

INVITATION FOR BID for ALUM TREATMENT

FROM Long Lake Protection and Rehabilitation District

YOU MUST USE THIS BID SHEET WHEN SUBMITTING YOUR BID
BIDS CONTAINING ESCALATOR CLAUSES CANNOT BE ACCEPTED
INSTRUCTIONS/CONDITIONS

Sealed Bids for furnishing the supplies and services described below must be postmarked no later than January 22, 2017 and mailed to Long Lake Protection and Rehabilitation District,
PO Box 294
Centuria, WI 54824

- No faxed or emailed bids will be accepted. The bid form shall be submitted in one envelope which has the Bidder's Name on its face.
- The bids will be opened and made public at a meeting of the Long Lake P&R District (Lake District) January 24, 2017.
- Supplies shall be shipped FOB Destination, Freight prepaid.
- The Lake District reserves the right to reject any or all bids, and to order within 10% more or less of the quantity specified. Bids must be firm for acceptance for 60 days after the bid deadline.
- Bid prices should not include Federal Excise Taxes or State Sales Tax, The Lake District is exempt from payment of such taxes.
- Any contract resulting from this bid will be subject to the attached Technical Specifications and Terms and Conditions.

For questions regarding this bid please contact Project Manager: Cheryl Clemens, Harmony Environmental, 715-268-9992, harmonyenv@amerytel.net.

Note: Fill in your bid price and total bid price for each item and the total bid price for this proposal per attached scope of work and terms and conditions.

Bid Item	Units	Quantity	Unit Cost	Total Price
Liquid Aluminum Sulfate Application to Long Lake (2018)	Gal	42,246		
Liquid Sodium Aluminate Application to Long Lake (2018)	Gal	21,123		
Liquid Aluminum Sulfate Application to Long Lake (2020)	Gal	40,496		

We agree to furnish the above supplies and services according to your plans, specifications and conditions at prices specified hereon.

Date _____

Firm _____

Signature _____

Print Name _____

Title _____

Email _____

Address _____

City _____ State _____ Zip _____

Telephone (Cell) _____ (Office) _____

LONG LAKE PROTECTION AND REHABILITATION DISTRICT

ALUM APPLICATION AT LONG LAKE

TECHNICAL SPECIFICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The alum treatment project is to apply aluminum sulfate (alum) to Long Lake using a subsurface injection system to inactivate sediment phosphorus and to reduce internal phosphorus loading. All Work included in this Section shall be performed in accordance with the following paragraphs, the General Requirements set forth in Division 1 of these Specifications, and the provisions of the other Contract Documents.
- B. Work covered by this section includes furnishing all supervision, labor, materials, and equipment required to supply, deliver, store, and apply aluminum sulfate to Long Lake, shown on Figure 1, 2 and 3. The Contractor shall:
 - 1. Furnish, deliver, store and apply liquid aluminum sulfate to Long Lake to mitigate the internal release of phosphorus from the lake sediment.
 - 2. Treat at appropriate weather, temperature, and flow conditions as directed by the PROJECT MANAGER.
 - 3. Furnish, install and remove all appropriate signage and buoys (if used) in a timely manner.
 - 4. Restore all areas directly or indirectly disturbed by the Work to the pre-existing condition.
 - 5. All other Work required for completion of the aluminum sulfate treatment as a project whole.
- C. The lake access and application staging areas are located at the south boat landing. The parking lot and boat ramp shall be used for all shore activities (See Figure 2).

LAKE DISTRICT will provide for CONTRACTOR's use of the access and staging areas by means of an agreement between LAKE DISTRICT and the Village of Centuria, copies of which will be available to CONTRACTOR. CONTRACTOR must conform all operations to the terms of that agreement.

1.2 REFERENCES

- A. AWWA B403-88 American Water Works Association Standard for Aluminum Sulfate.

1.3 SEQUENCE OF WORK

- A. Aluminum treatment shall not begin until chemical applicator (Contractor) is approved by LAKE DISTRICT. The first treatment is to occur once in the summer of 2018, and the second treatment is to occur in summer of 2020 (see 3.4.G for the specifics on the aluminum sulfate application timing).
- B. The Contractor shall provide all equipment, labor, and materials necessary to perform the work including application equipment, and equipment necessary to mobilize and demobilize. This shall

- include: a) GPS-linked computer system for barge (boat) guidance that is integrated with real-time bathymetric measurements and simultaneous chemical dosing control for aluminum sulfate and sodium aluminate pumping rates, b) treatment barge (boat) with on-board chemical storage tanks, and c) boom applicator for even chemical distribution of chemicals.
- C. The approved application period for the alum and sodium aluminate is May 15, 2018 through June 15, 2018 for the first application. The second application period projected for 2020 is to be determined pending results of the interim monitoring.

