

REPORT.



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HYDRA MARINER

DISPOSAL ASSESSMENT

UNDERTAKEN ON BEHALF OF

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA, DEPARTMENT OF
FISHERIES AND OCEANS

HYDRA MARINER DISPOSAL ASSESSMENT

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EXECUTIVE SUMMARY

The “MV HYDRA MARINER” is an ex-fishing vessel which broke from her mooring and ran aground on Navy Island, Dartmouth, NS on 06 January 2021.

ABL had visited the vessel previously in January and February 2021 and reported that the vessel’s engine room was found to be flooded along with aft underdeck accommodation space. A thick oil slick was noted on top of the water in the engine room compartment. The steering gear room/ engine room tunnel / aft peak was not accessible.

A dive survey was carried out on 06 February 2021 found no visible hull damage. Seabed condition was noted to be mix of sand and small rocks.

ABL was requested by Canadian Coast Guard (CCG) attend the vessel again in October 2021 and to conduct a survey of the vessel to investigate vessel disposal options and provided a IHM report.

During the latest inspection the engine room and hold were observed to be completely flooded and CCG reported that water ingress and egress was tidal. All compartments below deck were inaccessible.

It is understood that the Canadian Coast Guard have re-visited the vessel on multiple occasions for pollution prevention.

Based on ABL’s previous survey of the vessel, previous dive survey, and most recent survey, three disposal options with associated cost estimates have been presented in this report:

Option 1: Re-float, Wet Tow & Dismantling - CAD \$1,134,400.00 to \$1,424,300.00.

Option 2: Re-float, Dry Tow & Dismantling - CAD \$1,399,400.00 to \$1,842,300.00.

Option 3: Dismantling in Situ - CAD \$1,039,400.00 to \$1,327,800.00.

It is concluded that re-floating might prove difficult given the possibility of additional breaches to the hull bottom along the grounded length, and the overall condition of the steel plating which showed signs of heavy wastage on the port side bow section. If adequate buoyancy cannot be achieved, the vessel cannot be re-floated safely. Much will depend on thickness gauging, pumping tests, and the ability to gain sufficient buoyancy and patch accessible damages to the hull. There is a risk that significant time and resources will be spent only to determine that re-floating and/or towage are not feasible.

The dismantling in situ option is not without challenges but would pose less risk as it is not contingent on re-floating.

1.0 SCOPE OF WORK

1.1 INSTRUCTIONS RECEIVED

ABL was awarded the contract by Public Works and Government Services Canada, Department of Fisheries and Oceans, to survey the fishing vessel “HYDRA MARINER” at Navy Island, Dartmouth, Nova Scotia for the purpose of:

- i) considering removal options, and estimating costs
- ii) conduct a IHM (Inventory of Hazardous Materials) survey

Frans Schouffoer, Marine Engineer, ABL attend the vessel on October 15 2021, in attendance was Chris Couture, CCG Emergency Response Officer.

1.2 SCOPE OF THE SUMMARY REPORT

This report sets out to provide summary details of the vessel and grounding condition and to assess disposal options.

IHM report has been issued separately. Please see report ABL_CA-M10-0043_R001 IHM HYDRA MARINER and has been included in Appendix A.

This report discusses the feasibility of re-floating the vessel with preliminary estimates of costs as well as estimated costs for dismantling the vessel in-situ. Towage and disposal are also considered with cost estimates for both wet and dry towage.

2.0 VESSEL DETAILS

Name:	HYDRA MARINER
Previous Names:	CAPE MIRA
Built:	1963
Builder:	GEO. T. DAVIE & SONS LTD.
IMO Number:	5410573
Port of Registry:	Halifax, NS. Canada
Gross tons	295.00
Length overall:	33.51m
Breadth Moulded:	7.49m
Depth Moulded:	3.96m
Material:	Steel
Propulsion:	Diesel (485 kW)
Owner:	Understood to be Mr. MacNeil.
Lightweight	405mt

2.1 VESSEL LOCATION

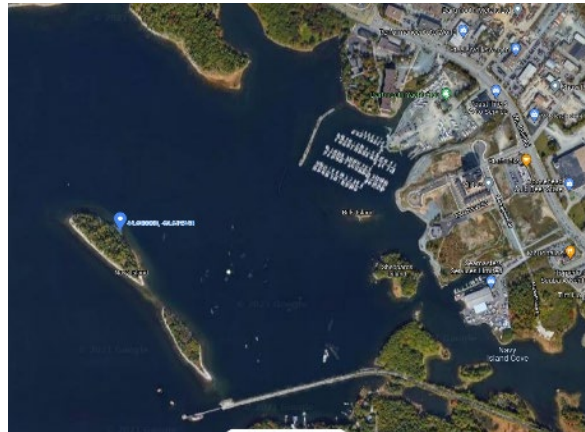


Figure 1: Google Earth image of Navy Island, location of vessel

Navy Island is in the Bedford basin on the Dartmouth side near Wrights Cove. The vessel appears to be grounded on a gravel / sand seabed. Tides are diurnal and data from the DFO tidal monitoring station located in Bedford Basin provides the following data:

Highest Astronomical Tide	2.21m
Higher High Water Large Tide	2.17m
Higher High Water Mean Tide	1.83m
High Water Level	1.77m
Mean Water Level	1.1m
Low Water Level	0.46m
Lower Low Water Mean Tide	0.36m
Lower Low Water Large Tide	-0.01m
Lowest Astronomical Tide	-0.05m

3.0 VESSEL CONDITION ASSESSMENT

3.1 LIMITATIONS OF SURVEY

1. The vessel was found beached, and examination of the shell plating was limited to viewing of areas above the waterline.
2. Previous dive survey was only those areas of the external underwater hull accessible to the divers.
3. No ceilings, claddings or sheathings were removed for examination of underlying structure.
4. No ultrasonic examination or other NDT inspection was carried out on the hull, fittings or pipe work within the scope of the survey conducted.
5. No tanks or enclosed spaces were opened for internal inspection.
6. Comments are based on conditions observed and documents presented.
7. The liquid contents of any pipe systems could not be determined.
8. Only areas of the vessel deemed safe for access were examined.
9. At time of survey the vessel was without power so no equipment was operational.
10. Movement in underdeck spaces was restricted as these compartments were flooded.
11. Thickness gauging was not carried out on the hull.

3.2 GENERAL COMMENTS ON VESSEL

At the time of the survey the vessel was found to be aground and listed to port approximately 10 degrees.

The vessel was monitored through the rising tide and at high tide found to be still be aground. Therefore, it is apparent that the vessel, in its current flooded condition, will remain fully grounded at all stages of the tide.

The seabed in the vicinity of the vessel appears to be gravel / sand.

The vessel is arranged with a single hold forward of the accommodation; a bosun store and forepeak tank forward; an engine room compartment and aft peak tank aft with the accommodation superstructure located at the aft above the engine room.

Due to the engine room and hold flooding it was not possible to access the under-deck compartments.

