



MASSWILDLIFE

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Guidelines for the Certification of Vernal Pool Habitat, March 2009*

Table of Contents:

- Section I. - NHESP Vernal Pool Fact Sheet
- Section II. - NHESP Certification Criteria & Documentation Requirements
- Section III. - NHESP Vernal Pool Field Observation Form

Background Information

The NHESP & Vernal Pool Certification:

The goal of the Natural Heritage & Endangered Species Program (NHESP) is to protect the state's native biological diversity with its highest priority being the protection of the state's native vertebrate, invertebrate, and plant species officially listed as Endangered, Threatened, or of Special Concern under the Massachusetts Endangered Species Act (M.G.L. c. 131A and implementing regulations 321 CMR 10.00).

The NHESP also administers the state's official vernal pool certification program. NHESP staff does not routinely survey and monitor vernal pools outside of rare species work and special vernal pool projects, but accepts certain biological and physical documentation submitted by outside scientists, resource managers, and other interested individuals and organizations as the basis for the possible certification of vernal pool habitat.

Why were the *Guidelines for the Certification of Vernal Pool Habitat* Revised in 2009?

Revisions to the Guidelines are designed to ensure consistency between the NHESP certification criteria and the biological and physical criteria of 'vernal pool habitat' in the WPA regulations (310 CMR 10.04, 10.57(1)(a)(3), 10.57(1)(b)(4), and 10.58(1)). The Guidelines have been modified to increase the confidence that pools that become certified provide essential breeding habitat for certain amphibians that require vernal pools. This is necessary, for example, because facultative vernal pool species use a variety of temporary and permanent wetlands and are not always reliable indicators of hydroperiod (two months inundation) or vernal pool habitat. The revised Guidelines address this by reducing the number of facultative species that can be used for certification. In addition, they enhance the requirements for documenting the physical and biological characteristics of a vernal pool (see sections II. and III. for specific changes). Overall, the revised Guidelines contribute to the defensible certification of vernal pool habitat in the variety of wetlands where they, in fact, occur.

I. VERNAL POOL FACT SHEET

What Are Vernal Pools?

Vernal pools are temporary bodies of fresh water that provide important habitat for many vertebrate and invertebrate species. “Vernal” means spring, and indeed, many vernal pools are filled by spring rains and snowmelt, and then dry during the summer. However, many vernal pools are filled by autumn rains (i.e., “autumnal pools”) and persist through the winter and others are semi-permanent and do not dry every year. Vernal pools are quite often very small and shallow; vernal pools that support rich communities of vertebrate and invertebrate animals may measure only a few yards across. However, vernal pools of several acres also occur throughout Massachusetts.

Where Are Vernal Pools Found?

Vernal pools are common in Massachusetts and occur in almost every town in the state. Vernal pools are found across the landscape where small woodland depressions, swales, or kettle holes collect spring runoff or intercept seasonally high groundwater tables. Although many people associate vernal pools with dry woodland areas, vernal pools also occur in meadows, river floodplains, interdunal swales, and large vegetated wetland complexes. Vernal pool habitat can occur where water is contained for more than two months in the spring and summer of most years and where no reproducing fish populations are present.

Why Are Vernal Pools Valuable?

Vernal pools constitute a unique and increasingly vulnerable type of wetland. Vernal pools are inhabited by many species of wildlife, some of which are totally dependent on vernal pools for their survival. Vernal pools do not support fish because they dry out annually or at least periodically. Some may contain water year round, but are free of fish as a result of significant drawdowns that result in extremely low dissolved oxygen levels. The wood frog (*Lithobates sylvaticus*) and the four local species of mole salamander (*Ambystoma* spp.) have evolved breeding strategies intolerant of fish predation on their eggs and larvae; the lack of established reproducing fish populations is essential to the breeding success of these species.