1.4 SUBMITTALS

- A. The Contractor shall submit certificate(s) indicating all materials meet requirements of these Specifications before treatment occurs. The Contractor shall submit the item, applicable reference specification, class, type, manufacturer, and distributor. The Contractor shall also submit the results of aluminum sulfate lot testing of materials delivered to the site, including an analysis of the metals content of the material, before treatment.
- B. The Contractor shall submit GPS coordinates and corresponding application rates and amounts of aluminum sulfate applied to the lake. This data shall be collected by the Contractor in real-time during the application and submitted to the PROJECT MANAGER on a daily basis.
- C. The Contractor shall submit a Plan of Work for approval by the PROJECT MANAGER prior to the start of work. The Plan of work shall include, at a minimum, the following items:
1. Explanation of plans and schedule for the timely delivery, storage and transfer of chemicals. All piping shall be heavy duty HDPE tubing. Type 316 stainless-steel fittings shall be used in areas where contact with liquid alum is anticipated. All couplings and connectors for alum distribution lines, storage tank, pumps, and injector units must meet corrosion resistance standards for alum.
 2. Description of the temporary lakeshore chemical storage facilities including a spill prevention, control and contingency plan (SPCC Plan). Provide manufacture's model number and material type for alum storage tank(s).
 3. Method of chemical distribution documenting the computer control of chemical pumping rate into the lake based on application vessel speed, real-time GPS navigation, and bathymetric measurements to ensure an ultimate effective dose of 42,246 gallons aluminate sulfate and 21,123 gallons sodium aluminate throughout depths greater than 15 ft. in 2018 and 40,496 gallons aluminum sulfate throughout depths greater than 15 ft. in 2020 (or as modified by monitoring results).
 4. Explanation of navigational guidance system detailing real-time GPS linked computer system for barge (boat) guidance and chemical metering control to ensure complete and uniform chemical coverage during application.
 5. Description of all backup systems to minimize down time.
 6. Description of land-to-vessel chemical transfer method.
 7. Anticipated treatment capacity (acre/hour or gallons/day). CONTRACTOR shall demonstrate an ability to apply 20,000 gallons per day.

8. Plan for adjusting application procedures or taking other steps to respond to unfavorable lake pH change or other adverse occurrence during application.

D. The base bid shall include mobilization, all equipment, material, work and labor, and applicable taxes required to complete the application described.

1.5 BASIS FOR COMPENSATION

A. Compensation for all work covered under this section of these Specifications shall be in accordance with the Terms and Conditions.

1.6 BONDS

A. Contractor shall procure and deliver to the Lake District and maintain at contractor's own expense without expense to the Lake District, until acceptance by the Lake District of the work covered by this contract, the following bonds:

1. Performance bond. A bond in the form prescribed by the Lake District with sufficient surety, approved by the Lake District, that Contractor will perform the work in accordance with the terms of the contract and with the plans and specifications, and that Contractor will commence and complete the work in the time prescribed in the contract, and that Contractor will provide against direct or indirect damages that may be suffered or claimed on account of the construction or improvement during the time of the same, and until the construction and improvement is accepted.
2. Labor and material bond. A bond guaranteeing prompt payment of moneys due all persons supplying Contractor or any subcontractor with labor and materials employed and used in carrying out the contract.

2.1 CHEMICALS

A. Aluminum Sulfate (Alum)

1. Liquid aluminum sulfate supplied shall meet the requirements of AWWA B403-88. The liquid aluminum sulfate shall be of commercial grade appropriate for the application with an aluminum content of **4.4% Al⁺³** (Aluminum) by weight.
2. The aluminum sulfate supplied under this standard shall contain no soluble mineral or organic substances in quantities capable of producing deleterious or injurious effects on public health or water quality.

PART 3: EXECUTION

3.1 DELIVERY, STORAGE AND HANDLING

A. The Contractor shall provide the name and location of the proposed chemical supplier with the Bid, and will be responsible for all coordination with the aluminum supplier necessary to ensure timely delivery to the project site. The Contractor shall confine all storage of equipment and materials within the Project Limits and otherwise in a safe, secure and environmentally sound manner. Conformance to these requirements shall be determined by the Contractor, subject to disapproval of the PROJECT MANAGER, whose failure to disapprove does not, however, constitute any shift of responsibility to properly handle equipment and materials from Contractor to PROJECT MANAGER. Tank Truck haul routes and site access shall be as directed by LAKE

DISTRICT. If gradual off-loading is required the contractor shall be responsible for all demurrage charges.

