PUBLIC UTILITY COMMISSION

OF OREGON

UM 1489

REBUTTAL TESTIMONY OF BONNIE C. LUCAS

May 31, 2011

1. My name is Bonnie C. Lucas. My physical address is 4830 Summit Avenue, Westlake, Oregon, and my mailing address is Box 87, Westlake, Oregon 97493.

2. My household has been on the Fish Mill Lodges Water System (referred to as FMLWS in this document) since 1967. The water system was established in 1950. Therefore, when Mrs. Bedsole purchased the property in 1989, this water system had been successfully operating for 39 years. Including Mrs. Bedsole's tenure, the water system has now been operating for 61 years.

3. The main points of Mrs. Bedsole's testimony appear to be:

a. She cannot afford to fix the water system.

b. Those currently on the water system could attain water in other ways, for instance by drilling a well or obtaining water from the lake.

I will discuss each of these issues, below. However, first I will comment on a few other minor issues addressed in Mrs. Bedsole's rebuttal, beginning first with her rebuttal titled "Kathy Miller Testimony Rebuttal."

MY REBUTTAL TO FMLWS "KATHY MILLER TESTIMONY REBUTTAL

4. Issue 1 Current Application Subsection (2), Small Number of Customers: One reason why there is such a small number of customers is that FMLWS refuses to allow additional customers on the system, and tries to remove customers at every opportunity. This system once had nine customers besides the motel, trailer park, and house owned by the Bedsoles.

5. Issue 1 Current Application Subsection (4), Customers can Obtain affordable water in other ways: Discussed below under the subheading "Costs of Fixing the Water System" and "Cannot Obtain Water in Other Ways."

6. Issue 2 Regulatory History re. Rates not increased enough to cover attorney fees: In all the years since I have been on the water system and before Mrs. Bedsole took over FMLWS, no legal fees were incurred regarding the water system. According to Kathy Miller's testimony on page 6, only seven years after Mrs. Bedsole acquired the water system, the first action was filed, followed by ten more in recent years. In Ms. Miller's Exhibit entitled "Abbreviated History of Fish Mill Lodges Water System," 54 different PUC involvement dates are listed. Besides those, I have received letters over the years from several different attorneys representing Mrs. Bedsole or FMLWS.

Since she has owned the water system, Mrs. Bedsole on behalf of herself or FMLWS has retained to represent her (that I am aware of): Thomas C. Nicholsen, Thomas C. Nicholson, P.C.; David Gordon, Macpherson, Ginter, Gordon & Diaz; Bradley Berg, with Bradley Berg, P.C.; William J. Ohle, Schwabe, Williamson & Wyatt, P.C.; Benjamin M. Kearney, Arnold, Gallagher et al; and Peter Mohr, Tonkon Torp LLP. That seems like a lot of lawyers and a lot of legal action concerning what Mrs. Bedsole refers to as a water system with a "small number of customers." Mrs. Bedsole is entitled to be represented by attorneys if she chooses to do so. I, however, should not have to pay for that choice, especially when it appears that most of the actions listed on Ms. Miller's abbreviated history seems to deal with her refusal to provide service as she agreed to do.

7. Issue 3 Claim 1 Financial Constraints: Mrs. Bedsole has offered no testimony about how her labor costs were arrived at. Without seeing details (not lump sums) about how much it

costs her to operate, it is hard to know whether or not the fee set by the PUC is reasonable. However, given that this is a small water system, and that it has not been maintained as it should, the work required should not have been that great. Most of the work appears to be centered on how to get everyone off the water system. I should not have to pay for that. As shown above, the water system is not over one hundred years old. It is 61 years old.

8. Issue 3 Claim 2 Inefficiency, and Claim 3 Legal and Regulatory Costs: The Cost of fixing the spring is discussed below under "Costs of Fixing the Water System." Legal and Regulatory Costs are discussed under my paragraphs 6 and 7 above.

9. Issue 4 New Developments: I paid my water bill due March 3, 2010 through January 26, 2011. From what I understand, the payments missed by another customer pursuant to the PUC's order were made up. These payments were not missed entirely.

10. Issue 5 Customer Concerns and Issue 6 Other Abandonment Cases: See "Costs of Fixing the Water System" and "Cannot Obtain Water in Other Ways" below. In each of the cases where abandonment was allowed, there was a reasonable alternative water source available, or an offer to sell the property to the water system customers. That is not the case here.

11. "In Closing" Page 6 of FMLWS Rebuttal. FMLWS contends in number 6 that the water easements are void. However, in Exhibit A, her own attorney at the time, David M. Gordon, sent me a letter reminding me (I'm not sure why) that "Fish Mill Lodges enjoys an easement across your property...." Therefore, in 1999 FMLWS felt the easement was valid.

In addition, in UM 1528, which was filed in March of this year, FMLWS contends that my allowing commercial traffic to flow across the roadway "violates Bonnie's easement with Fish Mill Lodges Water System (FMLWS)." If there is no valid easement, as FMLWS contends, how could this complaint be filed against me? FMLWS seems to want it both ways– there is an

easement when it benefits them and no easement when it doesn't.

This easement, attached as Exhibit B provides that as long as the water system serving the pipeline and the pipelines are in place, that my property, and Varenas' property, shall have perpetual use of all reasonably necessary water flowing through the pipeline. The easement is terminated only when the pipeline does not carry water for a period of three years, the pipeline is abandoned by FMLWS, or FMLWS fails to meet the terms and conditions of the easement. Since the water pipe is still present in the easement and FMLWS has submitted no evidence showing that it is no longer using spring water or has otherwise abandoned the pipeline on my property, FMLWS must continue to provide me and Varenas' with water. If the pipeline and water system are abandoned, and the easement is then terminated, I will remove or cap-off the pipeline.

12. Exhibit 2 Feasibility Study is discussed in "Costs of Fixing the Water System" below.

13. Exhibit 3 Newspaper Article says Siltcoos is Clean. See "Cannot Obtain Water in Other Ways" below.

MY REBUTTAL TO FMLWS'S PHIL BOYLE TESTIMONY REBUTTAL

14. Claim No. 2, Illegal Lateral. While this claim is not against me, I have lived in this neighborhood since 1967 and my property is located directly across the road from Varenas' property. The lateral line referred to by FMLWS is not illegal. It was installed by Joe and Dorothy Morris with the permission of Frank and Agnes Tomasek, previous owners of the FMLWS. In fact, I remember Frank Tomasek helping with the connection. While Varenas' have occupied the property, I have not observed them installing any pipelines anywhere on their property.

COSTS OF FIXING THE WATER SYSTEM

15. FMLWS testifies in many places that repairing the water system would be too expensive. To support this assertion, FMLWS relies on a water system feasibility study conducted in 2009 by HBH Consulting Engineers.

16. HBH recommends either painting the storage tank or replacing it. The cost of this upgrade is estimated to be $10,800. Attached as Exhibit C are prices for 3000 gallon black water tanks from Water Tanks and National Tank Outlet. The cost from either is under $1,800.

17. HBH recommends Water meters. We have not had water meters the entire time the system has been operating. These are an additional expense not needed with only three households on the system.

18. HBH recommends pumps and pressure tanks. While I agree that the pumps eventually need to be replaced, a pump is currently working and supplying me with water. Therefore, I do not agree with what HBH recommends. Besides, I don't ever go with the first opinion or bid I receive, I like to review several. Given that HBH's bid seems to be higher than it needs to be, I suspect, this part is also too high. Pumps can be obtained for $350.00, and a pressure tank for $820.00, for a total (2 pumps + 1 pressure tank) for approximately $1,500.

19. HBH recommends a chlorinator. Given the problems the spring has had with Coliform levels, this is probably a good idea. However, there are much cheaper options available. See Exhibit L.

20. HBH recommends a soda ash system due to the corrosive nature of the water. The water has always been mildly corrosive, and I do not consider that to be a problem worth $11,500 worth of fixing. I would delete this.

21. HBH recommends a new pump house. I agree this does need to be done. I obtained

an estimate from Bill Gardner Construction, see his proposal attached as Exhibit D. He could build the same pump house for $5,300 that HBH quotes $27,000 for. The pump house does not need a fence. I am not aware of any vandalism that has ever affected the operation of the spring. There is also no alarm needed for the same reason. That area receives very little traffic as it is down a brushy trail not near any development. A road is not needed. Vehicles have been able to get to the spring for many years merely by clearing the brush.

22. HBH recommends a standby generator. While this might be nice, it is certainly not necessary. This system has never had a standby generator.

23. HBH recommends a new spring box for $26,500. While I have no estimate for this, if the pump house was overestimated by 509%, then it is reasonable to assume that the spring box might also be similarly overestimated, bringing a reasonable price closer to $5,200. Therefore, I would estimate what is needed as follows:

Storage Tank	$ 1,800	
Chlorination	$ 719	
Pump & Pressure Tank	$ 1,500	(But may not be needed at this time)
Water Meters	$ 0	
Soda Ash System	$ 0	
Pump House	$ 5,300	
Standby Generator	$ 0	
Springbox	$ 5,200	
Labor	$ 2,000 ?	(Could be done themselves for nothing)
	$16,519	

This just shows it is possible to fix the system for substantially less than the $137,183 quoted by

the highly inflated feasibility study from HBH. We don't need a Cadillac system, just a functioning one that provides safe water.

