# Lac la Nonne Restoration Workshop Report

**December 2006**

# Lac la Nonne Restoration Workshop Report

***Prepared for:***

**Lac La Nonne Enhancement and Protection Association**
**Ms. Pat Doherty, Ms. Giselle Bourgeois, Mr. Tim Clarke**
**Site 1, Box 14, RR #1**
**Gunn, Alberta**
**T0E 1A0**

***Prepared by:***

***Aqua*lity Environmental Consulting Ltd.**
**11216 23B Avenue NW**
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**T6J 4Z6**

**Jay S. White, M.Sc., P. Biol.**
**Jennifer Rowell, M.Sc.**

**December 2006**

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LETTER OF TRANSMITTAL

**Date: January 9, 2007**

**To: Mr. Tim Clarke, President**
**Lac La Nonne Enhancement and Protection Association**
**Site 1, Box 14, RR #1**
**Gunn, Alberta**
**T0E 1A0**

**Re: Lac la Nonne Restoration Workshop**

Attention: Mr. Clarke

Aquality Environmental Consulting Ltd. is pleased to present the following report of the workshop held on Dec 4, 2006 to determine options and possibilities for the restoration of Lac la Nonne. An overview of the day's presentations are outlined followed by a summary of the results of the brainstorming sessions. Finally, recommendations obtained throughout the workshop are highlighted in table format to facilitate LEPA in its quest for viable restoration options for Lac la Nonne in its current ecological state.

Should you have any questions or comments regarding this report, please contact our office at (780) 433-9414.

Regards,

AQUALITY ENVIRONMENTAL CONSULTING LTD.

Per:_____
Jay S. White, M.Sc., P.Biol.
Principal

# Lac La Nonne Restoration Workshop Report

**The Workshop,**
**hosted by the Lac La Nonne Enhancement and Protection Association (LEPA)**
**was held on:**
**Monday, December 4, 2006**
**9:00am - 4:00pm**
**Main Floor Eco-Friendly Board Room, Oxbridge Place**
**9820 – 106 St., Edmonton, AB**

An Agenda for the workshop can be found in Appendix A.

## Welcoming Message – Tim Clarke, LEPA

*(Tim is a retired resident of Lac La Nonne and one of the key players in the organization of this workshop. Tim is actively involved in projects relating to the restoration and enhancement of Lac la Nonne).*

LEPA is concerned over declining water quality and increased algal growth. Some monitoring projects and assessments have been initiated e.g. County of Lac Ste. Anne outhouse and septic system random assessment program and the distribution of "On the Living Edge" books to residents.

Currently LEPA is seeking new Lake projects and are restricted by a time deadline. They need to identify restoration options and new projects *now* which must be initiated in 2007 to fulfill funding requirements. This seed money must be used on Lac la Nonne, and not the watershed as a whole.

Participants introduced themselves and their background and interest in the Lac la Nonne watershed. A list of participants and their contact information can be found in Appendix B.

## Purpose and Goals of Workshop – Jay White, Aquality Environmental Consulting Ltd.

Jay White identified the purpose and goals of the workshop; i.e. to share current knowledge of the state of the various components of the Lac la Nonne watershed and identify possible restoration projects that can be initiated by LEPA. He also presented findings of the Lac La Nonne State of the Watershed Report.

The State of the Watershed Report addressed:

- Public Perception and Concerns
- Institutional and Regulatory Authorities
- Watershed Characteristics (including topography, subwatershed boundaries, hydrology, groundwater, and lake levels)
- Water Quality
- Land Cover and Land Use
- Issues and Challenges

Jason Vanrobaeys of PFRA provided invaluable assistance with GIS and the many map overlays presented in the report. During the project, watershed and subwatershed boundaries were redefined and delineated by hand. Groundwater recharge areas as well as a groundwater contamination risk map were also presented. These maps helped identify changes in land cover and land use including the fact that 41% of tree cover was removed from the Lac La Nonne subwatershed within the last 10 years. During the same time period, tree cover loss was 52% in the Majeau subwatershed and 39% in the Nakamun subwatershed, all due to an increase in forage and cropland. Land use in the Lac la Nonne watershed is still changing. Subdivisions are planned for the future, as well as agricultural cattle and forage areas and pipelines. When more than three percent linear disturbance is observed in a watershed due to pipelines, trails, and roads etc., negative impacts are generally expected due to fragmentation of the watershed and effects on soil permeabilities. There is a four percent linear disturbance in the Lac la Nonne Watershed.

The report identified the following data gaps:

- Agricultural census breakdown
- Drained wetland inventory
- Riparian Health Assessments
- Water quality monitoring in Majeau Lake
- Long-term water quality monitoring for Lac la Nonne and Nakamun Lake and tributaries
- Groundwater mapping and water quality
- Historical data on the Majeau subwatershed
- Surface water/groundwater interactions
- Identification and categorization of current and pending land development projects e.g. Birch Cove, Henderson farmland, next to Elks Beach
- Paleolimnological assessments of Lac la Nonne, Majeau and Nakamun Lakes.

**Riparian Areas – Kerri O'Shaughnessy, Cows and Fish**

*(Kerri is a Riparian Specialist with Cows and Fish and has been involved in water quality initiatives and baseline monitoring of the Lac la Nonne watershed since 2003).*

Cows and Fish provide education, awareness and technical support about riparian habitat to stewardship groups through 11 provincial staff. Kerri has been involved with the Lac la Nonne watershed since 2003.

The Lac la Nonne watershed consists of a considerable amount of riparian area around the five lakes and the many tributary streams that connect them. Even when water is not present within them, the health of these riparian areas influence the ecological function of the watershed such as via filtering water, buffering the effects of drought and floods, providing shelter and forage for livestock and creating habitat for fish and wildlife. The Riparian Health Inventory or Assessment (RHI or RHA) is used to measure the overall health or condition of the riparian areas alongside creeks, wetlands, lakeshores, and rivers.

