Site Name: Sandy Lake South
Site Code: HRM_21_21
Date of Field Assessment: 07/29/2021
Assessors: Emma Bocking & Alex Setchell
PIDs: 40098139
GPS Coordinates: 44.7277587, -63.6977585
Wetland Type: Marsh
Size: 1.7 ha
Landowner: Maritime Conference of the Seventh-Day Adventist Church Inc.

Site Context: This marsh and lacustrine fen complex occupies the southeastern lobe of Sandy Lake Regional Park. It is on land owned by the Maritime Conference of the Seventh-Day Adventist Church, which operates the nearby Sandy Lake Academy. The wetland is fed by a stream that collects stormwater from Hammonds Plains Road.

Site Summary: This wetland is a lacustrine (lakeside) fen that transitions into a marsh, with floating-leaved aquatic and emergent plants, at the edge of Sandy Lake. Assessors note that on the day of field assessment, electro-conductivity (EC) measurements (taken once with a handheld device) picked up a lower EC measurement where the water exits the fen and enters the marsh, compared to where the inflow stream enters the wetland. This suggests that the wetland vegetation and soil is potentially removing some contaminants from the stormwater inflow, before it enters Sandy Lake. More research is needed to make any further comments.

Function/ Benefit	Rating	Description
Top Functions		
Waterbird Feeding Habitat	Higher	This wetland has habitat features that support a diversity and abundance of feeding waterbird species, such as ducks and shorebirds, particularly as a stopover site during migration or for overwintering. Such habitat features include nearby ponds or lakes, food and nutrient availability, a flat surface, ponded water and plenty of emergent vegetation cover. There are likely minimal stressors that are harmful for waterbirds, including high concentrations of metals and other contaminants.
Resident Fish Habitat	Higher	This wetland has habitat features that support a diversity and abundance of native resident fish. Such habitat features could include connectivity with the surrounding waterscape, high nutrient and oxygen availability, suitable vegetation cover and shade, and few known stressors such as toxic contaminants.
Waterbird Nesting Habitat	Higher	This wetland has habitat features that support a diversity and abundance of nesting waterbird species, such as ducks, shorebirds, seabirds or herons. Such habitat features could include surface water, intermediate aquatic plant cover, mild water level fluctuation, tree snags and a wide vegetated buffer.
Top Benefits		
Water Storage & Delay	High	This wetland is in an area where people and infrastructure are at risk from non-tidal flooding. Wetlands in these areas with high benefit scores provide the ecosystem service of flood regulation.
Phosphorous Retention	Higher	A high benefit score indicates that there may be sources of nutrient contamination up- or downstream of the wetland. Alternatively, there may be opportunity for P to enter the wetland quickly through suspended solids, indicated by high amounts of impervious surfaces, less natural cover, steep slopes and signs of erosion.
Sediment Retention & Stabilization	Higher	This function is highly beneficial if water quality data indicates contamination within 1 km upstream of the wetland. It is also beneficial in catchments where water enters the wetland quickly, indicated by high amounts of impervious surfaces, less natural cover, steep slopes and signs of erosion.


HRM_21_21
Sandy Lake wetland
Sandy Lake
Legend
Assessment Area
Assessment Point
Wetland
HRM_21_21
Google Earth
300 m
N

Site Name: Johnson's Brook

Site Code: HRM_21_19

Date of Field Assessment: 07/29/2021

Assessors: Emma Bocking & Alex Setchell

PIDs: 00422857, 3063063

GPS Coordinates: 44.7327117, -63.7211348

Wetland Type: Swamp

Size: 0.3 ha

Landowner: Nova Scotia Limited

Site Context: This wetland is a riparian section of Johnson's Brook, located next to Sandy Lake Regional Park off of a walking trail/Halifax Water access road. This small wetland is likely flooded seasonally. There is evidence of an old beaver dam just downstream, which likely enlarged this wetland at time of creation.

Site Summary: This small wetland is a good example of a beaver meadow—a wetland created through beaver activity on a watercourse, that temporarily or permanently stopped the flow of water and allowed for localized flooding. In this case, the wetland was not flooded on the date of field assessment, but some wetland facultative plants indicate occasional flooding. This wetland provides high quality habitat for resident fish populations—some of which were seen during field assessment. Overhanging trees and other vegetation provides good shade for fish, and a source of organic matter, food and nutrients.