- B. The Contractor shall provide notice to LAKE DISTRICT of delivery of equipment and materials seven days prior to the delivery date.
- C. The Contractor shall maintain a copy of the spill prevention and spill contingency plan on site for the duration of the project.

3.2 UNFAVORABLE TREATMENT CONDITIONS

The PROJECT MANAGER and the CONTRACTOR will be responsible to monitor wind and precipitation in order to make judgments about whether conditions are suitable for application. The PROJECT MANAGER MAY PROHIBIT APPLICATION WITH UNFAVORABLE WIND CONDITIONS. The National Weather Service at the L O Simenstad Municipal Airport (KOEO) in Osceola, WI (or acceptable alternative as judged by the PROJECT MANAGER) will be the source of wind speeds and forecast wind speeds.

- A. Application of aluminum shall not occur when wind speeds 6 feet above the lake surface exceed 15 miles per hour or are forecast to exceed 20 miles per hour within 2 hours of application.
- B. Application of aluminum shall not occur when wind gusts are forecast to exceed 25 miles per hour within the next 12 hours or 30 miles per hour within the next 24 hours.

3.3 LOCATION OF WORK

- A. Project Limits shall be the entire water surface area of Long Lake and access area indicated on Figure 2. The contractor shall not apply aluminum outside the indicated areas on Figure 3.
- B. The staging area is located at the public access to Long Lake located off of Tanglewood Trail in the Town of Balsam Lake, WI (Figures 1 and 2).

3.4 ALUMINUM APPLICATION

- A. The Contractor shall be responsible for the purchase, delivery, scheduling, and application of the chemicals including all labor.
- B. The Contractor shall be responsible for all staging area setup, security, cleanup, and restoration to its original condition (including asphalt, grading, turf, etc.) following completion of the application. The Contractor shall meet all local and county requirements and take all reasonable steps to minimize impacts on residents and lake users in noise, parking, safety, equipment and supply storage, smells, and general condition of the site. The Contractor will coordinate activities with the PROJECT MANAGER, Wisconsin DNR, and the Village of Centuria representatives to ensure that operations conform to the site use agreements.
- C. The Contractor shall conduct the aluminum sulfate application utilizing a barge or similar vessel with a PROJECT SCIENTIST approved microprocessor subsurface injection system that allows for uniform application of liquid aluminum sulfate at variable boat speeds. The barge position in the lake shall be controlled by a satellite guiding system (GPS) with computer integrated depth sonar to continuously adjust the flow of alum and sodium aluminate, based on changing lake depth and boat speed. Aluminum sulfate application shall be made to the indicated area of Long Lake (Figure 3).

- D. The Contractor shall ensure that the aluminum sulfate is evenly distributed throughout the treatment area shown in Figure 3. The contractor shall continuously adjust the application rate of the liquid alum and sodium aluminate based on the speed of the barge and depth of the lake to achieve the effective dose. The Contractor shall maintain records to verify the area of coverage (also see Section 1.04).
- E. The Contractor will continuously monitor the ambient pH in Long Lake during the aluminum sulfate treatment application at hourly intervals. If at any time during treatment, the depth-averaged ambient pH in the lake falls below 6.5 or increases above 9 S.U., Contractor will stop the treatment. Treatment will not resume until authorized by the PROJECT MANAGER.
- F. The Contractor shall conduct jar tests immediately prior to the alum treatment and every morning before treatment begins to evaluate the effects of using the chemicals and lake water present at the time of the treatment. It is anticipated that the treatment jar tests will be on 20 gallons of lake water and will test only for pH using the prescribed dose of alum. Results of the treatment jar test will be used, if necessary, to adjust the application rate. Results will be shared with the PROJECT MANAGER and approval to proceed or modification jointly agreed upon.
- G. The aluminum sulfate treatment shall be made at a sufficient rate to insure long term sediment phosphorus inactivation, as determined by the PROJECT SCIENTIST. Unless advised otherwise by the PROJECT MANAGER, the Contractor shall apply a buffered Alum (aluminum sulfate-sodium aluminate) at a dose rate of 60 g/m² in 2018. Unless advised otherwise by the PROJECT MANAGER, the Contractor shall apply aluminum sulfate (non-buffered) at a dose rate of 25 g/m² (455 gallons per acre) in 2020 (or as modified by interim monitoring). The contractor shall apply the full chemical allotment of aluminum sulfate as defined above. If there is a remaining supply of chemicals after the Contractor has applied the specified dose, due to changes in lake bathymetry, the Contractor is responsible for applying the remaining amount of chemicals to the lake uniformly as directed by the PROJECT MANAGER.
- H. The PROJECT SCIENTIST estimates that this treatment rate will require a total of **42,246** gallons of commercial grade (4.4% Al₃₊ Aluminum) liquid aluminum sulfate and 21,123 gallons of sodium aluminate in 2018 and a total of 40,496 gallons of commercial grade (4.4% Al₃₊ Aluminum) liquid aluminum sulfate in 2020. It is Contractor's responsibility to ensure that enough material is available to complete the Work in accordance with the dosing requirements stated herein.
- I. The Contractor will maintain ongoing access to communication with the PROJECT MANAGER, and will advise the PROJECT MANAGER on an ongoing basis as to application status, lake pH readings, and all other conditions relevant to conditions for alum application and dosing. The Contractor shall keep daily records acceptable to the PROJECT MANAGER and available for review as a basis for and substantiation of payment. Daily logs shall minimally state the following:
1. Hours of aluminum application
 2. The quantity of aluminum applied
 3. The approximate acreage and volume treated
 4. Approximate location (on map) of area treated
 5. Summary of truck deliveries.
 6. Explanation of any downtime
- J. The Contractor shall comply with all of the conditions of the permits.

