



To: Lake Lawrence Steering Committee

From: Ryan Van Goethem, CLM – Limnologist & Project Lead

Date: January, 15th, 2026

Email: ryanv@eutrophix.com

Cell : (303) 229-9622

Regarding: EutroSORB G and SI for internal phosphorus loading mitigation in Lake Lawrence

Lake Lawrence deserves clean, safe, and enjoyable water for the community and wildlife it supports. Please review the following information and the product presentation for consideration in your plans to restore water quality in the lake.

Lakes impaired by internal phosphorus loading can utilize EutroSORB G and EutroSORB SI as part of a restoration program. EutroSORB G is a 10% lanthanum-modified bentonite formulation. EutroSORB SI is a novel iron-coated technology (patent pending) in a liquid formulation with 20% lanthanum content and a dry formulation with 50% lanthanum content. Lanthanum-based technologies provide many benefits for managing phosphorous in natural aquatics ecosystems due to their safety, ease of use, and effectiveness. Lanthanum has been used world-wide on 100's of waterbodies since 1990's and well-studied and evaluated in the peer-reviewed literature (references attached). Lanthanum binding to phosphate occurs across a wide pH range 4-10 in anoxic and oxic conditions, and permanently binding phosphorus as Rhabdophane/Monazite that won't re-release under expected aquatic environmental conditions (stays bound pH 3-12, anoxic/oxic) (Recht & Ghassemi 1970; Dithmer 2106a; Mucci et al. 2018; Zhi et al. 2020; Kang et al. 2022). There are no known points of failure for the potential range of conditions at Lawrence Lake.

Many local projects performed by Aquatechnex LLC utilizing EutroSORB G have case studies available. These projects are using annual partial dosing to meet water quality goals. EutroSORB SI is a new formulation that has limited case studies to date, but that will rapidly change over the coming years.

Kitsap Lake, WA – 250-acre lake impacted by internal P load driven HABS. Over 90% reduction of hypolimnetic phosphorus, 35% improvement in water clarity. Significant reduction in extent and severity of HABS during recreational season. <https://eutrophix.com/case-studies-news/>
<https://www.bremertonwa.gov/1282/Kitsap-Lake-Algae-Control-and-Aquatic-Ve>

Long Lake, WA – 330-acre lake impacted by internal P load driven HABS. 70% reduction of hypolimnetic phosphorus. Significant reduction in extent and severity of HABS during recreational season. Case study handout and 2025 report available upon request.

Moses Lake, WA – 6,800-acre reservoir impacted with excess external and seasonal internal loading of P driving HABS with high negative economic impacts. Short-term demonstration of P sequestration to improve water quality on 1/3 of the lake. Data analysis demonstrated summer means of 50% lower phosphorus and 59% lower chlorophyll-a following EutroSORB G application relative to similar water years. <https://eutrophix.com/case-studies-news/>
<https://www.walpa.org/waterline/june-2025/novel-large-scale-phosphorus-mitigation-on-moses-lake-wa/>.

If you need any additional information regarding restoration of Lawrence Lake, please contact us.

Vendor information

EutroPHIX is a division of SePRO Corporation focused on helping restore water quality from harmful algae blooms and nutrient pollution. EutroPHIX and SePRO have over 30 years of experience in successful support of public lake and reservoir management throughout the country providing solutions and advanced technical services to manage hundreds of thousands of acres of surface water throughout the US on an annual basis. Ryan is a Limnologist & Project lead in the Western US and resides in Spokane, WA. Ryan has extensive knowledge of lakes and water quality issues in the area. Visit www.eutrophix.com for more information.