Some state-listed species that may be found in vernal pools:

Species	Status ¹
Marbled salamander (<i>Ambystoma opacum</i>)	T
Blue-spotted salamander (<i>A. laterale</i>)	T/SC
Jefferson salamander (<i>A. jeffersonianum</i>)	SC
Eastern spadefoot toad (<i>Scaphiopus holbrookii</i>)	T
Blanding’s turtle (<i>Emydoidea blandingii</i>)	T
Wood turtle (<i>Glyptemys insculpta</i>)	SC

¹Status pursuant to the MA Endangered Species Act: T = Threatened; SC = Special Concern.

Other amphibian species, including the American toad (*Anaxyrus americanus*), spring peeper (*Pseudacris crucifer*), and gray treefrog (*Hyla versicolor*), often exploit the fish-free waters of vernal pools but use a variety of different wetland types. Vernal pools also support rich and diverse invertebrate faunas. Some invertebrates, such as the fairy shrimp (*Eubranchipus* spp.), are also dependent upon vernal pools. Invertebrates are both important predators and prey in vernal pool ecosystems. Vernal pools are an important habitat resource for many birds, mammals, reptiles and amphibians, including many species listed under the MA Endangered Species Act (M.G.L c.131A).

Vernal Pool Protection

Vernal pools became eligible for protection when the **Massachusetts Wetlands Protection Act regulations (WPA)** (310 CMR 10.00) were revised in 1987 to include ‘wildlife habitat’ as an interest protected under the WPA. Vernal pools became protected not as a specific wetland type, but rather a

wetland function that provides important ‘wildlife habitat’. In accordance with the WPA, vernal pools are presumed present in jurisdictional wetland ‘Resource Areas’ only when mapped and certified by the Natural Heritage & Endangered Species Program (NHESP). Thus, the vernal pool certification program was established to register the locations of *all vernal pools, regardless of jurisdiction, that meet the biological and physical features of ‘Vernal Pool Habitat’ in the WPA*; i.e., those that provide essential breeding habitat for certain amphibians that require vernal pools (310 CMR 10.04, 10.57(1)(a)(3), 10.57(1)(b)(4), and 10.58(1)). Although the NHESP certifies vernal pool habitat, local conservation commissions and the Massachusetts Department of Environmental Protection (DEP) are responsible for the regulatory protection of vernal pools.

Other regulations have subsequently incorporated protections for certified vernal pools including: the **Massachusetts Surface Water Quality Standards** (314 CMR 4.00), **Massachusetts Environmental Code: Title 5** (310 CMR 15.00), **Massachusetts Forest Cutting Practices Act Regulations** (304 CMR 11.00), **Massachusetts 401 Water Quality Certification Regulations** (314 CMR 9.00), and some **local wetland bylaws**. These regulations extend protections to many certified vernal pools (CVPs) that may not be jurisdictional under the WPA. In addition, the WPA and Forest Cutting Practices Act regulations also provide protection to vernal pools that have not been certified if their occurrence is adequately documented during permit review.

The Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00) protect certified vernal pools and up to 100 feet beyond the pool boundary by preventing alterations which would result in impairment of the wildlife habitat function of the CVP. In order to receive protection through the WPA, however, CVPs must occur within a jurisdictional wetland ‘Resource Area’. If in a ‘Resource Area’, protection extends to the CVP itself, as well as to the portion of the 100-foot zone surrounding the CVP (referred to as ‘Vernal Pool Habitat’) that is within a Resource Area. WPA protection of ‘Vernal Pool Habitat’ does not extend into non-jurisdictional upland or the buffer zone of a resource area. In summary, conservation commissions are empowered to prevent the impairment of the capacity of Vernal Pool Habitat to function as wildlife habitat.

Vernal pools that are not certified may also be protected by local conservation commissions or the DEP if credible scientific evidence is presented prior to the end of the appeals period for a Superseding Order of Conditions (OOC) issued by the DEP. A conservation commission, or the DEP on appeal, can incorporate protective conditions into an OOC that would prevent the impairment of the wildlife habitat value of the pool and its 100 foot ‘Vernal Pool Habitat’ if the pool is not certified.

The WPA is administered by local conservation commissions under the jurisdiction of the DEP, either of which should be contacted for all questions related to the regulatory protection of certified and potential vernal pools.