During the first attendance in early 2021 six (6) sounding pipes were located:

- Two forward of the hatch cover which are believed to be fuel oil tank sounding pipes of the double bottom tanks under the bosun store. These were sounded and no content was measured, the tanks are assumed dry.
- Two aft of the cargo hatch cover which are also believed to be for fuel oil tanks. The stbd pipe was sounded and 52 cm of what appeared to be fuel was recorded. The port side was sounded and 100 cm of what appeared to be fuel was recorded.
- One sounding pipe on the stbd side of the wheelhouse was found but the pipe was found bent preventing the sounding tape weight from passing inside the pipe. This sounding pipe or fill pipe is believed to be for a portable water tank.
- One sounding pipe on the stern of the vessel, aft the steering gear but this pipe was also bent preventing the sounding tape weight from passing inside the pipe. This sounding pipe is believed to be for the Hydraulic oil tank for the steering gear.

The vessel is equipped with a rotary vane hydraulic steering system so it is likely that they system is still charged with oil.

On a previous visit a diesel driven emergency pump was found inside the bosun store and the fuel tank was found to contain approximately 25 liters of diesel oil.

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It is understood that CCG have removed as far as practical all bulk oil.

The vessel is equipped with a Halon fixed firefighting system consisting of two Halon cylinders and a pilot CO2 cylinder. It cannot be confirmed but it would appear both Halon and CO2 cylinders are still charged.

3.2.1 HULL SURVEY

Starboard side exterior not visible from inspection boat. Port side exterior, holes found on bow section that weren't visible at initial survey in February 2021. Hull integrity is uncertain.

3.2.2 DECK SURVEY

The winch / cargo deck, weeds were found growing on deck with a estimated layer of 5-10 cm of organic / compost growth.

All the hatch boards for the cargo hold and under deck spaces were found closed however the seals were missing so the hatch cover cannot be considered watertight.

On Port side the ships anchor was found not operational. The anchor wire was noted to be attached to the vessel's cargo winch.

3.2.3 ACCOMMODATION AND SUPERSTRUCTURE

At the upper-deck some vessel documentation was found, no water ingress from accommodation was noted, it was noted that 2 x Halon fire extinguishing cylinders were present.

Sampling and test of various areas within the accommodation confirmed the presence of asbestos.

The aft under deck accommodation space was found completely flooded, and not accessible.

3.2.4 UNDERDECK COMPARTMENTS

Due to flooding of the engine room and the hold, underdeck compartments where inaccessible.

HYDRA MARINER DISPOSAL ASSESSMENT

3.3 TANK SOUNDINGS / TANK CONTENTS

Table below details the know tanks, the soundings readings and the estimated quantity based on the available information.

Item	Tank/Item Name	Sounding	Estimated Quantity of oil	Estimated Quantity of oil contaminated water	Comments
1.	FWD F.O (P)	0			
2.	FWD F.O (S)	0			
3.	MID F.O (P)	52cm	700 ltrs		Removed by CCG on 01/02 Feb
4.	MID F.O (S)	100cm	3,400 ltrs		Removed by CCG on 01/02 Feb
5.	DAY TANK (P)	Unknown			
6.	LUB OIL (S)	Unknown			
7.	F.W. (P)	Unknown			
8.	F.W. (S)	Unknown			
9.	STERN F.W	Unknown			
10.	Flooded compartments: 1 Accommodation aft 2 Main Engine 3 Hold			254,000 ltrs	
11.	Emergency pump – Bosun store		25 ltrs		Removed by CCG on 01/02 Feb
Total Estimated Volume			NIL	254,000 ltrs	

3.3.1 DISPOSAL COSTS – OILS/OILY WATER

It is assumed that any remaining oils and oily water will be removed before, or at the commencement of vessel removal howsoever performed and transported by road or barged to an approved facility.

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Any unpumpable residuals and waste, hazardous or otherwise, will be removed during dismantling if this is the option followed, or at the time of vessel disposal at a scrap facility.

It is estimated that there is in the region of 254,000 litres oily water, if this is transported for treatment/disposal based on CAD \$0.35 - \$0.45/litre, the disposal costs would be CAD \$88,900.00 to \$114,300.00.

The contents of the main engine room, cargo hold and accommodation space need to be pumped out before the vessel can be re-floated.

Given the lack of access to the island and the water depth alongside the vessel it is likely that this will involve a barge / vessel being moored / anchored in proximity to the Hydra Mariner. Any plan for removal should include details of the equipment and vessels to be used as well as mooring / anchoring arrangements. The chart of the area indicates that the water depth increases significantly over a short distance from the shoreline and we would suggest a bathymetry survey of the immediate area around the vessel to establish exact depths

4.0 VESSEL DISPOSAL ASSESSMENT

4.1 OPTION 1 – RE-FLOAT, WET TOW & DISMANTLING

Present Status

Currently the source of water ingress is not completely known, although some areas of water ingress were identified on the bow section of the vessel. It is believed that the water ingress and egress is now tidal which would indicate a significant breach in the hull.

To re-float the source of the ingress needs to be located and plugged.

The dive survey indicated that the beach is sand / gravel with a few rocks. Location of rocks ought to be noted and a removal path considered that avoids them or additional measures put in place to limit abrasion.

A stability manual is available for the vessel, and this indicates that the vessel can safely be re-floated in the lightship condition.

Feasibility of Re-floating

Against the above background, the feasibility of re-floating will depend on the nature and extent of hull damage and whether it can be accessed for patching purposes.

Underwater shell plating thickness is unknown so prior to any efforts to upright or re-float the vessel thickness gauging would be recommended.

A re-floating plan will therefore involve the following activities:

- Dive survey to conduct thickness gauging and apply temporary patching to the penetrations currently identified, as well as any other potential penetrations. Establish if roller bags can be installed for uprighting and re-floating.
- Establish the ground reaction
- Establish if boulder/rock obstructions can be pulled clear
- Prepare safe access to vessel.
- Prepare moorings to provide the vessel with some station keeping abilities – anchors fore and aft and/or moorings to shore
- Prepare a stability assessment to demonstrate that the vessel will remain stable as it is re-floated.
- Prepare for pumping tests including the provision of a tank barge or tanktainers to receive oily water either afloat or ashore

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- Install high-capacity pumps relative to compartment volumes (15-25m³/hr) in pre-determined compartments having in mind list and trim
- Conduct pumping tests to confirm whether ingress can be controlled
- Prepare for re-float subject to pump test success including laying of roller bags and installation of airbags for additional buoyancy
- If ingress can be controlled, pump compartments in pre-determined sequence for controlled uprighting
- Patch damaged areas exposed
- Prepare for towage
- Continue to pump until afloat and clear of seabed obstructions – use airbags if necessary, for additional buoyancy
- Pull vessel astern using roller bags if possible or necessary and into deeper water
- Hold in position with tug(s), and/or anchor moorings for final towage preparations
- Towage to agreed disposal location
- Tug assistance may be required but considering the vessels lightship draughts and the high tide water depths then it is considered possible to re-float at high tide once the vessel has been de-watered.
- In order to prevent uncontrolled re-floating of the vessel the plan for the pollutant removal and de-watering should also include the plan for moving the vessel to a safe location as these operations will need to be coordinated.

