Vernal Pools: One Consultants Perspective

By David Marceau

Site evaluators these days are being asked more and more to do things that are getting further and further away from the concept of designing a septic system. One example of this is being able to identify vernal pools. Vernal pools are important features for site evaluators to identify because the buffers around them can be very highly regulated in some circumstances. In Maine, the State of Maine DEP regulates "significant vernal pools" which include buffers. The DEP calls them critical terrestrial habitats. In some cases the U.S. Army Corp. regulates vernal pools and a larger buffer. Thus, if a site evaluator does not make it clear to his/her client that the work that is being done does not include identifying vernal pools he/she could be liable for not addressing this issue. If you make no explicit claim to address DEP related issues for your clients that might cover you for now. However, the current proposal for the Subsurface Code (available at http://www.maine.gov/dhhs/eng/plumb/about.htm) (see definitions in Chapter 3 and Table 700.1 for setbacks) includes a 25 foot setback for fill extensions to "significant vernal pools" among other things. That ties system locations directly to the need to identify significant vernal pools and awareness of the fact that a significant vernal pool is not only the pool itself, but the critical terrestrial habitat surrounding the pool as well. As you will see in the following paragraphs, this is broad topic.

The actual State law that regulates significant vernal pools took effect on September 1, 2007. However, because the process of identifying significant vernal pools requires that egg masses be counted in April and May the real work performed to identify these pools did not take place for the first time until this past spring. The law that regulates significant vernal pools falls under the umbrella of is the Natural Resource Protection Act which is administered by the State of Maine, DEP, Natural Resource Protection Act. More specifically, significant vernal pools are regulated by the Significant Wildlife Habitat Rules which is Chapter 335.

For those of you who are not familiar with the process of identifying a significant vernal pool it is cumbersome. The place to start is to determine whether or not you think there are any potential vernal pools within or adjacent to the area in which you want to develop. Regulated activities include filling, disturbing soil, removing vegetation, and constructing or modifying permanent structures. Keep in mind that development includes changing a wooded area to grass, i.e. septic systems. The DEP has established a 250 foot "critical terrestrial habitat" buffer around the pool edge whereas the U. S. Army Corp. of Engineers (ACOE) has discretionary authority to require a 500 foot buffer (or more) if they get involved with wetland impacts. The ACOE also has different standards for identifying vernal pools and may enforce other regulations that vary from the DEP.

Potential vernal pools are any area which you think might contain enough water in a shallow depression to allow for wood frogs, spotted salamander, blue-spotted salamander or fairy shrimp to reproduce (the definition also includes rare and endangered species but these are usually not a concern). My experience in observing vernal pools for the last five years or so has taught me that generally you need to have a minimum of water 12 inches

or so deep for it to have potential to be significant. Otherwise the pool may allow amphibians to breed but the egg masses will not persist for long enough to allow them to develop into adults. Typically, the eggs are laid in April or May and metamorphose into adults by July or August. Running water may provide habitat for fish and moves too quickly to allow the type of amphibians we are concerned about to breed, so streams do not qualify as vernal pool habitat.

Once you have identified potential vernal pools then you need to determine if any are significant based upon the standards within Chapter 335. This essentially entails making observations of the potential vernal pools for amphibian egg masses or fairy shrimp during the time frame the DEP has established in your region. The northern region is anything north of the line extending from Fryeburg to Auburn to Skowhegan to Bangor to Calais (Wood Frogs May1 – May 21 and Spotted and Blue Spotted Salamanders May 10 - May 31) while anything south of that line is considered to be within the southern region (Wood Frogs April 7 – April 21 and Spotted and Blue Spotted Salamanders April 20 – May 21). In looking at the dates you might say what if things are colder or warmer than normal and the apparent observation period is obviously off. For example, I know of a significant vernal pool in Searsmont (the town I live in) that was frozen solid until April 21 last year. Obviously, I could not observe wood frog egg masses within that vernal pool during the time frame the rules state (April7 – April 21). When I called the DEP to ask the question they said the dates are guidelines and are not “firm”. When I asked how long the time frame for observations could or should be extended they said “check the web site”. Also, anyone who has worked along the coast knows that the ocean has a large effect on the warming and cooling trends so islands and peninsulas seem to be more like the northern region rather than the southern region, but, the rules don’t say that. So, there are numerous weather related issues that need to be worked out in order for projects to move forward.

