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November 17, 2025

West Hill Pond: September 2025 - Aquatic Plant Survey Results

Applied Watershed Sciences LLC (AWS) performed a late-season aquatic plant survey on September 6-8, 2025. The goal of the survey was to search the littoral zone for any potential new or non-native aquatic plant species and to document the presence and coverage of aquatic plants.

The survey consisted of three parts:
1. Typical boat-based waypoint aquatic plant survey, with added time surveying the deep-water areas (12-24ft),
2. Underwater SCUBA surveying of the north end of the lake,
3. A SONAR-based continuous scanning to document the biovolume of aquatic plants throughout the littoral zone.

The boat-based plant survey consisted of approximately 127 waypoints along the shoreline and island areas where aquatic plants were present. Survey methods were consistent with those used in past surveys at West Hill Pond. Raw data is in .csv format. The point sizes on the maps provided in this report are based on the coverage estimates (Very Sparse 1-9% cover, Sparse 10-19%, Moderate 20-59%, Dense 60-79%, Very Dense 80-100%). The point size on the point-based Coverage maps does not indicate a specific acreage. Coverages are simply a measure of how much of area is covered by aquatic plants from a top-down view. Plant height in the water column was estimated on a scale of 1-5 (Growth Form), where 1 indicates that a plant is very low in the water column, reaching just a few inches up from the sediment surface, while 5 indicates the species was growing to the surface and there were floating leaves and emergent/surface-matted parts of the plant present. A Growth Form value of 2.5ft in the raw data indicates that plants grew to about half the water column depth. Plant density categories (based on %coverage) and the plant height will change throughout the season, and this survey is best compared to other historical fall survey data rather than early summer data.

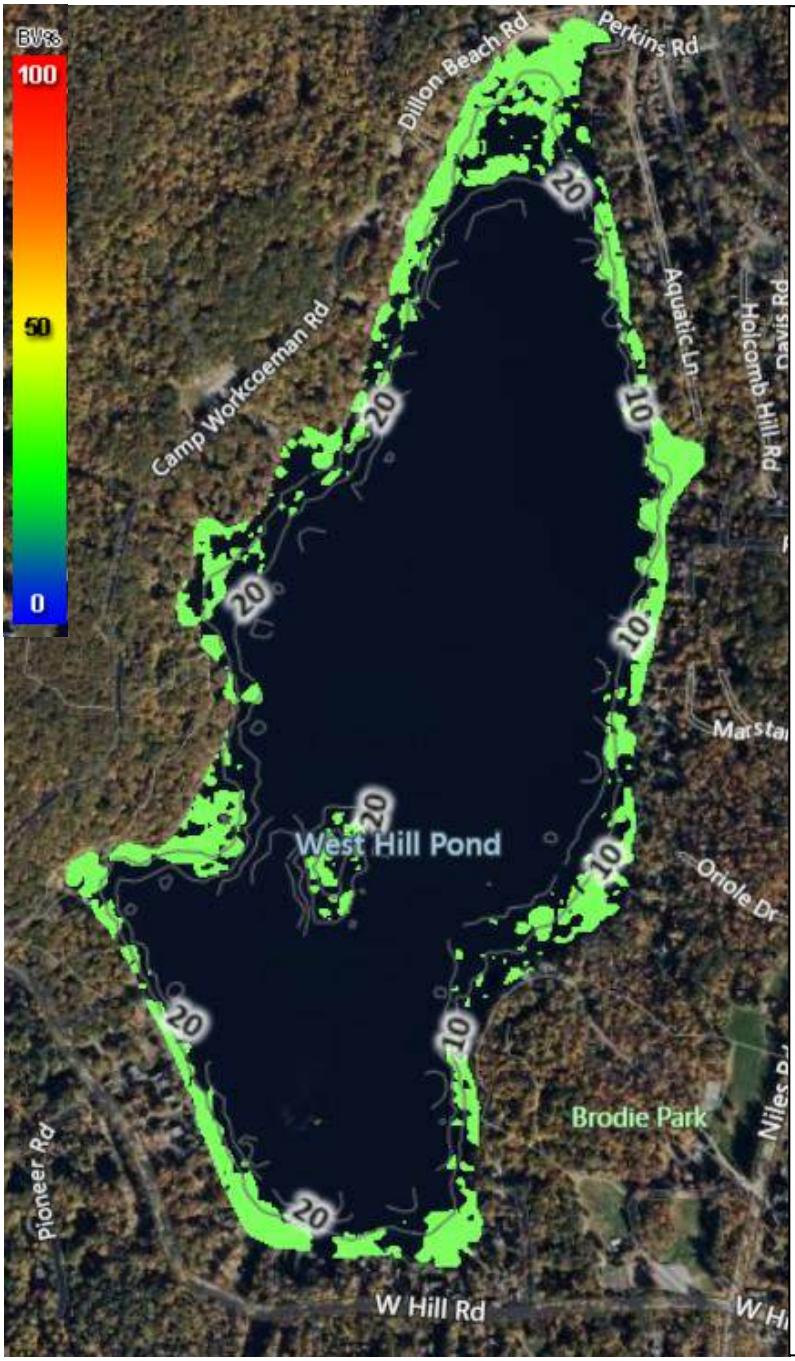
The underwater SCUBA survey involved a strategic search pattern of the northern cove and into the deeper littoral zone. This area near the boat ramp is considered a high-risk zone for new Aquatic Invasive Species (AIS). Luckily, no new invasive species were found this year. At present, the only documented non-native plant species West Hill Pond is *Glossostigma cleistanthum* (Mudmat), which is a diminutive plant that only reaches 1-2 inches high. It is considered an invasive plant, but it is not typically actively managed.

Boat-surveyed frequency data from 2025 is compared to previous years in Table 1. Maps from the boat-based survey are included at the end of the summary. Figures 1-2 show the SONAR-produced BioVolume maps; Figure 3 shows the area surveyed via SCUBA.

Sincerely,

Hillary Kenyon, M.S.
Principal Consultant
Certified Lake Manager #17-07M

Figure 1. BioBase Plant BioVolume (based on continuous SONAR data)



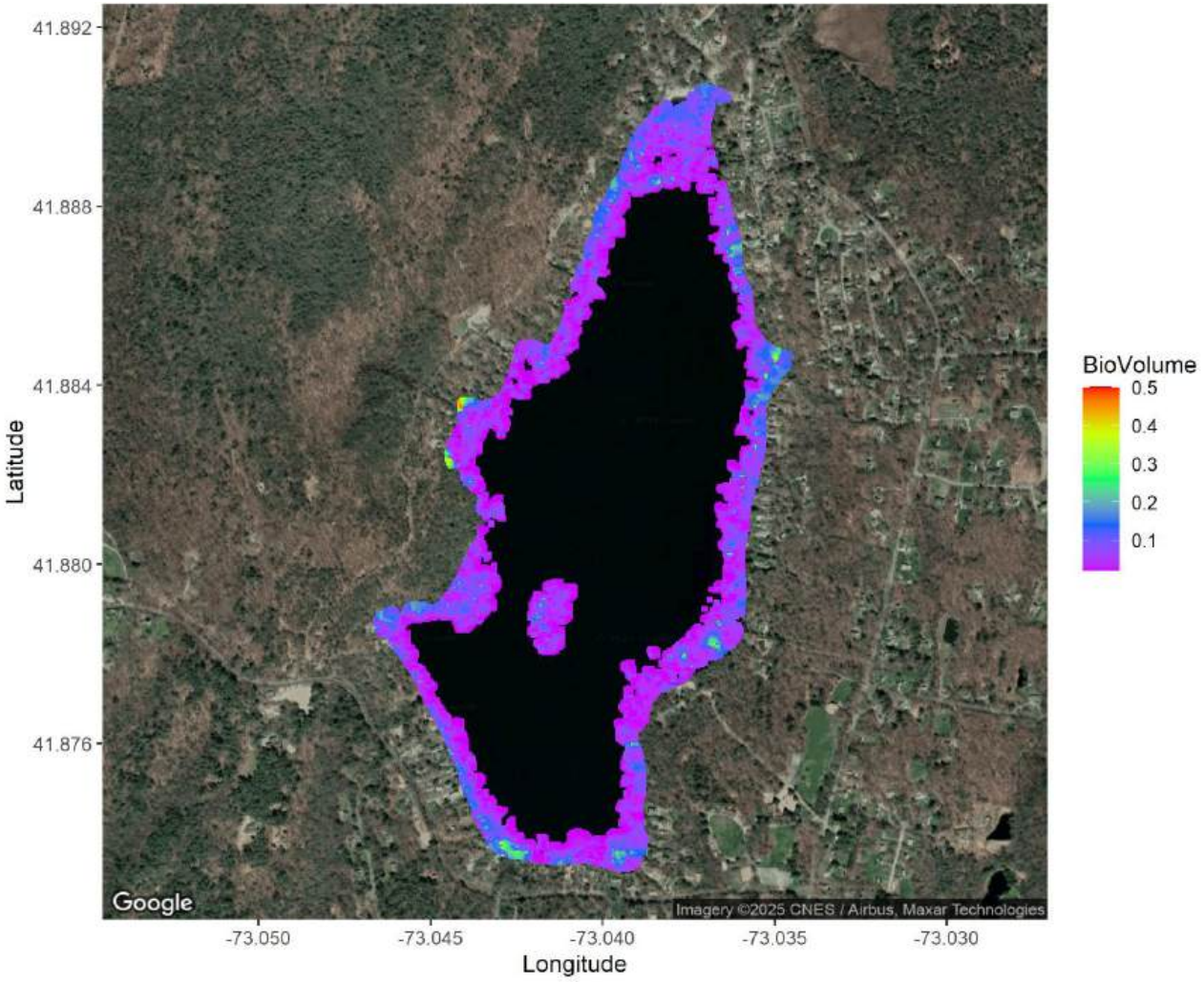
The .sl2 SONAR files taken during the AWS aquatic plant survey were loaded into the proprietary BioBase processing platform and used to create a BioVolume map. The platform uses the SONAR logs to produces a lakewide map (Figure 1). The raw SONAR log files are viewable within the program to make any needed manual manipulations due to SONAR errors or inconsistencies, which were not needed for the West Hill pond project.