TERMS & CONDITIONS

I. GENERAL

The following terms and conditions apply to all supplies, services, and construction furnished under this contract:

A. Definitions

1. "Lake District" means Long Lake Protection and Rehabilitation District; who is the buyer,
2. "Supplies" means all property, including, but not limited to, goods, commodities, equipment, parts, materials, printing, and leases on real and personal property,
3. "Services" means the furnishing of labor, time or effort by a Contractor, not involving the delivery of a specific end product other than reports, which are merely incidental to the required performance. This term includes "professional services" but it does not include employment agreements or collective bargaining agreements.
4. "Construction" means the process of building, altering, repairing, improving or demolishing any public structure or building, or other public improvements of any kind to any public real property. It does not include the routine operation, routine repair, or routine maintenance of existing structures, buildings, or real property.
5. "Project Manager" means a consultant selected by the Long Lake Protection and Rehabilitation District. The Project Manager is Cheryl Clemens with Harmony Environmental, Inc. unless otherwise designated by the Chairman of the Long Lake Protection and Rehabilitation District.
6. "Project Scientist" means the individual guiding the technical aspects of the project. The Project Scientist is Bill James with UW Stout.

B. Taxes. The Lake District is exempt from all State sales taxes and Federal excise taxes. The supply or supplies described in this purchase order or the attachments to it are purchased from the named seller ("Ordered From") for the exclusive use of the Lake District. It is understood that the exemption from the tax in the case of sales of supplies is limited to the sale of supplies purchased for the exclusive use of the Lake District, and it is agreed that if supplies purchased tax free are used otherwise or are sold to employees or others, such fact will be reported to the manufacturer of the supply or supplies. It is also understood that the fraudulent use of tax exemptions will subject all guilty parties to a fine of not more than \$10,000, or to imprisonment for not more than five years, or both, together with costs of prosecution.

C. Assignments. This contract shall not be assigned to another party without the express written consent of the Lake District.

D. Remedies. The parties acknowledge and agree that this contract shall be deemed to have been accepted and delivered in the State of Wisconsin, and the validity, construction, and enforceability of this contract shall be governed in all respects by the domestic laws of the United States and State of Wisconsin applicable to agreements made and to be performed entirely within the State of Wisconsin, without regard to the principles of comity or conflicts of laws of the State of Wisconsin or any other state. The parties irrevocably and unconditionally consent to personal jurisdiction and venue of any state or federal court sitting in, or with jurisdiction over actions arising in, Polk County, Wisconsin, for purposes of any suit, action, or proceeding arising out of or related to this

Agreement or any alleged breach or violation or any dispute between the parties, and any objections to such jurisdiction and venue are hereby expressly waived by the parties, it being agreed that the term "any court of competent jurisdiction" as used in this Agreement shall include the state court sitting in Polk County, Wisconsin.