Cows and Fish uses three tools:

1. Looking at my Lakeshore – Lakeshore Riparian Health Checklist
2. Caring for the Green Zone – Riparian Health Assessment workbook (for streams/small rivers and another one for lakes/wetlands)
3. Riparian Health Inventory – determination of a health score based on the eleven or nine parameters measured in the health assessment. RHI is recommended for monitoring demonstration sites as well as determining riparian health on a watershed scale.

There have been two education sessions in the Lac La Nonne watershed in the last five years using the riparian health (workbook): one on Nakamun Lake, and one on Lac la Nonne. No large scale riparian health inventory/ assessments have been completed to date.

Demonstration projects include the determination of a baseline health inventory for four new riparian pastures (thee stream systems, one wetland) plus one reference pasture. The Kirchner Demo was "unhealthy" in 2004 but just under the "healthy with problems" assessment result. The Kirchner reference site was "healthy" in 2004. Wood 1 was "healthy with problems" in 2005 while Wood 2 was "unhealthy". The results of the DeZaeyer assessment in 2006 are not yet completed.

To monitor trends, measure effects of management and account for natural variation, it may be useful to repeat RHI's at an interval of once every five years. Monitoring riparian health on a watershed or individual site basis can also help to identify a variety of management options that seem to be working, impediments to change, parameter specific improvements to riparian health, and to determine the impact of awareness and education efforts.

RHI is essentially an ecological measuring stick that provides some structure to our observations and allows us to determine the condition of a riparian area. Working with communities and watershed groups, RHI is a step to setting some common goals and developing management plans for individual landowners and the broader watershed.

## Living By Water Project – Kim Dacyk, Federation of Alberta Naturalists (FAN)

*(Kim was unable to attend the workshop but provided the written statement that follows verbatim).*

### Brief Program Description

The Home-site Consultation Program involves student consultants who perform home-site visits to identify actions to improve environmental-friendliness of the home and/or property. The assessment addresses: 1) buffer zones; 2) built structures; 3) yard; 4) house; and 5) boating. It is based on a "no-blame" premise and emphasizes individual responsibility for improvement.

### 2006 Results

Citizen science data collected for Lac La Nonne in the summer of 2006 revealed some trends that could become a problem in the future as well as some practices that could be organized on a community level in order to reduce impacts on Lac la Nonne.

One of the most notable trends is for every property owner to have a dock of their own. Only 12% of shoreline residents interviewed this summer did not have their own personal dock structure in the lake. The other 88% had individual docks built in front to their property. The number of docks could be significantly reduced by a community based initiative. The average amount of shoreline that is cleared on each property in order to access the water is 17.5m. When one considers that most lots on the lakefront span roughly 20m, this number becomes disproportionate. Public education of the issues surrounding shoreline fragmentation is sorely needed.

Along with shoreline fragmentation, most properties had turf grass right down to a retaining wall or hardened shoreline. The decline in lake levels have removed these structures from the water and allowed a natural buffer zone to develop. However, many of them remain at the high water mark. Should high water levels return a large percentage of the buffer zone between lake residents property would be greatly reduced. Therefore, it is important to encourage people to allow a buffer zone to grow above the high water mark. More than half (55%) of residents interviewed also had plans for further development on their property which would further thin out the existing vegetation on many properties.

Nearly one quarter (24%) of residents interviewed still had outhouses on their property. There were also a significant number of residents who did not have their septic systems pumped regularly. Public education about the importance of proper septic facilities and maintenance of those facilities should continue.

One third of the residents allowed pets to roam unleashed. This poses a significant threat to local wildlife as dogs and feral cats can disrupt natural predator/prey relationships in a large area which could result in a terrestrial ecological response similar to the aquatic cascade effects mentioned above.

Finally, 21% of people interviewed were using chemical pesticides of one form or another. Public education about the adverse effects of chemical pesticides should be encouraged as their byproducts can often bioaccumulate and persist in the surrounding environment.

In conclusion, there remains a great need for the continuation of public education and consultation within the community surrounding Lac la Nonne. Consultations need to focus on shoreline fragmentation, the importance of buffer zones both above and below the high water mark, the importance of proper septic disposal practices, chemical pesticides and bioaccumulation, as well as our role in the local ecosystem. Due to the fact that many of the problems facing Lac la Nonne are not site specific, it is imperative that follow up consultation should continue to stress the importance of proper material flow management and increase the public understanding of non-point sources of pollution to our environment.

## Agricultural Impacts – Sarah Depoe, Alberta Agriculture, Food & Rural Development (AAFRD)

*(Sarah is a Water Quality Monitoring Specialist for AAFRD and is the stream monitoring coordinator for the Lac la Nonne watershed. She is also a member of the Alberta Lake Management Society (ALMS).)*

Alberta Agriculture draws comparisons between watersheds by using relative intensities of agricultural land use: low, moderate, and high. The Lac la Nonne watershed has moderate agricultural intensity as determined by using the dollar value spent per acre on pesticides, fertilizers, and manure. Nutrients such as nitrogen and phosphorus are applied to the land in the form of animal manure, plant residues, or mineral fertilizers. The term "pesticide" is a composite term that includes all chemicals that are used to kill or control pests. In agriculture, this includes herbicides (weeds), insecticides (insects), fungicides (fungi), etc.

