



Devils Lake Water Improvement District

Post Office Box 974, 820 SE Hwy 101 Suite D, Lincoln City, Oregon 97367

Phone: (541) 994-5330 Fax: (541) 994-6040

www.DLWID.org

Quick Look:

- Board Interviews
- Blue Lake, SolarBees
- Septic Tank Revitalization Program

AGENDA

Regular Meeting

2009 Dec 3 at 6 pm. in the DLWID Office.

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| I. Minutes of the Previous Meeting | 6:00 |
| II. Financial Report | 6:05 |
| III. Public Comment (Agenda Items, Please limit comments to 5 minutes per person) | 6:10 |
| IV. Unfinished Business (Agenda Support Item A) | 6:20 |
| a. Boat House/Docks | |
| b. Land-use Complaints | |
| c. Lake Level | |
| d. The Devils Lake Plan | |
| i. DEQ 319 Grant | |
| ii. Native Vegetation | |
| iii. Whole Lake Circulation | |
| iv. Septic Tank Revitalization Program (Seth Lenaerts) | |
| v. Save our Shoreline Campaign (Seth Lenaerts) | |
| e. Financial Oversight Committee Report (Randy Weldon) | |
| f. Communications Committee Report (Jack Strayer) | |
| g. Safety Report | |
| h. Nutrient Budget RFP | |
| i. Listserve (Seth Lenaerts) | |
| j. Devils Lake Low Power Radio | |
| k. SDAO Best Practices and Self Assessment (Brian Green) | |
| l. SDAO Board Training Workshop (Seth Lenaerts) | |
| V. New Business (Agenda Support Item B) | 7:30 |
| a. Board Applicant Interviews | |
| b. PADL's Next Steps: John Lazier | |
| c. Hydroplane Racing Letter to OMB | |
| d. Webspace | |
| e. Technology Needs | |
| VI. Non-agenda Items | 7:50 |
| VII. Public Comment (Non-agenda Items, Please limit comments to 5 minutes per person) | 7:55 |
| VIII. Announcements | |
| IX. Adjournment | 8:00 |

Meetings of DLWID are handicapped accessible under the ADA.

If special accommodations are needed, please contact the District Office at (541) 994-5330 prior to the meeting.

Unfinished Business

- a. Boat House/Docks: Pending a new planning director at the county.
- b. Land-use Complaints:
 - i. 11th and EDLR: Letter being drafted to DSL. I have spoken with Salmon Drift Creek Watershed Council's Tech Team regarding the issue, and have sought input from ODFW before formally writing the letter. Anticipate a letter to be available for our next meeting.
 - ii. Seid Creek: Called Bridgette Lorchman who is now on maternity leave until late Jan 2010. Was referred to Cathy Tortocici (503- 231-6268) whom I called and left a message with to seek follow up.
- c. Lake Level: The D River became clogged with sand and debris as a result of high storm surges Friday, 2009-11-06. The lake level was around 9.2 at the time with no imminent risk of flooding. We did receive calls during the weekend, and Steve and I were monitoring the lake level throughout that time. On Tuesday, 2009-11-10 near low tide the river was dredged by George Haft Excavating in accordance with our permit for a cost of \$460. We will bill the City for half of that cost. At this time the lake had risen to about 10.4' which is mean high water. There does begin to be some street flooding at this level in the Crystal Lagoon Area (SE 1st and 2nd). Above that level there is increasing risk of inundation of low lying areas, homes and septic tanks included. Since the dredging the D River has been running to sea, and the lake has since receded to around 9.2' again.
- d. The Devils Lake Plan
 - i. DEQ 319 Grant: Correspondence with Dr. Ford and OSU, identified paperwork not yet completed from DEQ. Awaiting additional paperwork and clarification from DEQ prior to work beginning and signing contract formally with OSU. (See Nutrient Budget below).
 - ii. Native Vegetation: Inquired about potential February presentation. Dr. Pennington was out of the office through Thanksgiving, and will thus know more hopefully by December's Meeting. Timeline presented last meeting is summarized as follows:

	Days	Date
Task 1.1: Draft Plant List	33	12/11/09
Task 1.2: Final Plant List	47	12/23/09
Task 5.1: Mock-up	40	12/18/09
Task 5.2: Final Planting Guide	60	01/08/10

Whole Lake Circulation: I got a phone message from Elaine Stewart of Metro and she said that the Blue Lake report lends itself to being inconclusive on the effectiveness of the SolarBees. She did not elaborate much beyond that in the message. She neither endorsed nor contested the effectiveness, but was cautiousness in her tone particularly around the vegetation aspect. There was however evidence given in the report of increased native plant richness and abundance, demonstrating some recovery of the

lake bed to a more native constituency. The report does provide insight into the effectiveness and limits of the devices at cyanobacteria control. There was evidence of improved water clarity (Secchi Depth), but with negative changes in the water chemistry (pH). The report shows trends in cyanobacteria populations, but no hard-line assertions are made. The report closes by suggesting if algal control is the primary goal, continued use of the SolarBees units should be employed, but only until before fall turnover (lake wide mixing), and that continued water quality monitoring should be conducted for creation of a long-term dataset. For macrophyte control, harvesting, bottom barriers, and small-scale herbicide applications may be effective. I have had a read of the report and provide this more expanded analysis:

Blue Lake:

Water Clarity: Secchi Depth reportedly was statistically improved. Pre-treatment data was less available though and reportedly tended to be taken earlier in the season, which compounds this conclusion. Secchi Depths did degrade from a maximum of about 4 meters to less than 1 meter in late summer in 2009. This trend mimics the typical loss of clarity seen in the previous 5 years. While there does not seem to be evidence for a resounding change in water clarity, the report does specify that it was a statistically significant change for the better, and was one of the pre-determined parameters to gauge the successfulness of the SolarBees addition.

Algal Blooms: It was reported that there was no clear trend in average total algal biovolume, as there were spikes in the data both pre and post treatment. This is a measure of the amount of algae and cyanobacteria floating in the water column by mass. Another indicator of algae and cyanobacteria is the concentration of chlorophyll a, in which changes were seen. For the month of September, a two-fold reduction in surface Chlorophyll a from a year ago was seen and a near three-fold reduction from 2007 was also seen (Figure 17). Less dramatic, but similar trends were seen in August, the other peak month for algal blooms. This contrasts to a trend of increase Chl a in the area above the thermocline during the treatment period. Increased mixing likely is at the root of this dispersion and relative increase in primary production. However, sizable reductions in the Chl a concentrations were shown when comparing pre-treatment year 2006 to the 2007 & 2009 post treatment datasets (Figure 18). What this might mean is there are trends worthy of continued evaluation which are providing evidence of potentially an improvement at the surface, but potentially at the expansion of organisms in the subsurface waters. With only scant amount of data pre-treatment any and all conjectures are limited, and error bars were not presented.

The report shows that the constituents of the algal blooms were variable in the SolarBee periods of 2007 and 2009 with a mixture of cyanobacteria from 10% to near 100% of the biomass with mean values at approximately 48% and 72% respectively (Figure 16). This is compared to 2006 though when nearly every week's samples were 90+% cyanobacteria and the blooms were documented to begin as early as the first week of June (Figure 15). It is unclear as to when blooms began forming in 2009, but in 2007 there is no significant reporting until half way through August. This is I believe when the wake board competition was held, that disrupted the water column and sediment releasing phosphorus from the sediment which led to a major bloom. This event may have occurred in 2008 though, for which it is reported the samples were lost and were never analyzed. The report finds that the changes in cyanobacteria biomass were statistically inconclusive, but does note that the mean densities dropped nearly four-fold from 589,575 cells/ml pre-SolarBees to 138,557 post SolarBees (Table 1). The standard deviation or error bars associated with those means are quite large, demonstrating the inconclusiveness of the report. The Blue Lake Summary does provide the anecdotal accounts of lakeshore residents and park staff, that the algal production has been reduced in recent years, but that the lack of sampling and monitoring rigor make scientifically proving this

complicated. They do address briefly the large toxic bloom observed in October, 2009, that was 1000 times Oregon's Recreational Limit. The report authors' comments included that it was after the general recreational period, at a time which largely coincides with mixing of the fall-turnover. Temperature profiles were not presented, but likely correlate in timing to the loss of thermal stratification which occurs in early fall in these systems.

