

# Memorandum



**To:** Travis Ritchie, Yukon Energy Corporation  
**From:** EDI Environmental Dynamics Inc.  
**Date:** May 26, 2022  
**Project No:** 22Y0197  
**Re:** Marsh Lake Low Water Investigations — Monitoring Event 5 Fieldwork Summary

## Monitoring Event 5

**Table 1. Monitoring event information.**

<b>Date of monitoring event</b>	May 26, 2022
<b>Field staff</b>	James McGrath and Sean Munro (EDI)
<b>Weather</b>	Overcast/partly cloudy, 8°C
<b>Marsh Lake elevation (9 am to 5 pm average)</b>	653.829 m (0.033 m above low supply level)
<b>Areas monitored</b>	Lewes Marsh area near Sawmill Road and Alaska Highway, Kettley's Canyon wetland, Yukon River connected wetland 3.7 km downstream of Marsh Lake, Marsh Lake at unnamed creek mouth, north end of Marsh Lake, Judas Creek wetland, and Tagish River at the Tagish Bridge (Map 1).
<b>Access</b>	Pickup truck, zodiac, and walking

## Methods

### Drone Imagery Collection

Drone imagery was collected at each monitoring location along pre-determined flight paths at a consistent height of 80 m using a mini drone (DJI Mavic Mini 2) by operators with a valid drone operator's certificate. Identical flight paths will be used for subsequent monitoring events to ensure consistent imagery collection. During each flight, field staff monitored the imagery for areas of interest and recorded any wildlife observations. Following the completion of all monitoring events, the recorded imagery will be reviewed to compare conditions at different water levels throughout the duration of monitoring period.



## Collection of Bird and Wildlife Observations

Bird and wildlife observations were recorded by field staff on the ground and in the air (via drone) at each monitoring location. Species and number of individuals were recorded for each observation, as well as any signs of wildlife activity (tracks, muskrat push ups, etc.).

## Fish Sampling

Fish sampling was not completed during the May 25 monitoring visit; the next fish sampling event is planned for mid-June.

## **Results**

### General Site Conditions

Conditions were similar across all monitoring locations. Pockets of open water and mudflats in the wetlands associated with creeks and groundwater seeps continue to increase in size, with snow and ice now covering less than 5% of the general area. The Yukon River open channel that extends from the outlet of Marsh Lake downstream through the Lewes Marsh is largely free of ice. Representative photos of each site are shown in Photo 1 to Photo 12 at the end of this summary.

The ice on Marsh Lake has begun to break up and is moving towards the outlet of the lake. Open water spans from the Tagish River to the Judas Creek confluence with Marsh Lake. The area of open water at the lake outlet is continuing to increase in size along with small open water patches where tributaries flow into the lake. The crew also observed sections of lake ice moving toward the north end of the lake at site ML1.

### Bird Observations

A total of 57 bird species were detected during the monitoring event (Table 2), including two Species at Risk (Olive-sided Flycatcher and Rusty Blackbird). Given the seasonal timing, the bird species observed includes primarily migrants either passing through or using the area as stopover habitat. The bird species observed included a range of waterfowl/waterbirds using open water habitats, shorebirds using exposed mudflats, and other species either flying through the area (raptors) or using the riparian and surrounding forest areas (passerines). A large decrease in the abundance of waterfowl and waterbirds within the Yukon River channel was observed during this week's survey compared to previous weeks. This decrease in abundance is expected as we have passed the primary spring migratory bird window for the Southern Lakes Ecoregion.

### Wildlife Observations

Wildlife observations were recorded at some sites during the monitoring event. A black bear was observed walking along the cliff side adjacent to site LM1 on the east side of the Alaska Highway. Three muskrats were observed in a side channel at site LM6 as well as one coyote digging in the mud in a large pool. A coyote was also seen walking along the bank between sites LM2 and LM1. Fresh moose tracks were observed at site LM2 (Kettle's Canyon wetland) and LM1 (Yukon River wetland).



Table 2. Summary of bird species observed during the May 25, 2022, monitoring event.

