MA DCR - Massachusetts Guide to Lake Management (MassGLM) Comments Received thorugh May 16, 2025

Step 1. MassGLM Document Chapters	Step 2. MassGLM Document Comment Type	Step 3. Input Line Numbers	Step 4. Enter Comments
Foreword	Technical	5-6	Provide references of the documents. And, if possible, a link to state library.
Foreword	Technical	74	There seems to be a distinct lack of proper citation of studies and reference throughout the document. In fact, the document itself does not clearly state who are the authors of the report other than a passing mention of photographs etc on page 74 to Ken Wagner. The public has a right to know who reviewed the science and wrote the summaries of the subject matter. The public has a right to know the qualifications of the author, who or whom they are, and hopefully, some confidence of the independence of the author from undue pressure from the agencies who funded the work. Furthermore, it is not clear and who is responsible for the response to comments and the views presented in the Final EIR. Is it the author(s) or is it the government officials?
Table of Contents	General / Other	1	As a general comment on the entire document, Dr. Wagner is to be congratulated on this update of the GEIR. The Guide to Lake Management is an outstanding summary of a complex issue. It presents a balanced view of the science and practical experience of lake management. I hope that Secretary of EOEEA approves this update, when the final version is produced. Sincerely, Mark D. Mattson, PhD, former researcher at UMass Amherst, retired analyst at MassDEP and one of the authors of the 2004 GEIR.
Table of Contents	General / Other	1	I submitted many dozens of individual comments and I apologize as many were answered or clarified later in the document.
Table of Contents	General / Other	1	The GLM is a massive undertaking, but worth the efforts. You all did an excellent job creating and updating this all encompassing guide for waterbody stakeholders in Massachusetts

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Table of Contents	Technical	all	What is NOT said in the document is as relevant as what is said. First of all, this document presupposes that keeping unnatural lakes built by humans is preferable to allowing them to revert back to pre-manufacturing days when the flow of rivers were not impounded for the use by industrialists. What is not mentioned are exemplary approaches to waterbody management with very stringent standards and hoops to jump through in order to use of chemicals on waterbodies, as seen in Seattle, WA, and Portland, ME. These cities are far more restrictive about the use of chemicals in water bodies. ponds within our state that are being successfully managed ponds without the widespread use of chemicals. Adjuvants in herbicides, which are unregulated and unknown because they are listed by companies, such as SePRO as “secret,” “proprietary,” and “private.” Successes of places that have successfully managed the impact of invasive aquatic vegetation through non-chemical means, such as we see at Squam Lake in New Hampshire Complicated administrative hoops for governing bodies to jump through to apply chemicals to water bodies. Contingencies abounds for aeration and drawdowns (non-chemical controls), but not for chemicals (just follow the directions on the label). Longterm effects of chemicals on human health and to the environment, with the exception of mentioning herbivorous fish and PFAS Table 3 (line 3049) is striking in its lack of attention to the potential impact on humans and long-term impacts of ecosystems. The European Chemical Agency, for example, has indicated “probably harm to the unborn,” with the use of imazamox. This document notes work and observations done by the Lake George Park Commission; it does not make mention of the research being done by the Lake George Association.
Table of Contents	General / Other	NA	The title "Guide to Lake Management" implies this is more comprehensive than it is. Would like to see more on public engagement, policy, and other topics outside direct algae and invasives removal.
1. Essential Background Informatic	Grammatical / Editorial	129	Should be (Atlantic Coastal Pine Barrens)?
1. Essential Background Informatic	Technical	195	As I understand, lake eutrophication and lake aging are not exactly the same thing. Eutrophication defines the lake's productivity which may result in lake aging and filling, but they should really be defined as separate processes.
1. Essential Background Informatic	Graphics / Image	247	This and other graphics in the document are hard to read; consider blowing them up, adding color, or producing originals
1. Essential Background Informatic	Technical	254	Can you provide a reference?
1. Essential Background Informatic	Grammatical / Editorial	436	Delete during
1. Essential Background Informatic	Technical	527	

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1. Essential Background Informatic	General / Other	558	Also lines 560, 12290 The document mentioned post-treatment monitoring for fish kills, but the problem with chemical treatments is not as much short-term effects, such as fish kills, but long-term effects, such as endocrine disruption: harm to the reproductive systems of wildlife — and human beings.
1. Essential Background Informatic	Grammatical / Editorial	582	Put phosphorus before (P)
1. Essential Background Informatic	Grammatical / Editorial	746	Define PAH.
1. Essential Background Informatic	Technical	803	Can you add a description of size ranges of various bg and algae?
1. Essential Background Informatic	Technical	810	probably add in toxicity as a factor.
1. Essential Background Informatic	Grammatical / Editorial	891 - 893	This sentence is not a sentence.
1. Essential Background Informatic	Technical	1050	Can you add a brief size range?
1. Essential Background Informatic	Grammatical / Editorial	1285	specis should be species
1. Essential Background Informatic	Technical	1298-1299	Where there is not enough oxygen to support aerobic microbial activities, shifts occur that utilize alternative sources of oxygen and sediment chemistry is changed.' – Edit to 'Where there is not enough oxygen to support aerobic microbial activities, shifts occur that utilize alternative electron acceptors, and sediment chemistry is changed.'
1. Essential Background Informatic	Technical	1316-1318	Language could be stronger here to affirm that climate change IS affecting lakes. I wouldn't reference "debate" as it implies legitimate uncertainty.
1. Essential Background Informatic	Technical	1319	Precipitation itself is increasing in MA over the past decades.
1. Essential Background Informatic	Grammatical / Editorial	1346	neare should be near
2. Lake Management Planning	Regulatory / Permitting	1401	Would love to see guidance and more info on incorporating outreach and leveraging policy and regulations within a lake management plan. We get a lot of pushback with LM in our town... tips on how to weigh public opinion against ecological needs would be valuable.
2. Lake Management Planning	General / Other	1438	Maybe suggest emerging use of AI for evaluation of lakes and most likely techniques to reach reasonable goals.
2. Lake Management Planning	Regulatory / Permitting	1585	If point sources including stormwater are involved the TMDL can and will be considered in the next permit cycle.
2. Lake Management Planning	Grammatical / Editorial	1665 - 1667	Sentence is awkwardly worded; suggest parens around "unless it is expressly forbidden in MA"
2. Lake Management Planning	Technical	1737	can you provide a reference for Carlson's TSI?
2. Lake Management Planning	Technical	1876	Why is there minimal need for post-implementation monitoring needs for algaecides but there is the highest priority need for post—implementation monitoring for drawdowns?

