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10.00: Appendix

Note: The following are appendices to, but not part of, 310 CMR 10.00.

PREFACE TO REVISIONS TO THE MASSACHUSETTS WETLANDS
REGULATIONS (310 CMR 10.00)
RELATING TO THE DEFINITION OF “EXTENDED
DROUGHT” AND DISTINGUISHING “PERENNIAL RIVERS”
FROM “INTERMITTENT STREAMS”, 2002 REGULATORY REVISIONS

Introduction

The Wetlands Protection Act (M.G.L. c. 131, § 40) was amended in 1996 to provide additional protection for rivers, defined in the Act as “any natural flowing body of water that empties to any ocean, lake, pond, or other river and which flows throughout the year.” Since promulgating regulations in 1997, the Department of Environmental Protection (Department) has found that the original regulatory criteria do not clearly distinguish perennial rivers that flow throughout the year from intermittent streams that do not flow throughout the year. Many factors embodied in the original regulations, such as soil types or the presence or absence of macroinvertebrates, cannot practically be used to distinguish between perennial and intermittent streams. Other factors, such as stream gages, have limited usefulness due to their limited geographic extent. Still other factors, such as watershed size, are relevant but need to be modified based upon more recent research.

The Department has also found that the original definition of extended drought, which was based solely on precipitation data, does not accurately reflect the role of groundwater and stream flow during drought conditions. Extremely dry conditions existed in most of Massachusetts in the summer of 1999, leading to some of the lowest river and stream flows ever recorded. Even though many federal and state agencies declared droughts, the Wetlands Protection Act definition was not triggered in most communities because of brief but heavy summer rainstorms – rainstorms that fulfilled the regulatory precipitation numbers but did not provide sufficient recharge to restore groundwater or stream flow levels.

In order to address the issue of perennial rivers and drought, the Department formed a technical advisory committee with representatives from various interest groups, and with research and technical support provided by the United States Geologic Survey (USGS) and the Massachusetts Department of Environmental Management (DEM). The technical advisory committee spent more than two years searching for an approach that was based upon sound science and could also be implemented at the local level. This approach, based primarily on watershed size and surficial geology, is described below and is embodied in the new regulations.

It is also important to note that many intermittent streams still receive protection under the Wetlands Protection Act through applicable resource area performance standards for land under water, bank, land subject to flooding, and often, bordering vegetated wetlands. The distinction between perennial and intermittent flow pertains only to whether the stream has an associated riverfront area.

The Rulemaking Process

Drought conditions across the Commonwealth in late 2001 prompted the Department to adopt changes to the extended-drought provisions as an emergency regulation in December 2001. The Department then conducted four regional public hearings on the emergency-drought provisions as well as the perennial river versus intermittent stream changes. The Department received public comments through March 29, 2002. Thirty-eight parties commented on the proposed amendments. Of those, thirty-one commentators generally supported the proposed amendments or requested clarification of certain provisions. Six parties commented against the proposed amendments, and one party requested additional time to review and comment. Based upon a careful review and consideration of the comments, the Department has made some changes to the public hearing draft as described below.

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Summary and Rationale of the New Regulations

A. Perennial Rivers and Intermittent Streams:

1. Watershed Size and Surficial Geology.

The Department and its technical advisory committee concluded field observations alone cannot be used to predict whether a small stream is likely to flow throughout the year. Given permitting time constraints, the Department also concluded that it would be unworkable to devise a system based entirely on stream flow observations made during the late summer or early fall, when water levels are often at their lowest. Aside from the practical difficulties with this approach, observations made during this period may not be definitive when the conditions are unusually wet or unusually dry compared to long-term records.

To explore other options, the Department contracted with the USGS to research watershed characteristics that might be useful in classifying streams, such as drainage area, mean basin slope, length of stream, urbanized land cover, and the percentage of sands and gravels in the watershed. This research revealed that the most important characteristics for predicting whether a river flows throughout the year are watershed size (drainage area) and surficial geology (the percentage of sands and gravel in the watershed). As a result of this research, as well as independent analysis and field-testing by the Department, the Department and its technical advisory committee agreed that watershed size and surficial (subsurface) geology could reliably be used to predict whether a stream will flow year-round. There is a strong correlation between watersheds greater than or equal to one square mile and streams that are predicted to flow 99% of the time. There is also a strong correlation between watersheds with a high percentage of stratified drift (sands and gravels) and streams that flow 99% of the time. These two factors, as well as a fail-safe field observation provision, have been incorporated into the new regulations.