Each DEP Regional Office has Vernal Pool Liaison(s) who can be contacted at these locations:

<p>NORTHEAST REGIONAL OFFICE 203B Lowell Street Wilmington, MA 01887 (978) 694-3200</p>	<p>SOUTHEAST REGIONAL OFFICE 20 Riverside Drive Lakeville, MA 02347 (508) 946-2700</p>	<p>CENTRAL REGIONAL OFFICE 627 Main Street Worcester, MA 01608 (508) 792-7650</p>	<p>WESTERN REGIONAL OFFICE 436 Dwight Street Springfield, MA 01103 (413) 748-1100</p>
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The Massachusetts Surface Water Quality Standards (SWQS) (314 CMR 4.00), administered by the DEP, implement Section 401 of the federal Clean Water Act at the state level. When a project proposes discharges of solid or liquid fill in a wetland under federal jurisdiction, a permit must be obtained from the Army Corps of Engineers. In accordance with the SWQS, the project proponent must first obtain a Water Quality Certification from the DEP, under the Massachusetts 401 Water Quality Certification Regulations (314 CMR 9.00), that states that the discharge complies with the federal Clean Water Act. The SWQS classify CVPs as Outstanding Resource Waters (ORW) for which no new or increased discharge of pollutants, including solid fill or storm water, is allowed, and any existing discharge must cease, or be treated with the highest and best practical methods. Generally, a CVP will be protected from the discharge of fill as an ORW, even if the CVP is not subject to WPA jurisdiction as a state wetland.

The Massachusetts Environmental Title 5 (310 CMR 15.00) regulates the siting and construction of subsurface sewage disposal (septic) systems in the state. A system's septic tank and distribution box must be located a minimum of 50 feet, and the leaching field a minimum of 100 feet, from the boundary of a CVP. The setback for the leach fields can be reduced if hydrogeologic data demonstrates the pool is hydraulically up-gradient from the proposed system.

The Massachusetts Forest Cutting Practices Act Regulations (304 CMR 11.00) protect CVPs from certain forestry impacts. Harvesting requirements limit cutting to no more than 50% of the trees within 50 feet of a CVP. They also require that trees or tree tops not be felled in CVPs, and restrict the use of pools as staging areas or skidder trails. Guidelines, similar to the regulations, are established for activities planned near uncertified vernal pools identified by consulting foresters.

Town Wetlands and Zoning By-laws are used by many municipalities to enhance protections to vernal pools. While the details of by-laws are town specific, they are generally intended to increase protection to vernal pools beyond that afforded by the WPA.

The Vernal Pool Boundary

The shallow edges of vernal pool habitat represent one of the most ecologically valuable portions of these habitats. These areas are generally the first to thaw in the spring and provide access to the pool for the earliest breeding species. These shallow water zones also tend to be significantly warmer than the deeper portions of a vernal pool throughout the spring. Egg masses of early breeding amphibians benefit from the warmer water temperatures at the pool edges that promote rapid egg development.

The boundary of vernal pool habitat must incorporate these shallowest reaches of the pool. When there is no distinct and clear topographic break at the edge of a pool, the maximum observed or recorded extent of flooding represents the ecological boundary of the vernal pool. This boundary is evident and should be delineated by leaf staining and other indicators of hydrology outside of the mean annual high water period (March through early April in most cases).

The NHESP does not establish a physical, on-the-ground vernal pool boundary during the certification process. The WPA allows a project proponent to submit an opinion as to the extent of a CVP that is based upon a total run-off from a statistical 2.6 inch rainfall in 24 hours, but it should also include groundwater inputs to the basin at the beginning of the spring amphibian breeding season (see DEP DWW Policy 85-2). The DEP has stated in its policies that groundwater inputs should not be overlooked

in these calculations because otherwise it could result in a total volume considerably smaller than the basin holds in any given spring.

How Can Vernal Pools Be Certified?