CANNOT OBTAIN WATER IN OTHER WAYS

24. Mrs. Bedsole suggests that one alternative for water would be for me to run a pipeline to the lake. There are many problems with this alternative.

25. First, I don't own property by the lake. To get to the lake, I would have to obtain easements from several property owners. They would have to give me permission to dig up their property for the purpose of installing a pipeline. I'm not sure anyone would be willing to do that.

26. Second, even if I could get to the lake, I would have to obtain a permit to take water from the lake. I would also have to install all of the proper equipment.

27. Third, Siltcoos Lake is subject to toxic blue-green algae. FMLWS submitted a Siuslaw News article indicating that Siltcoos Lake is healthy. While that may have been true at the time the article was written, July 28, 2010, it is not always true.

Siltcoos Lake is contaminated by toxic blue-green algae and it's bloom is often a seasonal occurrence. Once blue-green algae exists in a lake, it does not suddenly disappear on its own. The Wisconsin Department of Natural Resources on its website (see attached Exhibit E) states that there are no quick or easy remedies for the control of blue-green algae once it appears in a lake. In order to get blue-green algae to disappear, the nutrient concentration of the entire lake must be changed. This can be very hard to do because there may be large amount of nutrients in the sediment at the bottom of the lake that feed the algae. Since Siltcoos Lake covers 3,160 acres, there is an awful lot of sediment to contain nutrients for the algae. In fact, Dunes City on June 11, 2008, enacted Ordinance Number 197 that appointed a City Water Quality Control Committee to make recommendations "to the City Council for the conservation, protection,

maintenance, and improvement of the quality of the City's waters and promotion of public health, welfare, and safety." This is because "Both Siltcoos and Woahink Lakes have experienced episodes of rapid grown of phytoplankton populations (algae bloom) in recent years." See Ordinance Number 197 attached as Exhibit F. Apparently Dunes City thought this was going to be an ongoing issue or the ordinance would not have been adopted. In fact, Dunes City, in 2006 before the blooms in 2007 and 2008 adopted Ordinance No. 181 to impose a moratorium on development because it found "Both Woahink and Siltcoos Lakes have experienced episodes of rapid growth of phytoplankton populations (algae bloom) in recent years." Ordinance 181 is attached as Exhibit G.

The algae bloom in Siltcoos is often seasonal. See the 2010 Lakes Water Quality Study of Woahink and Siltcoos Lakes presented to the Dunes City Council 7-8-10 by Mark Chandler, the pages pertaining to Siltcoos are attached as Exhibit H. All pages refer to the "fall algae blooms." Blooms don't happen every year. A bloom depends on the right combination of water temperature, low water depths, and nutrients. See University of Nebraska-Lincoln, Exhibit I. It will happen again, especially as our climate continues to warm. In 2007 the Oregon Health Authority advised people not to drink or come in contact with Siltcoos Lake water for 52 days, and in 2008 for 93 days (25% of the entire year). See Exhibit J. What am I supposed to do if I can't use the water at all for 93 days or more?

Blue green algae can be toxic. See Exhibits I and K. I do not want mouth ulcers, headaches, muscular pains, vomiting, liver failure, respiratory arrest, seizures, paralysis, etc. etc. These toxins, unlike the coliforms that I have been dealing with in the spring water, cannot be removed by boiling, filtering, or treating the water. See Exhibit K.

Finally, if FMLWS feels that Siltcoos Lake water is safe, why did they drill a well instead

of taking water from the lake, especially since they contend that going to the lake would cost only $2,000 - $3,000 while drilling a well would cost $5,000 - $10,000? (See Issue 6, Rebuttal to Kathy Miller's testimony). Since they have testified over and over that they have no money to make repairs to the water system, why would they choose the more expensive option of obtaining water, especially considering that their property is right on the lake and would not require the complication of obtaining easements? Perhaps the water is safe enough for me but not for them? Or is it that the cost of this type of system is more prohibitive then FMLWS has led us to believe?

28. FMLWS also suggests that I could have a well drilled. I spoke with Paul Christensen of Christensen Well Drilling. Due to the close proximity of septic systems, I would have to have a deep well dug. While Mr. Christensen estimated a 200 foot well to start with, My neighbor, Joe Lane, who dug a well just on the other side of the fence between our two properties had to go 325 feet. That well delivers only 1/16 to an 1/8th of a gallon per minute on a good day. In the summer there is no water at all. It is common knowledge in this neighborhood that drilling a well is often futile. I would hate to spend $10,000 and not end up with a functioning well. I still think the best option is to fix the spring. It has provided good water for many years. It just needs some upkeep. Neither going to the lake nor drilling a well are viable options.

When the Bedsole's bought Fish Mill Lodges in 1989, they knew that the water system was part of the purchase and that several families besides theirs were dependent on the spring for their water. Since they no longer want to be in the water business, they should let someone else operate it.

Signed: Bonnie Lucas

CERTIFICATE OF SERVICE

I hereby certify that on May 31, 2011, I served a true and correct copy of this Rebuttal Testimony by e-mail on the following:

Public Utility Commission, Filing Center
550 Capital Street NE Suite 215
Salem, OR 97302
puc.filingcenter@state.or.us

Dennis and Barbara Varenas
721 Old Garden Valley Road
Roseburg, OR 97470
varenas4@msn.com

Don Durland
120 Oasis Drive
Denison TX 75020-8857
durlandarts@texoma.net; piet@texoma.net

Jason W. Jones
Assistant Attorney General
Business Activities Section
1162 Court Street NE
Salem, OR 97301-7096
jason.w.jones@state.or.us

Peter D. Mohr
Attorney for Fish Mill Lodges Water System
1600 Pioneer Tower
888 SW Fifth Avenue
Portland, OR 97204
peter.mohr@tonkon.com

Signed: Bonnie Lucas

CORRECTED
CERTIFICATE OF SERVICE

I hereby certify that on June 1, 2011, I served a true and correct copy of this Rebuttal Testimony by e-mail on the following:

Public Utility Commission, Filing Center
550 Capital Street NE Suite 215
Salem, OR 97302
puc.filingcenter@state.or.us

Dennis and Barbara Varenas
721 Old Garden Valley Road
Roseburg, OR 97470
varenas4@msn.com

Don Durland
120 Oasis Drive
Denison TX 75020-8857
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Jason W. Jones
Assistant Attorney General
Business Activities Section
1162 Court Street NE
Salem, OR 97301-7096
jason.w.jones@state.or.us

Peter D. Mohr
Attorney for Fish Mill Lodges Water System
1600 Pioneer Tower
888 SW Fifth Avenue
Portland, OR 97204
peter.mohr@tonkon.com

and on June 2, 2011, I served a true and correct copy of this Rebuttal Testimony by e-mail on:

Judy Bedsole
Fish Mill Lodges Water System
PO Box 1373
Florence, OR 97439
fishmill1@charter.net

Signed: Bonnie Lucas

Macpherson, Gintner, Gordon & Diaz

LAWYERS

423 North Coast Highway
P.O. Box 1270
Newport, Oregon 97365
(541) 265-8881 \ (800) 829-8881
FAX (541) 265-3571
email: gordon@mggdlaw.com

David M. Gordon

October 22, 1999

Ms. Bonnie Lucas
P O Box 87
Westlake OR 97493

BY CERTIFIED
AND SURFACE MAIL

RE: Fish Mill Lodges Water System

Dear Ms. Lucas:

We represent the owners of the Fish Mill Lodges Water System. As you likely know, Fish Mill Lodges has existed for many years on the shore of Tsiltcoos Lake. Fish Mill Lodges is served by the Fish Mill spring located approximately a quarter of a mile away from the resort. A portion of the water pipeline that provides water to the resort crosses your property and it is this fact which prompts this correspondence.

As I am sure you can understand, the integrity of the water system is critical to the continued operation of Fish Mill Lodges. Over the years, there has been some uncertainty about the ability of others to connect to the water system and to undertake activities on property subject to the water pipeline easement. It is vitally important to the owners of Fish Mill Lodges that the system not be damaged in any way and that unpermitted connections not occur.

Fish Mill Lodges enjoys an easement across your property for purposes of constructing, maintaining and operating its water pipeline. The pipeline is buried and does not require frequent maintenance, but when a break occurs or a new line must be laid it is important that access not be denied for this purpose. Additionally, structures cannot be built in the easement as they may prevent critical maintenance that must be performed.

The purpose of this letter is to inform you of the need to not interfere with the operation of the water pipeline. The owners of Fish Mill Lodges are certain that you will cooperate and comply with the legal obligations imposed by the easement. Failure to do so, however, will lead to action by the owners of Fish Mill Lodges to protect their interest.

Continued . . .

