➢ More details are provided in Section 5.2.2.	Conduct a subsurface investigation to confirm or deny impacts.
• Underground / Aboveground Fuel Storage			✓	➢ There were none observed on the subject site.	None.
• Underground / Above Ground Chemicals			✓	➢ No chemical storage other than cleaning supplies was noted.	None.

Potential Source of Environmental Impact	Environmental Concern Actual	Potential	Low	Findings	Recommendations
• Waste Management			✓	➢ No significant waste sources were identified during the site visit.	None.
• Spill and Stain Areas			✓	➢ No significant spill or stained areas were identified during the site visit.	None.
• Wastewater Discharges			✓	➢ Wastewater is managed by the Town of Dalhousie.	None.
• Air Emissions			✓	➢ No air discharges were identified on the subject site.	None.
• Polychlorinated Biphenyls (PCBs)			✓	➢ None observed.	None.
• Asbestos Containing Materials (ACMs)			✓	➢ None observed.	None.
• Urea-formaldehyde foam insulation (UFFI)			✓	➢ None observed.	None.
• Ozone Depleting Substances (ODSs)			✓	➢ None observed.	None.
• Lead			✓	➢ None observed.	None.
• Electromagnetic Fields			✓	➢ None observed.	None.
• Wetlands / Watercourses			✓	➢ None observed.	None.
• Indoor Air Quality / Mold			✓	➢ None observed.	None.
• Odours			✓	➢ None observed.	None.
• Hydraulic Hoists and Elevators			✓	➢ None observed.	None.
• Potable Well Water			✓	➢ Potable water provided to the site through the Town of Dalhousie municipal water system.	None.
• Mercury			✓	➢ None observed.	None.
• Hazardous Materials			✓	➢ None observed.	None.
• Radon			✓	➢ The local bedrock is identified as low risk for potential radon.	Radon testing if concerns arise.

5.2.1 Current and Historical Land Use

The properties have been used as a rail line and port since at least the early 1940's with a port expansion occurring sometime before 1963. The port property has a rail line that extended along the eastern side of the property as well. Railway lines cause potential concerns due to the possibility of Petroleum Hydrocarbons (PCHs) releases of hydraulic oil, heavy metal contaminants and Polycyclic Aromatic Hydrocarbons (PAHs) from coal and creosote coated railway ties. The port stored coal and other chemicals on-site prior

to being shipped from the docks and therefore there is risk of contaminants being released into the environment.

Further assessment of the subsurface soil and groundwater was conducted due to the facility's history of petroleum hydrocarbons being stored on the site. More details of the Phase II ESA are provided in Section 6.0.

5.2.2 Adjacent Property Land Use

The adjacent properties consist of many operations that could contribute to the migration of contaminants onto the subject site. The table below outlines the locations of the adjacent properties of concern and the type of sources of potential contaminant migration.

Table 6. Adjacent property potential environmental concerns.

Address	Site Name	Property ID	Area of Concern
657 Victoria Street	058083 NB LTD. (Arts Motel)	50104413	Former underground storage tank(s). Possible of PHCs migration of contaminants.
Queen Street	PCI Chemical Canada	50181510	Former chemical plant which contains multiple underground and aboveground chemical storage. There is an open remedial file from 2008. The site also contained a former dumpsite. Possible Chemicals, Metals and PHC contaminants. It should be noted that this site is located significantly down-gradient of the subject site and migration onto the subject site is unlikely.
475 Queen Street	Maritime Fuels Limited	50104066	Existing bulk petroleum storage plant from the 1960s. The site contained multiple aboveground and underground storage tanks. There is an open remedial file associated with this property. It should be noted that there were multiple preexisting monitoring wells noted on the bulk plant and beyond the CN Spur line at an elevation that would be considered down-gradient and likely a result of investigations determining if off-site impacts were present.
439 Adelaide Street	B and J Auto Services Inc.	50261163	The property contains two closed remedial files as a result of waste oil contaminants found at the site. PCHs contaminants would be expected.
456 William Street	Lounsbury Company Limited	50367366	The property housed multiple underground and aboveground fuel storage plus potential from vehicle maintenance. There were two closed remedial files as a result of waste oil contaminants found at the site. PCHs contaminants would be expected.
William Street and Van Horne Street locations.	American Iron and Metal Company Inc.	50173616, 50172667 and 50172634	Contaminants from previous site activities that included a former Paper Mill and NB Power Plant. There are open remedial files associated with these properties. It should be noted that Bunker "C" contaminants were noted along the property line during the site assessment. The Department of Environment and Local Government were notified immediately and an assessment of the responsible party is being undertaken.

6.0 PHASE II ENVIRONMENTAL SITE ASSESSMENT

6.1 METHODOLOGY

As a result of the historical and current land activities, an environmental borehole / monitoring well investigation was undertaken between the dates of August 12th to the 15th and August 19th to the 23rd. The site work began following the clearance of all underground services at the site with the local utilities (*i.e.*, NB Power, Aliant Telecom, Rogers Cable, and Liberty Utilities). A meeting with the subcontractors occurred prior to any sitework to describe the site activities and any potential health and safety hazards. The rationale for the borehole and monitoring well locations was to place the boreholes adjacent to areas of concern.

-

Fundy Engineering's investigation procedures are consistent with CSA Z769-00 for Phase II Environmental Site Assessment Guidelines. The New Brunswick Petroleum Hydrocarbon Remediation Regulations (2020) were used as a reference document. The Tier I criteria used to evaluate the site conditions are for an industrial property with a municipal potable water source and coarse-grained soils.

6.2 EVALUATION OF TIER I GUIDELINES APPLICABILITY

The development of the Tier I look-up table takes into consideration several assumptions for Atlantic Canadian Sites. The validation of these assumptions against the site data is provided on the table below.

Table 7. Tier I Look-up Table Assumptions.

Do any of the Following Apply	Yes / No
Is there any liquid free product known or reasonably suspected to be in contact with the site soils, groundwater, sewer line, septic system?	No
Is any further activity required from the Ecological Screening Document?	No
Is there any impacted water known or reasonably suspected in the bedrock?	No
Is the seasonable high-water table at or above any impacted basement floor?	No
Are there any known or reasonably suspected compounds of concern on site that are not identified on the look-up table?	No
Do any groundwater resource protection policies (i.e. protected aquifer or watershed for future drinking water use) apply to the area of the site or plume?	No
Do the site conditions significantly differ from those of the default parameters?	No

The findings of the above table indicate the Tier I standards do apply for the subject site and therefore will be used to evaluate the site conditions.

6.3 POTENTIAL RECEPTOR ASSESSMENT

Prior to completing an intrusive investigation, a receptor assessment was completed to determine potential receptors and concerns which may be present at the subject site. The following flow chart illustrates all the migration pathways which may occur at the site.

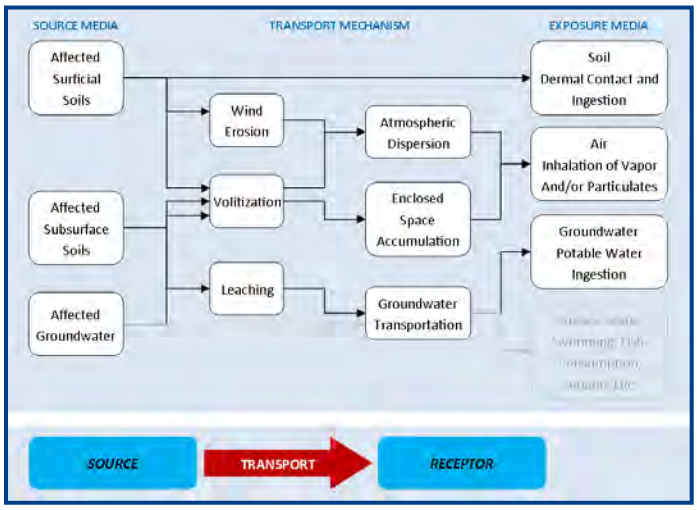


Figure 2. Migration Pathway Flowchart.

Following the site visit, the potential receptors that were identified at the subject property are affected subsurface soils and groundwater volatizing to indoor air and affecting occupants of the adjacent property buildings and through dermal contact of contaminants.

6.4 BOREHOLE / MONITORING WELL INVESTIGATION

The investigation was completed by Lantech Drilling Services, under the direction of Mr. Greg Derrah, *P.Tech., CESA* of Fundy Engineering. This work was completed using a track mounted drill and included the extension of thirty-one (31) boreholes. The boreholes were extended to a maximum depth of 19.51 m (65 feet) below ground surface. For the environmental test locations, soil samples were collected at each 0.6 m (2 foot) interval using a standard split spoon sampler until groundwater or bedrock was encountered. For the geotechnical boreholes, soil samples were collected beyond the groundwater elevation. Bedrock was cored in four of the boreholes for geotechnical purposes. The soil conditions may be generalized as being loose sand and gravel fill with cobbles and debris over dense silty clay till on the eastern portion of the site within the Dalhousie Port property. Within the CN rail line on the western section the soils that were encountered was Fill material that was placed for the rail bed that overlies bedrock at depths of 0.6 to 1.2 meters in much of the western section of the site.

The rationale for the borehole and monitoring well locations was to place the boreholes / monitoring wells down-gradient or in as close proximity as possible to areas of concern without damaging the underground and aerial utility lines. The borehole / monitoring well location plan is provided below on Figure 2.

It should be noted that the assessment was limited to only soil sampling in areas outside of the secured Dalhousie Port property due to the potential of vandalism to monitoring wells that were planned to be installed.

Figure 3. Borehole / Monitoring Well Location Plan.

Figure 4. Site photograph showing the extension of BH1-M.

Figure 5. Site photograph showing the extension of BH25.

6.5 SAMPLE COLLECTION

Soil samples were collected from every 0.2-meter interval and stored in airtight glass jars. Field screening of the soil samples was completed prior to sending the samples for analysis. This was completed with a Tiger Photo Ionization Detector gas monitor, which collects volatile organic compounds (VOCs) readings. The monitoring wells were purged on August 15th, 2024 using dedicated wattera tubing and a foot valve. Following the stabilization of groundwater conditions, water samples were collected from the monitoring wells on August 23rd, 2024 using sample bottles provided by RPC Laboratories.

Prior to sampling, static water levels were measured using a free phase interface probe to determine if there was any free hydrocarbon product within the monitoring wells. There were no indications of free hydrocarbon product within the wells, including during purging and water sampling. A handheld multi-parameter meter (Hanna 9828) was utilized to measure the field parameters and to determine when a sufficient volume of water had been purged from each monitoring well (*i.e.,* when the field parameters stabilized). Water samples from each groundwater monitoring well were collected via dedicated polyethylene tube connected to a low-flow peristaltic pump. All water samples were collected in clean laboratory supplied bottles. All sample bottles were filled to overflowing to ensure no headspace was present. Each bottle was tightly capped, labeled, and immediately placed within an ice-packed cooler until delivery to a courier for transport to the laboratory for Petroleum Hydrocarbon (PHCs), Polycyclic Aromatic Hydrocarbons (PAHs) and heavy metal analysis. Fundy Engineering's Sampling Protocol is provided in Appendix V.

6.6 SAMPLE ANALYTICAL RESULTS

A total of forty-one (41) soil samples and six (6) groundwater were collected and submitted to RPC Laboratories in Fredericton, NB for Petroleum Hydrocarbons (PHCs), Metal and Polycyclic Aromatic Hydrocarbon (PAHs) analysis. The soil samples were collected from locations where contaminants would be expected to concentrate and in proximity to property boundaries of adjacent properties of concern.

Fifteen (15) of the soil samples were analyzed for metals, seventeen (17) were analyzed for petroleum hydrocarbon concentrations and nine (9) were analyzed for polyaromatic hydrocarbon constituents.

Of the six water samples submitted, three (3) were analyzed for metals and three (3) were analyzed for petroleum hydrocarbon constituents. All the sample concentrations were compared to the Atlantic Risk Based Corrective Action Ecological Tier I Environmental Quality Standards as well as the Human Health Tier I Environmental Quality Standards for an industrial use, with non-potable groundwater and course-grained soils. As well, the ecological receptor guidelines were also included due to the proximity of the site to Heron Bay. The laboratory certificates are provided on Appendix VI.

Petroleum Hydrocarbons (PHCs)

Based on the (19) soil PHCs sample analyses, one of the samples was found to contain a concentration of Benzene that was above the Human Health and Ecological Standards. One of the soil samples analyzed for petroleum hydrocarbon constituents (BH18) had a Benzene concentration of 0.58 mg/kg that was slightly above the guideline of 0.52 mg/kg. This sample was collected from adjacent to the Maritime Fuels Bulk Station at 475 Queen Street. The additional sixteen soil samples analyzed for hydrocarbon concentrations found to be **below** the allowable Human Health and Ecological criteria. The Benzene guideline is based on the site contaminants being in the vicinity of a building and the potential of inhalation of vapours. As there are no buildings planned for the subject site the concentration would be below Tier II Pathway Specific Target Levels and not considered a risk to human health. If this soil is required to be removed for any development on the site special consideration should be made for proper disposal of this material.

Three groundwater samples were collected from the monitoring wells that were extended on the secured Port of Dalhousie property which were submitted for PCHs. These samples were found to be **below** the allowable Human Health and Ecological standards for PHCs.

Polycyclic Aromatic Hydrocarbons (PAHs)

Based on the (9) soil PHCs sample analyses, all of the soil samples were found to be **below** the allowable Human Health and Ecological standards for PAHs. The three water samples that were collected from the Port of Dalhousie extended monitoring wells were all found to be **below** the allowable Human Health and Ecological standards for PAHs.

Heavy Metals

Each of the seventeen soil samples analyzed for metals contained at least one constituent above the allowable Ecological and Human Health guidelines. The following table represents the constituent analyzed and the number of samples with results exceed the guideline.

Table 8: Metals sample guideline exceedances.

Parameter	Ecological Tier I Standard Exceedance	Human Health Tier I Standard Exceedance
Arsenic	**7**	**5**
Cadmium	**9**	**-**
Chromium	**1**	**-**
Copper	**6**	**-**
Lead	**13**	**5**
Manganese	**-**	**1**
Thallium	**-**	**3**
Vanadium	**15**	**-**
Zinc	**15**	**-**

The Human Health metal standards are based on Dermal Contact of the contaminants by humans. As all the samples are collected below ground surface there is no current risk to humans at the site. However, if the soils are to be excavated for future developments the metal impacts are required to be considered as a potential concern to the construction workers on-site and for the disposal facility if any of the material is required to be removed and disposed from the site.

The tabulated sample analysis are provided in Appendix VII.

6.7 QUALITY ASSURANCE AND QUALITY CONTROL

All samples submitted to RPC Laboratories were analyzed using the Alberta MUST methodology. RPC is accredited by various organizations including, the Standards Council of Canada and the Canadian Association of Environmental Analytical Laboratories and is ISO 9001:2000 certified.

6.8 LOCAL GEOLOGY CONDITIONS

The soil conditions can be described as loose brown sand with minor gravel overlaying dense silty clay. The monitoring well and borehole logs are provided in Appendix VIII.

6.9 GROUNDWATER ENCOUNTERED

The site hydrogeology (*i.e.,* groundwater elevation) was measured on August 23rd, 2024. The groundwater flow direction was estimated to be in a north easterly with a gradient of 0.47.

7.0 PHASE II (ESA) SITE WORK FINDINGS

7.1 POTENTIAL RISK TO HUMAN RECEPTORS

The likelihood of exposure to a human receptor was considered for this site and within 200 meters of the site. This information is summarized on the table below.

Table 9. Likelihood of Human Exposure.

Exposure Pathway	Likelihood of Exposure	Justification
Ingestion of soil	Unlikely	Impacts found below ground surface.
Dermal contact with soil	Unlikely	Impacts found below ground surface.
Ingestion of surface water	Unlikely	No impacts were found.
Dermal contact of surface water	Unlikely	No impacts were found.
Ingestion of groundwater	Unlikely	No impacts were found.
Inhalation of vapours (indoors)	Unlikely	No buildings located on the subject site or in the vicinity of the known elevated impacts.
Inhalation of vapours (outdoors)	Unlikely	Impacts found below ground surface.

Based on the soil and groundwater samples submitted being found to be **below** the applicable Tier I guidelines, there is no potential risks to the occupants of the industrial site.

7.2 POTENTIAL RISK TO ECOLOGICAL RECEPTORS

An ecological receptor review of the surrounding area was completed through aerial photographs and confirmed during the field investigations. The findings are documented below.

Table 10. Ecological Screening for the subject site.

Ecological Screening Part I – Identification of petroleum hydrocarbons in media	Yes or No	Report name and location of details and explanations
1. Do site characterization data indicate the presence of PHC in site surface soil (depth < 1.5 m) above the appropriate screening levels in Tables 1a and 1b?	**YES**	Pages 13-19
2. Do site characterization data indicate the presence of PHC in shallow site groundwater (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?	No	Pages 13-19

3. Do existing site characterization data indicate the presence of PHC in site groundwater above appropriate ecological screening levels derived for the protection of aquatic receptors in Table 3a/3b?	No	Pages 13-19
4. Do site characterization data indicate the presence of PHC in site surface water above the appropriate screening levels in Table 3a?	No	Pages 13-19
5. Does site characterization indicate the presence of PHC in on-site or adjacent sediments above the appropriate screening levels in Table 4?	No	Pages 13-19
IF ALL ANSWERS IN PART I ARE "NO" THEN NO FURTHER ACTION IS REQUIRED		

There are metal impacts to that are above allowable Ecological Standards within the soils. However, there were no impacts found or expected within the groundwater and therefore the transport mechanism of contaminants to the ecological receptor would be considered incomplete and therefore there are no risks to Heron Bay (ecological receptor).

7.3 CONTAMINATION PATHWAY EVALUATION

During the investigation there was no underground infrastructure found that would increase the migration of contamination.

8.0 LIMITATIONS

The observations made and facts presented in this report are based on site visits and contacts with regulatory authorities carried out between August and November 2024. Reports of regulatory compliance and conditions of the property reflect conditions at that time.

While every effort has been made to comprehensively catalogue environmental concerns at the assessed properties located in Dalhousie, New Brunswick, the appearance, discovery, or development of other environmental problems cannot be precluded. It should be noted that while every effort was made to extend the test locations as close to the areas of concern without damaging any underground infrastructure, further investigation may reveal additional information. Should any conditions at the properties be encountered, which differ from those reported herein, Fundy Engineering requests immediate notification to permit an assessment of our interpretations. There were no previous owners available to discuss the former land use and environmental condition. No independent confirmation of this information has been made.

The assessment did not include a review of any buildings' structural, mechanical, or electrical components. The investigation did not consider possible impediments to development of this property by watercourse and wetland alteration regulations, provincial Environmental Impact Assessment legislation, or requirements of the *Canadian Environmental Assessment Act (CEAA).*

These results are reported confidentially to the client, who is advised to take appropriate action to rectify any reported infractions of regulations. This report is intended for the use of the client. No professional responsibility is assumed for the use or interpretation of the findings by others.

9.0 SUMMARY AND CONCLUSIONS

Fundy Engineering & Consulting Ltd. (Fundy Engineering) was retained by CIMBEC to undertake a Phase I / II Environmental Site Assessment of two properties located in Dalhousie, NB. The properties are identified by the New Brunswick Geographic Information Corporation as Property Identification Numbers (PID) 50234251 and 50352038. The properties have contained a rail line and port since at least the early 1940's with a port expansion occurring sometime before 1963.

The Phase I ESA determined that the properties do not contain any actual environmental concerns; however, there were potential concerns associated with current and historical land use of the subject site and adjacent property use. As such, an intrusive investigation was conducted.

As a result of the work completed, the following is recommended:

- There was Benzene impacts found within one of the soil samples which were marginally above allowable guidelines. This sample was collected from adjacent to the Maritime Fuels Bulk Station at 475 Queen Street. The additional sixteen soil samples analyzed for hydrocarbon concentrations found to be below the allowable Human Health and Ecological criteria. The Benzene guideline is based on the site contaminants being in the vicinity of a building and the potential of inhalation of vapours. As there are no buildings planned for the subject site the concentration would be below Tier II Pathway Specific Target Levels and not considered a risk to human health. **If this soil is required to be removed for any development on the site special consideration should be made for proper disposal of this material**.

- The Human Health metal standards are based on Dermal Contact of the contaminants by humans. As all of the samples are collected below ground surface there is no current risk to humans at the site. **If the soils are to be excavated for future developments the metal impacts are required to be considered as a potential concern to the construction workers on-site and for the disposal facility if any of the material is required to be removed and disposed from the site.**

- **Although these contaminants are not a risk to the current or future human occupants of the subject site (*i.e.*, railroad and port) or the ecological receptors the Department of the Environment and Local Government should be notified of the findings of these assessments.**

- **These impacts are a result of former land activities at the site or from the adjacent properties and should be noted as a baseline prior to any site activities that were conducted by CIMBEC.**

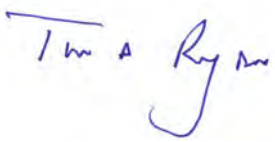
- **There are still remaining potential risk of contaminants migrating onto the subject site from the adjacent properties from the current and historical land activities; and,**

- **It should be noted that the assessment was limited to only soil sampling in areas outside of the secured Dalhousie Port property due to the potential of vandalism to monitoring wells that were planned to be installed.**

9.1 CLOSING

We trust this is sufficient for your present needs, please feel free to contact the undersigned for any additional information or clarification that may be required. This report was prepared by Mr. Greg Derrah, *P.Tech, CESA* and reviewed by Mr. Tim A. Ryan, *P.Eng, M.Eng*. The Qualifications of the assessors are documented in Appendix IX.

FUNDY ENGINEERING & CONSULTING LTD.



TIM A. RYAN, *P.ENG, M.ENG* **GREG DERRAH, *P. TECH., CESA***

10.0 GLOSSARY

The following terms are among those used in this Standard Phase I and II Environmental Site Assessment Report, which may not be familiar to all readers. These definitions are intended to be explanatory and therefore may differ from those used in other documents.

Aesthetic Objective (AO): a Canadian Drinking Water Quality Guideline, which addresses parameters that may affect consumer acceptance of potable drinking water, such as taste, odour, and colour.

anthropogenic: caused by human activity.

baseline: background or pre-activity data that can be used for comparison when conducting further analyses.

bedrock: solid rock encountered below the soil or any other unconsolidated cover that occurs on the Earth's surface.

bylaw: a law made by municipal government.

carcinogen: a cancer or tumor-casing agent.

distillation: the act of purifying liquids through boiling in order that the steam or gaseous vapours condense to a pure liquid.

fauna: the collective animal life occurring in an area or time period, especially the naturally occurring indigenous animal life.

flora: the collective plant life occurring in an area or time period, especially the naturally occurring indigenous plant life.

friable: materials that can be crumbled, pulverized, or reduced to powder by hand pressure.

geology: the science that studies Earth by looking at its composition and the processes past and present that shaped it, both on the surface and within.

groundwater: subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated.

guideline: a recommended, non-mandatory, optional practice that is not legislated (i.e., does not have the force of law), but is a statement of desired, good, or best practice. They are often departmental documents that are used to interpret legislation and / or regulation.

hydric soils: soils that are saturated or flooded long enough during the growing season to develop anaerobic conditions in the upper part of the soil that indicate the possibility of wetland presence.

hydrophytic vegetation: plant life capable of growing in wet conditions, such as in water or in soil or other substrate that is periodically saturated with water and whose presence suggests the possibility of a wetland.

Interim Maximum Acceptable Concentration (IMAC): an initially established maximum amount of a parameter that is allowed in a potable drinking water supply, as administered by Health Canada, until a comprehensive review of the known health effects associated with the parameter with respect to exposure levels and on the availability of treatment and analytical technologies can be completed.

lithology: a description of the physical character of a rock as determined by eye or with a low-power magnifier, and based on colour, structures, mineralogic components, and grain size.

lubricants: a substance used to reduce the friction between surfaces or as process materials either incorporated into other materials used as processing aids in the manufacturing of other products, or as carriers for other materials.

Maximum Acceptable Concentration (MAC): the maximum amount of a parameter that is allowed in a potable drinking water supply, as administered by Health Canada, based on a comprehensive review of the known health effects associated with the parameter with respect to exposure levels and on the availability of treatment and analytical technologies.

non-friable: materials that cannot be crumbled, pulverized, or reduced to powder by hand pressure.

parallelogram: a four-side figure with two pairs of parallel and congruent sides.

Parcel / Property Identification (PID) number: a unique number given to a land parcel for tracking information, such as deed holders, size, environmental issues, etc.

perchloroethylene: a volatile organic compound that is used primarily as a dry-cleaning agent. It is toxic and is considered to be carcinogenic.

petroleum hydrocarbons: a family of naturally occurring liquid organic compounds, which after distillation, yields combustible fuels, petrochemicals, and lubricants.

PolyChlorinated Biphenyls (PCBs): a group of synthetic, organic chemical compounds that were once widely used in electrical equipment, specialized hydraulic systems, heat transfer systems, and other industrial products. They are an environmental concern because they are a pervasive and persistent contaminant that is considered highly toxic and carcinogenic.

potable: safe for human consumption, such that it can be used in the preparation of food and beverages or for the cleaning of utensils and dishes used in the preparation of food and beverages.

sanitary waste: liquid or solid waste originating solely from humans and human activities, such as wastes collected from toilets, showers, wash basins, sinks used for cleaning domestic areas, sinks used for food preparation, clothes washing operations, and sinks or washing machines where food and beverage serving dishes, glasses, and utensils are cleaned, but does not include hazardous or radioactive materials.

scope of work: the objective and extent of work to be accomplished for the assignment.

slope: the run to rise of a surface, expressed as a ratio.

solid waste: non-liquid or gaseous waste that can be accepted for disposal in a landfill or incinerator and includes food waste, paper and cardboard, yard waste, metals, plastics, etc., but does not typically include industrial waste, medical waste, or hazardous waste.

terrestrial: relating to or inhabiting the land (e.g., terrestrial plants live on the land as opposed to in the water).

the Work: the tasks and activities required to complete the defined scope of work.

topography: the physical features of a geographical area including relative elevations and the position of natural and anthropogenic features.

ubiquitous: widely present.

watercourse: the full width and length, including the bed, banks, sides and shoreline, or any part of a river, creek, stream, spring, brook, lake, pond, reservoir, canal, ditch, or other natural or artificial channel open to the atmosphere, the primary function of which is the conveyance or containment of water whether the flow be continuous or not.

watershed: an area of land that drains to a single outlet and is separated from other watersheds by a divide.

wetland: land that either periodically or permanently, has a water table at, near, or above the land's surface or that is saturated with water and sustains aquatic processes as indicated by the presence of hydric soils, hydrophytic vegetation, and biological activities adapted to wet conditions.

wellfield: an area containing one or more potable groundwater wells that is used to provide water.

Appendix I:

Parcel Information

Parcel Information

PID:	50234251	**County:**	Restigouche
Status:	Active	**Active Date/Time:**	1993-03-25 00:00:00
Land Related Description:	Land	**Management Unit:**	NB1007
Area:	9.12	**Area Unit:**	Hectares
Date Last Updated:	2018-11-15 08:43:23	**Harmonization Status:**	Harmonized
Land Titles Status:	Not Land Titles	**Land Titles Date/Time:**	
Date of Last CRO:		**Manner of Tenure:**	Not Applicable
Land Gazette Information:	NO		
Description of Tenure:			

Public Comments:
MAP / CARTE 32M32, 32M42NE, 32M42NW, 32M43SE *!*
OTHER/AUTRE Cnr
Plan 11 see Env 75
Plan 10 D3 see Env 98

Parcel Interest Holders

Owner	Qualifier	Interest Type
Canadian National Railway Company		Owner

Assessment Reference

PAN	PAN type	Taxing Authority Code	Taxing Authority
3421263		945	Heron Bay / Baie-des-Hérons
6636621		945	Heron Bay / Baie-des-Hérons

Parcel Locations

Civic Number	Street Name	Street Type	Street Direction	Place Name
	Cnr			Dalhousie

County Parish

County	Parish
Restigouche	Dalhousie

Documents

Number	Registration Date	Book	Page	Code	Description
28215508	2009-12-29			1100	Deed/Transfer
26696949	2009-01-08			6110	Discharge of Mortgage
26696923	2009-01-08			6110	Discharge of Mortgage
26696642	2009-01-08			6100	Discharge, Release or Satisfaction

Parcel Information

Documents (cont.)

Number	Registration Date	Book	Page	Code	Description
11546851	2000-11-22	858	558	5200	Debenture or Other Voluntary Charge
11546778	2000-11-22	858	487	5100	Mortgage
177557	1998-01-26	764	246	104	Mortgage
177556	1998-01-26	764	185	101	Deed
170750	1996-05-17	705	177	112	Power of Attorney
166981	1995-05-23	674	317	112	Power of Attorney

Plans

Number	Suffix	Registration Date	Code	Description	Lot Information	Orientation
200422		1996-06-06	9040	Retracement & Plan or Return of Survey		Undefined
200422		1996-06-06	9040	Retracement & Plan or Return of Survey		Undefined
200346		1995-11-15	9040	Retracement & Plan or Return of Survey		Magnetic
200346		1995-11-15	9040	Retracement & Plan or Return of Survey		Magnetic
10	D3	1952-03-10	9040	Retracement & Plan or Return of Survey		Magnetic
10	D3	1952-03-10	9040	Retracement & Plan or Return of Survey		Magnetic
11		1930-09-20	9070	Expropriation		Magnetic
11		1930-09-20	9070	Expropriation		Magnetic

Parcel Relations

No Records Returned

Parcel Information

PID:	50352038	**County:**	Restigouche
Status:	Active	**Active Date/Time:**	2002-08-09 14:44:53
Land Related Description:	Water Lot	**Management Unit:**	NB1007
Area:	238.65	**Area Unit:**	Hectares
Date Last Updated:	2016-10-21 11:24:50	**Harmonization Status:**	Harmonized
Land Titles Status:	Land Titles	**Land Titles Date/Time:**	2002-08-15 13:52:48
Date of Last CRO:	2016-10-21 11:24:59	**Manner of Tenure:**	Not Applicable
Land Gazette Information:	YES		
Description of Tenure:			

Public Comments:
plan 18 D3 See Env 104
Plan 11 D3 see Env 99
Plan 10 see Env 197
Plan 10 D5 see Env 16
Plan 10 D3 see Env 98
Plan 1 D2_A see Env 174
Plan 14 found in Env 20
Plan 12 D3 see Env 100

Parcel Interest Holders

Owner	Qualifier	Interest Type
Port of Dalhousie Inc.		Owner

Assessment Reference

PAN	PAN type	Taxing Authority Code	Taxing Authority
5819975		945	Heron Bay / Baie-des-Hérons
3418804		945	Heron Bay / Baie-des-Hérons
3421938		945	Heron Bay / Baie-des-Hérons

Parcel Locations

Civic Number	Street Name	Street Type	Street Direction	Place Name
	William	Street		Dalhousie

County Parish

County	Parish
Restigouche	Dalhousie

Documents

Number	Registration Date	Book	Page	Code	Description
36444090	2016-10-21			2200	Easement

Documents (cont.)

Number	Registration Date	Book	Page	Code	Description
29738847	2011-01-27			4820	Land Titles Rectification
29714004	2011-01-19			2200	Easement
23810097	2007-05-10			1100	Deed/Transfer
21874855	2006-03-24			7100	Option/ Purchase and Sale Agreement
21874731	2006-03-24			1700	Crown Grant
14797493	2002-08-15			3800	Land Titles First Notice
14741350	2002-08-07			1700	Crown Grant
53890	1959-05-01	H6	434	115	Expropriation
13362	1911-09-23	E2	504	101	Deed
11445	1908-04-24	Y	754	119	Other

Plans

Number	Suffix	Registration Date	Code	Description	Lot Information	Orientation
36443985		2016-10-21	9020	Easement or Right-of-Way		Provincial Grid
36443985		2016-10-21	9020	Easement or Right-of-Way		Provincial Grid
36443985		2016-10-21	9020	Easement or Right-of-Way		Provincial Grid
29714103		2011-01-19	9050	Subdivision & Amalgamations		Provincial Grid
29714103		2011-01-19	9050	Subdivision & Amalgamations		Provincial Grid
29714103		2011-01-19	9050	Subdivision & Amalgamations		Provincial Grid
23780605		2007-05-04	9050	Subdivision & Amalgamations		Provincial Grid
23780605		2007-05-04	9050	Subdivision & Amalgamations		Provincial Grid
23780605		2007-05-04	9050	Subdivision & Amalgamations		Provincial Grid
14741269		2002-08-07	9040	Retracement & Plan or Return of Survey	Lot 02-1	Provincial Grid
14741269		2002-08-07	9040	Retracement & Plan or Return of Survey	Lot 02-1	Provincial Grid
14741269		2002-08-07	9040	Retracement & Plan or Return of Survey	Lot 02-1	Provincial Grid
1072	D1	1981-02-05	9020	Easement or Right-of-Way		Magnetic
1072	D1	1981-02-05	9020	Easement or Right-of-Way		Magnetic

Plans (cont.)

Number	Suffix	Registration Date	Code	Description	Lot Information	Orientation
1072	D1	1981-02-05	9020	Easement or Right-of-Way		Magnetic
2662	AT	1979-11-07	9040	Retracement & Plan or Return of Survey		Undefined
2662	AT	1979-11-07	9040	Retracement & Plan or Return of Survey		Undefined
2662	AT	1979-11-07	9040	Retracement & Plan or Return of Survey		Undefined
36	D2	1967-10-10	9020	Easement or Right-of-Way		Undefined
36	D2	1967-10-10	9020	Easement or Right-of-Way		Undefined
36	D2	1967-10-10	9020	Easement or Right-of-Way		Undefined
925	AT	1965-05-10	9040	Retracement & Plan or Return of Survey		Magnetic
925	AT	1965-05-10	9040	Retracement & Plan or Return of Survey		Magnetic
925	AT	1965-05-10	9040	Retracement & Plan or Return of Survey		Magnetic
19	D3	1964-12-21	9040	Retracement & Plan or Return of Survey		Astronomic
19	D3	1964-12-21	9040	Retracement & Plan or Return of Survey		Astronomic
19	D3	1964-12-21	9040	Retracement & Plan or Return of Survey		Astronomic
1	D2_A	1963-05-21	9040	Retracement & Plan or Return of Survey		Magnetic
1	D2_A	1963-05-21	9040	Retracement & Plan or Return of Survey		Magnetic
1	D2_A	1963-05-21	9040	Retracement & Plan or Return of Survey		Magnetic
799	AT	1961-04-06	9020	Easement or Right-of-Way		Magnetic
799	AT	1961-04-06	9020	Easement or Right-of-Way		Magnetic
799	AT	1961-04-06	9020	Easement or Right-of-Way		Magnetic
18	D3	1960-08-12	9040	Retracement & Plan or Return of Survey		Astronomic
18	D3	1960-08-12	9040	Retracement & Plan or Return of Survey		Astronomic
18	D3	1960-08-12	9040	Retracement & Plan or Return of Survey		Astronomic
12	D3	1952-04-10	9040	Retracement & Plan or Return of Survey		Magnetic
12	D3	1952-04-10	9040	Retracement & Plan or Return of Survey		Magnetic

Plans (cont.)

Number	Suffix	Registration Date	Code	Description	Lot Information	Orientation
12	D3	1952-04-10	9040	Retracement & Plan or Return of Survey		Magnetic
11	D3	1952-03-10	9040	Retracement & Plan or Return of Survey		Undefined
11	D3	1952-03-10	9040	Retracement & Plan or Return of Survey		Undefined
11	D3	1952-03-10	9040	Retracement & Plan or Return of Survey		Undefined
10	D3	1952-03-10	9040	Retracement & Plan or Return of Survey		Magnetic
10	D3	1952-03-10	9040	Retracement & Plan or Return of Survey		Magnetic
10	D3	1952-03-10	9040	Retracement & Plan or Return of Survey		Magnetic
560	AT	1948-03-05	9040	Retracement & Plan or Return of Survey		Magnetic
560	AT	1948-03-05	9040	Retracement & Plan or Return of Survey		Magnetic
560	AT	1948-03-05	9040	Retracement & Plan or Return of Survey		Magnetic
283	AT	1931-04-09	9040	Retracement & Plan or Return of Survey		Magnetic
283	AT	1931-04-09	9040	Retracement & Plan or Return of Survey		Magnetic
283	AT	1931-04-09	9040	Retracement & Plan or Return of Survey		Magnetic
179	AT	1927-04-12	9040	Retracement & Plan or Return of Survey		Magnetic
179	AT	1927-04-12	9040	Retracement & Plan or Return of Survey		Magnetic
179	AT	1927-04-12	9040	Retracement & Plan or Return of Survey		Magnetic
73	AT	1921-09-09	9040	Retracement & Plan or Return of Survey		Magnetic
73	AT	1921-09-09	9040	Retracement & Plan or Return of Survey		Magnetic
73	AT	1921-09-09	9040	Retracement & Plan or Return of Survey		Magnetic
71	AT	1921-08-19	9040	Retracement & Plan or Return of Survey		Undefined
71	AT	1921-08-19	9040	Retracement & Plan or Return of Survey		Undefined
71	AT	1921-08-19	9040	Retracement & Plan or Return of Survey		Undefined
10	D5	1919-05-15	9040	Retracement & Plan or Return of Survey		Undefined
10	D5	1919-05-15	9040	Retracement & Plan or Return of Survey		Undefined

Plans (cont.)

Number	Suffix	Registration Date	Code	Description	Lot Information	Orientation
10	D5	1919-05-15	9040	Retracement & Plan or Return of Survey		Undefined
14		1919-02-19	9040	Retracement & Plan or Return of Survey		Magnetic
14		1919-02-19	9040	Retracement & Plan or Return of Survey		Magnetic
14		1919-02-19	9040	Retracement & Plan or Return of Survey		Magnetic
13362		1911-09-23	9040	Retracement & Plan or Return of Survey		Magnetic
13362		1911-09-23	9040	Retracement & Plan or Return of Survey		Magnetic
13362		1911-09-23	9040	Retracement & Plan or Return of Survey		Magnetic
10		1909-03-22	9040	Retracement & Plan or Return of Survey		Undefined
10		1909-03-22	9040	Retracement & Plan or Return of Survey		Undefined
10		1909-03-22	9040	Retracement & Plan or Return of Survey		Undefined

Parcel Relations

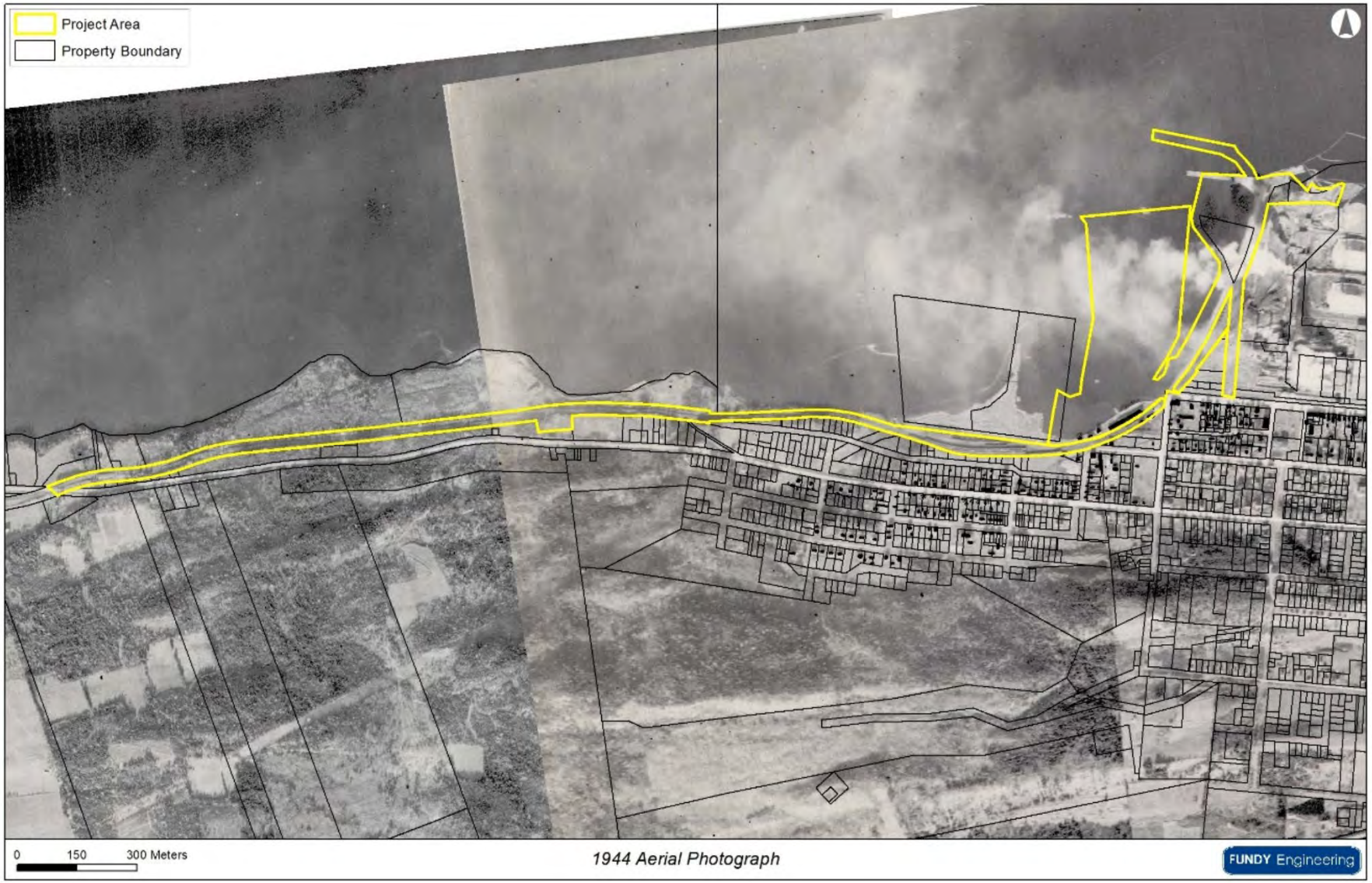
Related PID	Type of Relation	Lot Information
50104561	Parent	
50104983	Parent	
50105477	Parent	
50171974	Parent	
50171982	Parent	
50171990	Parent	
50172006	Parent	
50172014	Parent	
50172600	Parent	
50172618	Parent	
50172642	Parent	
50172766	Parent	
50172790	Parent	Parcel 1A
50172816	Parent	
50173483	Parent	Parcel A
50173509	Parent	

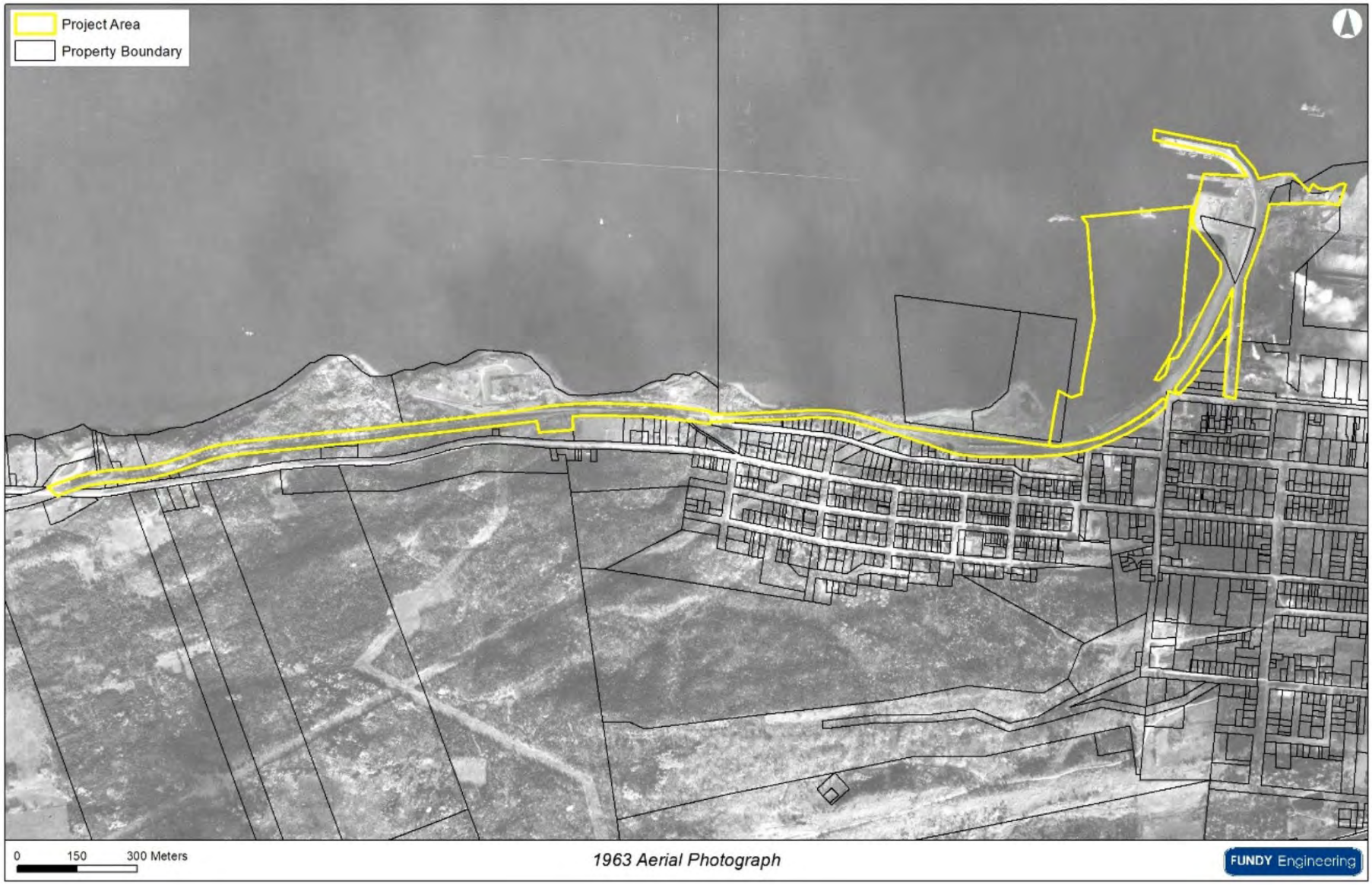
Parcel Relations (cont.)

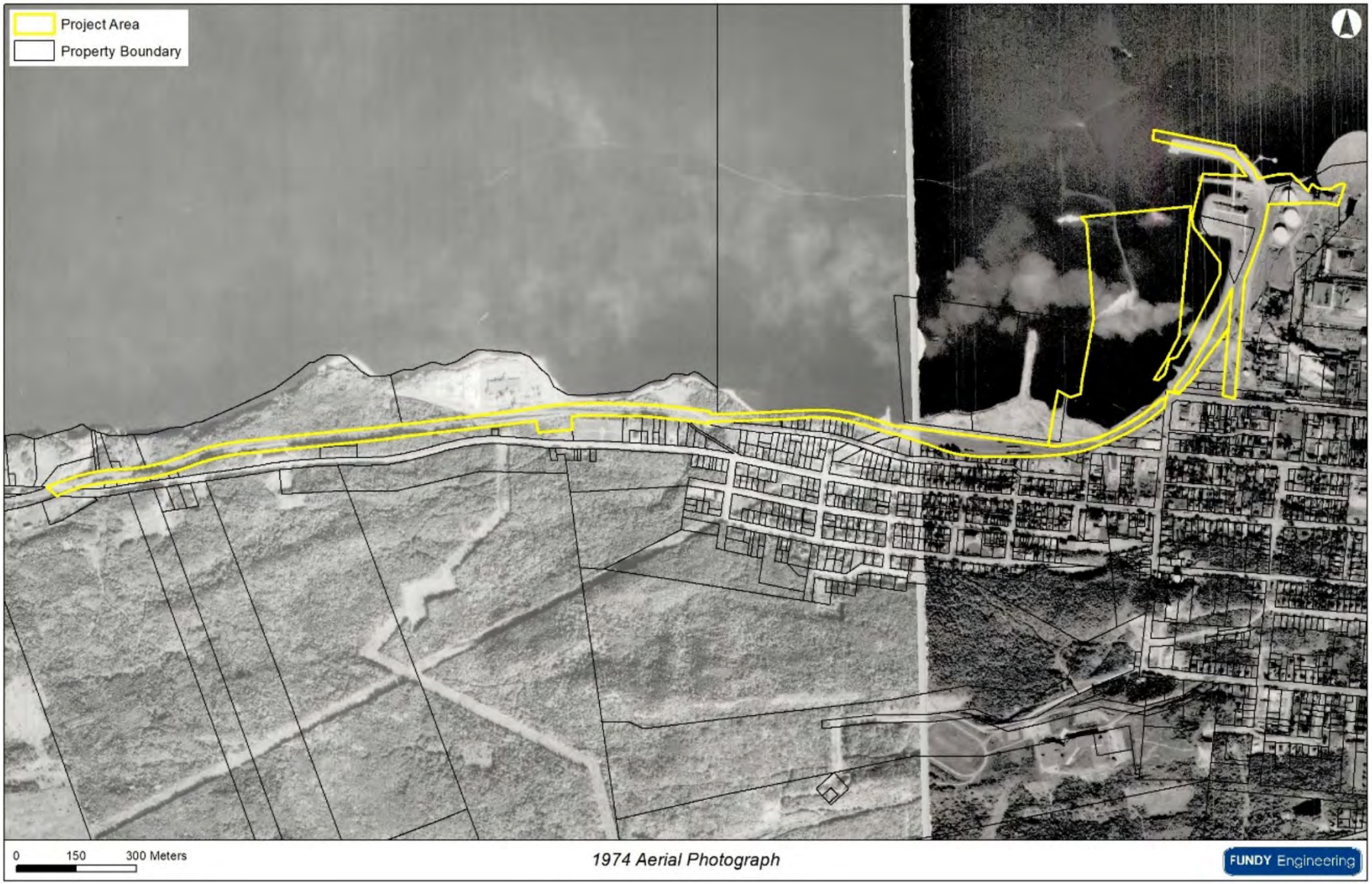
Related PID	Type of Relation	Lot Information
50173541	Parent	Parcel 1B
50173558	Parent	Lot
50173608	Parent	
50239300	Parent	
50239318	Parent	
50244045	Parent	Parcel 95-A
50244052	Parent	Parcel 95-B
50244060	Parent	Parcel 95-C
50244078	Parent	Parcel 95-D
50367515	Infant	Lot 2007-1
50383355	Infant	Parcel 2010-A

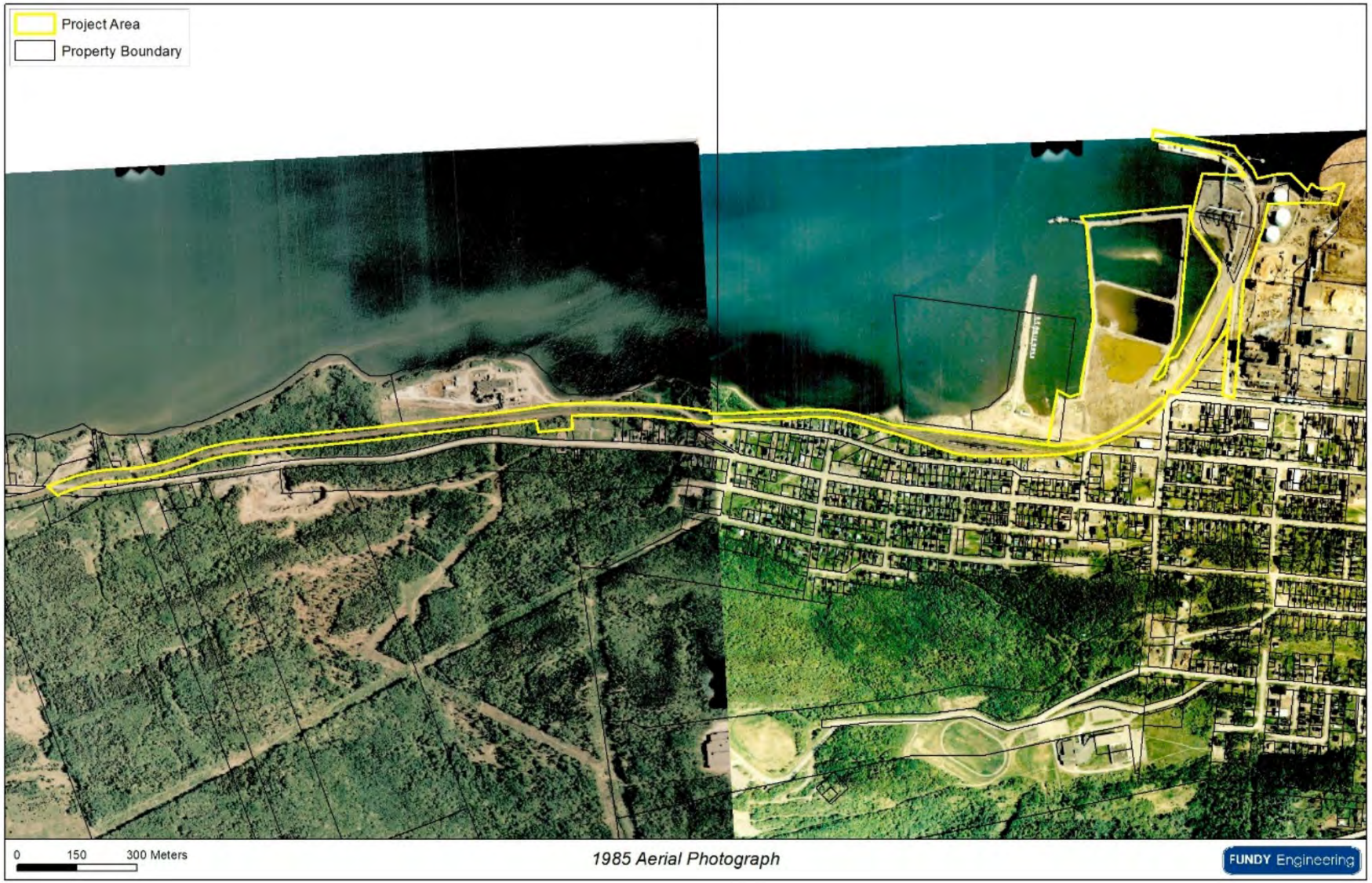
Appendix II:

Historical Aerial Photographs


Project Area
Property Boundary
0
150
300 Meters
1944 Aerial Photograph
FUNDY Engineering


Project Area
Property Boundary
0
150
300 Meters
1963 Aerial Photograph
FUNDY Engineering


Project Area
Property Boundary
0
150
300 Meters
1974 Aerial Photograph
FUNDY Engineering


Project Area
Property Boundary
0
150
300 Meters
1985 Aerial Photograph
FUNDY Engineering


Project Area
Property Boundary
0
150
300 Meters
1997 Aerial Photograph
FUNDY Engineering


Project Area
Property Boundary
0
150
300 Meters
2007 Aerial Photograph
FUNDY Engineering

Appendix III

Regulatory Records Search

July 25, 2024
File No.: 100-05-R1

Fundy Engineering
27 Wellington Row
Saint John, NB E2N 1E7
Attention: Greg Derrah

Your Ref.: 17712

RE: PID#: 50181510, 50261163, 50367366, 50104066, 50104413, 50173616, 50172667 & 50172634

In response to your request for property-based environmental information regarding the above noted properties, please be advised that a search of related departmental electronic databases has been conducted *with the information provided*, and the following information was found.

