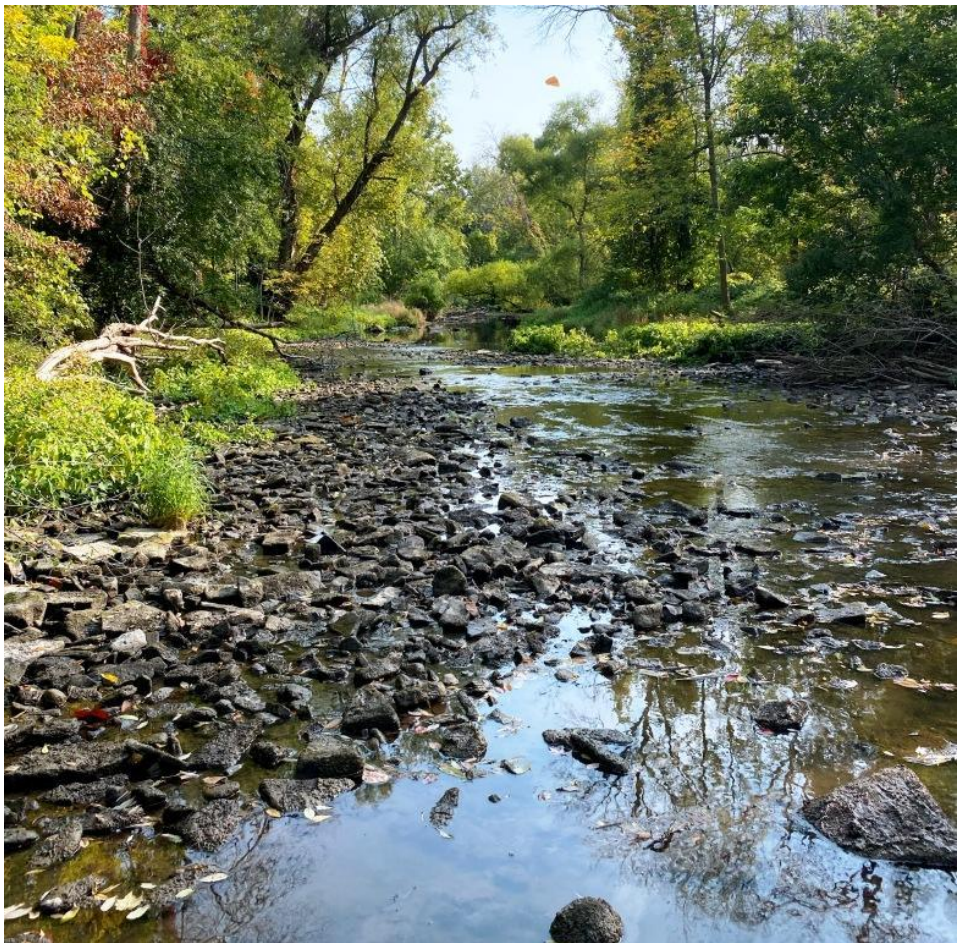
# OAK ORCHARD CREEK
# STAMP MUSSEL SURVEY
# MEDINA, NEW YORK



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## 1.0 INTRODUCTION:

Riveredge Environmental was contracted by CC Environment and Planning to conduct a mussel survey at a proposed wastewater discharge site on Oak Orchard Creek, Town of Medina, Orleans County (Figure 1). This document provides a summary of the freshwater mussel (Family Unionidae) survey conducted on September 27th 2020 at Oak Orchard Creek (GPS coordinates Lat. 43.197415 N, Long. 78.390987 W) in New York State Department of Environmental Conservation (NYSDEC) Region 8.

## 2.0 METHODS

Riveredge conducted timed-search surveys in the area of direct impact (ADI) which consisted of a permanent 6.1 m easement for the installation of a discharge pipe at the point where it meets the creek (Figure 2). Also surveyed were a lateral buffer of 10 m wide adjacent to the ADI, a mixing zone (MZ, 10 m in length) just downstream from the ADI (Figure 2), an upstream (USB, 10 m in length), and a downstream buffer (DSB, 100 m in length) (Figure 2).