If you have any questions concerning the legal affect of this easement, please feel free to contact an attorney or other counsel. This is an important legal matter and we appreciate your serious attention to it.

Thank you for your anticipated cooperation in this matter.

Sincerely yours,

David M. Gordon

DMG:sp

cc: Fish Mill Lodges

S:\Bednole, Judy\2 Correspondence\991022Lucas.wpd

8912726

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EASEMENT

DATED: March 14, 1989

PARTIES: Ralph L. and Bonnie C. Lucas (Grantor)
Frank L. and Agnes M. Tomasek (Grantee)

In consideration of the terms and conditions herein, Grantor conveys to Grantee, which term includes their heirs, successors, and assigns, a perpetual nonexclusive easement (hereinafter easement strip) to use a strip of land ten (10) feet wide, described as follows:

East ten (10) feet of Lot 7 Block 29 West Lake Subdivision Plat, as platted and recorded in Book 7, Page 2, Lane County Oregon Plat Records in Lane County, Oregon.

2068MAR.24'89#04REC 25.00
2068MAR.24'89#04PFUND 10.00

The terms of this easement are as follows:

1. Grantee, their agents, and independent contractors shall use the easement strip for the purpose of installation and maintenance of underground water pipelines.

2. Grantor reserves the right to use the easement strip for their own use, not inconsistent with grantee's use.

3. Grantor reserves the right to grant use rights for the easement strip to third parties.

4. Grantee agrees that for so long as the water system serving the water pipeline and the pipelines are in place on the easement strip, that Grantor's property as defined in paragraph 8 of this easement, and the property known as Lot 11, 12, & 13, Block 28 West Lake Subdivision Plat, as platted and recorded in Book 7, Page 2, Lane County Oregon Plat Records in Lane County, Oregon (neighboring property) shall have perpetual use of all reasonably necessary water flowing through the pipeline.

5. Grantee agrees that the rate charged to the Grantor and the neighboring property for use of the pipeline, water system, and water, shall not be raised above the existing rate of $180.00 per year (existing rate) for Grantors property and the same amount for the neighboring property, unless the average of the basic rate charged to individuals for water service (excluding sewer and water usage based on the amount of water used) by 1) Eugene Water and Electric Board (EWEB) or its successor and 2) the City of Florence or its successor, for a one year period of time equals or exceeds

the existing rate. Then and in that case at the option of Grantees, a new rate shall be established equal to or less than said average as modified from time to time by said EWEB and City of Florence.

6. Grantee agrees to at all times maintain the water pipes located on the easement strip, and the water system serving said water pipes, which system is located on Parcel I described more fully in Exhibit A attached hereto, in good condition and repair, including the connections from the water pipelines to Grantor's and the neighboring property's individual water pipes, at Grantee's sole expense. Grantee further agrees to return the easement to the same condition it was in before Grantee, its agents, or independent contractors commenced work on the pipes. This includes replacing or repairing any damage done to Grantor's nearby landscaping, at Grantee's sole expense.

7. Grantee agrees to indemnify and defend Grantor from any loss, claim or liability to Grantor arising in any manner out of Grantee's use of the easement strip. Grantee assumes all risk arising out of its use of the easement strip and Grantor shall have no liability to Grantee for any condition existing thereon.

8. Grantee agrees that except in the case of emergency, Grantee shall give Grantor and neighboring property prior written notice of not less than 24 hours of their intent to perform maintenance or repairs on the water system or pipelines, if the maintenance or repairs will interrupt the flow of water through the pipelines.

9. The easement is across the real property owned by Grantor and described as follows:

> Lot 7 of Block 29 West Lake Subdivision Plat, as platted and recorded in Book 7, Page 2, Lane County Oregon Plat Records in Lane County, Oregon.

Additional property of Grantor: Lots 5 and 6, Block 29, West Lake Subdivision Plat, as platted and recorded in Book 7, Page 2, Lane County Oregon Plat Records in Lane County, Oregon. All lots described in this paragraph are collectively referred to in this easement as "Grantors Property".

10. This easement shall be perpetual; however in the event that the pipeline does not carry water for a period of three years, is otherwise abandoned by Grantee, or Grantee fails to meet the terms and conditions of this easement, the easement shall, at the option of Grantor, expire and Grantee shall upon request execute a recordable document evidencing such expiration.

11. This easement is granted subject to all prior easements or encumbrances of record.

12. This easement is not personal or in gross, but is to be appurtenant to the following described property owned by Grantee:

See Exhibit "A" attached hereto and incorporated herein by reference thereto.

13. In the event that suit, action or other legal proceeding is instituted upon this easement, or any matter arising therefrom, the prevailing party shall be entitled to recover from the other party, in addition to costs and disbursements allowed by law, costs of evidencing title and such sum as the court may adjudge reasonable as an attorney's fee in said suit, action or other proceeding, including appeals therefrom.

IN WITNESS WHEREOF, the parties have caused this instrument to be executed the day and year first written above.

GRANTORS:

Ralph L. Lucas

Bonnie C. Lucas

GRANTEES:

Frank L. Tomasek

Agnes M. Tomasek

STATE OF OREGON

County of Lane)

The foregoing instrument was acknowledged before this 15TH day of March, 1989, by Ralph L. Lucas.

Notary Public for Oregon
My Commission Expires: 8-6-89

SHERI L. OLAFSON NOTARY PUBLIC STATE OF OREGON

STATE OF OREGON)

County of Lane

The foregoing instrument was acknowledged before me this 15th day of March, 1989, by Bonnie C. Lucas.

BECKY ZIEMER
NOTARY PUBLIC - OREGON
My Commission Expires _____

Becky Ziemer
Notary Public for Oregon
My Commission Expires: 10-9-92

STATE OF OREGON

County of Lane)

The foregoing instrument was acknowledged before me this 22 day of March, 1989, by Frank L. and Agnes M. Tomasek.

NORMA G. RUSSELL
NOTARY PUBLIC - OREGON
My Commission Expires _____

Norma G. Russell
Notary Public for Oregon
My Commission Expires: 6-20-89

8912726

EXHIBIT A

PARCEL I

Beginning at the most Southerly Southwest corner of Westlake, as platted and recorded in Volume 7, Page 2, Lane County Oregon Plat Records, in Lane County, Oregon, prior to vacation of Block 31, said point also being 2520 feet South of and 105 feet West of the 1/4 section corner between Sections 27 and 34, in Township 19 South, Range 12 West of the Willamette Meridian, Lane County, Oregon; thence from said beginning point due West 350 feet, thence due North 250 feet, thence due East 350 feet, thence due South 250 feet, to the point of beginning, all in Lane County, Oregon.

PARCEL II

Beginning at the Northwest corner of Lot 4, Block 28, of Westlake, as recorded in Book 7, Page 2, Lane County Oregon Deed Records, and run thence North 71° 44' West 10.52 feet to the center line of the alley running North and South in said block; thence North 13.19 feet along the Northerly extension of said alley centerline to the bank of Siltcoos Lake, thence following the bank of Siltcoos Lake, the following courses: South 87° 47' East 67.83 feet; thence South 59° 58' East 110.02 feet; thence South 25° 39 1/2' East 88.99 feet; thence South 21° 25' West 189.62 feet to the center line of Summit Avenue as that vacated in said plat; thence West 122.10 feet to the Southerly extension of the East line of the alley in said Block 28, thence North 298.00 feet to the point of beginning, in Section 34, Township 19 South, Range 12 West of the Willamette Meridian, Lane County, Oregon, being Lots 4 through 10 inclusive and vacated street abutting said lots in the plat of Westlake, by reason of vacation order recorded June 7, 1946, in Book 322, Page 261, Deed Records of Lane County, Oregon.

PARCEL III

The East half of Lot 14, Block 28, WESTLAKE, as platted and recorded in Book 7, Page 2, Lane County Oregon Plat Records, in Lane County, Oregon.

8912726

State of Oregon,
County of Lane—ss.

I, the County Clerk, in and for the said County, do hereby certify that the within instrument was received for record at

24 MAR 89 10: 17

Reel 1564R

Lane County OFFICIAL Records
Lane County Clerk

By: _____ County Clerk

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Ag & Industrial Tanks	Bolted Tanks	Septic Tanks	ASME Tanks
Norwesco Tanks	Corrugated Tanks	Underground Storage Tanks	Fuel Tanks
Rectangular Tanks	Municipal Tanks	Containment Solutions Tanks	Fuel Transfer Tank
Snyder Industries	Pioneer Water Tanks	Xerxes Tanks	Pressure Vessels
Liquid Tanks			

Hazardous & Industrial Waste Management

Frac Tanks	Rental Tanks	Roll Off Containers	Dewatering

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see also: Popular Sellers - Gravel Foundation Rings , Popular Sellers - Sight Gauge Assemblies , Popular Sellers - Safety Flex Assemblies , Water Pumps - Pressure Booster Systems , Fire Kits - Fire Hydrant Kits , Poly Plastic Tanks - Dura Pure Water Tanks - RMI

Poly Plastic Tanks
Norwesco Water Tanks - Green
Norwesco Water Tanks - Black
Norwesco Doorway/Specialty Tanks
Dura Pure Water Tanks - RMI
Solar Water Tanks
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PERIOD!