There is no record of Ministerial Orders or Remediation Orders related to these PID numbers, using our current search process.

Petroleum storage tank information related to **PID# 50104066, 50104413, 50181510 & 50367366** is attached. With respect to the remaining PID numbers, our records indicate that there are no petroleum storage tanks registered with the Department, under the Petroleum Product Storage and Handling Regulation.

Our records indicate that there has been contamination found at:

1.) **475 Queen St., Dalhousie, Esso Bulk Plant (PID# 50104066)**. See attached information report.
2.) **475 Queen St., Dalhousie, Maritime Fuels Limited (PID# 50104066)**. See attached information report.
3.) **Victoria St., Dalhousie, PCI Chemicals Canada Company (PID# 50181510)**. See attached information report.
4.) **439 Adelaide St., George St., Dalhousie, Dalhousie Muffler Ltee (PID# 50261163)**. See attached information report.
5.) **439 Adelaide St., Dalhousie, Dalhousie Muffler Ltee (PID# 50261163)**. See attached information report.
6.) **456 William St., Dalhousie, Lounsbury Company Ltd. (PID# 50367366)**. See attached information report, and Record of Site Condition.
7.) **456 Williams St, Dalhousie, Lounsbury Chev-Olds (related retired PID# 50101609)**. See attached information report.

Our records indicate that there has been associated source contamination found at:

1.) **Van Horne St., Dalhousie, American Iron & Metal LP, General Partner, American Iron & Metal GP Inc (PID# 50172634)**. See attached information report.
2.) **Van Horne St., Dalhousie, American Iron & Metal LP, General Partner, American Iron & Metal GP Inc (PID# 50172667)**. See attached information report.
3.) **451 William St., Dalhousie, Bowater Maritimes Inc. (PID# 50173616)**. See attached information report.

These PID numbers are not registered with the Department as a PCB Storage site.

Our records indicate that **PID# 69200114** is identified by the Department as dumpsite# **50181510**, **Dalhousie Jct**. Dumpsite is closed and no longer accepts waste.

The absence of departmental records in this search does not necessarily indicate that the sites have not been subject to environmental incidents. The information is accurate in that it provides a factual reflection of what is contained in departmental databases. The files themselves may or may not be complete.

As an example, in the case of underground petroleum storage tanks, the files accurately reflect all those that were registered with the program; there may be underground storage tanks that were not registered and of which the Department has no knowledge. Likewise, there may be incidents of spills of which the Department was not informed or which pre-date Departmental records. "Remediation Site Management System" was established in the early 2000's and does not contain a complete history of past spills or remediation efforts. Furthermore, if the properties have been recently altered, the PID#'s provided may not correspond with those contained in departmental files and thus on the databases.

Any persons intending to purchase or occupy the property should make their own independent determination of the environmental condition of the property and the extent of responsibility and liability, if any, that may arise from taking ownership or occupancy.

Authorizations Branch

Enclosures: 12

/lr

Petroleum Storage
(PID 50104066, 50104413, 50181510, 50367366)

PID #: 50104066	Site #: 335	Address:	MARITIME FUELS 475 QUEEN STREET DALHOUSIE

Tank Information

Current Status	Active
Date Out of Service	
Installation Date	1960
Tank Size	59100 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Regular

Current Status	Removed
Date Out of Service	
Installation Date	1960
Tank Size	59000 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Regular

Current Status	Active
Date Out of Service	
Installation Date	1960
Tank Size	90800 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Dyed Diesel

Current Status	Active
Date Out of Service	
Installation Date	1960
Tank Size	90800 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Dyed Diesel

Current Status	Active
Date Out of Service	
Installation Date	1960
Tank Size	90800 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Dyed Diesel

Current Status	Active
Date Out of Service	
Installation Date	1960
Tank Size	90800 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Diesel

Current Status	Active
Date Out of Service	
Installation Date	1960
Tank Size	59100 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Stove Oil

Current Status	Active
Date Out of Service	
Installation Date	1960
Tank Size	59100 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Dyed Diesel

Current Status	Removed
Date Out of Service	
Installation Date	1960
Tank Size	59000 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Lube Oil

Current Status	Removed
Date Out of Service	1988-10-13
Installation Date	1956
Tank Size	2300 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Waste Oil

Current Status	Removed
Date Out of Service	1988-10-13
Installation Date	1971
Tank Size	2300 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Waste Oil

Current Status	Removed
Date Out of Service	1988-10-03
Installation Date	1962
Tank Size	22700 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Gasoline

Current Status	Removed
Date Out of Service	1988-10-13
Installation Date	1959
Tank Size	9100 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Gasoline

Current Status	Active
Date Out of Service	
Installation Date	1985
Tank Size	16000 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Separator

Current Status	Removed
Date Out of Service	1988-12-14
Installation Date	1959
Tank Size	9100 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Separator

Current Status	Removed
Date Out of Service	
Installation Date	1991
Tank Size	4540 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Waste Oil

Current Status	Active
Date Out of Service	
Installation Date	Unknown
Tank Size	1100 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Waste Oil

Current Status	Active
Date Out of Service	
Installation Date	Unknown
Tank Size	1100 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Waste Oil

Current Status	Active
Date Out of Service	
Installation Date	2006
Tank Size	1250 L
Location	Above Ground
Constructed Of	Double Wall Steel
Substance Stored	Diesel

Current Status	Removed
Date Out of Service	2012-06-12
Installation Date	2001
Tank Size	909 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Furnace Oil

PID #: 50104413 Site #: 399 Address: ARTS MOTEL
855 VICTORIA STREET
DALHOUSIE

Tank Information

Current Status	Inactive
Date Out of Service	
Installation Date	1960
Tank Size	2250 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Furnace Oil

Current Status	Removed
Date Out of Service	1986-03-01
Installation Date	1986
Tank Size	900 L
Location	Above Ground
Constructed Of	Steel
Substance Stored	Furnace Oil

Current Status	Inactive
Date Out of Service	
Installation Date	1960
Tank Size	1125 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Furnace Oil

Current Status	Removed
Date Out of Service	1994-07-07

Installation Date	Unknown
Tank Size	5000 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Furnace Oil

PID #: 50181510 Site #: 2391 Address: OLIN CANADA ULC
600 QUEEN STREET
DALHOUSIE

Tank Information

Current Status	Removed
Date Out of Service	1987-01-01
Installation Date	1963
Tank Size	45000 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Furnace Oil

Current Status	Removed
Date Out of Service	
Installation Date	1986
Tank Size	9000 L
Location	Above Ground
Constructed Of	Steel
Substance Stored	Furnace Oil

Current Status	Removed
Date Out of Service	2016-11-24
Installation Date	1991
Tank Size	15000 L
Location	Above Ground
Constructed Of	Double Wall Steel
Substance Stored	Furnace Oil

Current Status	Removed
Date Out of Service	2001-03-07
Installation Date	Unknown
Tank Size	900 L

Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Furnace Oil

Current Status	Removed
Date Out of Service	2001-06-01
Installation Date	Unknown
Tank Size	900 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Waste Oil

Current Status	Removed
Date Out of Service	2015-08-07
Installation Date	Unknown
Tank Size	2273 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Diesel

Current Status	Removed
Date Out of Service	1998-01-01
Installation Date	1991
Tank Size	320 L
Location	Above Ground
Constructed Of	Single Wall Steel
Substance Stored	Furnace Oil

Current Status	Removed
Date Out of Service	2015-08-07
Installation Date	2001
Tank Size	1135 L
Location	Above Ground
Constructed Of	Double Wall Steel
Substance Stored	Diesel

Current Status	Removed
Date Out of Service	2015-08-07
Installation Date	2002

Tank Size	2000 L
Location	Above Ground
Constructed Of	Double Wall Steel
Substance Stored	Waste Oil

Current Status	Removed
Date Out of Service	2015-08-07
Installation Date	2001
Tank Size	9000 L
Location	Above Ground
Constructed Of	Double Wall Steel
Substance Stored	Furnace Oil

Current Status	Removed
Date Out of Service	2015-08-07
Installation Date	1998
Tank Size	900 L
Location	Above Ground
Constructed Of	Double Wall Steel
Substance Stored	Diesel

Current Status	Removed
Date Out of Service	2003-12-19
Installation Date	Unknown
Tank Size	1135 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Regular

Current Status	Active
Date Out of Service	
Installation Date	2014
Tank Size	1955 L
Location	Above Ground
Constructed Of	Double Wall Steel
Substance Stored	Diesel

PID #: 50367366 Site #: 6664 Address: LOUNSBURY CHEV OLDS
456 WILLIAM STREET
DALHOUSIE

Tank Information

Current Status	Removed
Date Out of Service	1992-06-26
Installation Date	Unknown
Tank Size	4500 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Gasoline

Current Status	Removed
Date Out of Service	1992-06-26
Installation Date	Unknown
Tank Size	4500 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Gasoline

Current Status	Removed
Date Out of Service	1992-06-26
Installation Date	Unknown
Tank Size	2250 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Diesel

Current Status	Removed
Date Out of Service	1992-06-26
Installation Date	Unknown
Tank Size	13500 L
Location	Under Ground
Constructed Of	Single Wall Steel
Substance Stored	Gasoline

Current Status	Active
Date Out of Service	

Installation Date	2002
Tank Size	2500 L
Location	Above Ground
Constructed Of	Double Wall Steel
Substance Stored	Waste Oil

ENV Remediation Sites Management System
Information Report
Report For PID: 50104066

File #:	6515-1-0958
Parcel Identifier (PID)	50104066
Site Name	Maritime Fuels Limited
Civic Address	475 Queen St., Dalhousie
Site Management File Opened	August 17, 2023
Contamination Type	Petroleum
Site Management File Status	Open Assessment Ongoing
Party Responsible For Remediation	Property Owner
Consultant	Hive Engineering
Order(s) Specific to Remediation Issued	No

ENV Remediation Sites Management System
Information Report
Report For PID: 50104066

File #:	6515-1-0308
Parcel Identifier (PID)	50104066
Site Name	Esso Bulk Plant
Civic Address	475 Queen St., Dalhousie
Site Management File Opened	September 25, 1991
Contamination Type	Petroleum
Site Management File Status	Closed Some remedial action taken - Contamination status has not been confirmed.
Party Responsible For Remediation	Imperial Oil
Consultant	MGI Limited
Order(s) Specific to Remediation Issued	No

ENV Remediation Sites Management System
Information Report
Report For PID: 50181510

File #:	6515-1-0641
Parcel Identifier (PID)	50181510
Site Name	PCI Chemicals Canada Company
Civic Address	Victoria St., Dalhousie
Site Management File Opened	April 9, 2008
Contamination Type	Other
Site Management File Status	Open Assessment Ongoing
Party Responsible For Remediation	Property Owner
Consultant	None
Order(s) Specific to Remediation Issued	No

ENV Remediation Sites Management System
Information Report
Report For PID: 50261163

File #:	6515-1-0447
Parcel Identifier (PID)	50261163
Site Name	Dalhousie Muffler Ltee
Civic Address	439 Adelaide St., George St., Dalhousie
Site Management File Opened	June 2, 1995
Contamination Type	Petroleum - Waste Oil
Site Management File Status	Closed Some remedial action taken - Site closure decision made, No further action necessary.
Party Responsible For Remediation	Property Owner
Consultant	None
Order(s) Specific to Remediation Issued	No

ENV Remediation Sites Management System
Information Report
Report For PID: 50261163

File #:	6515-1-0592
Parcel Identifier (PID)	50261163
Site Name	Dalhousie Muffler Ltee
Civic Address	439 Adelaide St., Dalhousie
Site Management File Opened	October 6, 2006
Contamination Type	Petroleum - Waste Oil
Site Management File Status	Closed Some remedial action taken - Site closure decision made, No further action necessary.
Party Responsible For Remediation	Property Owner
Consultant	None
Order(s) Specific to Remediation Issued	No

ENV Remediation Sites Management System
Information Report
Report For PID: 50367366

File #:	6515-1-0611
Parcel Identifier (PID)	50367366
Site Name	Lounsbury Company Ltd.
Civic Address	456 William St., Dalhousie
Site Management File Opened	February 6, 2007
Contamination Type	Other
Site Management File Status	Closed 2003 - Tier 3 Site Specific Remedial Criteria Achieved - Unconditional Closure
Party Responsible For Remediation	Lounsbury Company Limited
Consultant	Jacques Whitford Environment Ltd.
Order(s) Specific to Remediation Issued	No

ENV Remediation Sites Management System
Information Report
Report For PID: 50101609

File #:	6515-1-0361
Parcel Identifier (PID)	50101609
Site Name	Lounsbury Chev-Olds
Civic Address	456 Williams St, Dalhousie
Site Management File Opened	June 23, 1992
Contamination Type	Petroleum - Gasoline
Site Management File Status	Closed Some remedial action taken - Site closure decision made, No further action necessary.
Party Responsible For Remediation	Property Owner
Consultant	None
Order(s) Specific to Remediation Issued	No

ENV Remediation Sites Management System
Information Report
Report For PID: 50172634

Site Name	American Iron & Metal LP, General Partner, American Iron & Metal GP Inc
Civic Address	Van Horne St., Dalhousie

The above-noted property has been registered as an associated source property in association with the release of a contaminant on an adjacent property. Information relevant to the remediation of contamination caused by the release and the status of the ENV Site Management File is as follows:

File #:	6515-1-0176
Parcel Identifier (PID)	50382498
Site Name	Avenor Maritimes Inc.
Civic Address	451 William St., Dalhousie
Site Management File Opened	June 1, 1995
Contamination Type	Petroleum - Furnace Oil
Site Management File Status	Open Assessment Ongoing
Party Responsible For Remediation	Property Owner
Consultant	MGI Limited
Order(s) Specific to Remediation Issued	No

ENV Remediation Sites Management System
Information Report
Report For PID: 50172667

Site Name	American Iron & Metal LP, General Partner, American Iron & Metal GP Inc
Civic Address	Van Horne St., Dalhousie

The above-noted property has been registered as an associated source property in association with the release of a contaminant on an adjacent property. Information relevant to the remediation of contamination caused by the release and the status of the ENV Site Management File is as follows:

File #:	6515-1-0176
Parcel Identifier (PID)	50382498
Site Name	Avenor Maritimes Inc.
Civic Address	451 William St., Dalhousie
Site Management File Opened	June 1, 1995
Contamination Type	Petroleum - Furnace Oil
Site Management File Status	Open Assessment Ongoing
Party Responsible For Remediation	Property Owner
Consultant	MGI Limited
Order(s) Specific to Remediation Issued	No

ENV Remediation Sites Management System
Information Report
Report For PID: 50173616

Site Name	Bowater Maritimes Inc.
Civic Address	451 William St., Dalhousie

The above-noted property has been registered as an associated source property in association with the release of a contaminant on an adjacent property. Information relevant to the remediation of contamination caused by the release and the status of the ENV Site Management File is as follows:

File #:	6515-1-0176
Parcel Identifier (PID)	50382498
Site Name	Avenor Maritimes Inc.
Civic Address	451 William St., Dalhousie
Site Management File Opened	June 1, 1995
Contamination Type	Petroleum - Furnace Oil
Site Management File Status	Open Assessment Ongoing
Party Responsible For Remediation	Property Owner
Consultant	MGI Limited
Order(s) Specific to Remediation Issued	No

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175 Commerce Valley Drive W
Markham, Ontario L3T 723

T: 1 877 244 9437
W: optaintel.ca

Stephan

Dalhousie New Brunswick Canada

Project No:
17712

Opta Order ID:
147306

Requested by:
Greg Derrah
Fundy Engineering

Date Completed:
7/31/2024 3:07:53 PM

Project Name: Phase I and II ESA

Project #: 17712

ENVIROSCAN Report

Search Area: Dalhousie New Brunswick Canada

Requested by:
Greg Derrah
Date Completed: 07/31/2024 15:07:53

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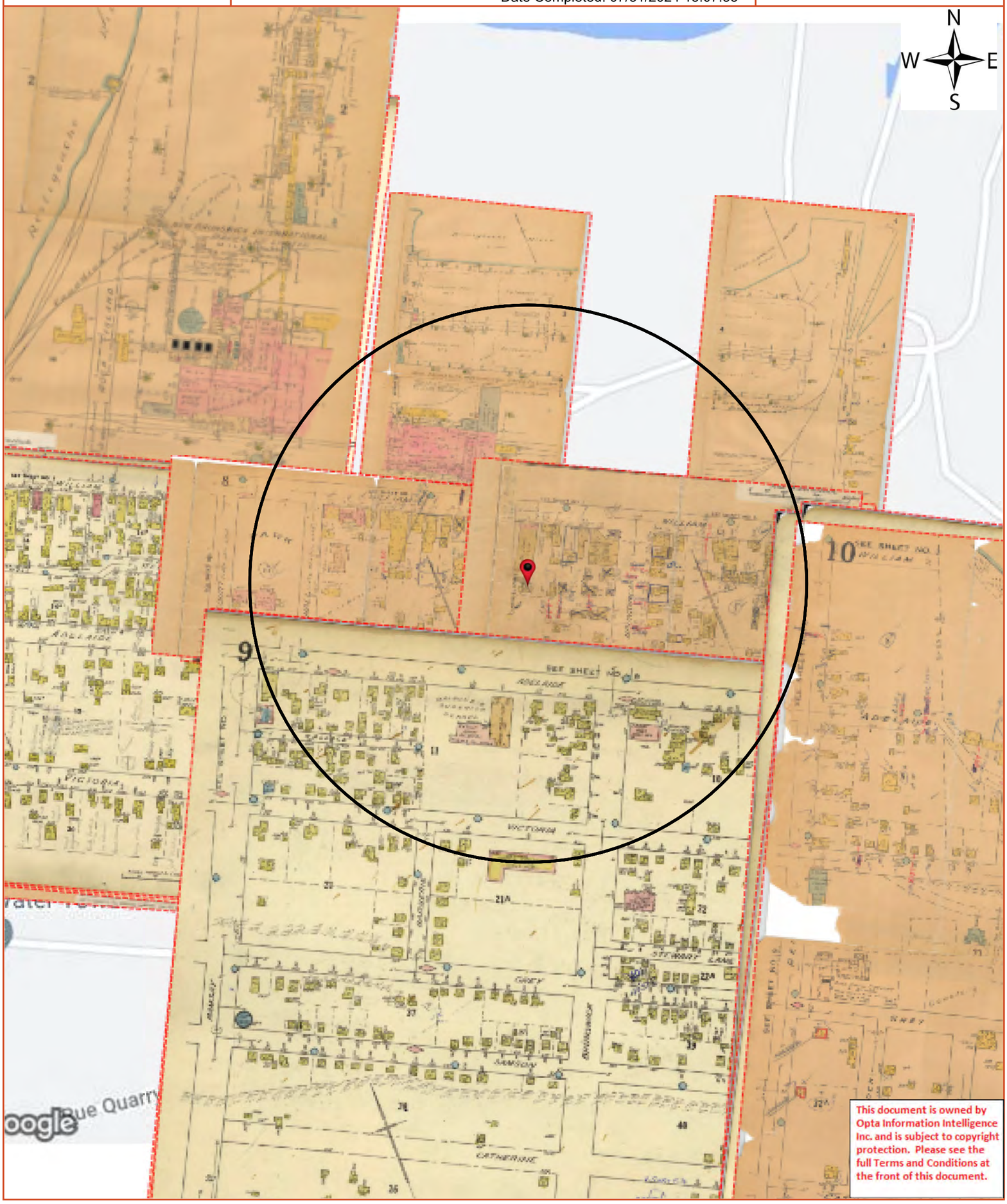

Opta Historical Environmental Services Enviroscan™ Terms and Conditions

Report

The documents (hereinafter referred to as the "Documents") to be released as part of the report (hereinafter referred to as the "Report") to be delivered to the purchaser as set out above are documents in Opta's records relating to the described property (hereinafter referred to as the "Property"). Opta makes no representations or warranties respecting the Documents whatsoever, including, without limitation, with respect to the completeness, accuracy or usefulness of the Documents, and does not represent or warrant that these are the only plans and reports prepared in association with the Property or in Opta's possession at the time of Report delivery to the purchaser. The Documents are current as of the date(s) indicated on them. Interpretation of the Documents, if any, is by inference based upon the information which is apparent and obvious on the face of the Documents only. Opta does not represent, warrant or guarantee that interpretations other than those referred to do not exist from other sources. The Report will be prepared for use by the purchaser of the services as shown above hereof only.

Disclaimer

Opta disclaims responsibility for any losses or damages of any kind whatsoever, whether consequential or other, however caused, incurred or suffered, arising directly or indirectly as a result of the services (which services include, but are not limited to, the preparation of the Report provided hereunder), including but not limited to, any losses or damages arising directly or indirectly from any breach of contract, fundamental or otherwise, from reliance on Opta Reports or from any tortious acts or omissions of Opta's agents, employees or representatives.

Entire Agreement

The parties hereto acknowledge and agree to be bound by the terms and conditions hereof. The request form constitutes the entire agreement between the parties pertaining to the subject matter hereof and supersedes all prior and contemporaneous agreements, negotiations and discussions, whether oral or written, and there are no representations or warranties, or other agreements between the parties in connection with the subject matter hereof except as specifically set forth herein. No supplement, modification, waiver, or termination of the request shall be binding, unless confirmed in writing by the parties hereto.

Governing Document

In the event of any conflicts or inconsistencies between the provisions hereof and the Reports, the rights and obligations of the parties shall be deemed to be governed by the request form, which shall be the paramount document.

Law

This agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein.

ENVIROSCAN Report

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Requested by:
Greg Derrah
Date Completed: 07/31/2024 15:07:53

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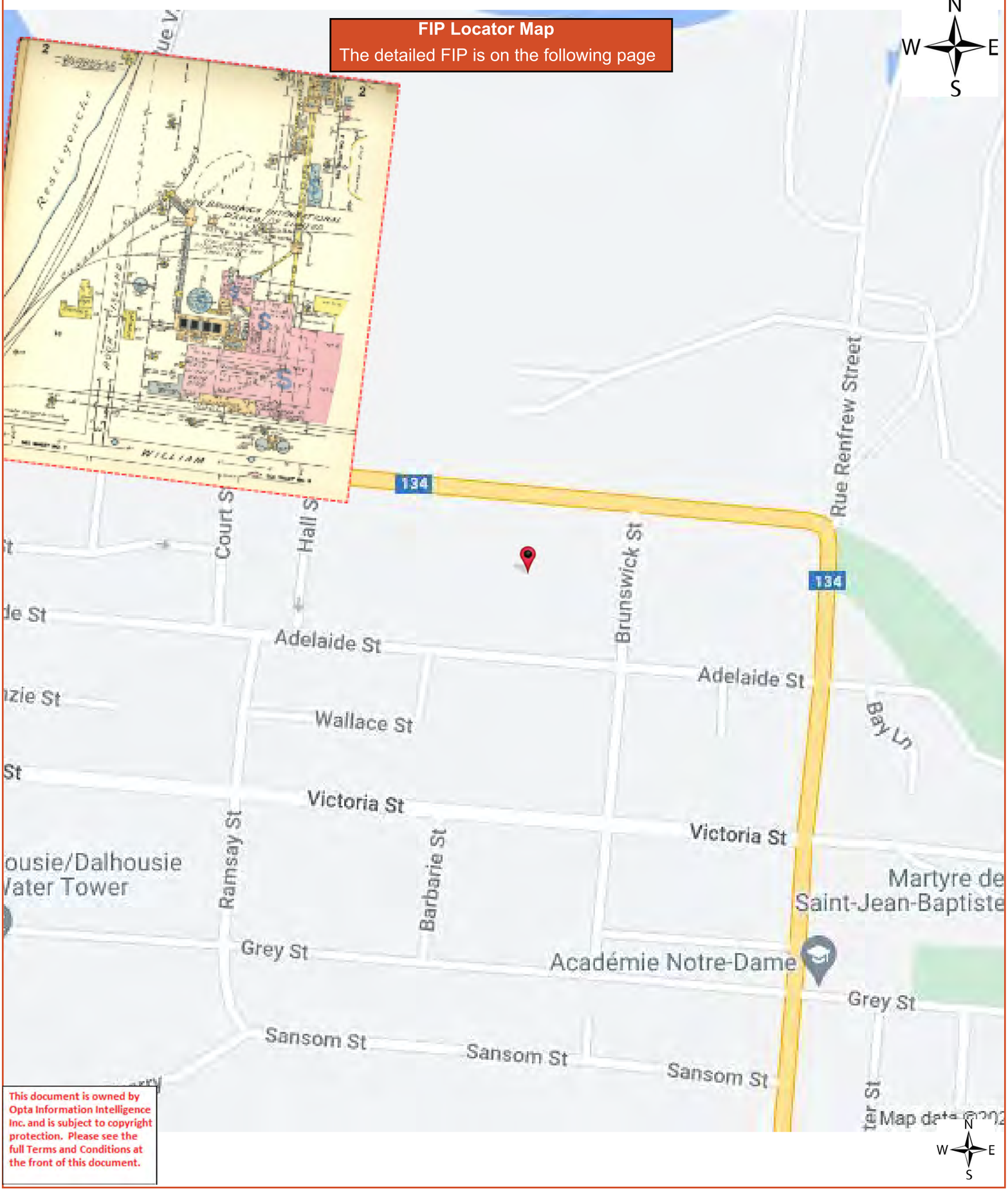

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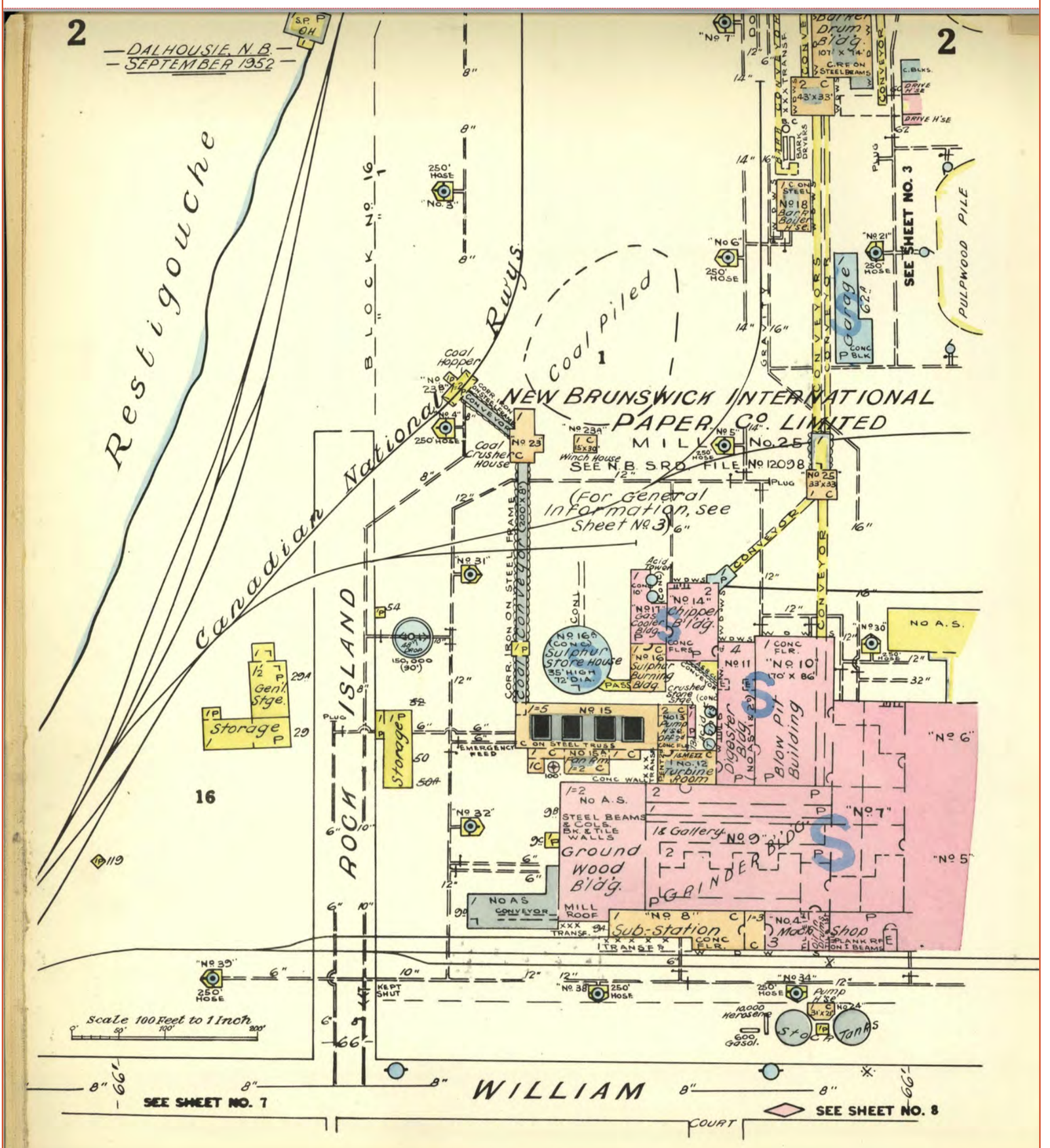

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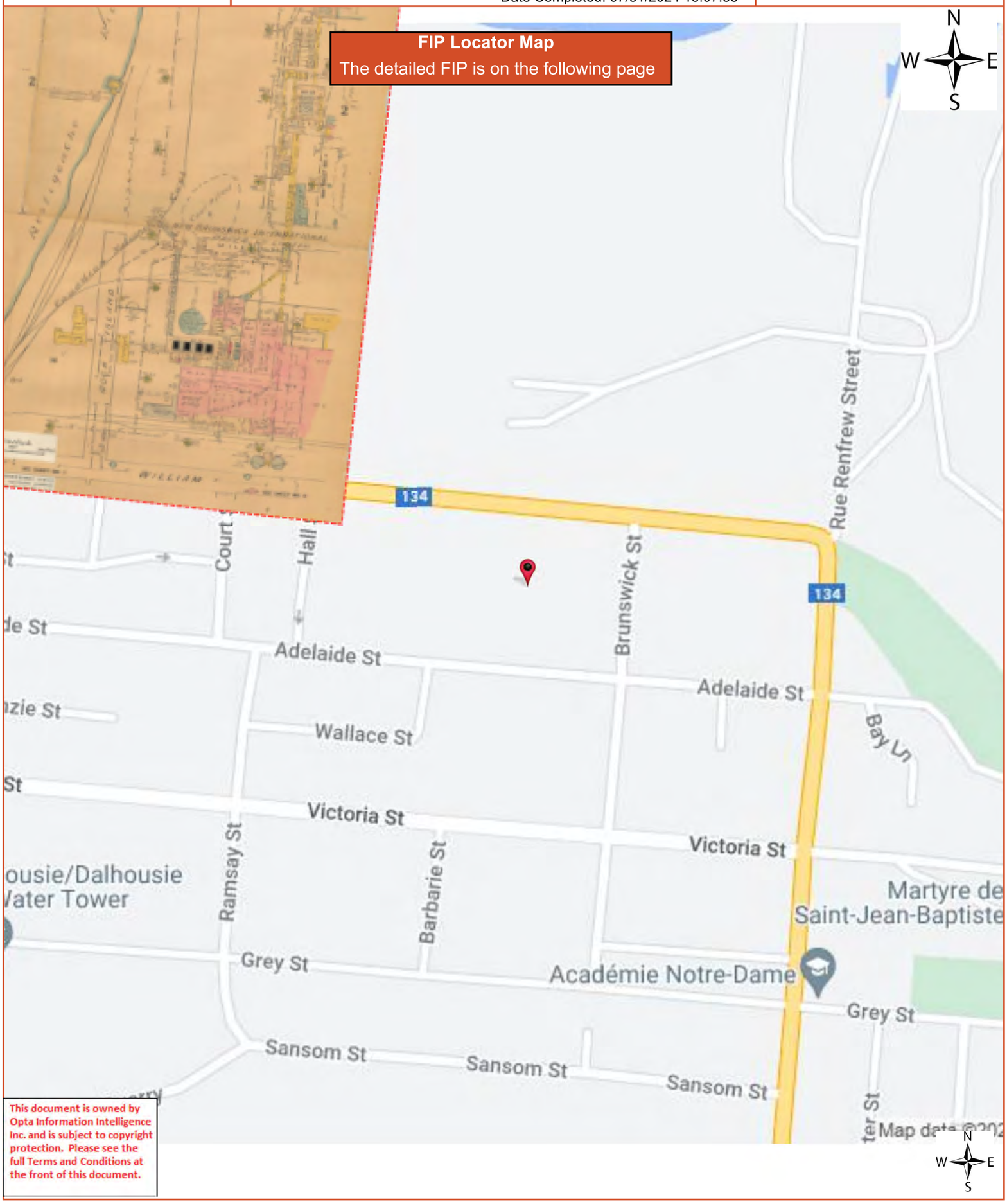

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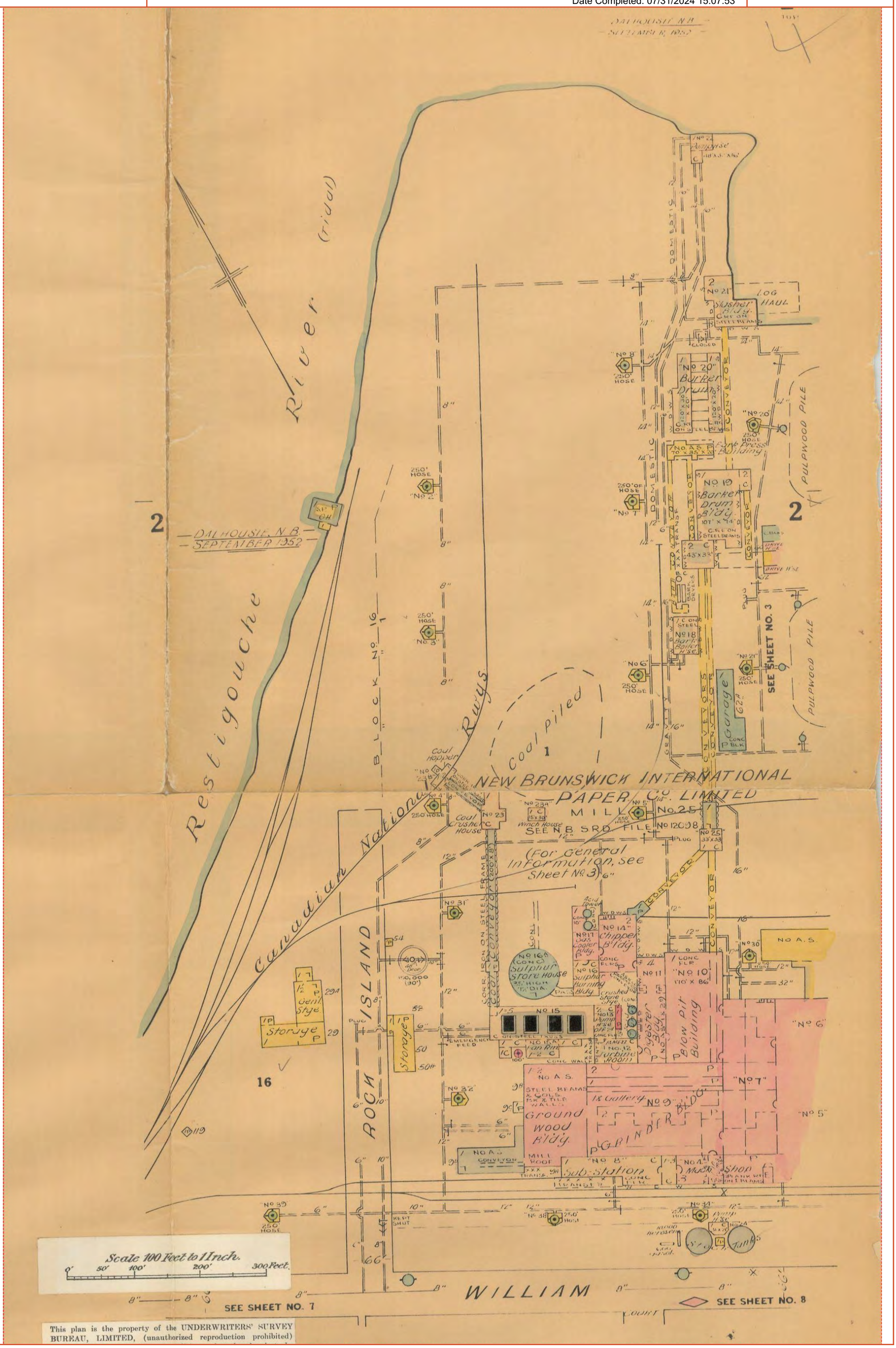

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Dalhousie Plan: 78 (1952)
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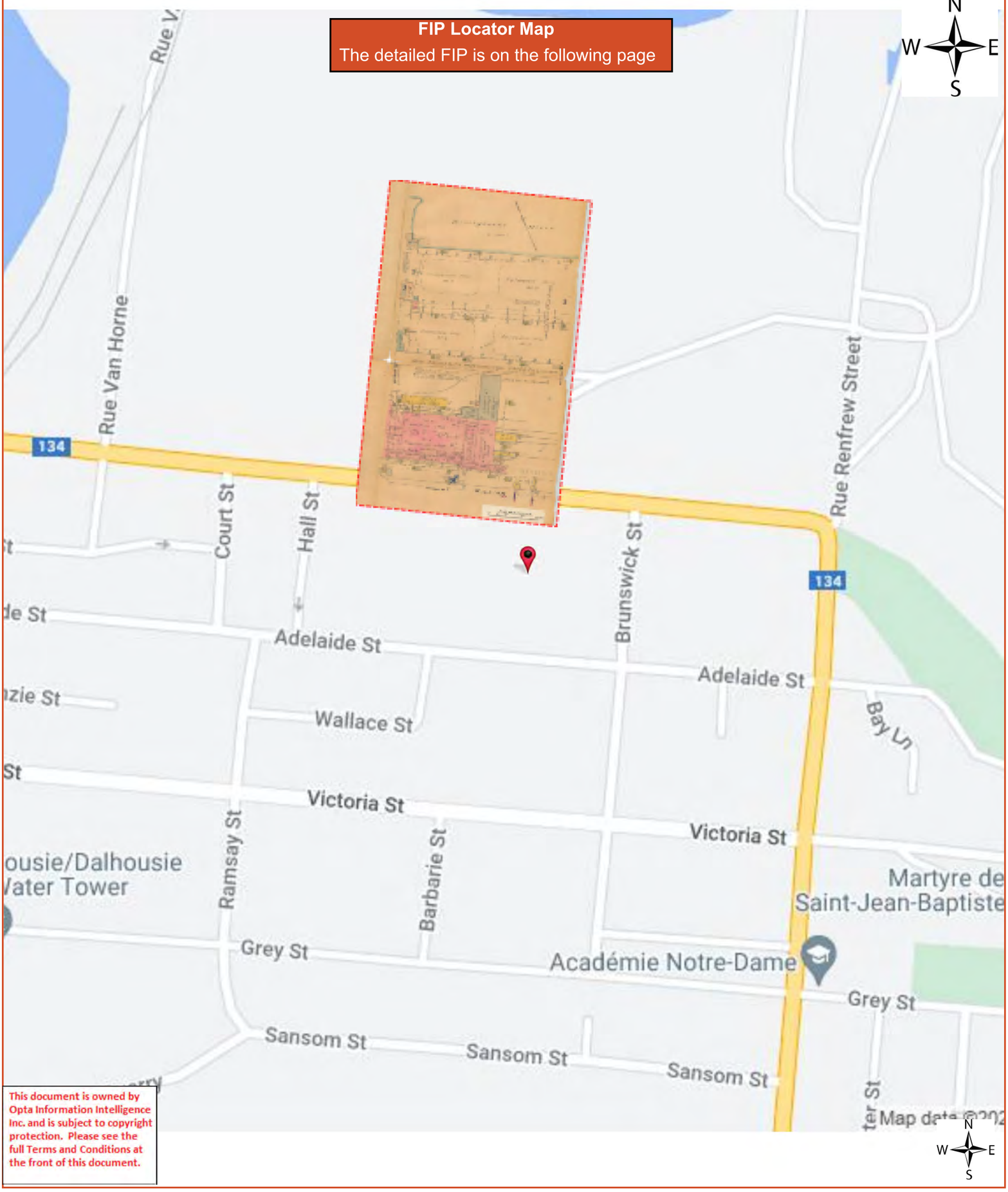

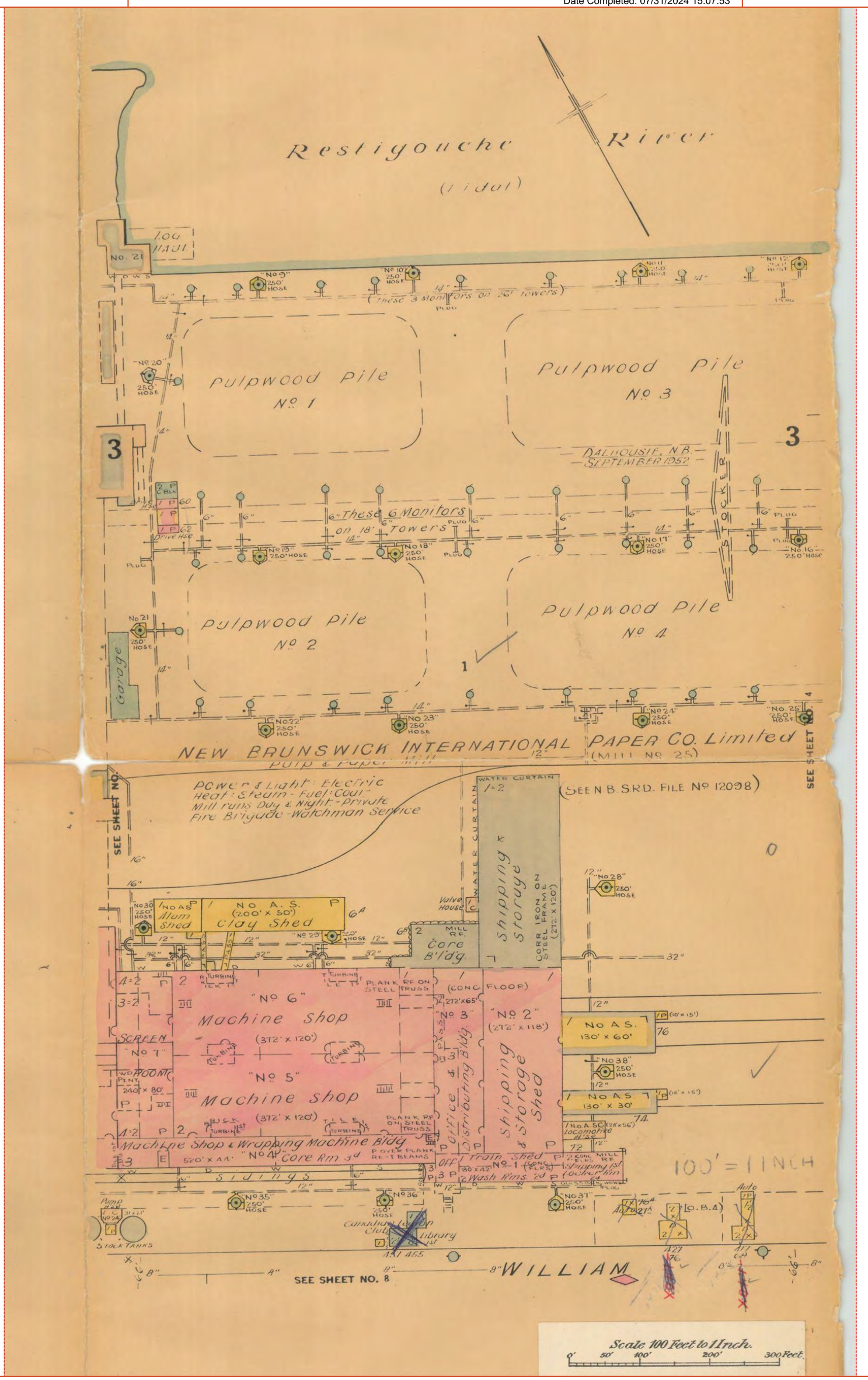

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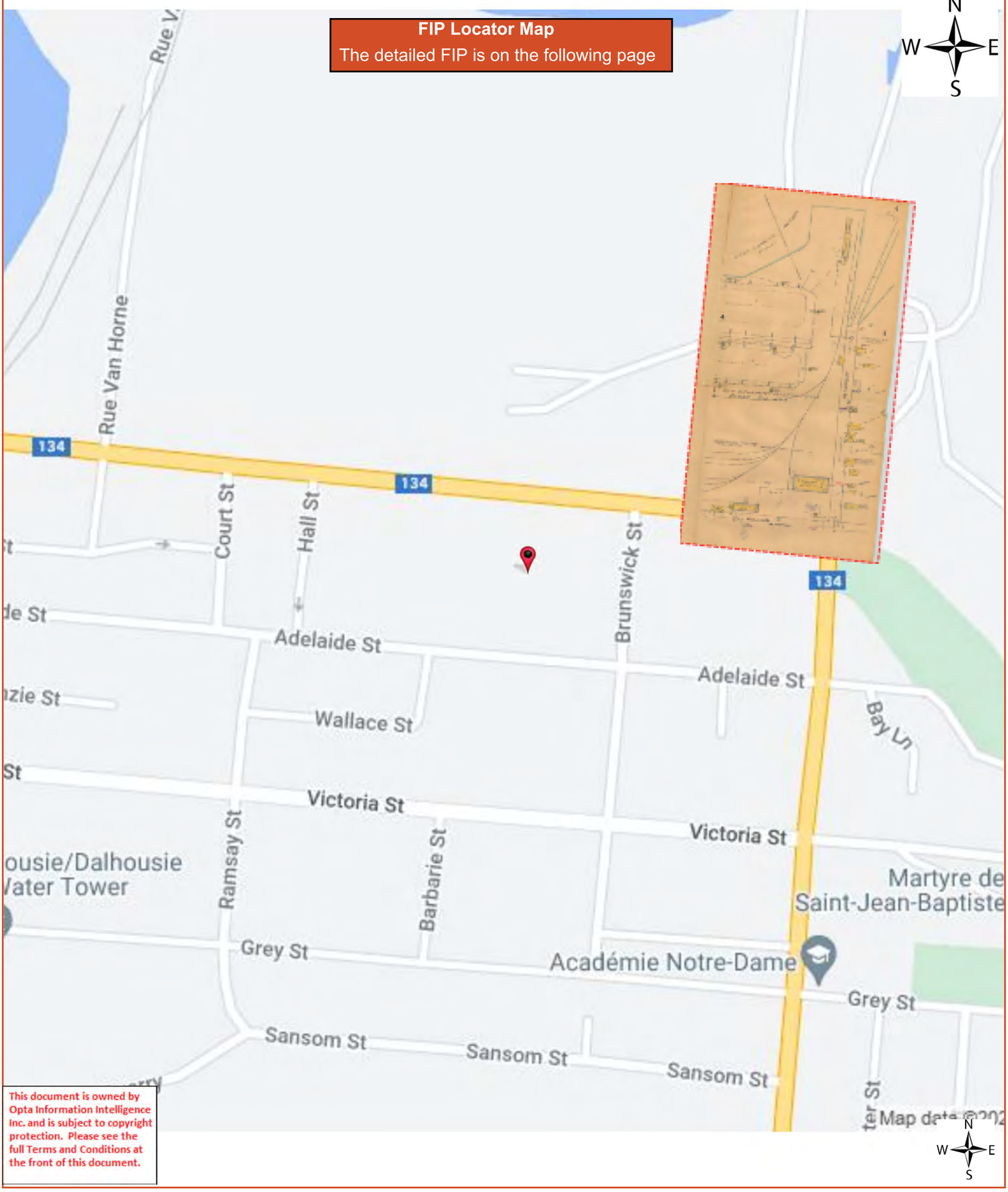