All survey cells were 10 m x 10 m except for the ADI which was 6.1 m x 10 m (Figure 2). A total of 13 cells were searched (USB, ADI, MZ, DSB). Given the low water levels, almost all cells were searched from bank to bank (Figure 3). Only the most downstream cell in the DSB that was in a wider section of the creek and included a small backwater area of the creek was not searched bank to bank. Cells were searched from downstream to upstream to avoid poor visibility created by suspended sediment.

Each cell was marked with temporary survey stakes (Figure 4) and searched visually and tactilely by six mussel searchers systematically walking upstream throughout the cell. Surveyors visually searched for mussels and probed the sediment by hand at a minimum rate of 0.2 min/$m^2$ (Clayton et al 2018). If live mussels were found, the cell was searched for an additional 0.3 minutes/$m^2$ as required by the West Virginia mussel survey protocols (Clayton et al. 2018).

This mussel survey was conducted in accordance with a Department of Environmental Conservation (DEC) License to Collect and Possess (Scientific) number 2793.

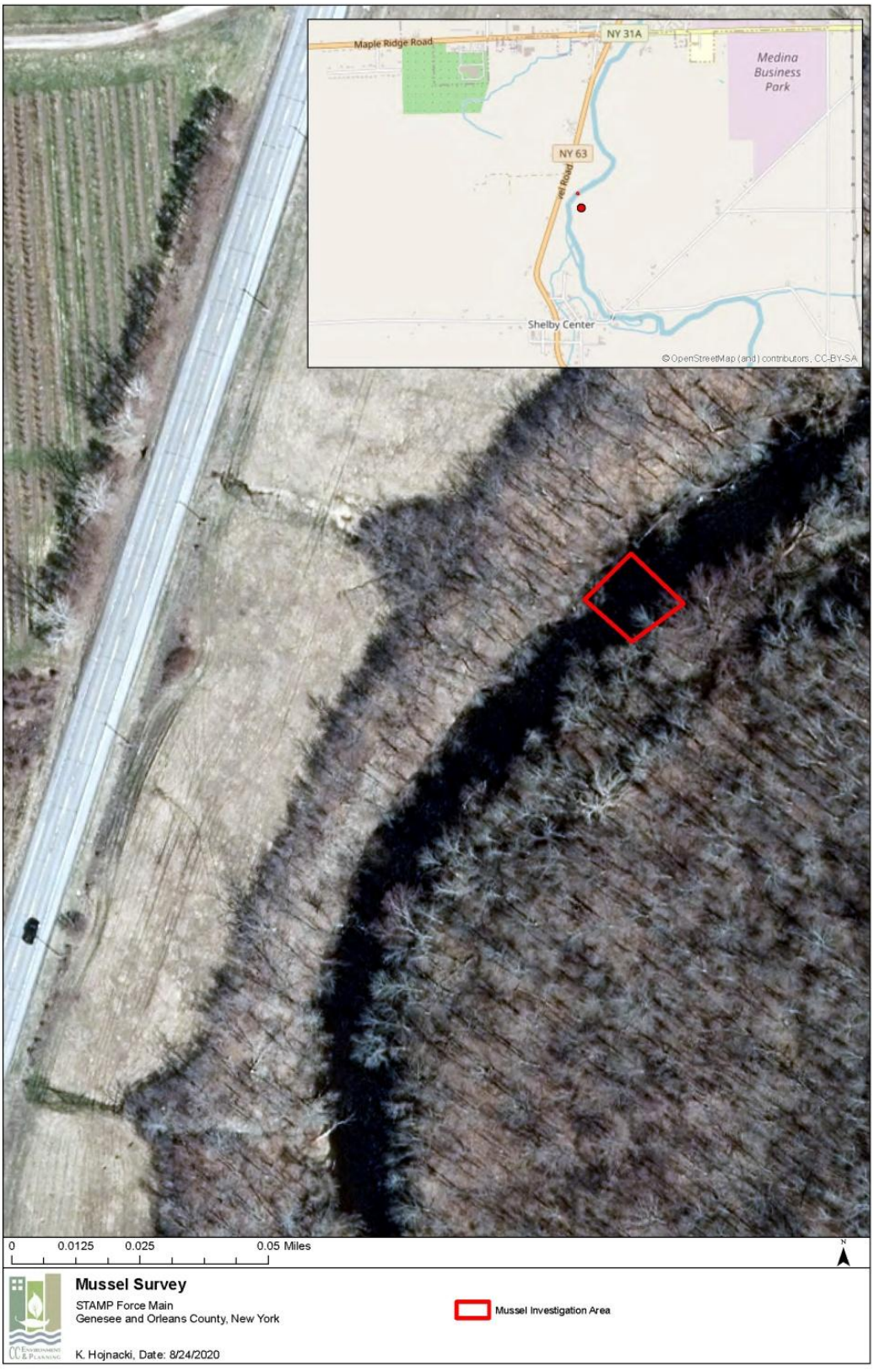


FIGURE 1. GENERAL LOCATION MAP OF THE PROPOSED OUTFALL ON OAK ORCHARD CREEK.