- E. Termination. The Lake District reserves the right to terminate its obligations under this purchase order or any part hereto in any delivery is not made or performance not completed within the time specified or if the material delivered is not as specified, Such right shall be in addition to Lake District other legal rights, whether set forth in this purchase order or not. Seller will deliver to Lake District any of the materials for which Lake District shall make written request at or after termination and Lake District will pay Seller fair value for any of such material so requested and delivered.
- F. Entire Agreement. This contract contains the entire agreement of the parties unless otherwise stated by the Lake District on this Purchase Order. This contract may not be modified or terminated orally, and no claimed modification, termination or waiver shall be binding on the Lake District unless in writing signed by the Lake District's contracting officer. No modification or waiver shall be deemed affected by Seller's acknowledgement or confirmation containing other or different terms. All titles to clauses contained in this order are for identification only and shall not be construed as being a substantive part of the agreement.
- G. The bid and contract are to be construed under the laws of the State of Wisconsin.

II. SUPPLIES

The following terms and conditions apply when supplies are furnished under this contract:

- A. Delivery and Acceptance. The Lake District reserves the right to refuse any supplies and to cancel all or any part of the supplies not conforming to applicable specifications, drawings, samples, or descriptions. Acceptance of any part of the order shall not bind the Lake District to accept future shipments, nor deprive it of the right to return supplies already accepted.
- B. Risk of Loss. Delivery shall not be deemed to be complete until all supplies have been actually received and accepted by the Lake District.
- C. Defects. Contractor acknowledges that the supplies furnished under this contract are satisfactory for the purpose intended by the Lake District, if disclosed, and that any defect in such supplies may occasion special damage to the Lake District.
- D. Conforming Supplies. Acceptance of all or any of the supplies shall not be deemed to be a waiver of the Lake District's right either to cancel or to return, all or any portion of the supplies because of failure to conform to the specification or description, or by reason of defects, latent or patent, or other breach of warranty, or to make any claim for damages not caused by the Lake District, such rights shall be in addition to any other remedies provided by law.
- E. Patent Infringement. Contractor agrees to indemnify and hold the Lake District harmless pursuant to Section IV of this Agreement from and against any actual or claimed trademark, patent or copyright infringement, or any litigation based thereon, with respect to any part of the supplies furnished under this contract, and such obligation shall survive acceptance of the supplies and payment therefore by the Lake District.

- F. Warranty. Contractor expressly warrants that the supplies furnished under this contract are of merchantable quality and satisfactory and safe for consumer use. Delivery of the supplies shall constitute an agreement by Contractor to Indemnify and hold the Lake District harmless from liability, loss, damage and expense, including reasonable counsel fees, incurred or sustained by the Lake District by reason of the failure of the supplies to conform to such warranties. Such indemnity shall be in addition to any other remedies provided by law and shall include consequential damages as provided under the Uniform Commercial Code.
- G. Labor Disputes. Whenever any actual or potential labor dispute delays or threatens to delay the timely performance of this order, Contractor shall immediately give notice thereof to the Lake District.

III. SERVICES/CONSTRUCTION

The following terms and conditions apply to all services and/or construction furnished under this contract:

- A. Insurance Requirements. The Contractor, prior to commencement of any work under this contract, shall have and maintain in force the following insurance covering work arising out of or related to the Agreement and from the performance of any and all work or services thereunder whether made presently or at any time thereafter.
 - 1. Worker's Compensation covering Wisconsin Statutory requirements and Employee's Liability with limits of not less than \$100,000/\$500,000/\$100,000;
 - 2. Comprehensive Business Auto Liability and Comprehensive or Commercial Liability insurance each with minimum limits of \$1,500,000 per occurrence for personal (bodily) injury and property damage combined. The C.G.L coverage shall include Contractual Liability, Products/Completed Operations Liability, XCU coverages, and LAKE DISTRICTs and Contractors' Protective coverages. The Contractor, prior to commencement of any work under this contract, shall furnish to the Lake District Project Manager, a Certificate of Insurance issued to the Lake District as evidence the required Insurance is in effect. All certificates shall require that the Lake District will be given 10 days prior written notice of cancellation- or change of coverages.
- B. The Contractor warrants that all materials used are of first quality and that the completed work will be free from defects in design and workmanship. It is understood that the completed work will be subject to the Lake District's inspection and written acceptance before final payment shall be due, and that neither payment to the Contractor nor any provision of this contract relieves the Contractor of the responsibility under this warranty and this warranty shall continue in force for one year after acceptance and final payment for the work.
- C. The Contractor shall provide all labor, materials, supplies, tools, and equipment necessary to perform the work and complete the project specified in this contract.
- D. All work performed under this contract shall comply with all applicable Federal, State and local laws, rules, and regulations.
- E. The District reserves the right to make changes in the work or delay the performance thereof. If such changes or delays required by the Lake District's affect the Contractor's cost, the contract price will be increased or decreased as appropriate, and the contract completion date will be altered as agreed upon.