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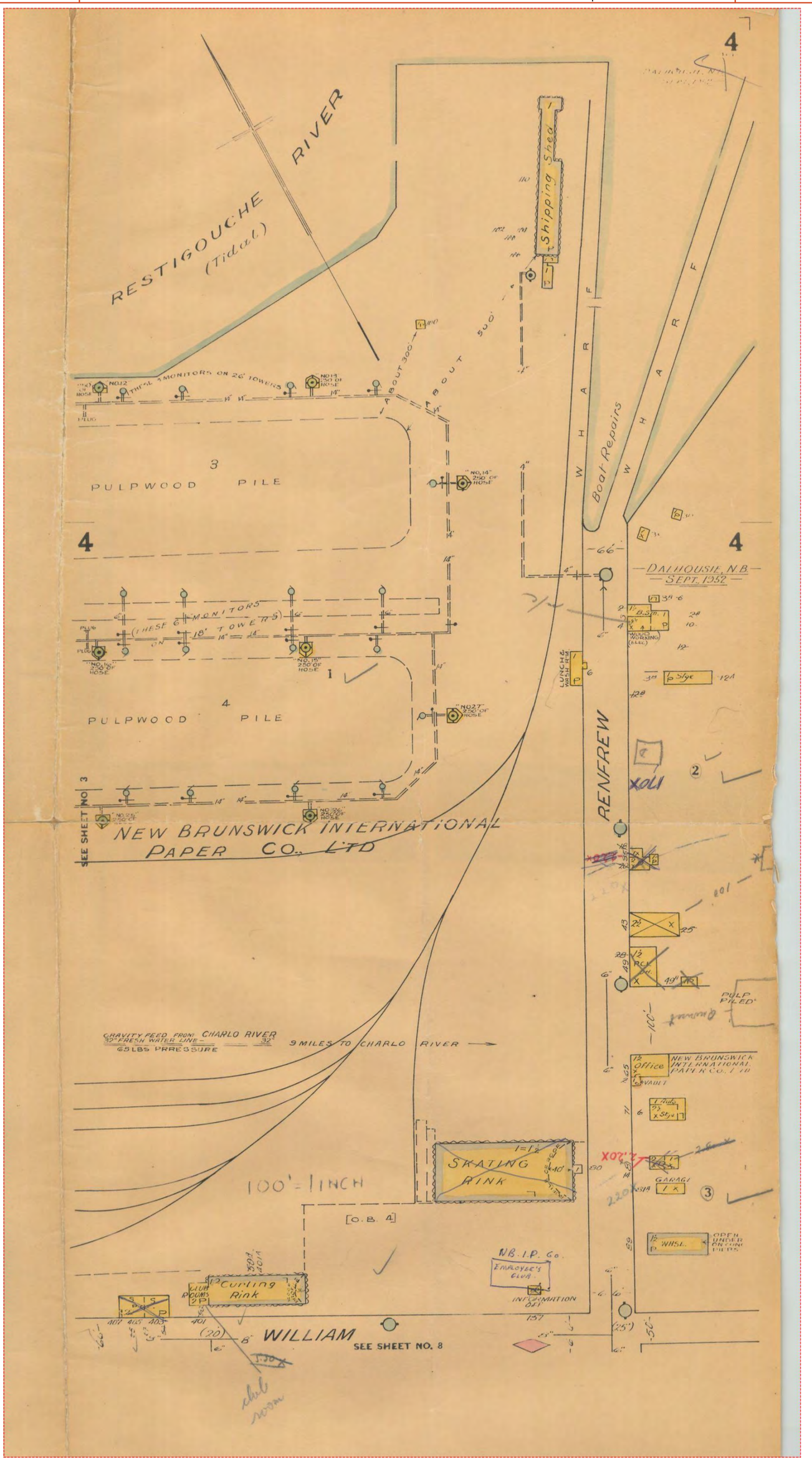

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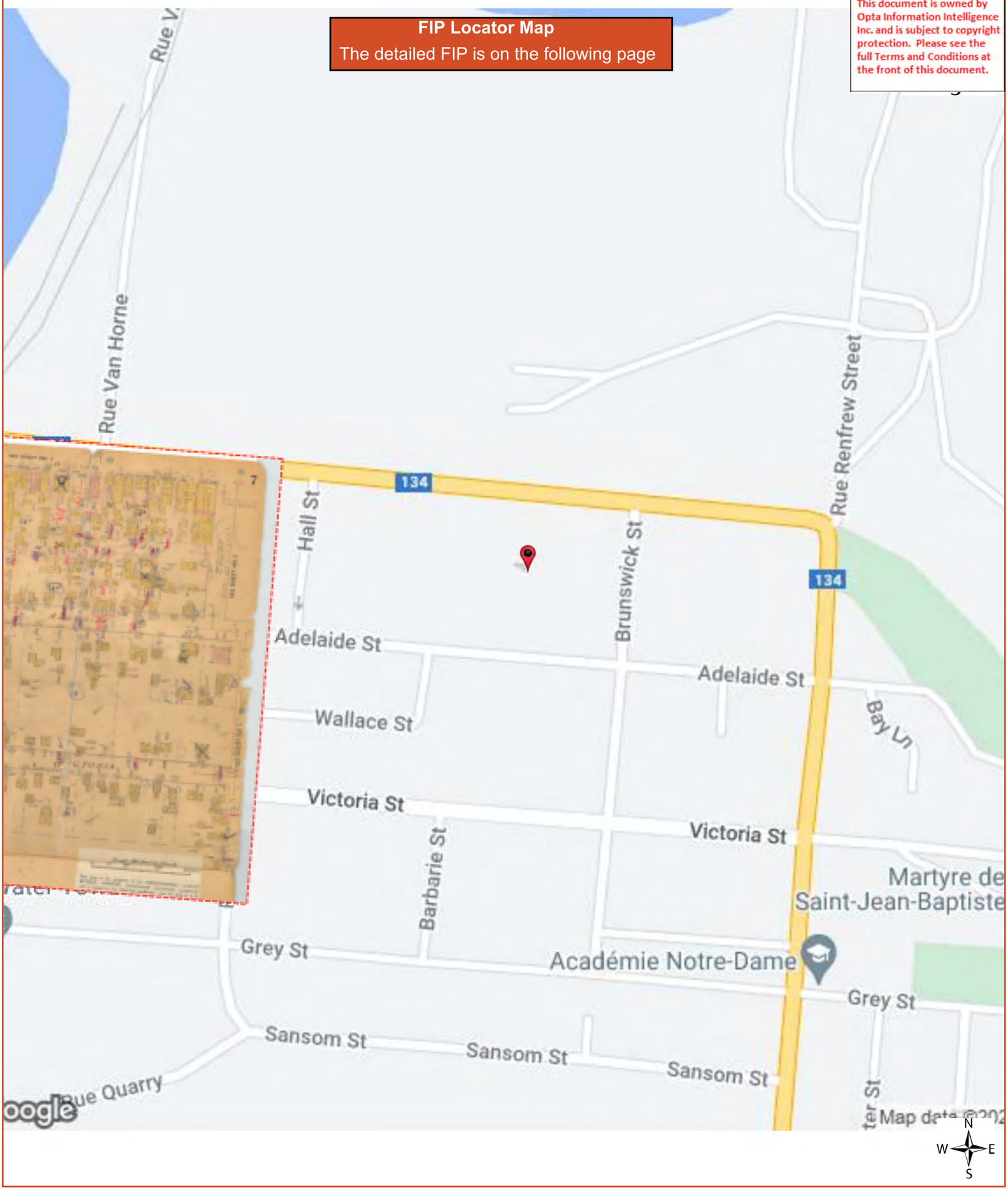

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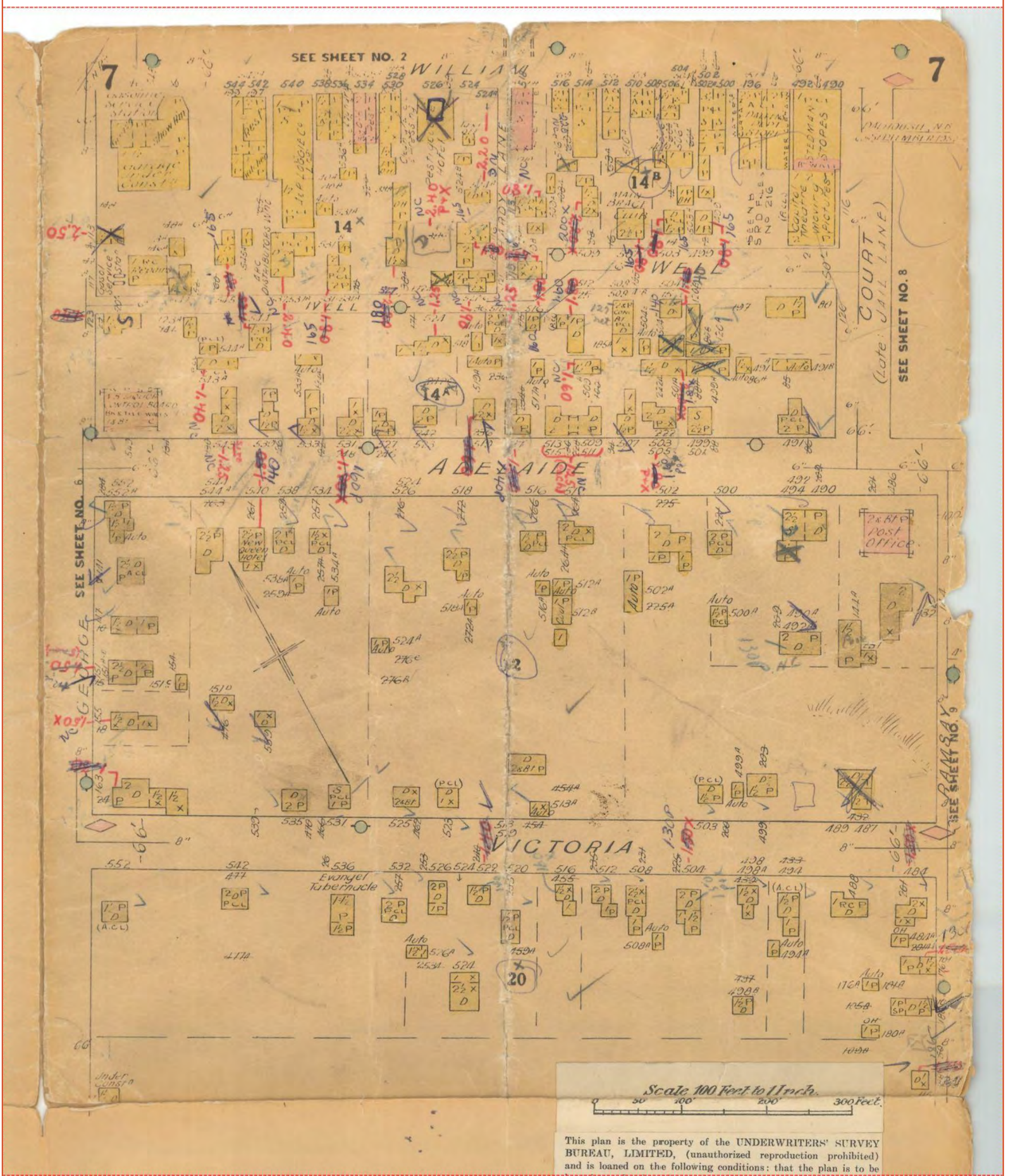

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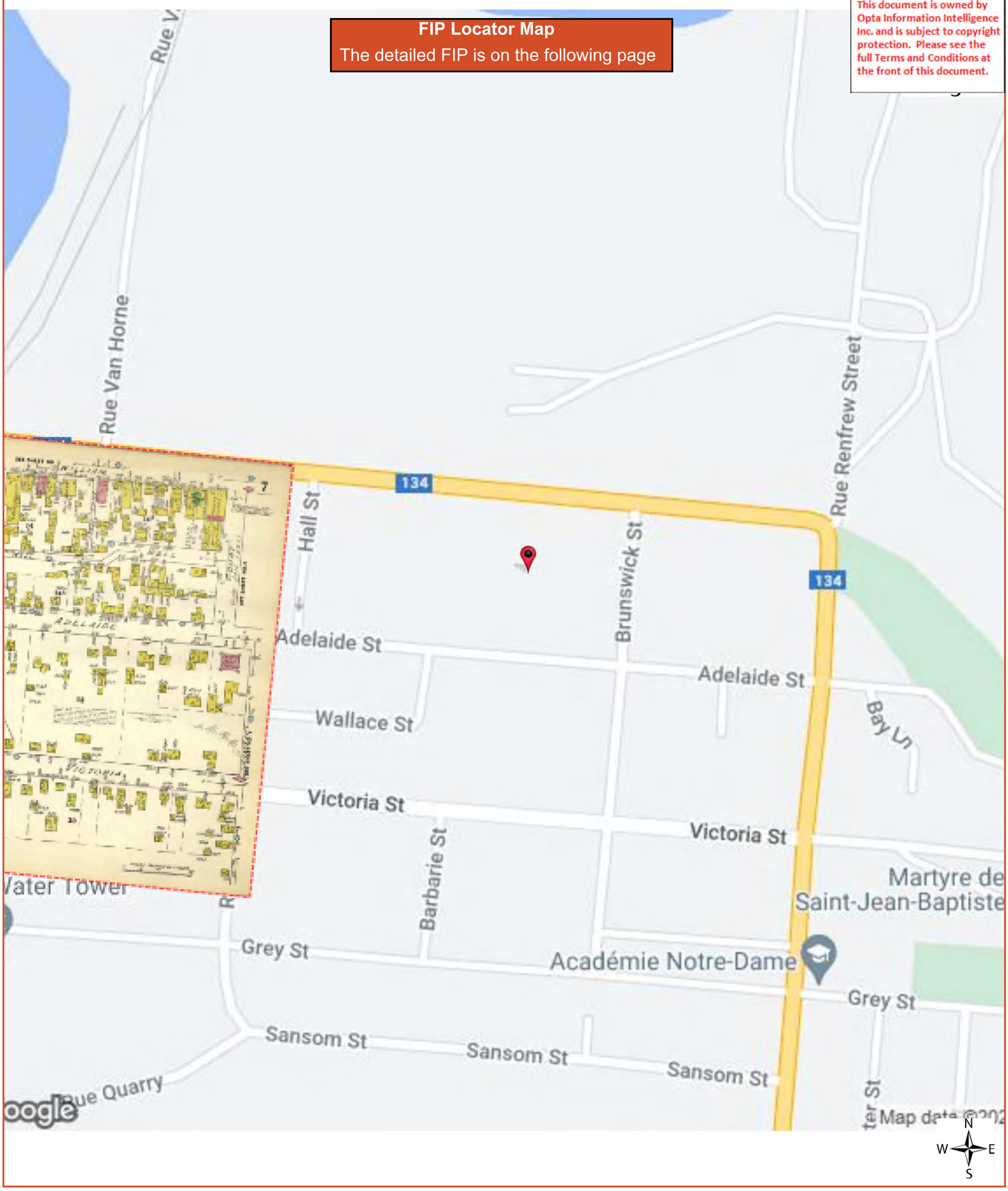

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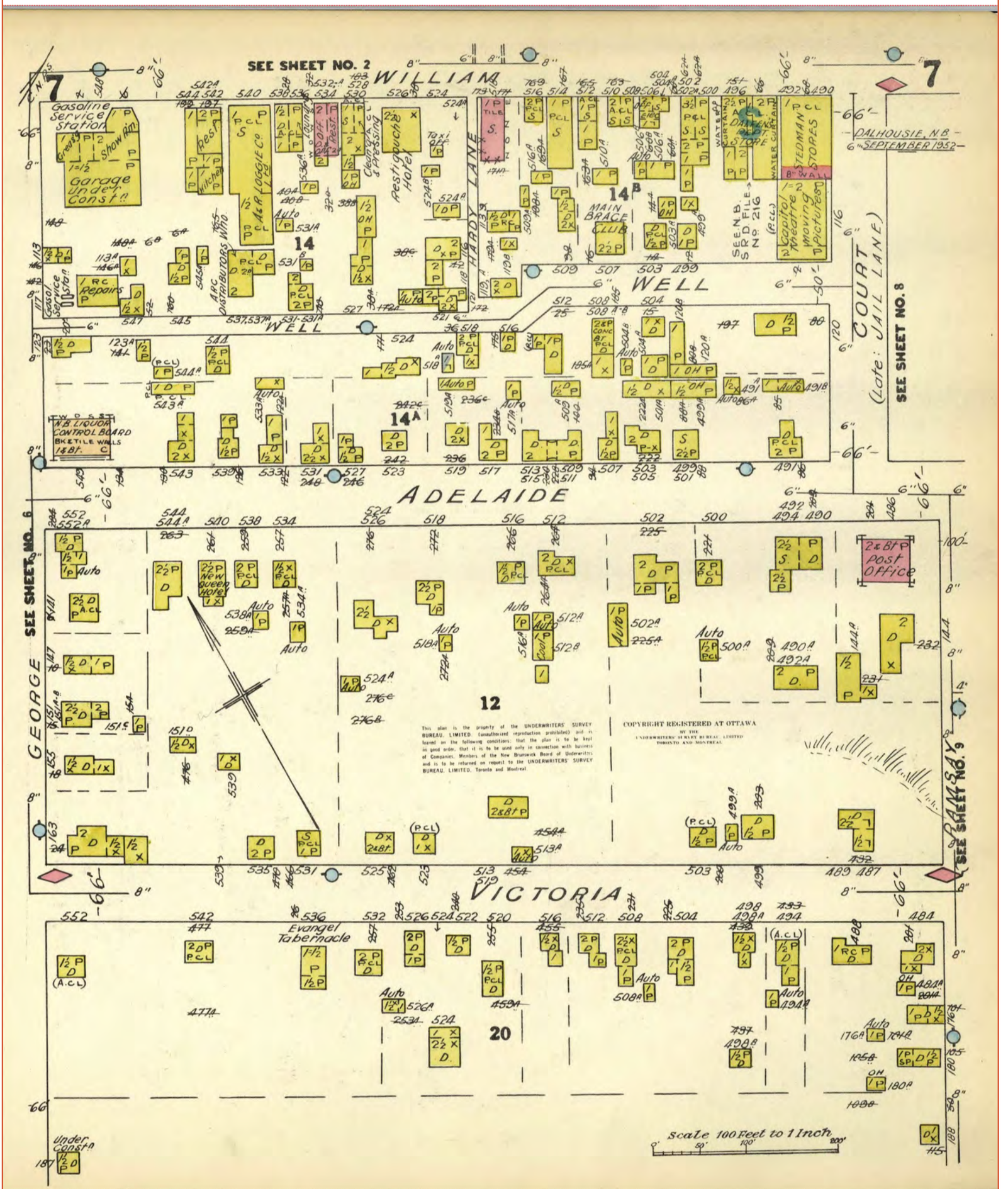

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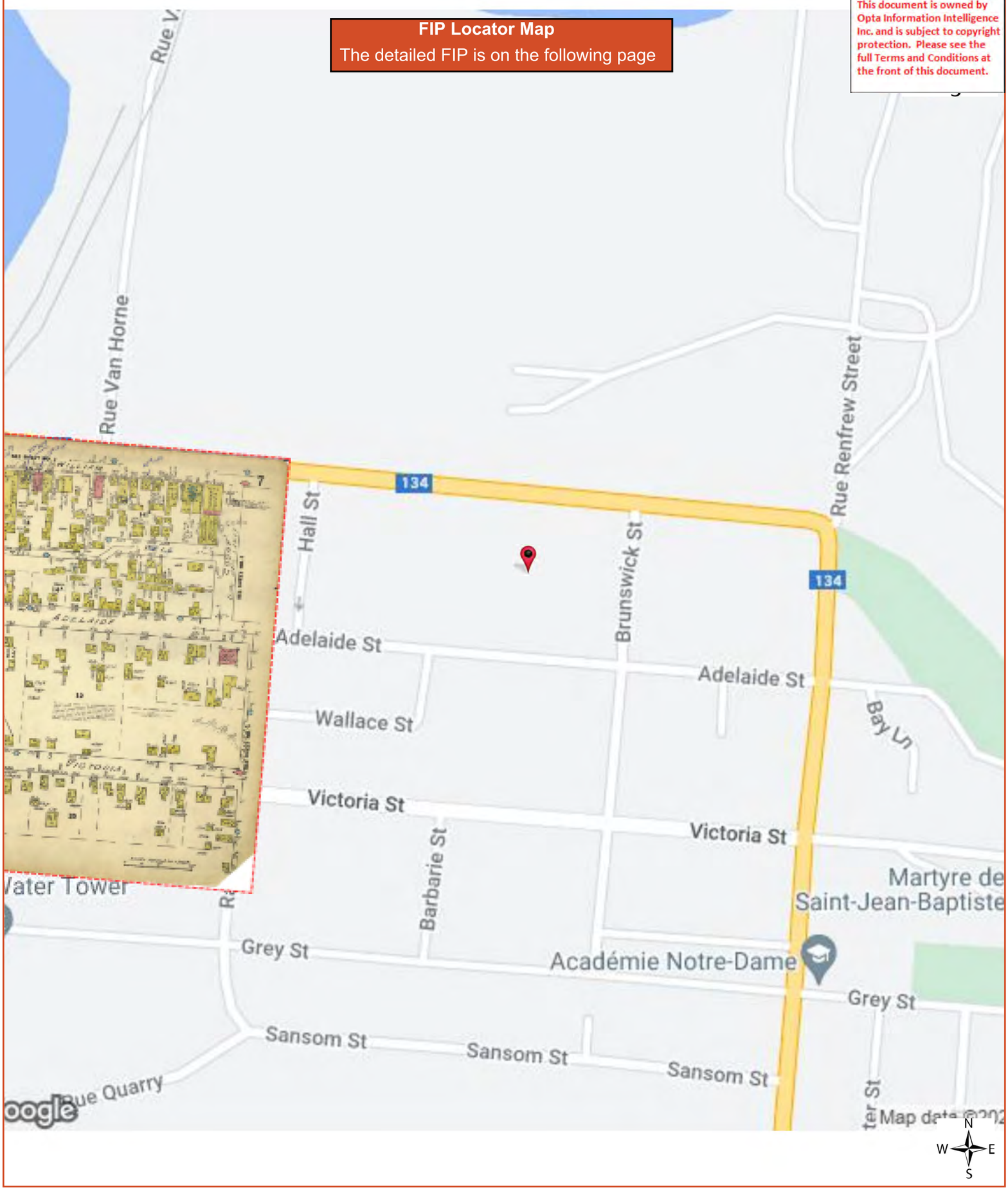

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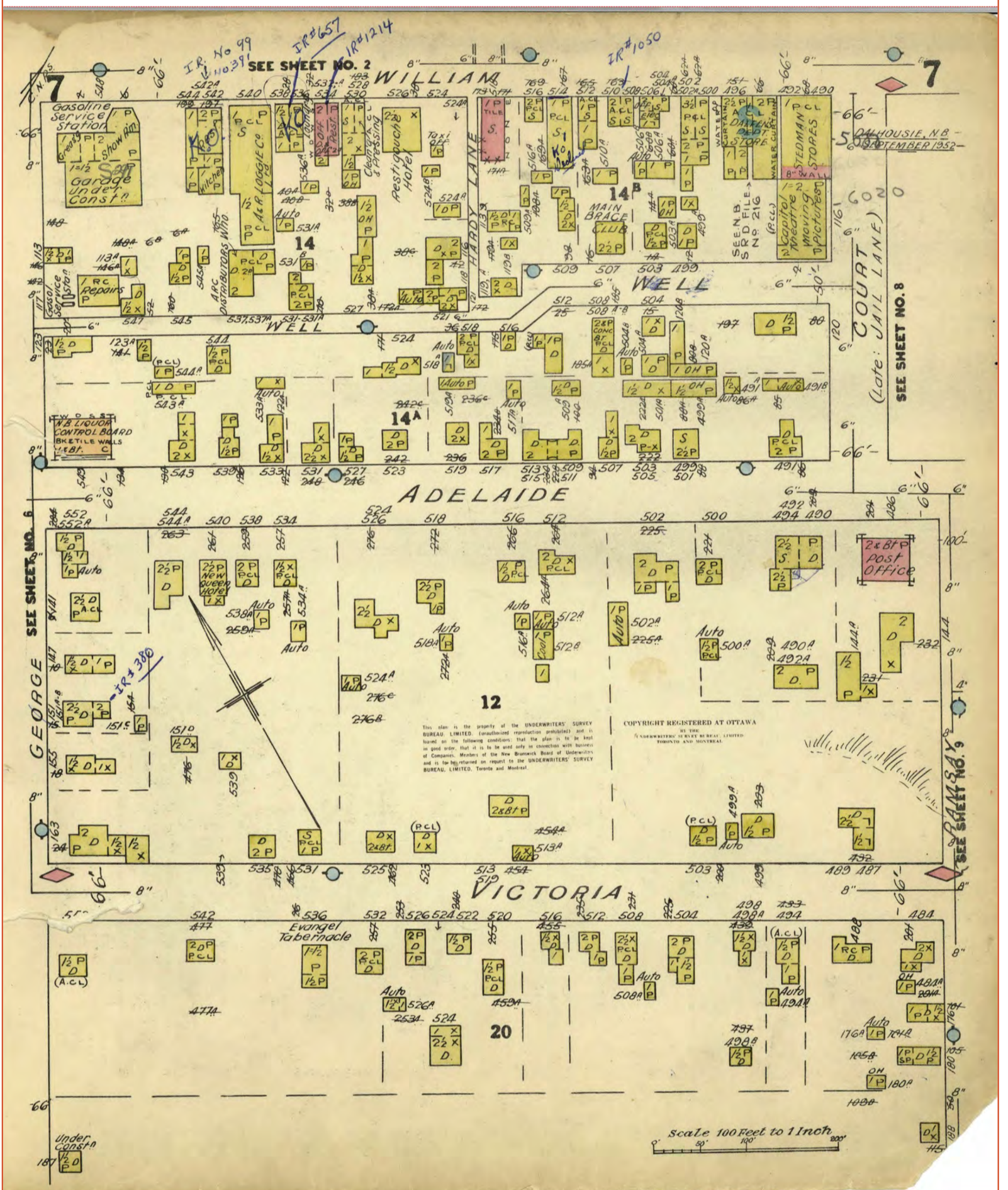

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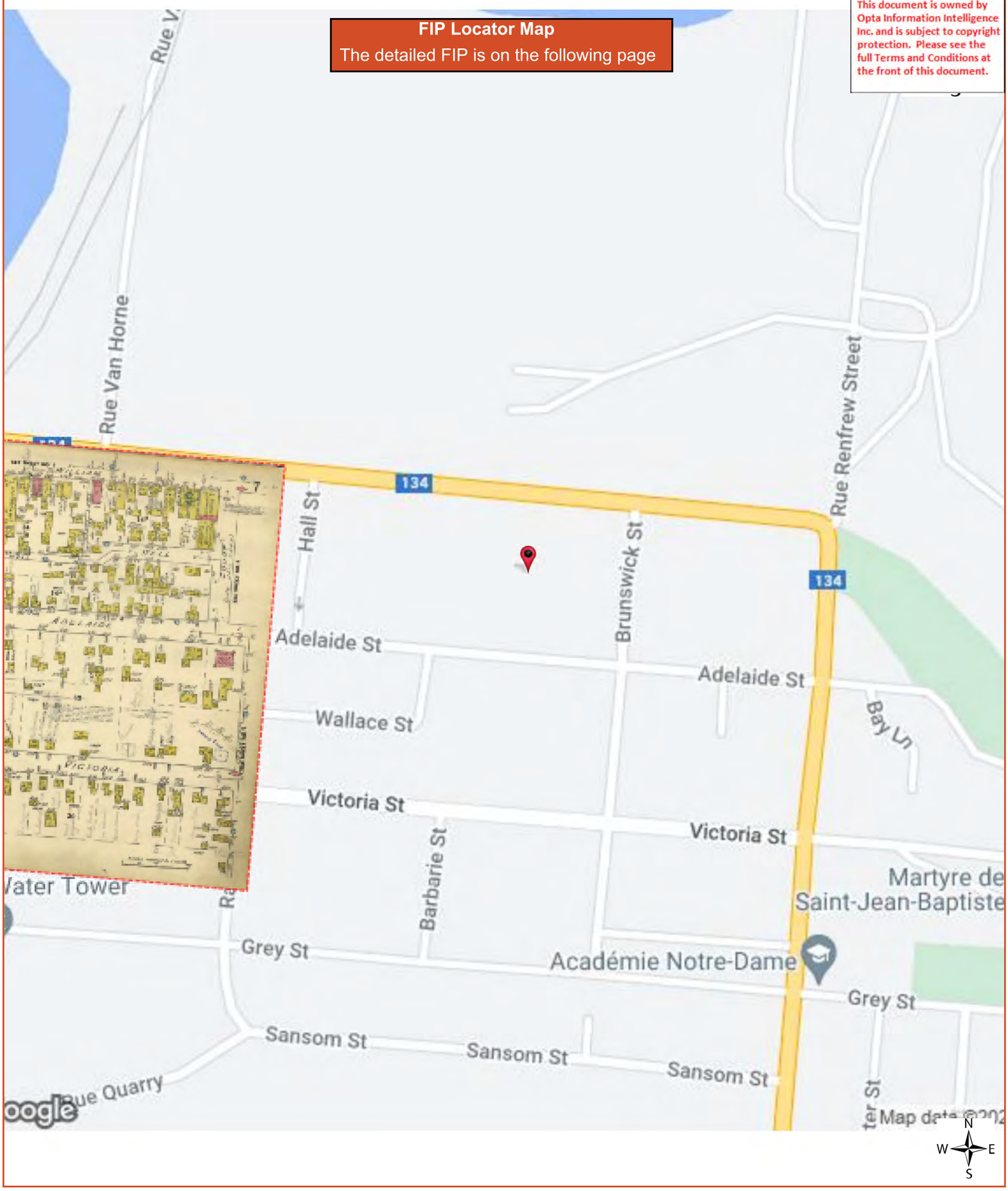

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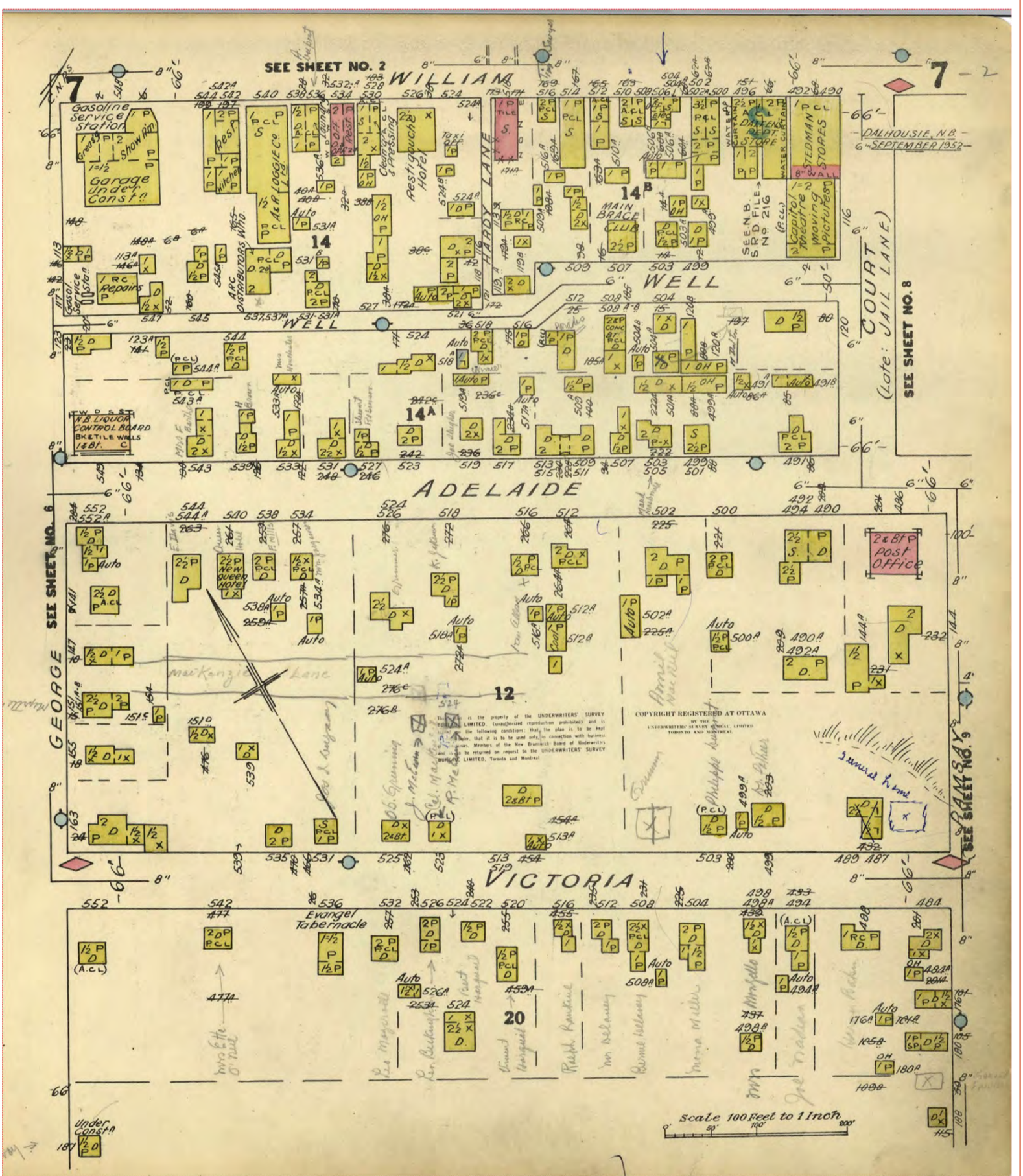

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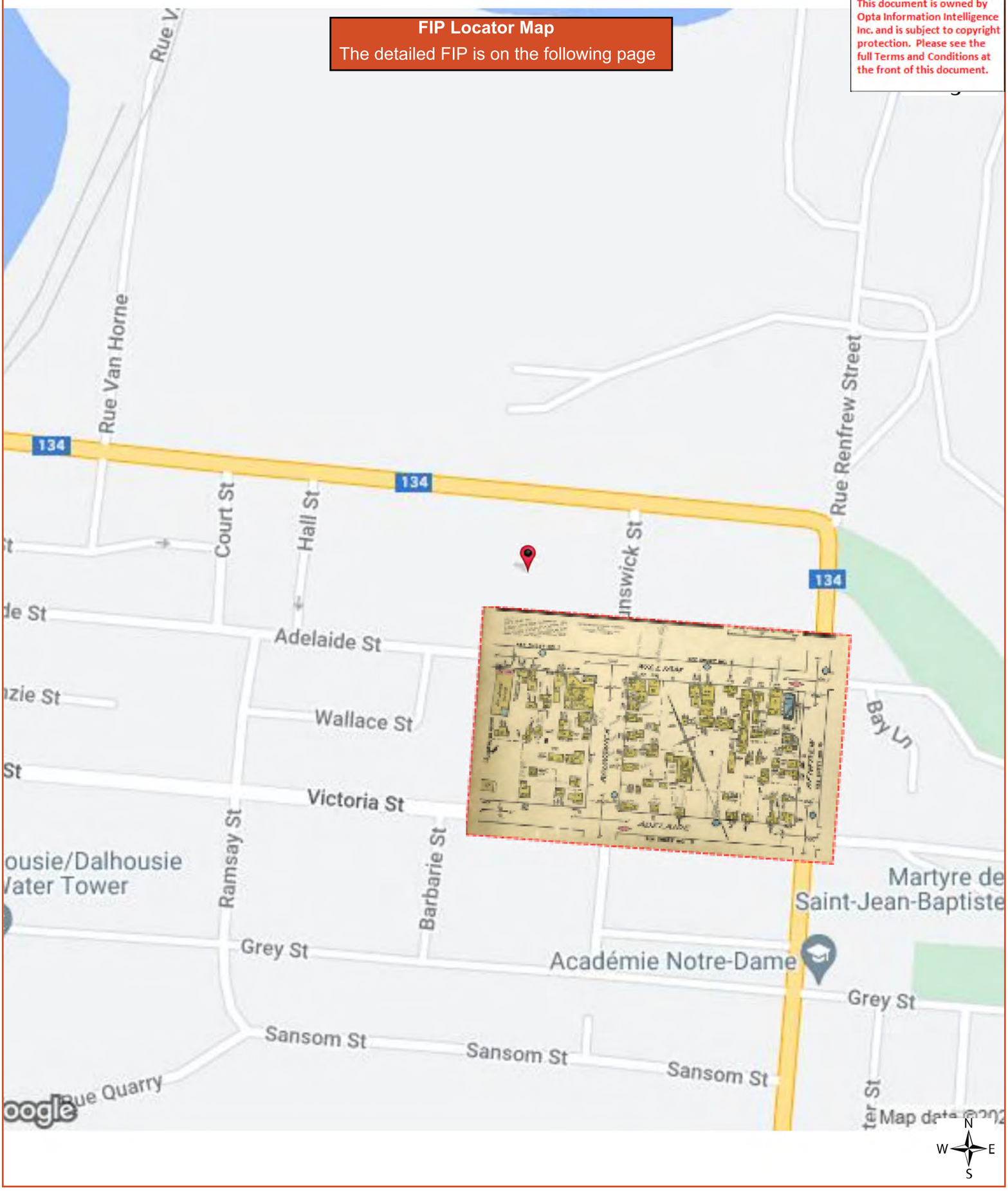

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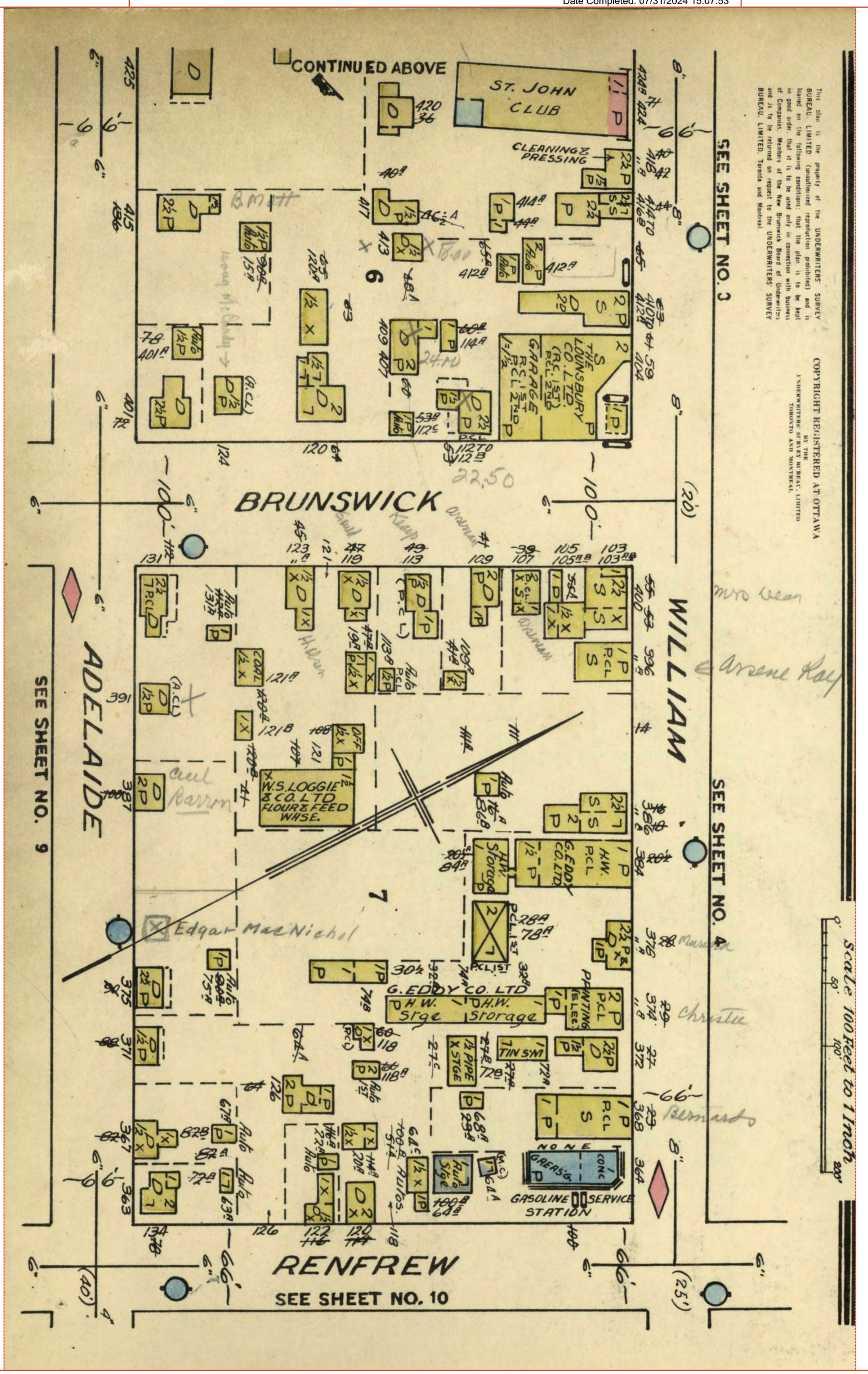

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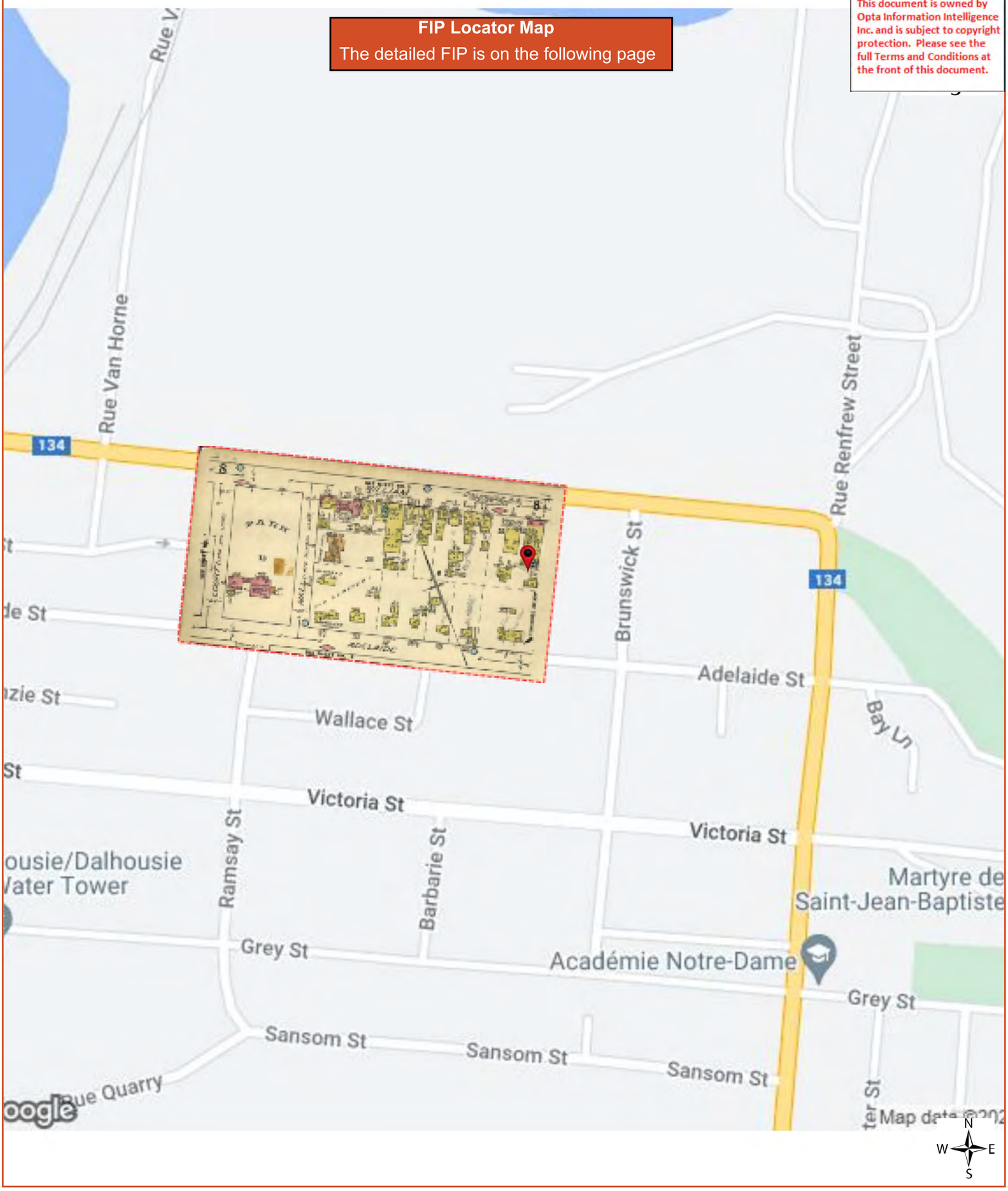

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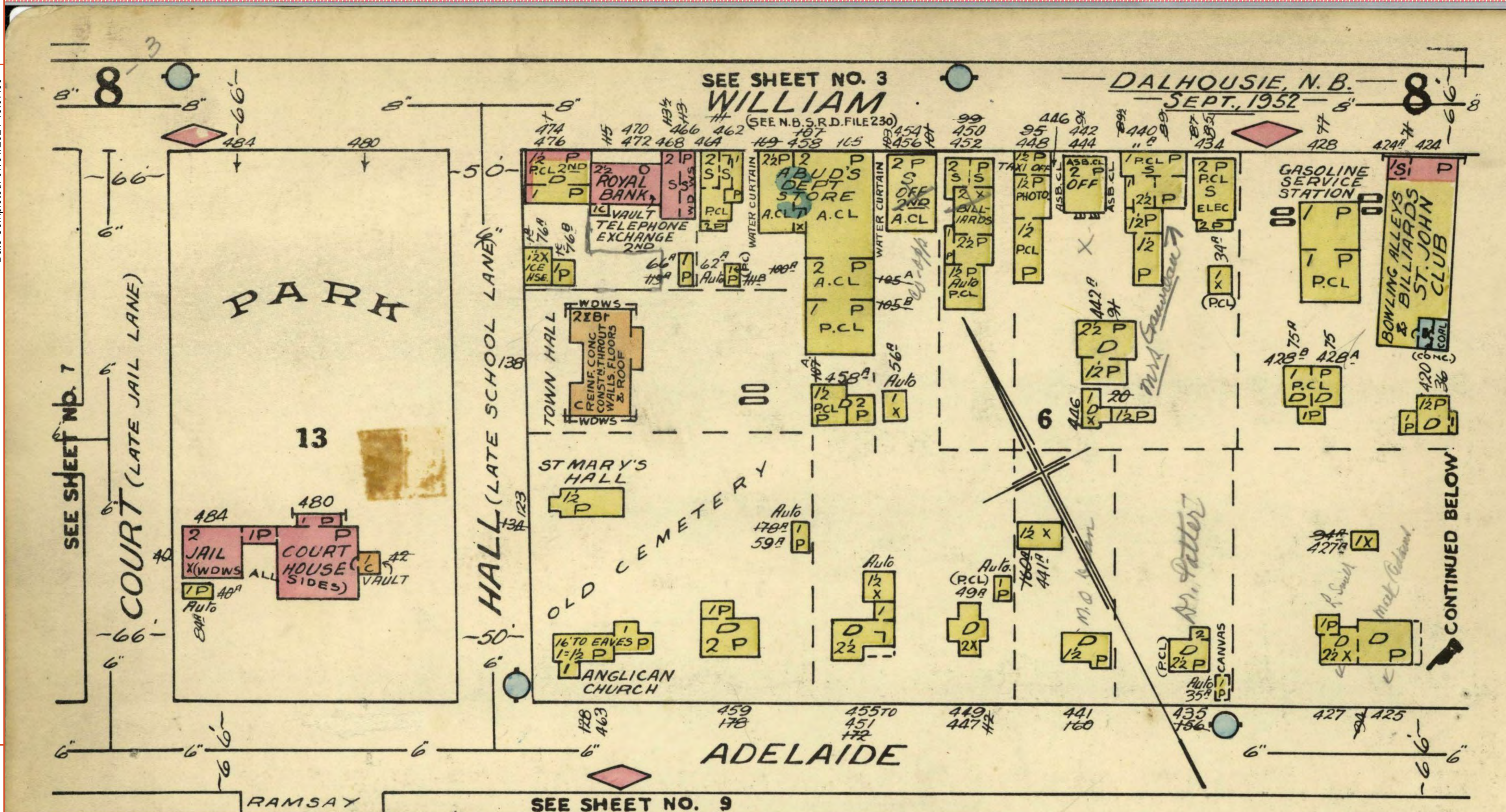
Project #: 17712



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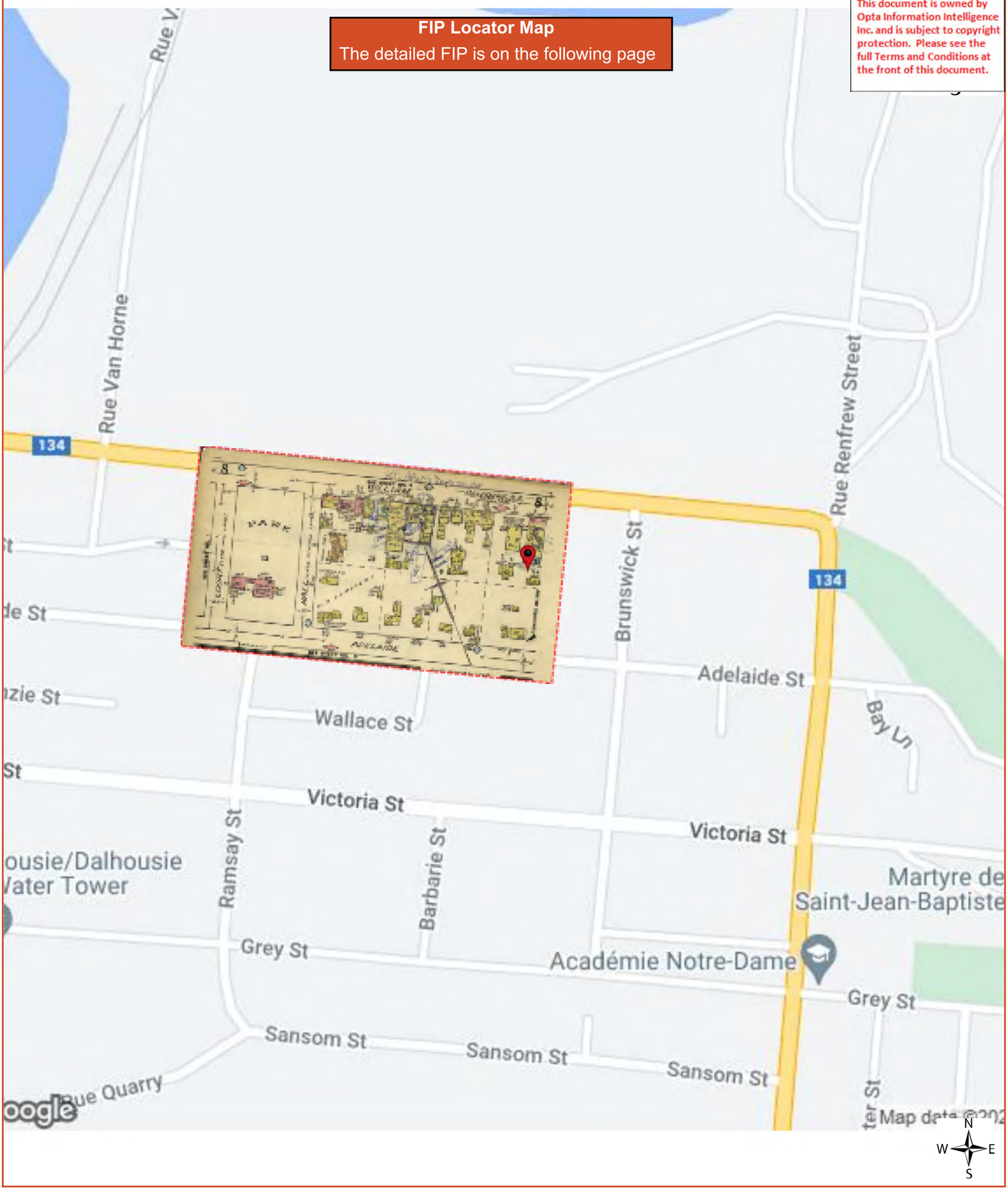