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3. Regulatory Framework	Technical	1957-1963	There was originally considerable discussion of how differences in types of lakes affects management and permitting in this document, but agency review resulted in the removal of nearly all of it. All that remains is a description of constructed lakes at lines 150-168. Constructed lakes are not treated any differently than natural lakes in Massachusetts under the WPA, yet constructed lakes are very often more susceptible to algae or vascular aquatic plant nuisances by virtue of shallow depth, sediment features, and watershed size and land use. The WPA allows for actions that address human-induced eutrophication of lakes, but the language is ambiguous with regard to what constitutes sufficient human influence to overcome certain restrictions on management activities. Greater consideration of the link between constructed lakes and human-induced eutrophication is needed, and a definition of ecological restoration within the context of constructed lakes is needed. This could be added after line 1963. There is room for interpretation of the current WPA regulations with regard to how much latitude a project proponent may have with regard to a constructed lake. The DEP should evaluate this, but this manual could provide some guidance to users that is currently missing.
3. Regulatory Framework	Technical	1960-1962	1.No process has yet been approved under MEPA for adding additional techniques that would not require MEPA review if applied in accordance with developed guidelines. Approaches such as new phosphorus inactivators, algae collection systems, floating islands, sonication, and bacterial products have no approval process but have been applied in Massachusetts, some without review under MEPA. Some have been denied permits because they are not covered by the GEIR and have been in limbo for years. A process has been under development for some time but was not ready for inclusion in this document and had serious flaws. Key elements in such a process would include setting up a panel of appropriate people, both from agencies and interest groups, public notice of any new technique or product approval process getting underway, solicitation of experts without financial interest in the product or technique to provide input, a public input process, and a decision that provides written back up suitable for inclusion in the online version of this manual. No one agency should have veto power over approval.
3. Regulatory Framework	Grammatical / Editorial	1982	define wpp
3. Regulatory Framework	Technical	2106-2110	I would mention cold water fisheries here.
3. Regulatory Framework	Technical	2138 - 2145	It makes no sense for the removal of vegetation to be considered dredging. Removing100 cu yds of wet plant biomass does not change the bathymetry of a body of water. If there's heavy vegetation, using herbicides and having excessive plant die off over a short period of time can cause low levels of O2. Removal of the plant biomass eliminates that problem. Having to file a 401 for mechanical harvesting will make that method cost/time prohibitive for a lot of waterbodies. It makes no sense, especially since the USACOE does not consider plant biomass dredged material.

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3. Regulatory Framework	Regulatory / Permitting	2138 - 2145	I am very concerned about the project management burden this section will add to harvesting projects. Is DASH considered hand pulling for this purpose? Is 100 cubic yards defined as the wet volume or dry volume of removed plants? How would one make an accurate estimate of the removal volume before implementation? Acres would be much easier to measure and plan for. Will MassDEP receive additional staffing to implement review of dredging permits for harvesting projects? DEP review times are very backed up as of May 2025, and I am concerned that requiring an additional permit to conduct these projects will make them impossible to accomplish. Volunteer water chestnut pulls are an effective management technique, but are often carried out by nonprofits and community groups which do not have the capacity to obtain a permit. Adding this requirement to water chestnut hand pulls will prevent many projects from being carried out and promote the growth of invasive species, particularly if it takes DEP several weeks to months to approve projects. Mechanical harvesting projects are already very difficult to fund. Additional permitting requirements will further drive up the cost, and will result in municipalities turning to herbicides more frequently, which will contribute to increased filling-in in many waterbodies. I am hoping to use budget overages this fiscal year to fund a mechanical harvesting project. Due to the nature of fiscal year planning, this would not be possible as a harvesting project if additional permitting were required, due to the timeline needed for approval from DEP.
3. Regulatory Framework	Regulatory / Permitting	2138-2145	I understand MassDEP ultimately decides if a project requires a 401 WQC, but it makes no sense that hand pulling or mechanical harvesting, especially if no sediment is disturbed, can trigger a 401 WQC. Could the MassGLM state that aquatic vegetation is not "dredged material" unless it's removed with significant sediment or soil? According to 40 CFR § 232.2 the EPA and US Army Corps of Engineers define "dredged material" as: Material that is excavated or dredged from waters of the United States." This clearly refers to soil, sand, silt, or other substrate, not plant matter alone. Aquatic vegetation is considered biological material, not fill material. I wish this could be clearly stated in the MassGLM to remove confusion and inconsistencies between regulatory agencies. Plant material is not dredged material and should not should not contribute towards the 100 cy threshold. If removal of 100 cy of plant material constitutes dredging and requires a 401 WQC, it will make mechanical harvesting too cost- and labor-intensive and will no longer be a realistic pond management tool.

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3. Regulatory Framework	Regulatory / Permitting	2138-2145	Section 401 of the federal Clean Water Act is administered by the Department of Environmental Protection, but its interpretation of how this law should be applied varies from that of the US Army Corps of Engineers. The controversy over whether or not mechanical harvesting of aquatic vegetation requires a permit under Section 401 has not been satisfactorily resolved and the current online permitting system used in Massachusetts is inadequate to facilitate permitting of harvesting under Section 401. Appropriate guidance to project proponents could not be offered in this document. This inconsistency and disagreement among the environmental agencies of Massachusetts should be rectified and appears to require action from near the top of the command chain, as agency staff has been unable to reach resolution after over 2 years of discussion. As most harvesting projects are conducted by towns, no revenue is accruing to the state as a function of permit fees. As the online permitting system is unable to properly handle these projects, applicants are left with no way to actually get a permit. I personally worked with David Wong to attempt to permit harvesting at Morses Pond under 401 and the conclusion was that the permit was not needed. As the largest harvesting program in MA of which I am aware, it is hard to conceive of where a 401 permit would apply to mechanical harvesting. Further, the former Ch 91 regulations specifically exempted mechanical harvesting from permitting under that program, but that language was removed in the most recent regulatory revision, leaving applicants uncertain of project status and Ch 91 applicability. It is essential that the regulations provide clear direction with minimal ambiguity. The inability of this manual to offer better guidance is a direct result of the failure of the DEP to provide clear direction.
3. Regulatory Framework	Regulatory / Permitting	2138-2145	The 2025 Guide would benefit from more clarity regarding the specific conditions that would trigger the requirement for a 401 WQC where physical control methods (e.g., harvesting and hydroraking) are used. Of particular concern is the statement that "...MassDEP maintains that vegetation removal may require a 401 permit even where the USACOE does not require a section 404 permit." This appears to be contrary to current guidance posted on the state's 401 WQC website (https://www.mass.gov/how-to/ww-07-08-09-water-quality-certifications-dredging-projects), which indicates, "If no federal permit is needed for an activity, then no 401 certification is required from MassDEP." The 401 WQC process could add substantial cost and delay - largely borne by municipalities, NGOs, and state agencies - if applied to aquatic plant removal projects that do not require federal licenses or permits. If the 2025 Guide is not clarified, the presumably unintended consequence would be to broadly discourage the use of physical control methods, even when those methods may be the best-suited or least impactful to aquatic ecosystems.
3. Regulatory Framework	Regulatory / Permitting	2138-2145	4th paragraph under 401 Water Quality Cert. Permits should not be required for hand pulling water chestnut weeds. Would add to DEP staff work load. Do they have the capacity to review requests in a timely manner? Hand Pulling of water chestnuts does not heavily disturb the soil, they lift out easily and this is the most cost effective way to reduce them. Less invasive than herbicide application. Would unnecessarily delay and complicate volunteer efforts to remove weeds. How is 100 cy determined before the weed pull event?
3. Regulatory Framework	Regulatory / Permitting	2142	A 401 was never required in the past for weed harvesting and ACOE says it is not necessary. Why is MassDEP adding more regulations to a federal program? Leave 401 for dredging not weeds.