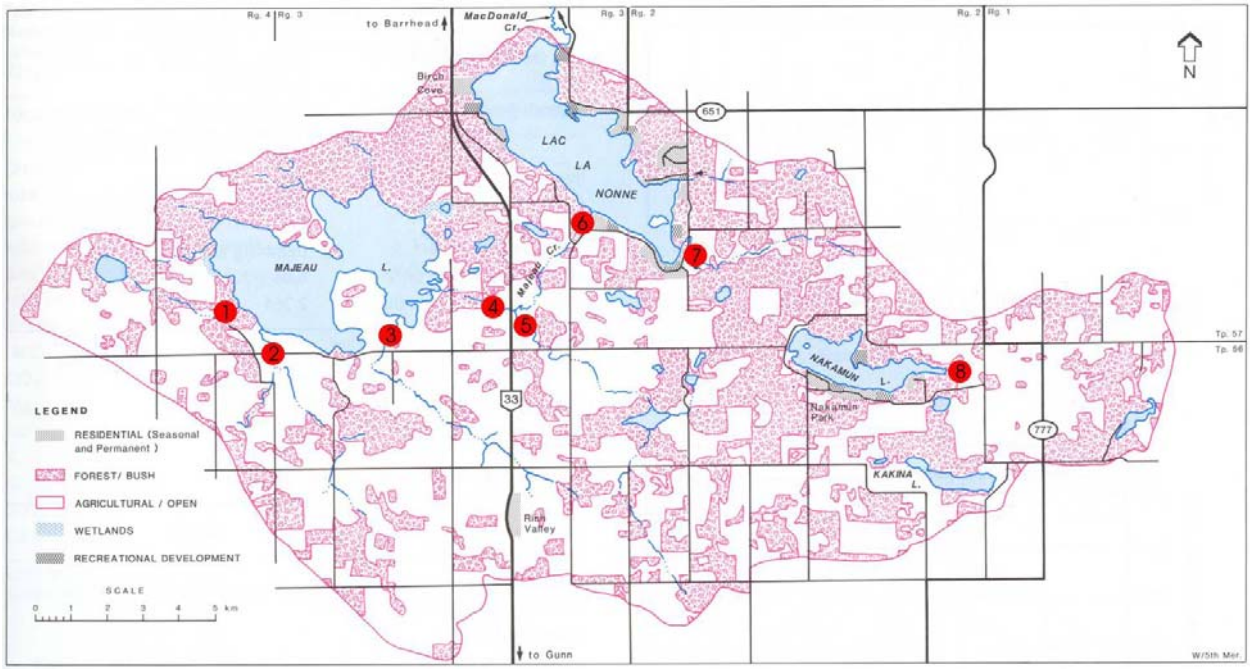


Figure 1. AAFRD Stream Monitoring Sampling Sites in the Lac la Nonne Watershed *(Courtesy Sarah Depoe, AAFRD)*

Fecal bacteria occur naturally in soil and water but can also be derived from human or animal waste (e.g. fecal coliform bacteria and *E. coli*). Agricultural sources may include: livestock operations, manure-treated fields, livestock access to surface water bodies, and faulty septic fields.

Monitoring sites were located at the mouth of the subwatersheds and have been monitored since 1999. Fourteen streams have been monitored since 1995. All monitoring work has been performed by volunteers for Alberta Environmentally Sustainable Agriculture (AESA). Flow-biased sampling is used in the Lac la Nonne watershed meaning that sampling is performed more frequently during periods with increased or high flow.

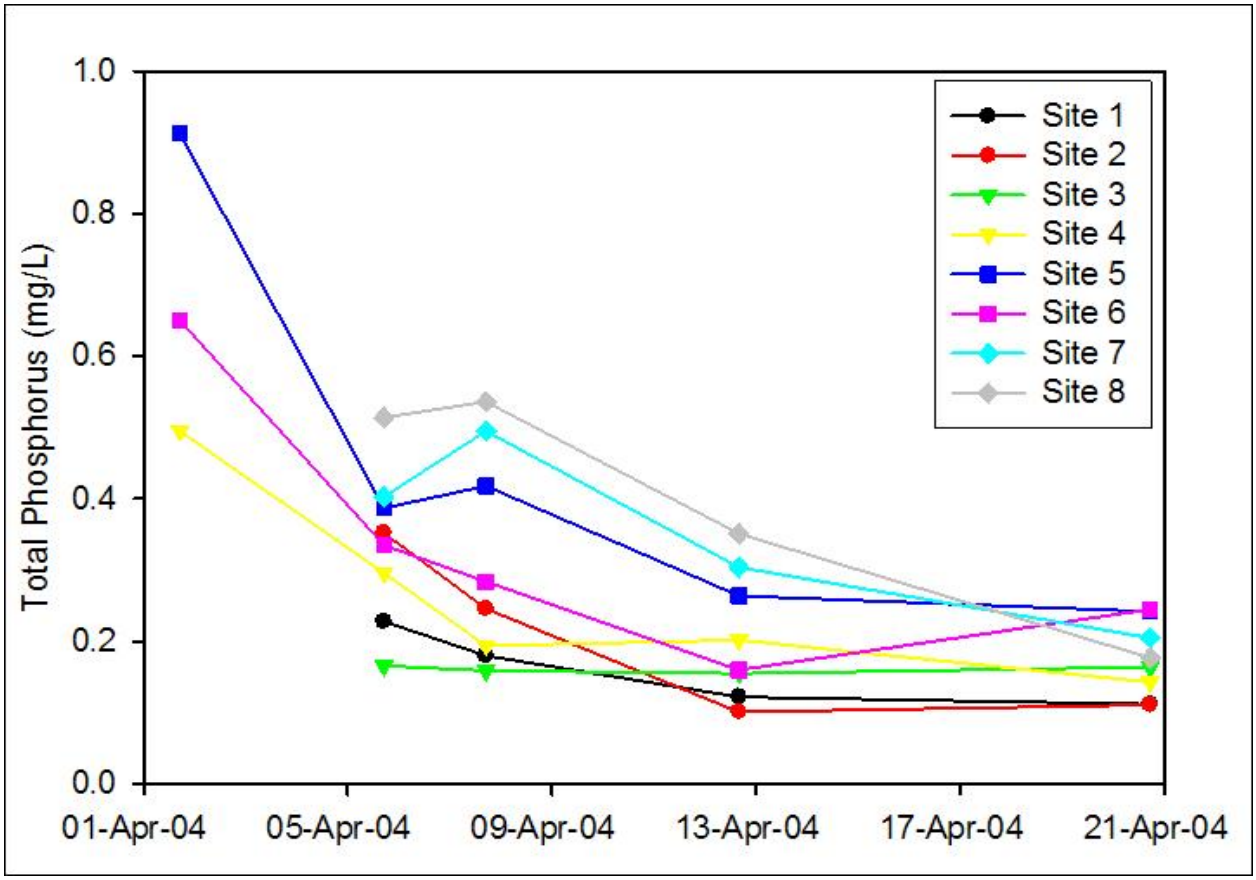


Figure 2. Total Phosphorus Concentrations at Lac la Nonne Watershed Sampling Sites During the 2004 Sampling Season *(Courtesy Sarah Depoe, AAFRD)*

Alberta Agriculture water quality objectives are based on background levels monitored at reference sites with the same intensity of agricultural use and historical data. Most of the eight sites were at or above the AAFRD water quality objectives, although there was 0% compliance for Canadian Council of Ministers of the Environment (CCME) water quality guidelines for the protection of aquatic life. A peak in phosphorus was observed at several sites during early spring 2004.