The NHESP administers the official vernal pool certification program and accepts certain biological and physical documentation submitted by outside scientists, resource managers, and other interested individuals and organizations as the basis for the possible certification of vernal pool habitat. People interested in vernal pool certification should:

1. Download the NHESP *Guidelines for the Certification of Vernal Pool Habitat, March 2009* and the *Vernal Pool Field Observation Form* from www.mass.gov/nhesp. Please read and understand the Guidelines before collecting data and completing the form.

The NHESP strongly recommends that landowner permission be obtained prior to collecting certification documentation. It is the sole responsibility of an individual providing vernal pool certification information to ensure that all activities associated with gathering said information comply with law.

Certification is based on evidence that a pool provides important wildlife habitat consistent with 'Vernal Pool Habitat' in the WPA. Wildlife that use vernal pools are generally divided into two groups:

Obligate Species: vertebrate and invertebrate species that require vernal pools for all or a portion of their life cycle and are unable to successfully complete their life cycle without vernal pools.

Facultative Species: vertebrate and invertebrate species that frequently use vernal pools for all or a portion of their life cycle, but are able to successfully complete their life cycle in other types of wetlands.

Obligate species serve as *direct* indicators of vernal pool habitat because they require at least two months of flooded conditions and the absence of established, reproducing fish populations. When breeding evidence of obligate species is documented, it is not necessary to prove there is no established fish population.

Facultative amphibian species serve as *indirect* indicators of vernal pool habitat.

Documentation of the appropriate facultative amphibian species does not ensure certification; evidence documenting there is no established, reproducing fish population must also be submitted. Additionally, the physical documentation (e.g., pool photos, descriptive notes) submitted must demonstrate the pool possesses the physical characteristics necessary to sustain a vernal pool environment (e.g., depth, size, vegetation).

2. Fill out a Vernal Pool Field Observation Form (paper or electronic form). Attach the physical and biological documentation and the maps as required by the Guidelines. Submit the packet to the NHESP for review.

The NHESP does not field visit pools prior to certification but relies on the submittal of accurate information and clear documentation of both the biological and physical evidence. If the documentation is inconclusive additional documentation may be requested or the pool may not be certified. Once it is determined that a vernal pool meets the certification criteria in the Guidelines, it will be officially certified by NHESP and the observer, conservation commission, DEP regional office, and landowner (if known) are formally notified.

For information on using the electronic form, please visit: www.mass.gov/nhesp.

Certified Vernal Pool Maps

- GIS Data layers of Certified Vernal Pools (updated continually) and Potential Vernal Pools are available through the MassGIS Online Data Viewer ('Oliver') at www.mass.gov/get-a-map.
 - Click on "Open OLIVER interactive mapping tool"
 - Zoom to area of interest
 - Add Layers by clicking on "Conservation/Recreation" folder, then "Natural Heritage Data", then "NHESP Certified Vernal Pools" and/or "Potential Vernal Pools".
- NHESP's town-wide 'Priority Habitat & Estimated Habitat' maps (published every 4 years) include CVPs and are available for public viewing at the offices of conservation commissions, planning boards, and building inspectors.

II. CERTIFICATION CRITERIA & DOCUMENTATION REQUIREMENTS

Please read and understand the **CERTIFICATION CRITERIA** and **DOCUMENTATION REQUIREMENTS** in the following sections before submitting Vernal Pool Field Observation Form(s) and supporting documentation.

Certification Criteria

Vernal pool certification is possible only after the appropriate **biological AND physical** criteria have been met and documented by one of the two certification methods described below:

A) OBLIGATE SPECIES METHOD

Biological Criteria

- Breeding evidence of obligate amphibian species OR the presence of fairy shrimp (see table on pg. II.2).

AND

Physical Criteria

- Evidence of a pool with no permanently flowing outlet (i.e., photo of the pool holding water).

B) FACULTATIVE AMPHIBIAN SPECIES METHOD

Biological Criteria

- Breeding evidence of 2 or more facultative amphibian species (see table on pg. II.2).

AND

Physical Criteria

- Evidence of a pool with no permanently flowing outlet (i.e., photo of the pool holding water).

AND

- Evidence that there is no established, reproducing fish population (i.e., photo of the pool dry).