USGS continues to refine its statistical methodology to better predict the probability of a stream flowing year-round. Once completed, the Department plans to use this information to produce stream maps that will eliminate reliance on the USGS topographic maps. Since this process will take several years, the regulatory changes described herein are necessary to address perennial versus intermittent determinations during the interim.

2. USGS Topographic Maps and STREAMSTATS.

The new regulations continue to rely upon an initial review of USGS topographic maps. Although these maps were not specifically developed to delineate perennial rivers from intermittent streams, the Department believes it is important to base initial reviews on maps that are widely available to Conservations Commissions and the regulated community. The regulations then provide for adjustments to stream status based upon watershed size, watershed geology, and field observations of no flow. Under the new regulations, streams that are shown as perennial on USGS topographic maps are classified as perennial. Streams that are shown as intermittent, or not shown at all, are classified based upon watershed size. If the watershed size is greater than or equal to one square mile, the stream is perennial. If the watershed size is less than one square mile, the stream is most likely intermittent.

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Some intermittent streams with a watershed size of between one-half and one square mile may be shown to be perennial if the USGS STREAMSTATS model predicts a positive flow or if the watershed contains at least 75% stratified drift. STREAMSTATS is a new statistical tool developed by USGS that can be accessed through the USGS web site at <http://ma.water.usgs.gov/streamstats/>. This web site provides valuable stream flow information to applicants and regulators alike. STREAMSTATS incorporates watershed size and geology into its calculations, and can be used to analyze the probability that a stream flows on a year-round basis at a particular location. That probability is reported in terms of flow duration statistics. Flow duration statistics indicate the percentage of time stream flows are equaled or exceeded at a given stream location. For example, if a stream's flow at the 99% flow duration is five cubic feet per second, the stream's flow is predicted to be greater or equal to that discharge rate 99% of the time. Streams with a predicted flow rate greater than or equal to 0.01 cubic feet per second at the 99% flow duration rate are considered perennial. The 99th percentile is the best available statistical expression of the statutory language "flows throughout the year."

Some commentators requested that the Department require use of the STREAMSTATS tool exclusively, and abandon reliance on USGS topographic maps. While the Department may take this approach in the future, we are concerned about USGS's ability to handle the high demands this would place on its web site. In addition, STREAMSTATS cannot work if the stream's centerline has not been digitized. Thus, streams located in many southeastern communities (a list of watersheds is included in the regulations), as well as smaller, unmapped streams throughout the state, cannot be analyzed using STREAMSTATS. In those communities, watershed size and surficial geology must be analyzed using available maps.

Other commentators expressed concerns about using STREAMSTATS in small watersheds, particularly those below 1.61 square miles. This number represents the smallest watershed size for which USGS has calculated "error bands" to accompany the STREAMSTATS package. After consultation with USGS, plus field-testing on small streams, the Department believes that STREAMSTATS properly estimates stream flow in watersheds down to one-half square mile in size. The regulations reflect this lower limit. Similarly, the regulations place a one-half square mile size limit on watersheds in which stratified drift percentages must be taken manually or electronically from surficial geology maps.

3. Direct Observations of No Flow.

Even though watershed size and geology are the most important characteristics for determining stream status, the methods outlined above are still "predictive" and may be overcome by direct observation. As a fail-safe mechanism, any stream must be classified as intermittent if it is observed not flowing for four days in a consecutive 12-month period, unless the observation occurs during a period of extended drought or the stream is significantly affected by withdrawals, impoundments, or other man-made flow reductions or diversions. In such cases, the observations become less probative in determining the stream's classification and the stream should be classified based upon its status under the regulations absent the observation.