West Hill Pond has very low aquatic plant biovolume. While most of the littoral zone has plant coverage, much of the coverage is low in the water column, with only scattered beds of Large-leaf pondweed or other species that grow higher off the bottom. The low height of the plants relative to the overlying water column, where plants were present, results in the low BV% map (~20%).

To better review the differences between the areas surveyed, AWS used the raw BioBase exported .csv data and a different color palette to visualize the data (Figure 2).

Figure 2 removed all SONAR points with less than 2% BV (0.02) and chose a full rainbow color palette to best visualize plant BV changes in the littoral zone. It was obvious from this mapped raw data, that plant BV in the coves and along much of the mid-depth shoreline was higher than other areas.

Figure 2. Exported BioBase BioVolume Data Visualized with a Different Color Palette



Analysis of the raw SONAR log BV% data indicates that 60% of the plant-covered area has less than 5% BV (appears to have not been mapped in the BioBase Figure 1), while 25% of the plant-covered area had 5-10% BV, and 13% of the area had 10-20% BV. Roughly 2% of the lake had BV greater than 20%, as documented in the raw exported BioBase SONAR data. Please note that for BV% to be near 100%, it indicates that close to 100% of the water column is filled with plants; these biovolumes are typically not observed with native plants and are only common in highly eutrophic waterbodies. Both maps are useful for understanding overall plant growth in West Hill Pond.

No invasive Hydrilla was found during any portion of the survey. During the SCUBA survey, we found that the plant community in the 8-20ft zone of the boat ramp was dominated by native species, including Robbins pondweed (*Potamogeton robbinsii*) and *Nitella* sp. (a plant-like Charophyte macroalgae). It was surprising to see how abundant Robbins pondweed was, as this species was not historically dominant in deep water and was not very prevalent at all just 10 years ago. Native Robbins pondweed is a plant that typically does not exceed 3-4ft tall, so it is a good plant to colonize the deep-water area overall. There was less than 20% open sediment in water ~8-16ft deep. Ample mussels were observed up to 20ft deep. The 18ft depth zone tended to be the current depth extent of macrophytes in the area surveyed. Approximately 6 acres of the lake's northern portion were searched by SCUBA, using a search pattern aided by underwater compass bearings.

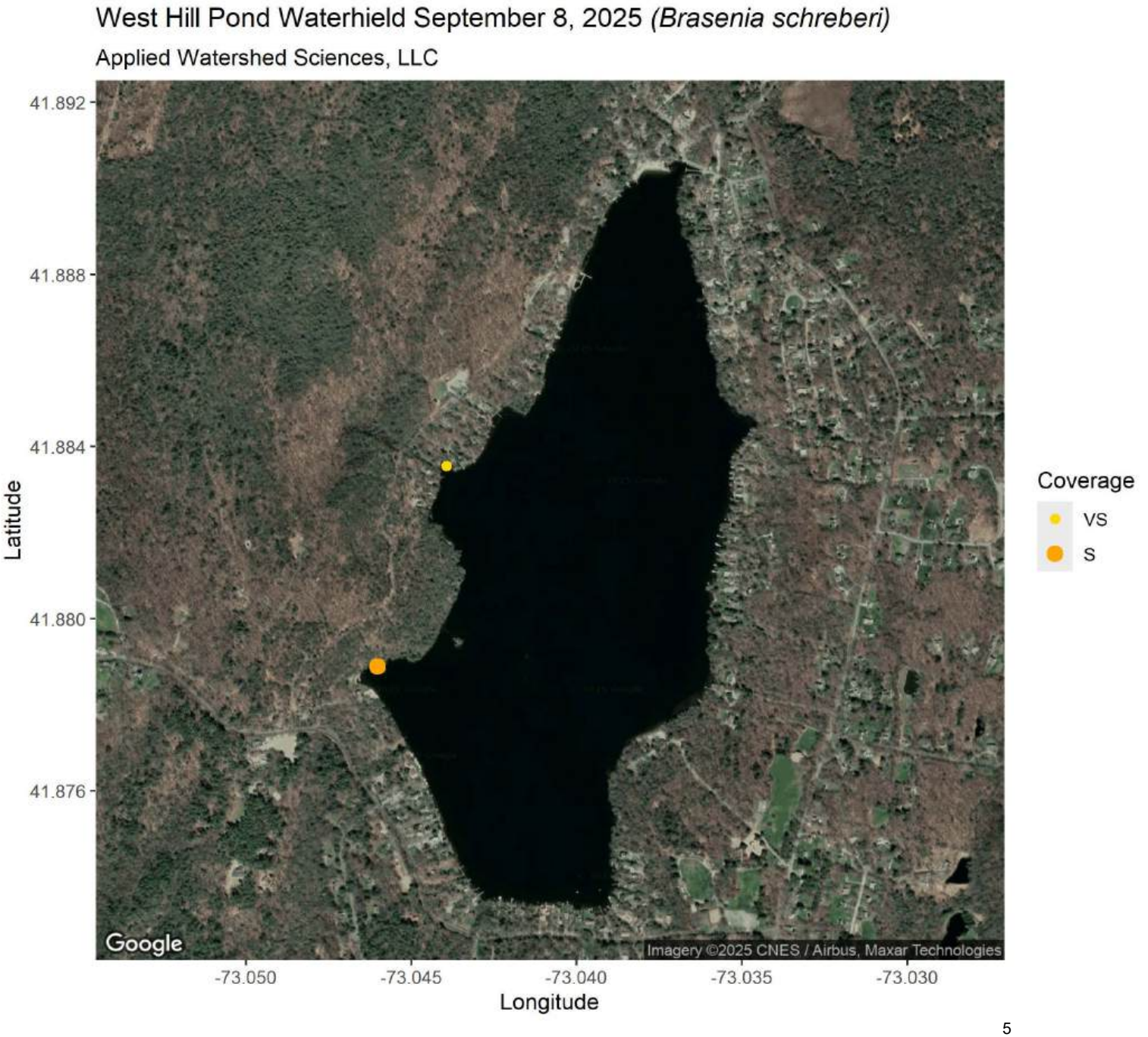
Figure 3. SCUBA Searched Zone

The two dominant species in the northern SCUBA-surveyed part of the lake (Figure 3) were patchy. There was very sparse, occasional other small, narrow-leaf pondweed and/or native Naiad patches (generally less than 5% across the whole surveyed zone), as well as some Large-leaf pondweed and Ribbon-leaf pondweed scattered individual plants (those two species you had been targeting historically with DASH). were fewer locations with very sparse Robbin's pondweed noted throughout the lake shoreline, but the Robbin's pondweed in the northern portion of the lake was dominant, as observed in 2024. The SCUBA surveyed area was mapped using a GPS mounted on the dive flag; transects were primarily ~30-40ft apart East-West, appropriate for the underwater visibility (~20 transects total).