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3. Regulatory Framework	General / Other	2165-2167	2.The use of copper by water utilities on an emergency basis to reduce algal blooms is allowed without a permitting process, but peroxide, a more recent algaecide that is highly applicable to cyanobacteria blooms with less adverse environmental impact potential, has not been afforded the same status as copper. This forces water utilities to use copper products when peroxides might be a better choice. Peroxide products should be allowable under the same circumstances as copper products. This will require some sort of legislative or environmental agency action. Peroxide is approved for use in MA, just not afforded the same exemption from permitting for water supply use as copper as it was not available when the copper exemption was created.
3. Regulatory Framework	Technical	2197-2205	The 2025 Guide should provide further clarification of what constitutes "plant matter" under Chapter 91 regulations. Plant matter that has senesced and deposited on the bottom of a waterbody as an organic sediment would seem to clearly qualify as "dredged, cleaned, or excavated" material when it is removed from that waterbody. However, live plant matter is not a sediment - much as live animal matter is not but decomposed animal matter is - and is removed by techniques that are substantially different from dredging or excavation. Furthermore, aquatic plant removal projects typically do not result in measurable water level or contour alteration of a Great Pond. Therefore, physical control methods that specifically target the removal of live aquatic plant matter would not seem to require Chapter 91 review. The requirement for Chapter 91 review of aquatic nuisance vegetation removal projects would add unnecessary regulatory delay and cost to lake restoration projects. The cost and delay will largely be borne by municipalities, NGOs, and state agencies, who tend to be the proponents of aquatic vegetation removal projects in waters subject to Chapter 91 jurisdiction. The presumably unintended consequence of this guidance would be to broadly discourage of the use of physical control methods in waters subject to Chapter 91 jurisdiction, even when those methods may be the best-suited or least impactful to aquatic ecosystems.
3. Regulatory Framework	Technical	2202 - 2205	It is not clear why 100 cy of removed vegetation would be subject to the 401 WQC if the regulation is designed around 100 cy of removed sediment. The text does not specify whether the dry or weight volume of removed vegetation should be considered. While vegetation root removal may disturb some sediment, one unit of removed vegetation would disturb much less than one unit of sediment. The amount of sediment disturbance will also vary according to target plant species, the presence of non-target species, and root composition of each. There are not enough details in the text to provide clear guidance on when this would or would not apply, and I am concerned that DEP does not have the staff capacity to support inquiries in a timely manner to enable project implementation.
3. Regulatory Framework	Regulatory / Permitting	2272	somewhere in this section mention USF&WS IPaC.
3. Regulatory Framework	Regulatory / Permitting	2294-2295	This sentence correctly notes that MassWildlife regulates the release of vertebrates into waters of the Commonwealth. It leaves open the question of release of invertebrates, for which MassWildlife has no statutory authority unless a species listed under MESA is involved. MassWildlife avoids discussion of this regulatory gap, which pertains to some biological control methods (e.g., milfoil weevils, loosestrife beetles) and even stocking of crayfish as long as the species is not listed as invasive. While this lack of authority probably should be mentioned, it is important to convey the need to establish authority for approval of invertebrate introduction, most logically under MassWildlife. This is therefore less of an appeal for an edit than it is for legislative action to grant some agency authority over invertebrate introductions.

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3. Regulatory Framework	Regulatory / Permitting	2324	The MESA reviewers have too often interfered with needed lake treatments due to a possible 'take' of endangered species. A well know case was Mystic Lake where alum treatments to control bluegreen blooms and restore the lake were denied by MESA because reducing the nuisance algae would reduce the food supply of endangered mussels. As a consequence, the lake blooms and the toxic BG killed most of the mussels. There needs to be a balance and understanding of what is a natural condition and what is not.
3. Regulatory Framework	Regulatory / Permitting	2348	The MESA conditions are often so restrictive that maintaining ecological balance with sensible lake management is impossible or financially unrealistic.
3. Regulatory Framework	Grammatical / Editorial	2355	Delete redundant "state-listed".
3. Regulatory Framework	Regulatory / Permitting	2396-2397	There are laws forbidding the import of species listed as invasive and therefore detrimental to the ecology and economy in Massachusetts and indeed many other states. However, there is no law or regulation that requires action against such species when it arrives. In some cases, action to eradicate or control invasive species conflicts with either the WPA or the MESA, resulting in a denial of permits for invasive species control. If it is accepted that these species are undesirable enough to have legal restriction on their import and distribution, there should be provisions to facilitate eradication and control. The conflicts between laws and regulations need to be addressed in a clear and definitive manner. This need was originally discussed in the regulatory section but was removed at agency request. It needs to be covered and applicants should know that there are conflicts among regulations that complicate lake management and need attention at the state level. The line numbers given are one possible place to put discussion, but some mention might also be provided following 2061-2072 under WPA considerations for ERLP.
3. Regulatory Framework	Technical	2402	Mention again that the WPA specifically protects cold water fisheries.
3. Regulatory Framework	Regulatory / Permitting	2405	Emphasize for inland Commissioners that Mass DMF has jurisdiction for alewife runs.
3. Regulatory Framework	Technical	2414	Eels are catadromous.
3. Regulatory Framework	Regulatory / Permitting	2416-2423	Applicants filing an NOI for an ERLP in coastal waterbodies subject to Time of Year Restrictions are required to obtain a written determination from DMF to include in the NOI filing (see WPA Form 3 Appendix A). However, in practice, DMF typically only issues confirmation that the applicant has contacted them to initiate project consultation regarding proposed activities subject to Time of Year Restrictions in coastal waterbodies. DMF then provides written comments on the NOI after filing. This can be confusing to applicants, consultants, and conservation commissions. An acknowledgment of this could be added to the 2025 Guide to help avoid future confusion.
3. Regulatory Framework	Regulatory / Permitting	2472	Are acec under DCR juristiction? I think it's mostly WPA under DEP??
3. Regulatory Framework	Technical	2484	Mention that the authority to regulate approved herbicides should be restored to DAR, and not overridden by special laws exempting towns.
3. Regulatory Framework	Graphics / Image	2596	Fig 13 Add cold water fishery to box with marine fishway etc. Also the figure title seems poorly formatted on my screen.