Some commentators questioned the requirement for four observation days rather than one, and questioned the stringency of the required documentation. The Department believes that four days (approximately 1% of days in a year) is a reasonable requirement that is rationally related to the best statistical evidence available to predict a stream's status. The new regulation is also meant to ensure that field observations are reliable, credible, and well documented. In the past, the Department has too often struggled with poorly documented and irreconcilable observations from opposing parties. The regulations also clarify what is meant by "flow."

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4. Perennial Streams with Very Small Watersheds.

Some commentators requested that the regulations include a method for proving that streams with very small watersheds (i.e. less than one square mile) flow throughout the year. These streams may emanate from springs, or in areas such as Cape Cod, they may draw upon a large regional groundwater aquifer system. Regardless of watershed size, these streams are considered perennial under the regulations if they are shown as perennial on USGS topographic maps. For those streams shown as intermittent, or not shown at all, they may be considered perennial if the watershed size is at least one-half square mile and it meets either the STREAMSTATS or stratified drift provisions. The stratified drift provisions have been broadened in the final regulations to encompass the entire state rather than a more limited list of watersheds. Streams that do not fit into these categories must be classified as intermittent. Unfortunately, proving that a stream is perennial by direct observation requires multiple observations made in the late summer and early fall months over many years, and the Department could not craft a workable provision to accommodate those timeframes.

B. Extended Drought.

The definition of “extended drought” has been amended to coincide with an “Advisory” or more severe drought as declared by the Massachusetts Drought Management Task Force in accordance with a statewide drought management plan. This change was made on an emergency basis, effective December 21, 2001, and is now incorporated into the permanent regulations. The plan has five drought action levels based upon multiple indicators such as stream flow, groundwater elevations, precipitation, snow pack, wild fire danger, crop moisture availability, reservoir levels, and the Palmer Drought Severity Index. The Task Force will issue written statements when a drought develops, when drought levels change, and when the drought ends. Monthly maps will be prepared by DEM detailing the geographic extent of the drought and the corresponding drought level. Drought information is published on the web at <http://www.state.ma.us/dem/programs/rainfall/index.htm>.

Some commentators questioned whether the regulations should be tied to a more severe drought level than “Advisory.” Prior to promulgating these final regulations, the Department conducted a return period analysis to determine how often an Advisory level of drought would occur compared to a drought declared under the original regulation’s definition based solely on precipitation. The analysis found that the probability of a drought declaration at a number of locations under the new system is less likely, or statistically the same, compared to the old definition. However, the geographic extent and duration of the drought may increase under the new system, as it reflects the time necessary for groundwater and stream flow levels to recover. The Department is satisfied that the new statewide system more accurately portrays stream flow conditions, will be more easily used, provide consistent analysis, and will not lead to more frequent drought declarations than the original regulations.

Many commentators expressed concern with the language concerning withdrawals, impoundments, and diversions. The Department has modified this language slightly in response to comments, and is also planning to develop guidance on this issue. First, the Department has retained the concept that the Legislature meant to protect rivers that would flow throughout the year in their natural condition. Property owners cannot raise the flashboards or otherwise manipulate the water flowing long enough to claim a stream is intermittent and escape riverfront jurisdiction. Man-made changes in stream flow should be investigated when streams that are predicted to flow perennially are observed dry. However, the Department has added the word “significant” to stress that the stream’s apparent change in status (i.e. a perennial stream is observed intermittent) must be directly related, and in most cases, proximate, to the withdrawal, impoundment, or other flow reduction or diversion. In other words, “but for” the withdrawal, impoundment, or other flow reduction or diversion, the stream would be perennial. The regulation also clarifies that the changes must be man-made.

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PREFACE TO WETLANDS REGULATIONS RELATIVE TO
MEAN ANNUAL HIGH WATER, 2000 REGULATORY REVISIONS

Introduction

The Department of Environmental Protection promulgated regulations on October 6, 1997 to implement the Rivers Protection Act amendments to the Wetlands Protection Act. Since then, the Department has gained considerable field experience and now recognizes that one aspect of these regulations, determining the “Mean Annual High-Water (MAHW) Line,” can be difficult and confusing in the field. Locating the MAHW line is important because it establishes the lower boundary of the Riverfront Resource Area.