- F. The Lake District may terminate all or any part of this contract by giving written notice to the Contractor. If the contract is terminated and the Contractor is not in default hereunder, the Lake District shall pay the Contractor for satisfactory work completed.
- G. All specifications, drawings, blueprints, photographs and all other information furnished to the Contractor in connection with this contract are and remain the property of the Lake District. Where the product of the contract is a document, printing plates, artwork, designs, blueprints, photographic negatives or plates or anything that is reproducible, such material or products including the original thereof, shall be and remain the property of the Lake District, whether or not it is stored on the Contractor's premises. The Contractor shall treat all such material in a confidential manner and will not use or reproduce such material except in connection with performance of this contract.
- H. Delays default by the Contractor or the Lake District caused by factor (such as strikes, acts of nature, civil disturbances, riots, etc.) beyond the control of the party delaying or in default shall be excused.
- I. Waiver by the Lake District of any breach of any provision hereof by the Contractor shall not constitute a waiver of any other breach of such provision or of any other provision hereof.

IV. INDEMNITY AND HOLD HARMLESS – LIABILITY AND DAMAGE

- A. It is agreed that the Contractor shall indemnify and hold harmless the Lake District, its employees, officers, officials, consultants, and agents from and against all claims, suits, liens, damages, losses, and expenses for injury, loss or damage without limitation, except in a situation of the Lake District's solo negligence as provided below, arising out of or related to this Agreement and from the performance of any and all work or services thereunder. Contract shall so indemnify and hold harmless the Lake District and indemnitees regardless of whether or not damages for injury to any property or any person are due to or claimed to be due to any active or passive negligence of the Lake District or other indemnitee, except only such loss, claim or damage as shall have been proven, determined and found by a court of competent jurisdiction to have been proximately caused by the sole negligence of the Lake District or other indemnitee.
- B. It is further agreed that the Contractor shall have the duty to defend the Lake District, its employees, officers, officials, consultants and agents, from and against any and all claims, suits, and any other action covered by the Indemnity and Hold Harmless Provision stated above. At the sole option of the Lake District, Contractor shall either immediately upon written request defend the Lake District or other indemnitee with appropriate legal counsel and shall bear all costs and expenses, including attorney fees, in the defense of any previously stated claim, suit or action or shall reimburse the Lake District for attorney fees and other expenses incurred by the Lake District in defending the same, said payment due within 30 days of written notice to the Contractor accompanied by an accounting of the claimed fees and expenses. Payments past due are, in addition to all other remedies available in law or equity, subject to twelve percent (12%) annual interest applied pro rata from the date payment was due until the date it is received by the Lake District.

- C. The terms and conditions and obligations upon Contractor stated in Paragraphs A and B above shall survive delivery or completion by Contractor of any goods and supplies or services and construction required by the Agreement, and shall further survive any acceptance of the same by the Lake District.