Regarding the identification of amphibian egg masses there are problems as well. The presence of 40 or more wood frog egg masses, 20 or more spotted salamander egg masses or 10 or more blue-spotted egg masses make a vernal pool significant by DEP rules. Again the counting seems easy but wood frogs tend to lay their egg masses on coarse woody debris or emergent grasses in large clumps which can make deciphering between masses a problem. Some people say that if you get to the point where that is a problem the pool is significant anyway. I don’t agree; 40 egg masses is a lot and I have seen times when they are all laid in one small location within the pool.

In addition, deciphering between spotted salamander egg masses and blue-spotted egg masses is not easy. Spotted salamander egg masses are laid in clusters of 30 to 250, have a rather thick membrane around their eggs, and the masses are very firm (as determined by squeezing).

These are wood frog egg masses somewhat clumped together. Note the lack of thick membrane surrounding them.

This is as picture of a Spotted Salamander Egg Mass. Note the thick, firm membrane surround the eggs.

Blue-spotted salamander eggs occur in masses of 1 to 30, are “loose”, and have a thinner membrane around them. The problem here occurs when you have about 30 eggs in a mass and the mass has decayed a bit so it is somewhat loose, and/or the individual eggs with the thickness of their membranes look more like blue-spotted than spotted. There are some vernal pools that I have been observing for 5 years where I have seen many adult blue-spotted salamanders in yet have never identified any egg masses that look like the blue-spotted egg masses shown in the reference manuals. Furthermore, there are few pictures in any manual that clearly depict the characteristics of amphibian egg masses. All of this leads me to believe that we don’t know as much as we think we know and the characteristics of egg masses are not well understood.

Another difficult part of the process is deciding whether to fill out the forms (more later on this), filling out the forms, then completing the process that you need to in order to document whether a vernal pool is significant or not. The actual forms have been compiled by and need to be submitted to the Maine Department of Inland Fisheries and Wildlife (MEDIFW) not the DEP as you might expect. This is because the DIFW are the people who are the experts regarding vernal pools not the DEP. This is a problem because the DIFW are not the regulators (as the DEP are) but are “advisory” to the DEP. Thus,

the DIFW has no stated time frame for action to be taken on any request whereas the DEP has specific time frames in which they need to act.
Also, the DIFW has said they will not make a determination on the significance of vernal pools without a minimum of two separate observations being recorded during the time frame that eggs are present. To a degree this is understandable given that the two amphibians we must record data for have a somewhat different time frame in which they lay their eggs. However, the DEP rules make no mention of this. The bottom line is that the DEP can, and does, ignore the opinions of the DIFW if they so choose.

In addition to this, submitting the form means that the information goes on a State GIS layer and is documented so that all can see. So, you might think that you should fill out the form and submit it if you want to document the fact that a vernal pool is not significant. However, you need to remember that the ACOE has no threshold for significance like the DEP does and thus they could look at the DEP information and potentially take jurisdiction over something they otherwise would not have known anything about. In my opinion, this has the potential to be a serious liability issue for site evaluators.

My bet is that either you stopped reading this a few paragraphs ago or you are saying to yourself "why to heck is this Marceau guy so wound up about these rules"? The reason is due to the large buffers (referred to as "critical terrestrial habitat" by the DEP) that surround these habitats and what you can and can't do within them. Basically, the DEP can regulate impacts to anything within 325 feet of a documented significant vernal pool. The first 250 feet is considered to be the "critical terrestrial habitat" while the 75 feet beyond that is considered to be "adjacent" if that area contains wetlands. The DEP allows 25 percent of the critical terrestrial habitat to be disturbed through a permit by rule process. However, this disturbance cannot be in a wetland because that wetland would be considered to be a wetland of special significance. Furthermore, the current proposal to the subsurface code requires a 25 foot setback to the 250 foot critical terrestrial habitat buffer around a significant vernal pool.

The location of property lines in relation to the pools is very important because the DEP tells us that you are not required to investigate properties you do not own, and, the 25 percent critical terrestrial habitat is based upon what you own, not the entire habitat of the pool. If you owned the entire area around a significant vernal pool the buffer would be nearly five acres (assuming the pool is very small). If the property line runs through the buffer the area you would be required to investigate could be significantly less.

Based upon my contacts with other consultants, lawyers, the DEP and land owners it seems to me that most people are taking the "don't ask don't tell" approach. This is understandable given that most towns do not have any vernal pool regulations, making an accurate determination may take 9 months or more, and dealing with the permit process can be very difficult.

If I had a wish list I would request that some additional indicators be allowed to be used during times of the year that the egg masses are not present so that determinations for

significance could be made year round. These could include such things as the presence of the tadpoles and larvae of the wood frogs and salamanders, water depths, precipitation data and the presence or absence of other critters known to exist in vernal pools. This proposal could allow projects to keep moving without inordinate disruptions. At any rate, it looks like regulations related to vernal pools are here to stay and we as consultants are going to have to negotiate the process.