Table 1. West Hill Pond: Submersed Aquatic Plant Overall Frequencies Comparison

Scientific Name	Common Name	September 2025 % Frequency	September 2024 % Frequency	September 2016 % Frequency (NEAR)
*Nothing present	NA	12	16	NA
Brasenia schreberi	Watershield	2	1	1
Elatine minima	Small waterwort	2	2	6
Eleocharis acicularis	Needle spikerush	0*	4	7
Elodea nuttallii	Waterweed	0	1	0
Filamentous green algae	NA	NA	3	5
Fontinalis sp.	Aquatic Moss	1	3	5
Glossostigma cleistanthum	Mudmat	17	24	0
Lobelia dortmanna	Water Lobelia	5*	21	10
Nitella sp. (<14ft water, very common in deep water)	Plant-like macroalgae	28 AWS 2025 survey included more deep water points than 2024 survey)	6	23 (NEAR 2-day survey included more deep water points)
Nuphar variegata	Yellow-waterlily	1*	5	5
Potamogeton amplifolius	Large-leaf pondweed	23	20	7
Potamogeton bicupulatus	Snailseed pondweed (narrow-leaf)	0	3	2
Potamogeton epihydrus	Ribbon-leaf pondweed	26	36	11
Potamogeton pusillus	Small pondweed (narrow-leaf)	4	1	0
Potamogeton robbinsii	Robbin's pondweed	8	27	1
Potamogeton spirillus	Spiral pondweed (narrow-leaf)	2	1	0
Sagittaria graminea	Narrow-leaf Arrowhead	6*	22	10
Schoenoplectus sp.	Bullrush	NA	1	0
Sparganium americanum	American bur-reed	NA	1	0
Typha sp. (shore)	Cattails	NA	6	5
Utricularia radiata	Small floating bladderwort	0	1	0
Vallisneria americana	Tapegrass	17	25	2

**Difficulty getting into very shallow water with wind & wave action, so fewer points likely resulted in an undersurvey of these species. It was possible to see into shore and confirm that there were no new AIS in these areas, but the waypoints could not be reached at several rocky locations with small beds of these plants.*
NA – emergent shoreline wetland plants not all documented in 2025, Filamentous green algae was not noted in field notes, likely because there was very little observable throughout the survey (whereas in the past there had been obvious large algae patches)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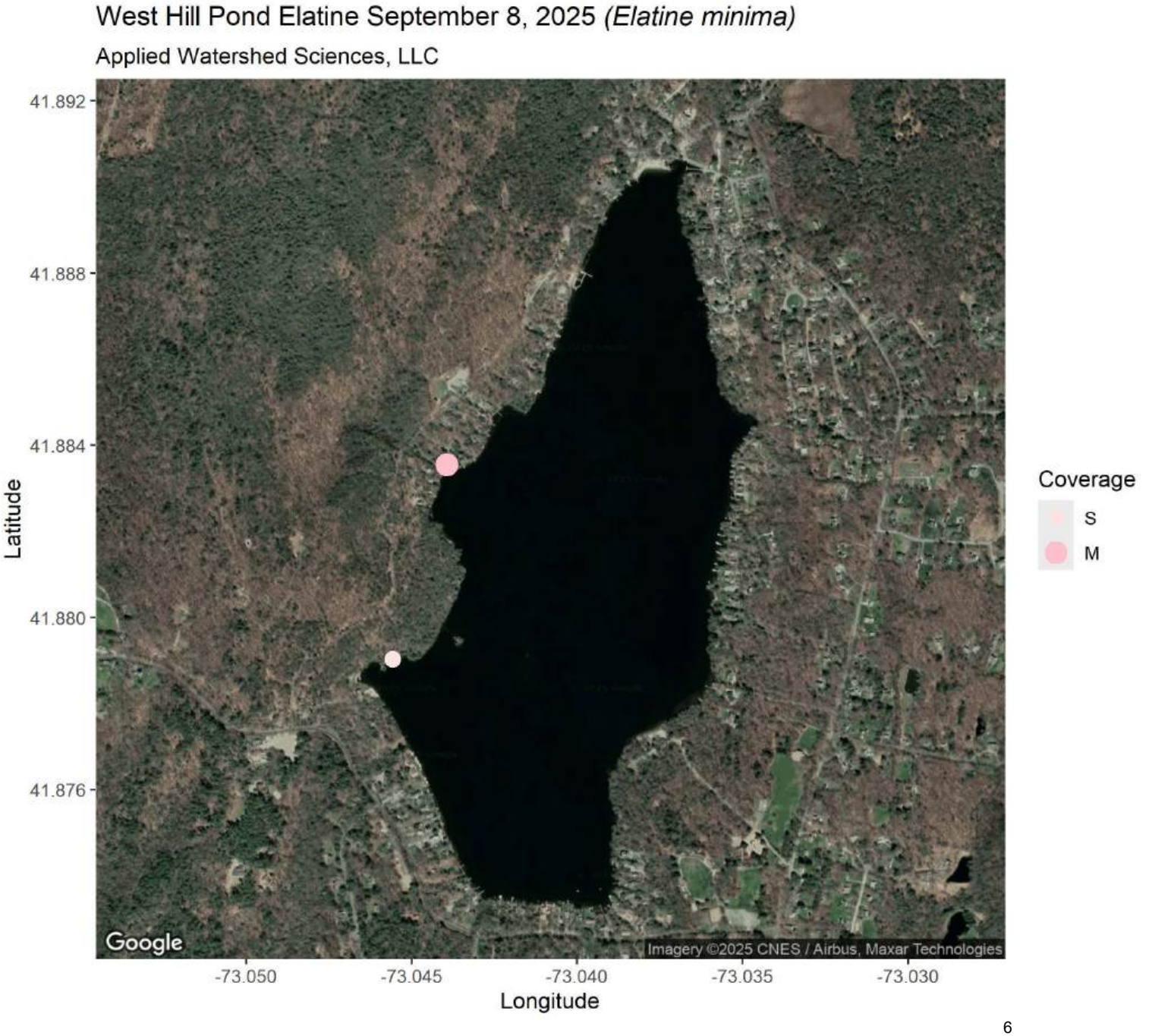
West Hill Pond Elatine September 8, 2025 (Elatine minima)
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West Hill Pond Water Aquatic Moss September 8, 2025 *(Fontinalis sp.)*