Vegetation: Plant surveys were conducted in 2003, 2007, 2008, & 2009 at varying months in the summer. The authors admit to the difficulty in replicating the previous year's methods, and to the variability of the timings of the surveys as potential errors in the data, but provide seemingly valuable data at least in terms of relative abundance for some of the macrophytes. Other species were likely under sampled as their peak populations are found at times on the summer, that samples were not taken consistently year to year. Lastly increased frequency of sampling was identified as under representing the previous years' conditions.

Findings suggest that the suppression of Eurasian Water milfoil seen between 2007 and 2008 was largely lost in the subsequent year, with percent abundances moving from 71% to 44%, and back to 73% in 2009. Increased clarity of the water is asserted to be the main cause of the rebound as the depth to which photosynthesis can occur is increased with better water clarity. If in fact the hypothesis of littoral sediment oxidation reduces nutrient bioavailability for shallow rooted invasive plants is true, the oxidation was insufficient at this time to retard the ongoing growth of such weeds under the increase water clarity regime also created by the circulation. There is though often large variability in plant growth year to year, and thus only longer term evaluations may provide a more definitive answer.

As to native vegetation, the report provides documented colonization and thus improvement of many native plant populations. The report states that the species richness (diversity) expanded from 2007 to 2009. The report cautions though that this trend may not continue or just be an artifact of the sampling. Some non-native plants also increased. This too may be a consequence of the changes in the monitoring year to year.

Chemistry: Nutrient analyses were generally unavailable for 2009 due to the timeframe of DEQ's lab. The frequency and duration of the sampling was reportedly less than previous years. Historically (2002 and 2003), large spikes in Phosphorus and Nitrate/Nitrite were recorded. A data gap between 2003 and 2005 exists, but those spikes were not prevalent in 2006 with nutrient levels generally below DEQ's benchmark. During the SolarBee trials, this trend largely remained with a pair of smaller spikes in the concentration above the thermocline where mixing was occurring.

What were recorded were outputs from probes, such as Dissolved Oxygen, pH and conductivity. One finding was that pH was negatively impacted (increased). This was one of the predetermined parameters to measure the efficacy of the SolarBees. What a change in pH suggests is increased photosynthesis had occurred. This could be by green algae, macrophytes and/or cyanobacteria. Photosynthesis uses up carbon dioxide which dissolved in the water is carbonic acid. Loss of CO₂ predictably leads to an increase in pH (more basic). Dissolved oxygen levels confirm the likely increase in primary production as spikes were seen during the peak months of algal activity. This pH change though is striking against the reduction in Chlorophyll a (a measure of primary production, including by cyanobacteria) (Figures 17 and 18). This may point to the fact that algae (green, good algae) were growing readily using up the carbon dioxide in the water for photosynthesis while creating oxygen, but were also being consumed by zooplankton at a fast enough pace as to show a reduction in the Chl a concentrations. Speculation on this increased grazing scenario is based merely on normal population dynamics as the monitoring did not include zooplankton as one of its parameters. There was evidence of a population shift from a purely cyanobacteria dominated system in 2006 to a combination of green and other algal, but these shifts were not statistically defensible.