References:

Malcolm L. Hunter Jr., Aram J. K. Calhoun, and Mark McCollough; Maine Amphibians and Reptiles; The University of Maine Press, Orono, Maine 1999.

Leo P. Kenny and Matthew R. Burne; A Field Guide to the Animals of Vernal Pools; Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program and Vernal pool Program, Westborough, MA 01581

Significant Vernal Pool Data Collection Form

For MDEP use only Letter sent to landowner on _____ (date) stating pool is: ◯ significant ◯ not significant.

INSTRUCTIONS: Complete all three pages of the form as thoroughly as possible. One form should be completed for each field visit.

1. PRIMARY OBSERVER INFORMATION

Contact Information and credentials previously provided? ◯ No (complete all of section 1)
◯ Yes (only name and phone number required)

a. Contact Information

Name: _____ Company: _____ Email: _____

Street: _____ City: _____ State: ____ Zip: _____ Phone: _____

b. Credentials

- Please check all that apply:

☐ Professional Herpetologist and/or Ecologist
☐ Professional Wetland Scientist
☐ Professional Biologist (concentration: _____)
☐ Trained Citizen Scientist
☐ Self-informed Naturalist
☐ Other: Maine DEP

- Please indicate your professional education, training, or certification that qualifies you to conduct biological surveys of vernal pools: _____

2. VERNAL POOL LOCATION INFORMATION

a. Location

DeLorme page and grid (e.g. 04E2): _____ Township: _____

Brief site directions to the pool (using mapped landmarks): _____

b. Mapping Requirements: At least 2 of the 3 must be submitted (check those submitted):

☐ USGS Topographic Map or USGS NWI Map (1:24,000 scale) with pool clearly marked.
☐ Large Scale Aerial Photograph (1:12,000 scale or better) with pool clearly marked.
☐ GPS Coordinates (complete section below).

GPS location of vernal pool (UTM, NAD83 preferred.)
Longitude/Easting: _____ Latitude/Northing: _____ Datum (e.g. NAD83): _____
Brand and model of GPS unit: _____
Check one: ◯ The above GPS point is at the center of the pool.
◯ The center of the pool is approximately _____ m◯ / ft◯ (check one) in the compass direction of _____ degrees from the above GPS point.

c. Landowner Contact Information

- Are you the landowner? ◯ Yes ◯ No If no, was landowner permission obtained for this survey? ◯ Yes ◯ No
- Does SVP Habitat (pool + 250') extend across abutting landowner parcel? ◯ Yes ◯ No ◯ Unknown
- Landowner's contact information (if known) Name: _____ Phone: _____

Street Address: _____ City: _____ State: _____ Zip: _____

Significant Vernal Pool Data Collection Form

3. VERNAL POOL SURVEY INFORMATION

a. Survey Date: _____

b. Wetland Habitat Characterization

- Choose the best descriptor for the physical setting:
  - ○ Isolated upland depression
  - ○ Floodplain depression
  - ○ Pool associated with larger wetland complex
  - ○ Other: _____

- Check all wetland types that best apply to this pool:
  - ☐ Forested swamp
  - ☐ Shrub swamp
  - ☐ Peatland (fen or bog)
  - ☐ Emergent marsh
  - ☐ Wet meadow
  - ☐ Shallow pond
  - ☐ Abandoned beaver flowage
  - ☐ Active beaver flowage
  - ☐ Slow stream
  - ☐ Floodplain overflow
  - ☐ Headwater seepage
  - ☐ Other: _____

- Surrounding habitat within 250 feet of pool (check all that apply):
  - ☐ Unmanaged upland forest
  - ☐ Recently harvested forest
  - ☐ Forested wetland
  - ☐ Other wetland type(s): _____
  - ☐ Agriculture/grassland
  - ☐ Right-of-way clearance
  - ☐ Permanent road/driveway
  - ☐ Nonintensive development (<25% habitat conversion)
  - ☐ Intensive development (>25% habitat conversion)
  - ☐ Other: _____

c. Vernal Pool Status Under the Natural Resources Protection Act (NRPA)

i. Natural Origin

- Select the pool's origin: ○ Natural ○ Natural-Modified ○ Unnatural ○ Unknown
  If modified, unnatural or unknown, describe any modern or historic human impacts to the wetland:
  _____

ii. Hydrology

- Select the pool's estimated hydroperiod AND provide rationale for opinion.
  - ○ Permanent
  - ○ Semi-permanent (drying partially in all years and completely in drought years)
  - ○ Ephemeral (drying out during the growing season in most years)