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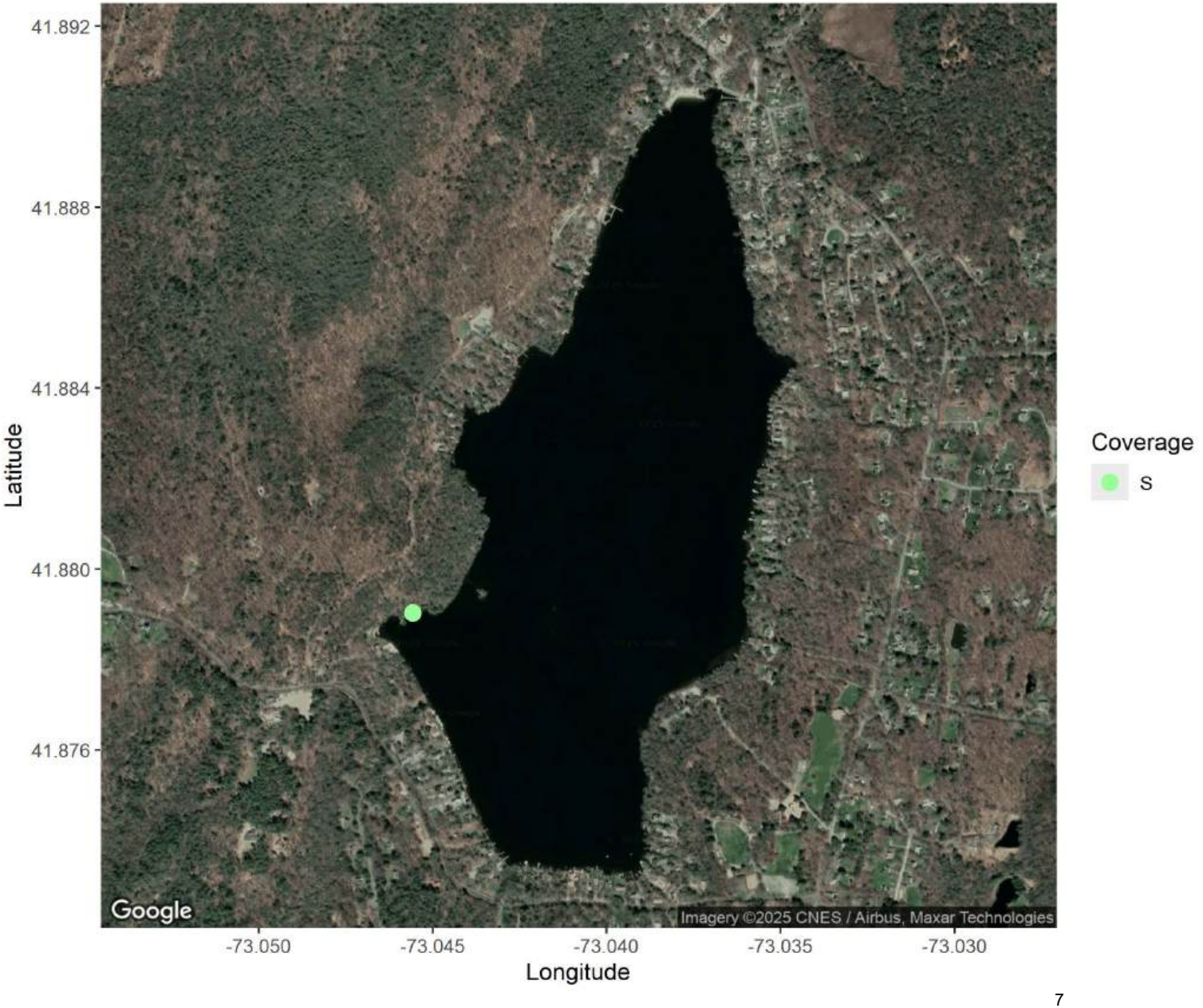