Function/ Benefit	Rating	Description
Top Functions		
Waterbird Feeding Habitat	Higher	This wetland has habitat features that support a diversity and abundance of feeding waterbird species, such as ducks and shorebirds, particularly as a stopover site during migration or for overwintering. Such habitat features include nearby ponds or lakes, food and nutrient availability, a flat surface, ponded water and plenty of emergent vegetation cover. There are likely minimal stressors that are harmful for waterbirds, including high concentrations of metals and other contaminants.
Resident Fish Habitat	Higher	This wetland has habitat features that support a diversity and abundance of native resident fish. Such habitat features could include connectivity with the surrounding waterscape, high nutrient and oxygen availability, suitable vegetation cover and shade, and few known stressors such as toxic contaminants.
Pollinator Habitat	Moderate	This wetland has habitat features that support pollinating insects and birds. It is likely to contain a diversity of flowering plants, and suitable nesting habitat such as tree snags, ground cover, downed wood, large trees and/or cliffs. The wetland is not persistently flooded.
Top Benefits		
Water Storage & Delay	Higher	This wetland is in an area where people and infrastructure are at risk from non-tidal flooding. Wetlands in these areas with high benefit scores provide the ecosystem service of flood regulation.
Nitrate Removal & Retention	Higher	High concentrations of nitrate in aquatic systems can lead to toxic algal blooms that are harmful to people and wildlife. There may be domestic wells nearby, or a tributary is present that would transport soluble nitrates out of the wetland. In addition, there may be potential sources of nitrogen in the area from agriculture, urban areas or septic systems.
Amphibian & Turtle Habitat	Higher	This wetland may be known to support a regionally rare amphibian or turtle species. Additionally, it may provide herbaceous or woody cover that is lacking in the surrounding landscape, and provide habitat for birds and mammals, which are supported by healthy amphibian and turtle populations.


HRM_21_19
Johnson's Brook
Legend
Assessment Area
Assessment Point
Wetland
HRM_21_19
Murphys Pit
HRM_21_05
Google Earth
Image © 2021 Maxar Technologies
N
200 m

Site Name: Karen's Brook swamp

Site Code: HRM_21_24

Date of Field Assessment: 08/20/2021

Assessors: Emma Bocking & Alex Setchell

PIDs: 40202806

GPS Coordinates: 44.7387216, -63.7194549

Wetland Type: Fen

Size: 2.2 ha

Landowner: Sandy Lake Holdings Ltd.

Site Context: This treed fen transitions into the riparian shrub fen assessed separately last year as HRM_17 (David's Wetland). This wetland is located on privately owned land next to Sandy Lake Regional Park. It is accessible by a grown over ATV trail.

Site Summary: This treed fen with a thick cover of moss and consistent, tall coniferous tree coverage, is a fine example of a lagg—a treed wetland often found at the edge of more open, wet wetlands. This wetland scores highly in the Water Storage and Delay function. Trees are known to capture water through their roots, and the dense groundcover and porous peat soil also slow down water. In a watershed with a mapped floodplain with known flood-risk areas, this ecosystem service is highly beneficial. Evaluating both the treed and shrub fens in this complex allow us to understand how different wetland types work together to provide different and complementary ecosystem services to the watershed.

Function/ Benefit	Rating	Description
Top Functions		
Water Storage & Delay	Higher	This wetland is effective at retaining water during periods of high input, acting like a 'sponge' on the landscape. This storage function could enhance the wetland's ability to recharge local groundwater. During dry times of the year, it has the potential to release this stored water back into the watershed.
Nitrate Removal & Retention	Higher	This wetland is effective at storing particulate nitrate and converting soluble nitrate and ammonia to nitrogen gas, through the process of denitrification. High concentrations of nitrate in aquatic systems can lead to toxic algal blooms that are harmful to people and wildlife. Isolated wetlands are particularly effective at retaining nitrates.
Pollinator Habitat	Higher	This wetland has habitat features that support pollinating insects and birds. It is likely to contain a diversity of flowering plants, and suitable nesting habitat such as tree snags, ground cover, downed wood, large trees and/or cliffs. The wetland is not persistently flooded.
Top Benefits		
Water Storage & Delay	Higher	This wetland is in an area where people and infrastructure are at risk from non-tidal flooding. Wetlands in these areas with high benefit scores provide the ecosystem service of flood regulation.
Pollinator Habitat	Higher	This wetland may contain a rare plant species. Additionally, it may contain some of the only herbaceous or woody vegetation within the local area.
Songbird, Raptor & Mammal Habitat	Higher	This function is highly beneficial if water quality data indicates contamination within 1 km upstream of the wetland. It is also beneficial in catchments where water enters the wetland quickly, indicated by high amounts of impervious surfaces, less natural cover, steep slopes and signs of erosion.


HRM_21_24
David's Wetland swamp
Legend
Assessment Area
Assessment Point
Wetland
HRM_21_24
Google Earth
Image © 2021 Maxar Technologies
N
200 m

Site Name: Murphy's Pit

Site Code: HRM_21_20

Date of Field Assessment: 07/29/2021

Assessors: Emma Bocking & Alex Setchell

PIDs: 40098592

GPS Coordinates: 44.7327767, -63.7111431

Wetland Type: Marsh

Size: 0.7 ha

Landowner: Agropur Cooperative

Site Context: This wetland area is close to an area listed on maps as 'Murphy's Pit', on Johnson's Brook. It is located next to an Agropur Cooperative (Farmers) dairy plant to the west of the access road. The wetland is somewhat accessible from a steep bank beside the road. Johnson's Brook enters into Sandy Lake just downstream of this site.