In summary the predetermined benchmarks for improvement were met for water clarity, not met for pH and inconclusive for cyanobacteria dominance. Many factors were listed compounding these findings, but generally the report tried to provide some level of insight or clarification. Blue Lake has for years suffered from eutrophication, predominately from enriched groundwater, and thus land based best management practices may be of little consequences on improving water quality. Decades worth of copper sulfate (1940-1970s) additions, water drawn down, mechanical harvesting, and algaecides have been among the lake management strategies employed. Whole lake circulation has been the primary method for two years. No indication was given as to the plans for continuing this strategy in the future.

iii. Septic Tank Revitalization Program (Seth Lenaerts)

November Tasks:

- Create an informational packet for homeowners
- Continue to meet/talk to stakeholders individually
- Bring the stakeholders together for a joint meeting

DLWID co-hosted a meeting with the City of Lincoln City on Wednesday, November 25th. I will provide a verbal report on that meeting. The intent of that meeting was to determine justification for the program, determine the area/distance from waterways to be regulated, inspection requirements and roles and responsibilities of participating agencies.

Work is also continuing on developing the GIS layer and gathering information about similar septic revitalization programs. In addition, contact was made with Shoreline Bank, which is a non-profit bank that has an established septic rehabilitation loan program.

December Tasks:

- Continue to look for funding opportunities
- Continue work on GIS layer
- Outcome of meeting tasks
- Create a septic tank presentation

iv. Save our Shoreline Campaign (Seth Lenaerts)

November Tasks:

- Begin to frame the project by creating objectives and goals
- Create/research a list of possible stakeholders

Project Mission:

Improve Devils Lake water quality with a focus on land immediately surrounding the lake.

Project Goals:

- Encourage natural vegetation on lake front and tributary properties
- Encourage permeable surfaces to increase water percolation
- Encourage local businesses to carry phosphorus free fertilizers
- Decrease fertilizer use around the lake and tributaries
- Decrease erosion due to construction, open soils and slopes
- Use vegetation to capture run-off and decrease nutrients and sediments from entering the lake
- Recruit home/land owners who are interested in participating
- Work with home/land owners to develop site plans for their property

- Provide classes or other educational opportunities for individuals interested in native vegetation and shoreline restoration

“Short” term Objectives

- Re-vegetate 1,000 (ish) feet of shoreline
- Develop example site plans for homeowners who want to make improvements
- Develop a website and handouts for homeowners
- Engage local businesses so that the businesses are encouraging shoreline restoration

Partner list:

PADL
 OSU Master Gardner Program
 Blake’s Coastal Nursery
 Balance Restoration
 Bear Valley Nursery and Landscaping
 Lincoln County Master Gardeners

Funding:

Disappointingly, the grant application from Oregon Volunteers! was not funded. Although, this grant was not intended to be the primary funding for this project, it would have been a nice subsidy for future shoreline restoration projects. The Cesar Chavez restoration project is still planned for Sat March 27th from 9am-1?

I plan on working with agencies and businesses to determine sources to purchase plants. Ideally, the district would be willing to fund or contribute towards 1-3 example restoration projects. (Each project being approximately 300 square feet) Other funding sources will be the landowner and I will continue to look for grant funding or other contributions.

This being said, for this project to be successful the board is likely going to have to contribute resources to this project. My projection for the 2009-2010 fiscal year will be between \$1,500-3,000.

At this point, I am looking direction from the board as to what information/questions/concerns you have or would need to allocate funding.

December Tasks:

- Develop sample garden plot designs
- Work more closely with OSU’s Master Gardner Program
- Continue to look for funding

e. Financial Oversight Committee Report (Randy Weldon)

Manager’s Note: Audit materials have been assembled and were delivered to the auditor on 2009-11-13.

f. Communications Committee Report (Jack Strayer)

g. Safety Report: No incidents to report, no issues presented for the month.

h. Nutrient Budget RFP: We received one response from Environmental Chemistry, Inc., Dr. Raymond has decades of experience and has worked on Devils Lake in the past as Project Manager of the Monitoring post grass carp while working for CH2M Hill.

Outline of Nutrient Budget Proposal:

1. Review and validate the data in the existing Access® database.
2. Assemble and review the available studies, including at least those listed on the DLWID web site.