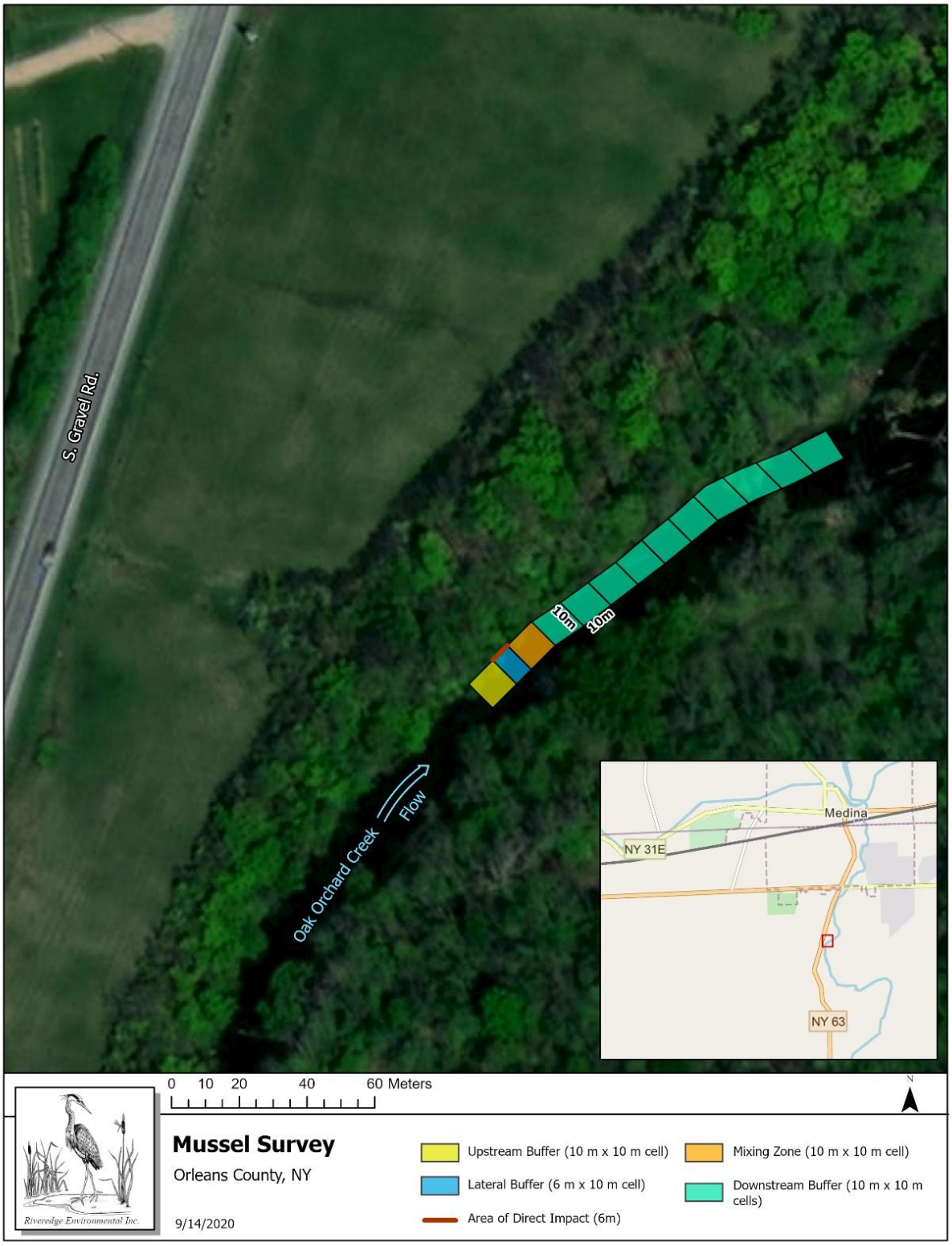


FIGURE 2. PLAN VIEW OF MUSSEL SURVEY CELLS IN OAK ORCHARD CREEK.