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3. Regulatory Framework	Graphics / Image	2596	The clarity of the "Permitting Flow Chart for Lake Projects in Massachusetts" could be substantially improved by using different shading and/or shapes to identify starting and decision points.
3. Regulatory Framework	Grammatical / Editorial	2600	Perhaps more of a graphic issue than grammar or editorial, but the caption on this figure is compressed, as is the footer for the page. This relates to the layout of the graphic, and I was unable to fix this in the assembly process. Someone will need to fix this in the final form, just for appearance.
3. Regulatory Framework	Document Functionality	2740	Link not working
3. Regulatory Framework	Technical	2751 - 2753	Water rights could be an issue.
4. Management Techniques	Technical	3051	13). Not restricted to cyanobacteria, increased N would benefit all algae.
4. Management Techniques	Technical	3052	Table 3, Row 12, Phosphorus Inactivation - Separate Lanthanum as its own row (12b), many of the disadvantages listed in row 12 are specific Alum oPossible toxicity to fish and invertebrates (Alum) oPossible release of phosphorous (Alum) oResuspension of floc in shallow areas (Alum) oMay cause fluctuations in water chemistry (Alum)
4. Management Techniques	Technical	0	bio char is not mentioned in this document and is a potential management technique
4. Management Techniques	Technical	2839	Perhaps this should be submitted to the Secretary for official approval.
4. Management Techniques	Technical	2889	Might add a sentence to say that rare, very deep lakes oxygen depletion and phosphorus release are less of a problem. They tend to be more oligotrophic.
4. Management Techniques	Technical	2910	Perhaps emphasize the conflict by adding: In fact, increased water clarity...
4. Management Techniques	General / Other	3041	Somewhere in this document the point needs to be made that it is not our objective to kill the plant life and, in so doing, kill the animal life. It is not only the endangered species that need to be considered, but also those that will be endangered by the treatment.
4. Management Techniques	Technical	3049	11b. Peroxides. Disadvantages - peroxides can also lead to possible rupture of cells
4. Management Techniques	Grammatical / Editorial	3050	1b). Suggest saying Partial reduction of sources of nutrients. .... After all this is rarely effective.
4. Management Techniques	Technical	3052	RE: OSWTS: Our reliance on soil simply kicks the can down the road; P will always be with us ("matter is neither created nor destroyed"), and it will eventually move to the lake. time is the key variable.
4. Management Techniques	Technical	3052 "IN-LAKE"	ANY MENTION OF COPPER SHOULD INCLUDE THE CAVEAT THAT IT IS TOXIC TO FISH.
4. Management Techniques	Technical	3052 IN-LAKE	12) P inactivation: Typically, alum is prescribed. The jury is out on the toxicity of Al to fish, so repeated applications (e.g. as in the failure to control P inputs) risks harm to fish. Also, mussels rely on these fish to reproduce and so are also at risk.

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4. Management Techniques	Graphics / Image	3059	The flow chart needs to be full page.
4. Management Techniques	Graphics / Image	3180	The diagram needs to be full page.
4. Management Techniques	Technical	3264	e.g. TryMarine?
5. Reduced Nutrient Inputs to Lake	Technical	3538	A large source of P is deliberately added to some public water supplies to inhibit corrosion of lead and copper. This should be addressed by using other means of corrosion inhibition.
5. Reduced Nutrient Inputs to Lake	Technical	3551	I think the SWPP should focus more on zoning changes rather than end of pipe solutions. Zoning could require infiltration performance requirements for all new construction as well as reconstruction and maintenance of facilities, roof drainage, impervious surfaces, repaving etc. While this would take years, it would be more effective and transfer costs to the developers.
5. Reduced Nutrient Inputs to Lake	Technical	3560 - 3567	The draft MS-4 revisions may upgrade these MCMs to include actual improvements to the infrastructure.
5. Reduced Nutrient Inputs to Lake	Technical	3727	In the NPS control section agriculture sources are not highlighted. I have seen many of the worst eutrophication problems from crops such as cranberries and dairy-cattle farms with manure runoff or oversaturation of manure to fields.
5. Reduced Nutrient Inputs to Lake	Grammatical / Editorial	3809	"lead" should be "led".
5. Reduced Nutrient Inputs to Lake	Technical	3828	While leaf collection is effective, I would suggest adding that on-site leaf composting by using mulching blades on mower and pulverizing the leaves in place would reduce P in street runoff, add organics and fertilizer back to soil.
5. Reduced Nutrient Inputs to Lake	Technical	3907	Suggest adding a sentence or two that many dairy farms with limited acres of pasture import much P in the form of gain suppliments, but the large amounts of manure overwhelm the small acres of pasture soil nutreint binding capacity and it runs off. Suggest they cooperate with neighbors to spread manure more widely.
5. Reduced Nutrient Inputs to Lake	Technical	4190	I suggest wet swales along roadsides are by themselves less efficient but could be improved it they repeatedlty divert water into the downslope forested areas for complete infiltration. Sadly, MassDOT and local roads often over-use curbing to keep water on the road until a storm drain or simply use the swale as aa green ditch running quickly down to dump into a stream.
5. Reduced Nutrient Inputs to Lake	Grammatical / Editorial	4278	Is "reducing" the right word?
5. Reduced Nutrient Inputs to Lake	Grammatical / Editorial	4477	"until" should be "unit".
5. Reduced Nutrient Inputs to Lake	Technical	4579	I suggest trying to add iron rich sand to infiltration areas.
5. Reduced Nutrient Inputs to Lake	Technical	4593	This might be a good place to mention "mounding". A reference for this is: Poeter E., J. McCray, G. Thyne, and R. Siegrist. 2005. Guidance for Evaluation of Potential Groundwater Mounding Associated with Cluster and High-Density Wastewater Soil Absorption Systems. Project No. WU-HT-02-45. Prepared for the National Decentralized Water Resources Capacity Development Project, Washington University, St. Louis, MO, by the International Groundwater Modeling Center, Colorado School of Mines, Golden, CO.