Typical Salvage Resources

Typical resources for re-afloat will include but not be limited to:

Floating assets:

- Zodiacs
- Workboat
- Tug(s) 20t bollard pull (approximately)
- Tank barge or barge with tanktainers
- Dive support

Personnel:

- Salvage team – say 10 including divers
- OSR team
- Shore support personnel

Main Equipment:

- Safe access equipment
- Pumps, hoses, couplings, power packs
- Generators, compressors, etc
- Lifting tackle and rigging
- Damage control materials
- Airbags, roller bags
- Welding/burning gear and consumables
- Dive spread with consumables
- Oil spill response equipment including but not limited to absorbents, booms and containers.

Towing Arrangements & Preparations

Should the vessel be re-floated, an agreed place of disposal would have to be designated and towage plans prepared and implemented accordingly.

As a minimum, the following items would require attention for towage:

- i) The vessel would require repairs / patching for water ingress locations, and any other damages found, and all hull penetrations not sealed for the re-floating should be sealed for towage
- ii) All side shell penetrations should be sealed
- iii) The propeller to be locked in position preventing rotation
- iv) All compartments and tanks would require pumping to remove any residual flood water and pollutants not already removed for the re-float operations
- v) An assessment of the potential lack of watertight subdivision between the engine room and fish hold to confirm the bulkhead is intact or restore compartmentalisation
- vi) Loose items on and below decks will require removal or securing for sea
- vii) Installation of main and emergency towing gear – a single tow chain lead would be best given the vessel's breadth connected a towing bracket of adequate strength

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- viii) Towline recovery arrangements and emergency back-up towline with floating line and recovery buoy
- ix) Submersible pumps should be in the major compartments and rigged ready for use. If electrically powered, then a suitably sized generator should be provided, and the pumps connected. Portable gas salvage pumps may also be rigged to the deck with adequate lengths of hose to reach compartments of concern.
- x) Safe access to allow easy boarding from a work boat should be established on both sides of the vessel
- xi) Paint marks or similar should be placed on the hull just above the waterline forward so that any change in draft can be readily seen from the tug during the tow
- xii) A tug with a minimum bollard pull of around 20mt to undertake the towage with adequate manning to enable crew to board the towed vessel in times of need
- xiii) A proper towage plan for the voyage accompanied by certificates for the tug and all towing equipment
- xiv) Towage arrangements should, as far as is feasible, comply with the requirements of DNVGL ST N001

Towage Cost Estimates

Towage preparations and equipment are estimated to cost between CAD \$10,000-\$15,000 including preparation of tow plan, towing arrangements & equipment, patching and sealing, removal or securing of loose equipment.

For estimating purposes, a tow duration of 3 days has been assumed. A suitable tug will cost in the order of CAD \$15,000 – \$18,000/day. Towage costs are therefore estimated to be CAD \$45,000 - \$54,000 and total towage costs including preparation and tugs, between CAD \$55,000 and CAD \$69,000.

Disposal Costs – Recycling at an Established Facility

The cost associated with vessel breaking and recycling has been estimated to be, CAD \$1,300 - \$1,800/mt. The cost associated with removing friable asbestos is considered on a case by case basis and has not been included within this estimate. With an assumed lightweight of 405mt, the estimated

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cost of break up and recycling is in the order of CAD \$526,500 - \$729,000 not allowing for any hazardous materials and contingencies.

Cost Estimate

A preliminary cost estimate is provided below:

- i) Salvage spread including personnel, divers, diving spread, equipment – CAD \$18,000 – \$20,000/day
- ii) Floating assets – average CAD \$7,000/day
- iii) 3rd party costs including tanktainers, shore transport – average CAD \$1,000/day
- iv) Towing costs \$45k - \$45k
- v) Dismantling costs at remote facility \$526k – \$729k

Total estimate assuming mob/demob, 14 days salvage, towing preparations, towing to dismantling facility **\$1,134,400 – \$1,424,300**

Re-Float, Tow and Dismantle

Category	Units	Unit price		Total price	
		Lower	Upper	Lower	Upper
Pollutants, litres	254,000	\$0.35	\$0.45	\$88,900.00	\$114,300.00
Mob / Demob	1	\$100,000.00	\$120,000.00	\$100,000.00	\$120,000.00
Salvage	14	\$26,000.00	\$28,000.00	\$364,000.00	\$392,000.00
Vessel preparation	1	\$10,000.00	\$15,000.00	\$10,000.00	\$15,000.00
Vessel tow, days	3	\$15,000.00	\$18,000.00	\$45,000.00	\$54,000.00
Vessel recycling, MT	405	\$1,300.00	\$1,800.00	\$526,500.00	\$729,000.00
			Total	\$1,134,400.00	\$1,424,300.00

Table 1 Price Estimate Re-Float, Wet Tow and Dismantle

4.2 OPTION 2 – RE-FLOAT, DRY TOW & DISMANTLING

This option considers similar activities as to option one but instead of a wet tow the use of a submersible barge is considered to transport the vessel to the disposal site.

In this scenario the following activities would need to be considered:

- Vessel refloat and temporary repair to perform float-over operation onto the submersible barge. This would be similar to option 1.
- Towing of submersible barge to location
- Float-on operation of the HYDRA MARINER
- Engineering support for design and fabrication seafastening of the HV HYDRA MARINER on the barge
- Float-off at disposal site and / or local tow to disposal site once in the proximity.

Cost Estimate

A preliminary cost estimate is provided below:

- i) Salvage spread including personnel, divers, diving spread, equipment – CAD \$18,000 – \$20,000/day
- ii) Floating assets – average CAD \$7,000/day
- iii) Submersible barge charter (engineering, mob and demob) - \$250k - \$400k
- iv) 3rd party costs including tanktainers, shore transport – average CAD \$1,000/day
- v) Towing costs \$60k- \$72k
- vi) Dismantling costs at remote facility \$526k – \$729k

Total estimate assuming mob/demob, 14 days salvage, towing preparations, towing and dismantling
\$1,399,400.00 – \$1,842,300.00

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Re-Float, Dry Tow and Dismantle

Category	Units	Unit price		Total price	
		Lower	Upper	Lower	Upper
Pollutants, litres	254,000	\$0.35	\$0.45	\$88,900.00	\$114,300.00
Mob / Demob	1	\$100,000.00	\$120,000.00	\$100,000.00	\$120,000.00
Salvage	14	\$26,000.00	\$28,000.00	\$364,000.00	\$392,000.00
Submersible barge (engineering, mob/demob)	1	\$250,000.00	\$400,000.00	\$250,000.00	\$400,000.00
Vessel preparation	1	\$10,000.00	\$15,000.00	\$10,000.00	\$15,000.00
Vessel tow, days	4	\$15,000.00	\$18,000.00	\$60,000.00	\$72,000.00
Vessel recycling, MT	405	\$1,300.00	\$1,800.00	\$526,500.00	\$729,000.00
		Total		\$1,399,400.00	\$1,842,300.00

Table 2 Price Estimate Re-Float, Wet Tow and Dismantle

4.3 OPTION 3 – DISMANTLING IN SITU – WET

If it transpires the vessel cannot be re-floated, dismantling in situ, either partially or in total, will be the only other feasible removal option. A partial dismantling assumes that the bridge/accommodation superstructure is removed and other deck fittings such that the hull to the main deck might be re-floated. However, for the purpose of this exercise, it is assumed that the whole wreck is dismantled and transported to a re-cycling facility either by barge or road transport.