3. Extract appropriate data from the reports and add it to the access database.
4. Identify and assemble relevant data from outside sources such as the Oregon Water Resources Department (WRD), Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon Geospatial Enterprise Office (GEO), Oregon Department of Fish and Wildlife (ODFW), Department of Environmental Quality (DEQ), Lincoln Soil and Water Conservation District, Mid-Coast Watershed Council, Salmon Drift Creek Watershed Council (SDCWC), and U.S. Army Corps of Engineers (USACoE).
5. Review the assembled data for suitability and completeness with regard to constructing a nutrient budget.

Deliverables:

1. All water quality data used for this project in an ARCGIS® database with all locations mapped and attribute files containing the data that pertain to each mapped point.
2. All other data as Access® database tables or Excel® spreadsheets.
3. All input and output files for water quality models.
4. PDF copies of all hard copy reports used that are not currently on file at the DLWID.
5. A written report in PDF format outlining the activities, methods, and results of our work.

Cost: \$31,360.

Staff Evaluation: The initial intent of the Nutrient Budget was to get perspective on best management alternatives. This was to be based on existing data only. My initial concern with this project was with the level of redundancy that might become apparent with our current DEQ 319 Grant for database creation. When we originally applied for these 319 funds, we had anticipated the creation of a model as an output similar to what is proposed here. The cost of the model, irrespective of our own matching dollars was some \$25,000, and inclusive of our match the project cost was estimated to be on par with what is quoted by Environmental Chemistry, Inc.

Basically the bid is probably very much at market, even though we have only one actual bid to evaluate. That being said, we are working to complete a much more robust database on our own with the portion of the 319 grant that we did receive (\$15,000), and thus the elements 1,2, 3 & 5 stated in the outline above are likely redundant in scope to our own work. In order to fully comply with our DEQ grant we will have other tasks such as the Quality Assurance Project Plan and the comparison of all data to that plan which would be independent of this Nutrient Budget Proposal at some level. I have inquired with DEQ as to if we can effectively hire out these elements of the 319 grant match should be choose to proceed with the Nutrient Budget. They have relayed that it would be our prerogative as to how we fulfilled our match as long as we did fulfill it not using additional federal dollars. What that means is we could proceed with the Nutrient Budget, tying it to the database compilation.

It is noteworthy that there are additional deliverables in the proposed Nutrient Budget than are in our 319 grant. These would include the formation of the BATHTUB model, a GIS layer for all sample points, collection of additional resources about Devils Lake, not currently held by the District, and a final report detailed in Deliverable #5. Should we choose to proceed with the Nutrient Budget starting in early December 2009, their estimated timeline had a completion date of April 2010. This should be suitable time to then to insure Dr. Ford at OSU has enough time to develop the relational database described in the 319 grant, but I can not speak to that officially. Here again though there maybe some level of overlap in deliverable #3, depending on the level of database restructuring that Env Chem, Inc might do. My assumption is it would be minimal, and would basically provide a useable database for developing a truly relational database as Dr. Ford would be creating.

Staff Conclusion: The board needs to decide if it wants to spend this additional money, and if so direct staff to move forward on collaborating with all parties for joint completion of the Nutrient Budget and the Relational Database. Funding would likely have to come out of the Improvement Fund: M&S: Contracting. These funds were appropriated with the intent of spending them on costs associated with installation of SolarBees, and thus a review of Local Budget Law by our attorney or others to determine if we can, without a supplemental budget, reprioritize these items to allow for the expenditure of a Nutrient Budget needs to be made. If the board does not want to fund the Nutrient Budget, staff recommends considering our current direction of Septic Tank Revitalization and Shoreline Revegetation as acceptable Best Management Practices (BMPs) to continue moving forward on and further, plan on working towards a Storm water Management Program as recommended in the Draft Devils Lake Plan as a next best step to consider in the future.

- i. Listserve (Seth Lenaerts): Talked with Mitchell Moore as staff requested. Mr. Moore has also looked into MyEmma and YMLP, he has not used ConstantContact. His comments were helpful and similar to mine.

It is recommended the board approve an appropriation of \$200 for the purchase of Services from ConstantContact for the rest of the 2009-2010 fiscal year.