  _____
  _____

- Maximum depth: ○ 0-12" (0-1 ft.) ○ 12-36" (1-3 ft.) ○ 36-60" (3-5 ft.) ○ >60" (>5 ft.)
- Approximate size of pool (at spring highwater): Width: _____ ○ m ○ ft Length: _____ ○ m ○ ft
  Check size class: ○ 0-0.1 acre ○ 0.1-0.5 acre ○ 0.5-1 acre ○ >1 acre
- Predominate substrate:
  - ○ Mineral soil (bare, leaf-litter bottom, or upland mosses present)
  - ○ Mineral soil (sphagnum moss present)
  - ○ Organic matter (peat/muck/mud) shallow or restricted to deepest portion
  - ○ Organic matter (peat/muck/mud) deep and widespread
- Nonwoody pool vegetation indicators (check all that apply):
  - ☐ Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)
  - ☐ Dry site ferns (e.g. spinulose wood ferns, lady fern, polypody fern)
  - ☐ Moist site ferns (e.g. sensitive fern, marsh fern, New York fern)
  - ☐ Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)
  - ☐ Sphagnum moss (anchored or suspended)
  - ☐ Wet site ferns (e.g. royal fern, cinnamon fern, interrupted fern)
  - ☐ Aquatic vascular spp. (e.g. cattail, pickerelweed, arrowhead)
  - ☐ Floating or submerged aquatics (e.g. water lilies, water shield, pond weeds, bladderwort)

iii. Inlet/Outlet Permanency

- Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):
  - ○ No inlet or outlet
  - ○ Ephemeral inlet or outlet
  - ○ Permanent inlet or outlet (channel with well-defined banks and permanent flow)
  - ○ Other or Unknown (explain): _____

Significant Vernal Pool Data Collection Form

3. VERNAL POOL SURVEY INFORMATION, continued from page 2

iv. Fishlessness

- Were fish observed? ○ Yes ○ No
- Were fish sampled? ○ Yes ○ No
- Describe the methods used for observing/sampling fish, and list species observed: _____

d. Significant Vernal Pool Status Under NRPA

i. Abundance Criteria

- For each indicator species, indicate the exact number of egg masses, method of verification, and confidence level for each life stage. Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) used to document significance are required by nonprofessional observers (see 1b). Label all photographs with the following: Observer Name, Pool Location, and Date of Photograph.

INDICATOR SPECIES	Egg Masses			Tadpoles/Larvae		Adults	
	#	Method of Verification*	Confidence Level**	Method of Verification*	Confidence Level**	Method of Verification*	Confidence Level**
Wood Frog							
Spotted Salamander							
Blue-spotted Salamander							
Fairy Shrimp							

*Method of verification, S = Seen; H = Handled; P = Photographed **Confidence level in observation, 1= <60%; 2= 60-95%; 3= >95%

ii. Rarity Criteria

- Note any rare, threatened, or endangered (RTE) species associated with vernal pools. Check the method(s) of verification and fill in the confidence level (CL) for each species observation. All RTE observations must be accompanied by a Rare Animal Form (available from MDIFW) and photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*				CL**	SPECIES	Method of Verification*				CL**
	V	P	H	S			V	P	H	S	
Blanding's Turtle	☐	☐	☐	☐		Wood Turtle	☐	☐	☐	☐	
Spotted Turtle	☐	☐	☐	☐		Ribbon Snake	☐	☐	☐	☐	
Ringed Boghaunter	☐	☐	☐	☐		Other:	☐	☐	☐	☐	

*Method of verification, V = Vouchered; P = Photographed; H = Handled; S = Seen

**CL: Confidence level in observation; 1= <60%; 2= 60-95%; 3= >95%

e. General Comments and/or Observations of Other Wildlife Species:

_____

_____

_____

4. OBSERVER SIGNATURE

I hereby certify that the information contained in this report is true and complete to the best of my knowledge.

Signature _____ Date _____

All submissions and supporting documents will be retained by the Maine Department of Inland Fisheries and Wildlife. Information submitted on this form and accompanying documents is part of the public record.

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Wildlife Resource Assessment Section
650 State Street, Bangor, ME 04401
Tara.King@maine.gov

For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: ○ significant ○ significant but no landowner permission ○ not significant due to: ☐ insufficient data OR ☐ does not meet biological criteria and/or ☐ does not meet vernal pool definition criteria.

Print Form