

## PGOLID Programs

### Mosquito Treatment

| Category           | Description  | Person(s) Responsible          |
|--------------------|--|--------------------------------|
| Mosquito Treatment | PGOLID hires an independent contractor to treat the perimeter of the lake for mosquitoes weekly throughout the summer. | Independent Contractor: Clarke |
| Recommendations    | Continue Program as designed.  |                                |

### Lake Monitoring

| Category                                | Description  | Person(s) Responsible             |
|---|--|-----------------------------------|
| Baseline Water Quality Monitoring       | <ol style="list-style-type: none"> <li>1. Collect water samples at designated lake sites once a month from May to September and evaluate for total phosphorus, chlorophyll <i>a</i>.</li> <li>2. Secchi disk monitoring once a month from May to September.</li> <li>3. Dissolved oxygen and temperature profiles taken once a month from May to September.</li> </ol>   | PGOLID Water Resource Coordinator |
| Extra Water Quality Monitoring Projects | <ol style="list-style-type: none"> <li>1. In 2008-2010, hypolimnion water samples collected twice a month from May to September to evaluate internal phosphorus loading from the lake sediment.</li> <li>2. In 2009-2010, additional water quality parameters collected including ortho-phosphorus, total nitrogen, chloride, alkalinity, color, conductivity, and total suspended solids.</li> <li>3. In 2007-2008, collected water samples in Echo Bay to evaluate conditions before a potential new development.</li> <li>4. In 2015, additional water quality parameters collected to evaluate Zebra mussel suitability: calcium, alkalinity, chloride, magnesium, pH, total dissolved solids, potassium and bicarbonate.</li> <li>5. In 2015-2016, collect water samples in Echo Bay to see if there are any changes since 2008.</li> </ol> | PGOLID Water Resource Coordinator |
| Special Lake projects                   | <ol style="list-style-type: none"> <li>1. Aquatic insect biomonitoring survey (2008).</li> <li>2. Zooplankton community monitoring (2015).</li> </ol>  | PGOLID Water Resource Coordinator |
| Recommendations                         | <ol style="list-style-type: none"> <li>1. Continue baseline monitoring, and add extra monitoring and special projects when necessary.</li> </ol>   | PGOLID Water Resource Coordinator |

## Watershed/Stream Monitoring

| Category                                | Description  | Person(s) Responsible             |
|---|--|-----------------------------------|
| Baseline Water Quality Monitoring       | <ol style="list-style-type: none"> <li>1. Collect water samples at designated stream inlets monthly (total phosphorus, total suspended solids, water flow, dissolved oxygen, temperature, conductivity).</li> <li>2. Collect water samples at designated stream inlets after storm events each season (&gt;1 inch rain).</li> </ol>  | PGOLID Water Resource Coordinator |
| Extra Water Quality Monitoring Projects | <ol style="list-style-type: none"> <li>1. Collect extra water samples during spring thaw to track the snow melt runoff into streams.</li> <li>2. Collect E.coli samples at Bob Creek and Burton Lake Outlet during baseline monitoring and storm event monitoring to evaluate any health risks from upstream cattle operation.</li> <li>3. Deploy a flow data logger to establish a rating curve for Pelican River (2015-2016).</li> </ol> | PGOLID Water Resource Coordinator |
| Special Stream projects                 | <ol style="list-style-type: none"> <li>1. Aquatic insect biomonitoring survey (2008).</li> </ol>   | PGOLID Water Resource Coordinator |
| Recommendations                         | <ol style="list-style-type: none"> <li>2. Continue baseline monitoring, and add extra monitoring and special projects when necessary.</li> </ol>   | PGOLID Water Resource Coordinator |

## Aquatic Plant Projects

| Categories            | Description   | Person(s) Responsible   |
|-----------------------|---|---|
| Aquatic Plant Surveys | <ol style="list-style-type: none"> <li>1. In 2003, Blue Water Science was hired to survey aquatic plants in the PGOLID lakes. This transect survey showed moderate aquatic plant diversity and the presence of invasive curly-leaf pondweed.</li> <li>2. In 2010-2011, PGOLID completed a point intercept survey for all four lakes as a follow-up to the 2003 survey.</li> <li>3. In 2015, completed a point intercept plant survey on Echo Bay to document the native plant community.</li> </ol> | <ol style="list-style-type: none"> <li>1. Blue Water Science</li> <li>2. Independent Contractor</li> <li>3. RMB Environmental Laboratories</li> </ol> |
| Recommendations       | Continue plant surveys every 10 years or so to monitor diversity and the presence of any new invasive species.  | PGOLID Water Resource Coordinator   |

## On-site Waste Treatment Systems

| Project  | Description   | Person(s) Responsible                          |
|--|---|--|
| County Records Survey, 2004  | Obtained county records for on-site waste treatment systems and evaluated the status and age of systems.  | Blue Water Science                             |
| Waste Treatment System Screening Volunteer Survey, 2006              | Invited lake residents to volunteer for a screening of their on-site waste treatment system.  | PGOLID Water Resource Coordinator              |
| County inspections of on-site waste treatment systems and abatements | In 2007-2009, Otter Tail County inspected on-site waste treatment systems that were 20 years old or older. They abated the properties that did not meet requirements.   | Otter Tail County Land and Resource Department |
| County Records Survey, 2012  | Obtained county records for on-site waste treatment systems and evaluated the status and age of systems. Compared to 2004 survey.   | PGOLID Water Resource Coordinator              |
| Outreach, 2013   | <p>Sent a letter to all residents with septic systems or holding tanks over 20 years old recommending they have it checked.</p> <p>Sent out an anonymous voluntary survey to home owners asking about how they maintain their system, while educating them on proper maintenance.</p> | PGOLID Water Resource Coordinator              |
| Recommendations  | Maintain records from the county on the ages of septic systems and continue to education residents about waste treatment and water quality.   | PGOLID Water Resource Coordinator              |