FIGURES

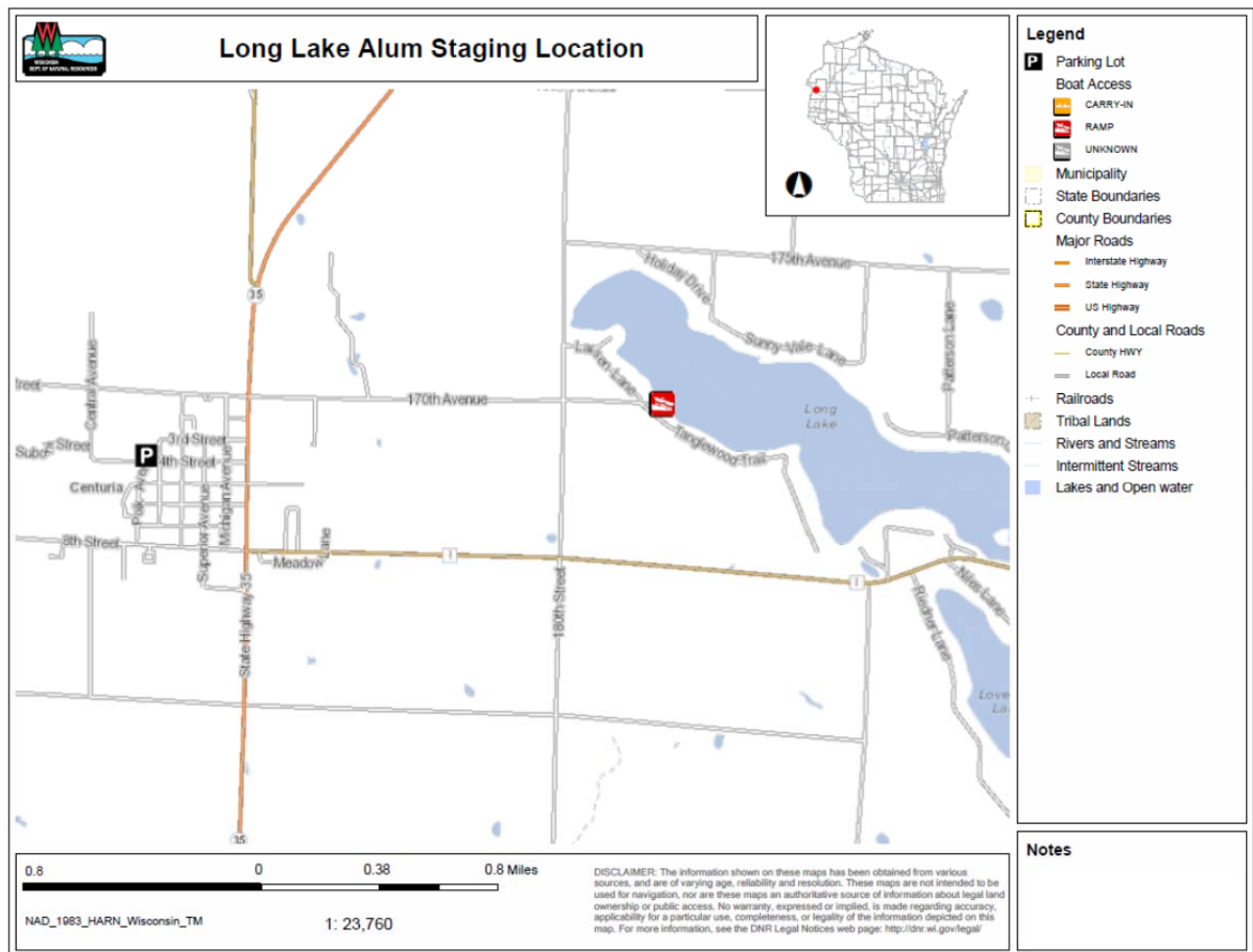


Figure 1. Long Lake Alum Treatment Project Location

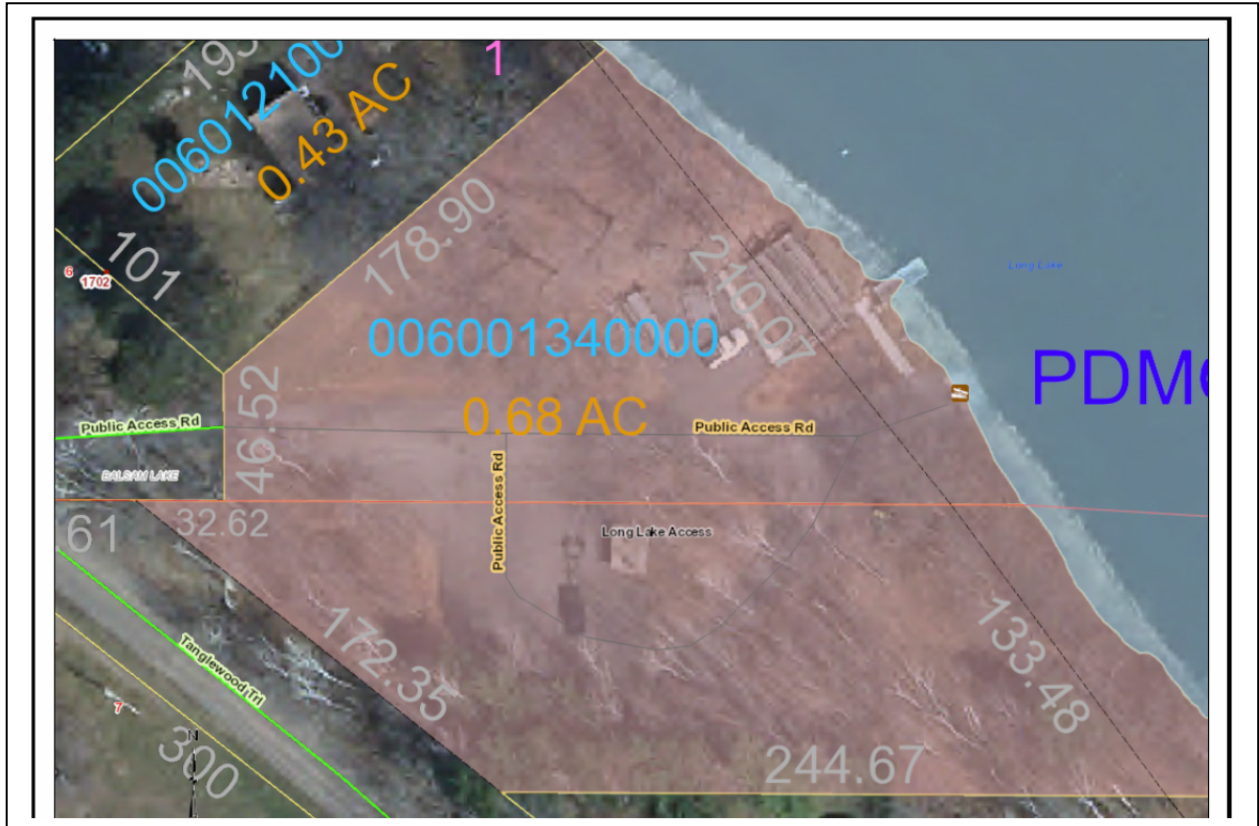


Figure 2. Alum Staging Aerial View (T34N R17W S7)