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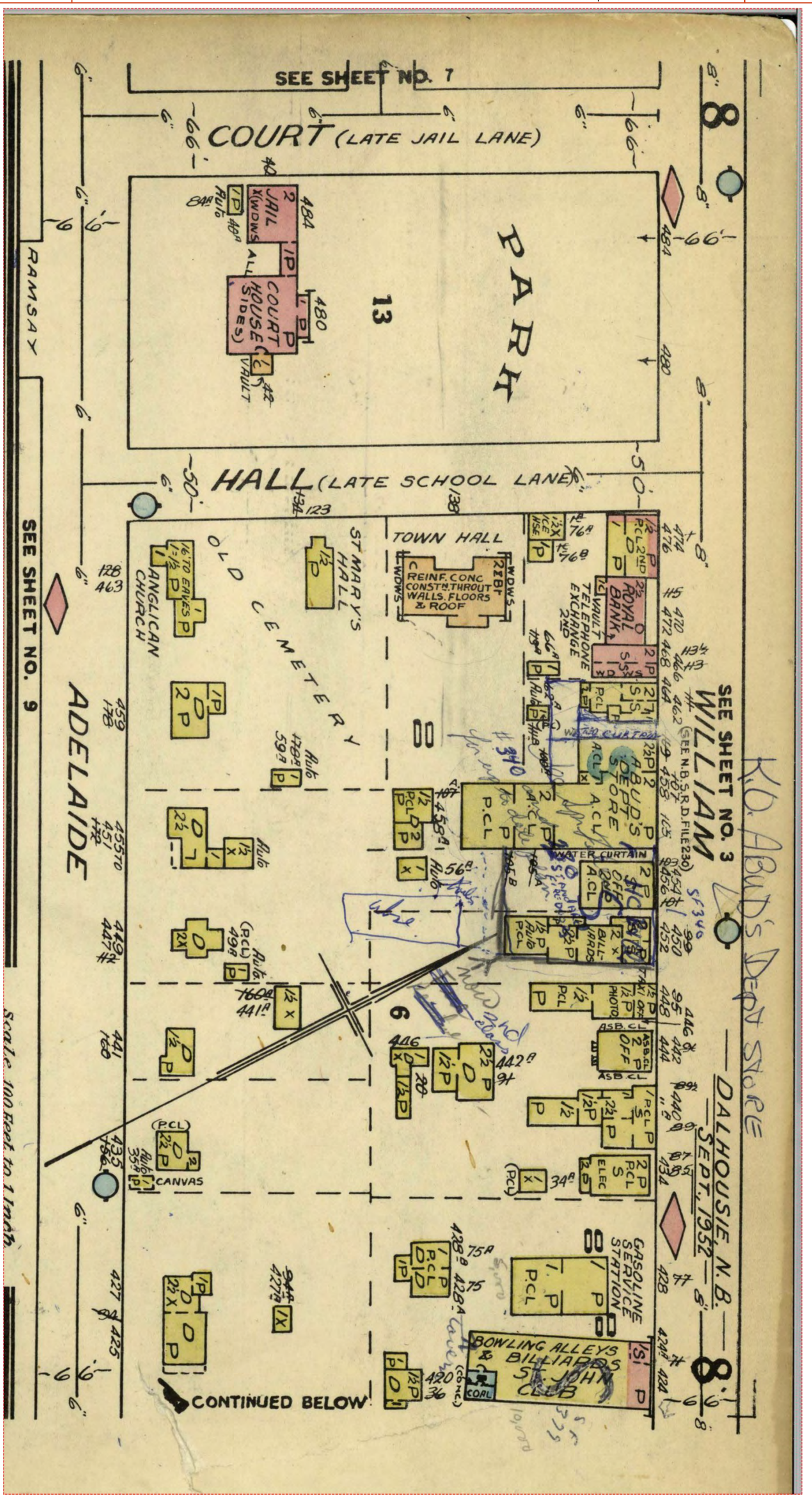

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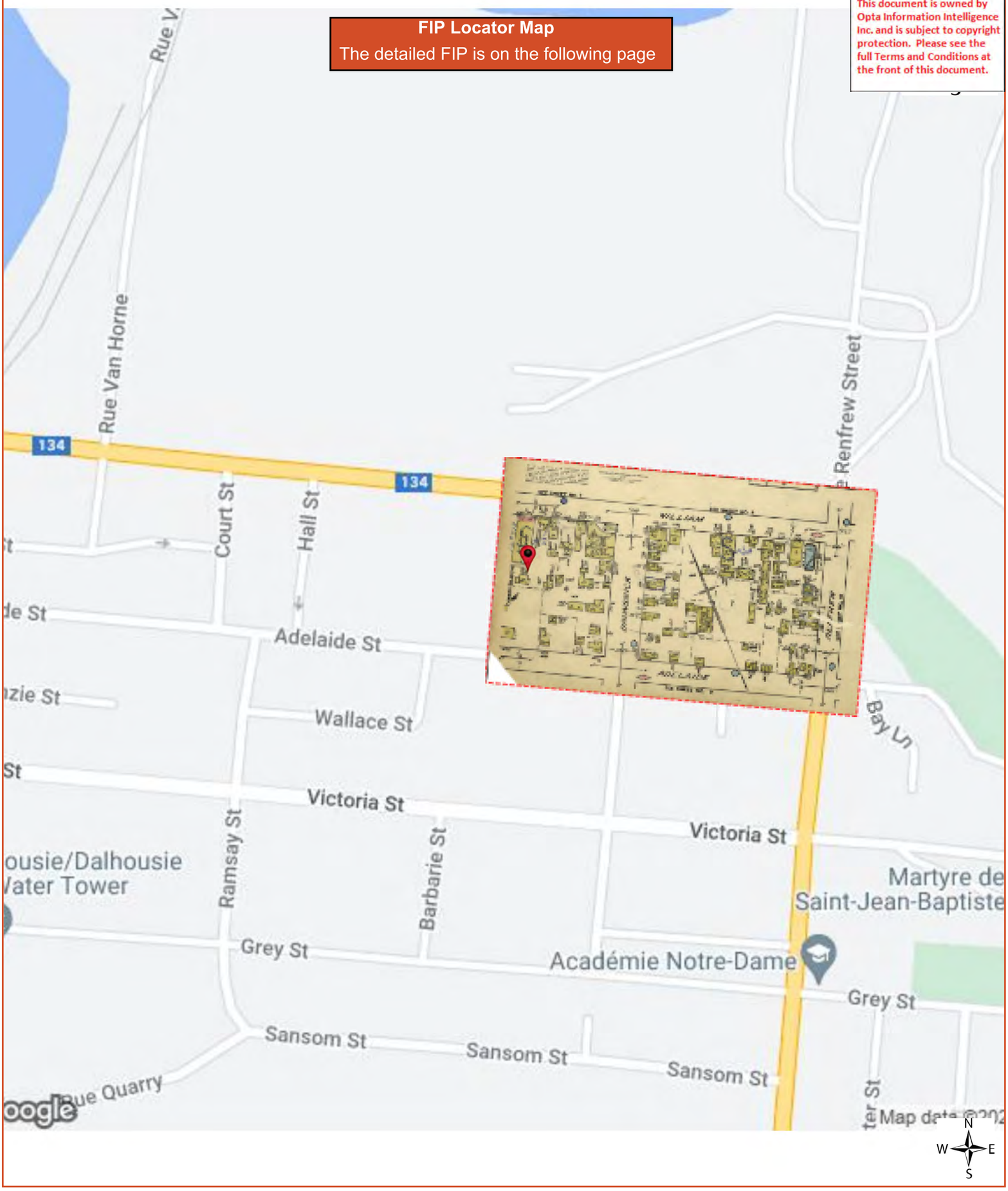

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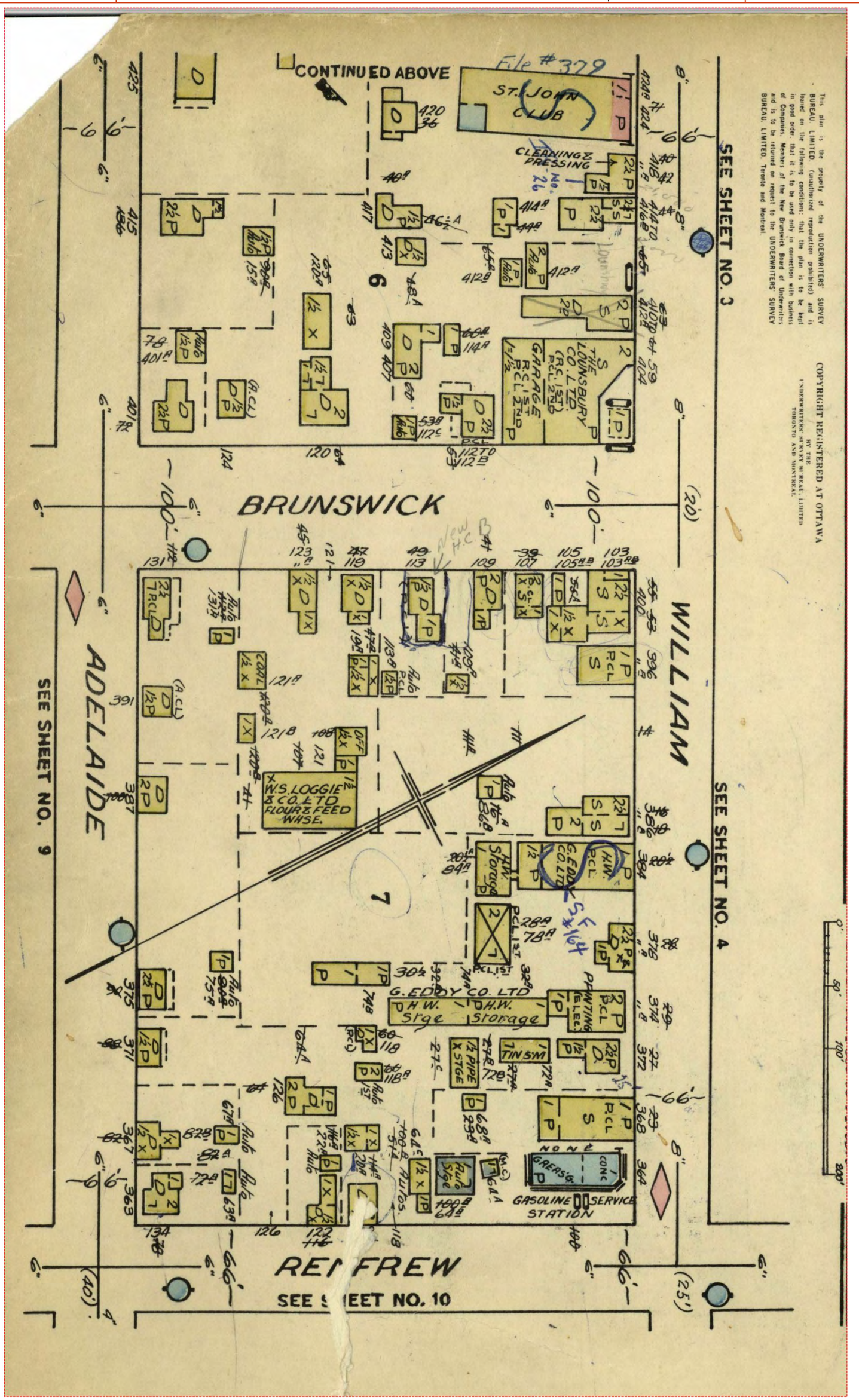

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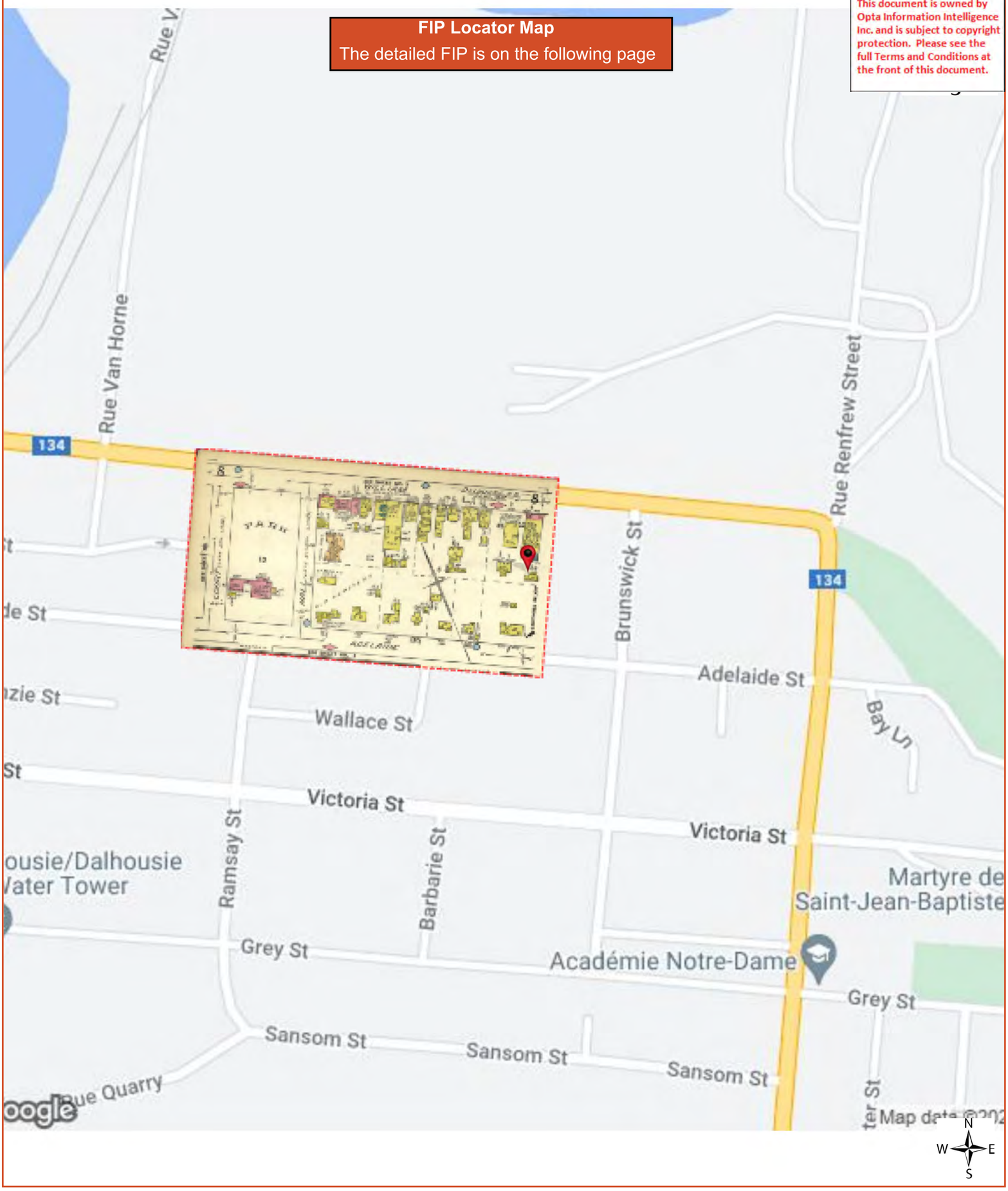

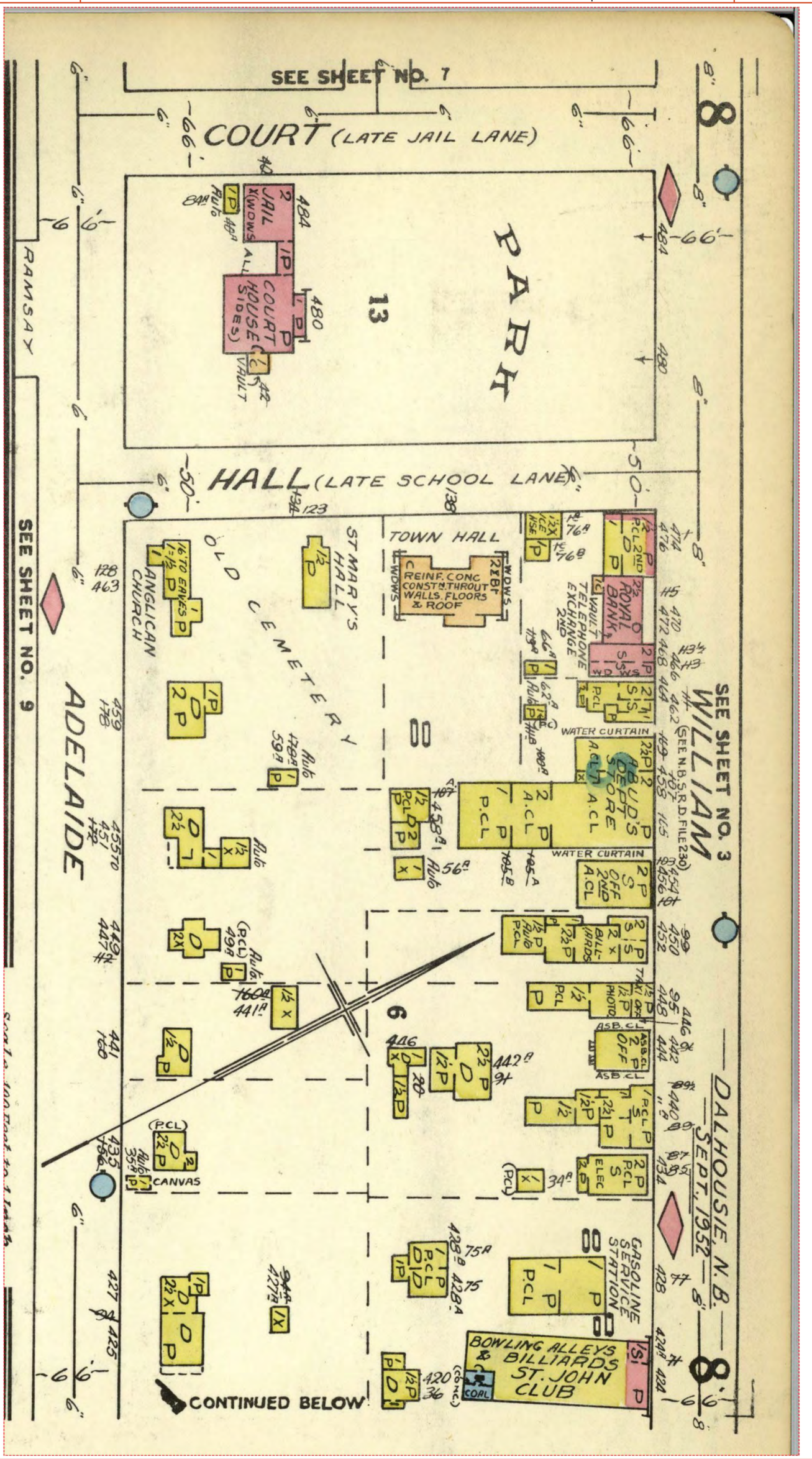

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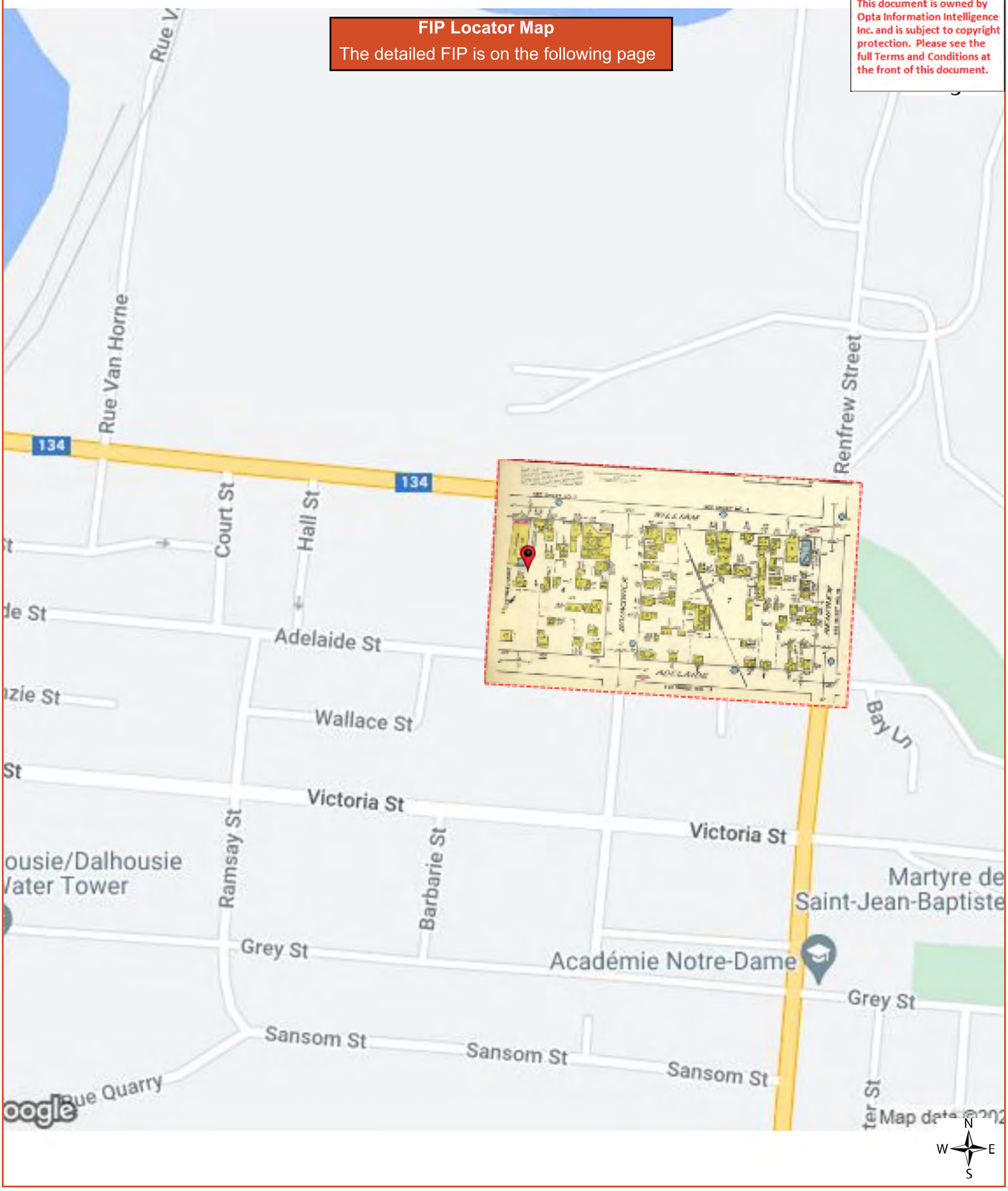

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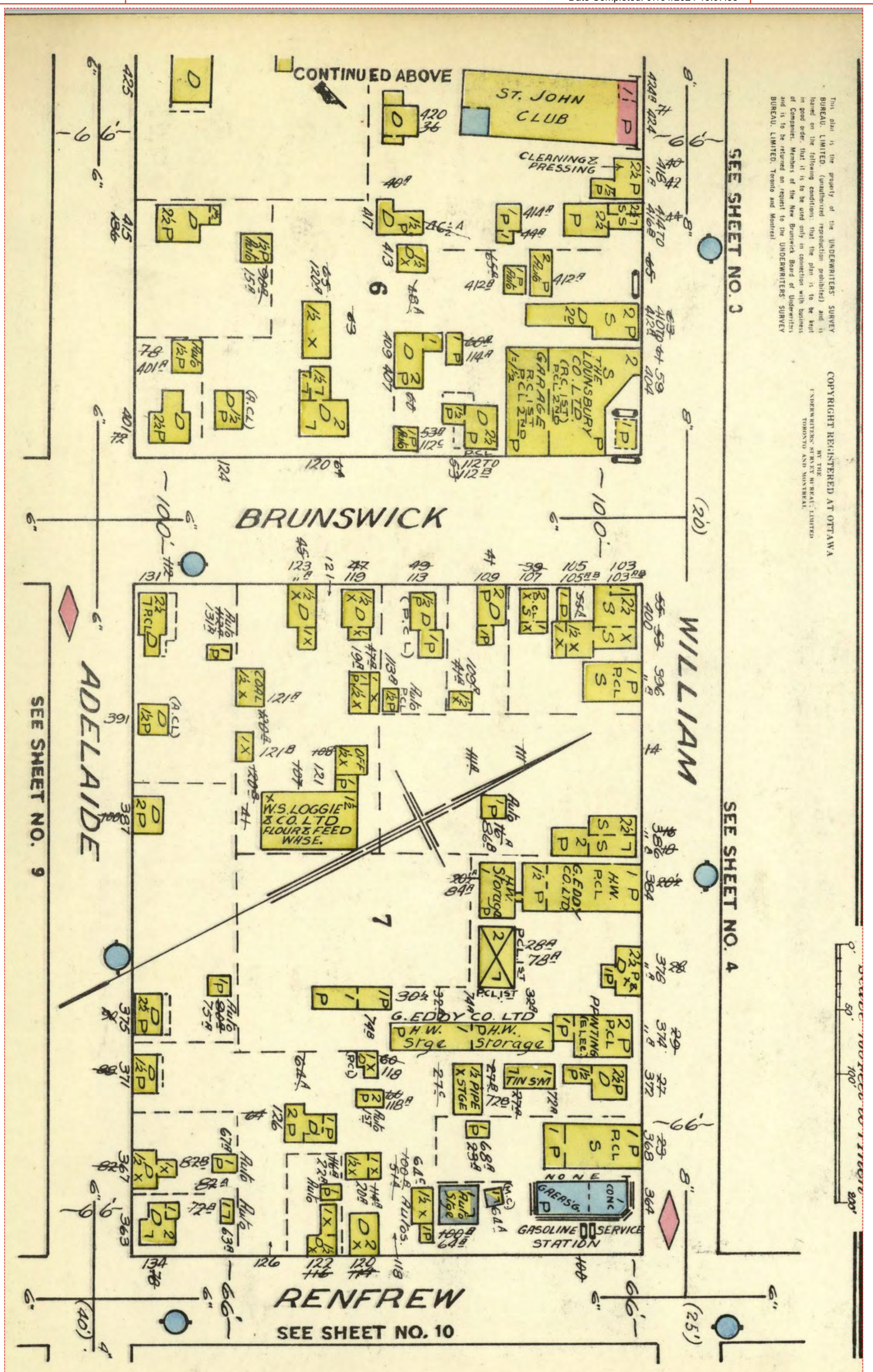

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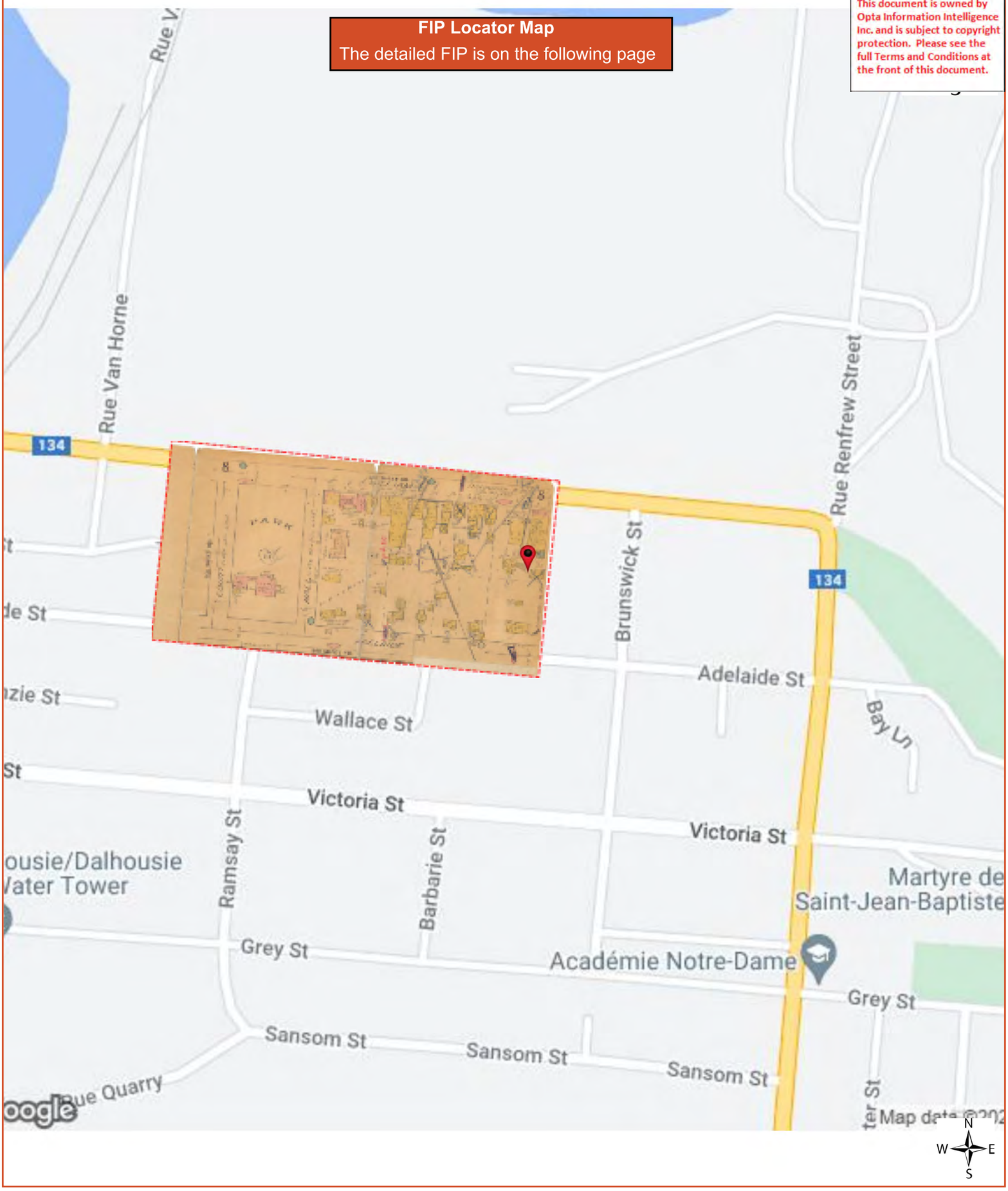

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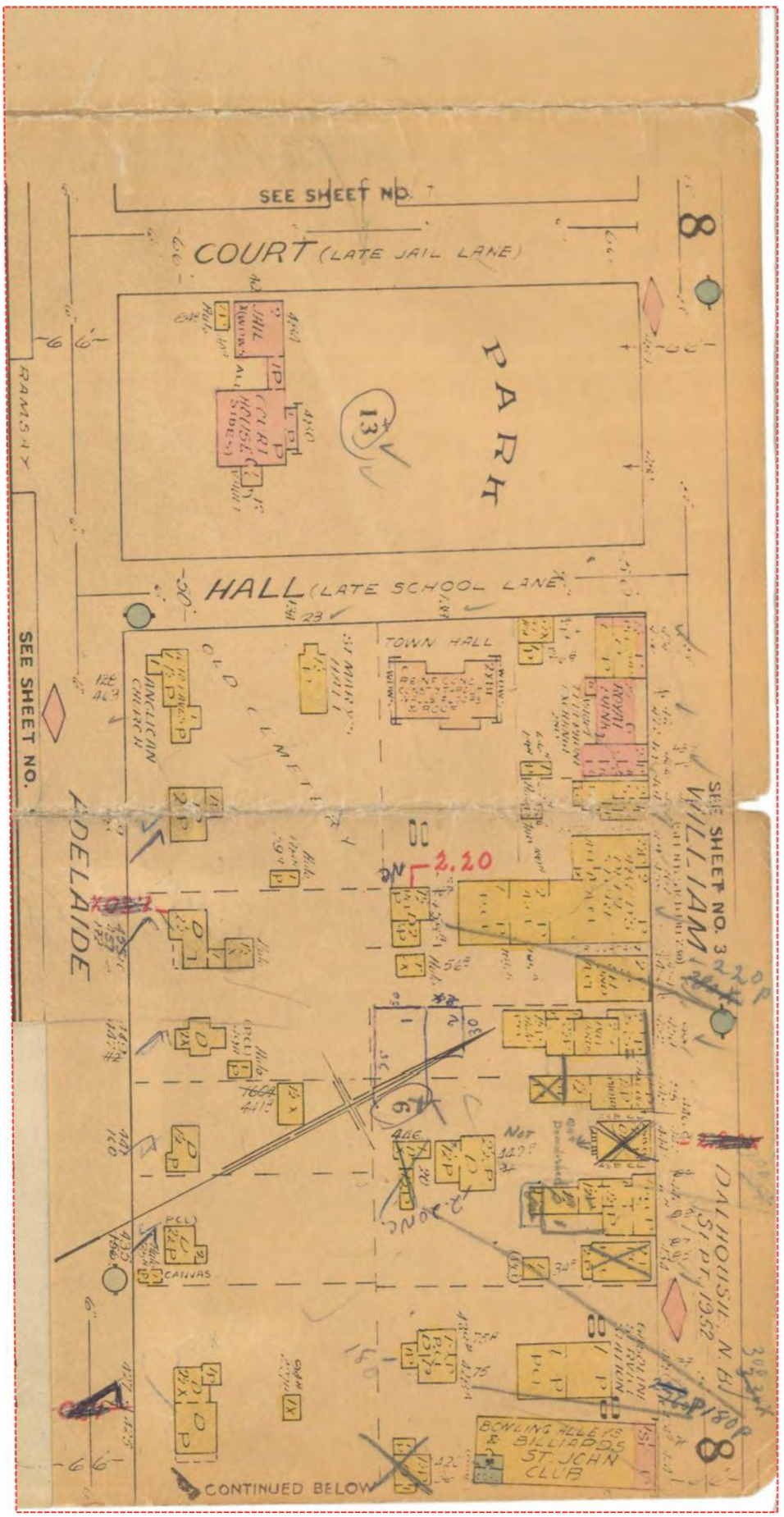

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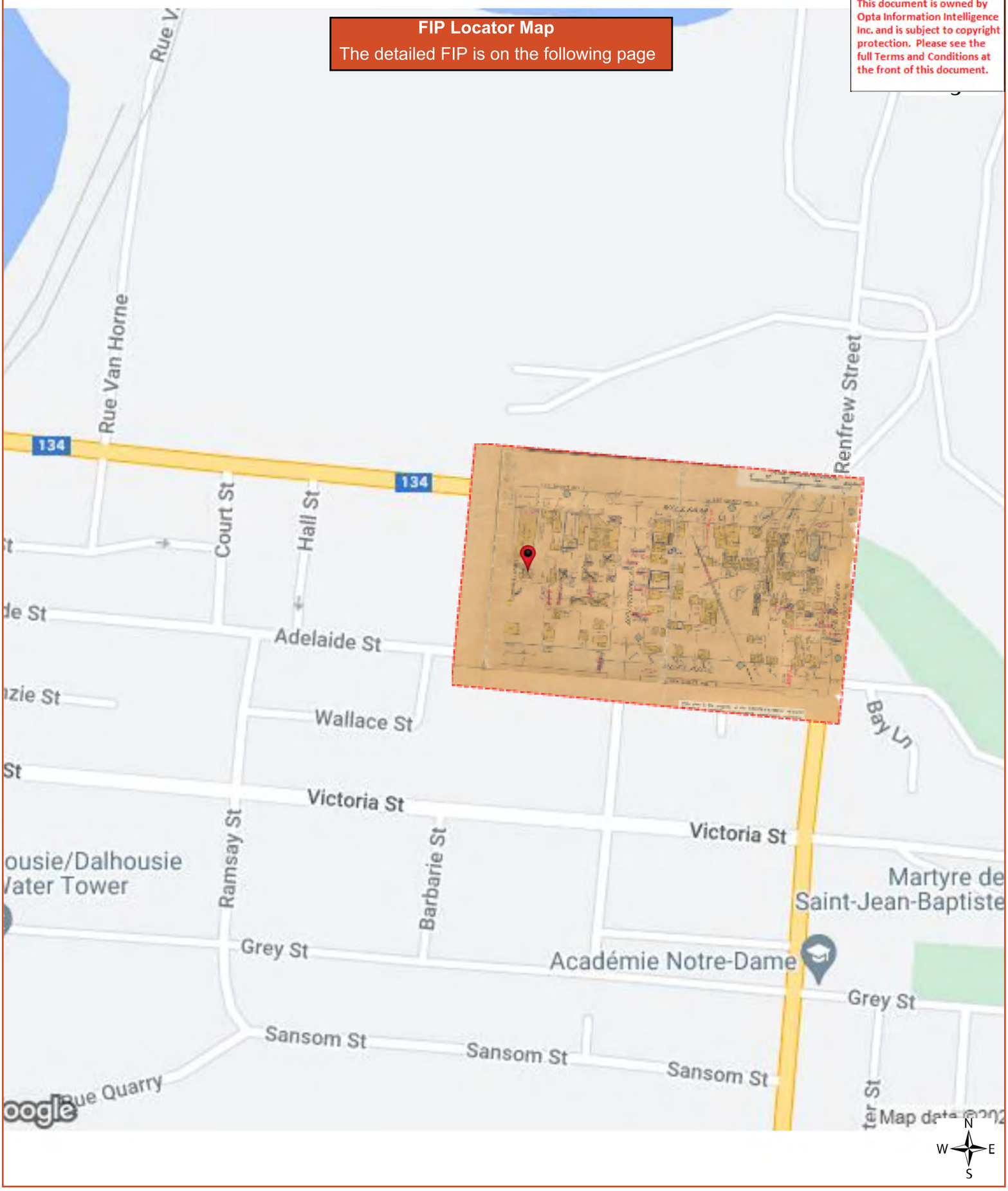

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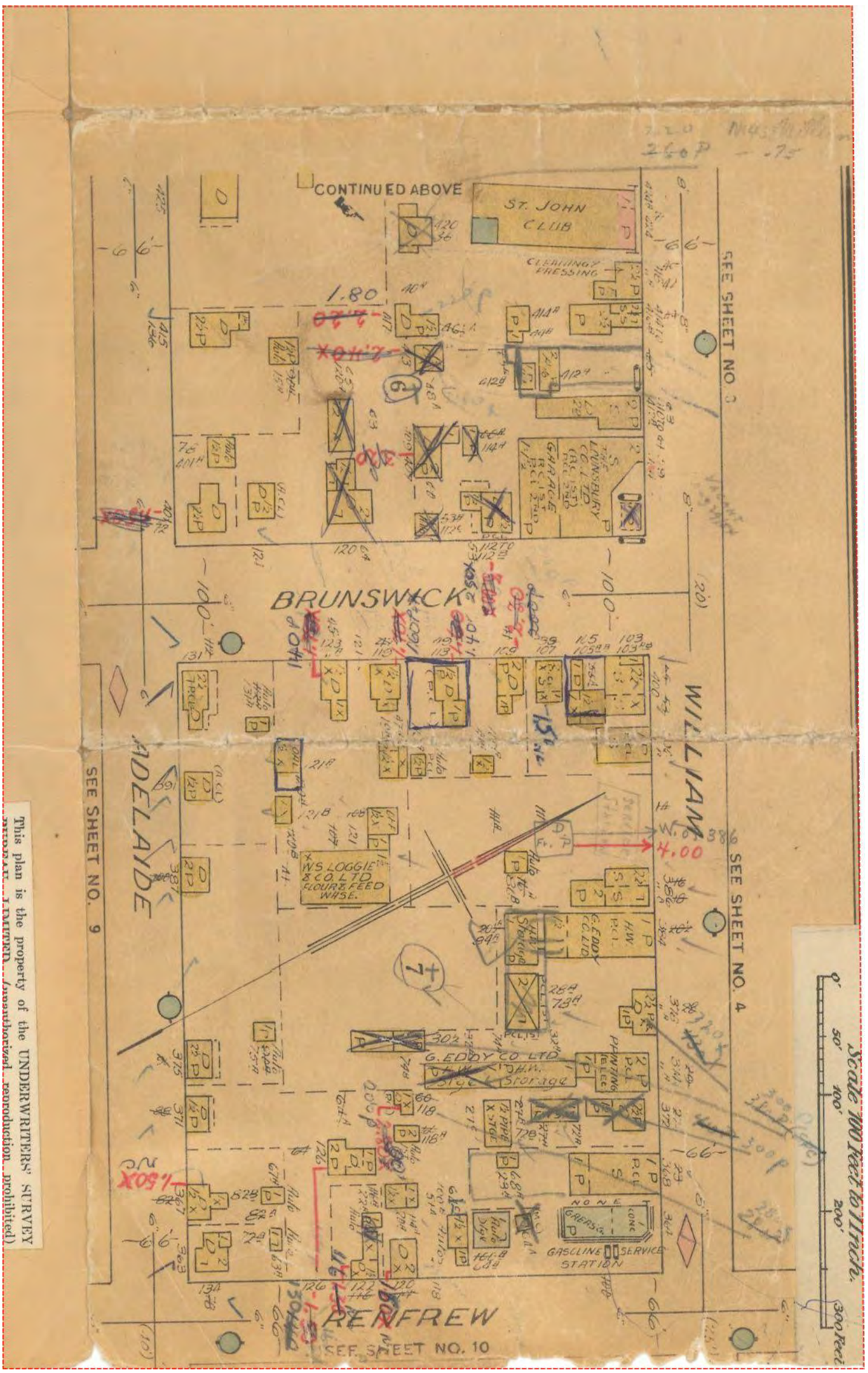

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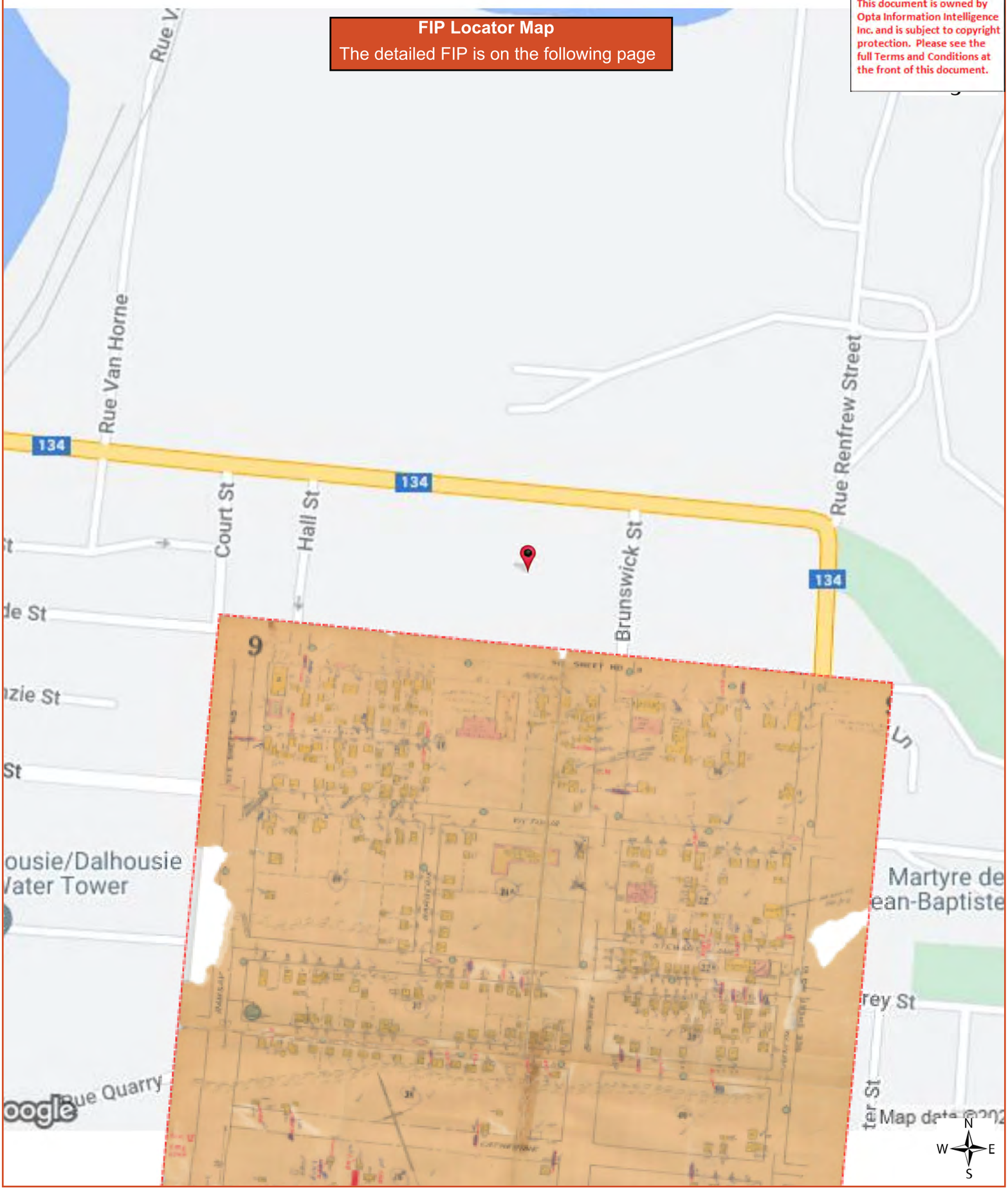

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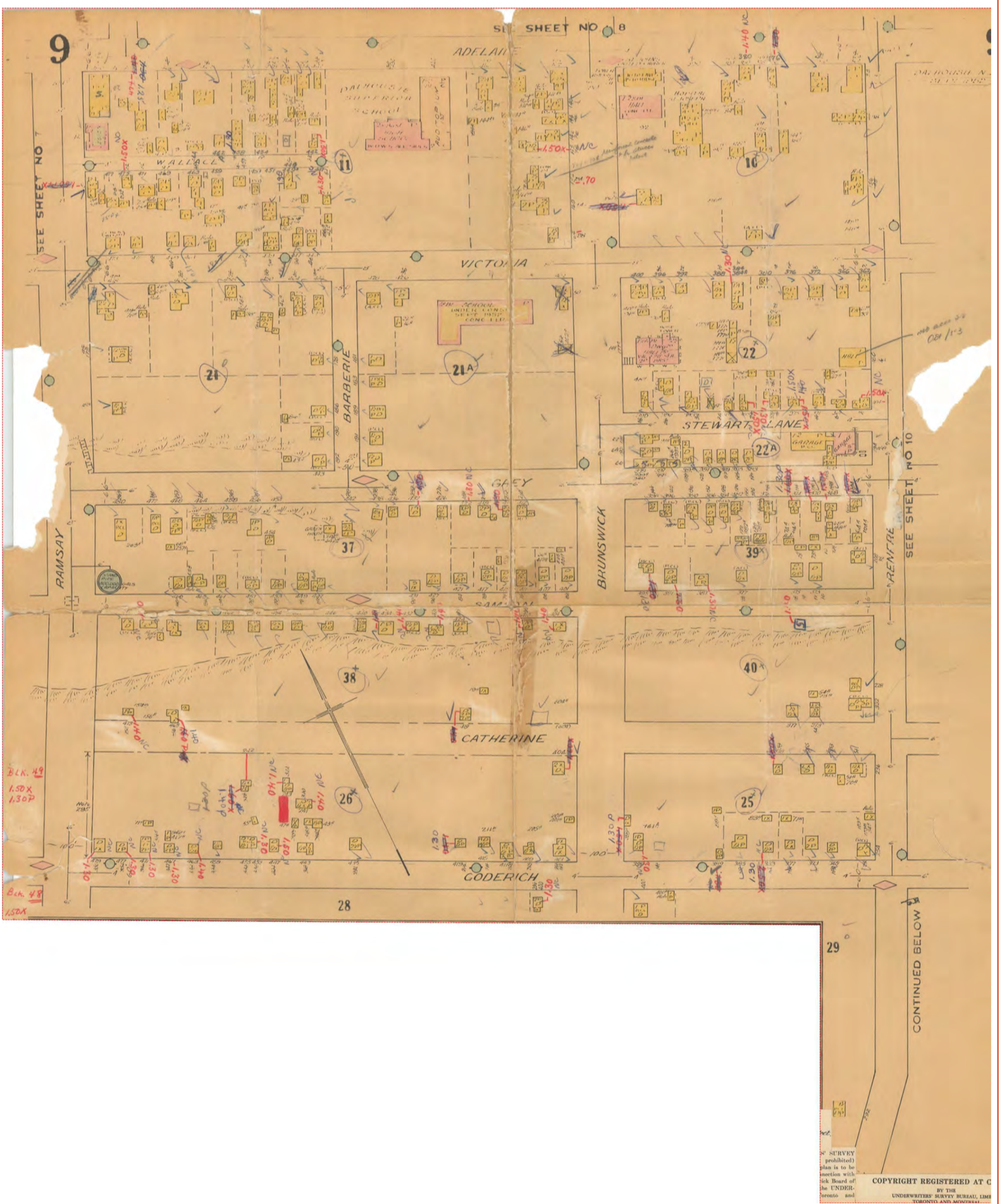

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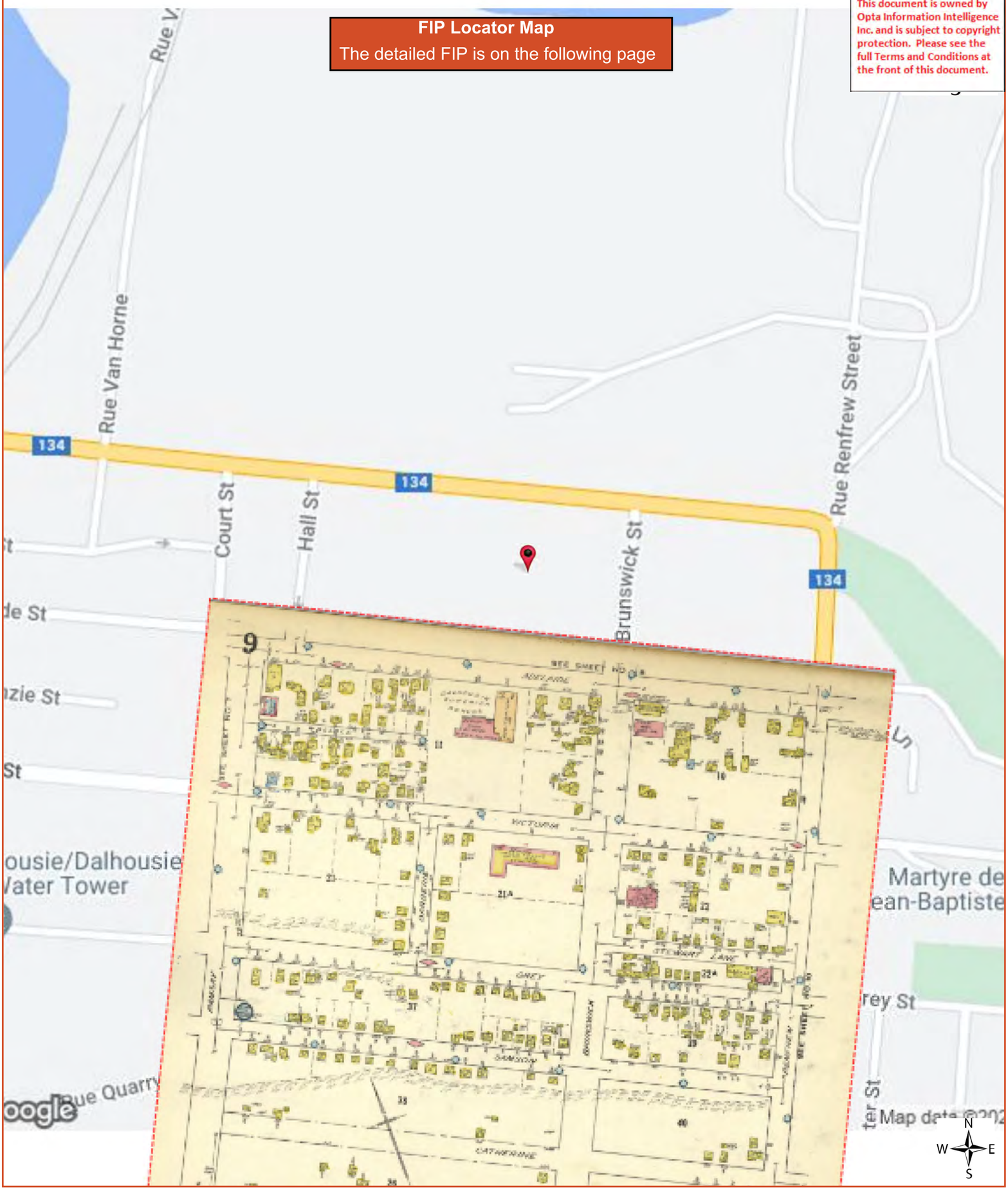