Site Summary: This wetland provides high quality wildlife habitat, particularly for waterbirds, resident and anadromous fish populations, amphibians and turtles, and aquatic invertebrates. Johnson's Brook is part of the Sackville River system—water from Sandy Lake flows into the Sackville River via Marsh Lake and Peveril's Brook—which is known to support populations of four species of anadromous fish. Every wetland along the Sackville River system plays an important role in providing good fish habitat, which also includes water cooling and sediment stabilization—two other functions provided by this wetland.

Function/ Benefit	Rating	Description
Top Functions		
Waterbird Feeding Habitat	Higher	This wetland has habitat features that support a diversity and abundance of feeding waterbird species, such as ducks and shorebirds, particularly as a stopover site during migration or for overwintering. Such habitat features include nearby ponds or lakes, food and nutrient availability, a flat surface, ponded water and plenty of emergent vegetation cover. There are likely minimal stressors that are harmful for waterbirds, including high concentrations of metals and other contaminants.
Resident Fish Habitat	Higher	This wetland has habitat features that support a diversity and abundance of native resident fish. Such habitat features could include connectivity with the surrounding waterscape, high nutrient and oxygen availability, suitable vegetation cover and shade, and few known stressors such as toxic contaminants.
Waterbird Nesting Habitat	Higher	This wetland has habitat features that support a diversity and abundance of nesting waterbird species, such as ducks, shorebirds, seabirds or herons. Such habitat features could include surface water, intermediate aquatic plant cover, mild water level fluctuation, tree snags and a wide vegetated buffer.
Top Benefits		
Anadromous Fish Habitat	High	This wetland may be a fishing spot (for both people and feeding waterbirds), which increases the value of a resident fish population. It may also be easily accessible by people.
Aquatic Invertebrate Habitat	Higher	A high benefit score implies that this wetland is also great habitat for fish, waterbirds and songbirds and mammals, all of which are supported by and benefit from healthy invertebrate species.
Sediment Retention & Stabilization	Higher	This function is highly beneficial if water quality data indicates contamination within 1 km upstream of the wetland. It is also beneficial in catchments where water enters the wetland quickly, indicated by high amounts of impervious surfaces, less natural cover, steep slopes and signs of erosion.


HRM_21_20
Murphy's Pit
Legend
Assessment Area
Assessment Point
Wetland
HRM_21_20
Murphys Pit
HRM_21_05
Google Earth
Image © 2021 Maxar Technologies
N
200 m

Site Name: South of Murphy's Pit
Site Code: HRM_21_05
Date of Field Assessment: 06/23/2021
Assessor(s): Emma Bocking & Alex Setchell
PIDs: 00429266
GPS Coordinates: 44.730237, -63.713396
Wetland Type: Marsh
Size: 3 ha
Landowner(s): Agropur Cooperative

Site Context: This wetland is visible from the Halifax Water-owned trail/access road located off of Farmers Dairy Lane in Bedford. The wetland is the shrubby riparian edge on Johnson's Brook, to the south of the trail. The Brook flows out of the wetland by way of a culvert, and eventually ends up in Sandy Lake—and from there to the Sackville River.

Site Summary: This wetland functions highly as habitat for both anadromous and resident fish, amphibians and turtles, aquatic invertebrates and waterbirds. As part of the Sackville River system, it is known to sometimes support anadromous fish. Turtles have been reported in the wetland by users of the adjacent walking trail. Because the Sackville River is a mapped floodplain with known floodrisk areas, this wetland has a high Water Storage and Delay benefit score—even though it does not have a high functional ability to store water, compared to other wetlands in the area. However, in developed watersheds, every wetland is beneficial in mitigating flood damage to build infrastructure.