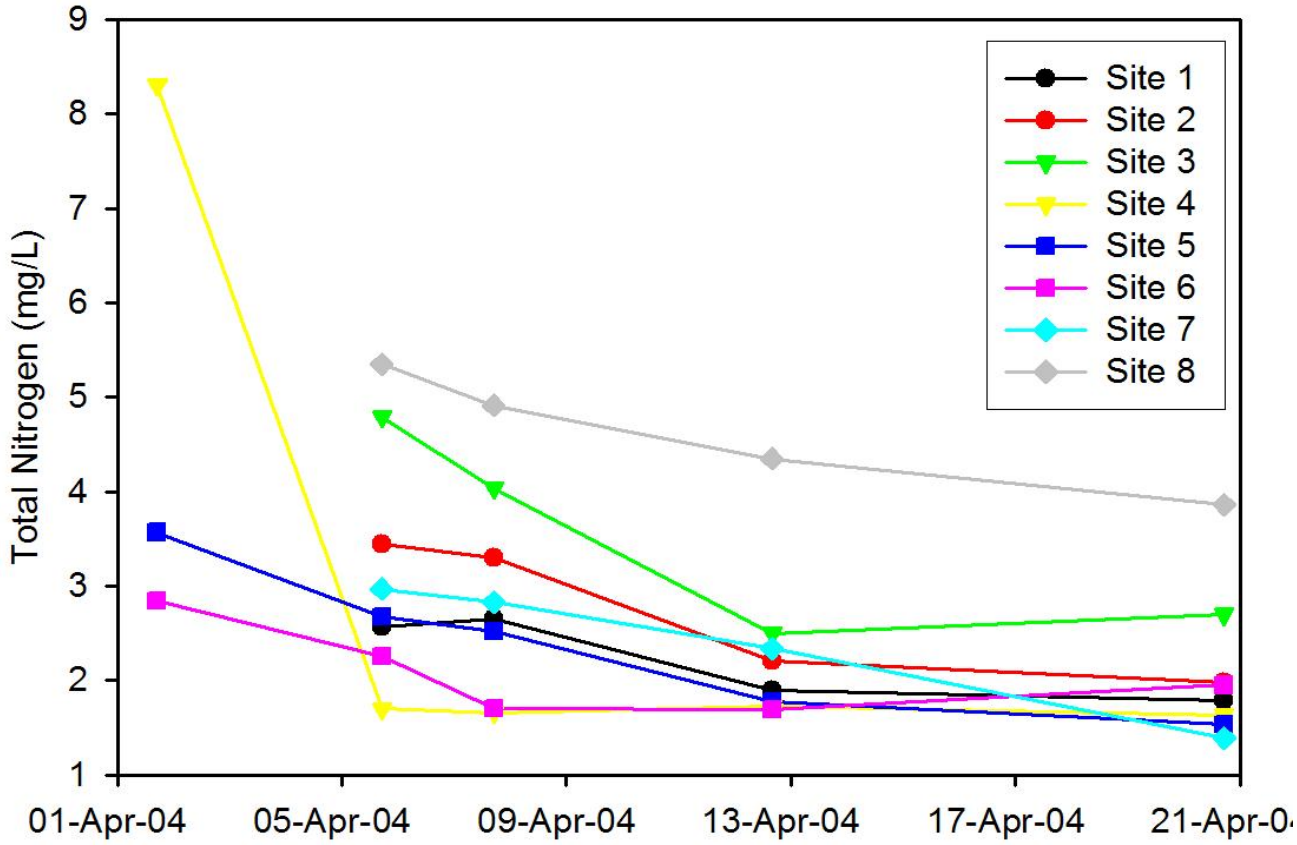


Figure 3. Total Nitrogen Concentrations at Lac la Nonne Watershed Sampling Sites During the 2004 Sampling Season *(Courtesy Sarah Depoe, AAFRD)*

Concentrations of nitrogen at the eight sampling sites were all above both water quality guidelines and water quality objectives.