Species	LM1	LM2	LM3	LM6	Yukon River channel	ML1*	ML2	JC	TR
Canada Goose			✓	✓				✓	✓
Snow Goose				✓					
Greater White-fronted Goose								✓	
Trumpeter Swan			✓	✓				✓	
Tundra Swan				✓				✓	
Unidentified Swan			✓					✓	
Blue-winged Teal			✓						
Northern Shoveler		✓	✓	✓			✓	✓	
American Wigeon			✓	✓	✓			✓	✓
Mallard	✓	✓	✓	✓	✓		✓	✓	
Northern Pintail		✓	✓	✓				✓	
Green-winged Teal			✓	✓	✓			✓	
Unidentified dabbling duck					✓			✓	
Canvasback				✓				✓	
Redhead									
Ring-necked Duck				✓	✓				
Greater/Lesser Scaup			✓	✓	✓			✓	
Surf Scoter				✓					
White-winged Scoter				✓					✓
Harlequin Duck									
Bufflehead			✓	✓	✓			✓	✓
Common Goldeneye					✓			✓	✓
Barrow's Goldeneye		✓	✓				✓		
Common Merganser									
Red-breasted Merganser					✓				



Species	LM1	LM2	LM3	LM6	Yukon River channel	ML1*	ML2	JC	TR
Unidentified diving duck					✓			✓	
Common Loon								✓	✓
Horned Grebe									
Red-necked Grebe									
Least Sandpiper									
Unidentified 'peep' sandpiper				✓	✓			✓	
American Golden Plover									
Semi-palmated Plover									
Wilson's Snipe									
Spotted Sandpiper									
Solitary Sandpiper									
Lesser Yellowlegs								✓	
Ruffed Grouse					✓				
Bonaparte's Gull			✓		✓			✓	
Short-billed Gull			✓	✓	✓		✓	✓	✓
Herring Gull			✓						✓
Arctic Tern									✓
Northern Harrier								✓	
Bald Eagle		✓		✓					
Northern Flicker					✓				
Canada Jay								✓	
Black-billed Magpie		✓			✓				
Common Raven			✓				✓	✓	
Olive-sided Flycatcher							✓		
Say's Phoebe					✓				
Violet-green Swallow		✓					✓	✓	✓
Tree Swallow		✓					✓		



Species	LM1	LM2	LM3	LM6	Yukon River channel	ML1*	ML2	JC	TR
Bank Swallow									
Cliff Swallow									✓
Ruby-crowned Kinglet	✓		✓		✓			✓	
Varied Thrush									
American Robin	✓	✓	✓		✓		✓	✓	✓
American Pipit							✓	✓	
Lapland Longspur									
Common Redpoll									
American Tree Sparrow					✓				
Dark-eyed Junco	✓	✓						✓	✓
White-crowned Sparrow	✓				✓			✓	
White-throated Sparrow									
Savannah Sparrow		✓			✓				
Lincoln's Sparrow									
Rusty Blackbird		✓							
Northern Waterthrush							✓		
Orange-crowned Warbler							✓	✓	
Yellow Warbler							✓		
Yellow-rumped Warbler			✓		✓		✓	✓	
Wilson's Warbler					✓				