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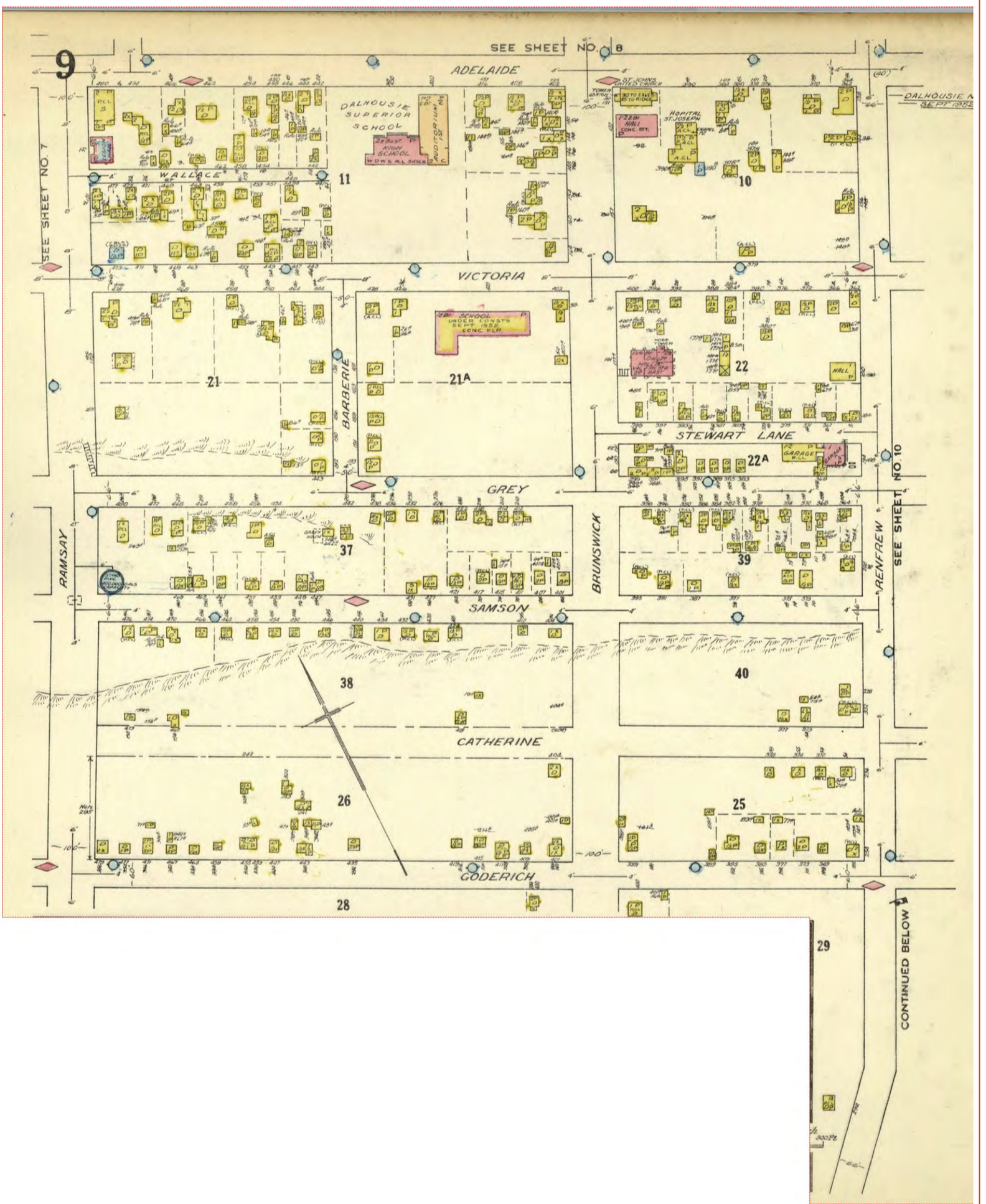

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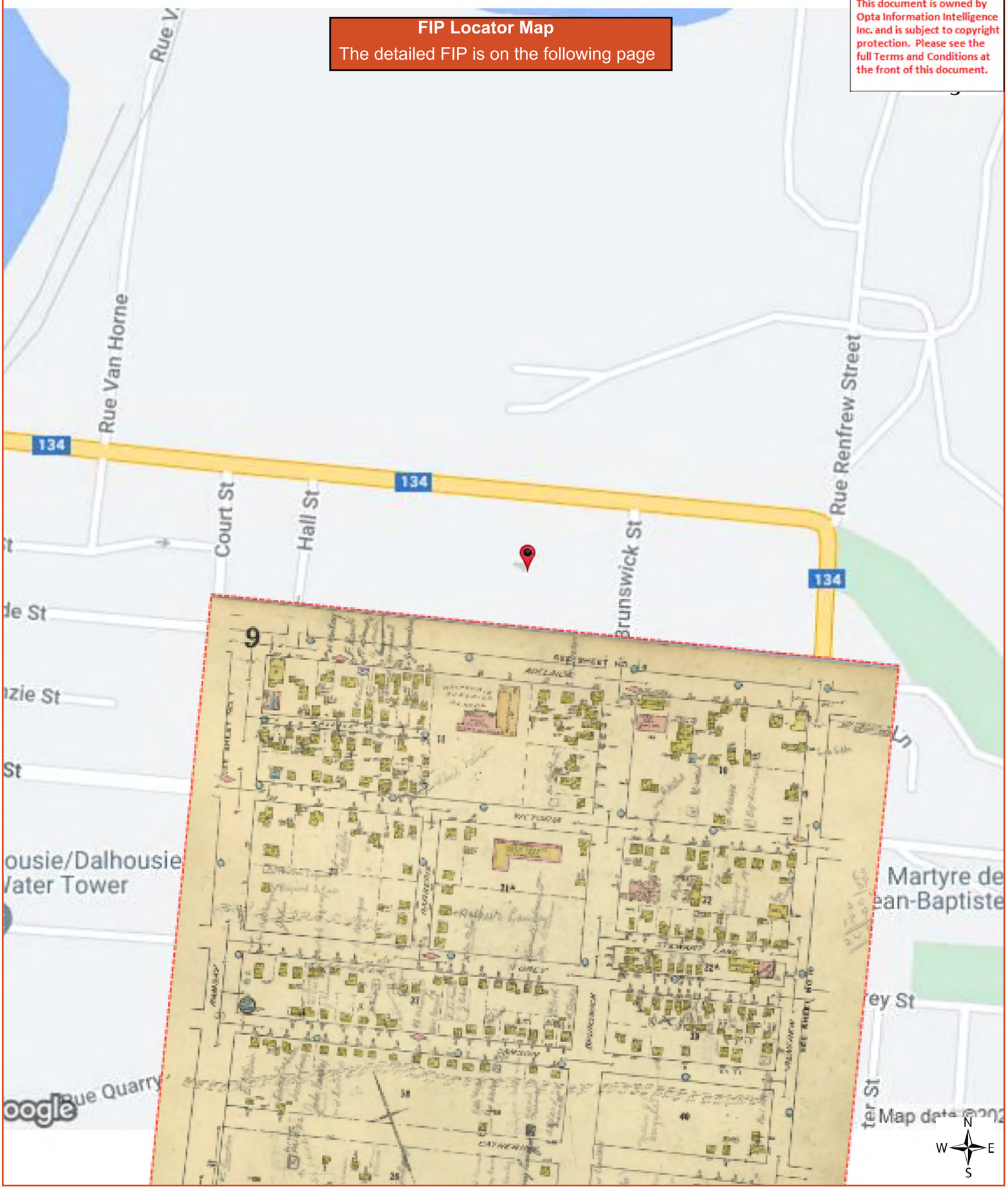

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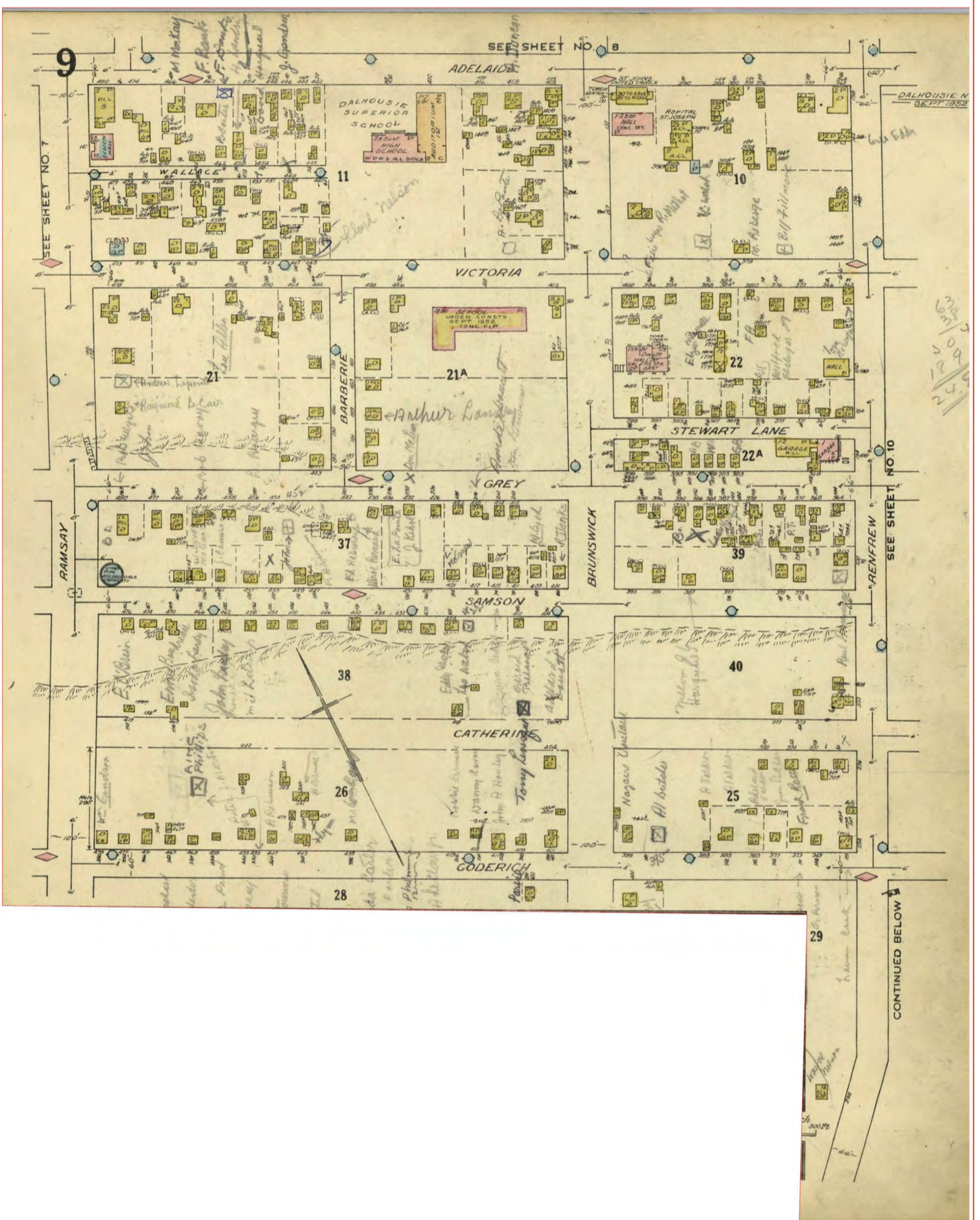

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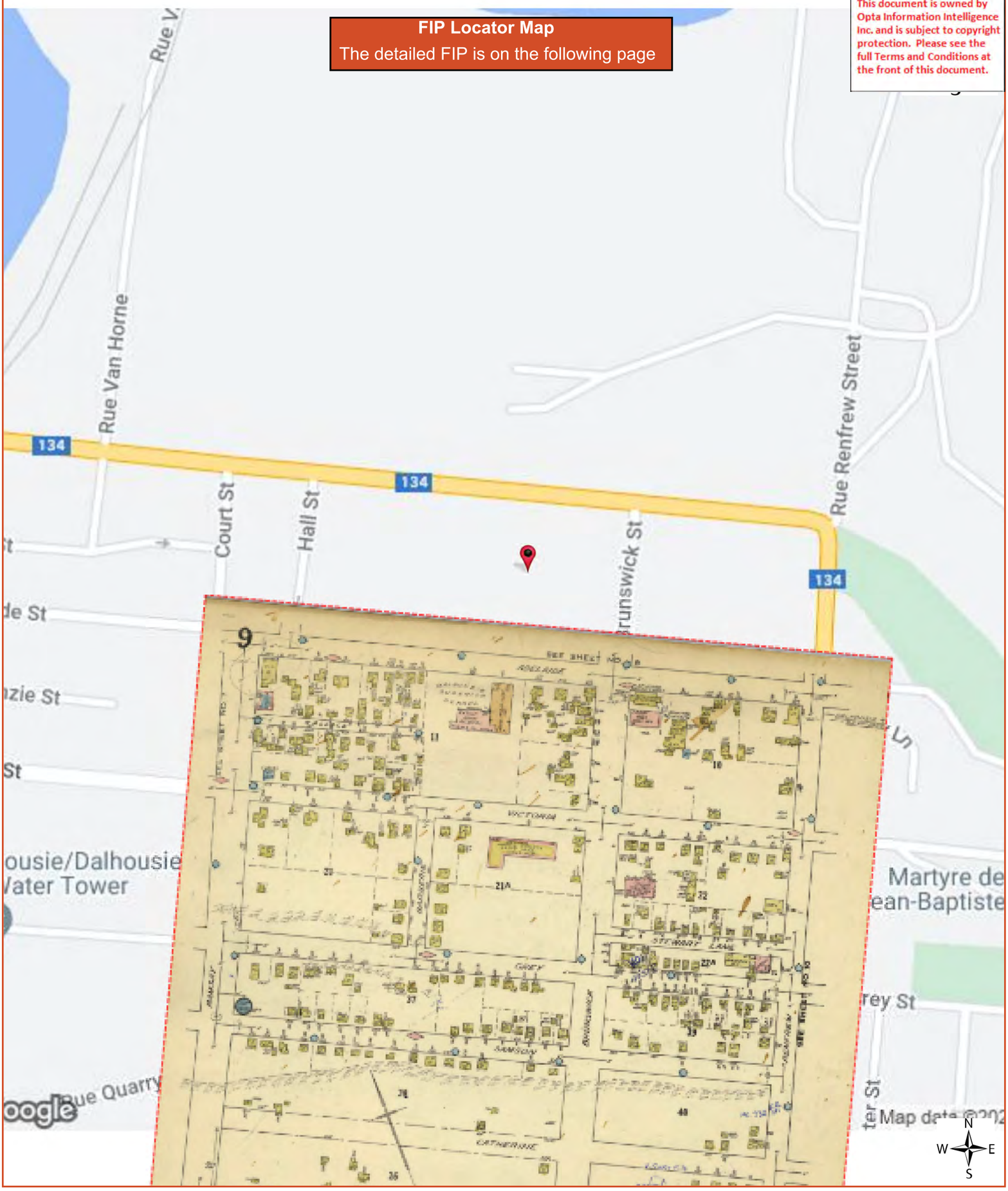

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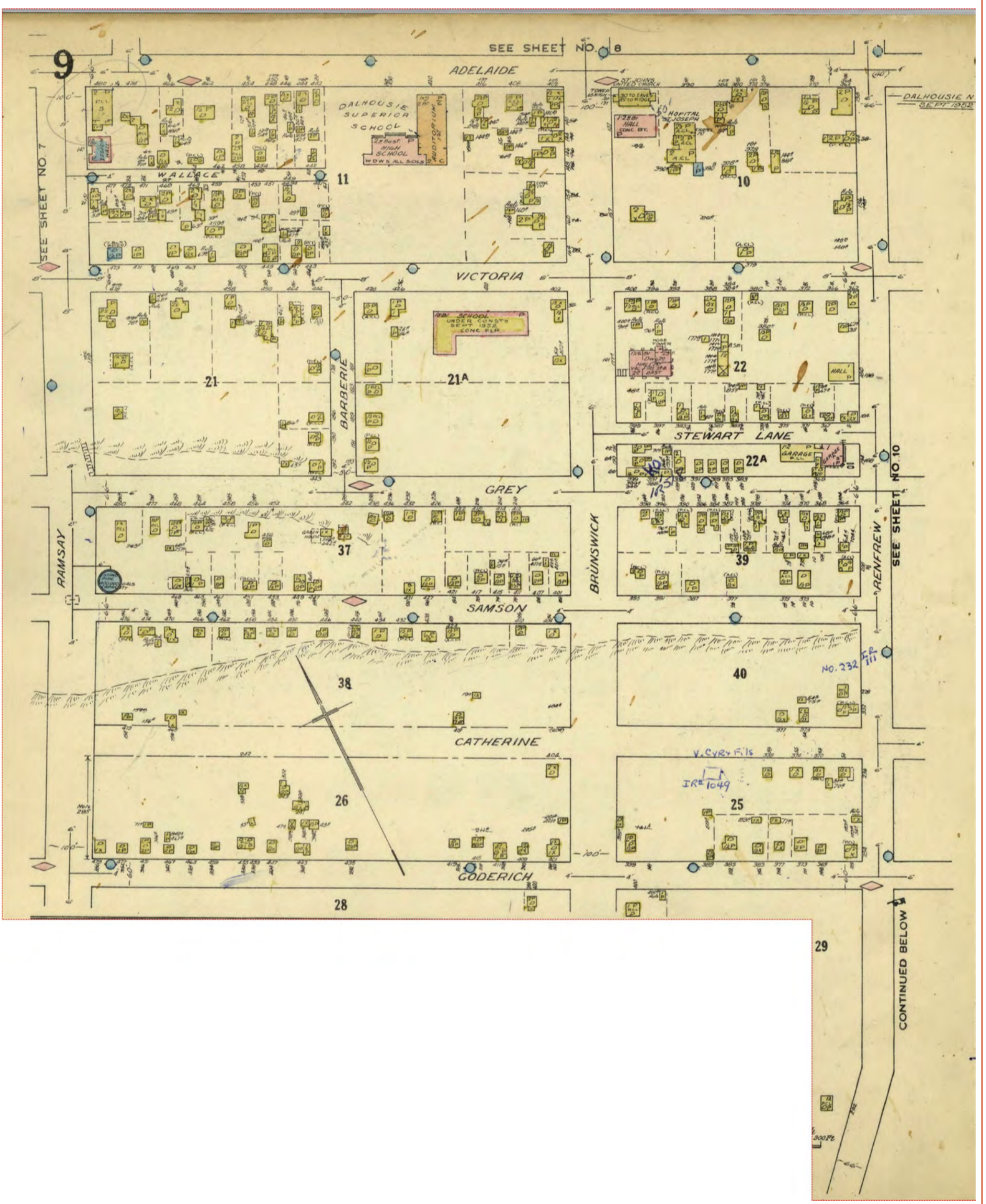

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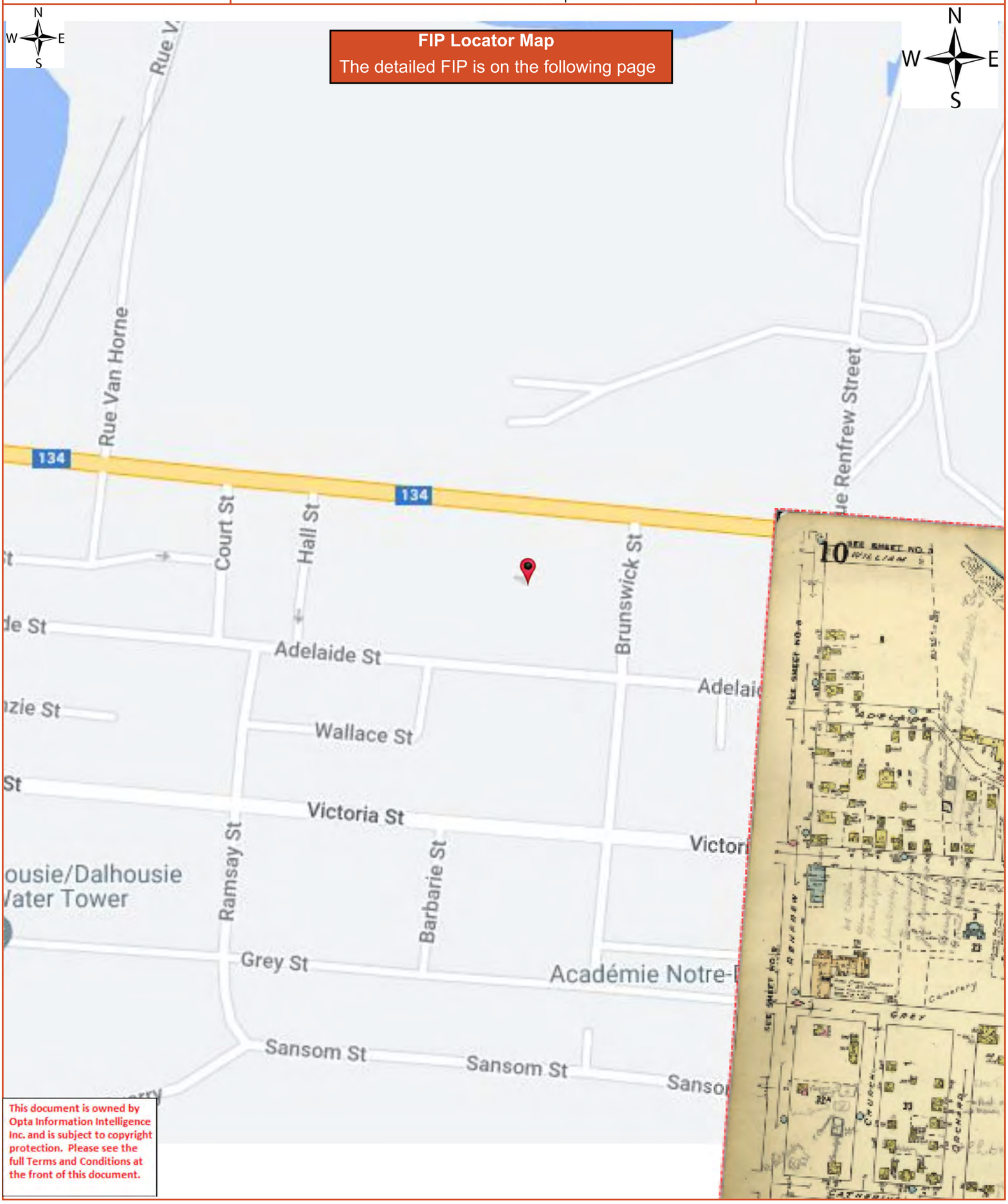

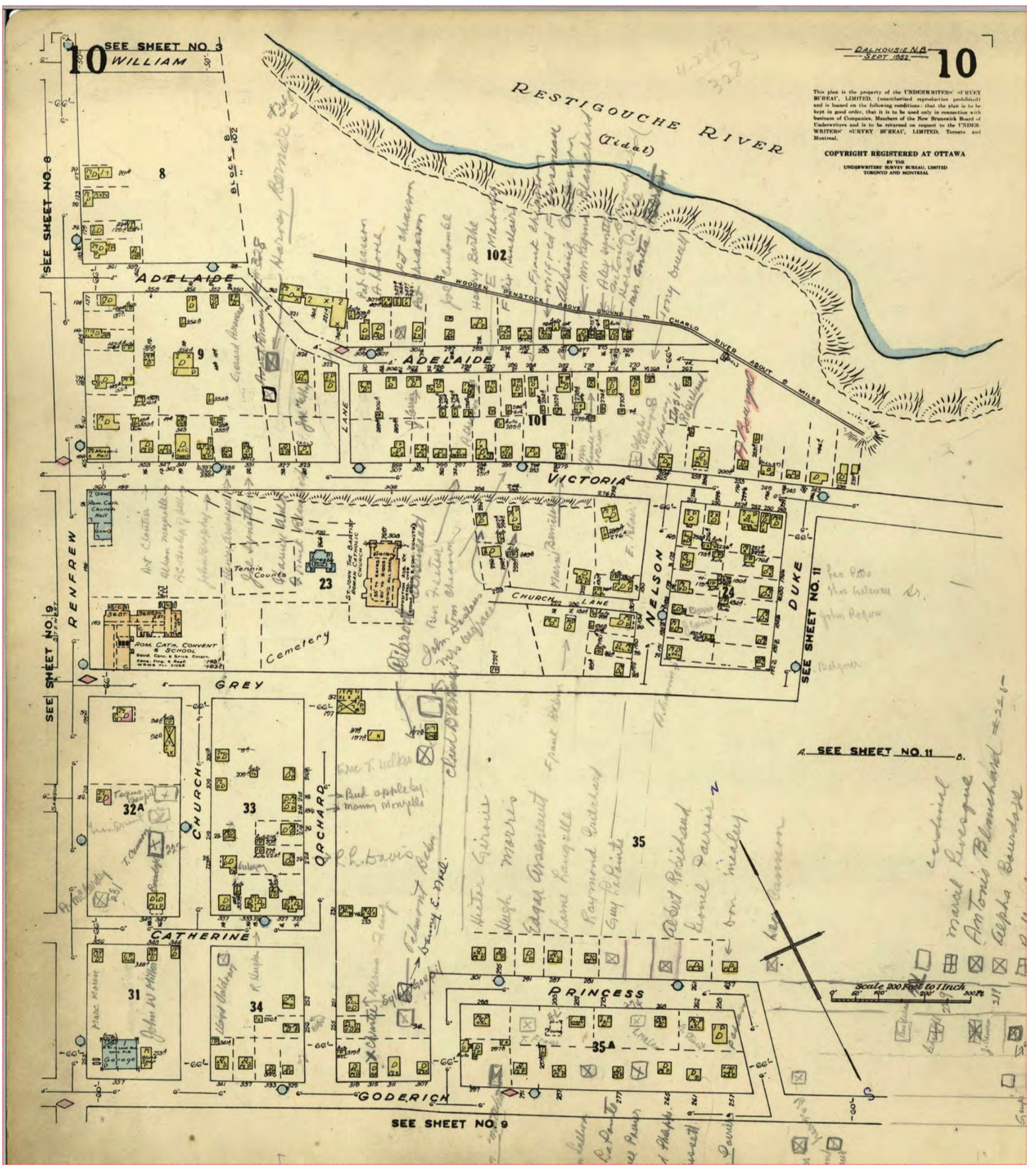

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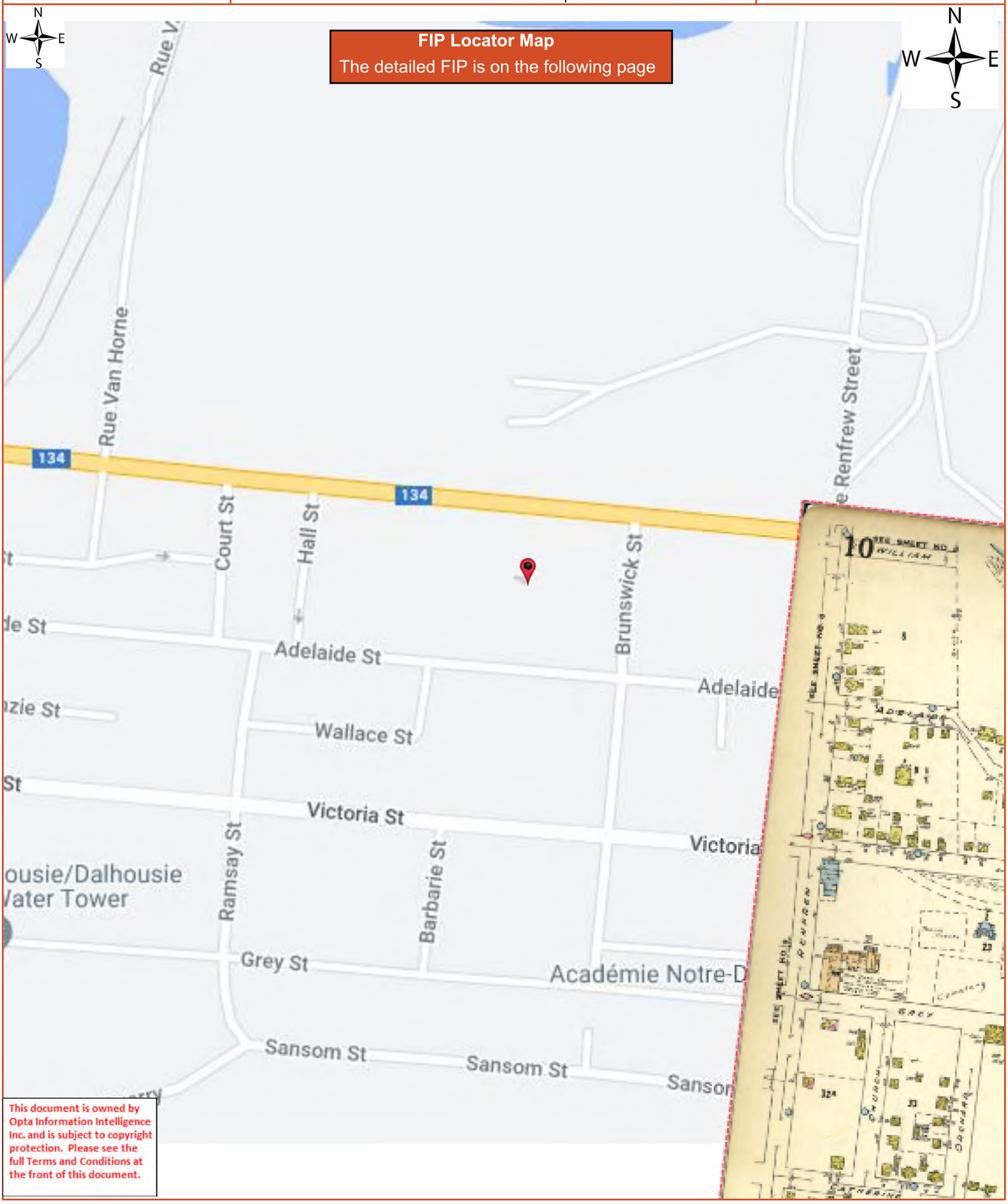

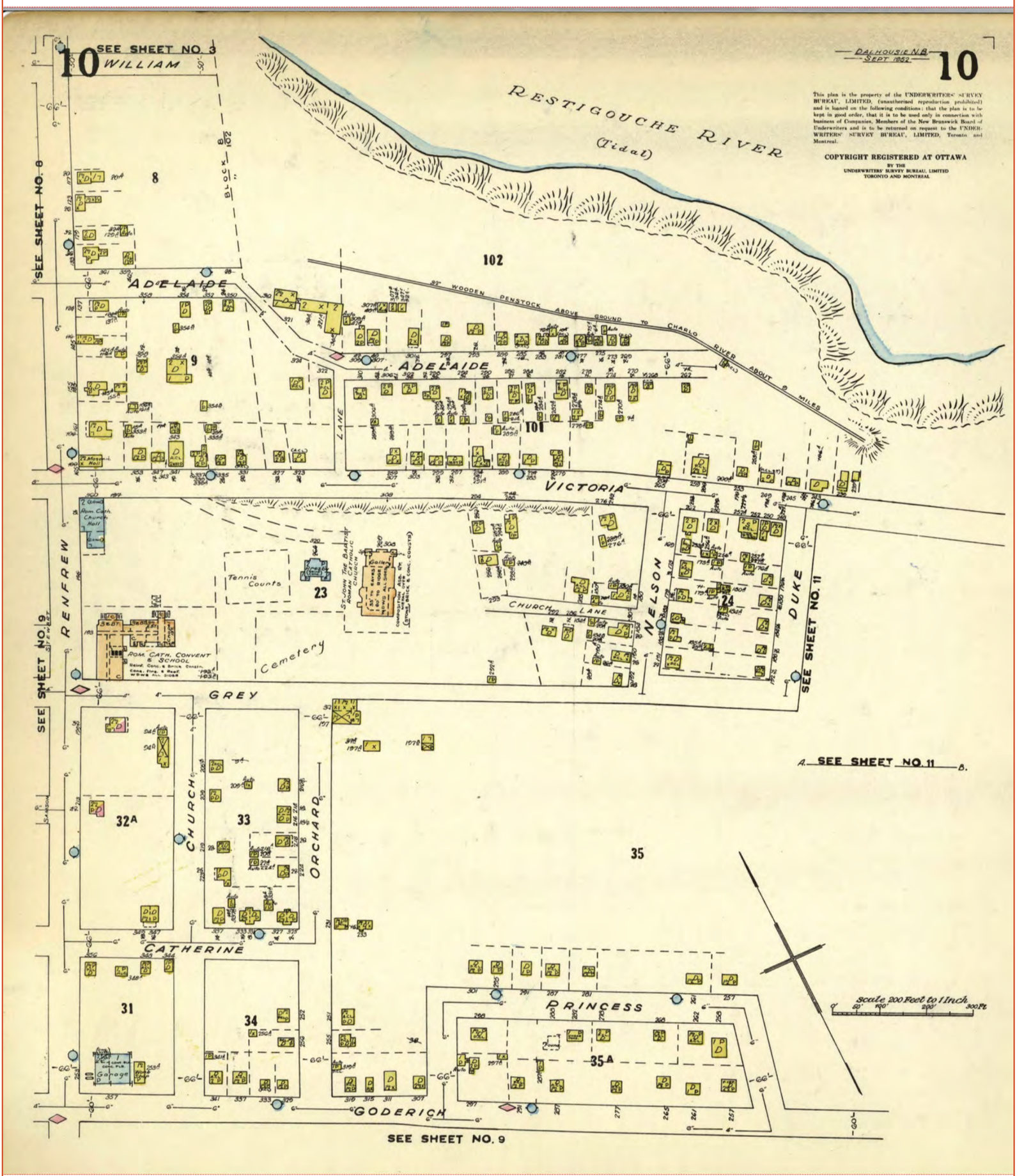

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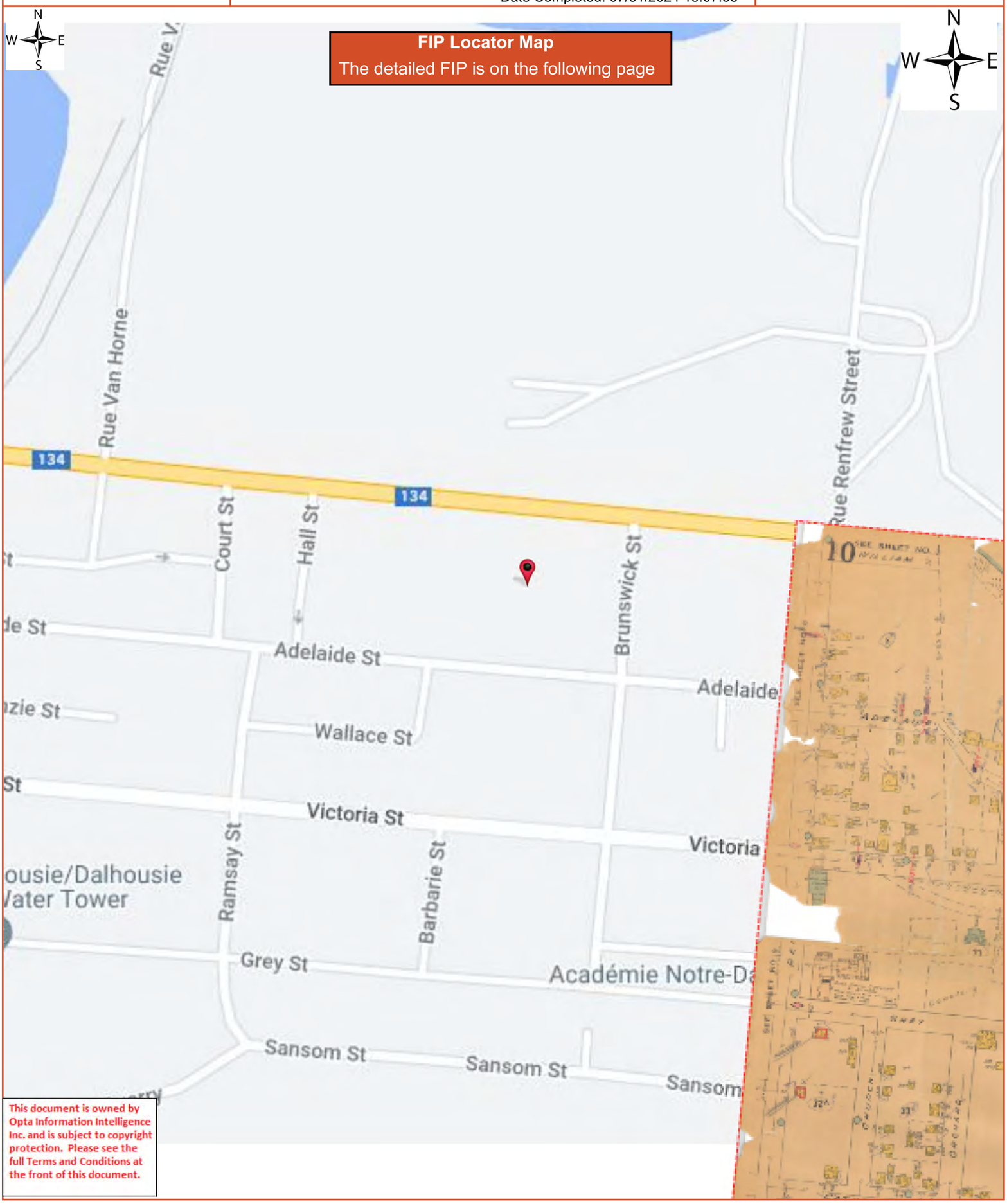

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175 Commerce Valley Drive W
Markham, Ontario L3T 7Z3

T: 1 877 244 9437
W: optaintel.ca

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657 Victoria Street, Dalhousie, New Brunswick, Canada

Requested by:
Greg Derrah
Fundy Engineering

Project No:
17712

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Project Name: Phase I and II ESA

Project #: 17712

ENVIROSCAN Report

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Greg Derrah
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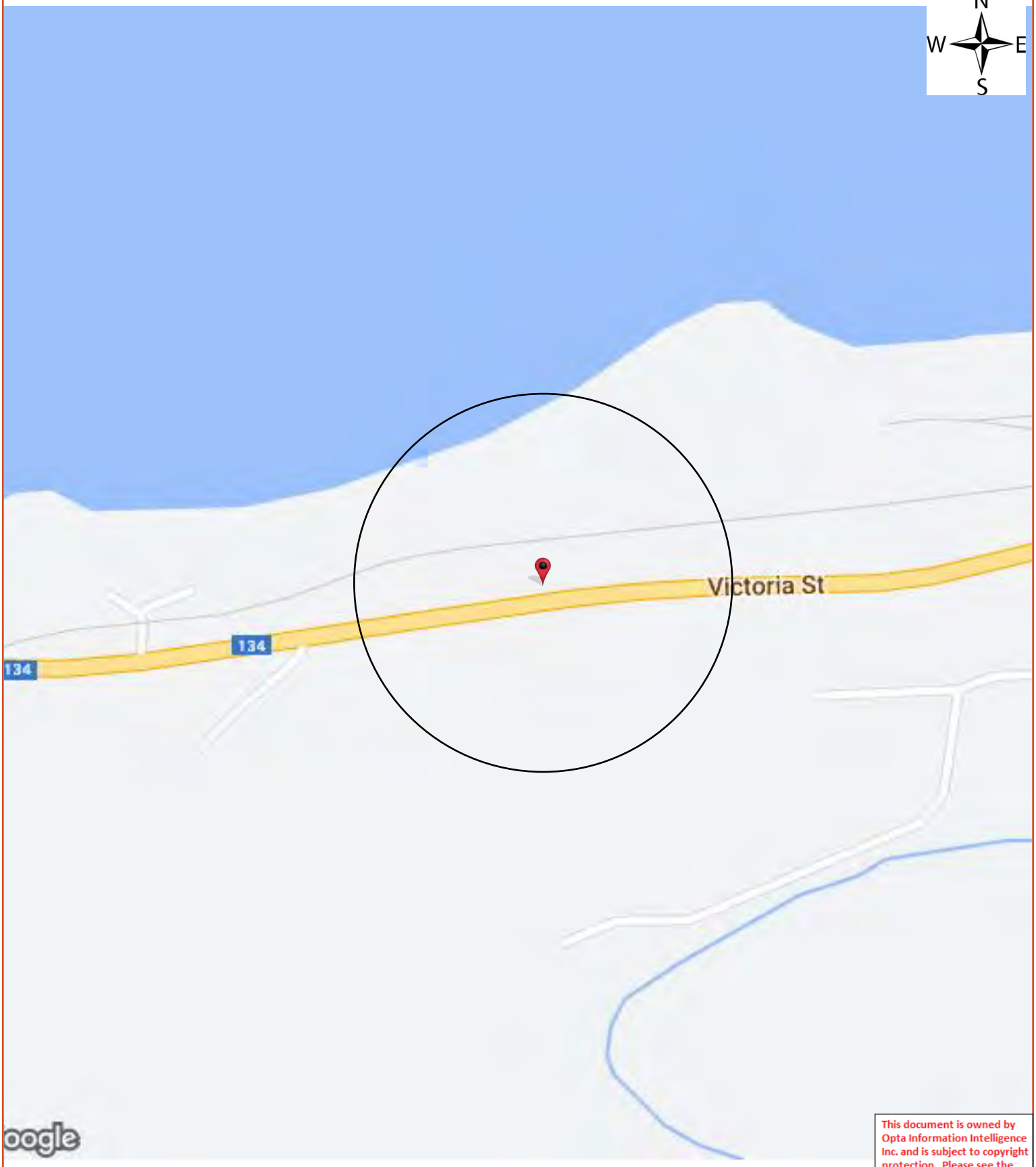

Opta Historical Environmental Services Enviroscan™ Terms and Conditions

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The documents (hereinafter referred to as the "Documents") to be released as part of the report (hereinafter referred to as the "Report") to be delivered to the purchaser as set out above are documents in Opta's records relating to the described property (hereinafter referred to as the "Property"). Opta makes no representations or warranties respecting the Documents whatsoever, including, without limitation, with respect to the completeness, accuracy or usefulness of the Documents, and does not represent or warrant that these are the only plans and reports prepared in association with the Property or in Opta's possession at the time of Report delivery to the purchaser. The Documents are current as of the date(s) indicated on them. Interpretation of the Documents, if any, is by inference based upon the information which is apparent and obvious on the face of the Documents only. Opta does not represent, warrant or guarantee that interpretations other than those referred to do not exist from other sources. The Report will be prepared for use by the purchaser of the services as shown above hereof only.

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The parties hereto acknowledge and agree to be bound by the terms and conditions hereof. The request form constitutes the entire agreement between the parties pertaining to the subject matter hereof and supersedes all prior and contemporaneous agreements, negotiations and discussions, whether oral or written, and there are no representations or warranties, or other agreements between the parties in connection with the subject matter hereof except as specifically set forth herein. No supplement, modification, waiver, or termination of the request shall be binding, unless confirmed in writing by the parties hereto.

Governing Document

In the event of any conflicts or inconsistencies between the provisions hereof and the Reports, the rights and obligations of the parties shall be deemed to be governed by the request form, which shall be the paramount document.

Law

This agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein.

Appendix VI:

Additional Site Photographs


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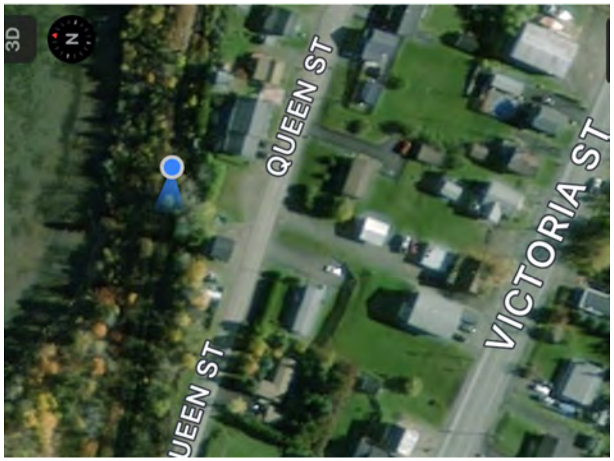
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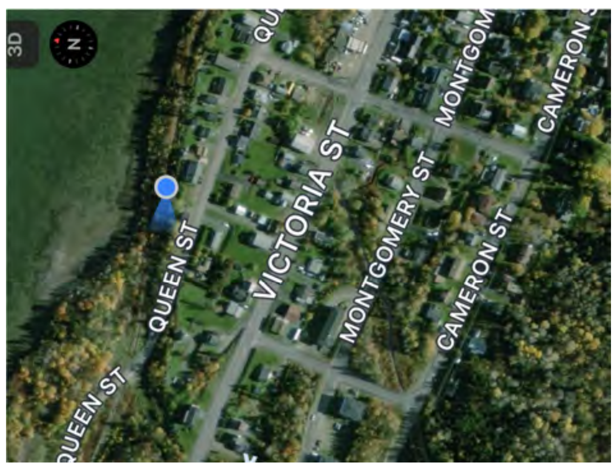
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Appendix V:

Fundy Engineering Data Sampling Protocol

SOIL AND GROUNDWATER SAMPLING PROCEDURES

FUNDY ENGINEERING & CONSULTING LTD.

FUNDY Engineering

TABLE OF CONTENTS

1.0 SUPERVISION OF EXPLORATORY BOREHOLES

1.1 Introduction

This document describes the procedures followed during the various drilling methods and sampling of exploratory boreholes observed by Fundy Engineering personnel.

1.2 Drilling Methods

1.2.1 Hollow Stem Augers

Exploratory boreholes are completed using 210 mm (8 inch) outside diameter (OD) hollow stem augers using a truck or track mounted drilling rig. The hollow stem augers are extended to the pre-determined sampling interval using conventional drilling methods, at which time a decontaminated 51 mm (2 inch) split spoon sampler is extended ahead of the lead auger to collect a soil sample. The split spoon sampler is then brought to the surface and opened exposing the soil core sample.

The hollow stem auger provides a temporary casing within the borehole so that the split spoon sampler can be installed through the annulus of the hollow stem augers making the technique more adaptable to variable and potentially unstable subsurface conditions.

The main advantages of this sampling system are:

- In appropriate geologic environments, continuous undisturbed samples of overburden can be obtained;
- In most instances drilling fluids (i.e. water) are not normally required; and
- If required, monitoring well casing(s) can be installed through the annulus of the hollow stem augers before the augers are withdrawn from the borehole.

1.2.2 Solid Stem Augers

A second method uses a solid-stem auger with either a single flight (one section) or continuous flight (multiple sections).

Solid stem augers with continuous flighting are used to advance holes in stable formations. Drill rigs turn the auger sections using a rotary drive head mounted on a hydraulic-feed mechanism that pushes the auger section down or pulls it back. Single auger lengths are generally 5 feet (1.5m) and diameters range from 4 to 24 inches.

For drilling, a special auger bit or cutter head is attached to the leading auger flight section and cuts a hole for the flights to follow. The cutter head id usually 2 inches (51 mm) larger in diameter than the flights, providing about 1 inch (25mm) clearance. The cuttings are brought to the top of the hole by the flights which act as a screw conveyor. As the auger drills into the earth, more auger sections are added until the desired depth is reached or penetration is halted by obstructions, hard ground, or caving conditions.

1.3 Drilling Equipment Decontamination

Drilling equipment is decontaminated prior to initial use, between borehole locations and the completion of drilling activities. The following items are manually scrubbed with a brush in a phosphate-free soap solution (i.e. Dish detergent) and thoroughly steam cleaned and/or power washed to remove any foreign materials and potentials contaminants:

- Back of drill rig;
- Hollow stem auger flights
- Drilling rods and other down-hole equipment; and
- Split spoon samplers.

1.4 Sample Logging

Split spoons are typically collected at 0.61m or 2-foot intervals in the overburden or as predetermined by the project manager. The samples are visually classified and a detailed borehole log containing the geologic description, including descriptions of colour, soil type, other constituents, moisture, structure and visible observations of staining and/or odours (if any) is completed for each borehole. The borehole logs also contain any significant observations noted during the drilling procedures, the locations from which soil sub-samples are collected, notes on sample recovery, sampler blow counts, organic vapour readings, samples submitted for laboratory analysis and well construction details (if applicable).

1.5 Containment of Drill Soil Cuttings

All borehole auger soil cuttings are captured and contained in sealable clean 205-L steel drums on-site. Each steel drum is properly labeled as to the contents, the borehole (s) from which the soil cuttings originated and the date on which the contents were generated. Pending results of the respective soil sample laboratory analyses, arrangements are made to dispose of the drum(s) from the site to a licensed waste disposal facility (if required).

2.0 SOIL SAMPLING, DECONTAMINATION METHODS, SAMPLES SELECTION AND LABORATORY ANALYSIS

2.1 Introduction

This document describes procedures followed by Fundy Engineering during decontamination of equipment, soil sample collection, selection and submission.

2.2 Decontamination Methods

Typically, sampling equipment (ex. Split spoon samplers and any sub-sampling equipment) are manually cleaned prior to each usage and at the completion of sampling activities according to the procedure below:

2.2.1 Soil Sampling Decontamination Methods for Suspected Petroleum Hydrocarbons

1. Brush and rinse with clean tap water;
2. Manually scrub equipment with a brush in a phosphate-free soap solution; and
3. Thoroughly rinse with distilled water.

2.2.2 Soil Sampling Decontamination Methods for Suspected Volatile Organic Compounds (VOCs)

Repeat step 1 through 3 as indicated above.

4. Rinse with a reagent-grade methanol solution, collecting rinsate waste; and
5. Rinse thoroughly with distilled water, collecting rinsate waste.

2.2.3 Soil Sampling Decontamination Methods for Suspected Metals

Repeat steps 1 through 3 above.

6. Rinse with a reagent-grade 10% nitric acid solution, collecting rinsate waste; and
7. Rinse thoroughly with distilled water, collecting rinsate waste.