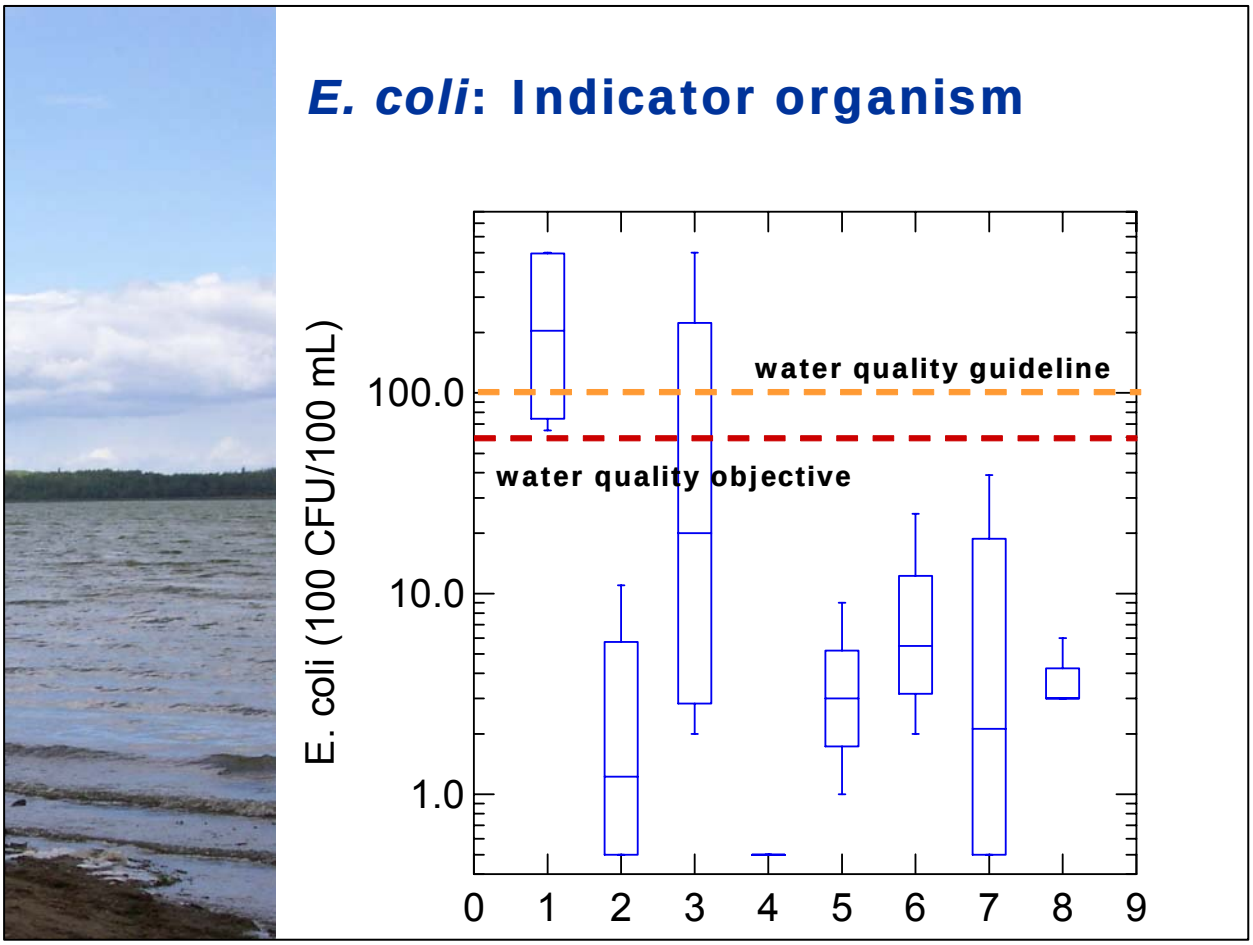


Figure 4. Concentrations of *E. coli* at Lac la Nonne Watershed Sampling Sites During the 2004 Sampling Season *(Courtesy Sarah Depoe, AAFRD)*

Concentrations of *E. coli* were found to be low in the tributaries, except at Sites 1 and 3. Most sites had *E. coli* concentrations that were well below both water quality guidelines and objectives.

The Alberta Agriculture Water Quality Index is based on baseline concentrations rather than on CCME guideline compliance.


Figure 5. Scale used for Alberta Agriculture Water Quality Index
*(Courtesy Sarah Depoe, AAFRD)*

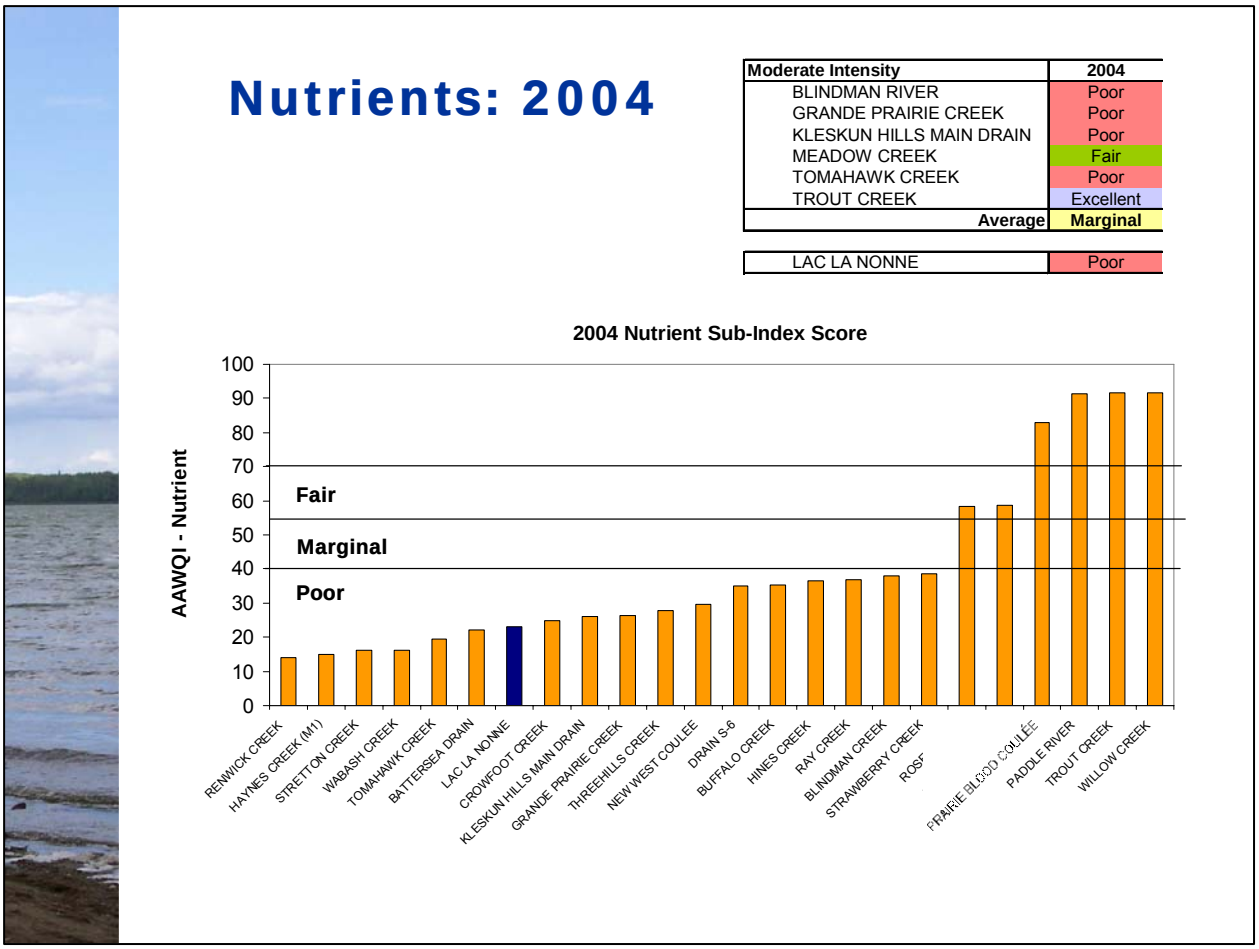


Figure 6. Results of 2004 Alberta Agriculture Water Quality Index Nutrient Assessments for 24 Alberta Watersheds *(Courtesy Sarah Depoe, AAFRD)*

The Lac la Nonne watershed had a "poor" AAWQI rating in 2004 and was found at the lower end of 24 watersheds (18$^{th}$ out of 24).