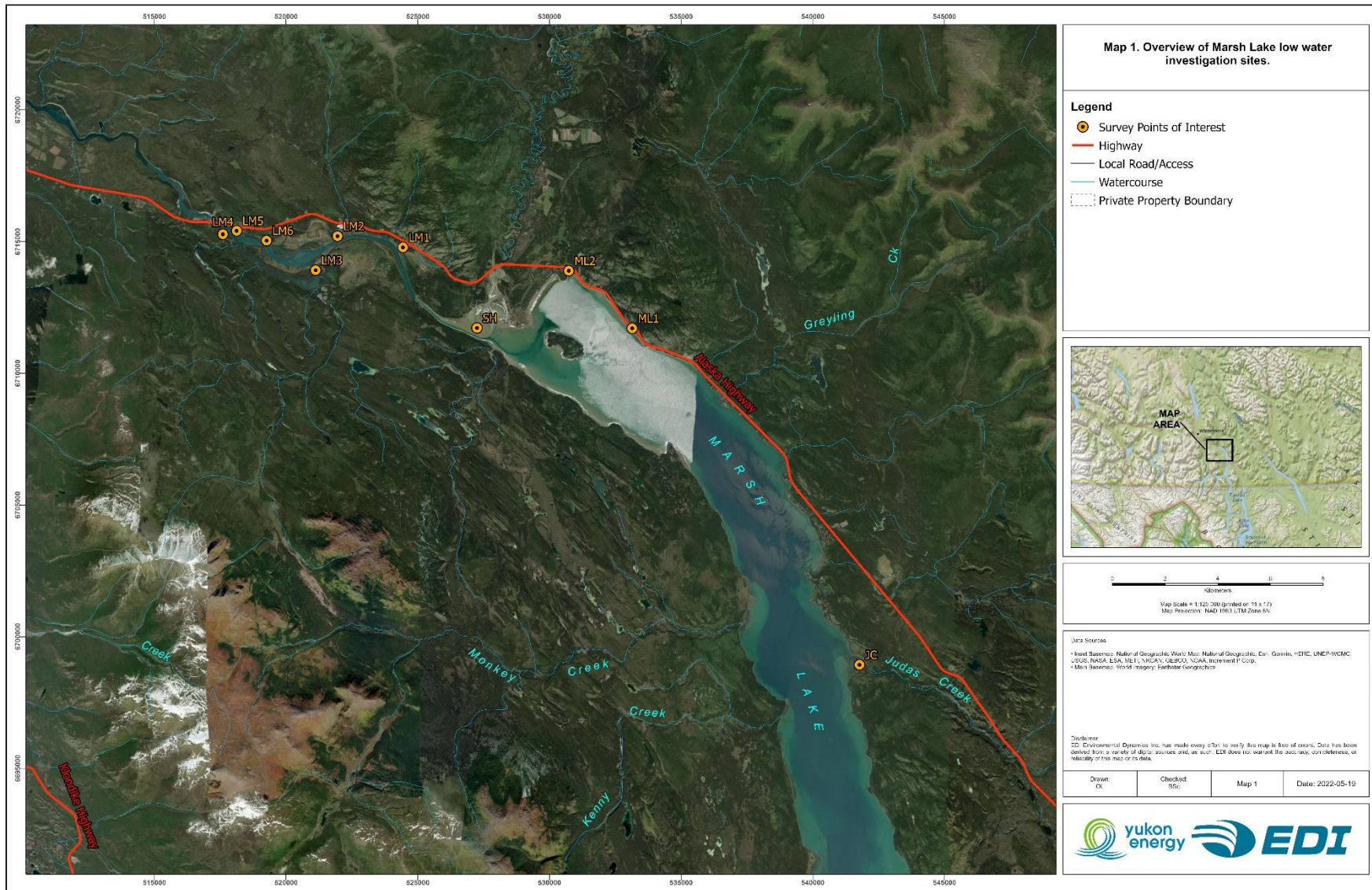




Photo 1. Conditions at monitoring site LM1 (Yukon River wetland 3.7 km downstream of Marsh Lake) on May 25, 2022.



Photo 2. Conditions at monitoring site LM2 (Kettley's Canyon wetland) on May 25, 2022.



Photo 3. Conditions at monitoring site LM3-A (Lewes Marsh adjacent to Sawmill Road) on May 25, 2022.



Photo 4. Conditions at monitoring site LM3-B (Lewes Marsh adjacent to Sawmill Road) on May 25, 2022.





Photo 5. Conditions at monitoring site LM3-C (Lewes Marsh adjacent to Sawmill Road) on May 25, 2022.



Photo 6. Conditions at monitoring site LM4 (Lewes Marsh adjacent to Sawmill Road) on May 25, 2022.



Photo 7. Conditions at monitoring site LM5 (Lewes Marsh) on May 25, 2022.



Photo 8. Conditions at monitoring site LM6 (Lewes Marsh) on May 25, 2022.



Photo 9. Conditions at monitoring site ML1 (unnamed creek mouth on Marsh Lake) on May 25, 2022.



Photo 10. Conditions at monitoring site ML2 (north end of Marsh Lake) on May 25, 2022. This site view is different from previous ones as the drone mission was aborted due to a helicopter working in the area.



Photo 11. Conditions at monitoring site JC (Judas Creek) on May 25, 2022.



Photo 12. Conditions at monitoring site TR (Tagish River) on May 25, 2022.