The **Obligate Species Method** is the most direct way to certify a vernal pool. If documentation submitted is inconclusive, or if the physical documentation appears to show inappropriate habitat, the pool may not be certified or additional documentation may be requested. Since **facultative amphibians** can use a variety of wetland habitats it is especially important when using this method that the pool

photos demonstrate the physical characteristics necessary to sustain a vernal pool environment (e.g., depth, size, vegetation). If there is any doubt, the NHESP may require additional evidence.

A. Obligate Species Method: Biological and Physical Criteria & Evidence Accepted for Certification:

THE NHESP STRONGLY RECOMMENDS THAT LANDOWNER PERMISSION BE OBTAINED PRIOR TO COLLECTING CERTIFICATION DOCUMENTATION. IT IS THE SOLE RESPONSIBILITY OF AN INDIVIDUAL PROVIDING VERNAL POOL CERTIFICATION INFORMATION TO ENSURE THAT ALL ACTIVITIES ASSOCIATED WITH GATHERING SAID INFORMATION COMPLIES WITH LAW.

BIOLOGICAL CRITERIA		PHYSICAL CRITERIA	
Obligate Species Accepted - one or more of the following	Breeding Evidence Accepted - one or more of the following from at least one obligate species must be documented by photos, video, or audio (chorusing)	Physical Features Accepted	Physical Evidence Accepted
<p>Wood frog (<i>Lithobates sylvaticus</i>)</p> <p>Spotted salamander (<i>Ambystoma maculatum</i>)</p> <p>Blue-spotted salamander * (<i>A. laterale</i>)</p> <p>Jefferson salamander * (<i>A. jeffersonianum</i>)</p> <p>Marbled salamander * (<i>A. opacum</i>)</p>	<p>Adult wood frogs -</p> <ul style="list-style-type: none"> • Full chorus (calls constant, continuous, & overlapping) - map location of chorus (pool) and site where recording was taken; OR • 5+ mated pairs OR <p>Adult salamanders -</p> <ul style="list-style-type: none"> • Congressing OR • Spermatophores OR • Marbled salamander attending a nest OR <p>Egg masses -</p> <ul style="list-style-type: none"> • TOTAL of 5 egg masses - any combination, regardless of species OR • 1 egg mass of a MESA-listed salamander or nest and eggs of marbled salamander OR <p>Larvae -</p> <ul style="list-style-type: none"> • Any number of larvae OR <p>Transforming juveniles -</p> <ul style="list-style-type: none"> • Still in pool with tail and/or gill remnants. 	<p>Pool with no permanently flowing outlet.</p>	<p>Good quality photos or video of the entire pool holding water including any inlets or outlets (e.g., any streams, culverts, etc).</p> <p><i>See 'Tips for Photographing Evidence Required for Vernal Pool Certification'.</i></p>
<p>Fairy shrimp (<i>Anostraca: Eubrachipus</i>)</p>	<p>Photo or video of adult specimen(s).</p>	<p>Same as above.</p>	<p>Same as above.</p>

*Species listed under the Massachusetts Endangered Species Act Regulations (MESA) (321 CMR 10.90). If observed, please document and fill out a *Rare Animal Observation Form* (available at www.mass.gov/nhesp) to be submitted to the NHESP.

B. Facultative Amphibian Species Method: Biological and Physical Criteria & Evidence Accepted for Certification:

BIOLOGICAL CRITERIA		PHYSICAL CRITERIA	
Facultative Species Accepted - two or more of the following	Breeding Evidence Accepted - one or more of the following from at least two facultative species must be documented by photos, video, or audio (chorusing)	Physical Features Accepted	Physical Evidence Accepted
Spring peeper <i>(Pseudacris crucifer)</i> Gray treefrog <i>(Hyla versicolor)</i> American toad <i>(Anaxyrus americanus)</i> Fowler’s toad <i>(Anaxyrus fowleri)</i>	Adults – <ul style="list-style-type: none"> • Full chorus (calls constant, continuous, & overlapping) - map location of chorus (pool) and site where recording was taken; OR • 5+ mated pairs OR Egg masses – <ul style="list-style-type: none"> • Any number of egg masses OR Larvae – <ul style="list-style-type: none"> • Any number of larvae OR Transforming juveniles – <ul style="list-style-type: none"> • Still in pool with tail remnants. 	Pool with no permanently flowing outlet. AND Evidence that there is no established, reproducing fish population.	Good quality photos or video of the entire pool holding water including any inlets or outlets (e.g., any streams, culverts, etc.). AND Good quality photos or video of the entire pool dry. <i>See ‘Tips for Photographing Evidence Required for Vernal Pool Certification’.</i>