Dismantling Plan

For ease and safety for work, efforts should be made to reduce the port list to a minimum. A dismantling plan will then have to be developed along the following lines:

- i) Develop job specific pollution and OSR plan, waste/hazardous waste management plan and HSE Plan for operations
- ii) Apply for and obtain any necessary permits
- iii) Identify and mobilise assets for dismantling, a) on water and b) ashore.
- iv) Develop dismantling sequence plan taking into account vessel stability at all stages of the operation.
- v) Pump out any and all accessible pollutants – oils, oily water.

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- vi) Dismantle in pre-determined sequence working from bridge deck down to main deck and then within hull per sequence and finally hull under waterline.
- vii) Scrap and transfer to flat top barge and/or ashore to waiting trucks.
- viii) Transport to disposal facility.

Typical Resources

It is envisaged that resources for dismantling will include:

Personnel:

- 10 scrappers/riggers
- 2 crane operators
- 4 divers at final stage
- Barge and shore crew
- Supervision
- OSR and HSE

Main Equipment:

- Safe access facilities
- Cutting/burning/welding tools
- Generators/compressors
- Pumps, hoses and fittings
- Rigging for lifting/pulling
- Crane facilities on vessel and barge/shore
- Consumables – gas bottles/etc.
- Asbestos containers

Floating Assets:

- Flat top barge properly prepared to receive scrap
- Support tug for barge
- Work boat(s)
- Zodiacs

Shore Assets:

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- Pre-prepared landing base for scrap
- Designated location for stick crane
- Truck transport
- Shore base camp – trailer/caravan set up
- Asbestos decontamination site

Estimated Costs

Costs are not easy to estimate due to the location of the vessel and associated logistics. Moreover, much will depend on whether facilities can be constructed to allow for a shore base to receive the scrap or barge or combination of both. However, it seems reasonable to assume an average rate for the dismantling spread of CAD \$2,100 - \$2,700/ per lightweight ton.

On the above basis, it is estimated to cost between **CAD \$1,039,400 and CAD \$1,327,800.**

Dismantling In-Situ - Wet					
		Unit price		Total price	
Category	Units	Lower	Upper	Lower	Upper
Pollutants, litres	254,000	\$0.35	\$0.45	\$88,900.00	\$114,300.00
Mob / Demob	1	\$100,000.00	\$120,000.00	\$100,000.00	\$120,000.00
Vessel recycling, MT	405	\$2,100.00	\$2,700.00	\$850,500.00	\$1,093,500.00
Total				\$1,039,400.00	\$1,327,800.00

Table 3 Price Estimate Dismantling In-Situ – Wet

5.0 SUMMARY OF COST ESTIMATES

The table below provides a summary of the price for each option.

Estimated Price Summary

Option	Description	Estimated price	
		Lower	Upper
1	Re-Float, Wet Tow and Dismantle	\$1,134,400.00	\$1,424,300.00
2	Re-Float, Dry Tow and Dismantle	\$1,399,400.00	\$1,842,300.00
3	Dismantling In-Situ - Wet	\$1,039,400.00	\$1,327,800.00

Table 4 Price Estimate Summary

6.0 CONCLUSIONS AND RECOMMENDATIONS

The vessel was found aground on the east coast of 'Navy Island', (in the Bedford Basin) on a gravel sea bed / beach and exposed to tidal currents.

The vessel is currently stable but the overall condition will likely deteriorate rapidly if remedial action is not taken.

The engine-room, the under decks accommodation spaces and hold were found flooded. Estimated to have a volume of 254,000 litres of oil contaminated water

The original source of the water ingress has not been established. There was visible egress of water on the port bow section. It is reported that water in the flooded compartments is now tidal.

A bathymetry survey may well be prudent to identify safe location for a marine spread required for the pumping and removal operation as well as identifying the best exit route for the vessel if re-floated.

The feasibility of re-floating cannot be determined with any confidence until it can be established if water ingress in the various compartments flooded can be controlled with pumps. Additional buoyancy might have to be provided by way of air bags. If found feasible, re-floating ought to be possible within a month. It would be useful to conduct pumping tests onboard at the earliest opportunity.

Towage of the vessel if re-floated ought to be feasible provided the hull has adequate thickness and can be patched up adequately to undertake a short tow passage to the place of disposal. With this option, there is an inherent risk that notable time and resources may be exhausted only to determine re-floating and/or towage is not feasible.

If the wreck were dismantled in situ, the scrap can be transported by barge or road to the recycling/disposal facility. With respect to the dismantling in situ, there are challenges posed by the location of the wreck, in particular the surrounding geography and water depth.

Care should be taken to avoid pollution through all these stages of the removal operation with a properly considered and developed pollution prevention plan in conjunction with the CCG.

HYDRA MARINER DISPOSAL ASSESSMENT

This report is based on surveys undertaken and / or documents reviewed and is prepared in good faith and without prejudice to any or all parties concerned.

For and on Behalf of
ABL GROUP (Canada), Ltd

A handwritten signature in blue ink, appearing to read 'E. Browell', written in a cursive style.

Ewan Browell
Naval Architect

APPENDIX A: ABL_CA-M10-0043_R001 IHM HYDRA MARINER

IHM MV HYDRA MARINER



AqualisBraemar LOC (Canada) Ltd
1000 Windmill Road, Suite 26 Dartmouth
NS, Canada B3B 1L7

T (+1) 902 407 3220

To:	Ewan Browell	Client:	CCG
From:	F. Schouffoer	Date:	2 November 2021
Project / Att. No:	CA-M10-0043		
Project:	MV HYDRA MARINER		
Job:	Inventory of Hazardous Materials (IHM) and Pollutants		
Location:	Navy Island, Bedford Basin, Dartmouth, Nova Scotia, Canada		

Parties Involved:

Name	Role	Company
F. Schouffoer	Marine surveyor Ship recycling – Hazmat expert	ABL

Purpose of attendance

Inventory of Hazardous Materials onboard of the MV HYDRA MARINER IMO 5410573 grounded on Navy Island, Bedford Basin, Dartmouth, Nova Scotia.

Onboard collection of necessary information. Onboard assessment of the collected information.

Onboard preparation of Visual / Sampling check plan collecting samples for testing of potential containing hazardous materials for which no documentation is available.

Hazardous Materials

- Asbestos containing materials (ACM)
- Polychlorinated Biphenyls (PCB)
- Ozon depleting substances (ODS)
- Organotin Compounds
- Heavy Metals - Lead
- Persistent organic pollutants
- Radioactive materials

Attendance summary

Undersigned attended the vessel on 15 October 2021 at 0900 to investigate the possible hazardous structural materials that might have impact on the shipbreaking. A visual check and a sampling were conducted in all accessible compartments. The wheelhouse – bridge deck, the upper deck accommodation and the outside main deck were accessible.

The bosun store, the (fish) hold, the engine room and sleeping bunks were not accessible as those compartments were flooded and tidal. No underwater paint samples (Organotin Compounds) were sampled as the vessel was in the water.

Observations

Observations concerning our visual check plan:

The firefighting system is containing ODS – two cylinders Halon1301, were observed, maximum containing two x 55Kg.

The refrigerating system is containing ODS – Freon R12, no pressure was observed, the amount will be minimal.