Function/ Benefit	Rating	Description
Top Functions		
Waterbird Nesting Habitat	Higher	This wetland has habitat features that support a diversity and abundance of nesting waterbird species, such as ducks, shorebirds, seabirds or herons. Such habitat features could include surface water, intermediate aquatic plant cover, mild water level fluctuation, tree snags and a wide vegetated buffer.
Waterbird Feeding Habitat	Higher	This wetland has habitat features that support a diversity and abundance of feeding waterbird species, such as ducks and shorebirds, particularly as a stopover site during migration or for overwintering. Such habitat features include nearby ponds or lakes, food and nutrient availability, a flat surface, ponded water and plenty of emergent vegetation cover. There are likely minimal stressors that are harmful for waterbirds, including high concentrations of metals and other contaminants.
Amphibian & Turtle Habitat	Higher	This wetland is capable of supporting an abundance and diversity of native amphibians (frogs, toads, salamanders) and turtles. Many of these species occur almost exclusively in wetlands, due to high productivity of algae and invertebrates, and the shelter provided by submerged vegetation.
Top Benefits		
Water Storage & Delay	Higher	This wetland is in an area where people and infrastructure are at risk from non-tidal flooding. Wetlands in these areas with high benefit scores provide the ecosystem service of flood regulation.
Nitrate Removal & Retention	Higher	High concentrations of nitrate in aquatic systems can lead to toxic algal blooms that are harmful to people and wildlife. There may be domestic wells nearby, or a tributary is present that would transport soluble nitrates out of the wetland. In addition, there may be potential sources of nitrogen in the area from agriculture, urban areas or septic systems.
Anadromous Fish Habitat	Higher	This wetland may be a fishing spot (for both people and feeding waterbirds), which increases the value of a resident fish population. It may also be easily accessible by people.


HRM_21_05
South of Murphy's Pit
Legend
Assessment Area
Assessment Point
Wetland
HRM_21_20
HRM_21_19
HRM_21_05
HRM_21_06
Farmers Dairy Ln
Hammonds Plains Rd
Lewis Dr
Olive Ave
Giles Dr
Bluewater Rd
213
Google Earth
©2021 Google
300 m
N

Site Name: Walter's Wetland
Site Code: HRM_21_06
Date of Field Assessment: 06/23/2021
Assessor(s): Emma Bocking & Alex Setchell
PIDs: 00417949
GPS Coordinates: 44.72745, -63.71778
Wetland Type: Marsh
Size: 5.5 ha
Landowner(s): Sandy Lake Holdings Ltd.

Site Context: Walter's Wetland is a cattail marsh located between Hammonds Plains Road and Farmers Dairy Lane in Bedford. It is (somewhat) accessible by way of a grown over patch of clear cut land. Numerous dead standing trees suggest a flooding event that caused a transition from a more treed wetland to its present condition.

Site Summary: Dense cattail cover, consistently ponded water through the summer, some areas of open water and plenty of tree snags make this wetland great habitat for both nesting and feeding waterbirds. The vegetation provides both shelter during nesting season, and food. Walter's wetland also provides high quality habitat for amphibians, turtles and resident fish populations. The wetland is benefiting the watershed by retaining nitrates and sediment, contributing to higher water quality downstream. Clearcutting in the last ten years in the adjacent upland may be contributing to wetland stress, as there is less vegetation to prevent overland run-off from entering the system.

Function/ Benefit	Rating	Description
Top Functions		
Waterbird Nesting Habitat	Higher	This wetland has habitat features that support a diversity and abundance of nesting waterbird species, such as ducks, shorebirds, seabirds or herons. Such habitat features could include surface water, intermediate aquatic plant cover, mild water level fluctuation, tree snags and a wide vegetated buffer.
Waterbird Feeding Habitat	Higher	This wetland has habitat features that support a diversity and abundance of feeding waterbird species, such as ducks and shorebirds, particularly as a stopover site during migration or for overwintering. Such habitat features include nearby ponds or lakes, food and nutrient availability, a flat surface, ponded water and plenty of emergent vegetation cover. There are likely minimal stressors that are harmful for waterbirds, including high concentrations of metals and other contaminants.
Resident Fish Habitat	Higher	This wetland has habitat features that support a diversity and abundance of native resident fish. Such habitat features could include connectivity with the surrounding waterscape, high nutrient and oxygen availability, suitable vegetation cover and shade, and few known stressors such as toxic contaminants.
Top Benefits		
Amphibian & Turtle Habitat	Higher	This wetland may be known to support a regionally rare amphibian or turtle species. Additionally, it may provide herbaceous or woody cover that is lacking in the surrounding landscape, and provide habitat for birds and mammals, which are supported by healthy amphibian and turtle populations.
Nitrate Removal & Retention	Higher	High concentrations of nitrate in aquatic systems can lead to toxic algal blooms that are harmful to people and wildlife. There may be domestic wells nearby, or a tributary is present that would transport soluble nitrates out of the wetland. In addition, there may be potential sources of nitrogen in the area from agriculture, urban areas or septic systems.
Songbird, Raptor & Mammal Habitat	Higher	This wetland may be a fishing spot (for both people and feeding waterbirds), which increases the value of a resident fish population. It may also be easily accessible by people.


HRM_21_06
Walter's Wetland
Legend
Assessment Area
Assessment Point
Wetland
HRM_21_06
Hammonds Plains Rd
213
Olive Ave
Estelle Ave
Lewis Dr
Google Earth
Image © 2021 Maxar Technologies
200 m
N