The Rulemaking Process

The Department established a technical advisory committee drawn from the environmental and development communities, plus federal, state, and municipal staff members, to develop improvements to the existing MAHW regulation. The technical advisory committee met throughout the fall of 1999 and spring of 2000 to review scientific literature, analyze potential methods for locating MAHW, draft a proposed regulation that was consistent with the legislative definition, and field-test the proposed definition. The technical advisory committee unanimously agreed upon the approach embodied in the new MAHW regulation, and the Department thanks each member of the committee for contributing so many hours in such a professional and dedicated manner.

The Department held five public hearings throughout the Commonwealth on the draft regulation, and received public comment through February 22, 2000. The new regulation is effective as of May 12, 2000.

Summary and Rationale of the Mean Annual High-Water Regulations

The Legislature defined MAHW in the Rivers Protection Act as, “. . . the line that is apparent from visible markings or changes in the character of soils or vegetation due to the prolonged presence of water and that distinguishes between predominantly aquatic and predominantly terrestrial land.”

The technical advisory committee and the Department first agreed that the legislative definition focuses on field indicators as the primary tool for locating the MAHW line. It requires us to find, “. . . a line that is apparent from visible markings or changes in the character of soils or vegetation. . .” (emphasis added). Upon review of the scientific literature, the technical advisory committee unanimously concluded that the concept of “bankfull discharge,” as evidenced by “bankfull field indicators,” most closely matched the legislative definition. In addition, our collective experience has shown that boundaries based upon readily-observable field indicators are easier to implement for conservation commissions and other parties than a methodology that relies on complicated statistical computations.

“Bankfull discharge” corresponds to the elevation, or stage of the river, that actively creates, modifies, and maintains the river’s channel. In the context of these regulations, the river’s channel can be described broadly as the cross-sectional area that carries the river’s annual high water flows, which typically occur in early spring. During bankfull discharge, the water is moving sediment, forming or removing bars, forming or changing bends and meanders, and generally doing work that results in morphologic change to the river system. These morphologic changes to the river system can be observed in the field. Bankfull field indicators include changes in vegetation (usually changes in vegetational community), stain lines, top of point bars (depositional features), changes in slope, changes in bank material, and bank undercuts. The Department is releasing guidance materials concurrently with the new regulation to assist conservation commissions and other parties in identifying these features in the field.

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First, the existing limited project for maintenance, repair and improvement of "structures" (310 CMR 10.53(3)(i)) has been amended to specifically include dams and reservoirs. Both drawdowns and refilling of dams pursuant to dam repair are now covered. Second, a new limited project (310 CMR 10.53(3)(m)) has been created for drawdowns that occur in response to orders or other recommendations from the Department of Environmental Management's Office of Dam Safety (DEM).

In extreme emergency situations, DEM orders immediate drawdown of water levels to protect public safety. Such drawdowns are statutorily authorized to occur without prior filing of a Notice of Intent (M.G.L. c. 253, §§ 44 through 50). More commonly, however, DEM tries to identify unsafe dams well in advance of the point where they pose an imminent threat. When DEM identifies such an unsafe dam, it usually sends a request to the dam owner to "certify as to the safety" of the dam. These DEM "recommendation letters" usually include recommended response actions, but they do not order any specific response action, such as dam repair. In response, dam owners generally seek to draw down water levels to lessen stress on the dam. However, drawdowns made in response to DEM "recommendation letters" may not be undertaken without first filing a Notice of Intent and receiving an Order of Conditions.