The navigation equipment radar, EPIRB, SART, gyro compass, radio equipment, the LSA – man overboard light and gally equipment: toaster, microwave oven must be considered as persistent organic pollutants.

Three lead batteries were observed, and four flood lights possibly containing mercury / cadmium compounds.

One wall mount / battery operated fire / smoke detector was noted which contains radioactive substances, Americium 241.

The brake lining on the main winch for fishing gear, anchor and break lining of the aft boat winch was observed.

Several colours of interior and exterior paint were observed, samples were taken. Insulation materials were noted in the cold store, refrigerating chambers and around the exhaust piping system, samples were taken.

The vessel's engine is a DEUTZ 1963, gaskets may contain asbestos or PCB, two samples were collected of the spare part gaskets and tested. Organic materials, plant growth was found all over the deck and bird droppings were observed on the outside areas.

The collected samples are tested by AGAT laboratories as per below table on ASBESTOS, LEAD and PCB.

Sample No.	Location – material		Test required	Comments
CA-M10-0043/wk41				
1	Hull exterior - Blue paint	Lead	ICP/MS	No Lead
2	Hull exterior - White paint	Lead	ICP/MS	No Lead
3	Hull Exterior - Gray paint	Lead	ICP/MS	No Lead
4	Hull Deck - Green paint	Lead	ICP/MS	AGAT: Containing Lead
5	Hull interior - White paint	Lead	ICP/MS	AGAT: Containing Lead
6	Wheelhouse - Floor tile (original)	ACM	MICROSCOPE	AGAT: Containing Asbestos
7	Wheelhouse - Floor tile (repair)	ACM	MICROSCOPE	No Asbestos
8	Wheelhouse - Insulation inner wall	ACM	MICROSCOPE	Friable No Asbestos
9	Engine gasket spares	ACM	MICROSCOPE	No Asbestos
10	Engine gasket spares	PCB	12031	
11	Messroom - Insulation inner wall	ACM	MICROSCOPE	Friable AGAT: Containing Asbestos
12	Cold store - Insulation freezer	ACM	MICROSCOPE	Friable AGAT: Containing Asbestos
13	Engine room – AE exhaust stack main deck	ACM	MICROSCOPE	Friable AGAT: Containing Asbestos
14	Engine room - ME exhaust stack main deck	ACM	MICROSCOPE	Friable AGAT: Containing Asbestos

The AGAT Laboratory test reports are attached to this report.

With the General Arrangement (GA) summary (Stability booklet) of the vessel, undersigned quantified the amount of asbestos containing materials as sampled.

ACM in floor tiles thickness 4mm = 0.004m.

Location	LxB (m2)	Thickness (m)	Volume m3
Bridge – wheelhouse	24.5	0.004	
Galley	14.5	0.004	
Alleys	16.10	0.004	
Crew Quarters	29.84	0.004	
Total	85	0.004	0.35m3

ACM Insulation in walls various thicknesses.

IHM MV HYDRA MARINER



AqualisBraemar LOC (Canada) Ltd
 1000 Windmill Road, Suite 26 Dartmouth
 NS, Canada B3B 1L7

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Location	LxH (m2)	Thickness (m)	Volume (m3)
Reefer	14.48	0.15	2.172
Food store rm	14.48	0.05	0.724
Galley	28.96	0.05	1.448
Alleyways	43.44	0.05	2.172
Crew Quarters	19.91	0.05	2.000
Total			8.516m3

ACM Insulation in Auxiliary and Main engine exhaust piping ($2\pi r \times L \times \text{Thickness}$).

Location	LxD (m2)	Thickness (m)	Volume (m3)
Main Engine stack	11.36	0.07	0.79
Auxiliary Engine stack	11.36	0.07	0.79
Total			1.59m3

Total volume asbestos containing materials as per samples: 10.456m3

The (minimum) calculated quantity of the tested materials containing asbestos:

Sample 6	Floors (Wheelhouse, Galley, Alleyway, Crew quarters)	confirmed:	0.35 M3
Sample 11 & 12	Walls (Reefer, Cold store rm, Galley, Alleyway, Crew quarters)	confirmed:	8.52 M3
Sample 13 & 14	Exhaust stacks (ME & AE)	confirmed:	1.60 M3

Total confirmed asbestos containing materials: 10.46M3 with a weight of approximately 1 ton

Conclusions:

As no documentation concerning the equipment components is available, and no samples could be taken in the flooded compartments (hold, bosun store, crew quarters and engine room) engine room, all electrical equipment and gaskets must be considered as Potential Containing Hazardous Materials (PCHM).

The brake lining of the main winch for fishing gear and anchor and the break lining of the aft boat winch may contain asbestos.

Summary:

Thermostats, smoke detectors, navigation / radio equipment and lifesaving equipment will require separate disposal.

Several colours of paint on the hull and super structure contained lead, existing in various layers accordingly, all paint on the vessel should be presumed to contain lead.

All the hazardous materials, and PCHM like cladding and structural materials containing asbestos must be disposed as per statutory regulations.

APPENDIX A
AGAT LABORATORY TEST RESULTS



AqualisBraemar LOC (Canada) Ltd
1000 Windmill Road, Suite 26
Dartmouth, NS Canada B3B 1L7
T (+1) 902 407 3220

CERTIFICATE OF ANALYSIS

AGAT WORK ORDER: 21X817195
PROJECT: C4-M10-0043
CLIENT NAME: MISC AGAT CLIENT NS
ATTENTION TO: Frans Schouffoer
DATE RECEIVED: Oct 18, 2021
DATE SAMPLED: Oct 15, 2021
DATE REPORTED: Oct 21, 2021

PACKAGE INFORMATION:

Work Sheet Name	Sample Type	Guideline / Standard	Package Name
X01	Other	ON OHSА - Reg. 278	Bulk Asbestos
X02	Other	ON OHSА - Reg. 278	Bulk Asbestos
X03	Paint		Lead In Paint
X04	Other		Total Polychlorinated Biphenyls in Paint

CERTIFICATE OF ANALYSIS

Bulk Asbestos							
Sample Description			CA-M10-0043 - 8	CA-M10-0043 - 9	CA-M10-0043 - 11	CA-M10-0043 - 12	
Date Sampled			10/15/2021	10/15/2021	10/15/2021	10/15/2021	
Parameter	Unit	G / S	RDL	3100358	3100359	3100361	3100362
Asbestos (Bulk)	%	0.5	0.5	ND	ND	5-15	5-15

Comments:

RDL - Reported Detection Limit; G / S - Guideline / Standard

3100358-3100359

Condition of sample was satisfactory at time of arrival in laboratory.

"ND" - Not Detected

As per Reg 278/05 and AGAT SOP, all non-detect results have been analyzed and confirmed three times.

3100361-3100362

Condition of sample was satisfactory at time of arrival in laboratory.