## 3.0 RESULTS AND DISCUSSION

Only one cell had live mussels. This cell was the most downstream cell of the DSB (Figure 5). The mussels found in this DSB cell was Giant Floater, *Pyganodon grandis* (Figure 6, Figure 7). Three live individuals and one recently dead (with fresh tissue attached to the shell) were found in the cell (Table 1). *Pyganodon grandis* has a rank of S4. This species is not protected in the State of New York and it is not a Species of Greatest Conservation Need (SGCN); it is not tracked by New York Natural Heritage (NYNHP). All individuals of this species were found in a backwater that had large deposits of sand and silt at the downstream end of the DSB (Figure 5). All other cells were predominantly cobble, with less sand and silt, and appeared to be subject to higher flow during spring runoff events. The overall Catch per Unit Effort (CPUE) was 0.6 mussels per hour (Table 1).

TABLE 1. NUMBER OF CELLS SEARCHED, SEARCH TIME, AND MUSSELS FOUND.

| Search Area | Number of Cells | Total Survey Area ($m^2$) | Search time in minutes (if no mussels, rate=0.2 min/$m^2$; with mussels rate=0.5 min/$m^2$ ) | No. of Live Mussels Found |
|---|---|---|---|---|
| Area of Direct Impact (ADI), no mussels | 1 | 61 | 12.2 | 0 |
| Mixing Zone (MZ), no mussels | 1 | 100 | 20.0 | 0 |
| Upstream Buffer (USB), no mussels | 1 | 100 | 20.0 | 0 |
| Downstream Buffer (DSB) cells without mussels (n=9) | 9 | 900 | 180.0 | 0 |
| Downstream Buffer (DSB) cell with live mussels (n=1) | 1 | 100 | 50.0 | 3 |
| Totals | 13 | 1,261 | 282.2 | 3 |
| Catch per Unit Effort (CPUE) in mussels per hour: | | | = 3/(282.2/60) = **0.6** | |