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5. Reduced Nutrient Inputs to Lake	Grammatical / Editorial	4659	Nice examples of projects but I would like to see more references included.
5. Reduced Nutrient Inputs to Lake	Technical	4848-4918	(from a leader of a lake association): I find the section on NPS Controls -- Onsite Wastewater Disposal alarmingly sanguine and not in line with the root cause of so much eutrophication. Line 4878 states that "removal rates >90% are expected through soil adsorption (typo btw) in most cases." And, on line 4887: "Experience suggests that non-failing septic systems are usually not a major P source to most lakes..." Yikes! I guess a lot depends on what "non-failing" means. Perhaps it's intended to refer to a Title 5 compliant system in perfect site conditions with plenty of perfect, unsaturated soil for an ample leach field and post-field absorption. On the other hand, I wager in most communities the term "non-failing" means a system that may be suboptimal but is not failing a BOH inspection. On many highly-populated lakes, soil is rocky or wet and lot sizes are cramped; in these circumstances, communities need guidance on how to mitigate the external P load from under-performing (but "non-failing") systems. We need guidance on two aspects: (1) how to realistically assess the impact of septic systems (including the long-term 'legacy load' mentioned) and (2) what possible septic system improvements/technologies are possible today or on the horizon to reduce P load from septic systems where they are the leading or a major cause of eutrophication. Without this additional guidance, a reader could easily get the impression "nothing to see here on septic systems." I doubt that is the authors' intent. Thank you!
5. Reduced Nutrient Inputs to Lake	Technical	4885	Again suggest adding iron rich sand to leach fields in sandy areas or soil low in P absorption.
6. Reduced Nutrient Availability in	Technical	5030	It should be stated that reducing excess nutrients to reduce algae should not be considered a 'take' of mussels, endangered or otherwise. It should be viewed as a necessary restoration of the ecological balance of algae in a lake, taken to protect mussels and the entire ecosystem.
6. Reduced Nutrient Availability in	Technical	5064	And line 5337 The document explains internal phosphorus loading, which supports algae blooms, and lowering phosphorus levels and thus algae blooms through phosphorus inactivation by aluminum. What I don't see mentioned, and I could be missing something — (it is a 414-p document that was literally years in the making that the public only had about a month to comment on — is the role of environmentally relevant levels of herbicides in the formation of harmful algal blooms. Brêda-Alves, F., de Oliveira Fernandes, V. & Chia, M.A. Understanding the environmental roles of herbicides on cyanobacteria, cyanotoxins, and cyanoHABs. Aquat Ecol 55, 347–361 (2021). https://doi.org/10.1007/s10452-021-09849-2
6. Reduced Nutrient Availability in	Technical	5135-5136	'Aluminum will hold P under a wide range of oxygen and pH levels and is readily available in multiple forms due to its use in water and wastewater…' – It would be helpful to be more specific about pH/oxygen ranges in this statement, clarify 'wide range'
6. Reduced Nutrient Availability in	Technical	5141-5142	'Lanthanum, a rare earth element, is combined with bentonite clay in a product called Phoslock and used for P inactivation in some other states and countries but has not been approved for use in MA as of 2024.' – It'd be more appropriate to avoid use of trade name here and substitute, Lanthanum Modified Bentonite (LMB)
6. Reduced Nutrient Availability in	Technical	5176	Seem we should mention the ratio of alum to aluminate approx. 2:1 as a typical mix to maintain neutral pH

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6. Reduced Nutrient Availability in	Technical	5194	Even if some minor toxicity were predicted or observed, the treatment benefits may outweigh the impacts and the impacts can be further mitigated by spreading out the doses or perhaps adding some calcium with the aluminum.
6. Reduced Nutrient Availability in	General / Other	5212-5214	'Phoslock is not a coagulant like aluminum, so it will not remove particulate P from the water column. Application when algae or other particles are not abundant in the water will maximize Phoslock results.' - Suggest replacing trade name with Lanthanum Modified Bentonite (LMB), as written it promotes Phoslock over other brands such as EutroSORB G.
6. Reduced Nutrient Availability in	Technical	5220	I think DEP would object to adding nitrates as some could reach nitrogen sensitive marine areas such as long island sound and cause anoxia there.
6. Reduced Nutrient Availability in	Technical	5255	Sediment testing for P may be unnecessary and result in lakes not being treated due to the cost of the studies involved. Reviews have shown that a typical dose of 50g/m2 provides relief in most lakes and even in lakes that require more the proper way to apply is to spread out the dose over a couple years of lower doses such as 50g/m2, and it that is done the applicator can see what the results are first hand. Get rid of this testing.
6. Reduced Nutrient Availability in	Technical	5388	Give reference for Monponsett study.
6. Reduced Nutrient Availability in	Technical	5601	Are additions of iron advised to increase binding in circulation systems?
6. Reduced Nutrient Availability in	Technical	5667	Do you recommend a combined alum or iron injection via shoreline hoses with air circulators hoses? I think this would enable a 'dial a Secchi' daily adjustment of clarity. I suggested it for Monponsett but it was not to be.
6. Reduced Nutrient Availability in	Technical	5681	I suspect that circulation would be less effective in shallow lakes (<10 ft) for pumps as well as air injection. Shallow lakes are probably more mixed simply from the wind and additional mixing is less effective. I see failures in lakes where Solarbee mixers were added in shallow lakes.
6. Reduced Nutrient Availability in	Technical	5714	In both circulation and HO systems there seems to be a recurring problem with pump failures of one type or another.
6. Reduced Nutrient Availability in	Technical	5724	I would mention specifically the failure of Solarbee's in Santuit, Skiniquit, on Cape Cod and many other lakes Cochiutate etc.
6. Reduced Nutrient Availability in	Technical	6071	This section discusses our limited understanding/research of this alternative technique for the use of HO. But the same could be said of the use of chemical treatment. The document should include long-term impacts of chemical treatment to the environment , human health, and the economics of the towns doing the treatments. For example, what are the long-term effects of chemical treatments on non-target vegetation? What are the risks to wildlife? What are the potential human health effects? The only impact I could locate had to do with the impact on herbivorous fish, which are not used in Massachusetts anyway, but are used in other geographic regions (as this documents mentioned in line 9743). We cannot rely on EPA data, whose research is at least 10 years in arrears with regard to adverse impacts.
7. Direct Algae Removal	Technical	6461	Also lines 6517, 8295 Suggest that management decisions be made under the guidance of licensed applicators. People who are essentially retail distributors for chemical manufacturers should have no business making management decisions to apply poisons to our waterways. When the document suggests that licensed applicators make recommendations, it belies the obvious conflict of interest that is built right into the document.