2.3 Soil Sampling Methods

2.3.1 VOC/BTEX Soil Sampling

Soil samples collected for VOCs and or benzene, toluene, ethylbenzene and xylene (BTEX) analyses are immediately removed from the split spoon core sampler and packed into a pre-labeled glass jar with a Teflon-lined lid. The sample jar is filled so that there is no headspace. The sample is stored in an insulated cooler in the field until sample selection and submission to the laboratory for analysis. The maximum holding time for these samples is seven (7) to fourteen (14) days depending upon the organic parameters being analyzed by the laboratory.

2.3.2 Inorganic (Metals) Soil Sampling

Soil samples for inorganic (metals) analysis are collected by taking the soil from the split spoon core and placing it into a 250ml, pre-labeled glass jar. The sample is stored in an insulated cooler in the field until sample selection and submission to the laboratory for analysis. The maximum holding time for these samples is three (3) months.

2.3.3 Samples for Field Screening

Soil samples for total organic vapour (headspace) screening are collected by taking soil from the split spoon core and crumbling it into a clean pre-labeled 500mL glass jar. The jar is filled approximately 1/3 full and covered with aluminum foil and plastic wrap; the ring lid is then screwed tightly onto the jar.

2.4 Sample Selection

Samples best reflecting “worst case” conditions are selected by Fundy Engineering for laboratory analysis based on visual and olfactory observations in the field, as well as soil vapour headspace concentrations or as directed by the Project Manager.

2.4.1 Sample Submission and Analysis

Samples selected for analysis are submitted to a certified analytical laboratory for analysis of pre-authorized parameters with a standard five (5) working day turnaround time unless other arrangements have been made. A chain of custody form is completed and included in each cooler.

3.0 MONITORING WELL INSTALLATION

3.1 Introduction

This document describes procedures followed during well installations performed under the supervision of Fundy Engineering personnel.

3.1.1 Screen and Riser Pipe

The monitoring wells are constructed from individually wrapped 51mm inside diameter (ID) schedule 40 polyvinyl chloride (PVC) flush threaded casing equipped with O-rings. The well screens consist of casing material which is factory slotted (slot width = 0.25mm) to permit the entry of water into the well. The bottoms of the screens are equipped with threaded end caps. The appropriate numbers of risers are coupled with the screen section(s) via threaded joints to construct the well. The top of the wells are tightly capped to prevent the entry of foreign materials using a locking *Enviroplug* well cap, which prevents the infiltration of surface water and foreign material into the well and also provides security. A watertight, traffic-rated protective casing is installed over each monitoring well within a concrete pad extending approximately 0.5 metres below ground surface (mbgs). No PVC cements or other solvent-based cements are used in the construction of the monitoring wells.

3.1.2 Settings Screens, Riser Casings and Filter Materials

The hollow stem augers are left in the borehole upon completion of the drilling to prevent the borehole from collapsing. The necessary well materials are assembled within the annulus of the hollow stem augers and lowered to the bottom of the borehole. The bottom of the well screen (end cap) is positioned flush with the bottom of the borehole and the riser sections are added until the top of the well casing is positioned approximately 0.15 mbgs.

After the monitoring well assembly is lowered to the bottom of the borehole, a No. 3 silica sand (or equivalent) is added through the inside of the hollow stem augers to fill the annular space created between the outside of the monitoring well and the inside of the borehole by the slow removal of the hollow stem augers. The top of the sand is constantly plumbed with a weighted measuring device as the silica sand is being introduced: (1) to ensure that the filter material is passing through the annulus of the hollow stem augers without obstruction evenly into the open borehole around the well screen; and (2) to ensure that a limited volume of silica sand is present within the drill casing at all times while the filter pack is being installed to minimize the potential for collapse of the natural formation around the well screen. Silica sand is added until the level of the sand in the annular space around the monitoring well is between 0.3 and 0.6m above the top of the screened interval.

3.1.3 Setting Seals and Grouting

Once the top of the sand pack is verified to be in the correct position, a bentonite seal is placed above the filter pack to a depth of within 0.5 mbgs.

Sufficient bentonite or equivalent is poured down the inside of the auger to produce a seal 0.6 m thick above the sand. After each increment of 0.15m of bentonite, (verified using a weighted measuring tape), approximately 4 L of distilled water is poured down the inside of the augers to activate (hydrate) the bentonite. The water interacts with the bentonite causing it to swell, thereby immediately sealing off the well screen/filter pack from any fluids or potential contaminants migrating down from above.

Bentonite grout may be used in lieu of the cement/bentonite grout in many areas. The final bentonite grout mix should have a “mud weight” of approximately 1 kg/L.

3.1.4 Capping the Wells

Water tight, traffic-rated flush mount casings are installed onto a bed of sand, which immediately overlies the cement/bentonite grout seal. This bed of sand allows any water entering the casing to drain through the sand and away from the borehole into the surrounding formation. The protective flush mount casings are typically set in a 0.5m cement pad and asphalt cold-patch may be used if applicable. The annulus of the protective casing is then partially filled with sand to provide stability and insulation to the monitoring well riser pipe.

3.1.5 Documentation of Monitoring Well Configuration

Detailed diagrams of the monitoring wells construction are included within the borehole log. All specific depth intervals of well materials are included on the diagram.

3.1.6 Quality and Packaging of PVC

The PVC risers and screens, from which the wells are constructed, are factory cleaned by scrubbing and soaking in detergent, rinsed in clean water and allowed to dry. The well materials are individually sealed in 6-mil polyethylene sleeves prior to shipment to the Site. Immediately prior to the construction of the monitoring well, the PVC well materials are removed from their plastic bags by persons wearing clean disposable Nitrile gloves.

4.0 WATER LEVEL MONITORING

4.1 Introduction

This document describes procedures, which are followed during water level monitoring activities performed by Fundy Engineering personnel.

4.2 Water Level Measurement

All water level measurements obtained from monitoring wells are collected using a battery operated water level indicator tape. The water level indicator tape is marked at 1cm intervals for accurate measurements to the nearest 0.5cm. The probe used to measure water levels consists of a stainless steel electrode with a circuit-insulating gap. The circuit is completed when the probe contacts water and a buzzer is activated. The electrode sounder consists of a contact electrode that is suspended down the monitoring well. Current flows through the electrode when it contacts the water surface and a buzzer sounds.

The procedure used for measuring water levels is as follows:

- Switch on;
- Lower the weighted electric tape slowly into the monitoring well until the buzzer indicates a closed circuit;
- Note the length of tape which corresponds to the top of the monitoring well protective casing (reference point is marked on casing); and
- Record the resultant values as the water level below the top of the monitoring well casing.

All water level measurements collected by Fundy Engineering personnel are recorded in a field book.

4.3 Equipment Cleaning

Care is taken not to immerse the electrode/tape any further into the monitoring well than necessary so that only the stainless steel probe comes into contact with the water during a water level measurement. The probe and approximately 1 m of the polyethylene tape is decontaminated initially and between monitoring wells according to the following procedures:

- Rinse thoroughly with distilled water;
- Scrub with phosphate-free detergent; and
- Rinse thoroughly with distilled water.

5.0 DEVELOPMENT OF MONITORING WELLS

5.1 Introduction

This document describes the monitoring well development procedures followed by Fundy Engineering personnel.

5.2 Monitoring Well Development

The chemistry of stagnant groundwater in a monitoring well is liable to differ from that in the formation due to contact with well materials and/or with the atmosphere, and due to changes in temperature and pressure. All monitoring wells must be developed to ensure both a good communication between the well and the formation, and to ensure that representative groundwater is available prior to collecting the samples for laboratory analysis.

After the monitoring well installation is completed, the depth to water is measured in the monitoring well (see Procedure 4). This data is utilized to calculate a casing volume of water (litres) in the monitoring well, based on the total depth of the particular monitoring well and the inside diameter of the monitoring well casing. Fundy Engineering uses a 51mm ID casing to construct monitoring wells which has a volume of 2.0 L of fluid per foot (0.17 imperial gallons per foot) of length.

The development of stagnant water from the monitoring well is necessary to permit the collection of representative groundwater samples. Typically, (if time permits) development of monitoring wells is initiated approximately 24 hours after completion of the monitoring well installation to allow time for the bentonite seals to hydrate and for the water level in the monitoring wells to stabilize.

The calculated volume of water is pumped and a minimum of three monitoring well casing volumes are withdrawn from the monitoring well using either a WaTerra™ foot valve pump attached to a length of low density polyethylene (LDPE) tubing equal to the depth of the monitoring well or a *Timco* high density polyethylene (HDPE) disposable bailer. The WaTerra™ and LDPE are permanently stored within the monitoring well and the Teflon bailer is discarded after development and sampling of the monitoring well has been completed. The pH, specific conductance and temperature are recorded after each well casing volume has been removed. Once the 10% fluctuation in field measurements has been achieved over three consecutive volumes. The total volume of water developed is recorded in a field book. The pH and specific conductance meters are calibrated to manufacturers specifications prior to commencing well development and are checked periodically throughout the field program.

5.3 Timco HDPE Disposable Bailer

Bailers are the most widely used method for developing monitoring wells. They are very portable and when used in the proper manner are very effective, especially on monitoring wells less than 6 mbgs. The Timco HDPE disposable bailer (38mm OD and 91mm in length) is gently lowered into the well, using nylon or polyethylene-twine. When the bailer is lowered into the monitoring well, it fills from the bottom to the top into the calibrated collection bucket. This step is repeated until less than a 10% fluctuation over 3 consecutive casing volumes is reached. After the monitoring well development and sampling are complete, the bailer is then discarded.

5.4 Containment of Development Water

All monitoring well development water is captured and contained in sealable 205-L steel drums on-site. Each steel drum is properly labeled as to the contents, the well(s) from which the development water originated and the date on which the contents were generated. Pending results of groundwater laboratory analysis arrangements are made to dispose of the drum(s) from the site to a licensed waste disposal facility (if required).

6.0 GROUNDWATER SAMPLING

6.1 Introduction

This document describes the procedures followed during the collection of groundwater samples by Fundy Engineering personnel.

6.2 Groundwater Sampling Methodology

Groundwater samples are generally collected immediately after monitoring well development has been completed (i.e. minimum of three consecutive casing volumes of water removed from the monitoring well). Each sample designated for laboratory analysis is collected by transferring water flow directly from the WaTerra™ LDPE tubing or Timco HDPE disposable bailer into the appropriate laboratory sample containers. Use of the dedicated WaTerra™ pumps and/or the Timco HDPE disposable bailer eliminates the potential for cross-contamination of samples between monitoring wells.

6.2.1 Sampling for VOCs in Groundwater

Samples for volatile organic compounds are collected to ensure that no headspace is remaining within the sample container. The bottles are filled such that the sample water displaces all of the air in the bottle. In order to protect the integrity of the groundwater sample and to ensure no air is retained within the laboratory sample container, the following methods are used to reduce agitation of the groundwater and preserve the natural VOCs.

6.2.2 WaTerra™ (LDPE) Method

The dedicated 5/8 inch LDPE WaTerra™ installed into each monitoring well is temporarily equipped with both a 3/8 inch LDPE reducer section followed by a 7/16 inch LDPE reducer length in order to significantly confine the column of water flow to ensure no air is present within the groundwater sample. The sample is then collected by inserting the 7/16 inch LDPE tube to the bottom of the appropriate laboratory containers. All reducer sections of LDPE are discarded after the sampling of each monitoring well has been completed and the WaTerra™ assembly is then returned to the well for possible future usage.

6.2.3 Disposable Bailer Method

The disposable Timco HDPE is submersed gently into the column within the monitoring well. Typically the bailer is tied to a length of nylon or polyethylene twine, (or equivalent). Groundwater retained within the bailer is brought to the surface, the disposable reducer attachment supplied with each bailer is installed at the discharge end of the bailer and the necessary laboratory bottles are filled

as per the method described in section 6.2.2. The bailer along with all related equipment is discarded after the sampling of each monitoring well has been completed.

The pH, specific conductance and temperature (i.e. field parameters) of the monitoring well water are recorded immediately prior to the collection of the sample for laboratory analysis.

6.2.4 Low Flow Groundwater Sampling Procedures

The groundwater level in the well will be determined before installing the pump and will be recorded on the purge form. The pump, safety cable, tubing, and electrical lines will be lowered slowly (to minimize disturbance) into the well to the appropriate depth, which will be determined in the field (typically 0.6-0.9 meters from the bottom of the well). Special precaution will be made to ensure the pump does not disturb any particulates at the bottom of the well. Pump tubing lengths above the top of well casing will be kept as short as possible to minimize heating the groundwater in the tubing by exposure to sun light and ambient air temperatures. The purged water will be discharged into a graduated bucket to determine the total volume. Typical flow rate will be between 0.1 to 0.5 L/min depending on the well drawdown. This information will be recorded on the purge form or in the field logbook. The pumping speed will be adjusted until little to no water level drawdown occurs. During well purging, field parameter indicators will be monitored and recorded (temperature, specific conductance, pH, and DO) at a frequency of five minute intervals or greater. Purging is considered complete and sampling will begin when all the above indicator field parameters have stabilized. Stabilization will be achieved when three consecutive readings are within the following limits:

Dissolved Oxygen (10% for values > 0.5 mg/L, if three Dissolved Oxygen values are < 0.5 mg/L, consider the value stabilized);
Specific Conductance (3%);
Temperature (3%);
pH (± 0.1 unit).

Each sample will be properly labeled and cooled within a cooler containing ice and then delivered to the laboratory.

6.3 Sample Acquisition

Sample storage and preservation are important to minimize oxidation, biodegradation and growth of bacteria, which may influence the chemistry of the water after sampling. For sample integrity and safety reasons, non-powdered Nitrile disposable gloves are worn during all soil and water sampling, monitoring well development and sampling procedures. Nitrile gloves are disposed of after each individual sampling application.

Organics (water samples)

Volatiles – Use 40mL glass "purge and trap" vials. Collect two vials per sample. Fill vials to overflowing with minimum agitation of sample. Replace cover (Teflon side toward sample) such that no air bubbles are trapped within the vial.

Semivolatiles (includes hydrocarbons, PAH, PCB etc) – Collect sample in one litre glass bottle with Teflon-lined cap. Fill bottle completely and cap securely.

"Alberta Must" – Collect two "purge and trap" vials and one litre amber bottle per sample.

Dioxins/Furans – Only bottles specially prepared and certified for this analysis may be used. Exercise extreme care to avoid contamination.

Organics (soil samples)

Samples for all parameters may be collected in glass mason jars (250ml or 500ml). Glass jars with Teflon-lined lids are also acceptable. Collect a representative sample, place in bottle, cover with aluminum foil liner (Mason jar) and replace lid securely. Samples should be kept cool prior to submission.

Inorganics (water samples)

Trace metals – Collect sample in polypropylene provides or 250 mL plastic bottles. If there is a need to distinguish between dissolved and particulate phases, it will be necessary to filter the sample at the time of sample collection. If possible, the sample should be preserved in nitric acid in the field (0.2%). If

mercury analysis is required, field preservation is mandatory, unless the sample can be delivered within two hours.

General Chemistry – Collect one 250 mL bottle per sample. Do not use bottles designated for microbiological analysis. Fill bottle and refrigerate.

Other Inorganics – there are special bottle and preservative requirements for many inorganic parameters. Please see separate sample preservation and

sample volume requirement information for cyanides, sulfide, phenolics, total organic halide, BOD, COD, nutrients, suspended solids etc.

Inorganics (soil samples)

Sample as for organics in soil. Foil liner on mason jar is not required. Plastic containers (bottles or clear polyethylene bags) are also acceptable.

Trace metals (biota): Collect samples, wrap in plastic film and freeze immediately. Clean polyethylene bags may be used.

Bacteriology (water samples)

Open the sterile 250mL plastic bottle provided for microbiological analysis without touching the inside of the cap or the mouth area of the bottle. Fill bottle within 2.5cm of the top and cover securely. Keep sample cool and deliver to the laboratory within 24 hours.

7.0 SAMPLE DESIGNATION, CUSTODY AND HANDLING

7.1 Sample Designation

A self adhesive, non-removable label will be affixed to each individual sample container and filled in with a marker prior to sample collection. Sample labels should contain the following information:

- Project number
- Sample identification number
- Date sample collected
- Sample preservative
- Sampler

7.2 Sample Chain of Custody

The primary objective of sample custody procedures is to create a legally accurate written record which can be used to trace the possession and handling of all samples from the moment of their collection, through analysis, until their final disposition. Custody of samples collected during any Fundy Engineering field investigation is maintained by the field personnel collecting the samples. Fundy Engineering personnel are responsible for documenting each sample transfer and maintaining custody of all samples until they are delivered to the laboratory. The chain-of-custody forms document the names of the relinquishing and receiving parties, the time and date of the transfer of custody, and the reason for the transfer of custody.

One chain-of-custody form will accompany each cooler shipped to the laboratory. The form will be placed in a sealed plastic bag inside the cooler. Upon receipt by the sample custodian for the laboratory, the sample custodian will note on the form any damaged sample containers or discrepancies between the sample label and information on the chain-of-custody form. A copy of the chain-of-custody form will then be transmitted to the Fundy Engineering project manager for their records and so that proper action can be taken, if necessary.

7.3 Sample Handling Procedures

Proper handling of samples is critical for meaningful laboratory test results. Immediately after sample collection, the chain-of-custody is completed and the samples are placed on ice in an insulated cooler for delivery to the laboratory for prompt analysis.

Some parameters may require field preservation procedures. These parameters are typically analyzed in individually prepared laboratory bottles containing the preservatives.

Typically, the laboratory holds original samples for thirty (30) days after return of the analysis results and data packages. Extracts prepared from the samples are held one hundred and eighty (180) days after return of the analysis results and data packages.

7.4 Quality Assurance Quality Control (QA/QC) Samples

7.4.1 Laboratory Trip Blank

A trip blank originating from the laboratory is submitted for analysis of VOCs on the day of sampling. The trip blank is placed inside the cooler containing the samples for VOCs analysis. The blank is not to be opened in the field or at any time by Fundy Engineering personnel.

7.4.2 Field Duplicate Sample

A random sample is duplicated in the field and submitted to the laboratory as a different sample code. This sample serves as a "blind" duplicate to the laboratory as a quality control check.

7.4.3 Sampling Equipment Decontamination Procedure

Any soil and groundwater sampling equipment utilized is thoroughly decontaminated prior to each use according to the following procedure:

- A phosphate free detergent wash ("Sunlight" detergent);
- Rinse thoroughly with water;
- A 10% nitric acid (HNO_3) rinse collecting waste rinsate;
- Rinse thoroughly with distilled water;
- A reagent methanol rinse collecting waste rinsate;
- Rinse thoroughly with water;
- Allow to air dry;
- Wrap in aluminum foil for storage and transport.

If the samples will not be scheduled for metals analysis, then steps 3 and 4 may be omitted; if samples will not be scheduled for organics analysis then step 5 may be omitted. All solvents must be pesticide grade.

8.0 PUMP TESTS PROCEDURES

8.1 Introduction

This document describes the procedures followed by Fundy Engineering personnel during the completion of monitoring well recovery tests. To perform a recovery test, the equilibrated (static) water level in each monitoring well will be recorded. The water level in the monitoring well will be rapidly lowered using either a WaTerra™ pumping apparatus or Timco HDPE disposable bailer and

then observed (using an electric water level indicator) as it recovers toward the static condition. The rate at which the water level in the monitoring well recovers is a function of the bulk (average) hydraulic conductivity of the geologic materials intersected by the well screen/sand pack.

8.2 Data Collection

Recovery tests (i.e. rising-head slug tests) will be initiated in monitoring wells by recording the static water level and then pumping the wells as rapidly as possible until the water level is just above the top of the sand pack surrounding the monitoring well screen. If the static water level is below or near the top of the sand pack, then pumping will continue until maximum drawdown is achieved. Once the maximum drawdown is reached, the WaTerra™ pump apparatus or Timco HDPE disposable bailer will be removed from the monitoring well and the initial water level, time and date will be recorded. The water level will be measured as it recovers toward the static condition according to the procedure outlined in Procedure 4. The required frequency of monitoring will decrease as the rate of recovery decreases with time according to a logarithmic function. Monitoring will continue until the water level has recovered to at least 80% of its original static water level.

All information pertaining to a recovery test is documented on a Pumping/Recovery Test data form and includes the following:

- Weather conditions (particularly precipitation events);
- Monitoring well construction details;
- Static water level;
- Water level at desired/maximum drawdown;
- Water level immediately after WaTerra™ pumping system is removed or inverted;
- Water levels as the well recovery is monitored;
- Total volume of water pumped from the well and the rate of pumping; and
- The time and date of each water level measurement.

8.3 Interpretation

The recovery data is analyzed and interpreted to calculate the bulk hydraulic conductivity of the subsurface geologic materials intersected by the well screen/filter pack. The Cooper (1967) method is used to determine the bulk hydraulic conductivity for confined aquifers and the updated method of Bouwer and Rice (1988) is used for confined aquifers.

9.0 Safety

Before drilling or digging testpits in the Saint John area you must call 1-866-344-5463 – Call before you dig utility notification service. You should call at least two days before you plan to drill. This service will provide clearances for Rogers Cable, Irving Oil Limited, Enbridge Gas, Aliant, Maritimes & Northeast Pipeline, City of Saint John Water/Waste Water, Saint John Energy.

When not drilling in the Saint John area each company will have to be contacted separately to receive clearances.

Safety clothing required for a drilling operation must include proper footwear, eye and head protection, hearing protection and safety vests.

The main danger when working around drill rigs are when you are taking notes and not watching what is going on. The drill rig is inherently a rotary device, therefore, becoming caught in the rotary parts is a real danger. In addition, there are numerous tools and drill stems overhead, therefore there is also a danger of falling objects.

Appendix VI:

Laboratory Certificates

Report ID: 532713-IAS
Report Date: 22-Aug-24
Date Received: 15-Aug-24

CERTIFICATE OF ANALYSIS

for
Fundy Engineering
PO Box 6626, 27 Wellington Row
Saint John, NB E2L 4S1

rpc
921 College Hill Rd
Fredericton NB
Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Attention: Greg Derrah
Project #: 17712

Analysis of Metals in Soil

RPC Sample ID:			532713-02	532713-03	532713-08
Client Sample ID:			BH2 (7-9')	BH3 (5-7')	BH6-M (3-5')
Date Sampled:			12-Aug-24	12-Aug-24	13-Aug-24
Analytes	**Units**	**RL**			
Aluminum	mg/kg	1	20100	21900	12600
Antimony	mg/kg	0.1	0.6	0.2	1.2
Arsenic	mg/kg	1	13	9	79
Barium	mg/kg	1	96	68	169
Beryllium	mg/kg	0.1	0.3	0.9	0.9
Bismuth	mg/kg	1	4	< 1	1
Boron	mg/kg	1	3	7	11
Cadmium	mg/kg	0.01	3.87	3.21	19.7
Calcium	mg/kg	50	16700	26400	22600
Chromium	mg/kg	1	39	43	24
Cobalt	mg/kg	0.1	24.1	19.5	10.2
Copper	mg/kg	1	75	42	101
Iron	mg/kg	20	30200	41300	101000
Lead	mg/kg	0.1	843.	240.	694.
Lithium	mg/kg	0.1	11.4	25.0	12.3
Magnesium	mg/kg	10	11100	13600	5710
Manganese	mg/kg	1	5820	929	626
Molybdenum	mg/kg	0.1	3.1	0.7	34.0
Nickel	mg/kg	1	46	59	29
Potassium	mg/kg	20	800	1760	1440
Rubidium	mg/kg	0.1	4.4	10.6	8.3
Selenium	mg/kg	1	< 1	1	4
Silver	mg/kg	0.1	0.4	0.4	1.1
Sodium	mg/kg	50	1250	770	500
Strontium	mg/kg	1	97	116	113
Tellurium	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Thallium	mg/kg	0.1	0.6	0.3	1.6
Tin	mg/kg	1	< 1	< 1	3
Uranium	mg/kg	0.1	0.6	0.5	0.8
Vanadium	mg/kg	1	30	49	34
Zinc	mg/kg	1	3270	2980	11900

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit

Matthew Norman
Senior Chemist
Inorganic Analytical Chemistry

Brannen Burhoe
Supervisor
Inorganic Analytical Services

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www.rpc.ca

Attention: Greg Derrah
Project #: 17712

Analysis of Metals in Soil

RPC Sample ID:			532713-10	532713-12	532713-13
Client Sample ID:			BH7 (5-7')	BH9 (3-5')	BH10 (5-7')
Date Sampled:			13-Aug-24	13-Aug-24	13-Aug-24
Analytes	**Units**	**RL**			
Aluminum	mg/kg	1	12000	14000	20200
Antimony	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Arsenic	mg/kg	1	5	6	5
Barium	mg/kg	1	23	26	72
Beryllium	mg/kg	0.1	0.4	0.8	1.5
Bismuth	mg/kg	1	< 1	< 1	< 1
Boron	mg/kg	1	6	6	9
Cadmium	mg/kg	0.01	1.06	1.90	1.05
Calcium	mg/kg	50	2950	3790	68300
Chromium	mg/kg	1	24	24	13
Cobalt	mg/kg	0.1	9.1	14.6	10.2
Copper	mg/kg	1	17	13	19
Iron	mg/kg	20	39000	30900	30100
Lead	mg/kg	0.1	8.1	10.8	134.
Lithium	mg/kg	0.1	11.1	16.4	6.2
Magnesium	mg/kg	10	4950	5310	6300
Manganese	mg/kg	1	201	1020	778
Molybdenum	mg/kg	0.1	1.0	0.9	0.6
Nickel	mg/kg	1	24	27	16
Potassium	mg/kg	20	1170	1360	2240
Rubidium	mg/kg	0.1	10.0	11.3	5.0
Selenium	mg/kg	1	< 1	< 1	2
Silver	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Sodium	mg/kg	50	170	120	2230
Strontium	mg/kg	1	23	26	163
Tellurium	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Thallium	mg/kg	0.1	< 0.1	< 0.1	0.1
Tin	mg/kg	1	< 1	< 1	< 1
Uranium	mg/kg	0.1	0.7	2.0	0.7
Vanadium	mg/kg	1	37	39	27
Zinc	mg/kg	1	2450	1030	493

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www.rpc.ca

Attention: Greg Derrah
Project #: 17712

Analysis of Metals in Soil

RPC Sample ID:			532713-16	532713-18	532713-23
Client Sample ID:			BH12 (5-7')	BH14 (3-5')	BH17 (0-2')
Date Sampled:			13-Aug-24	13-Aug-24	14-Aug-24
Analytes	**Units**	**RL**			
Aluminum	mg/kg	1	8300	10600	10600
Antimony	mg/kg	0.1	2.9	5.9	4.3
Arsenic	mg/kg	1	44	72	42
Barium	mg/kg	1	195	127	170
Beryllium	mg/kg	0.1	0.9	1.1	0.9
Bismuth	mg/kg	1	2	3	< 1
Boron	mg/kg	1	7	8	6
Cadmium	mg/kg	0.01	4.63	25.8	0.91
Calcium	mg/kg	50	10800	11200	5620
Chromium	mg/kg	1	14	21	26
Cobalt	mg/kg	0.1	8.3	13.2	11.7
Copper	mg/kg	1	115	336	107
Iron	mg/kg	20	40700	56800	62000
Lead	mg/kg	0.1	1180	1790	320.
Lithium	mg/kg	0.1	7.7	9.8	14.1
Magnesium	mg/kg	10	1380	2520	3720
Manganese	mg/kg	1	369	527	617
Molybdenum	mg/kg	0.1	18.8	17.1	13.1
Nickel	mg/kg	1	31	29	26
Potassium	mg/kg	20	750	970	1000
Rubidium	mg/kg	0.1	5.0	6.2	8.2
Selenium	mg/kg	1	1	2	1
Silver	mg/kg	0.1	1.5	3.1	0.3
Sodium	mg/kg	50	570	640	230
Strontium	mg/kg	1	95	103	68
Tellurium	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Thallium	mg/kg	0.1	1.0	2.4	0.8
Tin	mg/kg	1	3	39	13
Uranium	mg/kg	0.1	0.6	1.1	1.0
Vanadium	mg/kg	1	47	41	44
Zinc	mg/kg	1	2670	14400	747

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General Report Comments

Samples were air dried and sieved at 2 mm. A portion of each was digested according to EPA Method 3050B.
The resulting solutions were analyzed for trace elements by ICP-MS.

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Project #: 17712

QA/QC Report

RPC Sample ID:			CRM217163	RB115089
Type:			CRM NIST2706	Blank
Analytes	**Units**	**RL**		
Aluminum	mg/kg	1	10800	< 1
Antimony	mg/kg	0.1	51.7	< 0.1
Arsenic	mg/kg	1	28	< 1
Barium	mg/kg	1	113	< 1
Beryllium	mg/kg	0.1	0.6	< 0.1
Bismuth	mg/kg	1	< 1	< 1
Boron	mg/kg	1	13	< 1
Cadmium	mg/kg	0.01	0.22	< 0.01
Calcium	mg/kg	50	5580	< 50
Chromium	mg/kg	1	22	< 1
Cobalt	mg/kg	0.1	5.0	< 0.1
Copper	mg/kg	1	106	< 1
Iron	mg/kg	20	19500	< 20
Lead	mg/kg	0.1	743.	< 0.1
Lithium	mg/kg	0.1	8.6	< 0.1
Magnesium	mg/kg	10	1850	< 10
Manganese	mg/kg	1	181	< 1
Molybdenum	mg/kg	0.1	0.9	< 0.1
Nickel	mg/kg	1	18	< 1
Potassium	mg/kg	20	1960	< 20
Rubidium	mg/kg	0.1	14.4	< 0.1
Selenium	mg/kg	1	< 1	< 1
Silver	mg/kg	0.1	< 0.1	< 0.1
Sodium	mg/kg	50	1010	< 50
Strontium	mg/kg	1	32	< 1
Tellurium	mg/kg	0.1	< 0.1	< 0.1
Thallium	mg/kg	0.1	0.1	< 0.1
Tin	mg/kg	1	28	3
Uranium	mg/kg	0.1	0.8	< 0.1
Vanadium	mg/kg	1	34	< 1
Zinc	mg/kg	1	121	< 1

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Methods

Analyte	RPC SOP #	Method Reference	Method Principle
EPA 3050B Digestion	IAS-M19	EPA 3050B	Nitric Acid/Hydrogen Peroxide Digestion
Trace Metals	IAS-M01/IAS-M29	EPA 200.8/EPA 200.7	ICP-MS/ICP-ES

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Attention: Greg Derrah
Project #: 17712

Hydrocarbon Analysis in Soil (Atlantic MUST)

RPC Sample ID:			532713-01	532713-05	532713-06	532713-07	532713-11	532713-14
Client Sample ID:			BH1-M (10-12')	BH4-M (7-9')	BH5 (7-9')	BH6-M (5-7')	BH8 (10-12')	BH11 (10-12')
Date Sampled:			12-Aug-24	12-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24
Matrix:			soil	soil	soil	soil	soil	soil
Analytes	Units	RL						
Benzene	mg/kg	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Ethylbenzene	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylenes	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
VPH C6-C10 (Less BTEX)	mg/kg	2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
EPH >C10-C16	mg/kg	12	< 12	< 12	< 12	< 12	< 12	< 12
EPH >C16-C21	mg/kg	12	< 12	< 12	< 12	< 12	< 12	< 12
EPH >C21-C32	mg/kg	12	< 12	< 12	< 12	< 12	< 12	41
EPH (>C16-C32)	mg/kg	12	< 12	< 12	< 12	< 12	< 12	41
Modified TPH Tier 1	mg/kg	21	< 21	< 21	< 21	< 21	< 21	41
VPH Surrogate (IBB)	%		91	94	96	90	95	101
EPH Surrogate (IBB)	%		93	93	96	95	97	101
EPH Surrogate (C32)	%		105	104	109	105	107	107
Resemblance			ND	ND	ND	ND	ND	PAH.NRLR
Return to Baseline at C32			Yes	Yes	Yes	Yes	Yes	No
Moisture Content	%		16	15	14	19	20	24

This report relates only to the sample(s) and information provided to the laboratory.
RL = Reporting Limit; Soil results are expressed on a dry weight basis.

Bruce Phillips
Department Head
Organic Analytical Services

Angela Colford
Lab Supervisor
Organic Analytical Services

Report ID: 532713-OAS
Report Date: 19-Aug-24
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Attention: Greg Derrah
Project #: 17712

Hydrocarbon Analysis in Soil (Atlantic MUST)

RPC Sample ID:			532713-15	532713-19	532713-20	532713-22
Client Sample ID:			BH12 (10-12')	BH15 (10-12')	BH16 (10-12')	BH17 (7-9')
Date Sampled:			13-Aug-24	13-Aug-24	13-Aug-24	14-Aug-24
Matrix:			soil	soil	soil	soil
Analytes	Units	RL				
Benzene	mg/kg	0.005	< 0.005	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Ethylbenzene	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylenes	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
VPH C6-C10 (Less BTEX)	mg/kg	2.5	< 2.5	< 2.5	< 2.5	< 2.5
EPH >C10-C16	mg/kg	12	< 12	< 12	< 12	< 12
EPH >C16-C21	mg/kg	12	< 12	< 12	< 12	< 12
EPH >C21-C32	mg/kg	12	31	< 12	< 12	< 12
EPH (>C16-C32)	mg/kg	12	31	< 12	< 12	< 12
Modified TPH Tier 1	mg/kg	21	31	< 21	< 21	< 21
VPH Surrogate (IBB)	%		92	94	94	94
EPH Surrogate (IBB)	%		96	98	100	94
EPH Surrogate (C32)	%		101	106	107	102
Resemblance			UP.PLO	ND	ND	ND
Return to Baseline at C32			No	Yes	Yes	Yes
Moisture Content	%		13	12	13	17

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Attention: Greg Derrah
Project #: 17712

PAH in Soil

RPC Sample ID:			532713-04	532713-07	532713-09	532713-17	532713-17 Dup	532713-21
Client Sample ID:			BH3 (12-14')	BH6-M (5-7')	BH7 (7-9')	BH13 (5-7')	BH13 (5-7')	BH16 (3-5')
Date Sampled:			12-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24
Matrix:			soil	soil	soil	soil	soil	soil
Analytes	Units	RL						
Naphthalene	mg/kg	0.01	0.12	< 0.01	0.01	1.4	1.1	0.36
Acenaphthylene	mg/kg	0.01	< 0.01	< 0.01	< 0.01	0.10	0.09	0.03
Acenaphthene	mg/kg	0.01	0.18	< 0.01	< 0.01	0.19	0.16	0.01
Fluorene	mg/kg	0.01	0.10	< 0.01	0.02	0.22	0.18	0.02
Phenanthrene	mg/kg	0.01	0.43	0.01	0.01	2.5	2.3	0.41
Anthracene	mg/kg	0.01	0.06	< 0.01	< 0.01	0.48	0.44	0.06
Fluoranthene	mg/kg	0.01	0.36	< 0.01	< 0.01	2.6	2.4	0.58
Pyrene	mg/kg	0.01	0.27	< 0.01	< 0.01	1.8	1.8	0.65
Benz(a)anthracene	mg/kg	0.01	0.08	< 0.01	< 0.01	0.99	0.88	0.33
Chrysene/Triphenylene	mg/kg	0.01	0.06	< 0.01	< 0.01	0.80	0.70	0.32
Benzo(b+j)fluoranthene	mg/kg	0.01	0.09	< 0.01	< 0.01	1.4	1.3	0.42
Benzo(k)fluoranthene	mg/kg	0.01	0.03	< 0.01	< 0.01	0.49	0.46	0.14
Benzo(e)pyrene	mg/kg	0.01	0.05	< 0.01	< 0.01	0.86	0.74	0.19
Benzo(a)pyrene	mg/kg	0.01	0.06	< 0.01	< 0.01	0.66	0.54	0.14
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01	0.03	< 0.01	< 0.01	0.40	0.34	0.09
Benzo(g,h,i)perylene	mg/kg	0.01	0.04	< 0.01	< 0.01	0.31	0.27	0.08
Dibenz(a,h)anthracene	mg/kg	0.01	< 0.01	< 0.01	< 0.01	0.12	0.10	0.03
2-fluorobiphenyl (surrogate)	%		69	107	107	95	88	97
p-terphenyl-d14 (surrogate)	%		15	98	98	106	100	107
Moisture Content	%		33	19	15	14	14	20

This report relates only to the sample(s) and information provided to the laboratory.
RL = Reporting Limit; Soil results are expressed on a dry weight basis.

Bruce Phillips
Department Head
Organic Analytical Services

Angela Colford
Lab Supervisor
Organic Analytical Services

CERTIFICATE OF ANALYSIS

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Method Summary

OAS-HC03:The Determination of Petroleum Hydrocarbons (Atlantic MUST) in Soil (VPH)
OAS-HC03: Determination of Petroleum Hydrocarbons (Atlantic MUST) in Soil (EPH)
OAS-HC06:The Determination of Polynuclear Aromatic Hydrocarbons in Soil

Resemblance Legend

Resemblance Code	Resemblance
COMMENT	See General Report Comments
FO	Fuel Oil Fraction
FO.LO	Fuel Oil and Lube Oil Fraction
G	Gasoline Fraction
LO	Lube Oil Fraction
ND	Not Detected
NR	No Resemblance (not-petrogenic in origin)
NRLR	No Resemblance in the lube oil range (>C21-C32).
OP	One Product (unidentified)

Resemblance Code	Resemblance
PAH	Possible PAHs Detected
PG	Possible Gasoline Fraction
PLO	Possible Lube Oil Fraction
PWFO	Possible Weathered Fuel Oil Fraction
PWG	Possible Weathered Gasoline Fraction
TO	Transformer Oil
UP	Unknown Peaks
WFO	Weathered Fuel Oil Fraction
WG	Weathered Gasoline Fraction

General Report Comments

Samples 532713-4 - PAH surrogates below acceptance limits due to sample matrix effects.
Return to Baseline: Samples are considered to have returned to baseline if the area from C32-C36 is less than 10% of the area from C10-C32.

Report ID: 532713-OAS
Report Date: 19-Aug-24
Date Received: 15-Aug-24

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Project #: 17712

QA/QC Report

RPC Sample ID:			BLANKE0326	BLANKE0331	SPIKEE0326	SPIKEE0331
Type:			EPH	VPH	EPH	VPH
Matrix:			soil	soil	soil	soil
Analytes	Units	RL			% Recovery	% Recovery
Benzene	mg/kg	0.005	-	< 0.005	-	119%
Toluene	mg/kg	0.05	-	< 0.05	-	115%
Ethylbenzene	mg/kg	0.01	-	< 0.01	-	113%
Xylenes	mg/kg	0.05	-	< 0.05	-	115%
VPH C6-C10 (Less BTEX)	mg/kg	2.5	-	< 2.5	-	98%
EPH >C10-C16	mg/kg	12	< 12	-	-	-
EPH >C16-C21	mg/kg	12	< 12	-	-	-
EPH >C21-C32	mg/kg	12	< 12	-	-	-
EPH >C10-C32	mg/kg	21	-	-	97%	-

RL = Reporting Limit

Report ID: 532713-OAS
Report Date: 19-Aug-24
Date Received: 15-Aug-24

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Project #: 17712

QA/QC Report

RPC Sample ID:			BLANKE0332	SPIKEE0332
Matrix:			soil	soil
Analytes	Units	RL		% Recovery
Naphthalene	mg/kg	0.01	< 0.01	106%
Acenaphthylene	mg/kg	0.01	< 0.01	108%
Acenaphthene	mg/kg	0.01	< 0.01	107%
Fluorene	mg/kg	0.01	< 0.01	104%
Phenanthrene	mg/kg	0.01	< 0.01	108%
Anthracene	mg/kg	0.01	< 0.01	110%
Fluoranthene	mg/kg	0.01	< 0.01	104%
Pyrene	mg/kg	0.01	< 0.01	103%
Benz(a)anthracene	mg/kg	0.01	< 0.01	101%
Chrysene/Triphenylene	mg/kg	0.01	< 0.01	112%
Benzo(b+j)fluoranthene	mg/kg	0.01	< 0.01	101%
Benzo(k)fluoranthene	mg/kg	0.01	< 0.01	102%
Benzo(e)pyrene	mg/kg	0.01	< 0.01	113%
Benzo(a)pyrene	mg/kg	0.01	< 0.01	113%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01	< 0.01	89%
Benzo(g,h,i)perylene	mg/kg	0.01	< 0.01	91%
Dibenz(a,h)anthracene	mg/kg	0.01	< 0.01	93%

RL = Reporting Limit

Report ID: 532713-OAS
Report Date: 19-Aug-24
Date Received: 15-Aug-24

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Project #: 17712

Summary of Date Analyzed

	VPH		EPH		PAH	
RPC Sample ID	**Extracted**	**Analyzed**	**Extracted**	**Analyzed**	**Extracted**	**Analyzed**
532713-01	16-Aug-24	17-Aug-24	16-Aug-24	17-Aug-24	-	-
532713-04	-	-	-	-	16-Aug-24	16-Aug-24
532713-05	16-Aug-24	17-Aug-24	16-Aug-24	17-Aug-24	-	-
532713-06	16-Aug-24	17-Aug-24	16-Aug-24	17-Aug-24	-	-
532713-07	16-Aug-24	17-Aug-24	16-Aug-24	17-Aug-24	16-Aug-24	16-Aug-24
532713-09	-	-	-	-	16-Aug-24	17-Aug-24
532713-11	16-Aug-24	17-Aug-24	16-Aug-24	17-Aug-24	-	-
532713-14	16-Aug-24	17-Aug-24	16-Aug-24	17-Aug-24	-	-
532713-15	16-Aug-24	17-Aug-24	16-Aug-24	17-Aug-24	-	-
532713-17	-	-	-	-	16-Aug-24	17-Aug-24
532713-17 Dup	-	-	-	-	16-Aug-24	17-Aug-24
532713-19	16-Aug-24	17-Aug-24	16-Aug-24	17-Aug-24	-	-
532713-20	16-Aug-24	17-Aug-24	16-Aug-24	17-Aug-24	-	-
532713-21	-	-	-	-	16-Aug-24	17-Aug-24
532713-22	16-Aug-24	17-Aug-24	16-Aug-24	17-Aug-24	-	-

Report ID: 532852-IAS
Report Date: 22-Aug-24
Date Received: 16-Aug-24

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Attention: Greg Derrah
Project #: 17712

Analysis of Metals in Soil

RPC Sample ID:			532852-2
Client Sample ID:			BH19 (0-2)
Date Sampled:			13-Aug-24
Analytes	**Units**	**RL**	
Aluminum	mg/kg	1	13000
Antimony	mg/kg	0.1	0.6
Arsenic	mg/kg	1	30
Barium	mg/kg	1	271
Beryllium	mg/kg	0.1	1.4
Bismuth	mg/kg	1	< 1
Boron	mg/kg	1	12
Cadmium	mg/kg	0.01	2.63
Calcium	mg/kg	50	31000
Chromium	mg/kg	1	12
Cobalt	mg/kg	0.1	8.2
Copper	mg/kg	1	55
Iron	mg/kg	20	54800
Lead	mg/kg	0.1	120.
Lithium	mg/kg	0.1	10.1
Magnesium	mg/kg	10	1720
Manganese	mg/kg	1	992
Molybdenum	mg/kg	0.1	19.3
Nickel	mg/kg	1	27
Potassium	mg/kg	20	1040
Rubidium	mg/kg	0.1	6.3
Selenium	mg/kg	1	2
Silver	mg/kg	0.1	0.2
Sodium	mg/kg	50	250
Strontium	mg/kg	1	179
Tellurium	mg/kg	0.1	< 0.1
Thallium	mg/kg	0.1	0.4
Tin	mg/kg	1	1
Uranium	mg/kg	0.1	1.8
Vanadium	mg/kg	1	42
Zinc	mg/kg	1	1250

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit

Matthew Norman
Senior Chemist
Inorganic Analytical Chemistry

Brannen Burhoe
Supervisor
Inorganic Analytical Services

Report ID: 532852-IAS
Report Date: 22-Aug-24
Date Received: 16-Aug-24

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General Report Comments

Sample was air dried and sieved at 2 mm. A portion was digested according to EPA Method 3050B.
The resulting solution was analyzed for trace elements by ICP-MS.

Report ID: 532852-IAS
Report Date: 22-Aug-24
Date Received: 16-Aug-24

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Project #: 17712

QA/QC Report

RPC Sample ID:			CRM217163	RB115089
Type:			CRM NIST2706	Blank
Analytes	**Units**	**RL**		
Aluminum	mg/kg	1	10800	< 1
Antimony	mg/kg	0.1	51.7	< 0.1
Arsenic	mg/kg	1	28	< 1
Barium	mg/kg	1	113	< 1
Beryllium	mg/kg	0.1	0.6	< 0.1
Bismuth	mg/kg	1	< 1	< 1
Boron	mg/kg	1	13	< 1
Cadmium	mg/kg	0.01	0.22	< 0.01
Calcium	mg/kg	50	5580	< 50
Chromium	mg/kg	1	22	< 1
Cobalt	mg/kg	0.1	5.0	< 0.1
Copper	mg/kg	1	106	< 1
Iron	mg/kg	20	19500	< 20
Lead	mg/kg	0.1	743.	< 0.1
Lithium	mg/kg	0.1	8.6	< 0.1
Magnesium	mg/kg	10	1850	< 10
Manganese	mg/kg	1	181	< 1
Molybdenum	mg/kg	0.1	0.9	< 0.1
Nickel	mg/kg	1	18	< 1
Potassium	mg/kg	20	1960	< 20
Rubidium	mg/kg	0.1	14.4	< 0.1
Selenium	mg/kg	1	< 1	< 1
Silver	mg/kg	0.1	< 0.1	< 0.1
Sodium	mg/kg	50	1010	< 50
Strontium	mg/kg	1	32	< 1
Tellurium	mg/kg	0.1	< 0.1	< 0.1
Thallium	mg/kg	0.1	0.1	< 0.1
Tin	mg/kg	1	28	3
Uranium	mg/kg	0.1	0.8	< 0.1
Vanadium	mg/kg	1	34	< 1
Zinc	mg/kg	1	121	< 1

Report ID: 532852-IAS
Report Date: 22-Aug-24
Date Received: 16-Aug-24

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Methods

Analyte	RPC SOP #	Method Reference	Method Principle
EPA 3050B Digestion	IAS-M19	EPA 3050B	Nitric Acid/Hydrogen Peroxide Digestion
Trace Metals	IAS-M01/IAS-M29	EPA 200.8/EPA 200.7	ICP-MS/ICP-ES

Report ID: 532852-OAS
Report Date: 26-Aug-24
Date Received: 16-Aug-24

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Attention: Greg Derrah
Project #: 17712

Hydrocarbon Analysis in Soil (Atlantic MUST)

RPC Sample ID:			532852-1	532852-3
Client Sample ID:			BH18 (2-4)	BH21 (12-14)
Date Sampled:			13-Aug-24	13-Aug-24
Matrix:			soil	soil
Analytes	Units	RL		
Benzene	mg/kg	0.005	0.58	< 0.005
Toluene	mg/kg	0.05	2.1	< 0.05
Ethylbenzene	mg/kg	0.01	0.20	< 0.01
Xylenes	mg/kg	0.05	2.3	< 0.05
VPH C6-C10 (Less BTEX)	mg/kg	2.5	9.3	< 2.5
EPH >C10-C16	mg/kg	12	12	< 12
EPH >C16-C21	mg/kg	12	25	< 12
EPH >C21-C32	mg/kg	12	150	< 12
EPH (>C16-C32)	mg/kg	12	180	< 12
Modified TPH Tier 1	mg/kg	21	200	< 21
VPH Surrogate (IBB)	%		109	103
EPH Surrogate (IBB)	%		97	97
EPH Surrogate (C32)	%		comment	comment
Resemblance			PG.LO	ND
Return to Baseline at C32			No	Yes
Moisture Content	%		27	19

This report relates only to the sample(s) and information provided to the laboratory.
RL = Reporting Limit; Soil results are expressed on a dry weight basis.

Angela Colford
Lab Supervisor
Organic Analytical Services

Steven Davenport
Senior Technician
Organic Analytical Services

Report ID: 532852-OAS
Report Date: 26-Aug-24
Date Received: 16-Aug-24

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Method Summary

OAS-HC03:The Determination of Petroleum Hydrocarbons (Atlantic MUST) in Soil (VPH)
OAS-HC03: Determination of Petroleum Hydrocarbons (Atlantic MUST) in Soil (EPH)

Resemblance Legend

Resemblance Code	Resemblance	Resemblance Code	Resemblance
COMMENT	See General Report Comments	PAH	Possible PAHs Detected
FO	Fuel Oil Fraction	PG	Possible Gasoline Fraction
FO.LO	Fuel Oil and Lube Oil Fraction	PLO	Possible Lube Oil Fraction
G	Gasoline Fraction	PWFO	Possible Weathered Fuel Oil Fraction
LO	Lube Oil Fraction	PWG	Possible Weathered Gasoline Fraction
ND	Not Detected	TO	Transformer Oil
NR	No Resemblance (not-petrogenic in origin)	UP	Unknown Peaks
NRLR	No Resemblance in the lube oil range (>C21-C32).	WFO	Weathered Fuel Oil Fraction
OP	One Product (unidentified)	WG	Weathered Gasoline Fraction

General Report Comments

VPH / EPH surrogate(s) unavailable due to product interference/sample dilution.
Return to Baseline: Samples are considered to have returned to baseline if the area from C32-C36 is less than 10% of the area from C10-C32.