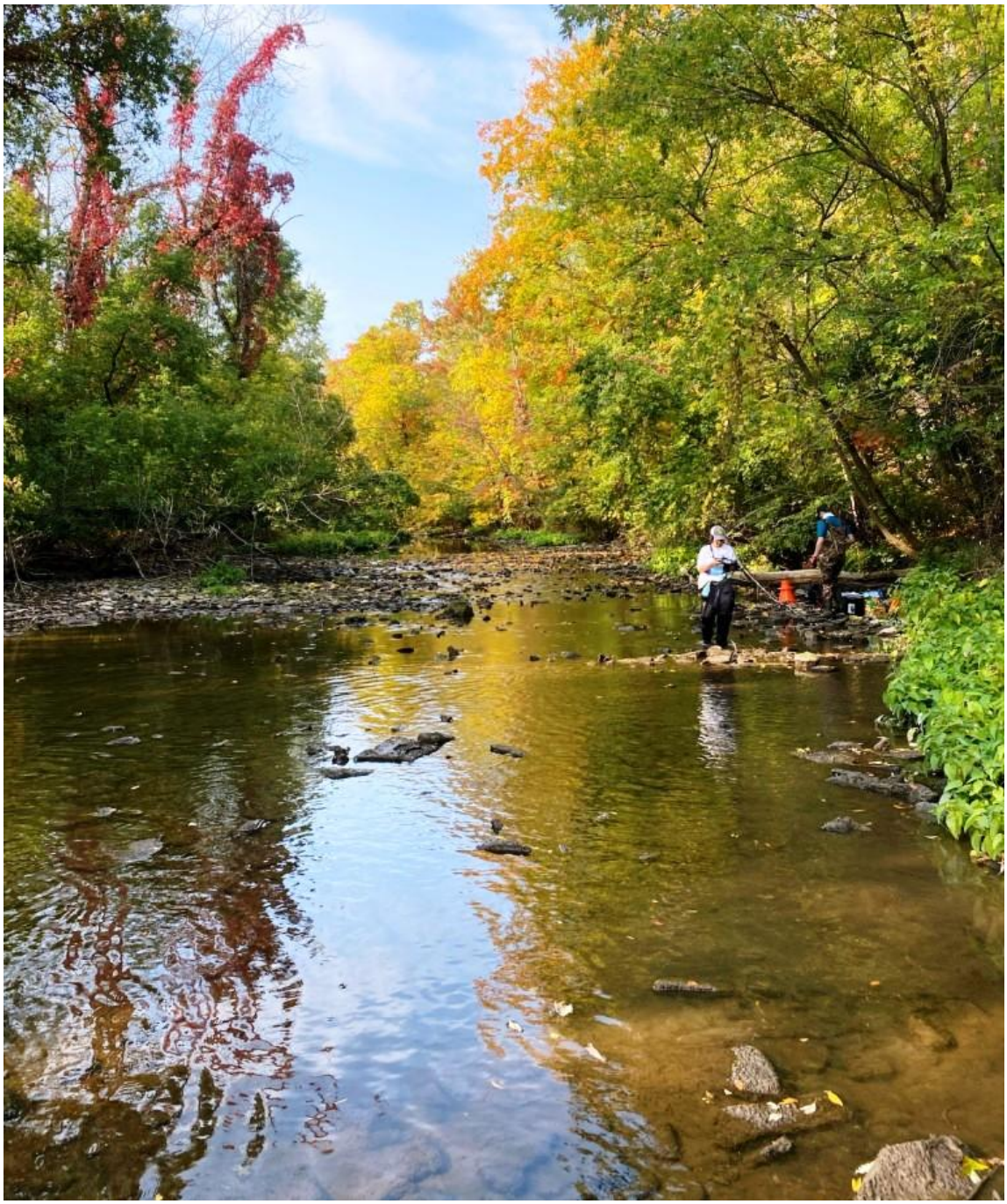

FIGURE 3. VIEW OF OAK ORCHARD CREEK AT THE ADI LOOKING UPSTREAM.