Highlighted Literature References

Bishop, W. M., McNabb, T., Cormican, I., Willis, B. E., & Hyde, S. (2014). Operational evaluation of Phoslock phosphorus locking technology in Laguna Niguel Lake, California. *Water, Air, & Soil Pollution*, 225(7), 2018. <https://doi.org/10.1007/s11270-014-2018-6>

Bishop, W. M., & Richardson, R. J. (2017). Influence of Phoslock® on legacy phosphorus, nutrient ratios, and algal assemblage composition in hypereutrophic water resources. *Environmental science and pollution research*, 25(5), 4544-4557. <https://doi.org/10.1007/s11356-017-0832-2>

Dithmer, L., Nielsen, U. G., Lundberg, D., & Reitzel, K. (2016a). Influence of dissolved organic carbon on the efficiency of P sequestration by a lanthanum modified clay. *Water Research*, 97, 39-46. <https://doi.org/10.1016/j.watres.2015.07.003>

Dithmer, L., Nielsen, U. G., Lurling, M., Spears, B. M., Yasseri, S., Lundberg, D., Moore, A., Jensen, N. D., & Reitzel, K. (2016b). Responses in sediment phosphorus and lanthanum concentrations and composition across 10 lakes following applications of lanthanum modified bentonite. *Water Res*, 97, 101-110. <https://doi.org/10.1016/j.watres.2016.02.011>

Egemose, S., Reitzel, K., Andersen, F. Ø., & Flindt, M. R. (2010). Chemical lake restoration products: sediment stability and phosphorus dynamics. *Environmental science & technology*, 44(3), 985-991. <https://doi.org/10.1021/es903260y>

Epe, T. S., Finsterle, K., & Yasseri, S. (2017). Nine years of phosphorus management with lanthanum modified bentonite (Phoslock) in a eutrophic, shallow swimming lake in Germany. *Lake and Reservoir Management*, 33(2), 119-129. <https://doi.org/10.1080/10402381.2016.1263693>

Kang, L., Mucci, M., & Lüring, M. (2022). Influence of temperature and pH on phosphate removal efficiency of different sorbents used in lake restoration. *Science of the Total Environment*, 812, 151489. <https://doi.org/10.1016/j.scitotenv.2021.151489>

Mucci, M., Maliaka, V., Noyma, N. P., Marinho, M. M., & Lurling, M. (2018). Assessment of possible solid-phase phosphate sorbents to mitigate eutrophication: Influence of pH and anoxia. *Sci Total Environ*, 619-620, 1431-1440. <https://doi.org/10.1016/j.scitotenv.2017.11.198>

Recht, H. L., & Ghassemi, M. Phosphate Removal from Wastewater Using Lanthanum Precipitation. *US Dept. of the Int. Publ.*, (17010).

Spears, B. M., Lurling, M., Yasseri, S., Castro-Castellon, A. T., Gibbs, M., Meis, S., McDonald, C., McIntosh, J., Sleep, D., & Van Oosterhout, F. (2013). Lake responses following lanthanum-modified bentonite clay (Phoslock(R)) application: an analysis of water column lanthanum data from 16 case study lakes. *Water Res*, 47(15), 5930-5942. <https://doi.org/10.1016/j.watres.2013.07.016>

Spears, B. M., Mackay, E. B., Yasseri, S., Gunn, I. D., Waters, K. E., Andrews, C., ... & Lüring, M. (2016). A meta-analysis of water quality and aquatic macrophyte responses in 18 lakes treated with lanthanum modified bentonite (Phoslock®). *Water research*, 97, 111-121. <https://doi.org/10.1016/j.watres.2015.08.020>

TRC Environmental (2017). Supplemental Environmental Impact Statement for State of Washington Aquatic Plant and Algae Management. Washington Department of Ecology, Pub. No. 17-10-020. <https://apps.ecology.wa.gov/publications/documents/1710020.pdf>

van Oosterhout, F., Yasseri, S., Noyma, N., Huszar, V., Manzi Marinho, M., Mucci, M., ... & Lüring, M. (2022). Assessing the long-term efficacy of internal loading management to control eutrophication in Lake Rauwbraken. *Inland Waters*, 12(1), 61-77. <https://doi.org/10.1080/20442041.2021.1969189>

Zhi, Y., Zhang, C., Hjorth, R., Baun, A., Duckworth, O. W., Call, D. F., ... & Grieger, K. (2020). Emerging lanthanum (III)-containing materials for phosphate removal from water: A review towards future developments. *Environment international*, 145, 106115. <https://doi.org/10.1016/j.envint.2020.106115>