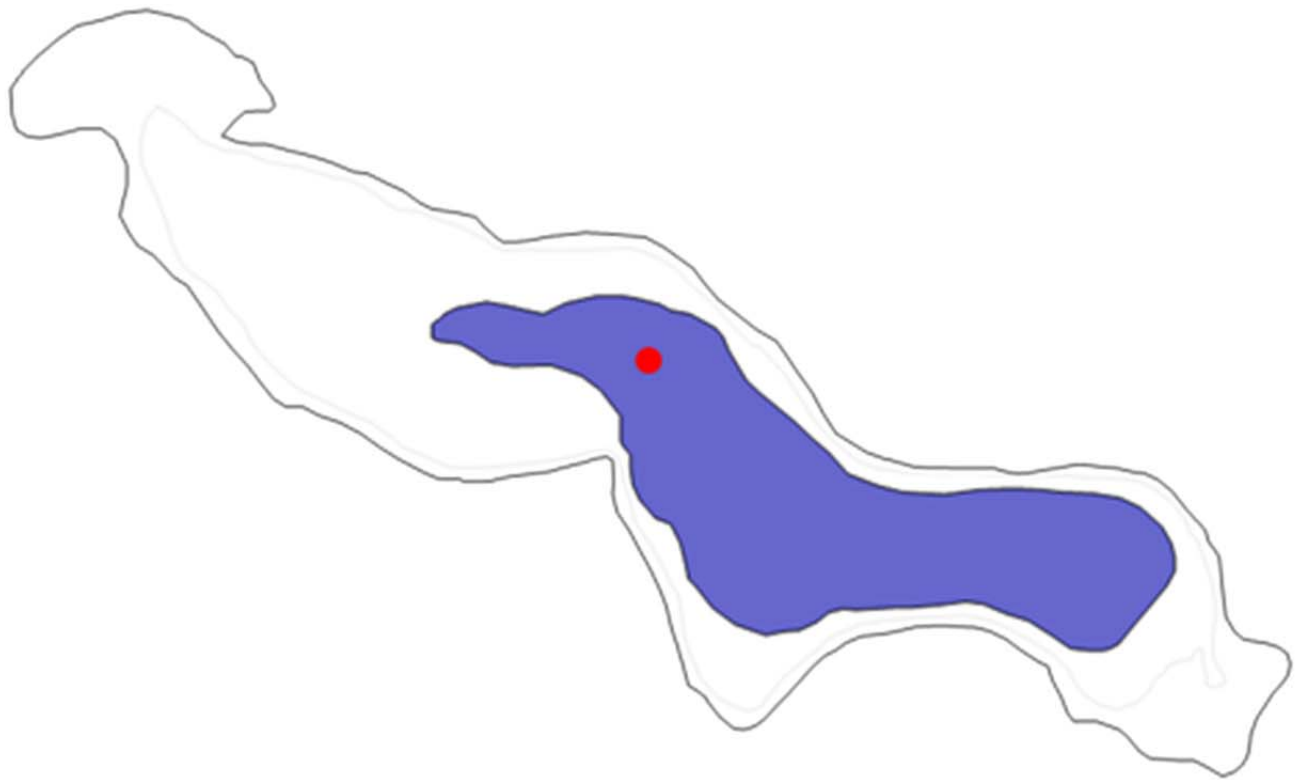


Figure 3. Alum Treatment Area (15 foot contour and deeper shown in blue). Red dot represents deep hole monitoring location.