Documentation Requirements

Documentation of the biological and physical evidence listed in the **CERTIFICATION CRITERIA** must be submitted for official certification of a vernal pool. Photographs are the preferred method of documentation but video of evidence or audio recording of chorusing frogs or toads are acceptable. Field notes are encouraged and helpful, but are not accepted as the sole source of evidence.

A. BIOLOGICAL DOCUMENTATION – Photos, Video, or Audio of Amphibian Breeding Evidence or Fairy Shrimp:

- Photos, video, or audio must be of suitable quality (resolution, focus, clarity, indicators of scale (e.g., coin, lens cap, ruler)) so species identification can be confirmed. Please see “*Tips for Photographing Evidence Required for Vernal Pool Certification*”.
- Photos, video, or audio must be labeled with pool location (town), pool name or tracking # (e.g. VP#1, Elm St. VP), date taken, & observer’s name.

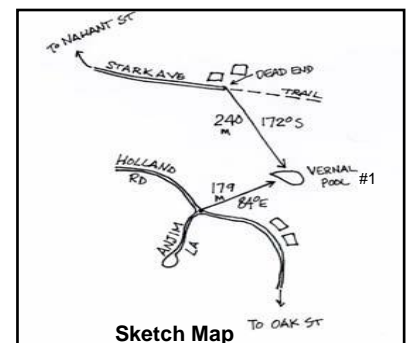
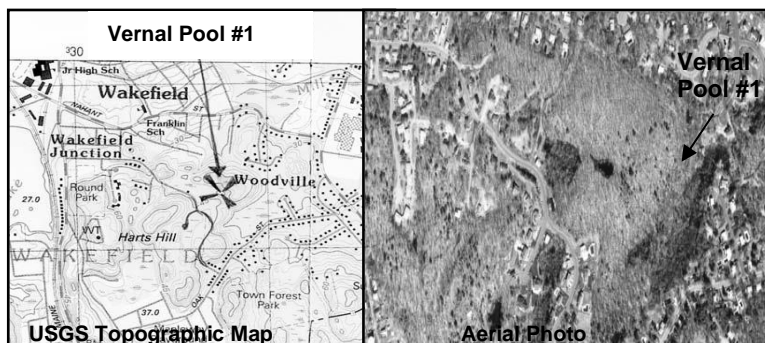
- Each individual egg mass or mated pair required for certification (e.g., all 5 wood frog egg masses) must be photographed or videotaped. If more than the minimum required number is observed, photo the required number, and count or estimate the total number and indicate this on the Vernal Pool Field Observation Form.
- Only audio tapes of full amphibian choruses (calls are constant, continuous & overlapping) are accepted (see Protocol Description at: <http://www.pwrc.usgs.gov/naamp/>) provided the location of chorusing (i.e., exact pool location) and the location of your recording site are accurately mapped.
- Documentation must be collected within 3 years prior to submittal to NHESP.

B. PHYSICAL DOCUMENTATION – Photos or Video of Pool Holding Water and Dry:

- Photograph(s) or video of the entire pool including any inlets or outlets (e.g., any streams, culverts) are required and must be of suitable quality (resolution, focus, scale) so pool features can be reliably assessed. One or more identifying landmarks (e.g., stand of trees, stumps, boulders, rock walls, etc.) to authenticate the pool location must be included. If unable to photograph the entire pool in a single photo, take a “panorama” series. Please see “*Tips for Photographing Evidence Required for Vernal Pool Certification*”.
- Photo(s) or video must be labeled with pool location (town), pool name or tracking # (e.g. VP#1, Elm St. VP), date taken, & observer’s name.
- Documentation must be collected within 3 years prior to submittal date to NHESP.