Asbestos present - Chrysotile

Analysis performed at AGAT Toronto (unless marked by *)

Insufficient Sample : IS

Sample Not Received : SNR

CERTIFICATE OF ANALYSIS

Bulk Asbestos

Sample Description					CA-M10-0043 - 6	CA-M10-0043 - 7	CA-M10-0043 - 13	CA-M10-0043 - 14
Date Sampled					10/15/2021	10/15/2021	10/15/2021	10/15/2021
Parameter	Unit	G / S	RDL	3100356	3100357	3100363	3100364	
Asbestos (Bulk) Phase 1	%	0.5	0.5	0.5-5	ND	5-15	5-15	
Asbestos (Bulk) Phase 2	%	0.5	0.5	ND	ND	50-75	30-50	

Comments:	RDL - Reported Detection Limit; G / S - Guideline / Standard
3100356	Condition of sample was satisfactory at time of arrival in laboratory. Asbestos present - Chrysotile "ND" - Not Detected Phase 1 - VFT Phase 2 - Mastic As per Reg 278/05 and AGAT SOP, all non-detect results have been analyzed and confirmed three times.
3100357	Condition of sample was satisfactory at time of arrival in laboratory. "ND" - Not Detected Phase 1 - VFT Phase 2 - Mastic As per Reg 278/05 and AGAT SOP, all non-detect results have been analyzed and confirmed three times.
3100363	Condition of sample was satisfactory at time of arrival in laboratory. Asbestos present - Chrysotile & Amosite Phase 1 - Insulation Amosite Phase 2 - Fibrous Material Chrysotile
3100364	Condition of sample was satisfactory at time of arrival in laboratory. Asbestos present - Chrysotile & Amosite Phase 1 - Insulation Amosite Phase 2 - Board Chrysotile

Analysis performed at AGAT Toronto (unless marked by *)

Insufficient Sample : IS

Sample Not Received : SNR

CERTIFICATE OF ANALYSIS

Lead In Paint								
Sample Description				CA-M10-0043 - 1	CA-M10-0043 - 2	CA-M10-0043 - 3	CA-M10-0043 - 4	CA-M10-0043 - 5
Date Sampled				10/15/2021	10/15/2021	10/15/2021	10/15/2021	10/15/2021
Parameter	Unit	G / S	RDL	3100343	3100352	3100353	3100354	3100355
Lead	mg/kg		15	<15	<15	<15	99	970
Total Sample Mass	g			0.5568	0.5389	0.481	0.432	0.4361

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Halifax (unless marked by *)

Insufficient Sample : IS

Sample Not Received : SNR

CERTIFICATE OF ANALYSIS

Total Polychlorinated Biphenyls in Paint

Sample Description	CA-M10-0043 - 10			
Date Sampled	10/15/2021			
Parameter	Unit	G / S	RDL	3100360
Total PCBs	mg/kg		0.5	<0.5
Decachlorobiphenyl	%			83

Comments: RDL - Reported Detection Limit: G / S - Guideline / Standard

Analysis performed at AGAT Halifax (unless marked by *)

Insufficient Sample : IS

Sample Not Received : SNR

CERTIFICATE OF ANALYSIS

Parameter	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Ref Material	Method		Matrix Spike	Matrix		Lower	Upper	
								Lower	Upper		Lower	Upper			
Lead In Paint															
Lead	3100355	3100355	970	880	9.7%	< 15	90%	70%	130%	103%	70%	130%	NA	70%	130%
Total Polychlorinated Biphenyls in Paint															
Total PCBs	1	BS DUP	< 0.5	< 0.5	NA	< 0.5	82%	60%	140%	72%	60%	140%	71%	60%	140%



CLIENT NAME: MISC AGAT CLIENT NS, NS
ATTENTION TO: Frans Schouffoer
PROJECT: C4-M10-0043
AGAT WORK ORDER: 21X817195
ASBESTOS REVIEWED BY: Ian Seddon, Analyst
SOIL ANALYSIS REVIEWED BY: Ashley Dussault, Report Writer
TRACE ORGANICS REVIEWED BY: Amy Hunter, Trace Organics Supervisor, B.Sc.
DATE REPORTED: Oct 21, 2021
PAGES (INCLUDING COVER): 10
VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

*Notes

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.

Certificate of Analysis

AGAT WORK ORDER: 21X817195

PROJECT: C4-M10-0043

 11 Morris Drive, Unit 122
 Dartmouth, Nova Scotia
 CANADA B3B 1M2
 TEL (902)468-8718
 FAX (902)468-8924
<http://www.agatlabs.com>

CLIENT NAME: MISC AGAT CLIENT NS

ATTENTION TO: Frans Schouffoer

SAMPLING SITE:

SAMPLED BY:

Bulk Asbestos

DATE RECEIVED: 2021-10-18

DATE REPORTED: 2021-10-21

Parameter	Unit	SAMPLE DESCRIPTION: CA-M10-0043 - 8		CA-M10-0043 - 9		CA-M10-0043 - 11	CA-M10-0043 - 12
		G / S	RDL	G / S	RDL	Other	Other
Asbestos (Bulk)	%	0.5	0.5	ND	ND	5-15	5-15

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON OHSA - Reg. 278
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

3100358-3100359 Condition of sample was satisfactory at time of arrival in laboratory.

"ND" - Not Detected


As per Reg 278/05 and AGAT SOP, all non-detect results have been analyzed and confirmed three times.

3100361-3100362 Condition of sample was satisfactory at time of arrival in laboratory.

Asbestos present - Chrysotile

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 21X817195

PROJECT: C4-M10-0043

11 Morris Drive, Unit 122
 Dartmouth, Nova Scotia
 CANADA B3B 1M2
 TEL (902)468-8718
 FAX (902)468-8924
<http://www.agatlabs.com>

CLIENT NAME: MISC AGAT CLIENT NS

ATTENTION TO: Frans Schouffoer

SAMPLING SITE:

SAMPLED BY:

Bulk Asbestos

DATE RECEIVED: 2021-10-18

DATE REPORTED: 2021-10-21

Parameter	Unit	SAMPLE DESCRIPTION: CA-M10-0043 - 6 CA-M10-0043 - 7					
		G / S	RDL	CA-M10-0043 - 13		CA-M10-0043 - 14	
				Tile		Other	
				DATE SAMPLED:	DATE SAMPLED:	DATE SAMPLED:	DATE SAMPLED:
Asbestos (Bulk) Phase 1	%	0.5	0.5	0.5-5	ND	5-15	5-15
Asbestos (Bulk) Phase 2	%	0.5	0.5	ND	ND	50-75	30-50

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to ON OHSA - Reg. 278
 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

3100356 Condition of sample was satisfactory at time of arrival in laboratory.

Asbestos present - Chrysotile
 "ND" - Not Detected
 Phase 1 - VFT Phase 2 - Mastic

As per Reg 278/05 and AGAT SOP, all non-detect results have been analyzed and confirmed three times.

3100357 Condition of sample was satisfactory at time of arrival in laboratory.

"ND" - Not Detected
 Phase 1 - VFT Phase 2 - Mastic

As per Reg 278/05 and AGAT SOP, all non-detect results have been analyzed and confirmed three times.