## Invasive Species Projects

| Categories                                    | Description  | Person(s) Responsible                              |
|---|--|--|
| Chemical Treatment of Aquatic Invasive Plants | 1. PGOLID started a Curly-leaf pondweed (CLP) treatment program in 2005. This project has shown a great reduction in CLP and is an ongoing project.  | Licensed chemical applicator                       |
| Surveys                                       | <ol style="list-style-type: none"> <li>1. From 2007-present, Eurasian flowering rush surveys are conducted from Buck's Mill to Little Pelican lake. Any flowering rush that is found is hand-removed. This project is ongoing and follows a flowering rush contingency plan.</li> <li>2. From 2006-present, inspect areas around public accesses for Eurasian watermilfoil.</li> </ol> | PGOLID Water Resource Coordinator                  |
| DNR Watercraft Inspection Program             | 1. From 2006-present, PGOLID has participated in the DNR Watercraft Inspection Program. This program hires DNR interns for the summer to inspect boats for invasive species and survey boaters entering and exiting the two Pelican Lake accesses.   | Minnesota Department of Natural Resources (DNR)    |
| Zebra Mussels                                 | 1. Educate PGOLID property owners about new regulations that apply to PGOLID lakes since zebra mussels were found in 2009.   | PGOLID Water Resource Coordinator and PGOLID Board |
| Zebra Mussel Monitoring                       | <ol style="list-style-type: none"> <li>1. Monitor Zebra mussel veliger density every two weeks throughout the summer, 2012-present.</li> <li>2. Monitor Zebra mussel adult density and distribution, 2013- present.</li> </ol>   | PGOLID Water Resource Coordinator                  |
| Recommendations                               | Continue all programs as currently designed.   | PGOLID Water Resource Coordinator and PGOLID Board |

## Shoreland Projects

| Projects                            | Description  | Person(s) Responsible             |
|-------------------------------------|--|-----------------------------------|
| Shoreland Inventory                 | In 2004, Blue Water Science was hired to conduct a shoreland inventory on PGOLID lakes. This project evaluated how many parcels had 50% natural vegetation along the shoreline in a strip at least 15 feet deep. The results showed that 40% of properties met these criteria. | Blue Water Science                |
| Shoreline Habitat Restoration Grant | PGOLID has been awarded 3 different grants from the DNR to restore shorelines. Through this program we have completed 15 projects since 2009.  | PGOLID Water Resource Coordinator |
| Recommendations                     | In the next five years, complete a new shoreland inventory and compare results to 2004 to see if there is any improvement.<br><br>Implement a voluntary tree and native wildflower seed planting program   | PGOLID Water Resource Coordinator |

## Information and Education

| Categories  | Description   | Person(s) Responsible                              |
|---|---|--|
| Educational Seminars and Presentations                          | <ol style="list-style-type: none"> <li>1. Educational seminars for lake residents in the summer.</li> <li>2. Educational presentations at PGOLID and PLPOA meetings.</li> </ol>   | PGOLID Water Resource Coordinator                  |
| Dissemination of Educational Information Via Electronic Sources | <ol style="list-style-type: none"> <li>1. Articles in the Pelican Brief (Pelican Lake Property Owners Association [PLPOA] Newsletter).</li> <li>2. PGOLID website.</li> <li>3. Pelican Lake Property Owners Association Website (PLPOA).</li> </ol> | PGOLID Water Resource Coordinator and PGOLID Board |
| New Regulations   | <ol style="list-style-type: none"> <li>1. Keep abreast of new state/county/local government lake regulations and disseminate the information in an understandable way to PGOLID residents.</li> </ol>   | PGOLID Water Resource Coordinator and PGOLID Board |
| Community   | <ol style="list-style-type: none"> <li>1. Work with upstream landowners, farmers, ranchers, and other lake associations to act in a proactive manner in the protection of the water quality that flows into the PGOLID.</li> </ol>                  | PGOLID Water Resource Coordinator and PGOLID Board |
| Recommendations   | Continue all programs as currently designed.  | PGOLID Water Resource Coordinator and PGOLID Board |

## Recommendations Summary

These recommendations were provided by the PGOLID Water Resource Coordinator after evaluating the status of past and present projects and the resulting data. These recommendations were written in March of 2016.

1. **Monitoring:** Continue current baseline lake and stream monitoring programs and add extra monitoring and special projects when deemed necessary by the PGOLID Water Resource Coordinator and PGOLID Board.
2. **On-site Waste Treatment Systems:** Continue educating PGOLID residents through various means including surveys, the Pelican Brief and e-communications.
3. **Aquatic Plant Surveys:** Complete a new survey every 10 years or so to monitor plant diversity and the presence of any new invasive species.
4. **Invasive Species:** Continue all current programs including Curly-leaf pondweed treatment, Eurasian flowering rush surveys and removal, zebra mussel monitoring, and DNR Watercraft Inspection Program.
5. **Shoreland Projects:** In the next five years, complete a new shoreland inventory project and compare results to 2004 to see if there is any improvement due to increased education and the DNR Shoreline Habitat Restoration Grants.
6. **Information and Education:** Continue current educational programs including articles for the website, educational seminars and presentations at meetings, communication with neighboring districts and land owners, and new regulation information.
7. **Land Conservation:** Promote the conservation of undeveloped shoreland parcels and smart responsible low-impact development practices. Protect land and limit the opportunities for future high-impact developments via conservation easements.