C. MAPPING REQUIREMENTS - THREE types of maps are required for certification and the pool locus must be clearly delineated and identified (your pool name or tracking #) on each map:

1. **U.S. Geological Survey topographic map** (copy) (1:24,000 or 1:25,000 scale) - topos can be downloaded from MassGIS.
2. **Color orthophotos** (copy) (1:12,000 scale or better) - orthophotos can be downloaded from MassGIS.
3. **One additional map or form of location data** to help clarify the pool’s location, as follows:
 - **Sketch map** - directions and distances from landmark(s), readily identifiable in the field, should be marked and clearly described on the map; if submitting a breeding chorus, the location of the chorus (pool) and recording site can be delineated on this map, **OR**
 - **Assessors map** - available from local tax assessor’s offices, include the map and parcel #'s, **OR**
 - **Professional survey, OR**
 - **GPS longitude/latitude coordinates.**



Tips for Photographing Evidence Required for Vernal Pool Certification¹

The biological and physical evidence required for vernal pool certification must be documented by photos and/or video (or audio for frog/toad chorusing) of suitable quality (resolution, focus, indicators of scale) so species identification can be confirmed and pool features be reliably assessed. Because this often requires close-up photographs in generally poor lighting conditions, some general “**rules of thumb**” are included below to help you produce good photos/video:

- Cameras that compensate for low light conditions and close-up focusing provide the best photos; most digital cameras are capable of this but fixed focus cameras (i.e., “point and shoot”) typically do not focus closer than 2-4 feet (if used carefully they usually produce suitable photos).
- Hold the camera as steady as possible or use a tripod to avoid blurred images.
- Take several photos, or extra photos using different backgrounds and light settings, to be certain you end up with a clear photo.
- Process or view your photos immediately so you can return to the pool for better photos, if needed.

POOL Photos (Physical Evidence)

Photographs of the vernal pool need to be clear and show as much of the pool as possible.

- They must include a landmark to authenticate the pool location (e.g., stand of trees, stump, a boulder, rock wall, etc.).
- If unable to photograph the entire pool in a single photo, try to photograph the pool in a “panorama” series.
- When photographing pools ‘holding water’, also include photos of any inlets or outlets (e.g., streams, culverts) observed entering or leaving the pool.

ORGANISM Photos (Biological Evidence)

Biological evidence from the pool needs to be documented by photographs/video that confirms **amphibian breeding** (i.e., mated pairs of frogs/toads, congressing salamanders, spermatophores, egg masses, larvae, or transforming juveniles) or the presence of **fairy shrimp** (see Certification Criteria for specific requirements).

- **Mated pairs** of wood frogs and **congressing salamanders** typically need to be photographed at night. A flash can sometimes illuminate the water surface, impeding the view underwater, so a flashlight can be used to illuminate subjects underwater.
- **Spermatophores** are found on the bottom of the pool. Reflections on the surface can sometimes block underwater images and can be eliminated in two ways: 1) position an object (or person) to cast a shadow over the area you are photographing, or 2) use a polarizing filter on your camera.
- To photograph **egg masses**, place a light-colored background (e.g., yellow foam meat tray, Frisbee, white board) behind the masses so they are clearly visible against the dark water and more easily identifiable; they should not be removed from the water and only minimally disturbed. Also try and include something in the photo for scale (e.g., backing tray with measurement markings, a hand, net, etc.).

- **Larvae** and **fairy shrimp** usually need to be briefly removed from the pool to be photographed. Place larvae or fairy shrimp in a small container (e.g., margarine tub, foam meat tray, clear plastic baggie) *filled with pool water* or photograph in your hand.
 - a. **Salamander larvae** - place in container filled with pool water and photograph from above to clearly show the gills and, if possible, a side view of the body.
 - b. **Wood frog tadpoles** - photograph in or out of water but positioned to show the belly (i.e., gut coiling) and gold flecking over the belly and sides.
 - c. **Fairy shrimp** - place in white or clear container filled with pool water and photograph.
 - d. **Transforming juveniles** – photograph so tail and/or gill remnants are visible; photos should be taken from above and/or a side view for proper identification.