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7. Direct Algae Removal	Technical	6473	'This is done out of concern for release of water-soluble toxins from cells when lysed by copper, as toxins are not usually excreted and are only liberated into the water upon cell death and membrane rupture.' - This doesn't flow with the next statement, I suggest clarification as many papers show toxins can leak and some types are mostly found in dissolved state, and even internal toxins can mostly be in dissolved state at certain life stages. A potential edit could be: 'This is done out of concern for release of water-soluble toxins from cells when lysed by copper, as the false premise was toxins are not excreted and are only liberated into the water upon cell death and membrane rupture.' This may be a good spot to add a statement such as, 'risks and state criteria are based on total toxin, and total toxin is likely to continue to increase without intervention.'
7. Direct Algae Removal	Technical	6480	'Tracking of algae and earlier action is advised, with treatment of cyanobacteria at cell counts between 10,000 and 20,000 cells/mL' - Why not say < 20,000 cells/mL…. why wait until 10,000 cells/mL? Many effective programs treat at lower densities or more proactively. Most studies show < 5,000 cells/mL is where toxin is not predicted at risk levels
7. Direct Algae Removal	Technical	6489	'Some algae are resistant to copper' – 'Innately more tolerant' may be more appropriate vs 'resistant', unless that is specifically defined and supported.
7. Direct Algae Removal	Technical	6493	'Controlling green algae mats, especially within the Spirogyra-Mougeotia-Zygnema group and the Cladophora-Rhizoclonium-Pithophora group, is very difficult at any concentration of copper.' - This sentence contradicts others. I suggest editing to, 'may be difficult to control if they are able to achieve dense mats or excessive biomass.' Also, Spirogyra has been shown to be much more sensitive than Pithophora (Lembi paper)… and those more sensitive than Oscillatoria. Too general to lump all together.
7. Direct Algae Removal	Technical	6533	'Some fish, notably species of trout, are sensitive to copper at concentrations less than the maximum allowable label limit (1 ppm) but the MassWildlife database for fishkills does not indicate any significant mortality in MA from copper treatments.' - I suggest clarifying to 'Some fish, notably species of trout, are sensitive to certain formulations of copper at concentrations less than the maximum allowable label limit (1 ppm) if a sufficient exposure duration is achieved, but…'
7. Direct Algae Removal	Grammatical / Editorial	6546	'Willis (2022) did not find impacts on benthic invertebrates at application rates typically used in MA but did detect them at maximum allowable rates. Willis (2022) also found that bioavailability and toxicity were not reliably predictable from sediment copper concentration.' – This should be Willis 2012
7. Direct Algae Removal	Technical	6550	'Should dredging be considered at any point, costs will greatly increase where copper concentrations exceed MA regulatory thresholds relating to sediment disposal.' - This statement needs more information, as it's misleading. What are the regulatory threshold sediment concentration in MA for copper? Many studies have found no significant increase in sediment copper concentrations over decades of treatments, (even in routinely treated catfish ponds) especially at the concentrations typically used as described and the max annual amounts allowed by EPA labels. Has there been any documented situation where algaecide use has caused a sediment copper disposal concern in MA or US?

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7. Direct Algae Removal	Technical	6563	'0.2 to 1.0 ppm in MA, but the approved label allows application at up to 10 ppm.' - Labels on liquid formulations allow much higher than 10ppm H2O2
7. Direct Algae Removal	Technical	6664	'Apply algaecides while algal growth is in its exponential phase; do not wait for a dense bloom to form' - Although it is ideal to catch algae early and less dense, the risks of allowing a dense bloom to go unabated is much greater than treating in most situations. "Do not" is too strong here. "Take more caution and weigh potential risks of treatment if treating a dense bloom", is more appropriate.
7. Direct Algae Removal	Technical	6671	'Where cyanobacteria or other algae with potential for toxicity are treated, monitor for toxin level in the water before and after treatment' - Is monitoring for toxin pre and post treatment of cyanobacteria required in MA? 'Monitoring Needs' in the section title suggests toxin monitoring is required. This would be too time consuming and costly to do on every application. Also, total toxin, where regulatory criteria are based on, decrease with effective treatment and some toxin may be oxidized as stated. Monitoring 'Considerations' is more appropriate than 'needs' here
8. Aquatic Plant Control	Technical	8565	The mode of action of glyphosate appears to be well known and reported in https://npic.orst.edu/factsheets/archive/glyphotech.html#references Saying that it is unknown only feed public fears. It dissrupts the shikimic acid pathway in plants as animals do not have that pathway.
8. Aquatic Plant Control	Technical	6881	I observed an accidental benthic barrier at I believe gate 41 at the Quabbin Reservoir where an old paved road going to Dana was flooded during the creation of the reservoir but the underwater road is plainly visible as a weed free lane and remains so after about 80+ years. Probably hard to permit.
8. Aquatic Plant Control	Regulatory / Permitting	7215-7453	WINTER DRAWDOWNS: LINE 7424. Continuation of Draw down. There have been drawdowns for over 20 years on our local lakes without any results showing impacts on littoral zone, target vegetation, or an established, quantitative management goal.MASSWILDLIFE -NESP review was not completed, making The Order of conditions Illegally obtained and awarded by the conservation commissions in Lanesboro and Pittsfield Mass for Onota Lake ,Pontoosuc Lake and Richmond Pond in Richmond

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8. Aquatic Plant Control	Regulatory / Permitting	7239-7240	Reference to the coarsening process for sediment in areas exposed to drawdown and the reduction in overall plant abundance and shift in species composition was deleted at the request of MassWildlife. The deleted statement should be restored, as we are not giving people all the information they need to understand the effects of drawdown. This was debated for quite some time and MassWildlife simply refused to accept giving people this information. An employee of MassWildlife even published a paper on this topic, noting exactly what was stated and then deleted. The reasons given for this deletion were not valid and that deletion was done to appease an agency that has tried to set policy where they have no regulatory power and limit actions by withholding information. We compromised on many things in this chapter that I can live with, but this isn't one of them. I would simply alter the cited sentence to read "Drawdown is used most often in Massachusetts for the control of invasive Eurasian or variable leaf milfoil, but the coarsening effect of repeated drawdown on sediment tends to reduce the overall abundance of plants and shift the species composition to annual forms."
8. Aquatic Plant Control	Technical	7255-7258	This relates to the previous comment about sediment coarsening through drawdown. This paragraph was altered to allow the coarsening function of repeated drawdown to be mentioned but not any of its effects, and then had caveats added to reflect the long time frame for this process and that it was not going to be discussed in this chapter. It should be discussed in this chapter and the Carmignani and Roy reference is a great start, but all language relating to how drawdown changes exposed substrate was deleted. There are both benefits and detriments involved and a discussion of both is warranted. I can supply the deleted language or provide a concise review of pluses and minuses. At the core, drawdown will create more sandy to gravelly substrate in lakes with extensive organic sediment deposits, a significant increase in habitat diversity that leads to higher biotic richness. MassWildlife objects because the organic substrate is the most productive and its reduction in a drawdown zone could represent decreased resources for fish. However, the Carmignani research found no significant impact of drawdown on any fish species in MA and productivity should not be the only metric for assessing habitat value in a lake. A discussion of the coarsening function of drawdown could continue from the last paragraph in place of this paragraph, listing both positives and negatives but not taking the narrow view that only productivity matters.
8. Aquatic Plant Control	Technical	7283	Multiple benefits of drawdown were deleted at the request of MassWildlife with inadequate justification. These included the longer term reduction in plant abundance in a drawdown zone after years of drawdown and related sediment coarsening and the increase in habitat diversity by creating sandy to rocky zones in lakes with extensive organic deposits. While I feel that those benefit statements should be restored, I can live with their omission as long as my other comments relating to coarsening are properly addressed. But if those making the decision can see their was clear to restoring the list of benefits, I can provide it.
8. Aquatic Plant Control	Technical	7353	Although 3 in per day is a nice target we are currently drawing down a dam prior to removal and find that the drawdown rate is highly variable function of rainfall. Try as we might sometimes a big storm comes and the impoundment refills then drops during a dry spell. Do the best you can.