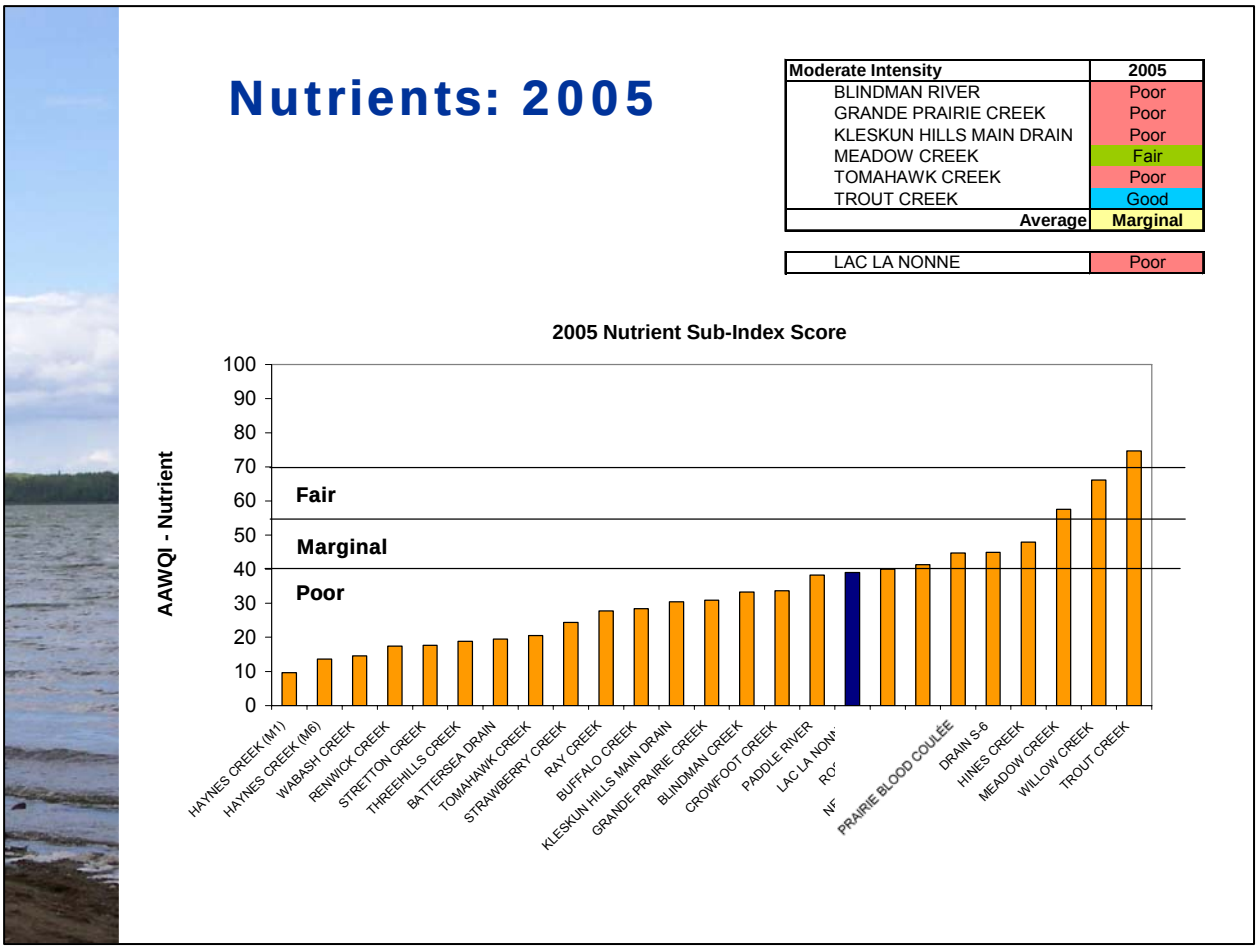


Figure 7. Results of 2005 Alberta Agriculture Water Quality Index Nutrient Assessments for 25 Alberta Watersheds *(Courtesy Sarah Depoe, AAFRD)*

In 2005, the Lac la Nonne watershed also received a "poor" rating, but it was almost a "marginal" rating and had elevated its position, becoming 9th out of 25 watersheds assessed.

It is clear that nutrient inputs need to be addressed. The flows in the tributaries were higher in 2005 than in 2004 but for a much shorter time frame. Sites 4 and 6 were identified by Aquality as problem sites but sites 7 and 8 were also high. Sites 4 and 6 have inputs from Majeau Creek, which has lots of agricultural activity directly on the creek. There are guidelines related to slope and the application of manure which are legislated and enforced. There is also a Natural Resource Conservation Board (NRCB) hotline and a warning process to facilitate compliance.

For more information refer to:

1) 2004 Reference Guide Agricultural Operation Practices Act (AOPA)(2nd Edition), available at www.agric.gov.ab.ca.
2) Manure Management for Cow/Calf Producers: What is required by AOPA? Available at www.agric.gov.ab.ca.

3) Beneficial Management Practices: Environmental Manual for Crop Producers in Alberta, available at www.agric.gov.ab.ca.

It was suggested that concerned stewards continue to educate the community residents about steps that can be taken individually to enhance and protect water quality in the Lac la Nonne watershed.