- j. Devils Lake Low Power Radio: Antenna has been installed. Conduit to the antenna has also been installed. Just need run the coaxial cable and try it. Jack Woods a volunteer with HMSC is willing to help with the final tuning. Plans to coordinate with him on and the City on that in the near future. Having Steve develop a locking mechanism for the exterior antenna box. Other item to consider is the potential installation of a phone line to connect remotely to the radio recording device for updates. If the unit's coverage is acceptable, this is a highly warranted expense to consider.
- k. SDAO Best Practices and Self Assessment: (Brian Green)
- l. SDAO Board Training Workshop (Seth Lenaerts) Special District Association of Oregon was contacted and staff requested SDAO to come to Lincoln City to provide the Board/Management Roles and Responsibilities training. As a member of SDAO the district has access to eight free hours of consulting a year, therefore this training would not cost any money. George Dunkel who would lead the training is willing to accommodate the Board's schedule. However, it is considered a workshop and an open meeting; therefore proper public notice must be given.

It is recommended that the board schedule this training. Options: Weekend, A different Thursday night or a pre-meeting.

- a. Board Applicant Interviews: Total of 4 applications, (Mr. Joe Barnes was interviewed last month). One application was recently withdrawn (Mr. Tony McCaslin). Interviewers to be held then are for Mr. Mark Christie and Mr. Douglas Pirie. Copies of their applications were sent previously. Process will see the completion of interviews in December, and the appointment and swearing in of the newest board member in January. DLWID policy calls generally for the replacement of a board member to follow this scenario. Letter of resignation to be sent to the Lake Manager, 1 week prior to the end of the month. Lake Manager places item on Agenda. Board accepts resignation. Manager advertises opening with close date 1 week prior to following meeting. Interviews held at that next meeting. Board provided one month to consider appointment. Appointment made by vote of the Board with swearing in to follow immediately. Position is Filled until next election cycle (2011, 2013, 2015, etc).
- b. PADL's Next Steps: John Lazier
- c. Hydroplane Racing Letter to OMB: Draft letter to be circulated for review.
- d. Webpace: The donated server space by Clear Creek Telephone and TeleVision has served the District's needs for nearly two years. Thanks for Mitchell Moore for this ongoing gracious donation. Growth of the website has been substantial. Google Analytics Use shows the continued benefits of communication it provides. We have though reached the capacity of the donated space, and additional space is warranted. It was recommended that Google Docs, an online system for document management would facilitate the requirements of the District, but this would equate to a complete reorganization of how the District handles files and posts to the web. Many file types preferred for web content would not be supported, and eventually with additional webpace enhancements and additions the 75 MB would be used up as well. It is staffs recommendations that we move to a paid service provider. Two were recommended by David Skirvin should we chose to go to a paid service. The cheaper of the two was FatCow at \$66/year with unlimited space. The other was \$109/year for 200GB. David has offered to help us transition the website and emails should be seek to proceed.
- e. Technology Needs: Our main laptop is dying. Our older one nearly has. We have twice had the newer one serviced in the last two months. I had hoped it would have lasted through until the next budget year, but I feel that it is unlikely and would like the board to consider purchasing a new machine. I purchased two small handheld back up drives (one has to be returned as it was damaged upon arrival) to help preserve the data as our online system has had programming issues since the aforementioned crashes. This is good preventative maintenance and was recommended by Computer Ease. We have funds in Debt Service which are unlikely to be used this year which if a resolution was made could be used to buy a new computer. My choice would be to go to a desktop at this time with a large monitor. This coincides with the Safety Recommendations of our insurance carrier, SDAO, presented a few meetings ago. I have asked Sandy Gruber, GIS specialist for LC to recommend some specifications for us to run our GIS, and other CPU intensive programs. My estimate is that we would spend under \$2,000 which if authorized I would move forward with in the next month. We are updating potentially a lot of hardware, software and data seemingly, and thus this might be a good time to make all the improvements.

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