¹Based on *Wicked Big Puddles: A Guide to the Study and Certification of Vernal Pools*, 3rd Edition (March 2003) by Leo P. Kenney, Vernal Pool Association (www.vernalpool.org) and is used with permission.

Instructions (continued)
 4. Certification by the Facultative Amphibian Method - provide photo, video, or audio (chorusing) of the required breeding evidence and photo(s) or video of the pool holding water **AND** dry.
 6. Provide information to help distinguish the pool & assess its features.
 7. All required biological & physical evidence must be documented by good quality photos, video, or audio.
 8. Indicate the 3 required maps submitted.

4. Biological Evidence: *Facultative Amphibians*

Breeding evidence¹ of ≥ 2 species must be documented by photos, video, or audio.

BREEDING AMPHIBIANS	DATE OBSERVED month/day/year	BREEDING EVIDENCE ¹ OBSERVED
Spring peeper		
Gray treefrog		
American toad		
Fowler's toad		

Breeding evidence¹ includes: full breeding choruses (call constant & overlapping), ≥ 5 adults in amplexus, any # of egg masses, tadpoles, and/or transforming juveniles in pool.

5. Rare Wetland Species

Were MESA-listed species observed using this pool?

Yes No

If yes, please submit a Rare Animal Observation Form with photo & map to the NHESP (available at www.nhesp.org).

6. Description of Pool and Surroundings ~ Please describe to the best of your ability and knowledge.

Dimensions (please include measurements or estimates):

Approx. Length: _____ Approx. Width: _____ Approx. Maximum Depth: _____

Describe distinctive features (roads, structures, boulders, foot trails, vegetation types, etc.) which are visible from or near the pool that would help someone recognize it.

Origin of the pool (check): Natural depression Human-made pool/ditch Created wetland/pool Other or Unknown (describe) _____

The pool's hydroperiod is most likely: Seasonal (drying out in most years) Semi-permanent (drying partially in most years) Permanent

Describe any inlet or outlets to/from the pool and their permanence (e.g., streams, culverts, etc).

Land use in vicinity of pool (approx. 100 ft from pool edge – check all that apply): upland forest forested wetlands emergent marsh/scrub-shrub wetland
 agricultural/grassland/meadow residential/commercial other _____

7. Documentation Submitted – Label with pool name or tracking #, town, date taken, observer's name.

- Photo(s) Video Audio
 Obligate Species Facultative Species Pool Holding Water Dry Pool

9. Property Owner Information - Landowner information is optional & is available from local tax assessor's offices.

Name _____

Address _____

Town _____ State _____ Zip _____ Assessors Map/Pcl# _____ (if known)

10. Observer Information & Signature – Must be filled out & signed.

Name _____

Address _____

Town _____ State _____ Zip _____

Telephone _____ E-mail _____

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

Signature _____ Date _____

Signature of Adult, if Observer is under 18 years of age _____

All submissions and supporting documents will be retained by the NHESP and, with the exception of information for MESA-listed species and the identity of minors, are available to interested parties under the Public Records Law.

8. Maps Submitted

Pool locus must be delineated & identified with your pool name or tracking #.

3 REQUIRED MAPS:

- USGS Topographic Map - 1:24,000 or 1:25,000 or better
 Color orthophoto - 1:12,000 or better

and ≥1 of the following:

- Assessor's map (Map and Plot #)
 Professional survey
 Sketch map - with directions and distances from permanent landmarks
 GPS longitude/latitude coordinates:
 Latitude = _____
 Longitude = _____

SEND COMPLETED, SIGNED FORM & SUPPORTING DOCUMENTATION TO:

**NHESP - Vernal Pool Certification
 MA Division of
 Fisheries & Wildlife
 1 Rabbit Hill Rd.
 Westborough, MA 01581**

For questions call 508-389-6360