Report ID: 532852-OAS
Report Date: 26-Aug-24
Date Received: 16-Aug-24

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Project #: 17712

QA/QC Report

RPC Sample ID:			BLANKE0342	BLANKE0354	SPIKEE0342	SPIKEE0354
Type:			VPH	EPH	VPH	EPH
Matrix:			soil	soil	soil	soil
Analytes	Units	RL			% Recovery	% Recovery
Benzene	mg/kg	0.005	< 0.005	-	110%	-
Toluene	mg/kg	0.05	< 0.05	-	108%	-
Ethylbenzene	mg/kg	0.01	< 0.01	-	105%	-
Xylenes	mg/kg	0.05	< 0.05	-	106%	-
VPH C6-C10 (Less BTEX)	mg/kg	2.5	< 2.5	-	97%	-
EPH >C10-C16	mg/kg	12	-	< 12	-	-
EPH >C16-C21	mg/kg	12	-	< 12	-	-
EPH >C21-C32	mg/kg	12	-	< 12	-	-
EPH >C10-C32	mg/kg	21	-	-	-	105%

RL = Reporting Limit

Report ID: 532852-OAS
Report Date: 26-Aug-24
Date Received: 16-Aug-24

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Project #: 17712

Summary of Date Analyzed

	VPH		EPH	
RPC Sample ID	**Extracted**	**Analyzed**	**Extracted**	**Analyzed**
532852-1	19-Aug-24	19-Aug-24	19-Aug-24	19-Aug-24
532852-3	19-Aug-24	19-Aug-24	19-Aug-24	19-Aug-24

Report ID: 533707-IAS
Report Date: 06-Sep-24
Date Received: 23-Aug-24

CERTIFICATE OF ANALYSIS

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Attention: Greg Derrah
Project #: 17712

Analysis of Metals in Soil

RPC Sample ID:			533707-02	533707-02 Dup	533707-07
Client Sample ID:			BH22 (2-4')	Lab Duplicate	BH24 (3-5')
Date Sampled:			19-Aug-24	19-Aug-24	21-Aug-24
Analytes	**Units**	**RL**			
Aluminum	mg/kg	0.2	16000	15400	20100
Antimony	mg/kg	0.02	1.48	1.20	0.50
Arsenic	mg/kg	0.2	39.2	38.4	13.4
Barium	mg/kg	0.2	99.8	93.0	102.
Beryllium	mg/kg	0.02	0.94	0.93	0.83
Bismuth	mg/kg	0.2	1.7	1.6	0.2
Boron	mg/kg	0.2	5.2	5.2	3.9
Cadmium	mg/kg	0.002	6.95	6.68	3.43
Calcium	mg/kg	10	25600	26800	8340
Chromium	mg/kg	0.2	34.0	35.4	41.9
Cobalt	mg/kg	0.02	16.2	15.5	16.9
Copper	mg/kg	0.2	136.	124.	42.9
Iron	mg/kg	4	49300	50600	37400
Lead	mg/kg	0.02	888.	859.	106.
Lithium	mg/kg	0.02	19.2	18.1	14.9
Magnesium	mg/kg	2	9280	8610	7770
Manganese	mg/kg	0.2	966.	865.	1040
Molybdenum	mg/kg	0.02	6.80	7.07	1.96
Nickel	mg/kg	0.2	35.6	34.3	44.6
Potassium	mg/kg	4	1190	1220	1140
Rubidium	mg/kg	0.02	8.88	8.46	7.95
Selenium	mg/kg	0.2	1.5	1.6	1.2
Silver	mg/kg	0.02	1.58	1.78	0.33
Sodium	mg/kg	10	160	160	220
Strontium	mg/kg	0.2	132.	133.	69.2
Tellurium	mg/kg	0.02	0.03	0.02	< 0.02
Thallium	mg/kg	0.02	0.82	0.77	0.31
Tin	mg/kg	0.02	4.24	2.66	1.54
Uranium	mg/kg	0.02	1.01	1.05	0.67
Vanadium	mg/kg	0.1	55.2	53.2	38.1
Zinc	mg/kg	0.2	4130	4120	1080

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit

Matthew Norman
Senior Chemist
Inorganic Analytical Chemistry

Brannen Burhoe
Supervisor
Inorganic Analytical Services

Report ID: 533707-IAS
Report Date: 06-Sep-24
Date Received: 23-Aug-24

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Attention: Greg Derrah
Project #: 17712

Analysis of Metals in Soil

RPC Sample ID:			533707-08	533707-10	533707-11
Client Sample ID:			BH25 (2-4')	BH28 (2-4')	BH30 (2-4')
Date Sampled:			21-Aug-24	21-Aug-24	21-Aug-24
Analytes	**Units**	**RL**			
Aluminum	mg/kg	0.2	16600	24500	20500
Antimony	mg/kg	0.02	0.58	0.19	1.01
Arsenic	mg/kg	0.2	15.4	5.7	28.7
Barium	mg/kg	0.2	78.1	62.3	139.
Beryllium	mg/kg	0.02	0.92	0.65	0.67
Bismuth	mg/kg	0.2	0.2	0.2	1.7
Boron	mg/kg	0.2	3.5	3.6	6.6
Cadmium	mg/kg	0.002	0.845	0.509	5.86
Calcium	mg/kg	10	8550	8270	17400
Chromium	mg/kg	0.2	37.5	44.8	94.2
Cobalt	mg/kg	0.02	14.6	14.9	20.4
Copper	mg/kg	0.2	47.4	24.5	215.
Iron	mg/kg	4	40300	35200	47400
Lead	mg/kg	0.02	98.8	95.0	799.
Lithium	mg/kg	0.02	21.3	18.5	19.7
Magnesium	mg/kg	2	9620	8450	14000
Manganese	mg/kg	0.2	816.	814.	686.
Molybdenum	mg/kg	0.02	3.53	0.62	2.59
Nickel	mg/kg	0.2	42.3	45.9	76.7
Potassium	mg/kg	4	912	932	986
Rubidium	mg/kg	0.02	6.61	10.4	7.91
Selenium	mg/kg	0.2	1.4	0.9	1.1
Silver	mg/kg	0.02	0.20	0.05	6.28
Sodium	mg/kg	10	110	240	250
Strontium	mg/kg	0.2	51.4	60.7	61.0
Tellurium	mg/kg	0.02	< 0.02	< 0.02	< 0.02
Thallium	mg/kg	0.02	0.23	0.13	0.58
Tin	mg/kg	0.02	2.23	< 0.02	2.53
Uranium	mg/kg	0.02	0.53	0.68	0.60
Vanadium	mg/kg	0.1	45.9	39.8	65.6
Zinc	mg/kg	0.2	468.	381.	3910

Report ID: 533707-IAS
Report Date: 06-Sep-24
Date Received: 23-Aug-24

CERTIFICATE OF ANALYSIS

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Attention: Greg Derrah
Project #: 17712

Analysis of Metals in Water

RPC Sample ID:			533707-14	533707-15	533707-16
Client Sample ID:			BH6-M	BH1-M	BH4-M
Date Sampled:			22-Aug-24	22-Aug-24	22-Aug-24
Analytes	**Units**	**RL**			
Aluminum	µg/L	1	89	93	61
Antimony	µg/L	0.1	0.3	2.3	0.2
Arsenic	µg/L	1	8	< 2	< 1
Barium	µg/L	1	32	21	26
Beryllium	µg/L	0.1	< 0.2	< 0.2	< 0.1
Bismuth	µg/L	1	< 2	< 2	< 1
Boron	µg/L	1	1160	1780	41
Cadmium	µg/L	0.01	0.10	1.04	0.73
Calcium	µg/L	50	254000	156000	55800
Chromium	µg/L	1	< 2	< 2	< 1
Cobalt	µg/L	0.1	0.8	0.5	0.1
Copper	µg/L	1	2	9	< 1
Iron	µg/L	20	19000	130	70
Lead	µg/L	0.1	11.0	177.	0.1
Lithium	µg/L	0.1	28.0	80.3	1.1
Magnesium	µg/L	10	46800	465000	6600
Manganese	µg/L	1	1120	11	11
Molybdenum	µg/L	0.1	3.8	6.8	1.1
Nickel	µg/L	1	< 2	< 2	< 1
Potassium	µg/L	20	36400	163000	4770
Rubidium	µg/L	0.1	19.4	53.2	1.6
Selenium	µg/L	1	< 2	< 2	< 1
Silver	µg/L	0.1	< 0.2	0.5	< 0.1
Sodium	µg/L	50	234000	4310000	13400
Strontium	µg/L	1	1090	3060	240
Tellurium	µg/L	0.1	< 0.2	< 0.2	< 0.1
Thallium	µg/L	0.1	< 0.2	0.7	< 0.1
Tin	µg/L	0.1	< 0.2	< 0.2	< 0.1
Uranium	µg/L	0.1	3.9	1.4	0.1
Vanadium	µg/L	1	< 2	< 2	< 1
Zinc	µg/L	1	91	371	251

Report ID: 533707-IAS
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General Report Comments

Samples were air dried and sieved at 2 mm. A portion of each was digested according to EPA Method 3050B.
The resulting solutions were analyzed for trace elements by ICP-MS.

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Project #: 17712

QA/QC Report

RPC Sample ID:			CRM218149	RB115516
Type:			CRM NIST2706	Blank
Analytes	**Units**	**RL**		
Aluminum	mg/kg	0.2	9620	0.8
Antimony	mg/kg	0.02	46.9	< 0.02
Arsenic	mg/kg	0.2	31.5	< 0.2
Barium	mg/kg	0.2	119.	< 0.2
Beryllium	mg/kg	0.02	0.56	< 0.02
Bismuth	mg/kg	0.2	< 0.2	< 0.2
Boron	mg/kg	0.2	13.6	< 0.2
Cadmium	mg/kg	0.002	0.233	< 0.002
Calcium	mg/kg	10	4890	< 10
Chromium	mg/kg	0.2	22.9	< 0.2
Cobalt	mg/kg	0.02	5.29	< 0.02
Copper	mg/kg	0.2	91.8	< 0.2
Iron	mg/kg	4	17400	< 4
Lead	mg/kg	0.02	614.	0.02
Lithium	mg/kg	0.02	9.13	< 0.02
Magnesium	mg/kg	2	1990	< 2
Manganese	mg/kg	0.2	185.	< 0.2
Molybdenum	mg/kg	0.02	0.91	< 0.02
Nickel	mg/kg	0.2	18.3	< 0.2
Potassium	mg/kg	4	2070	9
Rubidium	mg/kg	0.02	14.6	< 0.02
Selenium	mg/kg	0.2	0.9	< 0.2
Silver	mg/kg	0.02	0.02	< 0.02
Sodium	mg/kg	10	170	< 10
Strontium	mg/kg	0.2	28.4	< 0.2
Tellurium	mg/kg	0.02	0.05	< 0.02
Thallium	mg/kg	0.02	0.13	< 0.02
Tin	mg/kg	0.02	26.3	3.36
Uranium	mg/kg	0.02	0.87	< 0.02
Vanadium	mg/kg	0.1	36.1	< 0.1
Zinc	mg/kg	0.2	131.	0.2

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Methods

Analyte	RPC SOP #	Method Reference	Method Principle
EPA 3050B Digestion	IAS-M19	EPA 3050B	Nitric Acid/Hydrogen Peroxide Digestion
Trace Metals	IAS-M01/IAS-M29	EPA 200.8/EPA 200.7	ICP-MS/ICP-ES

Report ID: 533707-OAS
Report Date: 28-Aug-24
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Attention: Greg Derrah
Project #: 17712

Hydrocarbon Analysis in Soil (Atlantic MUST)

RPC Sample ID:			533707-01	533707-03	533707-03 Dup	533707-06	533707-09	533707-13
Client Sample ID:			BH5-G (7-9')	BH22 (10-12')	BH22 (10-12')	BH23-B (15-17')	BH26 (0-2')	BH32
Date Sampled:			19-Aug-24	21-Aug-24	21-Aug-24		21-Aug-24	22-Aug-24
Matrix:			soil	soil	soil	soil	soil	soil
Analytes	Units	RL						
Benzene	mg/kg	0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.20	< 0.005
Toluene	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.51	< 0.05
Ethylbenzene	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.06	< 0.01
Xylenes	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.60	< 0.05
VPH C6-C10 (Less BTEX)	mg/kg	2.5	< 2.5	< 2.5	< 2.5	< 2.5	3.9	< 2.5
EPH >C10-C16	mg/kg	12	< 12	< 12	< 12	< 12	< 12	< 12
EPH >C16-C21	mg/kg	12	< 12	< 12	< 12	< 12	13	< 12
EPH >C21-C32	mg/kg	12	< 12	< 12	< 12	< 12	47	< 12
EPH (>C16-C32)	mg/kg	12	< 12	< 12	< 12	< 12	60	< 12
Modified TPH Tier 1	mg/kg	21	< 21	< 21	< 21	< 21	64	< 21
VPH Surrogate (IBB)	%		98	95	89	89	95	95
EPH Surrogate (IBB)	%		98	100	104	106	98	101
EPH Surrogate (C32)	%		117	122	123	119	115	118
Resemblance			ND	ND	ND	ND	PG.PWFO.LO	ND
Return to Baseline at C32			Yes	Yes	Yes	Yes	No	Yes
Moisture Content	%		18	20	20	16	11	18

This report relates only to the sample(s) and information provided to the laboratory.
RL = Reporting Limit; Soil results are expressed on a dry weight basis.

Angela Colford
Lab Supervisor
Organic Analytical Services

Steven Davenport
Senior Technician
Organic Analytical Services

Report ID: 533707-OAS
Report Date: 28-Aug-24
Date Received: 23-Aug-24

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Attention: Greg Derrah
Project #: 17712

Hydrocarbon Analysis in Water (Atlantic MUST)

RPC Sample ID:			533707-14	533707-15	533707-16
Client Sample ID:			BH6-M	BH1-M	BH4-M
Date Sampled:			22-Aug-24	22-Aug-24	22-Aug-24
Matrix:			water	water	water
Analytes	Units	RL			
Benzene	mg/L	0.001	< 0.001	< 0.001	< 0.001
Toluene	mg/L	0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	mg/L	0.001	< 0.001	< 0.001	< 0.001
Xylenes	mg/L	0.001	< 0.001	< 0.001	< 0.001
VPH C6-C10 (Less BTEX)	mg/L	0.01	< 0.01	< 0.01	< 0.01
EPH >C10 - C16	mg/L	0.05	< 0.05	< 0.05	< 0.05
EPH >C16 - C21	mg/L	0.05	< 0.05	< 0.05	< 0.05
EPH >C21-C32	mg/L	0.1	< 0.1	< 0.1	< 0.1
Modified TPH Tier 1	mg/L	0.1	< 0.1	< 0.1	< 0.1
VPH Surrogate (IBB)	%		95	85	91
EPH Surrogate (IBB)	%		89	97	107
EPH Surrogate (C32)	%		100	113	120
Resemblance			ND	ND	ND
Return to Baseline at C32			Yes	Yes	Yes

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Organic Analytical Services

Steven Davenport
Senior Technician
Organic Analytical Services

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Attention: Greg Derrah
Project #: 17712

PAH in Soil

RPC Sample ID:			533707-04	533707-05	533707-05 Dup	533707-09	533707-12
Client Sample ID:			BH23 (12-13')	BH7-G (2-4')	BH7-G (2-4')	BH26 (0-2')	BH29 (0-2')
Date Sampled:			21-Aug-24	21-Aug-24	21-Aug-24	21-Aug-24	21-Aug-24
Matrix:			soil	soil	soil	soil	soil
Analytes	Units	RL					
Naphthalene	mg/kg	0.01	0.04	0.11	0.11	0.10	0.11
Acenaphthylene	mg/kg	0.01	0.03	0.02	0.02	0.07	0.09
Acenaphthene	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	mg/kg	0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	mg/kg	0.01	0.05	0.20	0.19	0.12	0.13
Anthracene	mg/kg	0.01	0.03	0.03	0.02	0.06	0.08
Fluoranthene	mg/kg	0.01	0.15	0.28	0.25	0.22	0.37
Pyrene	mg/kg	0.01	0.18	0.23	0.21	0.24	0.42
Benz(a)anthracene	mg/kg	0.01	0.12	0.12	0.10	0.19	0.28
Chrysene/Triphenylene	mg/kg	0.01	0.14	0.10	0.10	0.15	0.25
Benzo(b+j)fluoranthene	mg/kg	0.01	0.24	0.14	0.13	0.35	0.51
Benzo(k)fluoranthene	mg/kg	0.01	0.09	0.05	0.05	0.13	0.19
Benzo(e)pyrene	mg/kg	0.01	0.12	0.07	0.06	0.20	0.28
Benzo(a)pyrene	mg/kg	0.01	0.16	0.09	0.08	0.21	0.35
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01	0.09	0.04	0.04	0.13	0.19
Benzo(g,h,i)perylene	mg/kg	0.01	0.08	0.05	0.04	0.11	0.16
Dibenz(a,h)anthracene	mg/kg	0.01	0.02	0.01	< 0.01	0.03	0.05
2-fluorobiphenyl (surrogate)	%		92	92	91	85	86
p-terphenyl-d14 (surrogate)	%		92	93	91	90	92
Moisture Content	%		22	31	35	11	7

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Method Summary

OAS-HC03:The Determination of Petroleum Hydrocarbons (Atlantic MUST) in Soil (VPH)
OAS-HC03: Determination of Petroleum Hydrocarbons (Atlantic MUST) in Soil (EPH)
OAS-HC04: The Determination of Petroleum Hydrocarbons (Atlantic MUST) in Water(VPH)
OAS-HC04: Determination of Petroleum Hydrocarbons (Atlantic MUST) in Water (EPH)
OAS-HC06:The Determination of Polynuclear Aromatic Hydrocarbons in Soil

Resemblance Legend

Resemblance Code	Resemblance	Resemblance Code	Resemblance
COMMENT	See General Report Comments	PAH	Possible PAHs Detected
FO	Fuel Oil Fraction	PG	Possible Gasoline Fraction
FO.LO	Fuel Oil and Lube Oil Fraction	PLO	Possible Lube Oil Fraction
G	Gasoline Fraction	PWFO	Possible Weathered Fuel Oil Fraction
LO	Lube Oil Fraction	PWG	Possible Weathered Gasoline Fraction
ND	Not Detected	TO	Transformer Oil
NR	No Resemblance (not-petrogenic in origin)	UP	Unknown Peaks
NRLR	No Resemblance in the lube oil range (>C21-C32).	WFO	Weathered Fuel Oil Fraction
OP	One Product (unidentified)	WG	Weathered Gasoline Fraction

General Report Comments

Return to Baseline: Samples are considered to have returned to baseline if the area from C32-C36 is less than 10% of the area from C10-C32.

Report ID: 533707-OAS
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Project #: 17712

QA/QC Report

RPC Sample ID:			BLANKE0430	BLANKE0434	SPIKEE0430	SPIKEE0434
Type:			EPH	VPH	EPH	VPH
Matrix:			soil	soil	soil	soil
Analytes	Units	RL			% Recovery	% Recovery
Benzene	mg/kg	0.005	-	< 0.005	-	98%
Toluene	mg/kg	0.05	-	< 0.05	-	97%
Ethylbenzene	mg/kg	0.01	-	< 0.01	-	97%
Xylenes	mg/kg	0.05	-	< 0.05	-	97%
VPH C6-C10 (Less BTEX)	mg/kg	2.5	-	< 2.5	-	96%
EPH >C10-C16	mg/kg	12	< 12	-	-	-
EPH >C16-C21	mg/kg	12	< 12	-	-	-
EPH >C21-C32	mg/kg	12	< 12	-	-	-
EPH >C10-C32	mg/kg	21	-	-	95%	-

RL = Reporting Limit

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Project #: 17712

QA/QC Report

RPC Sample ID:			BLANKE0429	BLANKE0438	SPIKEE0429	SPIKEE0438
Type:			EPH	VPH	EPH	VPH
Matrix:			water	water	water	water
Analytes	Units	RL			% Recovery	% Recovery
Benzene	mg/L	0.001	-	< 0.001	-	104%
Toluene	mg/L	0.001	-	< 0.001	-	101%
Ethylbenzene	mg/L	0.001	-	< 0.001	-	98%
Xylenes	mg/L	0.001	-	< 0.001	-	97%
VPH C6-C10 (Less BTEX)	mg/L	0.01	-	< 0.01	-	93%
EPH >C10 - C16	mg/L	0.05	< 0.05	-	-	-
EPH >C16 - C21	mg/L	0.05	< 0.05	-	-	-
EPH >C21-C32	mg/L	0.1	< 0.1	-	-	-
EPH >C10 - C32	mg/L		-	-	107%	-

RL = Reporting Limit

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Project #: 17712

QA/QC Report

RPC Sample ID:			BLANKE0431	SPIKEE0431
Matrix:			soil	soil
Analytes	Units	RL		% Recovery
Naphthalene	mg/kg	0.01	< 0.01	92%
Acenaphthylene	mg/kg	0.01	< 0.01	94%
Acenaphthene	mg/kg	0.01	< 0.01	93%
Fluorene	mg/kg	0.01	< 0.01	92%
Phenanthrene	mg/kg	0.01	< 0.01	91%
Anthracene	mg/kg	0.01	< 0.01	92%
Fluoranthene	mg/kg	0.01	< 0.01	90%
Pyrene	mg/kg	0.01	< 0.01	90%
Benz(a)anthracene	mg/kg	0.01	< 0.01	101%
Chrysene/Triphenylene	mg/kg	0.01	< 0.01	106%
Benzo(b+j)fluoranthene	mg/kg	0.01	< 0.01	96%
Benzo(k)fluoranthene	mg/kg	0.01	< 0.01	100%
Benzo(e)pyrene	mg/kg	0.01	< 0.01	104%
Benzo(a)pyrene	mg/kg	0.01	< 0.01	104%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01	< 0.01	85%
Benzo(g,h,i)perylene	mg/kg	0.01	< 0.01	80%
Dibenz(a,h)anthracene	mg/kg	0.01	< 0.01	86%

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Project #: 17712

Summary of Date Analyzed

	VPH		EPH		PAH	
RPC Sample ID	**Extracted**	**Analyzed**	**Extracted**	**Analyzed**	**Extracted**	**Analyzed**
533707-01	26-Aug-24	27-Aug-24	26-Aug-24	27-Aug-24	-	-
533707-03	26-Aug-24	27-Aug-24	26-Aug-24	27-Aug-24	-	-
533707-03 Dup	26-Aug-24	27-Aug-24	26-Aug-24	27-Aug-24	-	-
533707-04	-	-	-	-	26-Aug-24	26-Aug-24
533707-05	-	-	-	-	26-Aug-24	26-Aug-24
533707-05 Dup	-	-	-	-	26-Aug-24	26-Aug-24
533707-06	26-Aug-24	27-Aug-24	26-Aug-24	27-Aug-24	-	-
533707-09	26-Aug-24	27-Aug-24	26-Aug-24	27-Aug-24	26-Aug-24	26-Aug-24
533707-12	-	-	-	-	26-Aug-24	26-Aug-24
533707-13	26-Aug-24	27-Aug-24	26-Aug-24	27-Aug-24	-	-
533707-14	27-Aug-24	27-Aug-24	26-Aug-24	26-Aug-24	-	-
533707-15	27-Aug-24	27-Aug-24	26-Aug-24	26-Aug-24	-	-
533707-16	27-Aug-24	27-Aug-24	26-Aug-24	26-Aug-24	-	-

Appendix VII:

Tabulated Sample Results

Hydrocarbons in Groundwater Analytical Results (mg/L)					
Parameter	Atlantic RBCA Ecological Tier I (ug/L)	Atlantic RBCA Human Health Tier I	Sample ID		
			BH1-M	BH4-M	BH6-M
			(10-12')	(7-9')	(5-7')
			12-Aug-24	12-Aug-24	13-Aug-24
Benzene	4,600	6.3	< 0.001	< 0.001	< 0.001
Toluene	4,200	20	< 0.001	< 0.001	< 0.001
Ethyl-Benzene	3,200	20	< 0.001	< 0.001	< 0.001
Xylenes	2,800	20	< 0.001	< 0.001	< 0.001
TPH	480	20	< 0.01	< 0.01	< 0.01
Resemblance	-	-	ND	ND	ND
ND = Not Detected					
Cells Shaded Red Exceed Human Health Based Guidelines for Commercial, Non-Potable, Coarse Grained Soil					

Metals Groundwater Sample Analytical Results (ppm)					
Parameter	Atlantic RBCA Ecological Tier I	Atlantic RBCA Human Health Tier I	Sample ID		
			BH1-M	BH4-M	BH6-M
			22-Aug-24	22-Aug-24	22-Aug-24
Aluminum	-	-	93	61	89
Antimony	2,500	-	2.3	0.2	0.3
Arsenic	125	-	< 2	< 1	8
Barium	5,000	-	21	26	32
Beryllium	1,000	-	< 0.2	< 0.1	< 0.2
Bismuth		-	< 2	< 1	< 2
Boron	12,000	-	1,780	41	1,160
Cadmium	1.2	-	1.04	0.73	0.10
Calcium		-	156,000	55,800	254,000
Chromium	560	-	< 2	< 1	< 2
Cobalt	40	-	0.5	0.1	0.8
Copper	20	-	9	< 1	2
Iron		-	130	70	19,000
Lead	20	-	**177**	0.1	11.0
Lithium		-	80.3	1.1	28.0
Magnesium		-	465,000	6,600	46,800
Manganese		-	11	11	1,120
Molybdenum	10,000	-	6.8	1.1	3.8
Nickel	83	-	< 2	< 1	< 2
Potassium		-	163,000	4,770	36,400
Rubidium		-	53.2	1.6	19.4
Selenium	20	-	< 2	< 1	< 2
Silver	15	-	0.5	< 0.1	< 0.2
Sodium		-	4,310,000	13,400	234,000
Strontium		-	3,060	240	1,090
Tellurium		-	< 0.2	< 0.1	< 0.2
Thallium	3	-	0.7	< 0.1	< 0.2
Tin		-	< 0.2	< 0.1	< 0.2
Uranium	85	-	1.4	0.1	3.9
Vanadium	50	-	< 2	< 1	< 2
Zinc	100	-	**371**	**251**	91

Cells Shaded Red Exceed Atlantic RBCA Human Health Tier I Guidelines
Cells Bolded and Underlined Exceed Atlantic RBCA Ecological Tier I Guidelines

Hydrocarbons in Soil Analytical Results (mg/kg)

Parameter	Atlantic RBCA Ecological Tier I	Atlantic RBCA Human Health Tier I	Sample ID															
			BH1-M	BH4-M	BH5	BH5-G	BH6-M	BH8	BH11	BH12	BH15	BH16	BH17	BH18	BH21	BH22	BH23-B	BH26	BH32
			(10-12')	(7-9')	(7-9')	(7-9')	(5-7')	(10-12')	(10-12')	(10-12')	(10-12')	(10-12')	(7-9')	(2-4')	(12-14')	(10-12')	(15-17')	(0-2')	(15-17')
			12-Aug-24	12-Aug-24	13-Aug-24	19-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	14-Aug-24	13-Aug-24	13-Aug-24	21-Aug-24		21-Aug-24	22-Aug-24
Benzene	**180**	**0.52**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.58**	< 0.005	< 0.005	< 0.005	0.20	< 0.005
Toluene	**250**	**4,700**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	2.1	< 0.05	< 0.05	< 0.05	0.51	< 0.05
Ethyl-Benzene	**300**	**10,000**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.20	< 0.01	< 0.01	< 0.01	0.06	< 0.01
Xylenes	**350**	**6,300**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	2.3	< 0.05	< 0.05	< 0.05	0.60	< 0.05
TPH	**1,700**	**2,000**	< 21	< 21	< 21	< 21	< 21	< 21	41	31	< 21	< 21	< 21	200	< 21	< 21	< 21	64	< 21
Resemblance	**-**	**-**	ND	ND	ND	ND	ND	ND	PAH.NRLR	UP.PLO	ND	ND	ND	PG.LO	ND	ND	ND	PG.PWFO.LO	ND

PAH = Possible PAHs Detected **NRLR = No Resemblance in lube oil range (>C21-C32)** **UP = Unknown Peaks** **PLO = Possible Lube Oil Fraction** **PG = Possible Gasoline Fraction** **LO = Lube Oil Fraction** **PWFO = Possible Weathered Fuel Oil** **ND = Not Detected**

Cells Shaded Red Exceed Atlantic RBCA Human Health Tier I Guidelines
Cells Bolded and Underlined Exceed Atlantic RBCA Ecological Tier I Guidelines

Metals Soil Sample Analytical Results (ppm)

Parameter	Atlantic RBCA Ecological Tier I	Atlantic RBCA Human Health Tier I	BH2	BH3	BH6-M	BH7	BH9	BH10	BH12	BH14	BH17	BH19	BH22	BH24	BH25	BH28	BH30
			(7-9')	(5-7')	(3-5')	(5-7')	(3-5')	(5-7')	(5-7')	(3-5')	(0-2')	(0-2')	(2-4')	(3-5')	(2-4')	(2-4')	(2-4')
			12-Aug-24	12-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	13-Aug-24	14-Aug-24	13-Aug-24	19-Aug-24	21-Aug-24	21-Aug-24	21-Aug-24	21-Aug-24
Aluminum	-	222,000	20,100	21,900	12,600	12,000	14,000	20,200	8,300	10,600	10,600	13,000	16,000	20,100	16,600	24,500	20,500
Antimony	40	63	0.6	0.2	1.2	< 0.1	< 0.1	< 0.1	2.9	5.9	4.3	0.6	1.48	0.50	0.58	0.19	1.01
Arsenic	26	31	13	9	**79**	5	6	5	**44**	**72**	**42**	**30**	**39.2**	13.4	15.4	5.7	**28.7**
Barium	670	96,000	96	68	169	23	26	72	195	127	170	271	99.8	102	78.1	62.3	139
Beryllium	8	1,100	0.3	0.9	0.9	0.4	0.8	1.5	0.9	1.1	0.9	1.4	0.94	0.83	0.92	0.65	0.67
Bismuth	-	-	4	< 1	1	< 1	< 1	< 1	2	3	< 1	< 1	1.7	0.2	0.2	0.2	1.7
Boron	120	24,000	3	7	11	6	6	9	7	8	6	12	5.2	3.9	3.5	3.6	6.6
Cadmium	1.9	192	**3.87**	**3.21**	**19.7**	1.06	**1.90**	1.05	**4.63**	**25.8**	0.91	**2.63**	**6.95**	**3.43**	0.845	0.509	**5.86**
Calcium	-	-	16,700	26,400	22,600	2,950	3,790	68,300	10,800	11,200	5,620	31,000	25,600	8,340	8,550	8,270	17,400
Chromium	87	2,300	39	43	24	24	24	13	14	21	26	12	34	41.9	37.5	44.8	**94.2**
Cobalt	180	250	24.1	19.5	10.2	9.1	14.6	10.2	8.3	13.2	11.7	8.2	16.2	16.9	14.6	14.9	20.4
Copper	91	16,000	75	42	**101**	17	13	19	**115**	**336**	**107**	55	**136**	42.9	47.4	24.5	**215**
Iron	-	164,000	30,200	41,300	101,000	39,000	30,900	30,100	40,700	56,800	62,000	54,800	49,300	37,400	40,300	35,200	47,400
Lead	32	740	**843**	**240**	**694**	8.1	10.8	**134**	**1,180**	**1,790**	**320**	**120**	**888**	**106**	**98.8**	**95.0**	**799**
Lithium	-	-	11.4	25	12.3	11.1	16.4	6.2	7.7	9.8	14.1	10.1	19.2	14.9	21.3	18.5	19.7
Magnesium	-	-	11,100	13,600	5,710	4,950	5,310	6,300	1,380	2,520	3,720	1,720	9,280	7,770	9,620	8,450	14,000
Manganese	-	5,200	**5,820**	929	626	201	1,020	778	369	527	617	992	966	1,040	816	814	686
Molybdenum	40	1,200	3.1	0.7	34	1.0	0.9	0.6	18.8	17.1	13.1	19.3	6.80	1.96	3.53	0.62	2.59
Nickel	89	2,500	46	59	29	24	27	16	31	29	26	27	35.6	44.6	42.3	45.9	76.7
Potassium	-	-	800	1,760	1,440	1,170	1,360	2,240	750	970	1,000	1,040	1,190	1,140	912	932	986
Rubidium	-	-	4.4	10.6	8.3	10	11.3	5.0	5.0	6.2	8.2	6.3	8.88	7.95	6.61	10.4	7.91
Selenium	2.9	140,000	< 1	1	4	< 1	< 1	2	1	2	1	2	1.5	1.2	1.4	0.9	1.1
Silver	40	490	0.4	0.4	1.1	< 0.1	< 0.1	< 0.1	1.5	3.1	0.3	0.2	1.58	0.33	0.20	0.05	6.28
Sodium	-	-	1,250	770	500	170	120	2,230	570	640	230	250	160	220	110	240	250
Strontium	-	9,400	97	116	113	23	26	163	95	103	68	179	132	69.2	51.4	60.7	61.0
Tellurium	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.03	< 0.02	< 0.02	< 0.02	< 0.02
Thallium	3.6	1	0.6	0.3	**1.6**	< 0.1	< 0.1	0.1	**1.0**	**2.4**	0.8	0.4	0.82	0.31	0.23	0.13	0.58
Tin	300	140,000	< 1	< 1	3	< 1	< 1	< 1	3	39	13	1	4.24	1.54	2.23	< 0.02	2.53
Uranium	33	300	0.6	0.5	0.8	0.7	2.0	0.7	0.6	1.1	1.0	1.8	1.01	0.67	0.53	0.68	0.60
Vanadium	18	169	**30**	**49**	**34**	**37**	**39**	**27**	**47**	**41**	**44**	**42**	**55.2**	**38.1**	**45.9**	**39.8**	**65.6**
Zinc	340	140,000	**3,270**	**2,980**	**11,900**	**2,450**	**1,030**	**493**	**2,670**	**14,400**	**747**	**1,250**	**4,130**	**1,080**	**468**	**381**	**3,910**

Cells Shaded Red Exceed Atlantic RBCA Human Health Tier I Guidelines
Cells Bolded and Underlined Exceed Atlantic RBCA Ecological Tier I Guidelines

PAH Sample Analytical Results (ppm)										
Parameter	Atlantic RBCA Ecological Tier I	Atlantic RBCA Human Health Tier I	Sample ID							
			BH3	BH6-M	BH7	BH7-G	BH13	BH16	BH23	BH26	BH29
			(12-14')	(5-7')	(7-9')	(2-4')	(5-7')	(3-5')	(12-13')	(0-2')	(0-2')
			12-Aug-24	13-Aug-24	13-Aug-24	21-Aug-24	13-Aug-24	13-Aug-24	21-Aug-24	21-Aug-24	21-Aug-24
Naphthalene	22	25	< 12	< 0.01	0.01	0.11	1.4	0.36	0.04	0.10	0.11
Acenaphthylene		66	< 0.01	< 0.01	< 0.01	0.02	0.10	0.03	0.03	0.07	0.09
Acenaphthene	46,000	43,000	0.18	< 0.01	< 0.01	< 0.01	0.19	0.01	< 0.01	< 0.01	< 0.01
Fluorene		4,100	0.1	< 0.01	0.02	0.01	0.22	0.02	< 0.01	< 0.01	< 0.01
Phenanthrene	12	5	0.43	0.01	0.01	0.20	2.5	0.41	0.05	0.12	0.13
Anthracene	32	37,000	0.06	< 0.01	< 0.01	0.03	0.48	0.06	0.03	0.06	0.08
Fluoranthene	180	5,300	0.36	< 0.01	< 0.01	0.28	2.6	0.58	0.15	0.22	0.37
Pyrene	99,000	3,200	0.27	< 0.01	< 0.01	0.23	1.8	0.65	0.18	0.24	0.42
Benz(a)anthracene	1	-	0.08	< 0.01	< 0.01	0.12	0.99	0.33	0.12	0.19	0.28
Chrysene / Triphenylene	14	-	0.06	< 0.01	< 0.01	0.10	0.80	0.32	0.14	0.15	0.25
Benzo(b)fluoranthene		-	0.09	< 0.01	< 0.01	0.14	1.4	0.42	0.24	0.35	0.51
Benzo(k)fluoranthene	15	-	0.03	< 0.01	< 0.01	0.05	0.49	0.14	0.09	0.13	0.19
Benzo(e)pyrene		-	0.05	< 0.01	< 0.01	0.07	0.86	0.19	0.12	0.20	0.28
Benzo(a)pyrene	72	-	0.06	< 0.01	< 0.01	0.09	0.66	0.14	0.16	0.21	0.35
Indeno(1,2,3-c,d)pyrene	0.76	-	0.03	< 0.01	< 0.01	0.04	0.40	0.09	0.09	0.13	0.19
Benzo(g,h,i)perylene	13	-	0.04	< 0.01	< 0.01	0.05	0.31	0.08	0.08	0.11	0.16
Dibenz(a,h)anthracene		-	< 0.01	< 0.01	< 0.01	0.01	0.12	0.03	0.02	0.03	0.05
2-fluorobiphenyl (surrogate) (%)		-	69	107	107	92	95	97	92	85	86
p-terphenyl-d14 (surrogate) (%)		-	15	98	98	93	106	107	92	90	92
Moisture content (%)		-	33	19	15	31	14	20	22	11	7

Cells Shaded Red Exceed Atlantic RBCA Human Health Tier I Guidelines
Cells Bolded and Underlined Exceed Atlantic RBCA Ecological Tier I Guidelines

Appendix VIII:

Borehole / Monitoring Well Logs

FUNDY Engineering

BOREHOLE LOG No. 1

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.504

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 12, 2024

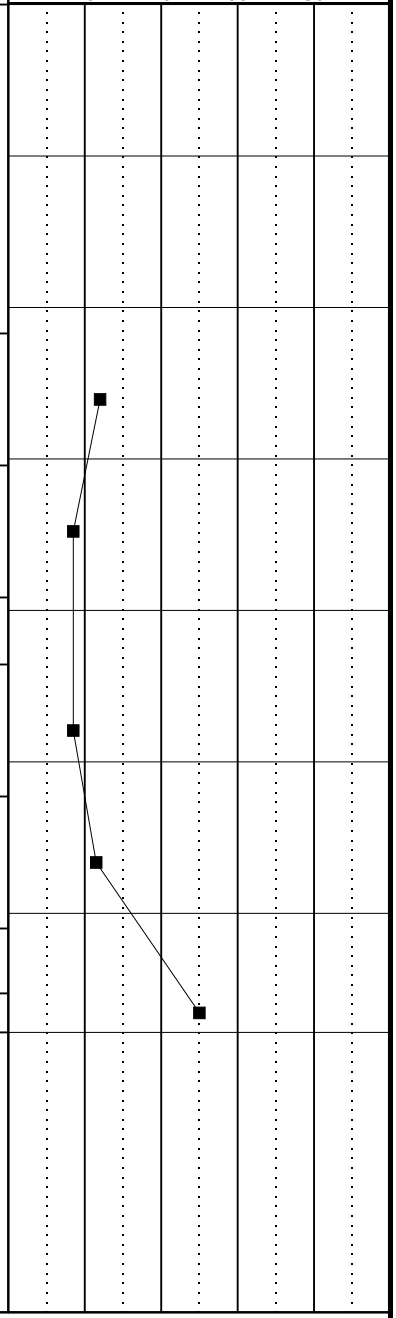
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	2.45	Auger to 1.52m							
0.35		2.1								
0.7		1.75								
	2.8									
1.05		1.4								
1.4		1.05	Compact Brown Sand and Gravel FILL with Cobbles				25	9-9-15-11 (24)		
1.75	5.6	0.7								
2.1		0.35					30	8-7-10-12 (17)		
2.45		0								
	8.4									
2.8		-0.35	Auger to 3.05							
3.15		-0.7	Compact Brown Sand and Gravel FILL with Cobbles				13	8-8-9-10 (17)		
	11.2									
3.5		-1.05								
3.85		-1.4					25	10-11-12-9 (23)		
4.2	14	-1.75	Auger to 4.57							
4.55		-2.1	Very Dense Wet Brown Sand and Gravel Fill with Cobbles. Expect refusal was a result of a boulder.				10	12-50		
			Boring Terminated at 4.75 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 2

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.681

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 12, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	2.5	Auger to 1.52m							
0.5		2								
1		1.5								
1.5	4	1	Dense Brown Sand and Gravel FILL with Cobbles				28	8-18-14-14 (32)		
2		0.5					20	13-22-15-37 (37)		
2.5	8	0	Auger to 3.05							
3			Expect a boulder was encountered				0	50		
			Boring Terminated at 3.1 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 3

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.830

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 12, 2024

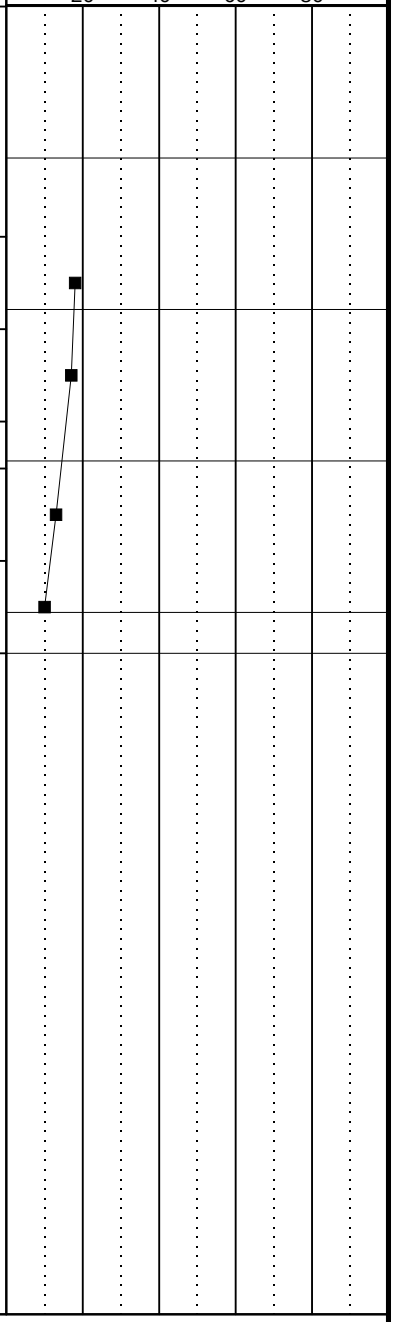
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	2.5	Auger to 1.52m							
0.5										
1		2								
	4	1.5								
1.5			Compact Brown Sand and Gravel FILL with Cobbles				20	9-9-9-7 (18)		
2		1								
		0.5					5	9-9-8-8 (17)		
2.5	8									
		0	Auger to 3.05							
3			Compact Brown Sand and Gravel FILL with Cobbles				20	5-7-6-7 (13)		
3.5		-0.5								
	12	-1	Loose Wet Marine Sand with Trace Silt				18	10-6-4-5 (10)		
4			Boring Terminated at 4.27 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 4

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.792

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 12, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	2.5	Auger to 1.52m							
0.5										
1	4	2								
1.5		1.5								
1.5		1	Compact Brown Sand and Gravel FILL with Cobbles				25	17-10-12-12 (22)		
2										
2.5	8	0.5	Compact Wet Sand and Gravel Fill with Cobbles				13	10-10-12-8 (22)		
3		0	Auger to 3.05							
3.5	12	-0.5	Compact Wet Grey Sand and Gravel FILL with Cobbles				20	6-7-7-6 (14)		
4		-1					30	11-10-12-7 (22)		
			Boring Terminated at 4.27 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 5

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.804

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 12, 2024

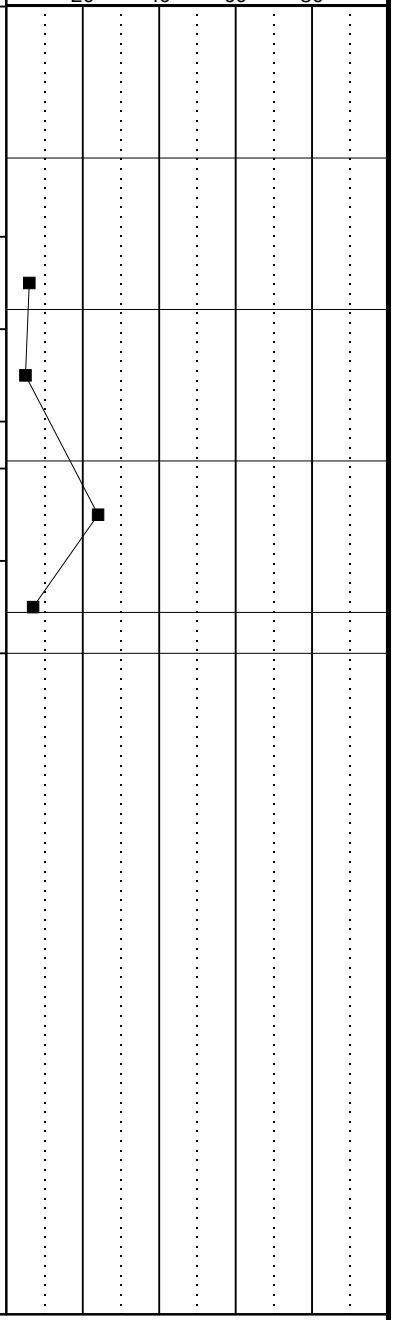
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	2.5	Auger to 1.52m							
0.5		2								
1	4	1.5								
1.5		1	Loose Brown Sand and Gravel FILL with Cobbles				20	5-3-3-3 (6)		
2		0.5	No Recovery				0	3-2-3-2 (5)		
2.5	8	0	Auger to 3.05							
3		-0.5	Compact Wet Brown Sand and Gravel FILL with Cobbles				25	5-11-13-10 (24)		
3.5	12	-1	Loose Wet Brown Sand and Gravel Fill with Cobbles				46	10-5-2-4 (7)		
4			Boring Terminated at 4.27 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 5-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 20, 2024

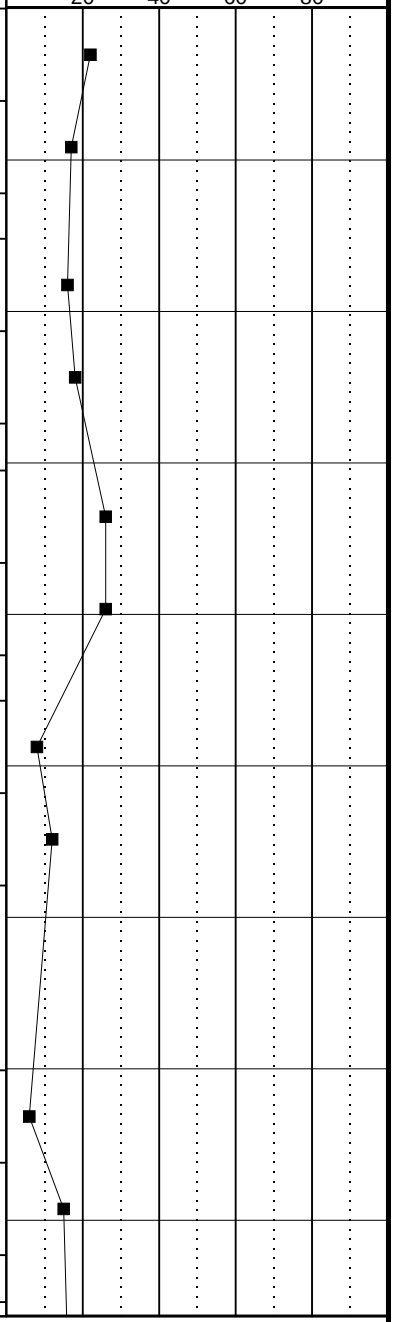
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0		Compact Brown Sand and Gravel FILL with Black Silt				13	5-7-15-12 (22)		
0.5										
1			Compact Black Sand and Gravel FILL with Coal				15	8-8-9-7 (17)		
	4		Auger to 1.52m							
1.5			Compact Wet Brown Sand and Gravel with Coobles				30	4-8-8-9 (16)		
2			Compact Grey and Black Wet Sand and Gravel				25	10-9-9-8 (18)		
2.5	8		Auger to 3.05m							
3			Compact Wet Grey Sand and Gravel				41	2-10-16-14 (26)		
3.5										
	12		Compact Wet Grey Sand and Gravel with Grey Silty Sand and Gravel in tip				51	11-14-12-10 (26)		
4			Auger to 4.57m							
4.5			Loose Wet Grey Sand and Gravel				13	2-3-5-5 (8)		
	16									
5			Compact Grey Silty Clay				30	3-6-6-6 (12)		
5.5										
6	20		Cased to 7.01m							
6.5										
7			Loose Grey Silty Clay				10	2-3-3-2 (6)		
	24									
7.5			Compact Grey Silty Clay				28	6-7-8-11 (15)		
8										
8.5	28		Auger to 8.54m							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 5-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 20, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
9							15	6-7-9-8 (16)		
9.5							56	10-13-12-13 (25)		
	32		Auger to 10.06m							
10			Loose Grey Silty Clay				61	0-4-4-5 (8)		
10.5			Compact Grey Silty Clay				61	4-6-6-7 (12)		
11	36		Auger to 12.2m							
11.5										
12										
	40		Loose Grey Silty Clay				60	1-3-4-5 (7)		
12.5							61	2-2-6-8 (8)		
13										
	44		Auger to 13.72m							
13.5							51	4-5-4-9 (9)		
14			Compact Grey Silty Clay				30	5-7-6-7 (13)		
14.5	48		Auger to 15.24m							
15			No Recovery				0	4-10-18-8 (28)		
15.5			Compact Grey Silty Clay with some Gravel				30	8-6-6-6 (12)		
16	52		Auger to 16.77							
16.5			No Recovery				0	4-3-4-7		
17	56									

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 5-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 20, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
								(7)		
17.5			Sand with some Gravel				61	4-11-13-10 (24)		
18			Auger to 18.29m							
	60									
18.5			Dense Red Clay TILL with Cobbles				51	12-16-25-23 (41)		
19			Dense Red Clay TILL with Cobbles				33	6-15-20-24 (35)		
19.5	64		Boring Terminated at 19.51 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

FUNDY Engineering

BOREHOLE LOG No. 6

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.772

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 12, 2024

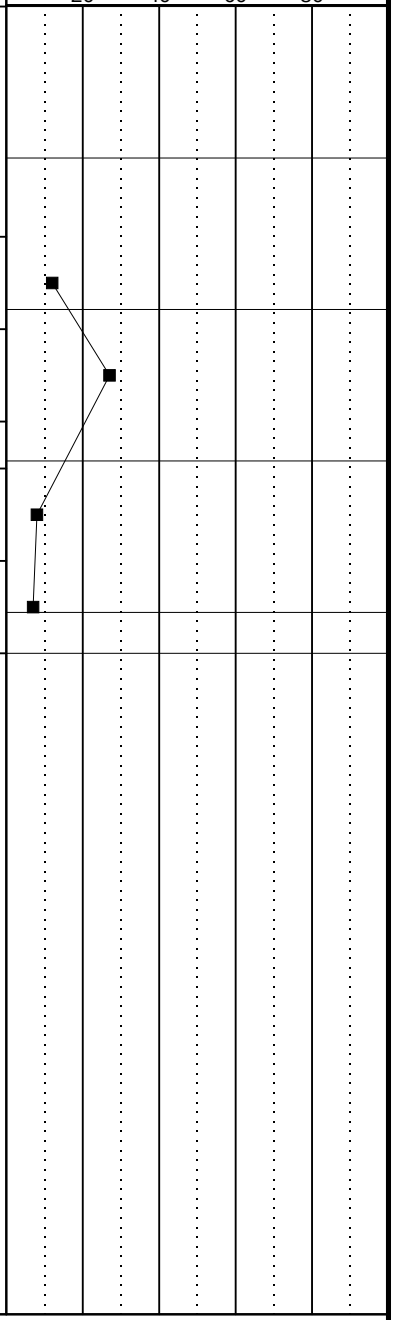
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	2.5	Auger to 1.52m							
0.5		2								
1	4	1.5								
1.5		1	Compact Wet Black and Brown Sand and Gravel Fill. Sampled for PHCs				33	9-8-4-4 (12)		
2		0.5	Compact Wet Black and Brown Sand and Gravel Fill. Less black material				36	14-16-11-12 (27)		
2.5	8	0	Auger to 3.05							
3		-0.5	Loose Wet Grey Sand and Gravel Fill				20	6-6-2-2 (8)		
3.5	12	-1	Loose Wet Brown Sand and Gravel Fill with Cobbles				15	5-3-4-8 (7)		
4			Boring Terminated at 4.27 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 7