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- Why would you buy from any where else?

* Sale prices are based on picking up tanks directly from Norwesco factory locations. Will call handling fees, delivery charges, or in-coming freight charges to our stocking yards will be added to the final price of the tanks.

American Tank Company's freshwater Tanks are the most cost effective way to store drinking water for residential and commercial installations.

Also used for vineyard or agricultural irrigation, fire protection, water treatment, and other water related uses. Where very large capacities of water are required, multiple tanks may be plumbed together. These durable tanks are designed and manufactured to make water storage safe, dependable and affordable.

American Tank Company's freshwater polyethylene (poly) storage tanks are manufactured by means of the rotational molding process, which produces a one-piece, seamless tank. Linear poly tanks are molded from 100% FDA approved materials and will not impart any taste or residue, meeting the National Sanitation Foundation (NSF) requirements for safe storage of drinking water (potable water).

American Tank Company's freshwater tanks are UV stabilized and will not breakdown under harsh outdoor weather

conditions, and will not rust, chip, peel, or corrode. Black opaque color helps prevent water borne algae growth.

American Tank Company's freshwater tanks can be placed on any flat, firm, level surface for simple installation, and being lightweight, easily rolled into place by hand. Great for remote cabins and hard to reach locations! Pre-installed fittings include 1½" top-inlet & 2" lower-outlet for simple hookup, and the standard 16" threaded manway with a 2" vent allows for easy access to the tank. Extra fittings can be easily added and allow for the installation of additional accessories and system components.

American Tank Company supports the manufacturer's 3-year warranty on freshwater tanks which are designed and warranted for water use only, at ambient temperature and are not intended nor warranted for chemical storage.

Certified NSF 61 labels are not available from all factory locations.

Due to the nature of the rotational molding process, dimensions may vary from what is published and shown on the referenced drawings.

Product Description	Retail Price	Your Price
305 Gallon Fresh Water Poly Tank Color: Black Gallons: 305 Dia. 46" Height: 49" Lbs: 64 CAD Drawing Product #: 0005-005	~~$364.47~~	$237.45 Call to Order
500 Gal Fresh Water Poly Tank Color: Black Gallons: 500 Dia. 48" Height: 73" Lbs: 103 Product #: 0005-007	~~$535.43~~	$348.83 Call to Order
550 Gallon FreshWater Poly Tank Color: Black Gallons: 550 Dia. 67" Height: 44" Lbs: 95 CAD Drawing Product #: 0005-010	~~$515.92~~	$336.12 Call to Order
1,100 Gallon Fresh Water Poly Tank Color: Black Gallons: 1100 Dia. 87" Height: 52" Lbs: 179 CAD Drawing Product #: 0005-020	~~$782.18~~	$509.53 Call to Order
1,350 Gallon Fresh Water Poly Tank Color: Black Gallons: 1350 Dia. 71" Height: 88" Lbs: 204 CAD Drawing Product #: 0005-025	~~$985.10~~	$641.79 Call to Order
1,500 Gallon FreshWater Poly Tank Color: Black Gallons: 1500 Dia. 95" Height: 57" Lbs: 194 Product #: 0005-026	~~$922.80~~	$601.20 Call to Order
1,550 Gallon FreshWater Poly Tank Color: Black Gallons: 1550 Dia. 87" Height: 66" Lbs: 215 CAD Drawing Product #: 0005-030	~~$950.81~~	$619.45 Call to Order
2,500 Gallon Fresh Water Poly Tank Color: Black Gallons: 2500 Dia. 95" Height: 90" Lbs: 339 CAD Drawing Product #: 0005-035	~~$1,468.13~~	$956.48 Call to Order
2,500 Gal Fresh Water Poly Tank - LB 102Dx81H New 22" Manway (CA Only) Color: Black Gallons: 2500 Dia. 102" Height: 81" Lbs: 314 Product #: 0005-037	~~$1,403.50~~	$914.38 Call to Order
3,000 Gallon Fresh Water Poly Tank Color: Black Gallons: 3000 Dia. 95" Height: 108" Lbs: 404 CAD Drawing Product #: 0005-040	~~$1,827.39~~	$1,190.54 Call to Order
3,000 Gal Fresh Water Poly Tank-LB 102Dx95H Color: Black Gallons: 3000 Dia. 102" Height: 95" Lbs: 400 Product #: 0005-042	~~$1,731.77~~	$1,128.24 Call to Order
3,000 Gal Fresh Water Poly Tank - LB 102Dx95H New 22" Manway (CA Only) Color: Black Gallons: 3000 Dia. 102" Height: 95" Lbs: 400 Product #: 0005-043	~~$1,731.77~~	$1,128.24 Call to Order
5,000 Gal Fresh Water Poly Tank-LB 102Dx152H Color: Black Gallons: 5000 Dia. 102" Height: 152" Lbs: 875 CAD Drawing Product #: 0005-045	~~$3,732.10~~	$2,431.46 Call to Order
5,000 Gal Fresh Water Poly Tank-LB 119Dx112H New 22" Manway (CA Only) Color: Black Gallons: 5000 Dia. 119" Height: 112" Lbs: 754 Product #: 0005-048	~~$3,036.54~~	$1,977.65 Call to Order

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Our black plastic water tanks are manufactured to strict quality guidelines to ensure years of high-performance use. Rugged, impact-resistant, one piece polyethylene construction makes our plastic water tanks your number one choice for potable water storage. Our plastic water tanks are manufactured using resins that meet FDA specifications to ensure safe storage of potable water. The black color limits light penetration, which reduces the growth of water-borne algae. Where applicable, our plastic water tanks will carry the NSF approval. All of our plastic water tanks come with a self-vented slosh proof lid, a 1-1/2" fill fitting, and a 2" drain fitting. Our plastic water tanks come with a 3 year warranty. Give us a call today at 888-686-8265!

210 Gallon Black Water Tank (40"dia x 49"ht)

Regular price: $270.00
Sale price: $189.00

300 Gallon Black Water Tank (35"dia x 81"ht)

Regular price: $379.00
Sale price: $279.00

305 Gallon Black Water Tank (46"dia x 50"ht)

Regular price: $346.00
Sale price: $229.00

405 Gallon Black Water Tank (52"dia x 48"ht)

Regular price: $402.00
Sale price: $299.00

425 Gallon Black Water Tank (42"dia x 75"ht)

Regular price: $433.00
Sale price: $314.00

500 Gallon Black Water Tank (48"dia x 73"ht)

Regular price: $508.00
Sale price: $349.00

550 Gallon Black Water Tank (67"dia x 44"ht)

Regular price: $490.00
Sale price: $335.00

625 Gallon Black Water Tank (64"dia x 50"ht)

Regular price: $445.00
Sale price: $329.00

800 Gallon Black Water Tank (46"dia x 118"ht)

Regular price: $715.00
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Custom Open & Closed Top Tanks

Chemical Resistance Chart

Used Oil Collection Tanks

850 Gallon Black Water Tank (54"dia x 50"ht)

Regular price: $857.00
Sale price: $545.00

1000 Gallon Black Water Tank (64"dia x 80"ht)

Regular price: $860.00
Sale price: $589.00

1100 Gallon Black Water Tank (87"dia x 53"ht)

Regular price: $743.00
Sale price: $498.00

1350 Gallon Black Water Tank (71"dia x 88"ht)

Regular price: $935.00
Sale price: $639.00

1500 Gallon Black Water Tank (95"dia x 58"ht)

Regular price: $877.00
Sale price: $598.00

1550 Gallon Black Water Tank (87"dia x 65"ht)

Regular price: $903.00
Sale price: $619.00

2500 Gallon Black Water Tank (95"dia x 91"ht)

Regular price: $1,394.74
Sale price: $949.00

2500 Gallon Black Water Tank (102"dia x 79"ht)

Regular price: $1,333.00
Sale price: $910.00

3000 Gallon Black Water Tank (95"dia x 109"ht)

Regular price: $1,736.00
Sale price: $1,190.00

3000 Gallon Black Water Tank (102" dia x 93"ht)

Regular price: $1,645.00
Sale price: $1,128.00

3400 Gallon Black Water Tank (102" dia x 107"ht)

Regular price: $2,183.00
Sale price: $1,523.00

4000 Gallon Black Water Tank (96"dia x 140"ht)

Regular price: $3,150.00
Sale price: $2,024.00

5000 Gallon Black Water Tank (102"dia x 152"ht)

Regular price: $3,545.00
Sale price: $2,429.00

5000 Gallon Black Water Tank (119"dia x 112"ht)

Regular price: $2,883.00
Sale price: $1,975.00

5000 Gallon Black Water Tank (141" dia x 86"ht)

Regular price: $2,959.00
Sale price: $2,029.00

6250 Gallon Black Water Tank (102"dia x 194"ht)

Regular price: $5,118.00

6500 Gallon Black Water Tank (119"dia x 149"ht)

Regular price: $5,290.00

7000 Gallon Black Water Tank (142"dia x 125"ht)

Regular price: $5,643.00

Proposal

Page # _____ of _____ pages

CCB# 120770

Contractor
Bill Gardner Const.
P.O. Box 2889
Florence OR 97439
541-997-2156

Proposal Submitted To:	Job Name	Job #
Bonnie Lucas		
Address	**Job Location**	
4830 Summit ave.		
	Date 5-27-11	**Date of Plans**
Phone # 541-997-3664	**Fax #**	**Architect**

We hereby submit specifications and estimates for:

Build 8'x10' Pump House
Cement Floor
Insulation
Finished Plywood wall Interior & Exterior
40 yr Comp Roof
Painted
1 window
1 Exterior 3' door

We propose hereby to furnish material and labor – complete in accordance with the above specifications for the sum of:

$ 5300.00 Five Thousand Three Hundred Dollars. No/00 Dollars

with payments to be made as follows: _____

Any alteration or deviation from above specifications involving extra costs will be executed only upon written order, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents, or delays beyond our control.