3100363 Condition of sample was satisfactory at time of arrival in laboratory.

Asbestos present - Chrysotile & Amosite
 Phase 1 - Insulation Amosite Phase 2 - Fibrous Material Chrysotile

3100364 Condition of sample was satisfactory at time of arrival in laboratory.

Asbestos present - Chrysotile & Amosite
 Phase 1 - Insulation Amosite Phase 2 - Board Chrysotile

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 21X817195

PROJECT: C4-M10-0043

11 Morris Drive, Unit 122
 Dartmouth, Nova Scotia
 CANADA B3B 1M2
 TEL (902)468-8718
 FAX (902)468-8924
<http://www.agatlabs.com>

CLIENT NAME: MISC AGAT CLIENT NS

ATTENTION TO: Frans Schouffoer

SAMPLING SITE:

SAMPLED BY:

Lead In Paint

DATE RECEIVED: 2021-10-18

DATE REPORTED: 2021-10-21

SAMPLE DESCRIPTION: CA-M10-0043 - 1 CA-M10-0043 - 2 CA-M10-0043 - 3 CA-M10-0043 - 4 CA-M10-0043 - 5

Parameter	Unit	G / S	RDL	SAMPLE TYPE:	Paint	Paint	Paint	Paint	Paint
				DATE SAMPLED:	2021-10-15 14:00	2021-10-15 14:00	2021-10-15 14:00	2021-10-15 14:00	2021-10-15 14:00
					3100343	3100352	3100353	3100354	3100355
Lead	mg/kg		15		<15	<15	<15	99	970
Total Sample Mass	g				0.5568	0.5389	0.481	0.432	0.4361

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Halifax (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 21X817195

PROJECT: C4-M10-0043

11 Morris Drive, Unit 122
 Dartmouth, Nova Scotia
 CANADA B3B 1M2
 TEL (902)468-8718
 FAX (902)468-8924
<http://www.agatlabs.com>

CLIENT NAME: MISC AGAT CLIENT NS

ATTENTION TO: Frans Schouffoer

SAMPLING SITE:

SAMPLED BY:

Total Polychlorinated Biphenyls in Paint

DATE RECEIVED: 2021-10-18

DATE REPORTED: 2021-10-21

CA-M10-0043 -

SAMPLE DESCRIPTION: 10

SAMPLE TYPE: Other

DATE SAMPLED: 2021-10-15
14:00

3100360

Parameter	Unit	G / S	RDL	3100360
Total PCBs	mg/kg		0.5	<0.5
Surrogate	Unit	Acceptable Limits		
Decachlorobiphenyl	%	60-140		83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
 Analysis performed at AGAT Halifax (unless marked by *)

Certified By:

Quality Assurance

CLIENT NAME: MISC AGAT CLIENT NS
PROJECT: C4-M10-0043
SAMPLING SITE:

AGAT WORK ORDER: 21X817195
ATTENTION TO: Frans Schouffoer
SAMPLED BY:

Soil Analysis															
RPT Date: Oct 21, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Lead In Paint

Lead	3100355	3100355	970	880	9.7%	< 15	90%	70%	130%	103%	70%	130%	NA	70%	130%
------	---------	---------	-----	-----	------	------	-----	-----	------	------	-----	------	----	-----	------

Certified By: 

Quality Assurance

CLIENT NAME: MISC AGAT CLIENT NS
PROJECT: C4-M10-0043
SAMPLING SITE:

AGAT WORK ORDER: 21X817195
ATTENTION TO: Frans Schouffoer
SAMPLED BY:

Trace Organics Analysis																
RPT Date: Oct 21, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

Total Polychlorinated Biphenyls in Paint

Total PCBs	1	BS DUP	< 0.5	< 0.5	NA	< 0.5	82%	60%	140%	72%	60%	140%	71%	60%	140%
------------	---	--------	-------	-------	----	-------	-----	-----	------	-----	-----	------	-----	-----	------

Comments: If Matrix spike value is NA, the spiked analyte concentration was lower than that of the matrix contribution.
 If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.

Certified By: _____





Method Summary

CLIENT NAME: MISC AGAT CLIENT NS

PROJECT: C4-M10-0043

SAMPLING SITE:

AGAT WORK ORDER: 21X817195

ATTENTION TO: Frans Schouffoer

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Asbestos (Bulk)	INOR-249-6010	modified from EPA 600/R-93/116 & NIOSH 9002	PLM
Asbestos (Bulk) Phase 1	INOR-249-6010	modified from EPA 600/R-93/116 & NIOSH 9002	PLM
Asbestos (Bulk) Phase 2	INOR-249-6010	modified from EPA 600/R-93/116 & NIOSH 9002	PLM
Soil Analysis			
Lead	MET-121-6105 & MET-121-6103	EPA SW 846 6020A/3050B, SM3125, AOAC 974.02	ICP/MS
Total Sample Mass			
Trace Organics Analysis			
Total PCBs	ORG-120-5107	EPA SW-846 8082	GC/ECD
Decachlorobiphenyl	ORG-120-5106	EAP SW846 3510C/8080/8010	GC/ECD



AGAT Laboratories

Unit 122 • 11 Morris Drive
Dartmouth, NS
B3B 1M2

webearth.agatlabs.com • www.agatlabs.com

Laboratory Use Only

Arrival Condition: Good Poor (see notes)
Arrival Temperature: 22.0, 21.7, 22.8
Hold Time: _____
AGAT Job Number: 21X817195

Notes: 21OCT18 1:21

Chain of Custody Record

P: 902.468.8718 • F: 902.468.8924

Report Information

Company: ABL
Contact: F. SCHOUFFER
Address: 1000 WINDMILL ROAD 26
NS B3B 1L7
Phone: 902 (416) 3974 Fax: _____
Client Project #: CA-M10-0043
AGAT Quotation: _____
Please Note: If quotation number is not provided client will be billed full price for analysis.

Report Information (Please print):

1. Name: F. SCHOUFFER
Email: FRAUS.SCHOUFFER@ABL-Group.ca
2. Name: _____
Email: _____

Report Format

Single Sample per page
 Multiple Samples per page
 Excel Format Included
 Export

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days
Rush TAT Same day 1 day
 2 days 3 days

Date Required: _____

Invoice To

Same Yes No

Company: _____
Contact: _____
Address: _____
Phone: _____ Fax: _____
PO/Credit Card#: _____

Regulatory Requirements (Check):

List Guidelines on Report Do not list Guidelines on Report
 PIRI
 Tier 1 Res Pot Coarse
 Tier 2 Com N/Pot Fine
 Gas Fuel Lube
 CCME CDWQ
 Industrial NSEQS-Cont Sites
 Commercial HRM 101
 Res/Park Storm Water
 Agricultural Waste Water
 FWAL
 Sediment Other _____

