

MARSH LANDING COMMUNITY ASSOCIATION ACTION PLAN FOR PONDS AQUATIC SYSTEMS RECOMMENDATIONS

Attached you will find proposals for the standard lake assessments, bacteria treatment, and debris removal add-on. I've thought of a few more things to consider regarding the implementation of the proposals. Let me know if you have any questions.

Proposals/follow-up:

- Debris Removal – once signed proposal is received can begin immediately, during routine maintenance.

- Lake Assessments - review changes since aeration is installed and determine further action – once signed proposal is received can begin when regional biologist can get it scheduled.
 - Since the lakes have aeration already installed seasonal variability will have less of an impact on results.
 - One caveat to consider here is collecting data that can be compared apples to apples, i.e. sampling at the same time of year as the original sampling. The original sampling was done in June 2018. In this case you would need to wait until June 2020 then to sample again.
 - If you would like results sooner and to track your current progress regarding changes in nutrients and improving the dissolved oxygen levels. Ensuring the dissolved oxygen levels effects other remediation that can be taken you it may be better to just sample now to determine the next steps.

- Bacteria - once signed proposal is received and appropriate dissolved oxygen levels have been verified can begin immediately.
 - Microbial activity is highest in the summer months when water temperatures are at the highest. Microbes tend to be less active or even dormant in the winter months, however bacteria can be applied any time, but they are just more efficacious in the warmer months.
 - Sites with the highest percent organic content were selected for bacteria treatments.
 - It is hard to track whether bacteria are successful it is typically left to qualitative observation.

- Carp stocking and permit (I checked this was not included on the original contract)

- Marsh Landing **does not** have an existing carp permit so we will need to apply for one.
 - Once all the paperwork is submitted and the carp barriers are installed it takes least 6 weeks for FWC to review and approve carp permits.
 - Carp Barrier's, outflows are located at sites 1, 8, and 7 and will need to be measured for barriers, fabrication and installation will be completed on a time and material work order. I will get a ballpark estimate on this as well. Barrier's need to be completed prior to permit approval and are usually installed when water levels are low and the outflow opening is exposed, not underwater.
 - Carp Stocking- Carp are usually stocked in the winter months, but there is a little wiggle room here, fish are available usually starting in December but the larger size typically not until February or March.
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- Sport Fish stocking – Need to verify oxygen levels before stocking, fish are available for stocking in the winter months.

 - Littoral Plants – Suggestions for plants attached, but any plantings should not be considered until early summer of 2020 (June). Disregard the gulf spike rush on the suggestions.

Thank you,

Christina Kennedy

Water Quality Resource Consultant-Florida