**Current Status of Fish Populations – Don Hildebrandt, Alberta Sustainable Resource Development (ASRD)**

*(Don is a Fisheries Technician for ASRD – Fish and Wildlife and has been studying the Lac la Nonne watershed since 2002.)*

Overviews were presented for the status of fish populations in Lac la Nonne, Nakamun Lake, and Majeau Lake. Lac la Nonne contains populations of walleye, northern pike, yellow perch, lake whitefish, tullibee, spottail shiner, white sucker, burbot. In 1998, due to low catch rates and observed illegal catches, walleye harvest limits were reduced to zero. In 1999, declining pike populations across the province resulted in standard harvest limits of three pike over 63 cm.

In 2005, a Fall Walleye Index Netting (FWIN) was conducted on Lac la Nonne to determine the status of the lake's walleye population. A series of gill nets captured 128 walleye, 22 pike, one perch, 50 lake whitefish, four tullibee and one white sucker. The results indicated that walleye densities were in approximately the middle of the range of densities observed at other lakes in the province.

In 2006, a low-level creel survey was conducted on Lac la Nonne. Walleye population appears to have recovered somewhat since the late 1990's, with relatively good abundance and a variety of age classes. Although catch rates have improved since 1997, they are still low in comparison to lakes like Lac Ste. Anne and Pigeon Lake. Some limited harvest may be possible in the future, perhaps through a special draw system to prevent over-harvest. The pike population appears to have improved slightly, but densities are still very low overall. Perch populations appear to be suffering, with serious declines in relative abundance since 1997.

Nakamun Lake

Nakamun Lake has been notoriously prone to winterkill for decades and has been stocked numerous times by Fish and Wildlife beginning in 1934. The lake was stocked with pike in 1934, 1969, and 1970, with walleye in 1934, 1938, and 1945, and with perch in 1934, 1944, 1945, 1946, 1984, 1992, and 1993. After another complete winterkill in 2002/03, winter oxygen levels were monitored from 2004 – 2006.

Dissolved oxygen levels in 2005 and 2006 were marginally high enough to warrant re-stocking the lake, and in June 2006, approximately 25,000 perch young-of-year and juveniles as well as a couple of dozen pike young-of-year and juveniles were transplanted into the lake from Thunder Lake. Winter oxygen levels will be monitored in Nakamun Lake over the succeeding years to track the success of the re-introduction.

Majeau Lake

There is no survey data available on file for Majeau Lake, and the only record of fish presence is the observation of pike in the outlet creek below the lake in spring 1984. It is possible that pike from Lac la Nonne occasionally reach as far as Majeau Lake to spawn, but it is unlikely that the lake has any year-round fish population, as the mean depth is reported to be only 2.1 meters.

In addition to heavy fishing pressure and water quality concerns from nutrient enrichment, fish populations at Lac la Nonne and Nakamun Lake also face pressure from habitat loss through shoreline alteration.

**The "Bathtub" Predictive Water Quality Model – Dave Trew, Alberta Environment (AENV)**

*(David is a Water Quality Specialist for AENV and has 35 years experience in limnology and water quality. He is a member of ALMS and the Alberta Society of Professional Biologists.)*

The "Bathtub" Predictive Water Quality Model is another tool to help describe what factors are influencing the health of a lake as well as long-term trend analysis. It has been used by the Baptiste Stewardship Group and the Baptiste model can easily be applied to Lac la Nonne. The model can measure and predict how much improvement each restoration measure will bring to the lake. For example, if we improved sewage input from septic systems, what effect would that have on the Lake?….or if we improved agricultural activity and inputs, what effect would that have?.....or if a particular tributary decreased certain inputs by such and such a percentage, how would that improve the lake? etc. This model requires estimated internal loadings from Lac la Nonne to be useful. It is a free tool that has been derived and developed from the US Army Corps of Engineers.

The model requires adequate input data to be useful: e.g. morphometric data, water quality, tributaries, atmospheric, climate, hydrology, internal loading, longterm hydrologic balance etc.

**Facts/anecdotes presented by participants throughout the day:**

- There has been twice as much snow already this year in November than last year at the same time
- Due to the higher temperatures there has also already been lots of runoff but little frost
- The consequences of this could be that water may just disappear
- This spring there was practically no runoff
- Larger scale planning initiatives need to be started
- Trend assessment of data for the last 25 years by a consultant to be released soon
- Resident's water source is groundwater wells
- Seasonal residents use lake water for showering etc
- It is presumed that no-one uses Lac la Nonne as a drinking water source

- Currently, there are proposed developments in areas associated with high risk for groundwater contamination.
- Barrhead County continues to allow the installation of septic systems.
- With respect to Confined Feedlot Operations (CFOs), the census data is sometimes not clear. PFRA's soil polygons indicate where the license is held, not necessarily where the cattle are.
- The most recent data available for land use in the Lac la Nonne watershed is Alberta Environment's "snapshot" of land use for September 2006, available through Curtis Horning.

## Lake Restoration Options

Principles:

- Ultimately need to address external source of problem
- Recognize both quick wins (direct) and long-term strategies (indirect)
- Need to involve all stakeholders to get buy-in from majority of the community sectors and municipalities
- Need realistic expectations for water quality (i.e. historic benchmark targets)
- Solid focus and direction with goals timelines and targets

Suggestions:

- Need something big to excite residents
- Survey indicates a willing population….but what?
- Learn from other lakes and initiatives

Challenges:

- Permanent resident vs. weekend resident attitudes
- Lake vs. watershed approach (i.e. big bang vs. small actions)
- Emotional issue → people are looking to LEPA and LWSS to *do* something

**Lake Restoration Options**

1) Watershed Restoration (WS)
- BMPs implemented at cottages and by the agriculture and oil industries
- Target sensitive areas

2) Diagnostic Study (L/WS)
- Nutrient budget/water balance
- Internal loads (cyanobacteria & filamentous algae)
- Identify whether its phosphorus or nitrogen limited
- Create a strong terms of reference for consultant
- Paleolimnology

3) Shoreline Restoration (L)
- Re-vegetate shoreline (lakes & streams, tributaries)
- Add wetlands
- Common docks, beaches (education)
- Fish habitat, turbidity, temperature