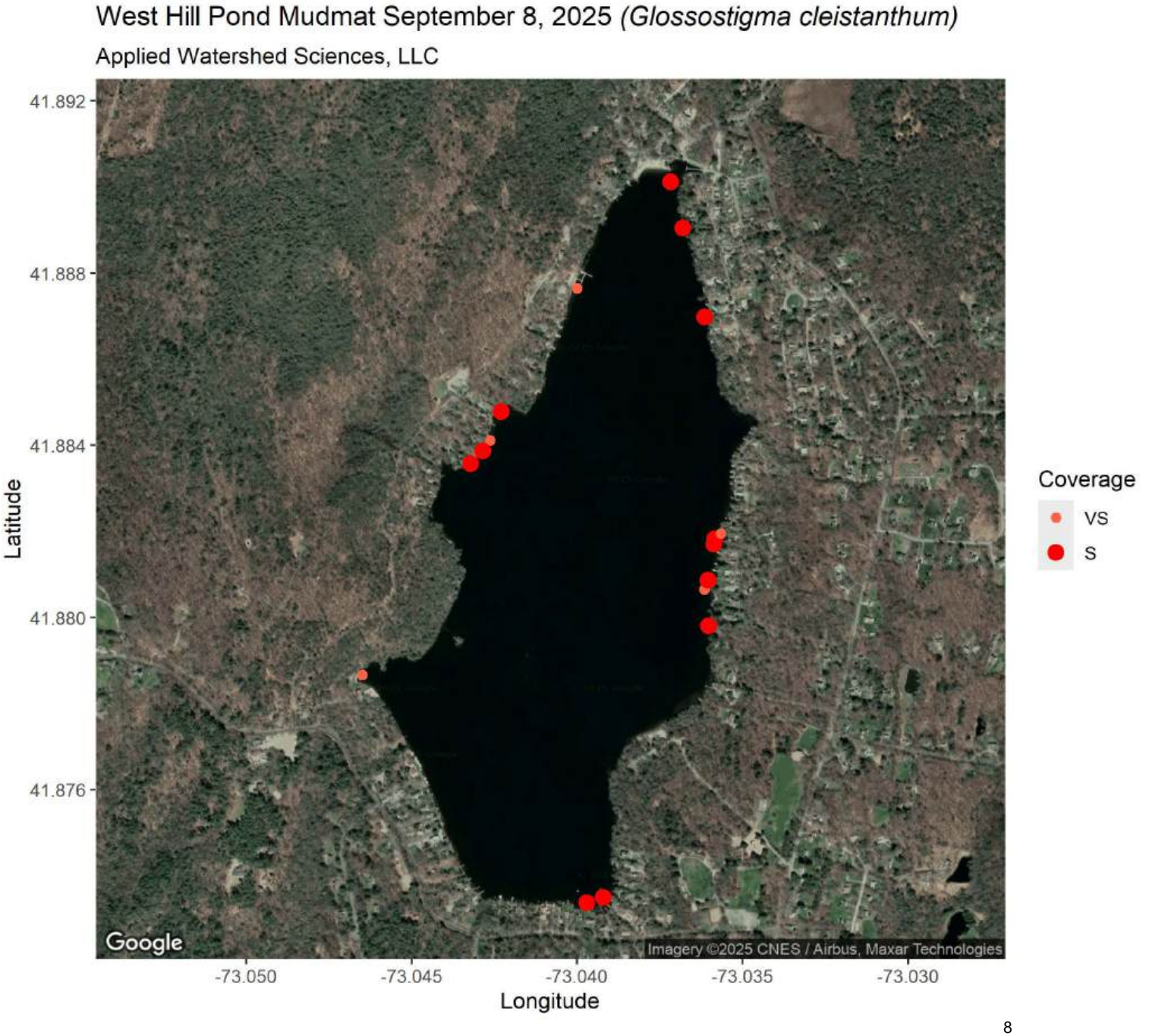
West Hill Pond Mudmat September 8, 2025 (Glossostigma cleistanthum)
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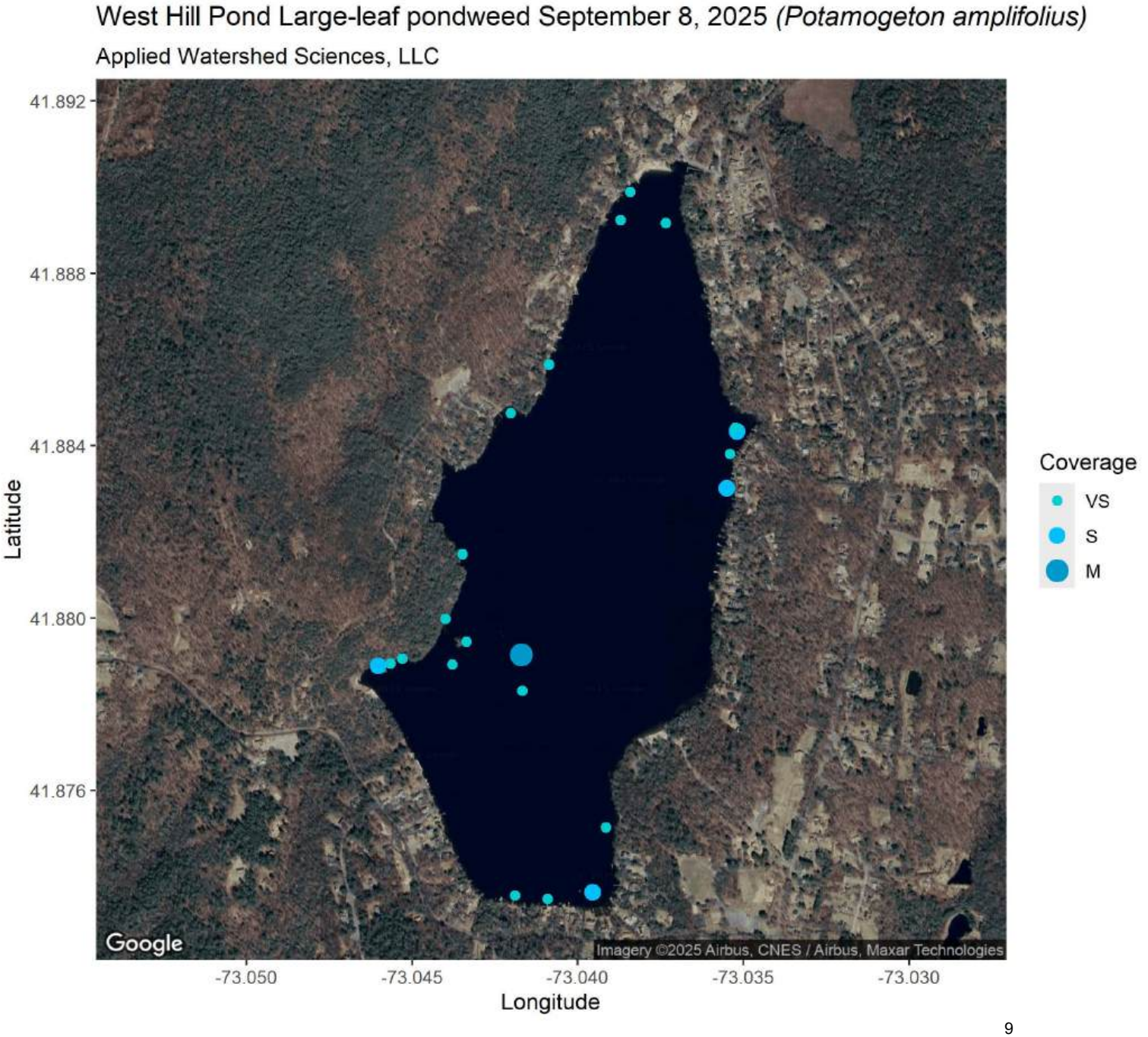
West Hill Pond Large-leaf pondweed September 8, 2025 (Potamogeton amplifolius)
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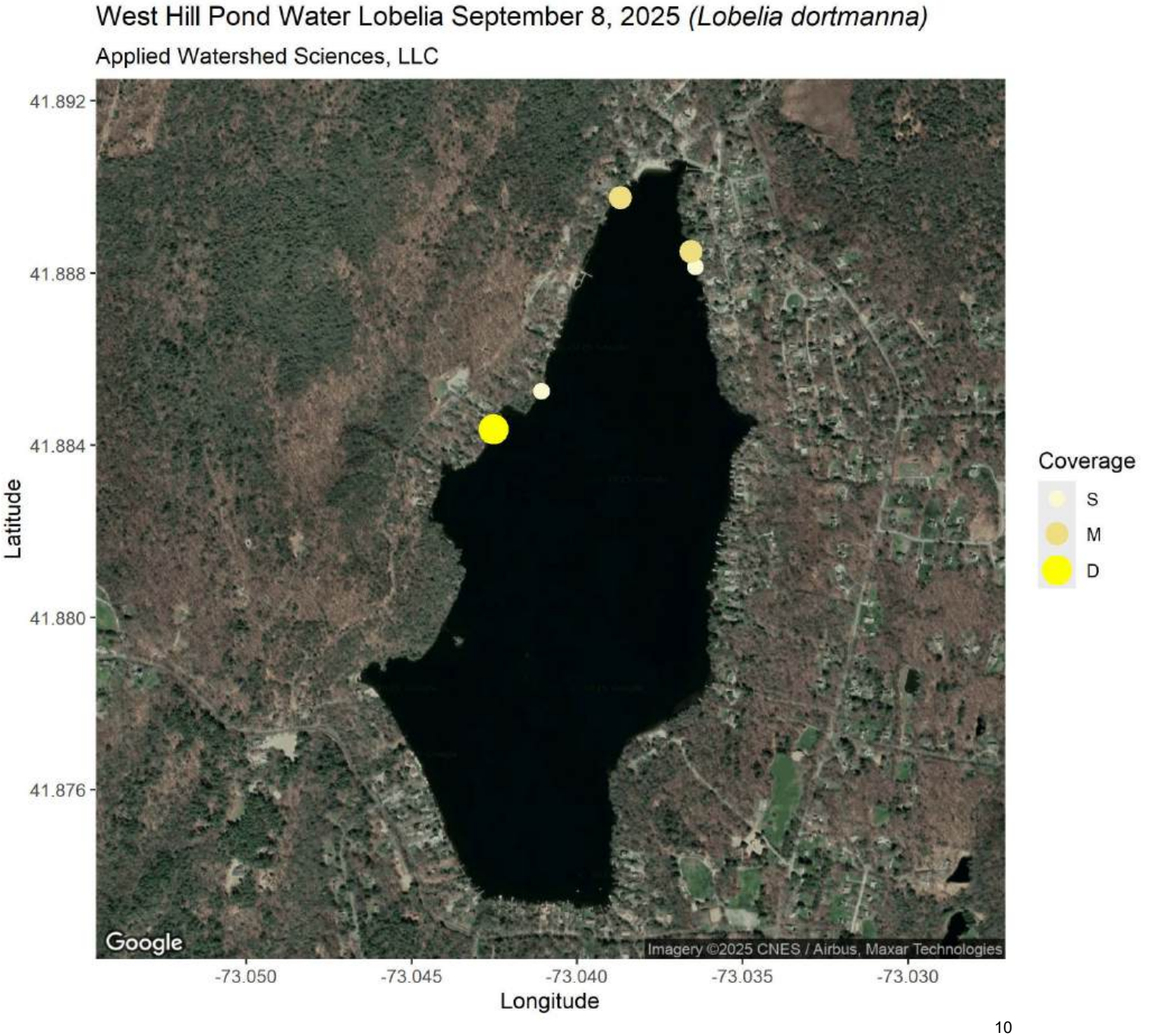
West Hill Pond Water Lobelia September 8, 2025 (Lobelia dortmanna)
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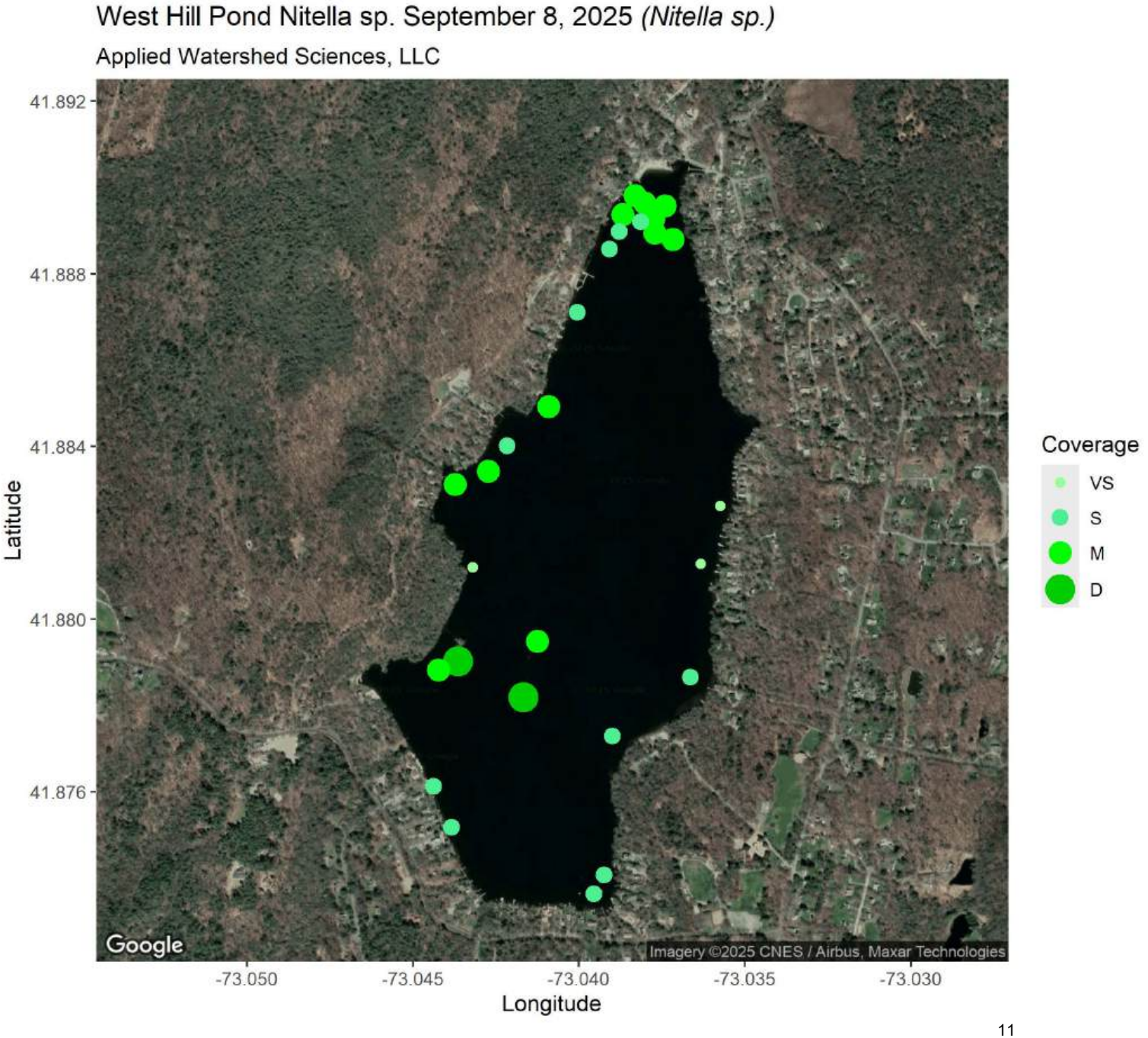
West Hill Pond Nitella sp. September 8, 2025 (Nitella sp.)
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West Hill Pond Water Robbins pondweed September 8, 2025 *(Potamogeton robbinsii)*