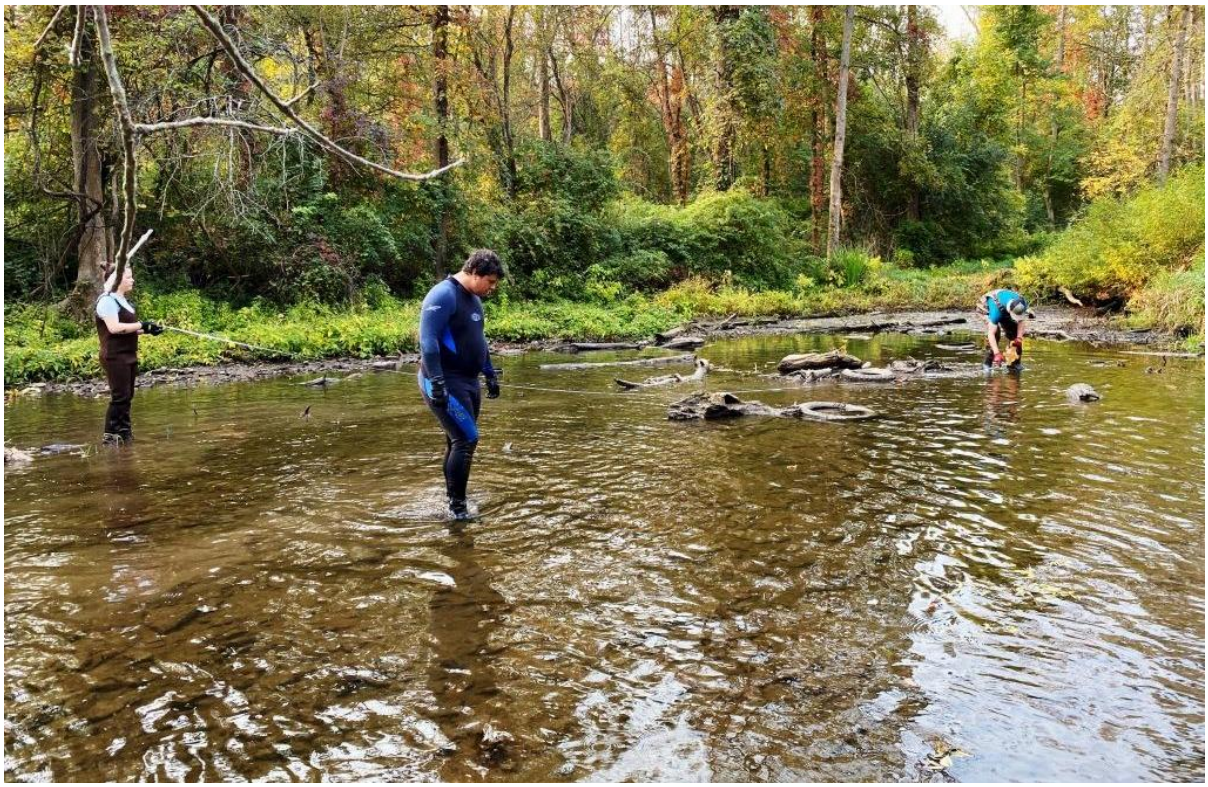

FIGURE 4. SURVEY CELLS WERE MARKED OUT WITH TEMPORARY SURVEY STAKES.

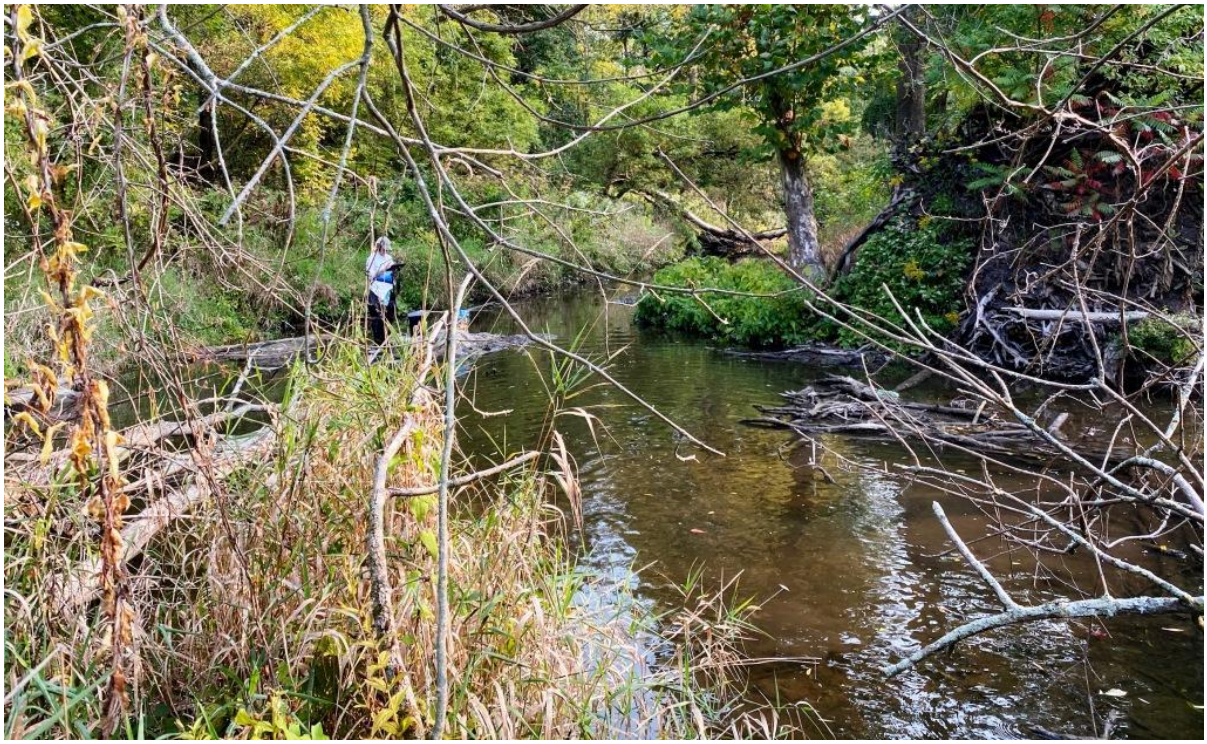

FIGURE 5. THE DOWNSTREAM CELL WHERE LIVE MUSSELS WERE FOUND.

FIGURE 6. *PYGANODON GRANDIS* WAS FOUND IN THE DSB.

FIGURE 7. VIEW OF THE BEAK SCULPTURE OF *PYGANODON GRANDIS*.