Respectfully submitted Bill Gardner

Note – this proposal may be withdrawn by us if not accepted within 30 days.

Acceptance of Proposal

The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payments will be made as outlined above.

Signature _____

Date of Acceptance _____ Signature _____

NC3819

Wisconsin Department of Natural Resources

What can be done to reduce the frequency and intensity of blue-green algae blooms?

There are no quick or easy remedies for the control of blue-green algae once they appear in a lake or pond. Reducing the amount of nutrients that wash into our lakes and ponds will eventually reduce the frequency and intensity of blue-green algae blooms, but it may take a long time and a lot of community involvement to effectively change the nutrient concentrations in a water body. This is because there may still be large amounts of nutrients in the sediment at the bottom that may continue to serve as food for the blue-green algae.

Regulatory agencies like the Wisconsin Departments of Natural Resources and Agriculture, Trade, and Consumer Protection are working with communities around the state to reduce stormwater runoff, and to encourage agricultural practices that reduce soil erosion while maintaining high crop yields. Locally, landowners and interested citizens can help minimize the problems associated with algal blooms by working together with partners in their watershed to reduce the amount of nutrients that reach nearby lakes, streams, and ponds. You can help reduce nutrient concentrations by promoting the following practices in your community:

- Use lawn fertilizers only where truly needed
- Prevent yard debris (e.g., leaves, grass clippings, etc.) from washing into storm drains
- Support local ordinances that require silt curtains for residential and commercial construction sites
- Plant and maintain vegetative buffer strips along shorelines of lakes, ponds and streams. Note: Native plants are much more effective at filtering runoff than the typical grass species found on residential lawns.

CITY OF DUNES CITY
LANE COUNTY, OREGON

ORDINANCE NUMBER 197

AN ORDINANCE REPLACING RESOLUTION NO. 05-12-06, (A) AND CONTINUING THE WATER QUALITY CONTROL COMMITTEE.

Whereas, the City of Dunes City finds:

A. The Mid-Coast Basin Program, OAR 690-518-0010 (1)(a) classified the waters of Siltcoos and Woahink Lakes only for utilization of water for domestic, livestock, and in-lake uses for recreation, wildlife, and fish life purposes; and

B. The residents of Dunes City primarily rely upon Siltcoos and Woahink Lakes as their sources of water; and

C. Both Siltcoos and Woahink Lakes have experienced episodes of rapid growth of phytoplankton populations (algae bloom) in recent years; and

D. The City's Comprehensive Plan Policy E1 states, "The City shall strive to preserve the quality of the land, air, and water resources in the City" and;

E. The City's Comprehensive Plan Policy K2 states, "The City will strive to preserve water quality…" and;

F. The City's Comprehensive Plan states on page 48, "The City shall protect water assets with vigilance for the benefit of the entire community" and;

G. The City's "Water Quality Control Committee" was formed in accordance with Comprehensive Plan Policy B8, under Resolution No. 05-12-06, (A).

NOW THEREFORE, THE CITY OF DUNES CITY ORDAINS AS FOLLOWS:

140.10 The City's "Water Quality Control Committee" is hereby continued and from the effective date of this section shall be known as the "Water Quality Committee".

140.11 PURPOSE.

The purpose of the Water Quality Committee is to make recommendations to the City Council for the conservation, protection, maintenance, and improvement of the quality of the City's waters and the promotion of public health, welfare, and safety.

140.12 DUTIES.

The duties and responsibilities of the Committee shall include but not be limited to the following:

A. Monitor the water quality of nearby lakes and streams in accordance with Resolution 06-8-06; and

B. Collect, record, report, and archive the water quality monitoring date, draw conclusions; and

C. Anticipate and respond to potentially toxic algal blooms, following the "Algal Bloom Sampling and Reporting Protocol."

D. Examine water related matters within the Siltcoos and Woahink watersheds; and

E. Review implementation of the City's ordinances that have the purpose of maintaining and enhancing water quality; and

F. Communicate with the Planning Commission, the Road Commission, the City Council, and the State Agencies or the public; and

G. Serve in an advisory capacity to the City Council in matters relating to water quality and quantity; and

H. Do and perform all other acts and things necessary and proper to carry out the provisions of this subchapter.

140.13 MEMBERS.

The Committee shall consist of at least seven members, one of them, a member of the Council, shall act as non-voting Chairperson. At the first meeting of each year, the chairperson shall assume the chairperson's duties. No person shall be a voting member of the Committee unless such person resides within the watersheds of Siltcoos or Woahink Lakes.

A. Five voting members shall be appointed with at least two who shall be water testers (one for Siltcoos Lake and one for Woahink Lake). Three voting members shall constitute a quorum.

B. Non-voting member(s) shall be appointed as needed to conduct technical water quality sampling or other technical task undertaken by the Committee.

140.14 TERM OF OFFICE.

A. Committee members serving at the time of adoption of this subchapter shall serve until the expiration of the term for which they were appointed.

B. Appointments shall be for terms of three years and staggered so that not more than two (2) positions become open each year. Appointments shall be made by the Mayor and approved by the Council. Appointments expire on December 31 of the expiration year.

140.15 VACANCIES.

Vacancies shall be filled by the Mayor and approved by the Council for the remainder of the unexpired term of the predecessor.

140.16 REMOVAL OF COMMITTEE MEMBERS.

Any member who, unless officially excused, fails to attend three consecutive meetings of the Committee, or fails to attend at least fifty (50) percent of the meetings in any one (1) year, may be disqualified from serving on the Water Quality Committee, and upon certification of such absence by the Committee Chairperson shall be replaced in the manner prescribed in this ordinance.

140.17 MEETINGS.

The committee shall meet at least once each month at a regular time set by the Committee. The Chairperson, or two (2) members, may call a previously unannounced special meeting to be held not less than 24 hours after notice is given. Notice of a previously unannounced special meeting shall be given by telephone to Committee members, the Mayor, and the local press representative, and a notice shall be posted in the City Hall. Minutes shall be taken of meetings and are to include the meeting date, members present, items discussed, citizen input, matters voted upon by the members, and recommendations to the City Council.

ADOPTED BY THE CITY COUNCIL OF DUNES CITY, OREGON, THIS

11th DAY OF June, 2008.

Ayes: _____ Nays: _____ Abstain: _____ Absent: _____

[signed copy in office]_____
Eric Hauptman, Mayor

[signed copy in office]_____
Amy Graham, Acting City Recorder

ORDINANCE NO. 181

AN ORDINANCE IMPOSING A MORATORIUM ON LAND DEVELOPMENT PROHIBITING THE ACCEPTANCE OF APPLICATIONS FOR PARTITIONS, SUBDIVISIONS AND PLANNED UNIT DEVELOPMENTS IN THE CITY OF DUNES CITY, AND DECLARING AN EMERGENCY

The City of Dunes City Finds:

A. The residents of Dunes City primarily rely upon the surface waters of Woahink and Siltcoos Lakes for their potable water; and

B. The residents of Dunes City rely upon subsurface disposal systems to treat their sewage effluent; and

C. Subsurface disposal system effluent contain nitrates and phosphorus that eventually migrate into groundwater and surface water sources, providing nutrients that enrich phytoplankton populations; and

D. Nutrients are also introduced into surface waters through erosion and run–off.

E. Woahink Lake is more susceptible to changes in water quality than any other lake in its watershed. Both Woahink and Siltcoos Lakes have experienced episodes of rapid growth of phytoplankton populations (algae bloom) in recent years; and

F. Subsurface disposal system effluent also contains fecal coliform that can transmit water–borne disease; and

G. Several cases of water–borne diseases, including Plesiomonas shigellodies, have been documented in Siltcoos Lake within the last year.

H. A 1972 Lane County survey of septic tanks found that 26 percent of all tanks located within 100 feet of Woahink Lake were performing unsatisfactorily.

I. It is a very difficult and slow process to rehabilitate the water quality of a lake that has been compromised. Dune City's low land use density would exacerbate the cost of developing a distribution system for a water treatment facility.