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8. Aquatic Plant Control	Technical	7375-7379	The April 1 target date was insisted upon by MassWildlife and is not scientifically supported. Some caveats are given - it is after all a target date and is not to be used for compliance determination - but it is still held up as the legitimate target date when it is early in the Berkshires and late in SE Massachusetts. If, after a 3-5 year permit, it is found that refill is not complete by April 1, the refill start date should be reviewed as suggested, but may not need to be changed "to better meet the target refill date". Rather both the validity of the refill date and the practicality of the start date should be examined. The need for refill is a function of habitat availability, which in turn is triggered by temperature. If temperature data are not available to make a science based decision on target refill date, April 1 is a suitable default, but we call for such temperature data in the monitoring section and discuss how to use it in the Drawdown Appendix. Here we have a simplified date selection not based on the best available science and may mislead permit agencies as to what to do if the April 1 date is not achieved. It would be better to end the sentence on 7379 with ..." to better meet the target refill date or alter the target date to reflect the ecological need for full lake status."
8. Aquatic Plant Control	Technical	7450-7453	This is the most egregious overstepping of scientific boundaries in the entire manual from my perspective. All "mainstream" techniques have a section on Experience in MA and Elsewhere" except drawdown. The highly edited version near the end of the process was data driven and fair to all viewpoints, yet MassWildlife insisted it be removed. No other agency made that demand, and the explanation in these lines that because drawdown might be done differently now, past experience is not valid or enlightening is completely wrong. We have changed how we use herbicides, how we approach dredging, how we inactivate phosphorus, and even how we approach many watershed management tools, yet no one suggested that the experience associated with each of those should be deleted. We have changed how drawdown is managed twice before this in my 40 years of work in MA, yet no one suggested ignoring experience in the original GEIR 20 years ago. This is a simple case of one agency trying to keep information from the public. The successes of drawdown are clearly documented for many cases. There have indeed been some problems and shedding light on them is appropriate. The research that resulted in the Carmignani Ph.D. thesis and multiple published papers listed many possible adverse impacts from drawdown yet found few, and all of those were known previously. There can be legitimate differences of opinion on where and how to apply drawdown; it is not for every lake and each case has enough uniqueness to call for scrutiny, but to simply delete the experience of the last 50 years is a travesty. The experience section should be restored and I can provide it if DCR can't find the most recent version.
8. Aquatic Plant Control	Technical	7452	Why was the Carmignani 2019 thesis on drawdown impacts and related papers not cited in this report? What is the Department of Fish and Game hiding? The thesis shows little impact but F&G staff seem intent on censorship of the data? Is this even legal? The public demands a full review.

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8. Aquatic Plant Control	Technical	7452	The fact that Mass Fish and Game refuses to allow free and transparent discussion of the case histories of drawdowns in Massachusetts is very concerning regarding our constitutional rights under the First Amendment. According to the MEPA website: The MEPA Office is part of the Executive Office of Energy and Environmental Affairs (EEA). We provide meaningful opportunities for public review of the potential environmental impacts of projects for which agency action is required. We serve the general public, state agencies, municipalities, and project proponents. If the process is to be transparent, how can Mass Fish and Game dictate to the independent authors of the report which studies shall be included and which shall be purposely excluded? Why was The Carmignani thesis and related papers on drawdown excluded? Simply because MFG did not like the published results? They claim each unique lake might be handled differently if the papers were discussed openly? Well, if they are unique then perhaps to some extent they should be handled a bit differently. And why would we trust MFG to respond and edit the document in this case? I ask that independent qualified lake managers such as Dr. Wagner to do an independent review of the subject and present it in the final document for the agencies and public to see.
8. Aquatic Plant Control	Technical	7453	state agency proponents of this document have chosen not to include case histories or7452 other summaries of past drawdown projects here??? A fair and full environmental review should be complete and transparent and not subject to censorship of State! I ask that the case histories and scientific reviews be allowed.
8. Aquatic Plant Control	Technical	7524	I recommend more cutting be allowed with limited collection. And if the lake is largely infested what difference does spreading make? In my opinion, we need more inexpensive control methods such as cutting to clear boat lanes and swimming areas.
8. Aquatic Plant Control	Technical	7639	Interpretation of harvested plants to be sediments and require a 401 is stupid. If ACOE says it is not required then don't add additional unneeded regulations.
8. Aquatic Plant Control	Technical	7709	Regrowth is noted when hand-pulling invasive species, but the same is true of the use of herbicides. Weeds grow back in water bodies, just as they do in your vegetable garden. Regrowth should not be cited as a disadvantage of hand-pulling.
8. Aquatic Plant Control	Technical	7754-7830	The description of mechanical harvesting methods appears to be limited to cutting-type harvesters. However, so-called Eco Harvesters, which pull or tear macrophytes through use of a rotating drum, are not specifically described. These machines are used widely enough in Massachusetts and the mechanical action is distinct enough from cutting-type harvesters that they should be included in the 2025 Guide, either as a part of this section or under their own heading.

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8. Aquatic Plant Control	Technical	7754-7830	The section on mechanical harvesting only discusses systems that cut the plants, along with subsequent collection. Another mechanical harvesting system in wide use "traps" the plants between two sets of rollers and pulls the plants onto a conveyor belt and into a hopper on the harvesting boat. This system is sometimes called "Eco-Harvesting". For instance, see these websites: https://lakeweedharvester.com/eco-harvester/ and https://cdseaweed.com/eco-harvester-sales. In the best case, the system can pull plants from the lakebed with the roots attached. In many cases, the plant stalk breaks and the top part of the plant is removed. The former case, is obviously preferable, but breaking is likely more common. However, in either case, the plants are held by the rollers and placed directly on the conveyor belt system and carried into the boat's hopper. There is very little chance for the plant fragments to float loose and drift away from the operation. This is in contrast to the cutter systems, where the plants fragments are floating loose in the lake after they are cut, before they are collected by the conveyor belt system. With the cutter system, forward motion of the boat is needed for the fragments to be brought onto the conveyor, so when the boat is maneuvering around the site, there are many times when the forward motion is not maintained and fragments can drift away. Both systems have the same issues of regrowth, which can limit their effectiveness. Also, cutting or pulling the plants can in some cases stimulate the plant growth. But in our experience, the drifting plant fragments are quite limited with the Eco-Harvester. I think this type of system should be included in the Mechanical Harvesting discussion. FYI, our lake has had two seasons of limited Eco-Harvester treatments. Both treatments were not large enough for us to adequately determine their effectiveness. The first season's treatment was limited by our budget. The second season, we had a significant budget, and existing WPA approval without restrictions on the extent of harvesting, but DEP injected their opinion that they consider mechanical plant harvesting to be "dredging" and had to limited to 100 cu yd on our lake. This was a severe limitation on the treatment needed for our lake, and so we have yet to have had an adequate assessment of the effectiveness of the Eco-Harvesting treatments.

