Hanover Conservation Commission
Vernal Pool Inventory Protocol
J. Kennedy 03/23/21

**Protocol for Vernal Pool Inventory in the Town of Hanover**

**1. Background:** As part of the Open Space planning effort initiated in 2018, existing wetland and vernal pool data will be updated. We have created mapping and associated data files to assist in this effort. As we traversed the recently acquired Mink Brook Community Forest, we discovered many potential vernal pool locations, and identified them for future inventory. New Hampshire DES and the US Army Corps of Engineers require extensive documentation and evaluation of vernal pools for regulatory purposes.

**2. Preparation for field inventory:** As we approach the spring field season, we must be careful to avoid duplication and to respect property rights. The Conservation Commission will have lists and maps of potential pool sites on Town-owned lands, and will organize the field inventory effort. Before going out in the field, the following will be needed:

**a. Property access and Permission:** Before going out to field sites, make sure that you have property owner written permission, and that you park and access the sites from approved locations.

**b. Maps:** The Commission can provide you with LiDAR-generated topographic maps if requested. Alternatively, you can use trail maps, natural area mapping from conservation organizations. Another good source of mapping is the NH GranitView website [ granit view ] . Zoom in to Hanover, then pull up Layers/Elevation/LiDAR contours and also Elevation/Topography/LiDAR-base bare earth hillshade. Amazing!

**c. GPS:** We highly recommend using a hand-held GPS mapping unit, such as the Garmin 64S or similar units. The Hanover Planning and Zoning Department has a unit available for volunteer use. You can also use a cell phone with GAIA GPS[ Gaia GPS ]. In any case, setting waypoints with latitude and longitude in decimal degrees is important. As an aid to locating the pools, the Commission can supply ".gpx" files to load into the units.

**d. Equipment:** Waterproof footwear is a must. Polarized sunglasses help cut glare. A dip net or even a food strainer can be used to examine aquatic life. A 10-power hand lens and a measuring tape are also helpful. A cell phone camera can be used for documentation, but don't take too many photos. Bring survey flagging and a Sharpie to mark the data points using the numbering system assigned by the Commission.

**e. Organization:** The Commission and the Biodiversity Committee chair will maintain a list of sites and volunteers assigned to those sites. Please follow their directions.