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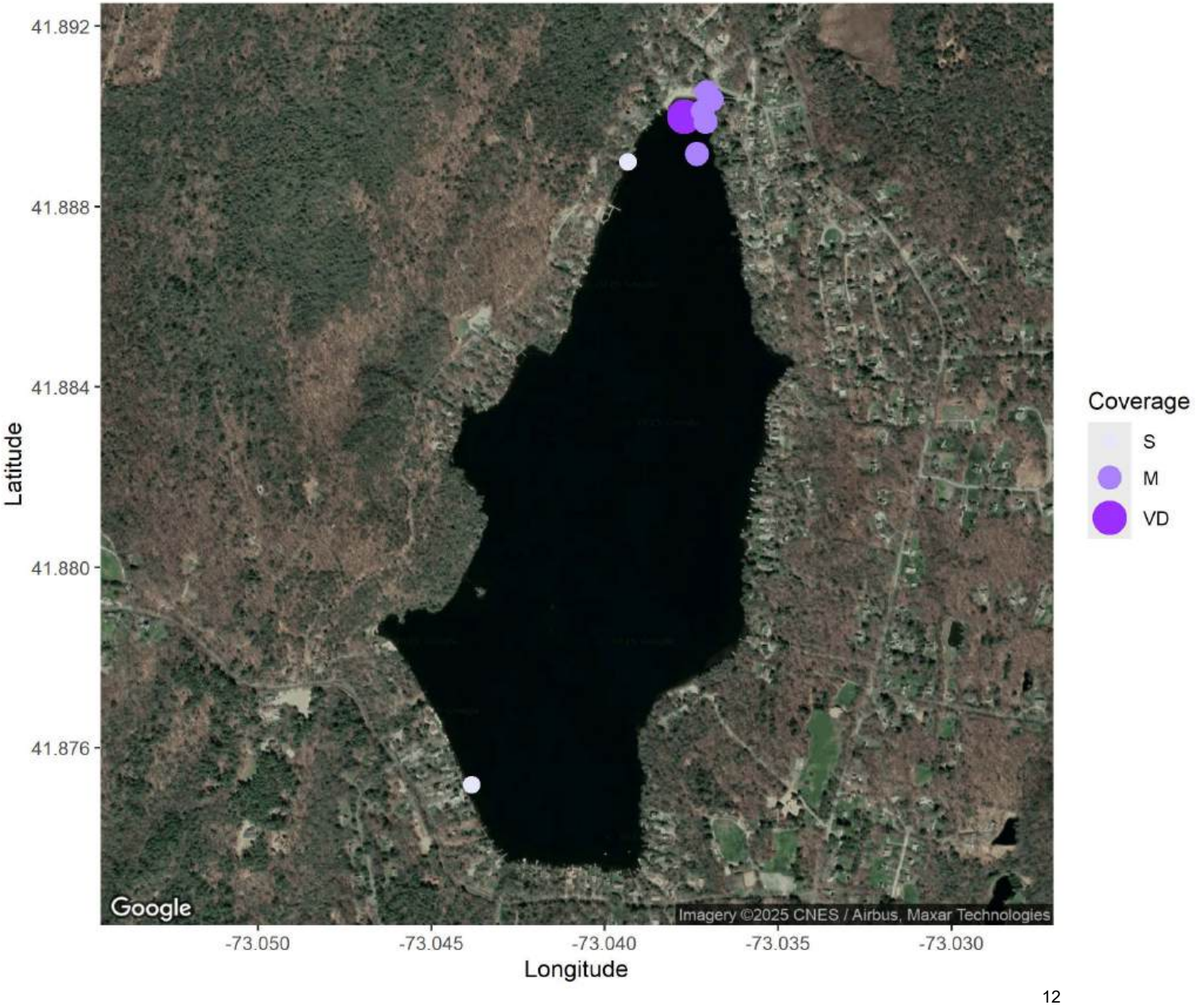

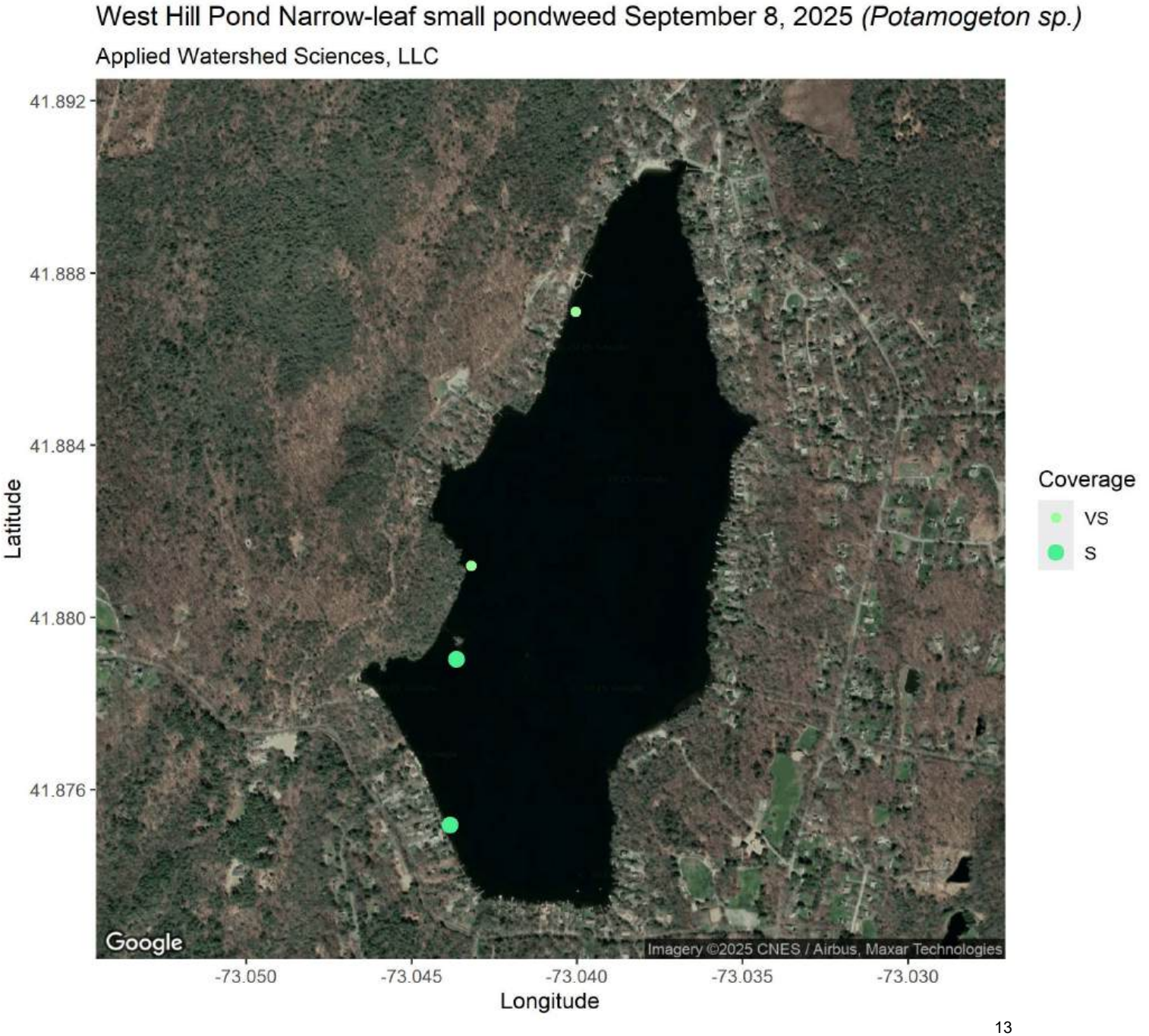
West Hill Pond Narrow-leaf small pondweed September 8, 2025 (Potamogeton sp.)
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West Hill Pond Narrow-leaf spiral pondweed September 8, 2025 *(Potamogeton spirillus)*