J. The *Dunes City Drinking Water Source Assessment and Potential Planning Strategies* report (December 2002) identifies sensitive area setbacks based upon risk of spill contamination, high soil erosion potential, high permeability of soils and high runoff potential.

NOW, THEREFORE,

THE CITY OF DUNES CITY ORDAINS AS FOLLOWS:

Section 1. Moratorium Adopted. In accordance with ORS 197.505 – 197.540, and based on the above findings, and the findings attached as Exhibit "A" hereto and incorporated herein by reference, the City adopts a moratorium on certain types of intensive land development located within the corporate limits of Dunes City and, consistent with the sensitive area setback identified by the *Dunes City Drinking Water Source Assessment and Potential Planning Strategies* report. Properties subject to the moratorium include those lands within 1,000 feet from water a body; soils that have slopes in excess of 16 percent and a K–factor (soil erodibility potential) greater than 0.25; soils identified in the USGS geologic map of Oregon as Recent Alluvial Deposits that have a high potential for groundwater recharge adjacent to streams; and soils mapped by the Natural Resources Conservation Service as being Class D. Except as herein provided, no new land use applications shall be accepted, processed or issued for partitions, subdivisions, and planned unit developments that include land subject to one or more of the above–listed four (4) factors.

Section 2. Exempted Development. Proposed partitions that meet the below–listed standards are exempt from this moratorium:

a. Development that proposes to augment the use of traditional septic tank and subsurface sewage disposal systems with a Sand filter, textile filter, or other similarly advanced treatment unit approved by the Oregon Department of Environmental Quality – approved alternative treatment technologies (ATTs) that have been certified by the NSF International and meet the performance standards and other requirements of OAR 340–071–0135; and

b. Development applications that are accompanied with the applicant's agreement to comply with the temporary erosion control measures and procedures contained in Exhibit B, attached to this ordinance and included herein by reference; and

c. Development that demonstrates through site specific soil testing, development of phosphorous adsorption isotherms, and computations performed by an Oregon registered Professional Engineer that detectable levels of phosphorous in the soil from the proposed drainfield locations and configurations to the nearest surface water body (stream with a defined bed and bank or lake) will not occur for at least 100-years after installation of the system.

For purposes of this ordinance, demonstration that the required travel time for detectable levels of phosphorous in the soil at the point of concern will be met when computations show that less than one-half of the volume of soil within the soil section under consideration will be saturated with phosphorous (P) after the required time interval.

Computations include and shall show:

- A site plan showing proposed drainfield locations and orientation,
- The direction of groundwater flow;
- The assumed or minimum drainfield width relative to the direction of flow of groundwater;
- The design phosphorous loading rate from the wastewater system and justification for the design loading rate if less than 20 parts per million (ppm) total phosphorous;
- The adsorption capacity of the soil at the design loading rate in parts per million (ppm);
- The unit weight of soil;
- The assumed reaction depth and justification for the design reaction depth if greater than the lessor of half the distance from the bottom of the drainfield disposal line to the top of the permanent groundwater table or three (3) feet;
- The design hydraulic loading rate for systems serving more than one dwelling or uses other than for a single-family dwelling. A design hydraulic loading rate of 450 gallons per day (gpd) shall be utilized for a single-family residence.
- The time of travel to the nearest surface water body and;
- The rate of travel in feet per year for the movement of detectable phosphorous in the soil from the disposal system.

Section 3. Emergency Clause. That the matters contained herein concern the public health, welfare and safety and therefore, an emergency is hereby declared to exist, and this Ordinance shall become effective immediately upon its passage by the Common Council and approval by the Mayor.

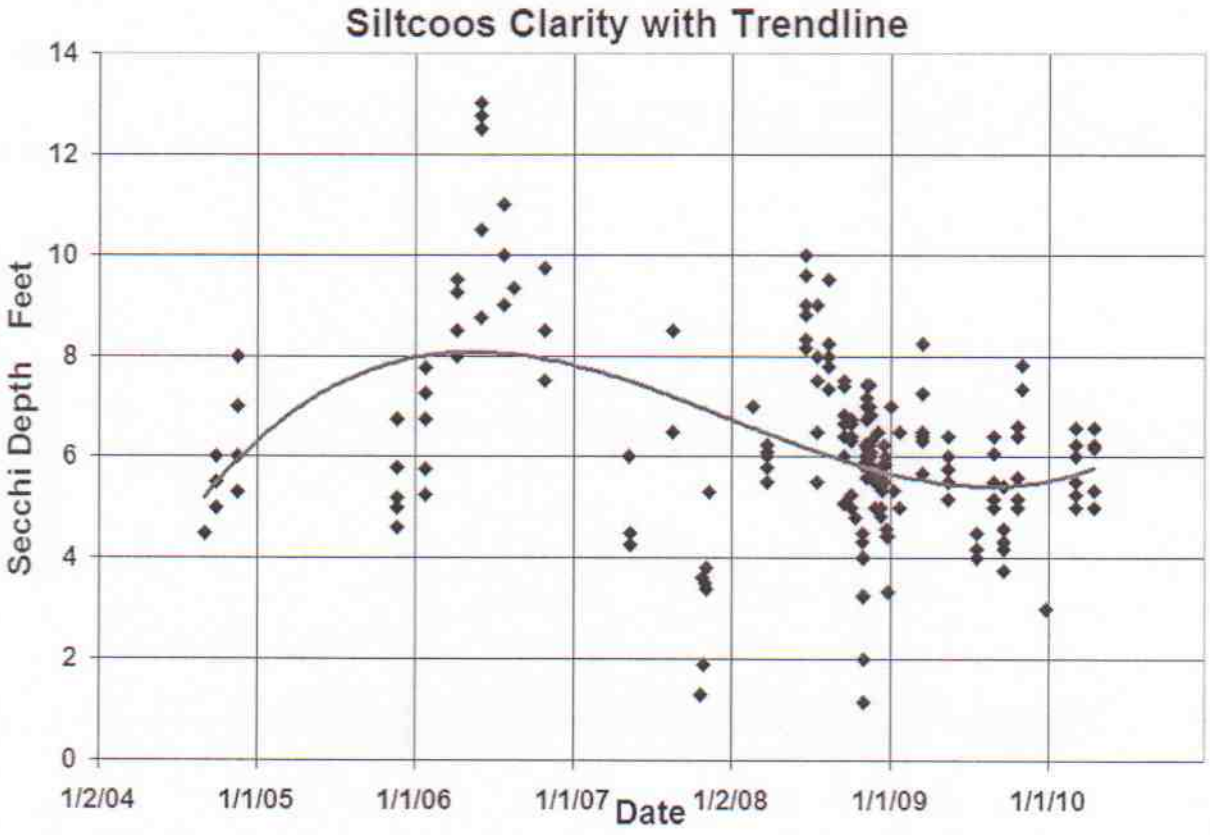
Section 4. Expiration Date. This ordinance shall expire on September 9, 2006 at midnight unless otherwise provided by an ordinance extending the moratorium established herein, in accordance with ORS 197.530(2).

ADOPTED BY THE DUNES CITY COUNCIL THIS 12th DAY OF May, 2006.

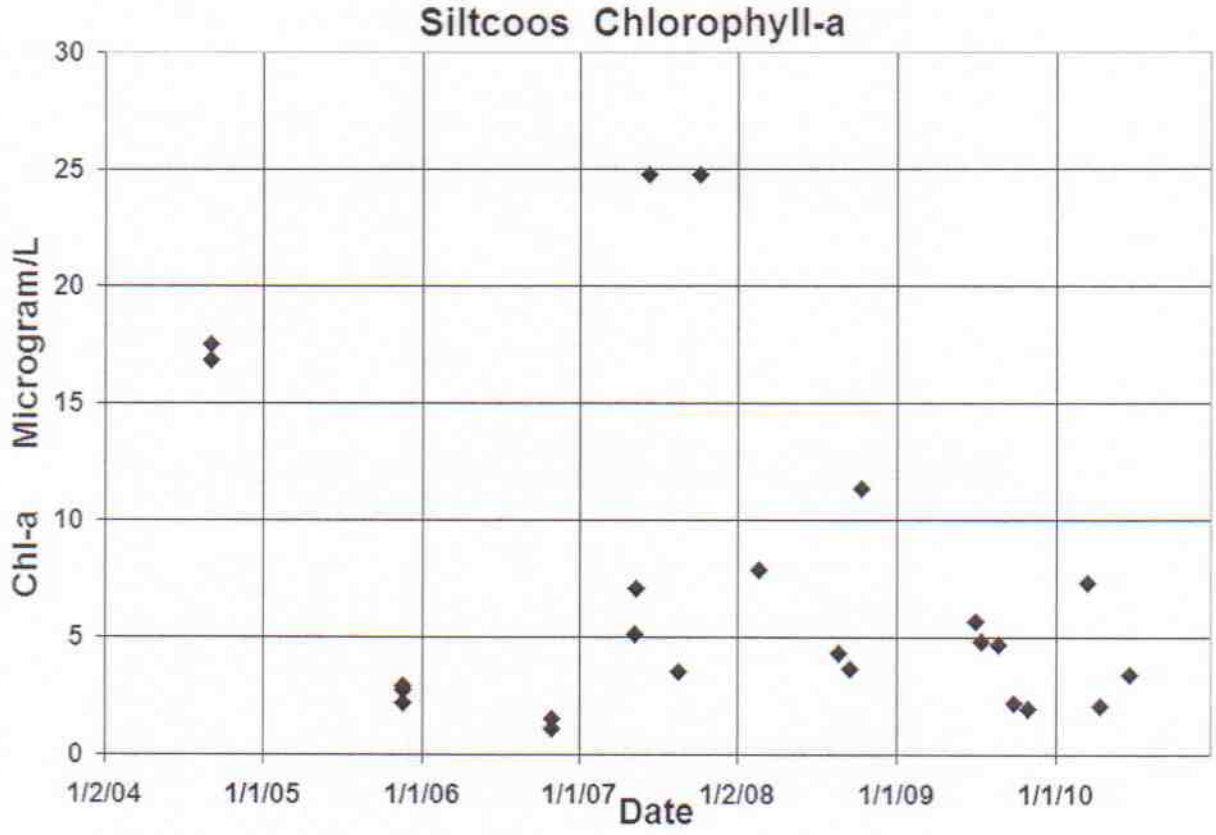
Ayes: _____ Nays:_____ Abstain:_____ Absent:_____