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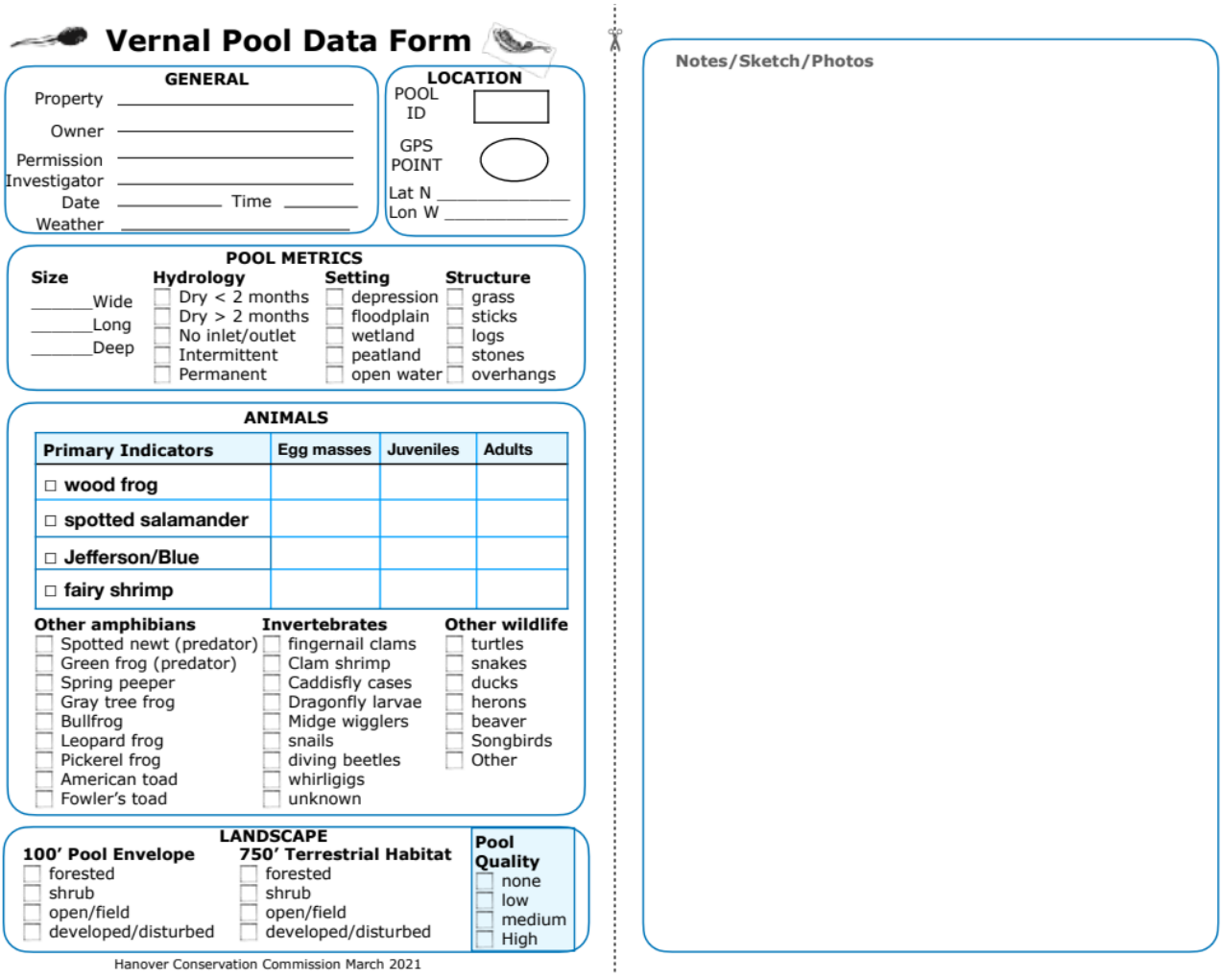
**f. Data Entry:** The field sheets will be collected and the data entered into the Town GIS system. Initial data entry can be done by anyone familiar with spreadsheets or data entry. The data can then be summarized, tabulated or charted in any number of formats.

**3. Data Forms:** There are several state and federal data forms available to use:

**Hanover Conservation Commission Vernal Pool Data Form:** We have developed a single-page field book size data form which combines many of the features of the several data forms, but is more tailored to our data collection program and the NH Vernal Pool regulations. The form is available from the town website, and is shown below



**Vernal Pool Data Form**

**GENERAL**
Property _____
Owner _____
Permission _____
Investigator _____
Date _____ Time _____
Weather _____

**LOCATION**
POOL ID ☐
GPS POINT ◯
Lat N _____
Lon W _____

**POOL METRICS**

| Size | Hydrology | Setting | Structure |
|---|---|---|---|
| _____Wide | ☐ Dry < 2 months | ☐ depression | ☐ grass |
| _____Long | ☐ Dry > 2 months | ☐ floodplain | ☐ sticks |
| _____Deep | ☐ No inlet/outlet | ☐ wetland | ☐ logs |
| | ☐ Intermittent | ☐ peatland | ☐ stones |
| | ☐ Permanent | ☐ open water | ☐ overhangs |

**ANIMALS**

| Primary Indicators | Egg masses | Juveniles | Adults |
|---|---|---|---|
| ☐ wood frog | | | |
| ☐ spotted salamander | | | |
| ☐ Jefferson/Blue | | | |
| ☐ fairy shrimp | | | |

| Other amphibians | Invertebrates | Other wildlife |
|---|---|---|
| ☐ Spotted newt (predator) | ☐ fingernail clams | ☐ turtles |
| ☐ Green frog (predator) | ☐ Clam shrimp | ☐ snakes |
| ☐ Spring peeper | ☐ Caddisfly cases | ☐ ducks |
| ☐ Gray tree frog | ☐ Dragonfly larvae | ☐ herons |
| ☐ Bullfrog | ☐ Midge wigglers | ☐ beaver |
| ☐ Leopard frog | ☐ snails | ☐ Songbirds |
| ☐ Pickerel frog | ☐ diving beetles | ☐ Other |
| ☐ American toad | ☐ whirligigs | |
| ☐ Fowler's toad | ☐ unknown | |