Drinking Water Sample: Yes No Salt Water Sample Yes No
Reg. No.: _____

Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample Info. Sample Containment	Field Filtered/Preserved	Standard Water Analysis	Metals: <input type="checkbox"/> Total <input type="checkbox"/> Diss <input type="checkbox"/> Available	Mercury	<input type="checkbox"/> BOD <input type="checkbox"/> CBOD	pH	<input type="checkbox"/> TSS <input type="checkbox"/> TDS <input type="checkbox"/> VSS	TKN	Total Phosphorus	Phenols	Tier 1: TPH/BTEX (PIR) <input type="checkbox"/> low level	Tier 2: TPH/BTEX Fractionation	CCME-CWS TPH/BTEX	VOC	THM	HAA	PAH	PCB	TC + EC <input type="checkbox"/> P/A <input type="checkbox"/> MPN <input type="checkbox"/> MF	HPC <input type="checkbox"/> Pseudomonas	Fecal Coliform <input type="checkbox"/> MPN <input type="checkbox"/> MF	Other: <u>LEAD</u>	Other: <u>ASBESTOS</u>	Hazardous (Y/N)	
<u>CA-M10-0043/1</u>	<u>15/OCT/21 14:00</u>	<u>PAINT</u>																											
<u>2</u>	<u>"</u>	<u>PAINT</u>																											
<u>3</u>	<u>"</u>	<u>"</u>																											
<u>4</u>	<u>"</u>	<u>"</u>																											
<u>5</u>	<u>"</u>	<u>PAINT</u>																											
<u>6</u>	<u>"</u>	<u>tile</u>																											
<u>7</u>	<u>"</u>	<u>tile</u>																											
<u>8</u>	<u>"</u>	<u>insulation</u>																											
<u>9</u>	<u>"</u>	<u>rubber</u>																											
<u>10</u>	<u>"</u>	<u>rubber</u>																											
<u>11</u>	<u>"</u>	<u>insulation</u>																											
<u>12</u>	<u>"</u>	<u>insulation</u>																											

Samples Relinquished By (Print Name): FRAUS SCHOUFFER
Samples Relinquished By (Sign): [Signature]

Date/Time: 15-OCT-2021 13:15
Date/Time: 15 OCT 2021 13:15

Samples Received By (Print Name): _____
Date/Time: _____
Samples Received By (Sign): [Signature]
Date/Time: _____

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page of
Nº: **71153**



AGAT Laboratories

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Dartmouth, NS
B3B 1M2

webearth.agatlabs.com • www.agatlabs.com

P: 902.468.8718 • F: 902.468.8924

Laboratory Use Only

Arrival Condition: Good Poor (see notes)

Arrival Temperature: _____

Hold Time: _____

AGAT Job Number: 21X817195

Notes:

Chain of Custody Record

Report Information

Company: _____

Contact: _____

Address: _____

Phone: _____ Fax: _____

Client Project #: _____

AGAT Quotation: _____

Please Note: If quotation number is not provided client will be billed full price for analysis.

Report Information (Please print):

1. Name: _____

Email: _____

2. Name: _____

Email: _____

Report Format

Single Sample per page

Multiple Samples per page

Excel Format Included

Export

Regulatory Requirements (Check):

List Guidelines on Report Do not list Guidelines on Report

PIRI

Tier 1 Res Pot Coarse

Tier 2 Com N/Pot Fine

Gas Fuel Lube

CCME CDWQ

Industrial NSEQS-Cont Sites

Commercial HRM 101

Res/Park Storm Water

Agricultural Waste Water

FWAL

Sediment Other _____

Invoice To

Same Yes / No

Company: _____

Contact: _____

Address: _____

Phone: _____ Fax: _____

PO/Credit Card#: _____

Drinking Water Sample: Yes No

Salt Water Sample Yes No

Reg. No.: _____

Sample Identification	Date/Time Sampled	Sample Matrix	# Containers	Comments - Site/Sample Info. Sample Containment	Field Filtered/Preserved	Standard Water Analysis	Metals: <input type="checkbox"/> Total <input type="checkbox"/> Diss <input type="checkbox"/> Available	Mercury	<input type="checkbox"/> BOD <input type="checkbox"/> CBOD	pH	<input type="checkbox"/> TSS <input type="checkbox"/> TDS <input type="checkbox"/> VSS	TKN	Total Phosphorus	Phenols	Tier 1: TPH/BTEX (PIRI) <input type="checkbox"/> low level	Tier 2: TPH/BTEX Fractionation	CCME-CWS TPH/BTEX	VOC	THM	HAA	PAH	PCB	TC + EC <input type="checkbox"/> P/A <input type="checkbox"/> MPN <input type="checkbox"/> MF	<input type="checkbox"/> HPC <input type="checkbox"/> Pseudomonas	Fecal Coliform <input type="checkbox"/> MPN <input type="checkbox"/> MF	Other:	Other: <u>MSB/MSD/MSJ</u>	Hazardous (Y/N)
CA-1110-0043/13	15-027-21 1400	water																										
- " - 14	- " -	1 W/analyte																										

Samples Relinquished By (Print Name):	Date/Time	Samples Received By (Print Name):	Date/Time	Pink Copy - Client	Page <input type="text"/> of <input type="text"/>
Samples Relinquished By (Sign):	Date/Time	Samples Received By (Sign):	Date/Time	Yellow Copy - AGAT	N ^o : 71154
				White Copy - AGAT	

APPENDIX B – PHOTOGRPAHS

IHM MV HYDRA MARINER



1. Growth on deck.



2. Lead batteries on wheelhouse deck.



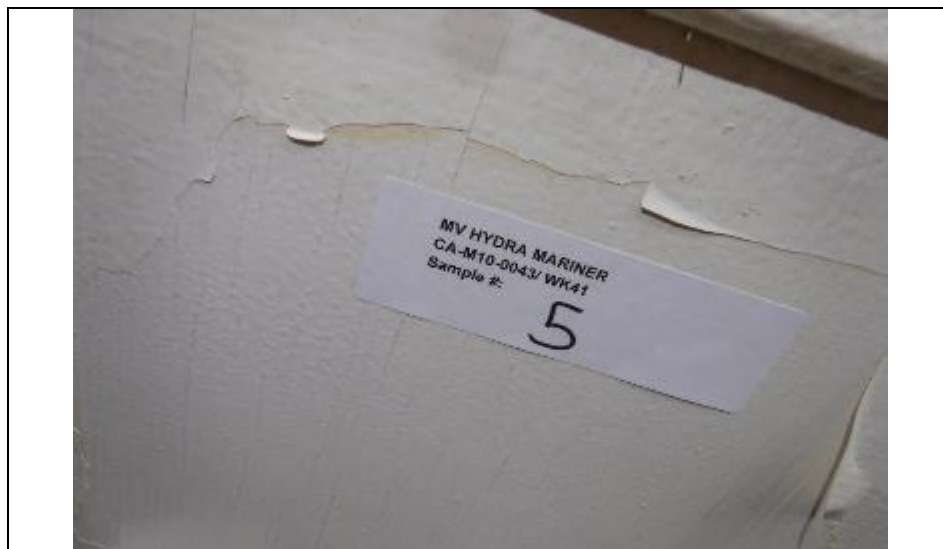
3. Lithium Batteries in EPIRB and SARTS in wheelhouse.



4. Halon Gas.



5. Sample 4 - green paint containing lead.



6. Sample 5 - interior paint containing lead.



7. R12 ozone depleting gas.



8. Fire detector – radioactive Americanum 241.



9. Floor tiles in wheelhouse and accommodation containing asbestos.



10. Insulation behind cladding in messroom area containing asbestos.



11. Cold store insulation – containing asbestos.



12. Exhaust gas pipe insulation Main & Auxiliary engines. Samples 13 & 14 asbestos containing.



13. CO2, water and dry chemical fire extinguishers noted.

APPENDIX B: SELECTED PHOTOGRAPHS



1. Growth on deck



2. Port fed hull section – breach



3. Port fed hull section – breach



4. Port view on hull looking aft



5. Bow looking aft



6. Fed area of deck