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.692

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 12, 2024

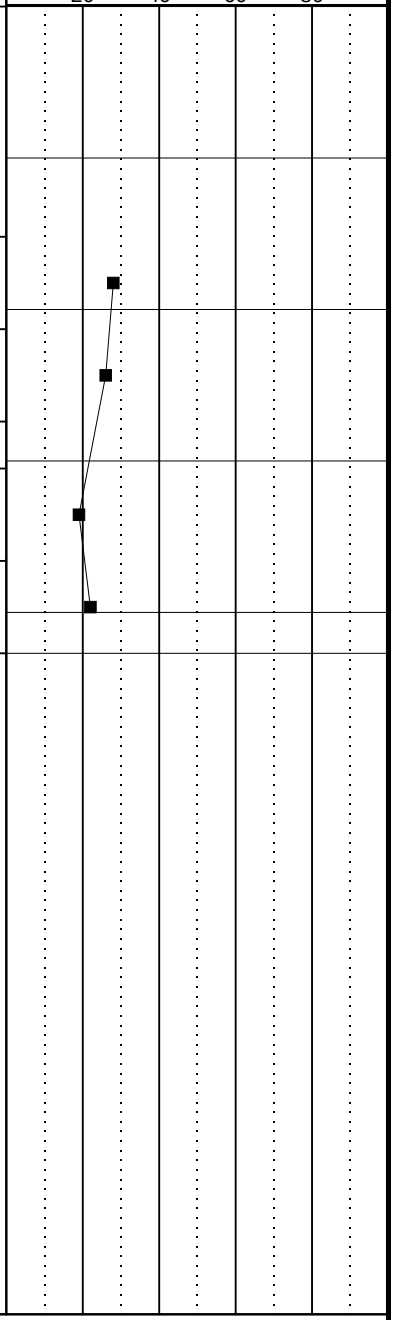
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	2.5	Auger to 1.52m							
0.5		2								
1	4	1.5								
1.5		1	Compact Reddish Brown Sand and Gravel Fill(Metal Sample)				38	9-14-14-12 (28)		
2		0.5	Compact Wet Black Sand and Gravel Fill. Sample Submitted for PAH and PHCs analysis				30	7-11-15-12 (26)		
2.5	8	0	Auger to 3.05							
3		-0.5	Compact Wet Grey Sand and Gravel Fill				36	10-10-9-10 (19)		
3.5	12	-1	Compact Wet Grey Sand and Gravel Fill				25	9-11-11-10 (22)		
4		-1.5	Boring Terminated at 4.27 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



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FUNDY Engineering

BOREHOLE LOG No. 7-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 20-21, 2024

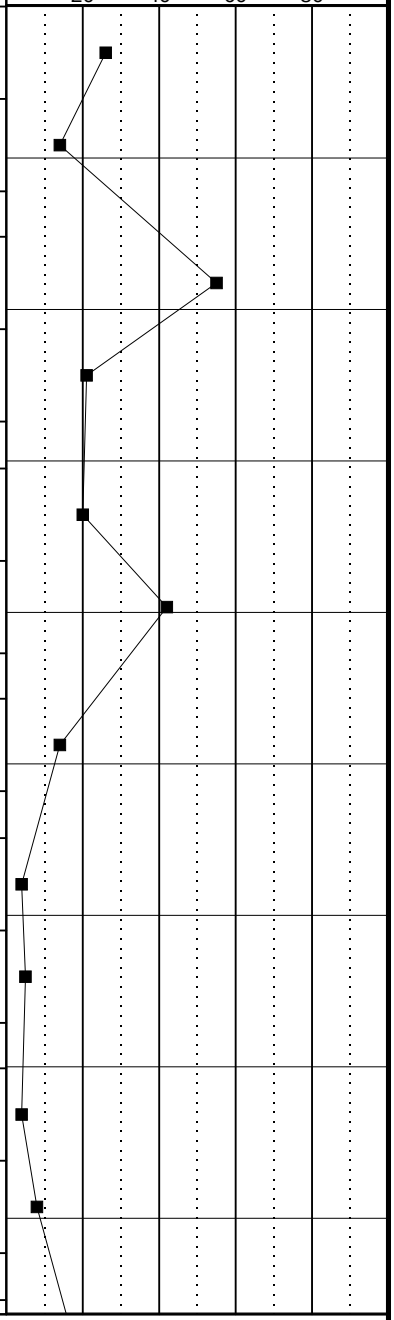
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0		Compact Brown Sand and Gravel FILL				38	10-11-15-10 (26)		
0.5										
1			Compact Black Sand and Gravel FILL with Wood last 6"				28	6-6-8-18 (14)		
	4		Auger to 1.52m							
1.5			Very Dense Dump Reddish Brown Sand and Gravel FILL				38	15-29-26-12 (55)		
2										
2.5	8		Compact Wet Grey Sand and Gravel				36	4-10-11-11 (21)		
			Auger to 3.05m							
3			Compact Wet Grey Sand and Gravel				25	9-11-9-7 (20)		
3.5	12									
4			Dense Wet Grey Sand and Gravel				61	10-20-22-10 (42)		
4.5			Auger to 4.57m							
	16		Compcat Wet Grey Sand and Gravel				46	4-7-7-8 (14)		
5			Cased to 5.49m							
5.5			Loose Black Silty Sand				25	3-3-1-1 (4)		
6	20		Loose Black Silty Sand				10	2-2-3-4 (5)		
6.5			Auger to 7.01m							
7			Loose Grey Marine Silty Clay				61	0-2-2-2 (4)		
	24									
7.5							24	3-3-5-9 (8)		
8										
8.5	28		Auger to 8.54m							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



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FUNDY Engineering

BOREHOLE LOG No. 7-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 20-21, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
9			No Recovery				0	5-7-11-11 (18)		
9.5	32		Compact Grey Marine Silty Clay with some Gravel				25	4-8-16-11 (24)		
10			Auger to 10.06m							
10.5			Compact Grey Marine Silty Clay				51	4-5-6-8 (11)		
11	36						53	8-6-6-6 (12)		
11.5			Auger to 12.20							
12	40		Loose Grey Silty Clay				60	4-4-4-6 (8)		
12.5			Auger to 13.72m							
13	44									
13.5							61	2-2-3-5 (5)		
14							61	2-2-3-4 (5)		
14.5	48									
15			Auger to 15.24m							
15.5			Compact Grey Silty Clay				61	3-5-6-7 (11)		
16	52						61	4-7-8-10 (15)		
16.5			Auger to 16.77m							
17	56						13	4-5-6-8		

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

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FUNDY Engineering

BOREHOLE LOG
No. 7-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 20-21, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
								(11)		
17.5			Compact Grey Silty Clay with some Gravel				13	8-9-13-15 (22)		
18			Auger to 18.29							
	60									
18.5							13	7-7-12-13 (19)		
19			Dense Red Sand and Gravel TILL				18	11-23-23-29 (46)		
19.5	64		Boring Terminated at 19.51 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

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FUNDY Engineering

BOREHOLE LOG
No. 8

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.492

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 13, 2024

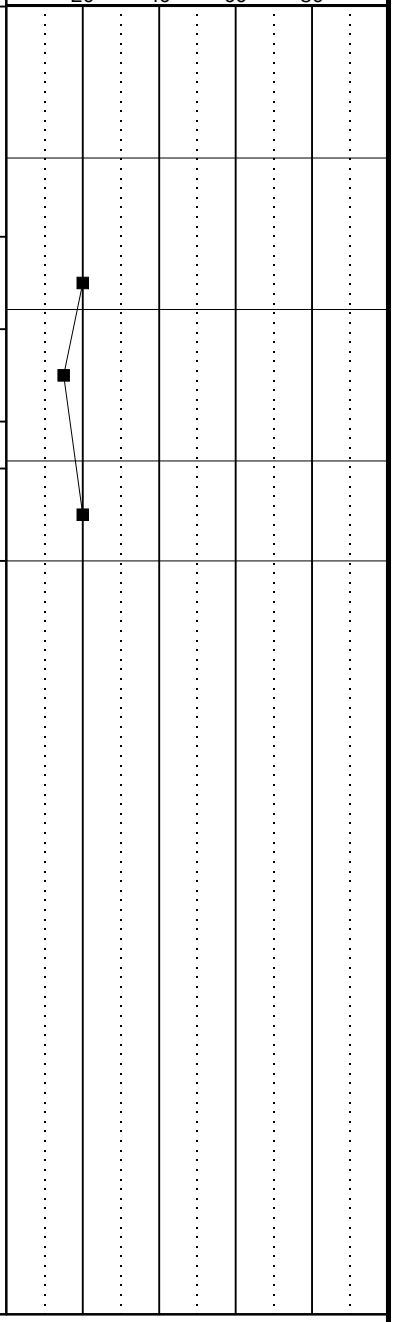
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	2	Auger to 1.52m							
0.5										
1	4	1.5								
1.5		1	Compact Brown Sand and Gravel. Wet Silty Clay Seam the last 4"s				25	18-12-8-6 (20)		
2		0.5	Compact Wet Brown Sand and Gravel Fill with Cobbles				10	5-5-10-13 (15)		
2.5	8	0	Auger to 3.05							
3		-0.5	Compact Wet Brown Sand and Gravel Fill with Cobbles. Slight Hydrocarbon Odour. Sample Submitted for PHCs Analysis				25	10-10-10-9 (20)		
3.5	12	-1	Boring Terminated at 3.66 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



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FUNDY Engineering

BOREHOLE LOG
No. 8-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 21, 2024

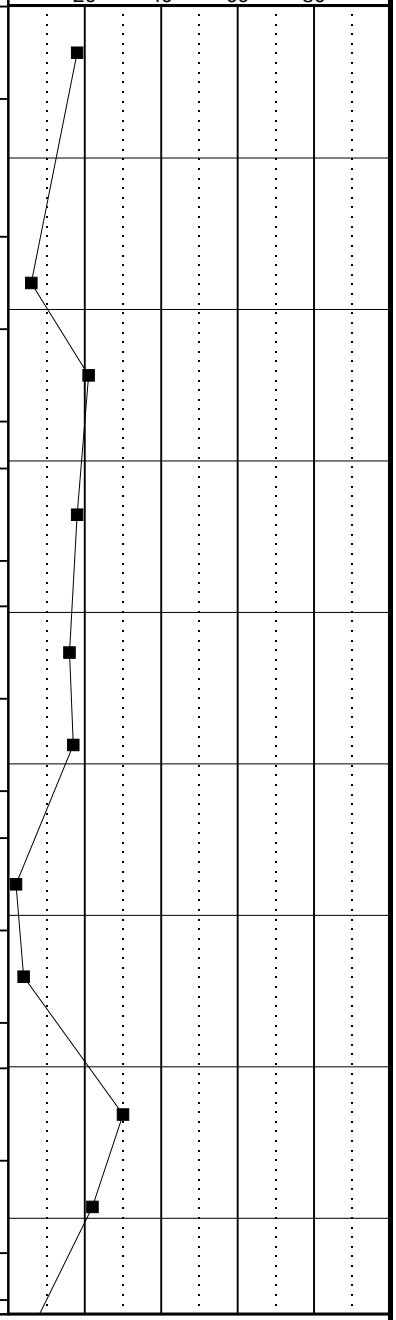
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0		Compact Brown Sand and Gravel FILL with Cobbles				20	6-8-10-20 (18)		
0.5										
1			Larger Boulders, Auger to 1.52m							
1.5	4		Loose Wet Sandy gravel with Cobbles, Silty sand in tip				23	5-3-3-2 (6)		
2										
2.5	8		8" Loose Brown Silty sand and 10" Compact Sandy Gravel				46	4-8-13-12 (21)		
3			Auger to 3.05m							
3.5	12		Compact Wet Brown Sand adn Gravel FILL				25	5-8-10-9 (18)		
4			Cased to 3.96m due to colleping							
4.5			No Recovery				0	9-8-8-10 (16)		
5	16		Compact Brown Sand and Gravel FILL				46	11-9-8-8 (17)		
5.5			Auger to 5.49m							
6	20		Loose Grey Marine Silty Clay				48	1-1-1-1 (2)		
6.5							61	2-2-2-2 (4)		
7			Auger to 7.01m							
7.5	24		Compact Grey Marine Silty Clay (more Clayey)				48	4-14-16-15 (30)		
8			Compact Grey Marine Silty Clay				33	8-10-12-10 (22)		
8.5	28		Auger to 8.54m							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



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FUNDY Engineering

BOREHOLE LOG No. 8-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 21, 2024

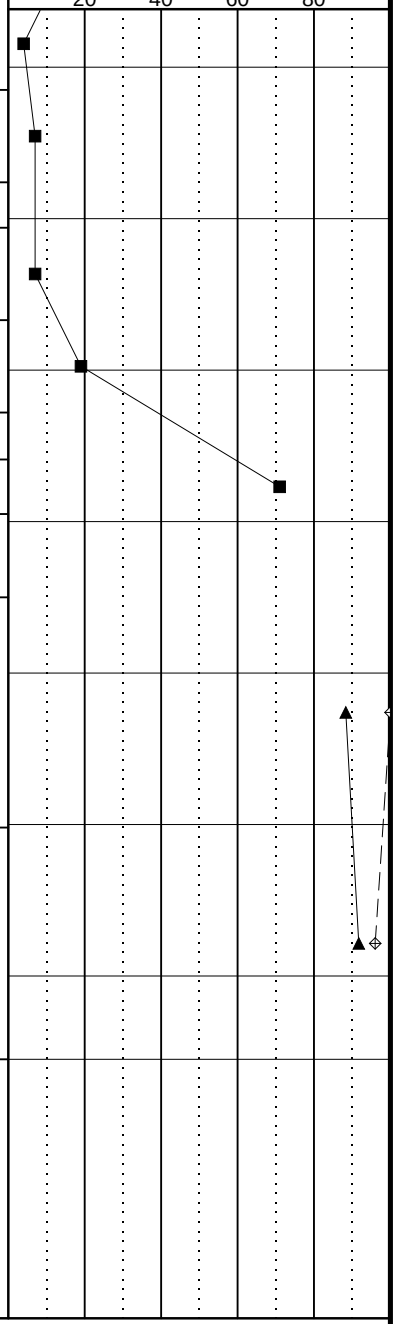
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
9							25	2-2-2-3 (4)		
9.5			Loose Grey Silty Clay				61	3-4-3-6 (7)		
	32									
10			Auger to 10.06m							
10.5			Loose Red Silty Clay with trace Gravel				48	3-3-4-5 (7)		
11	36		10" Loose Grey and Red Silty Clay with Gravel and 10" Compact Red Clayey TILL				51	8-9-10-13 (19)		
11.5			Auger to 11.59m							
12			Very Dense Red Clayey TILL with Cobbles				8	12-21-50 (71)		
	40		Cleaned to 12.5m							
12.5			Moderately jointed grey and red mudstone.			100			88.3	
13										
13.5	44									
14			Excellent intact grey and red mudstone., [,			96			91.7	
14.5	48									
15										
15.5			Boring Terminated at 15.55 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 9

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.986

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 13, 2024

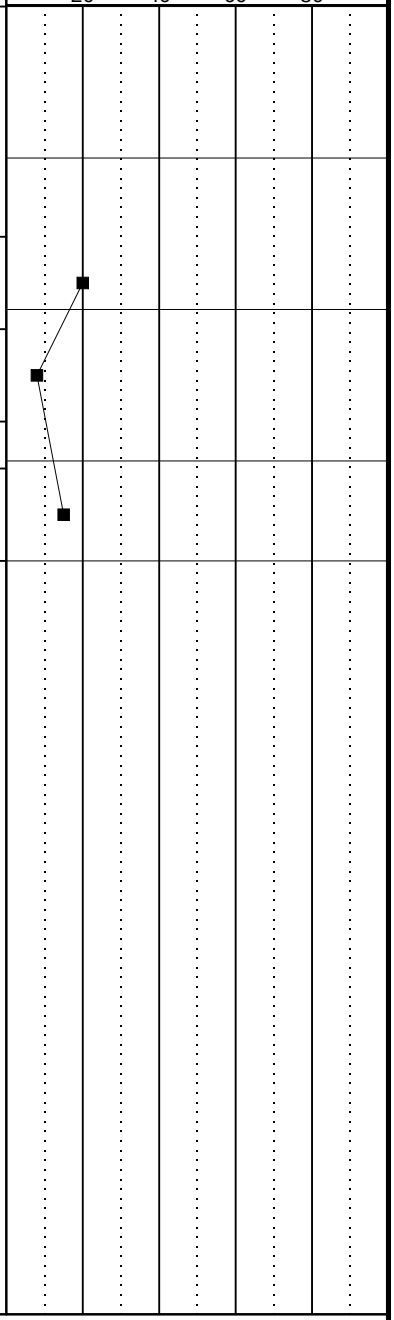
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0		Auger to 1.52m							
0.5		2.5								
1		2								
	4									
1.5		1.5	Compact Brown Sand and Gravel Fill with Cobbles				30	7-10-10-12 (20)		
2		1	Loose Brown Sand and Gravel Fill with Cobbles. Last4" Grey Silty Clay.				46	12-5-3-3 (8)		
2.5	8	0.5	Auger to 3.05							
3		0	Compact Wet Grey Silty Clay				25	5-8-7-10 (15)		
3.5		-0.5								
	12		Boring Terminated at 3.66 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 10

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.733

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 13, 2024

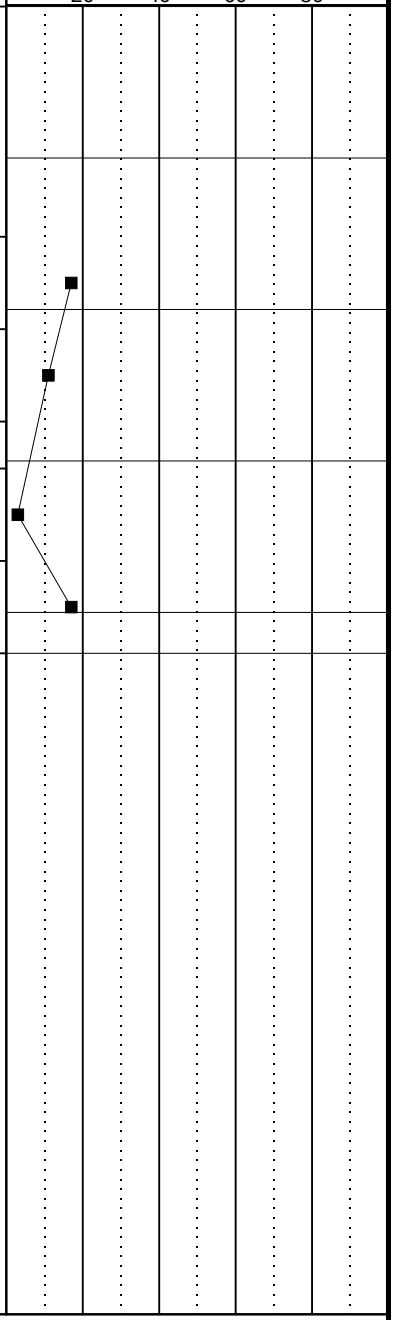
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	2.5	Auger to 1.52m							
0.5		2								
1		1.5								
1.5	4	1	Compact Brown Sand and Gravel Fill with Silty Clay				13	5-10-7-6 (17)		
2		0.5	No Recovery				0	11-9-2-7 (11)		
2.5	8	0	Auger to 3.05							
3		-0.5	Loose Brown Peat Moss				33	1-1-2-3 (3)		
3.5	12	-1	Compact Silty Clay with Limestone seams				13	6-6-11-12 (17)		
4		-1.5	Boring Terminated at 4.27 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 11

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 3.335

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 13, 2024

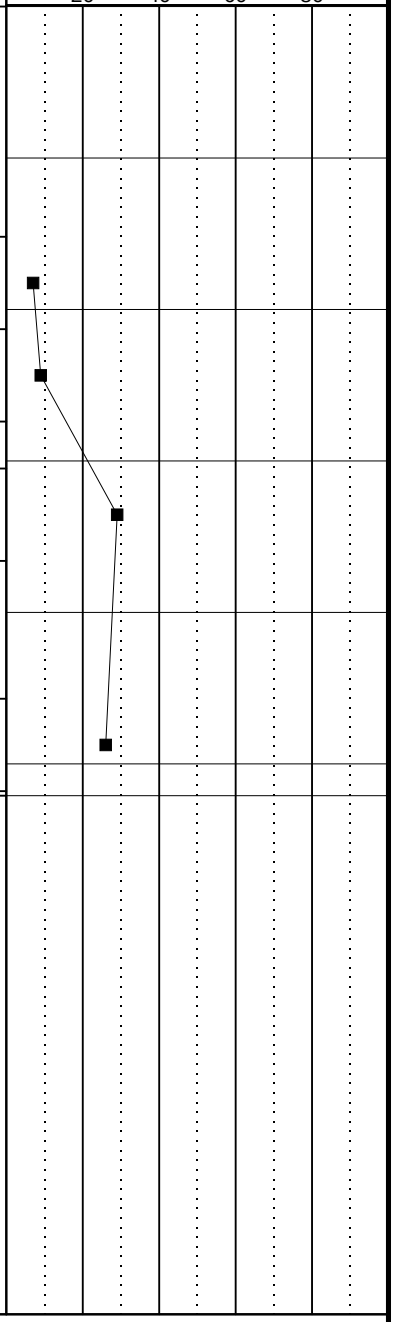
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	3	Auger to 1.52m							
0.5		2.5								
1	4	2								
1.5		1.5	Rock in Tip				0	9-5-2-2 (7)		
2		1	Wet Wood				13	12-4-5-8 (9)		
2.5	8	0.5	Auger to 3.05							
3		0	Compact Brown Silty Gravel Till				46	17-12-17-20 (29)		
3.5	12	-0.5	Auger to 4.57							
4		-1								
4.5		-1.5	Compact Wet Brown Silty Gravel Till				41	7-8-18-48 (26)		
5	16		Possible Bedrock				3	50		
			Boring Terminated at 5.21 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 11-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

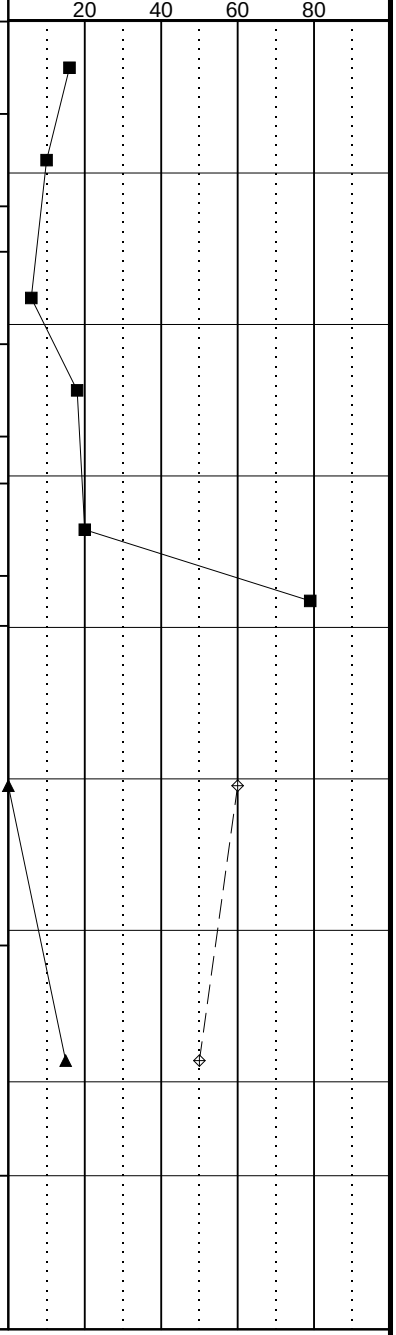
LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 21, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0		2" Top Soil, 8"Compact Brown Sand and Gravel FILL				25	9-7-9-13 (16)		
0.5										
1			10" Black and Brown Sand and Gravel FIll, 2" Loose Brown Silty Clay FILL				30	8-7-3-4 (10)		
	4		Auger to 1.52m							
1.5			Brown Sand and Gravel with Wood in tip				15	4-4-2-10 (6)		
2										
2.5	8		Compact Wet Brown Sand ang Gravel FILL				25	5-10-8-13 (18)		
			Auger to 3.05m							
3			Compact Wet Grey Silty Sand TILL				46	9-10-10-16 (20)		
3.5	12									
			Freathred Bedrock				20	16-29-50 (79)		
4			Very poor crushed red mudstone.			60			0	
4.5										
5	16									
5.5										
6	20		Very poor crushed red mudstone.			50			15	
6.5										
7										
	24									
7.5			Boring Terminated at 7.62 m.							

TEST RESULTS SUMMARY



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 12

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 4.363

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 13, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0									
0.5		4	Auger to 1.52m							
1		3.5								
1.5	4	3								
2		2.5	Loose Black Sand and Gravel Fill with Cobbles. Sample sent for Metal Analysis				13	4-3-4-4 (7)		
2.5	8	2	Compact Brown Sand and Gravel Fill				23	6-6-6-6 (12)		
3		1.5	Auger to 3.05							
3.5	12	1	Compact Wet Brown Sand and Gravel Fill with Cobbles				20	3-7-15-15 (22)		
			Boring Terminated at 3.66 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 13

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 4.865

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 13, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	4.5	Auger to 1.52m							
0.5										
1		4								
1.5	4	3.5	Possible Bedrock				5	50		
			Auger to 3.05							
2		3								
2.5	8	2.5								
3		2	Possible Bedrock				3	10		
			Boring Terminated at 3.08 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 14

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 5.061

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 13, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	5	Auger to 1.52m							
0.5		4.5								
1		4								
1.5	4	3.5	Loose Brown Silty Sand and Gravel with Cobbles				25	3-4-5-7 (9)		
2		3	Dense Brown Silty Sand and Gravel with Cobbles				30	14-25-13-16 (38)		
2.5	8	2.5	Auger to 3.05							
3		2	Very Dense Brown Silty Sand and Gravel with Cobbles				25	5-27-50 (77)		
3.5		1.5	Auger to 4.57							
4	12	1								
4.5		0.5	Very Dense Bedrock				3	50		
			Boring Terminated at 4.62 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 15

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 4.751

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 13, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	4.5	Auger to 1.52m							
0.5		4								
1	4	3.5								
1.5		3	Compact Brown Silty Sand and Gravel with Cobbles				33	5-9-10-11 (19)		
2		2.5	Dense Brown Silty Sand and Gravel with Cobbles				38	13-16-17-25 (33)		
2.5	8	2	Auger to 3.05							
3			Bedrock				5	50		
			Boring Terminated at 3.1 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 16

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 4.458

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 13, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	4	Auger to 1.52m							
1.5	4	3	Compact Greyish Brown Silty Sand and Gravel				15	6-6-5-15 (11)		
2.5	8	2	Dense Greyish Brown Silty Sand and Gravel				30	13-16-17 (33)		
3		1.5	Auger to 3.05							
3.5		1	No Recovery					11-21-35-50 (56)		
			Boring Terminated at 3.58 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 17

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 4.198

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 14, 2024

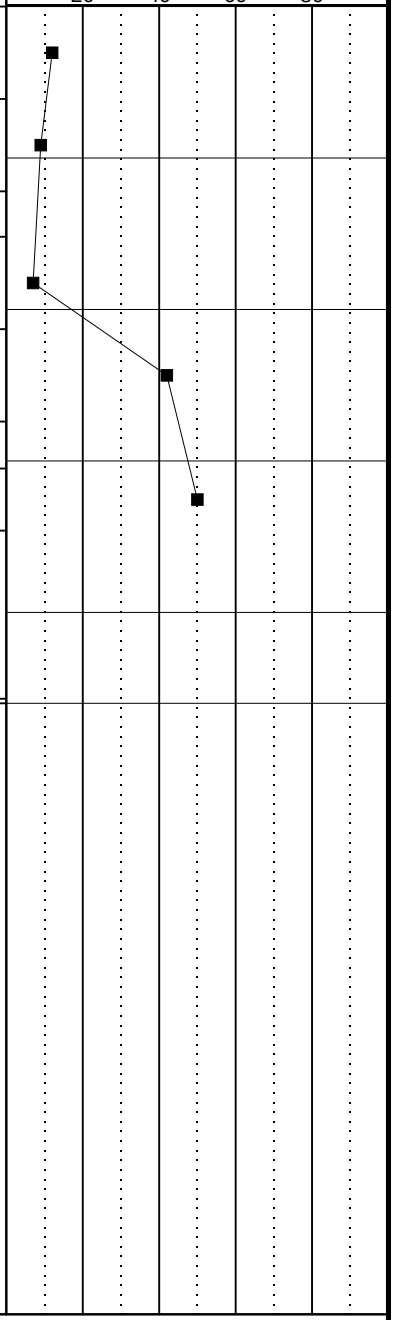
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	4	Compact Brown Black Sand and Gravel Fill with Cobbles				13	8-5-7-7 (12)		
0.5		3.5	Loose Brown Black Sand and Gravel Fill with Cobbles				8	7-5-4-6 (9)		
1	4	3	Auger to 1.52m							
1.5		2.5	Loose Grey Silty Sand and Gravel Fill with Cobbles				13	2-3-4-4 (7)		
2		2	Dense Wet Grey Silty Sand Till PCHs Analysis				46	10-16-26-23 (42)		
2.5	8	1.5	Auger to 3.05M							
3		1	Very Dense Grey Mudstone				10	31-50		
3.5	12	0.5	Auger to 4.57M							
4		0								
4.5			Cored to 5.79M. Got the Rock					50		
			Boring Terminated at 4.6 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 18

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 4.110

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

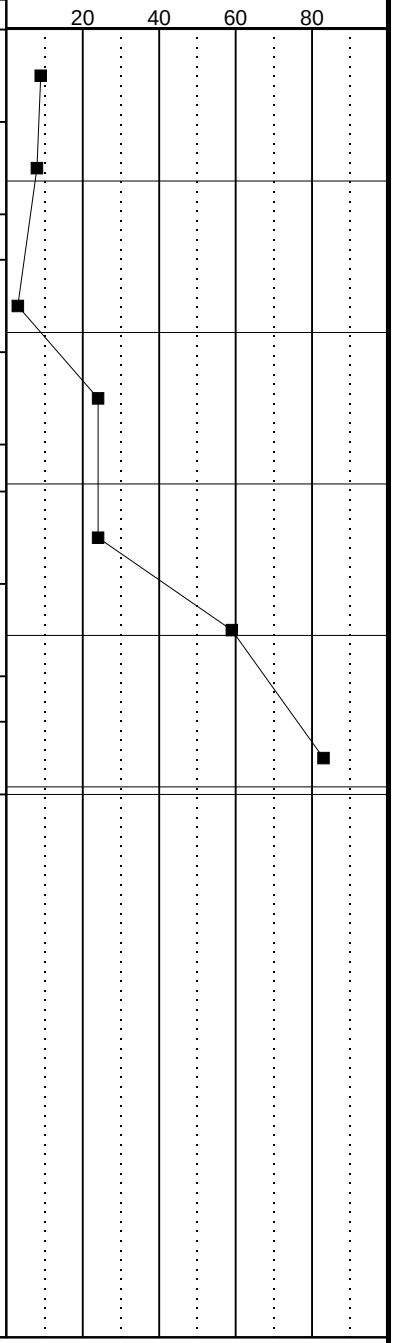
DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 14, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	4	Loose Brown Sand and Gravel Fill				13	3-4-5-5 (9)		
0.5		3.5	Loose Black Sand and Gravel Fill with Sand				8	8-5-3-3 (8)		
1	4	3	Auger to 1.52M							
1.5		2.5	Loose Wet Grey Silty Clay				10	1-1-2-10 (3)		
2		2	Compact Wet Grey Silty Clay				10	11-13-11 (24)		
2.5	8	1.5	Auger to 3.05M							
3		1	Compact Pink Conglomerado Bedrock				25	8-11-13-30 (24)		
3.5	12	0.5	Very Dense Pink Conglomerado Bedrock				46	25-30-29-40 (59)		
4		0	Auger to 4.57							
4.5		-0.5	No Recovery					15-33-50 (83)		
5	16		Boring Terminated at 5.05 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 19

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 3.970

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 14, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	3.5	Loose Brown Black Sand and Gravel Fill (Metal)				15	5-3-3-4 (6)		
0.5										
1	4	3	Loose Brown Black Sand and Gravel Fill (Metal)				13	6-3-3-2 (6)		
1.5		2.5	Auger to 1.52M							
2		2	Loose Grey Silty Clay				15	2-2-3-3 (5)		
2.5	8	1.5	Loose Grey Silty Clay				13	5-4-5-4 (9)		
3		1	Auger to 3.05M							
3.5	12	0.5	Compact Brown Silty Clay Till with Cobbles				20	7-8-8-19 (16)		
4		0	Very Dense Brown Silty Clay Till with Cobbles. Bedrock in tip				18	24-18-50 (68)		
			Auger to 6.10M							
4.5		-0.5								
5	16	-1								
5.5		-1.5								
6	20	-2	Bedrock					50		
			Boring Terminated at 6.13 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 20

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 4.827

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 14, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	4.5	Loose Sandy Gravel Fill				13	3-4-6-8 (10)		
0.5										
1	4	4	Loose Sandy Gravel Fill (Surface Gravel Collaping in)				5	9-3-2-1 (5)		
1.5		3.5	Aguer to 3.05 (Soild on Auger was Wet Peat Moss)							
2		3								
2.5	8	2.5								
3		2	Loose Wet Grey Silty Clay				23	3-5-4-8 (9)		
3.5	12	1.5	Compact Wet Grey Silty Clay. Tip Head Till				20	8-8-7-12 (15)		
4		1								
4.5		0.5	Auger to 4.57M							
5	16	0	Compact Wet Grey Silty Clay.				15	7-6-7-8 (13)		
5.5		-0.5	No Recovery					13-25-43 (68)		
			Boring Terminated at 5.74 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 21

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 7.200

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 14, 2024

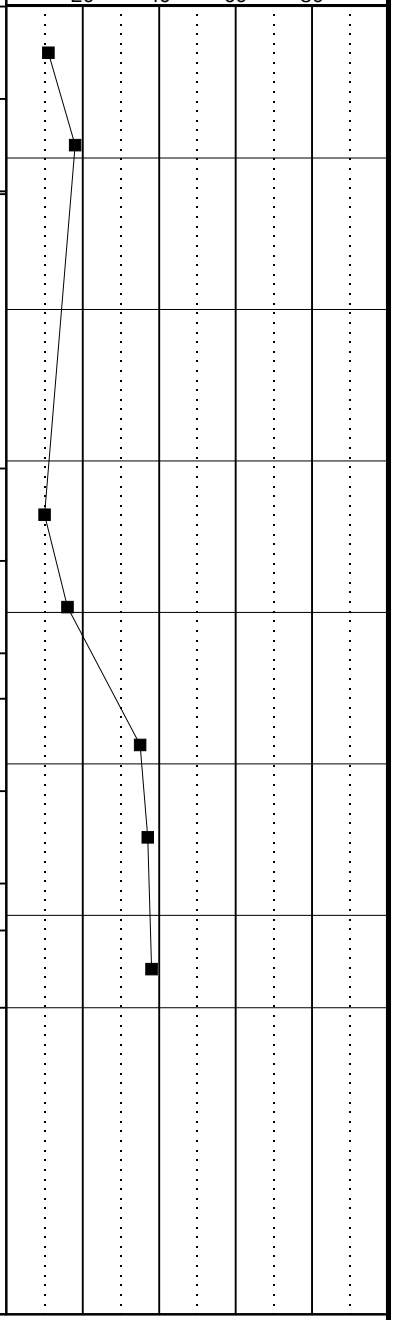
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0 – 0.5	0	7 – 6.5	Compact Brown Sand and Gravel FILL				8	8-5-6-7 (11)		
0.5 – 1		6.5 – 6	Loose Grey Silty Clay				18	6-10-8-7 (18)		
1 – 1.5	4	6 – 5.5	Aguer to 3.05 as top rock caved in @ 1.52M							
1.5 – 2		5.5 – 5								
2 – 2.5	8	5 – 4.5								
2.5 – 3		4.5 – 4								
3 – 3.5	12	4 – 3.5	Compact Wet Grey Silty Clay				36	5-3-7-9 (10)		
3.5 – 4		3.5 – 3	Compact Wet Grey Silty Clay. PHCs Sampled				30	6-8-8-9 (16)		
4 – 4.5		3 – 2.5	Auger to 4.57M							
4.5 – 5	16	2.5 – 2	Dense Wet Grey Silty Clay				20	11-16-19-12 (35)		
5 – 5.5		2 – 1.5	Dense Brown Sand and Gravel TILL and Cobbles				20	7-15-22-13 (37)		
5.5 – 6		1.5 – 1	Auger to 6.10M							
6 – 6.5	20	1	Pink Bedrock					16-18-20-50 (38)		
			Boring Terminated at 6.61 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 22

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 10.456

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 19, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	10	Auger to 1.52m							
0.5										
1	4	9.5								
1.5		9	Caved in. Auger to 3.05							
2		8.5								
2.5	8	8								
3		7.5	Compact Wet Claycy Sand and Gravel FILL					5-7-18-17 (25)		
3.5	12	7	Boring Terminated at 3.66 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 23

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 12.848

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 19, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	12.5	Auger to 1.52m							
0.5										
1	4	12								
1.5		11.5	Caved in. Auger to 3.05							
2		11								
2.5	8	10.5								
3		10	Loose Sand ang Gravel FILL				5	5-4-5-6 (9)		
3.5	12	9.5	Tried to Auger to 4.57M. Hit Auger refusal @ 3.96M							
		9	Boring Terminated at 3.96 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢—⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 23B

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 13, 2024

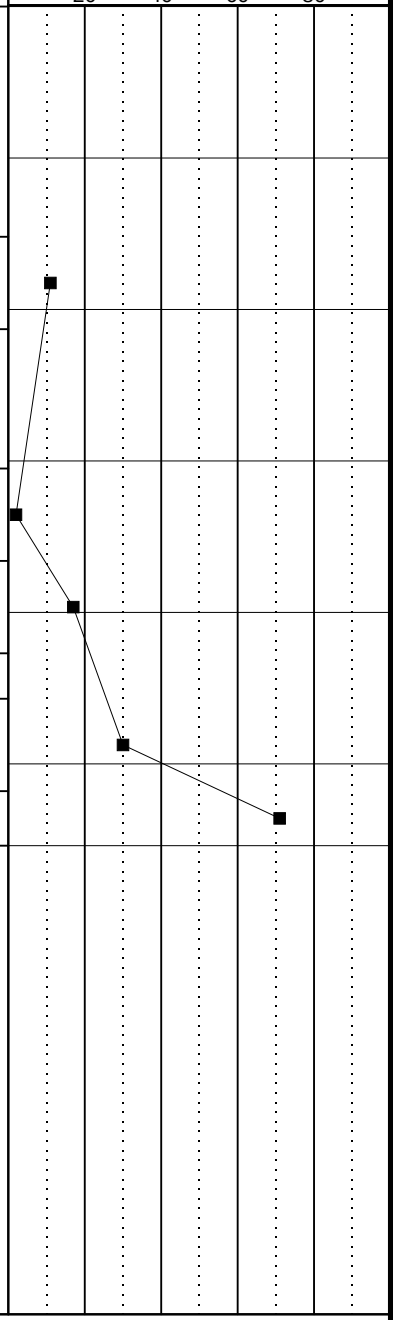
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0		Auger to 1.52m							
0.5										
1										
	4									
1.5			Compact Brown Silty Clay with Cobbles				15	6-6-5-15 (11)		
2			Auger to 3.05							
2.5	8									
3			Loose Brown Clayey Sand and Gravel TILL with Cobbles				3	3-1-1-5 (2)		
3.5										
	12									
4							10	6-7-10-9 (17)		
4.5			Aguer to 4.57m							
			Compact Black and White fractured Bedrock				41	11-12-18-13 (30)		
	16									
5							20	23-21-50 (71)		
5.5			Boring Terminated at 5.54 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 24

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 13.896

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 19, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	13.5	Auger to 1.52m, Hard Augering sample of black @3'-5'							
0.5										
1	4	13								
1.5		12.5	No Recovery					50		
2		12	Auger to 2.13m Auger refused							
			Boring Terminated at 2.13 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 25

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 16.389

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 19, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	16	Auger to 0.61m							
0.5										
1	4	15.5	Loose Black Sand and Gravel FILL with Cobbles				25	3-5-5-7 (10)		
1.5		15	Auger to 1.52m							
2		14.5	No Recovery					15-9-8-18 (17)		
			Boring Terminated at 2.13 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 25-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 21, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0		Auger to 1.52m							
1.52	4		Fair fractured grey shale.			82			61.7	
3.05	8		Fair fractured grey shale.			93			63.3	
4.57	12		Boring Terminated at 4.57 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 26

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 20.030

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 19, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	20	Compact Balck Sand and Gravel FILL with Cobbles				15	9-7-8-30 (15)		
0.5		19.5	No Recovery				25	50		
			Boring Terminated at 0.64 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 26-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 21, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0		Auger to 1.22m							
0.5										
1										
	4		Very poor crushed grey Shale.							
1.5										
2						82			0	
	8									
2.5										
3			Very poor crushed grey Shale.							
3.5						93			0	
	12									
4			Boring Terminated at 4.27 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

FUNDY Engineering

BOREHOLE LOG No. 27

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 22.520

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 19, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	22.5	Compact Balck Sand and Gravel FILL with Cobbles				25	5-6-6-4 (12)		
0.5		22	Cannot Auger				25	50		
			Boring Terminated at 0.64 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 27-G

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** _____

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 21, 2024

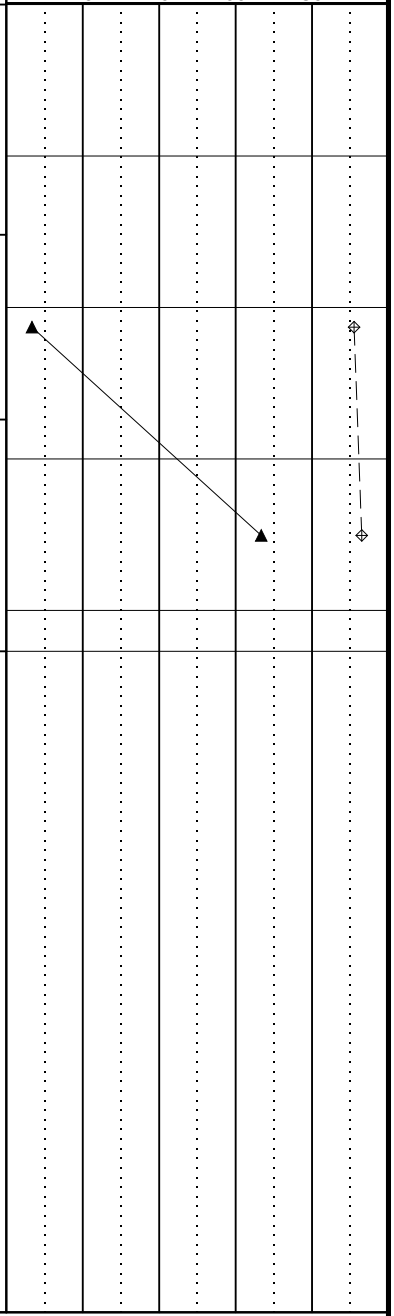
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0		Auger to 1.52m							
1.52	4		Very poor crushed grey Shale.			91			6.7	
2.44	8		Fair fractured grey Shale.			93			66.7	
4.27	12		Boring Terminated at 4.27 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 28

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 24.426

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 19, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	24	Auger to 1.52m							
0.5										
1	4	23.5								
1.5		23	Cannot Auger					50		
			Boring Terminated at 1.57 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 29

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 27.421

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

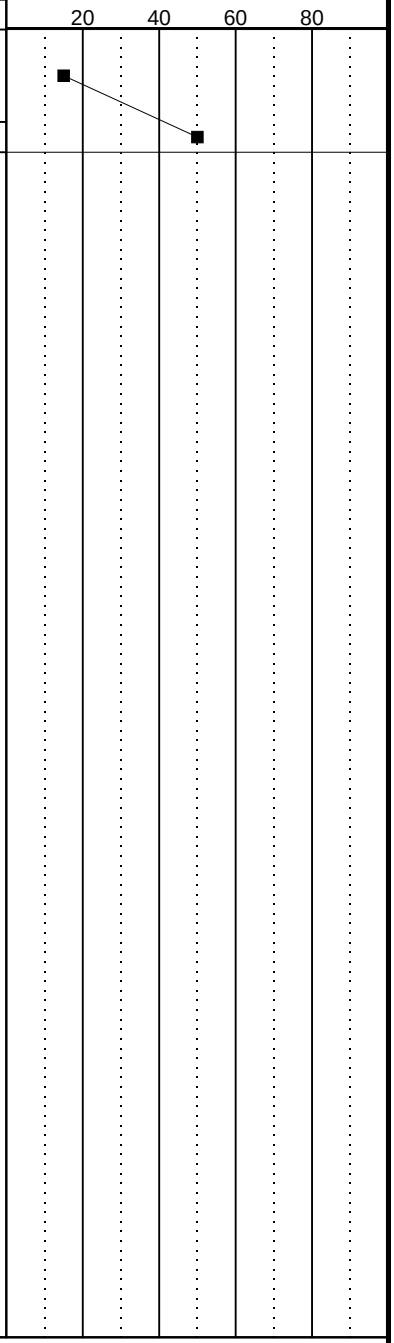
DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 19, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	27	Compact Sand and Gravel FILL					4-8-7-16 (15)		
0.5			Cannot Auger					3-50		
			Boring Terminated at 0.81 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢—⊣ Liquid Limit
Water Content - ●
SPT N Values - ■



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG
No. 30

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 29.260

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 19, 2024

DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	29	Auger to 0.61							
0.5			Cannot Auger Boring Terminated at 0.69 m.					50		

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

FUNDY Engineering

BOREHOLE LOG No. 31

PROJECT: _____ **PROJECT NO.:** _____

CLIENT: _____ **DATUM:** CGVD2013

PROJECT LOCATION: _____ **ELEVATION (m):** 2.732

DRILLING CONTRACTOR: Lantech Drilling

LOGGED BY: Yi Yuan **CHECKED BY:** Greg Derrah

DRILLING METHOD: CME 55 Track Mounted Drill **DATE:** Aug 19, 2024

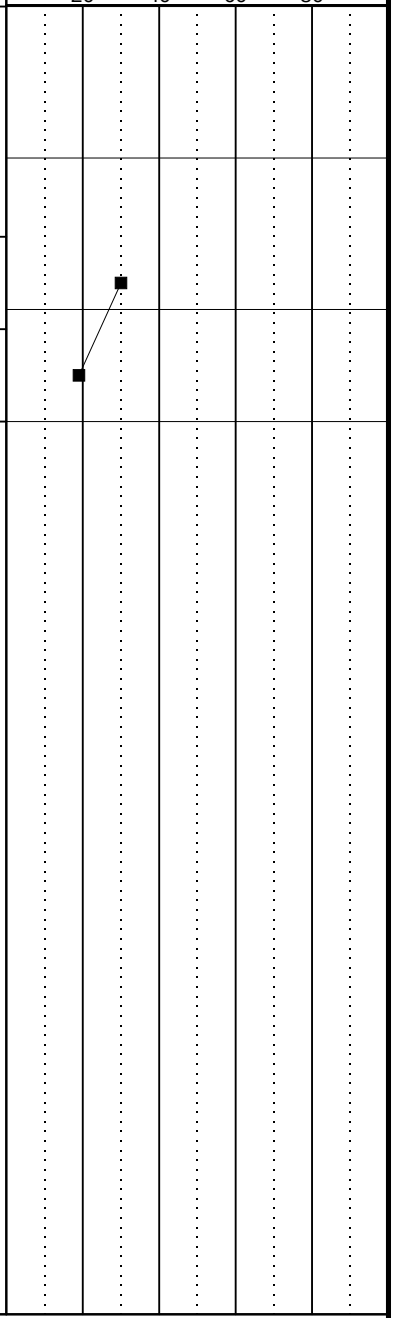
DEPTH TO - WATER> INITIAL: _____ **AFTER 24 HOURS:** _____ **CAVING>** _____

Depth (meters)	Depth (feet)	Elevation (meters)	Description	Graphic	Sample Type	Core Recovery (%)	Sample Rec. (cm)	Blow Counts (N value)	RQD (%)	Rock Strength (MPa)
0	0	2.5	Auger to 1.52m							
0.5		2								
1		1.5								
1.5	4	1	Compact Brown Sand and Gravel FILL				25	12-20-10-18 (30)		
2		0.5	Compact Wet Grey Sand and Gravel FILL				46	8-10-9-11 (19)		
2.5	8	0	Boring Terminated at 2.74 m.							

TEST RESULTS SUMMARY

Bedrock Core Recovery (%) ◈
RQD (%) ▲
Plastic Limit ⊢——⊣ Liquid Limit
Water Content - ●
SPT N Values - ■

20 40 60 80



This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Appendix IX:

Qualifications of the Assessors

Tim A. Ryan, *M.Eng., P.Eng.*
Environmental Engineering Services Director

Qualifications at a glance

- *ELP*, Wallace McCain Institute, 2015
- *M.Eng.*, UNB, 1996
- *BASc.* in Engineering, Waterloo, 1990
- *Professional Engineer,* APEGNB, APEPEI, APENS, and APEGA

SPECIALTY AREAS: Phase I, and II ESAs, site remediation, environmental management, environmental permitting, monitoring, and compliance, contaminant hydrogeology, and clean water initiatives

Profile

Tim is active in the business community. He has led two trade missions to Alberta for securing business-to-business opportunities for New Brunswick-based companies. Some noteworthy projects Tim has managed include: environmental impact assessment, permitting, monitoring, and compliance for portions of the $750 million (USD) Canaport™ LNG_{LP} Marine Terminal; environmental analysis and permitting for the ultra-low sulphur diesel pipeline between the Irving Oil Limited Refinery and the East Saint John Terminal; obtaining environmental permits associated with the qplex™ development in Quispamsis; undertaking high-level mapping of potential energy investments throughout southwestern NB for Enterprise Saint John; management of historical contamination at the site of the Garcelon Civic Centre in St. Stephen; and environmental management of the Kent Building Supplies in west Saint John. He recently graduated from the Entrepreneurial Leadership Program through the Wallace McCain Institute where he developed a broad base of skills to help lead Fundy Engineering into the future. Tim also manages the joint-venture agreement between Fundy Engineering and Summit Liability Solutions, a Calgary-based firm that primarily works in the upstream oil and gas industry.

Greg S. Derrah*, P.Tech., CESA*
Project Management Lead

Qualifications at a glance

- *Environmental Technology Diploma*, NBCC, 1999
- *Professional Technologist*, NBSCETT
- *Certified Environmental Site Assessor*, AESAC

SPECIALTY AREAS: Phase I, II, and III environmental site assessments, risk assessments, site remediation, environmental audits, and hazardous materials surveys

Profile

Greg has an extensive resume of Phase I and Phase I / II ESAs and site professional services for properties throughout Atlantic Canada, including: remedial action plan development for the new Kent Building Supplies in west Saint John; environmental professional services for the Garcelon Civic Centre in St. Stephen; containment and innovative risk-management of contaminated soils on the former McKnight Motors Property in east Saint John; site remediation of a former maintenance garage in Campobello; site professional services for the abatement of lead-based paints within

former warehouses in Perth Andover; and delineation and remediation of a fuel oil release to a fractured bedrock aquifer in Grand Bay-Westfield. Alone, Greg has supervised the installation of more than 2 000 boreholes and monitoring wells throughout the Maritimes and managed over 500 remedial programs. His drive for success and on-time product delivery within budget maintains his strong track-record of repeat business.

Angela Dick, ***B.Sc. ENR*** ***fluent en francais***
Intermediate GIS Analyst / Environmental Technologist

Qualifications at a glance

- *B.Sc. ENR*, University of New Brunswick, 2019
- *Certified Outdoor Educator*, Canadian Wildlife Federation
- *Certified Backpack Electrofisher*
- *Certified in CABIN sampling*, *Rapid Geomorphic Assessments, and Rapid Stream Assessments*

SPECIALTY AREAS: ArcGIS, data management, project management, environmental field sampling, flora surveys, habitat assessment, and fish sampling

Profile

Angela came to Fundy Engineering after working for Fort Folly Habitat Recovery for two years where she focused on helping restore traditionally important species, such as the inner Bay of Fundy Atlantic salmon, and their habitats. She holds a Bachelor of Science in Environment and Natural Resources from the University of New Brunswick. Angela works with our environmental team to tell data stories with maps. She has been actively involved in the development of a fish ladder on Bean Brook in east Saint John, the environmental treatment facility for the Reversing Falls Mill, and several environmental assessments throughout New Brunswick.