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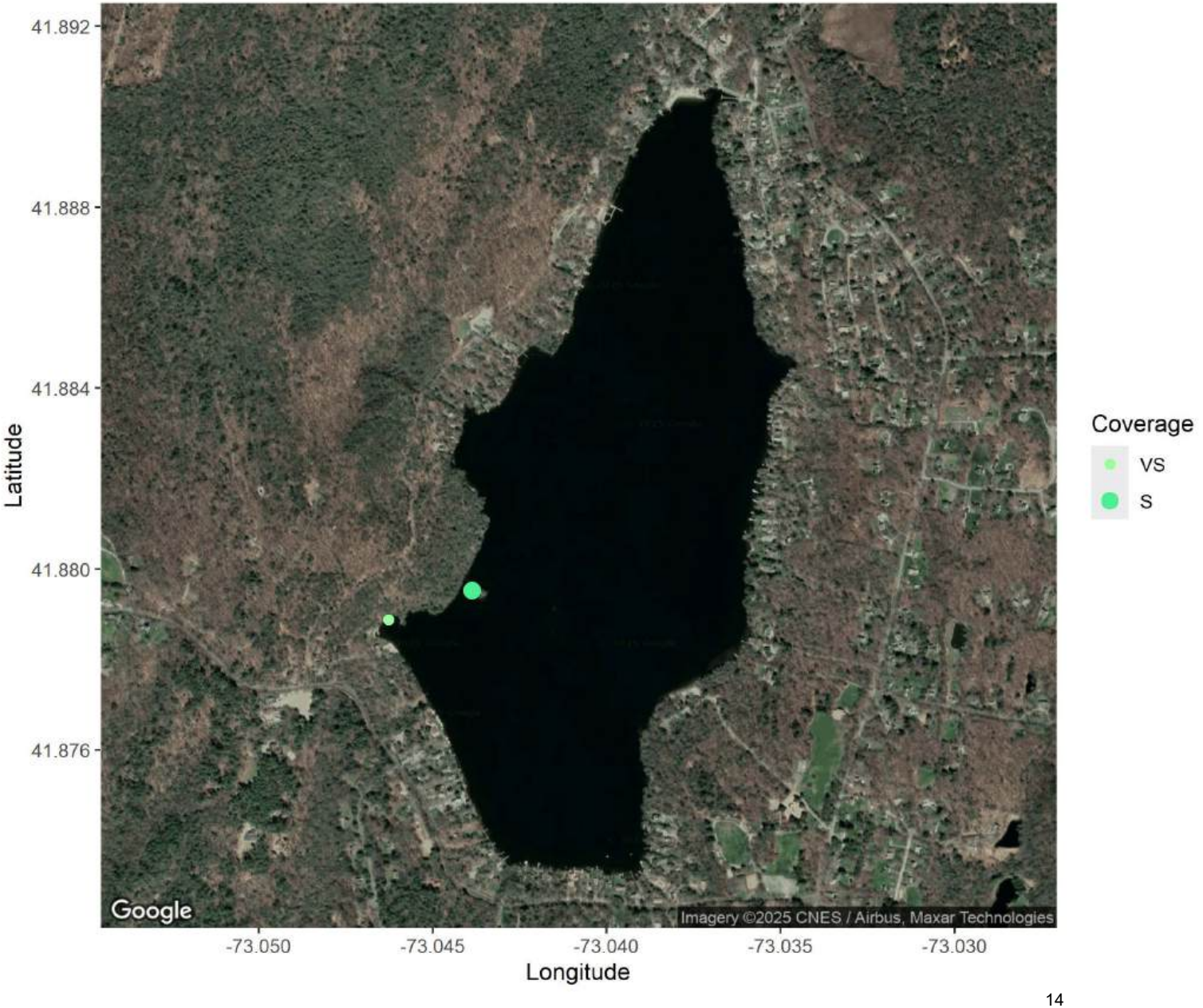