Such drawdowns clearly "alter" wetlands and frequently alter more than 5,000 square feet of bordering vegetated wetland. Particularly if the drawdowns are allowed to continue for extended periods, they can result in significant adverse impacts. Yet drawdowns are often critical for dam safety purposes. For this reason, the new wetlands limited project has been established to allow drawdowns made in response to DEM "Orders" and "Recommendation Letters" to occur in two circumstances:

1. Where the drawdown is to occur for a limited time in order to render the dam safe until repairs can be made. In this circumstance, DEM has agreed in a Memorandum of Understanding (MOU) with DEP to issue a finding, on a case by case basis, establishing a reasonable period of time in which the drawdown and repair are to be completed. Such a finding by the DEM Office of Dam Safety should be included by the applicant with a Notice of Intent for this type of project.
2. Where DEM has found that the drawdown is necessary for public safety, and that it is not economically feasible at the time of such finding to repair the dam. Again, DEM has agreed in its MOU with DEP to issue such findings in writing, and to send copies to the conservation commission and DEP. DEM will generally find repair to be infeasible when the cost of the repair exceeds the value of the property containing the dam, except where the dam owner derives other financial benefits from the dam. DEM also has agreed in its MOU with DEP to issue a "superseding" finding of economic feasibility upon request of any person, organization, or agency if warranted by changed circumstances (*e.g.*, change in dam ownership, commitment by another person or group to finance the repair in whole or in part, *etc.*). When a DEM finding of economic infeasibility has been issued, conservation commissions may grant an Order of Conditions for up to three years for the drawdown, and may extend or reissue an Order as many times as necessary so long as repair continues to be economically infeasible.

This limited project provision should ensure that all drawdowns related to dam safety are permissible under 310 CMR 10.00, while limiting their duration to the time it takes to repair the dam, unless such repair is economically infeasible. By establishing this limited project, the Department hopes to create a clear mechanism whereby both dam owners and third parties are encouraged to take all reasonable actions to alleviate adverse impacts from dam safety-related water level drawdowns.

LIMITED PROJECT AND EMERGENCY CERTIFICATION PROCEDURES FOR
RESPONSE ACTIONS TO RELEASES OF OIL AND/OR HAZARDOUS MATERIALS

(310 CMR 10.06(3) & (7), 10.24(7)(c)(6), and 10.53(3)(q))

On July 31, 1993, the Department issued a new set of regulations governing cleanups of oil and/or hazardous materials (OHM) (310 CMR 40.0000). The Department now has revised its Wetlands Protection Act Regulations (310 CMR 10.00) to provide greater consistency and ease of administration in applying 310 CMR 40.0000 and 310 CMR 10.00 while ensuring that the interests of the Wetlands Protection Act are protected to the greatest extent practicable. (A short summary of 310 CMR 40.0000 is available from the Department's Division of Wetlands and Waterways, One Winter Street, Boston, MA 02108.)

Preface: continued

The Department has adopted a new wetlands "limited project" for OHM release response actions that are necessary to protect health, safety, public welfare, and/or the environment, but that cannot meet current wetland regulatory standards without obtaining a variance. Standards for the limited project are similar to, though considerably more detailed than, the Wetlands variance standards.

The Department also has amended the Wetlands emergency procedures as they relate to remediation of OHM spills in order to ensure that these procedures don't result in unnecessary delays and exacerbation of critical toxic pollution problems.

New Wetlands Regulation Limited Project for Oil and/or Hazardous Materials Release Response Actions

Because cleanups of oil and/or hazardous material (OHM) releases are critical for the protection of health, safety, public welfare, and the environment, the Department believes that they should be allowed to go forward so long as, to the maximum extent practicable: adverse impacts to wetlands are avoided and, to the extent this is not possible, such adverse impacts are minimized and mitigated.

310 CMR 40.0000 gives responsible parties (RPs) a number of alternatives for dealing with oil and hazardous material releases. Immediate Response Actions (IRAs) are generally required to be implemented on an emergency basis, and thus would normally be reviewed under the emergency certification provisions of the Wetland Regulations (see discussion of emergency certifications in this Preface, below).

Any other measure implemented pursuant to 310 CMR 40.0000 that can meet normal Wetland regulatory performance standards will continue to be governed by those standards and will not be eligible for limited project status. Furthermore, any measure undertaken pursuant to 310 CMR 40.0000 that is not needed to eliminate significant risk to health, safety, public welfare or the environment (*i.e.*, measures designed solely to reach "background" levels of pollution) will not be eligible for limited project status (see the language in parentheses in the first paragraph of 310 CMR 10.24(7)(c)(6) and 10.53(3)(q)).