_____ _____

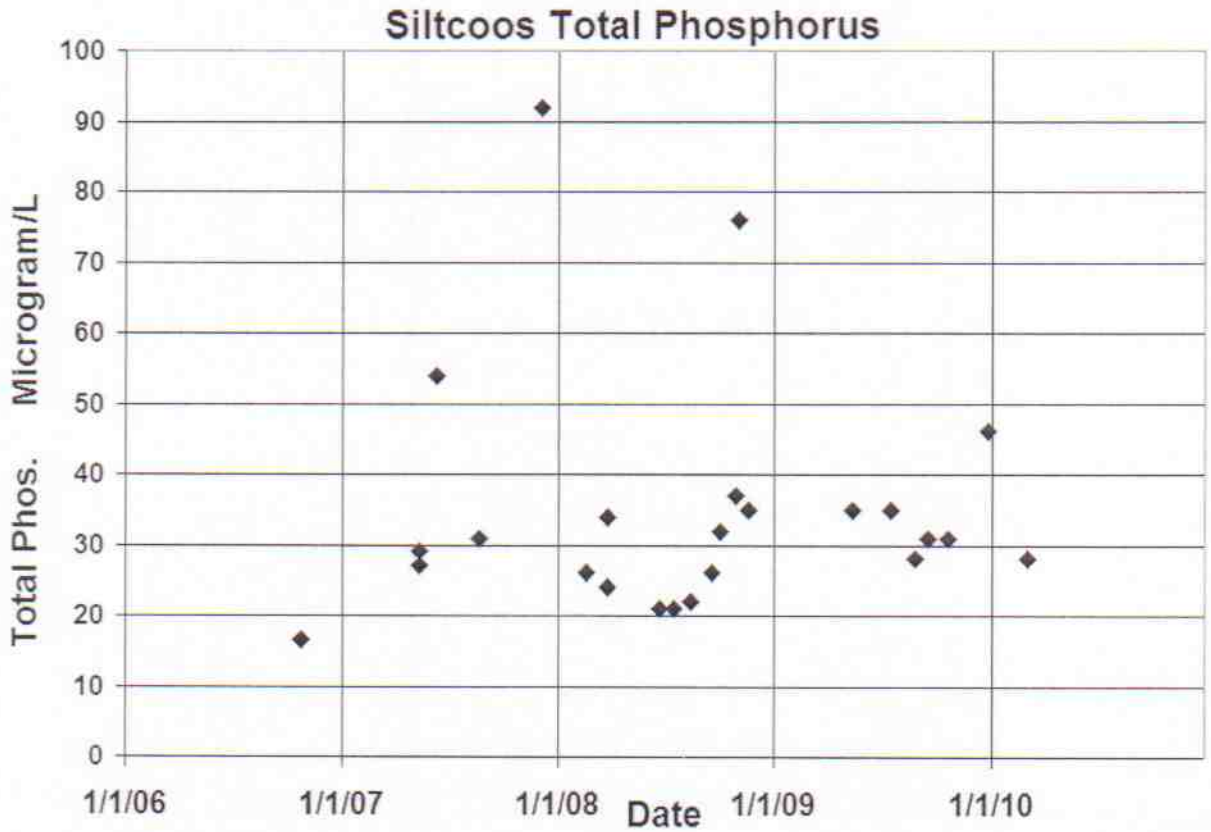
Sheldon Meyer, Mayor Joanne Hickey, City Recorder



The above chart shows the clarity of the water in Siltcoos Lake from 2004 up until June of 2010. The trend line indicates greatest visibility in 2006 with less in the most recent years reflecting the algal blooms that are very apparent in the fall of 2007 and 2008.



This chart shows the levels of Chlorophyll-a in micrograms per liter in Siltcoos Lake from 2004 up until June of 2010. Higher levels indicate elevated presence of algae in the water. The higher data points are generally associated with fall blooms. The predominant species during these occurrences has usually been Anabaena. The Chlorophyll-a samples are sent frozen to the University of Washington for analysis.



Total phosphorus levels in micrograms per liter in Siltcoos lake 2006 up until March of 2010 is displayed in the chart above. A cyclical pattern for the phosphorus levels is apparent in 2008. This may be due to weed growth increases in the spring and summer causing the nutrients to be bound up in the weeds and so the level in the water drops. As the weeds break down and the runoff increases in the fall the levels increase. The highest levels correspond with fall algal blooms. These samples are sent frozen to a lab at Oregon State University for analysis.

Summary

The water quality in Woahink Lake is generally good and stable at present with relatively minor spring algal blooms; in Siltcoos Lake we have seen more significant blue-green algal blooms in 2 of the past 3 years and that is reflected in the data.

###

EXHIBIT H
PAGE 3 OF 3

University of Nebraska–Lincoln

UNL Water: Lake, Pond & Stream Protection

Toxic Blue-green Algae - recognition and management

Toxic Algae Fact Sheet and Frequently Asked Questions

Author: Tadd M. Barrow, School of Natural Resources, University of Nebraska-Lincoln

What is Algae?

Algae are defined as simple rootless plants that grow in bodies of water relative to the amount of nutrients available.

Blue-Green Algae or Cyanobacteria:

Although technically not a true algae, toxic blue-green algae refers to certain species of cyanobacteria that have the ability to produce toxins. Some contend because the cell utilizes sunlight for photosynthesis it is a plant and thus blue-green algae. Others maintain because the cell lacks a well defined nucleus, it is a bacteria or cyanobacteria. Regardless of the terminology, cyanobacteria or blue-green algae are both accepted definitions.

Brief History of Toxic Algae:

Freshwater algae toxins (a.k.a. cyanotoxins) in the United States were first implicated in animal deaths in the late 1800's. Beach closings as a result of toxic algae have occurred in the Midwest since the 1950's. Relatively recent advancements in laboratory procedures has made the process of detecting the most common algal toxins more feasible and affordable; as a result Nebraska agencies and public health organizations collaboratively began addressing toxic algae issues in May 2004.

What is Toxic Algae?

Certain species of Blue-green algae (a.k.a. cyanobacteria) have the ability to produce toxins. Toxic blue-green algae can dominate the algal populations of a lake under the right combinations of water temperature, low water depths, and nutrients.

Risks and symptoms:

Pets and livestock have died from drinking water containing toxic blue-green algae. The risks to humans comes from external exposure (prolonged contact with skin) and from swallowing the water. Symptoms from external exposure are skin rashes, lesions and blisters. More severe cases can include mouth ulcers, ulcers inside the nose, eye and/or ear irritation and blistering of the lips. Symptoms from ingestion can include headaches, nausea, muscular pains, central abdominal pain, diarrhea and vomiting. Severe cases could include seizures, liver failure, respiratory arrest-even death, although this is rare. The severity of the illness is related to the amount of water ingested, and the concentrations of the toxins.

Are some people at greater risk?

Yes. Some people will be at greater risk from toxic blue-green algae than the general population. Those at greater risk include:

- Children-toddlers tend to explore the shoreline of a lake, causing greater opportunity for exposure. Based on body weight, children tend to swallow a higher volume of water than adults, and therefore could be at greater risk.
- People with liver disease or kidney damage and those with weakened immune systems are also at higher risk.

Tips on what to do and things to avoid:

- Be aware of areas with thick clumps of algae and keep animals and children away from the water.
- Do not wade or swim in water containing visible algae. Avoid direct contact with algae.
- Make sure children are supervised at all times when they are near water. Drowning, not exposure to toxic algae, remains the greatest hazard of water recreation.
- If you do come in contact with the algae, rinse off with fresh water as soon as possible.
- Do not boat or water ski through algae blooms.