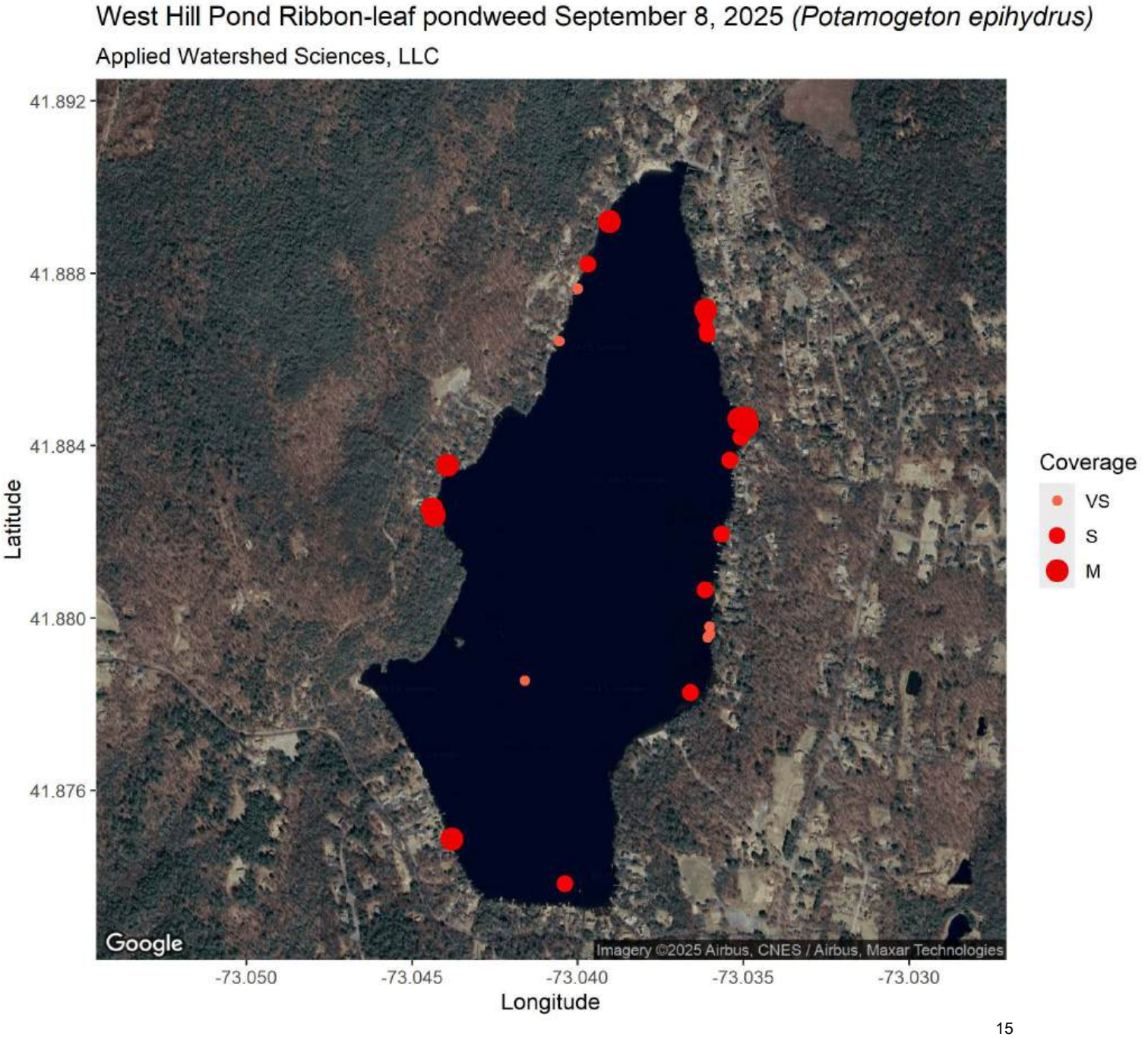
West Hill Pond Ribbon-leaf pondweed September 8, 2025 (Potamogeton epihydrus)
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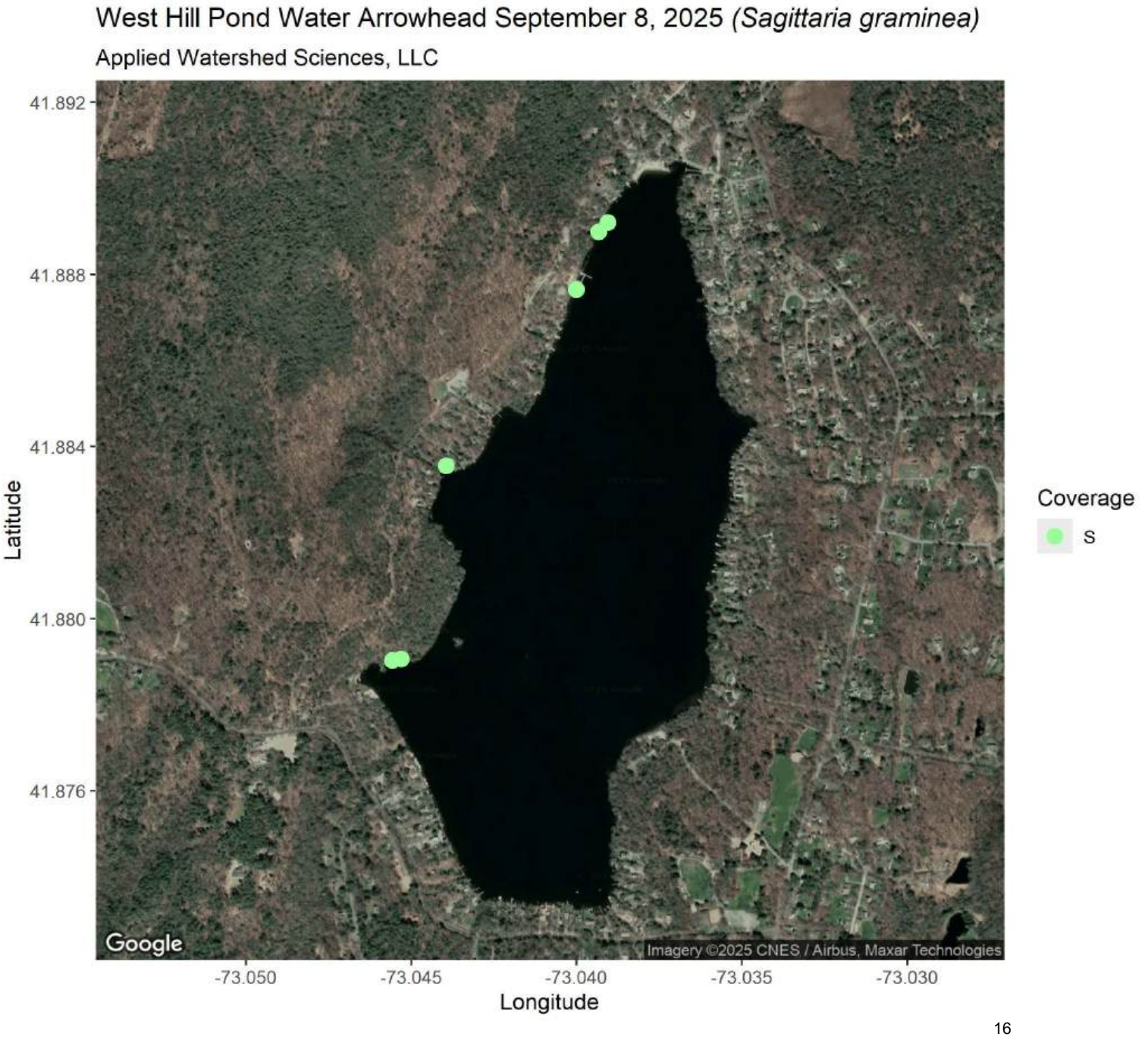
West Hill Pond Water Arrowhead September 8, 2025 (Sagittaria graminea)
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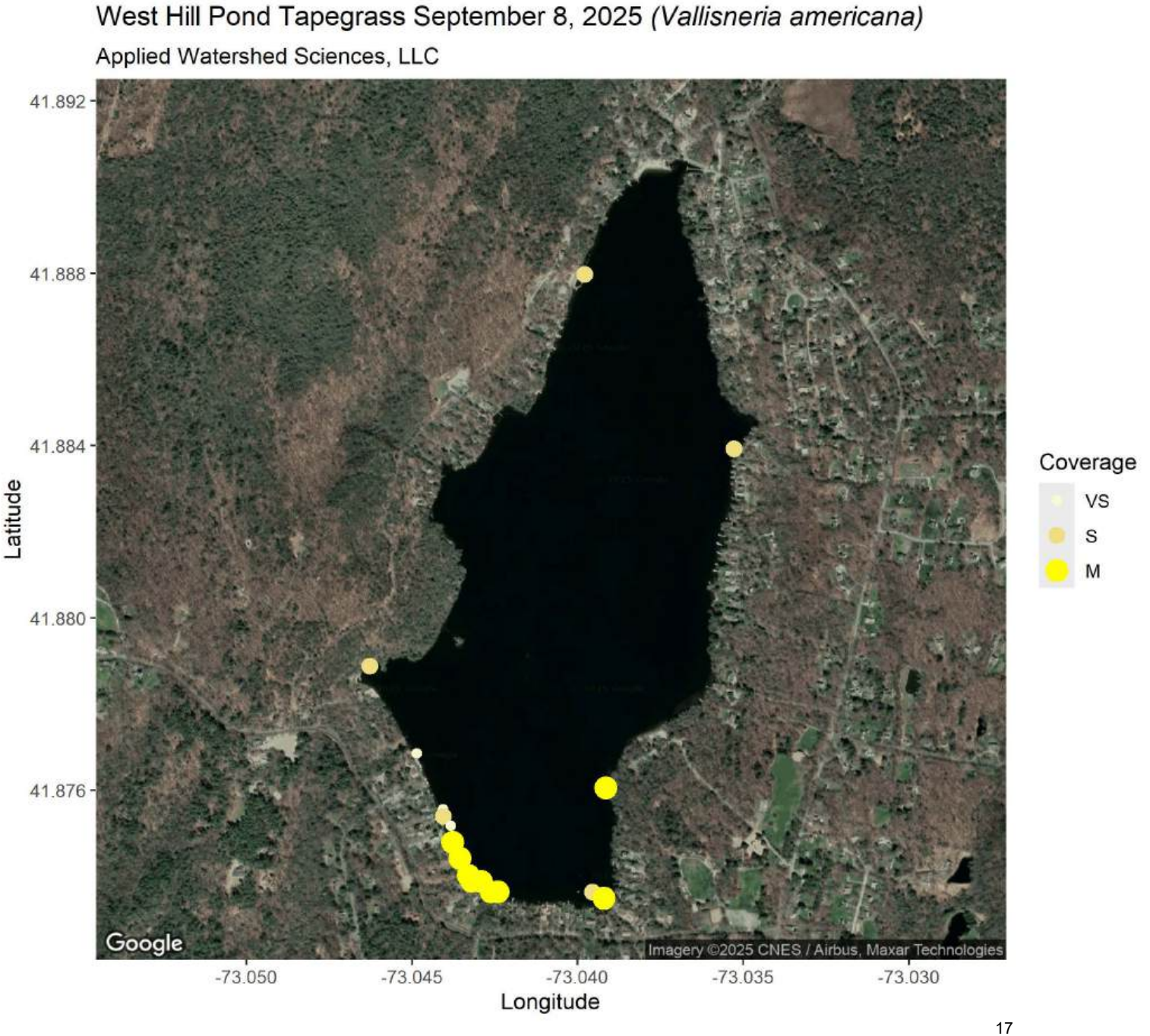
West Hill Pond Tapegrass September 8, 2025 (Vallisneria americana)
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