Limited project status may be needed, however, for response actions such as Release Abatement Measures (RAMs), even though they are designed for relatively minor levels of contamination. RAMs can have large wetland impacts: *e.g.*, diverting contaminated ground or surface water in a manner that drains wetlands, building an access road through a wetland in order to reach a work site, *etc.* It should be noted that RAMs -- and all other remediation and containment measures except IRAs and Comprehensive Response Actions (described in the next paragraph) -- are not mandated, although they are allowed, by 310 CMR 40.0000.

Only Comprehensive Response Actions (CRAs) -- and not RAMs or other remedial actions -- are required under 310 CMR 40.0000 to be selected on the basis of an alternatives analysis that gives significant consideration to wetland impacts. Therefore, selection of the particular CRA technology or methodology (*e.g.*, pump and treat, dredge and fill, *etc.*) may be made without performing the additional alternatives analysis normally required under provisions of 310 CMR 10.24(7)(c)6.a. and 10.53(3)(q)1. However, the design, construction, implementation, and operation of all OHM-related limited projects, including CRAs, RAMs, *etc.*, must meet specific performance standards, including maximum practicable avoidance, minimization and mitigation of adverse wetland impacts (see 310 CMR 10.24(7)(c)6.b. and 10.53(3)(q)2.).

Finally, it is important to note that since only the most seriously contaminated sites will have BWSC oversight, the language of the limited project gives conservation commissions and the DEP Wetlands Program the authority to deny limited project status for any proposed project that clearly does not comply with 310 CMR 40.0000. Needless to say, such a conclusion will generally be very difficult to reach for persons who don't have considerable expertise in oil or hazardous materials issues, and the Department does not anticipate that claims of compliance with the standards of 310 CMR 40.0000 will be rejected by conservation commissions or the Wetlands Program in many cases. The Wetlands Program does intend, however, to work with DEP's Bureau of Waste Site Cleanup to examine projects applying for limited project status if it has reason to believe the project was not selected or designed in compliance with 310

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

CMR 40.0000.

Preface: continued

Revisions in Wetland Emergency Procedures Regarding Releases of OHM

310 CMR 40.0000 allows certain Immediate Response Actions (IRAs) to commence prior to written approval, and in some cases up to 24 hours before oral approval from BWSC, "where the delay involved in notifying and obtaining approval from the Department would substantially exacerbate release or site conditions or endanger health, safety, public welfare or the environment." Consequently, the revised regulations state (see revisions to 310 CMR 10.06(7)) that projects in these two categories shall be given up to 48 hours (but never more than 24 hours after BWSC has orally approved commencement of the work) to make a request for a Wetlands Emergency Certification with the conservation commission. Work on these types of projects is allowed to continue pending a decision on the request for Emergency Certification by the conservation commission or the DEP Wetlands Program on appeal. In cases where a conservation commission denies, or fails to act within 24 hours of a requests for Emergency Certification for these types of projects, the DEP Wetlands Program will review requests for emergency certification and issue a decision within seven days. It should be noted, however, that all of these types of emergency projects will have received at least oral approval from the Department's Bureau of Waste Site Cleanup within 24 hours of commencement.

Immediate Response Actions which are not so urgent as to be eligible for oral approval from BWSC are not be covered by the special provisions stated in the preceding paragraph. However, all emergency certifications granted for Immediate Response Actions are valid for up to 60 days, rather than the 30 day maximum for non-hazardous waste emergency projects (see revisions to 310 CMR 10.06(3)). The Department is doing this to make the Wetland Protection Act Regulations more consistent with 310 CMR 40.0000, and to encourage quick OHM clean-ups without excessive process.

To determine whether, and under what conditions, the Department's Bureau of Waste Site Cleanup (BWSC) has given written or oral approval to an Immediate Response Action, conservation commissions can call DEP's BWSC release notification unit the appropriate DEP regional office. If that office is closed, a person from that unit can be paged by calling the Massachusetts State Police at 617-566-4500. The current phone numbers for the Department's regional offices are: Northeast: 617-935-2160; Southeast: 508-946-2700; Central: 508-792-7650; and Western: 413-784-1100.