**LANDSCAPE**

| 100' Pool Envelope | 750' Terrestrial Habitat | Pool Quality |
|---|---|---|
| ☐ forested | ☐ forested | ☐ none |
| ☐ shrub | ☐ shrub | ☐ low |
| ☐ open/field | ☐ open/field | ☐ medium |
| ☐ developed/disturbed | ☐ developed/disturbed | ☐ High |

Hanover Conservation Commission March 2021

**Notes/Sketch/Photos**

:Here are some informal directions on using the form:
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| Item | Metrics | Example |
|---|---|---|
| **GENERAL** | | |
| Project | Name of project or property | Mink Brook Community Forest |
| Owner | Name of owner | Town of Hanover |
| Permission | Make sure you have permission | Verbal, written, e-mail |
| Investigator | Name of inventory person | J. Wood |
| Date | Date (s) of site visits | 4/1/21 |
| Time | Time of day | 2 pm |
| Weather | Brief description | Sunny, warm, windy |
| **LOCATION** | | |
| POOL ID | Quad or code + number | SE 04 |
| GPS point | Note waypoint number in circle<br>(do the same on your field map) |  |
| Latitude/Longitude | Decimal degrees - 5 places<br>from GPS unit, cell phone? | N 43.56789 W72.65432 |
| **POOL METRICS** | | |
| Size | Length, width in feet<br>Avg/max depth in decimal feet | 50 x 15<br>.5 – 1.5 |
| Hydrology | Dry – estimated or known dry-up time<br>No Inlet/Outlet (no defined channel)<br>Intermittent (seasonal)<br>Permanent (note flows in pool if any) | 2 months is NH cutoff<br>check boxes |
| Setting | Where the pool sits on the landscape | check boxes<br>add if needed |
| Structure | Nesting and hiding sites in the pool | check boxes<br>add if needed |
| **ANIMALS** | | |
| Primary Indicators | Count the egg masses<br>divide large pools into quadrants | WF/25 SS/15 |
| | observe/count tadpoles, nymphs | |
| | observe/hear adults – estimated number | |

| | | |
|---|---|---|
| | Fairy shrimp (note presence/absence) | yes/no |
| Other amphibians | Observed or heard | check boxes<br>add if needed |
| Invertebrates | Best guess – caddis cases, clams are small and hard to spot. Use dip net if time allows | check boxes<br>add if needed |

| | | |
|---|---|---|
| Other wildlife | Observed or heard | check boxes<br>add if needed |
| **LANDSCAPE** | This is very important for context | |
| 100-foot Pool Envelope | The immediate area around the pool | |
| 750-foot Critical Terrestrial Habitat | Estimate land use outside pool envelope – estimate distance species can use up to 750 feet | |
| Pool quality | This is based size and number of animals + the quality of the surrounding area | |

**References and Links:**
* available from Vicki Smith at the Zoning and Planning office, and on the Hanover.org web site

***NHFG Vernal Pool Manual** (88 pages)
Marchand, M. 2016. *Identifying and Documenting Vernal Pools in New Hampshire, 3rd ed*. NH Fish & Game Department, Concord, NH.

***NHFG Vernal Pool Data Form**
*NH Vernal Pool Documentation Form.* NH Fish & Game Department, Concord, NH, 2015

***Harris Center Volunteer Handbook** (20 pages, includes data form)
Thelen, B.A. et al., 2018. *Vernal Pool Project: Volunteer Handbook.pdf.* Harris Center for Conservation Education, Harrisville, NH

Harris Center Vernal Pool Project https://harriscenter.org/programs-and-education/citizen-science/vernal-pool-project