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8. Aquatic Plant Control	Regulatory / Permitting	8174-8757	MassGLM, 8.Aquatic Plant Control, Herbicides 8174-8757, there is no reference to MDEP/EPA permitted aquatic herbicides Line 8451 Flumioxazin, 8504 Fluridone, 8530 Florpyrauxifen-benzyl as PFAS under the Massachusetts PFAS Task Force definition of the compound as one fully fluorinated carbon atom. 8548 Glyphosate, no mention of The EPA's own assessments, including a draft biological evaluation in 2020 and a final one in 2021, indicate that glyphosate is likely to harm a significant portion of endangered and threatened species. Specifically, the draft evaluation found that glyphosate is likely to harm 93% of the plants and animals protected under the Endangered Species Act. The final evaluation, released in November 2021, further confirmed this, according to the U.S. Environmental Protection Agency (.gov). 8457 Diquat dibromide, no mention diquat has been banned in the European Union (EU). The EU stopped approving diquat in 2019 due to concerns about its adverse effects on human health and aquatic life. This decision was driven by a finding from the European Food Safety Authority (EFSA) that diquat posed a high risk to residents, bystanders, and birds, as well as to farm workers. Lines 8174-8757 no mention of, The MDCR bans the use of MDEP permitted aquatic herbicides in the Quabbin and Wachusett Reservoirs.
8. Aquatic Plant Control	Technical	8246-8251	Regarding the Aquatic Herbicides, common target species, and use restrictions table: "Argos" should be added under Common Aquatic Product Names for Copper. "2,4-D Amine" should be added under Common Aquatic Product Names for 2,4-D.
8. Aquatic Plant Control	Technical	8250	Florpyrauxifen-benzyl Application and Water Use Restrictions, “Use of treated water or composted, treated plants for livestock not recommended.” – The last line is confusing, it should read, ‘Use of treated water for livestock watering, or treated plants for compost is not recommended.’
8. Aquatic Plant Control	Technical	8328	Would nutrients released during plant decay also contribute to algal blooms?
8. Aquatic Plant Control	Technical	8342	Chemical treatment is likened to taking medicine, but chemically treating our lakes is more akin to taking addictive substances. Once it is used, it becomes a never-ending series of applications, with resulting chemical resistance, as we have seen in waterbodies in southeast United States, which are now dealing with fluriodone-resistant hydrilla, as this document mentions (line 8359). A better analogy is cocaine or tobacco — interestingly, they are all (cocaine, tobacco, and chemicals for ponds) marketed the same way. (e.g., first treatment free! Or nominally charged!)
8. Aquatic Plant Control	Technical	8550	To say the exact mechanism of glyphosate is unknown suggests not enough is known, while the action on enzymes is known. It is reported that kills plants by inhibiting the enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). This enzyme is crucial for the production of aromatic amino acids (phenylalanine, tyrosine, and tryptophan) in plants through the shikimate pathway. To suggest otherwise opens the door to unfounded objection to the use of this compound..
8. Aquatic Plant Control	Technical	8554	“it requires only a few days of contact time,” -Edit to ‘it requires only a few hours to a day of contact time,’

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8. Aquatic Plant Control	Technical	8569	I would further clarify that most of the toxic effects observed in roundup are due to the added surfactants and 'inert' ingredients and not due to glyphosate itself. As such, there are some commercial forms of glyphosate that are free of surfactants that can be used if there is a remaining toxicity concern.
9. Alternative Techniques	Technical	8958	'Phoslock and Other Products for P Inactivation' - Remove 'Phoslock' change to 'Lanthanum Modified Bentonite (LMB) and other Products for P Inactivation'
9. Alternative Techniques	Technical	8959-8971	- Replace 'Phoslock' with 'Lanthanum Modified Bentonite' or 'LMB'
9. Alternative Techniques	Technical	8972	'The general rule is to apply 100 lbs. of Phoslock for each pound of P to be inactivated.' – Remove brand specific dosing, or add dosing for other trade names such as EutroSORB G (50 lbs to 1 lb P)
9. Alternative Techniques	Technical	8987	'Products marketed under the name EutroSORB® contain multiple P-binders and are also intended to remove P from inflows.' - Remove 'from inflows'
9. Alternative Techniques	Grammatical / Editorial	8989	Currently reads: 'Solid formulations of EutroSORB can be added to filtering "socks" placed in channels and a liquid formulation can be applied to inflows.' -Change to: 'EutroSORB F is granular media contained within a filter sock for removing P from inflows. EutroSORB G is 10% lanthanum modified bentonite that can be applied granular or as a slurry to target sediment P. EutroSORB WC is a liquid formulation for water column P stripping. EutroSORB SI is a liquid formulation of iron-coated lanthanum designed to target sediment P.'
9. Alternative Techniques	Grammatical / Editorial	9002	Change 'EutroSorb' to 'EutroSORB' and add a space between 'SePRO_could'
9. Alternative Techniques	Technical	9147	Again, there is discussion about potential adverse impacts of the alternative technique of a floating wetland, but it is acknowledged that they remove nutrients, and isn't a goal of lake management to manage excess nutrients? Also, a review of the literature has identified that the "main advantage of this potential, cost-effect technology is that they float on the water surface and can cope with fluctuating water depths during heavy and scanty rainfall events." (Sharma, R., Vymazal, J., Malaviya, P. (2021). Application of floating treatment wetlands for stormwater runoff: A critical review of the recent develops with emphasis on heavy metals and nutrient removal. Science of the Total Environment 777, 146044.
9. Alternative Techniques	Technical	9657	I recall one bacteria additive proponent saying that nitrate was needed as an additive to digest organic sediments but DEP is unlikely to allow nitrate additions to lakes.
Appendix C - Cost of Lake and Wat	Technical	11271	Why. is dredging so low cost per kg P in the. table, yet is among the most expensive per acre?