4) Phosphorus-locking (L)
- Liming (alum)
- Fe hydroxide
- Unproven/experimental
- Fish population impacts
- Short-term → lasts 10-13 years for alum; 3 years for lime
- Costs & approvals

5) Hypolimnetic withdrawal (L)
- Stratification/anoxia
- Water quantity → inflow needed to maintain lake level (e.g. groundwater recharge)
- Resident buy-in
- Costs – reduce by using gravity
- From deep basin discharging to low-lying wetland/lagoon
- P-removal

6) Aeration/oxygenation (L)
- Locks-P
- Destabilizing environment for high cost?
- Water quality

7) Sediment/vacuum Dredging (L)
- Cost? $$$
- Approval?
- P-removal
- Cost recovery through resale as soil amendment

8) Lake levels (L)
- Approvals/$
- Diversions
- Riparian/plant communities

9) Coordinated macrophyte removal or aquatic vegetation harvesting (L)
- Approvals? Scale?
- Link to fish habitat?
- Required? Benefit to WQ?

10) Sediment Mapping (L)
- May identify areas of enrichment
- P-release
- Part of diagnostic study

11) In-stream restoration (WS)
- Wetland filtering etc.
- Riparian vegetation

12) Find a way to engage counties (WS)
- Individual stewardship options (cumulative impact)

13) Define: (WS)
- Roles & responsibilities
- Accountabilities
- Agencies & regulators
- Others i.e. deal w/ sewage stormwater runoff etc.

14) Environmental Trading (WS)
- No net loss
- 2:1 ratio
- Carbon Credits e.g. DFO habitat, greenhouse gases
- P-limited
- Requires work on defining contributions from different land-uses

15) Encourage government to prioritize (sensitive) land-use by watershed categories (WS)
- Boating
- Country Residential
- Recreational lake vs. non-recreational lake (IWRM)

16) Identify future pressures (WS)
- Chemistry, oxygen, temperature

17) Dilution solution to pollution
- Water availability?

18) Partner with University Researchers (ARC) (ALMS) (L)
- In-lake restoration
- Best strategy for in-lake is to partner with researchers who can experiment

19) Sediment mixing - locks-P

20) Biological control
- Grass carp → dangerous

**Looking for Something BIG!**

WS = watershed L= lake

## Lake Restoration Options – Experts Votes on Top 9 Proposed Options

Participants were given $1.85 ($1.00, $0.50, $0.25, $0.10) to spend as they saw fit on the following nine restoration projects. Total money spent was $25.90.:

1) Watershed Restoration – (3 x $0.10, 1 x $0.25, 10 x $1.00) = **$10.55 = 40.7%**
2) Nutrient Budget/Water Balance – (2 x $0.10, 3 x $0.25, 7 x $0.50, 1 x $1.00) = **$5.45 = 21.0%**
3) Shoreline Restoration - (4 x $0.10, 8 x $0.25, 2 x $0.50) = **$3.40 = 13.1%**
4) Phosphorus - Locking (Alum, Ferrous oxide) – (1 x $0.10, 1 x $0.25, 2 x $1.00) = **$2.35 = 9.1%**
5) Hypolimnetic Withdrawal - (3 x $0.10, 4 x $0.50) = **$2.30= 8.9%**
6) Aeration/Oxygenation – (1 x $0.50, 1 x $1.00) = **$1.50 = 5.8%**
7) Dredging – (1 x $0.25) = **$0.25 = 1.0%**
8) Diversion/Levels – (1 x $0.10) = **$0.10 = 0.4%**
9) Macrophyte Removal - 0 = **$0.00 = 0%**

## Next steps:

1. A decision matrix needs to be created to help you decide between the restoration options that have been presented.
2. For the bathtub model, adequate data is required, especially for the descriptive approach. Therefore, one of the first steps should probably be a nutrient budget/water balance diagnostic study for Lac la Nonne.
3. Some physical/eye-catching public perception enhancement projects directly on the lake were identified, led by the Lac la Nonne shoreline restoration option.
4. Other visible options include phosphorus locking and hypolimnetic withdrawal.

## Appendix A

# Lac La Nonne Restoration Workshop Agenda

**Monday, December 4, 2006**
**9:00am - 4:00pm**
**Main Floor Eco-Friendly Board Room, Oxbridge Place**
**9820 – 106 St. , Edmonton, AB**

08:30 – 09:00 – Continental breakfast and coffee

09:00 – 09:05 – Welcoming Message – Tim Clarke, LEPA

09:05 – 09:20 – Participant Introductions – Jay White, Aquality Ltd.
– Purpose and Goals of Workshop

09:20 – 10:00 – Lac la Nonne State of the Watershed Report – Jay White, Aquality Ltd.

10:00 – 10:15 – Coffee break

10:15 – 10:45 – Riparian Areas – Kerri O'Shaughnessy, Cows and Fish

10:45 – 11:15 – Agricultural Impacts – Sarah Depoe, AFRD

11:15 – 11:45 – Current Status of Fish Populations – Don Hildebrandt, ASRD

11:45 – 12:15 – The "Bathtub" Predictive Water Quality Model – Dave Trew, AENV

12:15 – 12:45 – Catered lunch

12:45 – 13:30 – Brainstorming Break-out Sessions

13:30 – 14:15 – Team Spokesperson presents Restoration Options

14:15 – 14:45 – Group discussion of Restoration Options

14:45 – 15:00 – Coffee break

15:00 – 15:30 – Rank and prioritize proposed options (dot exercise)

15:30 – 16:00 – Final words & Wrap Up

**Parking Information:**
There are 2 Imparks in the vicinity:

- Lot #276 106 Street & 96 Avenue
- Lot # 259 9820 - 107 Street

**Eco-Friendly Boardroom:**
We will be meeting in an Eco-Friendly Boardroom, so please do not bring paper products or non-recyclable containers. Coffee, tea and china will be provided.

**Appendix B**

# Lac la Nonne Restoration Workshop Participants:

# Attendees

## AENV – Alberta Environment

**Diiwu, John**
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Water Approvals
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**Fax:** 780 427-7824
**E-mail:** john.diiwu@gov.ab.ca

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Regional Planner
Environmental Management
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250 Diamond Avenue
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