EXHIBIT I
PAGE 1 OF 2

- Do not drink the water, and avoid any situation that could lead to swallowing the water.

Is it safe to eat fish from lakes that have toxic algae?

The toxins have been found in the liver, intestines and pancreas of fish. Most information to date indicates that toxins do not accumulate significantly in fish tissue, which is the meat that most people eat. It is likely that the portions of the fish that are normally consumed would not contain these toxins. However, it is ultimately up to the public to decide whether they want to take the risk, even if it is slight. Anglers may want to practice catch and release at lakes containing toxic algae.

Where can I find out more information about lake sampling for toxic algae?

The Nebraska Department of Environmental Quality is conducting weekly and monthly sampling at select public lakes that are either popular recreational lakes, or have historically had toxic algae problems. This information is updated weekly on the DEQ agency Web site.

What should I do if I have concerns regarding a private lake?

As part of the University of Nebraska Water Quality Extension Program , UNL has developed a "Volunteer Monitoring Program" and lake test kits that will be sent to interested lake associations, owners, etc. so they can collect a sample and send it to UNL for analysis. To obtain more information and a test kit please contact the program at (402) 472-7783, or (402) 472-8190 or go to Water Quality Testing pages within this water Web site: http://water.unl.edu/lakes

If I think a public lake has a toxic algae bloom, who do I call?

Please contact the Department of Environmental Quality's Surface Water Section at (402) 471-0096, or (402) 471-2186.

If I am experiencing health symptoms, who do I call?

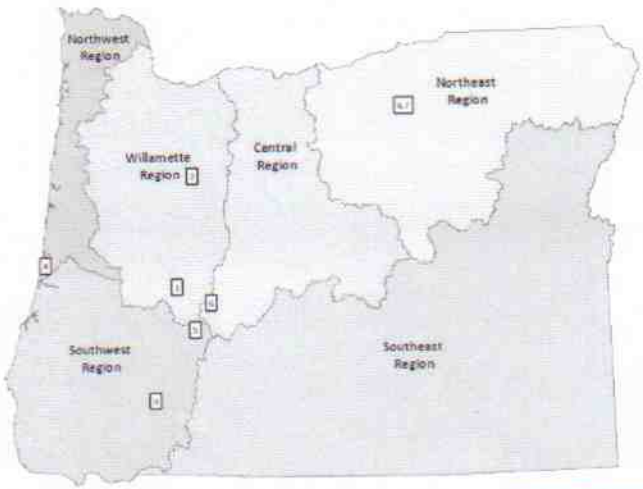
If you experience health symptoms, notify your physician, and also report it to the Nebraska Health and Human Services System at (402) 471-2937. You can also contact the Nebraska Regional Poison Center at 800-222-1222 for more information.

Toxic Algae »

Frequently Asked Questions

EXHIBIT I
PAGE 2 OF 2

Blue-Green Health Advisories



Number	Waterbody	Region	County	Start Date	End Date	No. Days
1	Hill Creek Lake	Willamette	Lane	05/11/2007	06/06/2007	26
2	Detroit Lake	Willamette	Marion	05/30/2007	06/13/2007	14
3	Lost Creek Lake	Southwest	Jackson	06/12/2007	07/10/2007	28
4	Willow Creek Lake	Northeast	Morrow	06/22/2007	08/03/2007	42
5	Lemolo Lake	Southwest	Douglas	06/26/2007	08/20/2007	55
6	Odell Lake	Central	Klamath	07/25/2007	08/13/2007	19
7	Willow Creek Lake	Northeast	Morrow	08/17/2007	10/31/2007	75
8	Siltcoos Lake	Northwest	Lane	09/18/2007	11/09/2007	52

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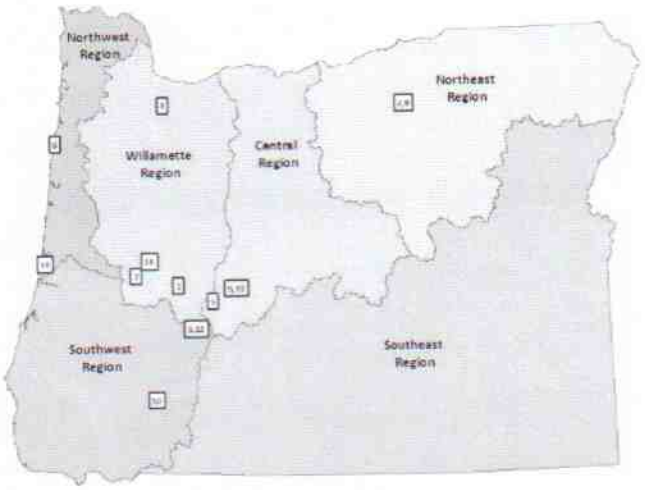
2008 Blue-Green Health Advisories



Advisory	Waterbody	Region	County	Start Date	End Date	No. Days
1	Hill Creek Lake	Willamette	Lane	05/15/2008	07/16/2008	62
2	Willow Creek Lake	Northeast	Morrow	07/02/2008	08/20/2008	49
3	Lemolo Lake	Southwest	Douglas	07/10/2008	08/27/2008	48
4	Tualatin River	Willamette	Washington/Clackamas	07/12/2008	07/25/2008	13
5	Odell Lake	Central	Klamath	08/07/2008	08/22/2008	15
6	Devils Lake	Northwest	Lincoln	08/14/2008	11/03/2008	81
7	Dorena Reservoir	Willamette	Lane	08/22/2008	09/24/2008	33
8	Willow Creek Lake	Northeast	Morrow	09/10/2008	12/23/2008	104
9	Wickiup Reservoir	Central	Deschutes	09/11/2008	09/25/2008	14
10	Lost Creek Lake	Southwest	Jackson	09/15/2008	01/27/2009	134
11	Dexter Reservoir	Willamette	Lane	09/18/2008	10/22/2008	34
12	Lemolo Lake	Southwest	Douglas	09/18/2008	10/15/2008	27
13	Wickiup Reservoir	Central	Deschutes	10/02/2008	10/27/2008	25
14	Siltcoos Lake	Northwest	Lane	10/28/2008	01/29/2009	93

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Algae-related health advisories by year: 2010 2009 2008 2007 2006 pre2006

Blue Green Algae

Blue-green algae (*Anabaena*) can produce toxins harmful to humans and animals. These algae levels are likely to be associated with dangerous toxin concentrations in the water. Swallowing or inhaling water droplets from lakes that are showing high levels of toxin should be avoided, as well as skin contact with water by humans or animals. The toxins cannot be removed by boiling, filtering or treating water.

If people choose to eat fish from lakes with dangerously high toxin concentration, they should remove all fat, skin, and organs before cooking since toxins are more likely to collect in these tissues.

Symptoms of numbness, tingling, dizziness and paralysis can lead to difficulty breathing or heart problems and require immediate medical attention. If symptoms of skin irritation, weakness, diarrhea, nausea, cramps and fainting persist or worsen, people should seek medical attention. Children and pets are particularly susceptible.

Local contact:

- Deschutes County Health Department (541) 322-7418

Web link below For lake advisories and FAQ:

- http://www.oregon.gov/DHS/ph/envtox/maadvisories.shtml

EXHIBIT K
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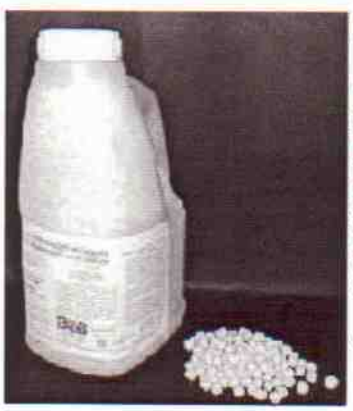
B&B Commercial Pellet Chlorinator Model Mark III-10

- Designed for commercial/agricultural use
- Uses EPA- registered, 3/8" dry chlorine pellets.
- Holds approximately 10 lbs
- Adjusts automatically to water usage.
- Provides easy filling, monitoring and maintenance.
- Eliminates the need for mixing messy liquid solutions.

Sale Price: $ 650.00 Shipping: $ 35.00

Quantity 1 ADD TO CART



B&B Dry Chlorine Pellets

B&B's highly concentrated dry chlorine pellets come in a variety of easy-to-handle and easy-to-store containers: 5, 10, 25, and 35 lb containers. Chlorine pellets are 73% available chlorine and have a guaranteed shelf life of one year. The pellets are EPA registered for the treatment of drinkable water supplies. B&B pellets are guaranteed to work in all dry pellet chlorinators designed for 3/8" pellets.

Other specifics:

- Hard compaction
- 3/8" diameter - rounded ends
- Low powder residue
- Weight approximately 1 gram
- EPA Reg. No. 53026-1

Quantity 1

8.8 lbs (4 X 2.2 Lbs) -- $69.00 ADD TO CART

Note: Hazardous material fee included in shipping charges.

EXHIBIT L
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