

# EXHIBIT A ORDINANCE NO. 181

## BACKGROUND

### Municipal Government

1. Dunes City is a small lake-dependent coastal community of approximately 1300 residents adjacent to Siltcoos, Woahink, and Little Woahink Lakes, south of Florence. Dunes City lacks a long-term source water protection strategy or a comprehensive system of ordinances that mitigate the impacts of erosion, sediment, surface water, septic effluent and storm runoff, and contamination of ground water from construction or post-construction development. A significant part of Dunes City ordinances were drafted in the late 1970's.

Dunes City lacks a tax base and does not have professional staff with the necessary skills or experience to monitor water quality concerns. Instead, the city relies upon a core group of dedicated volunteers. Recent development pressures, unprecedented in the City's history, now have the potential to significantly impact local water quality. As a result Dunes City is proposing a limited moratorium on development. During the ensuing 120 days, Dunes City will design and implement measures to protect the quality of their lakes and groundwater. This will include federal and/or state funding to develop comprehensive water quality regulations and to implement objective development standards. Twenty-five percent of Dunes City's registered voters have signed petitions favoring a limited moratorium.

### Coastal Lakes

2. Siltcoos and Woahink Lakes are coastal lakes connected by Woahink Creek and located in Oregon's Mid Coast Basin. They are reported in Lane County's Coastal Water Supply Study as being important sources of water, including ground water recharge, for the entire area south of the Siuslaw River.<sup>1</sup> Oregon's water-resource agencies designated certain water-related "uses" within basins as protected "beneficial uses." The Mid Coast basin designations for protected beneficial uses include: public domestic water supply, anadromous fish passage, salmonid fish rearing, salmonid fish spawning, resident fish and aquatic life, fishing, boating, water contact recreation, and aesthetic quality.

These dune lakes are thought to be unique in the northern hemisphere because of their size, range, large number, great variety, and close physical proximity.

Dunes City essentially encompasses lands bordering these lakes. Little Woahink Lake is a small lake that drains into the much larger Woahink Lake. Woahink Lake drains into the even larger Siltcoos Lake. To the west of both lakes are the Oregon Dunes National Recreation Area and Siuslaw National Forest. The majority of lands abutting Woahink Lake are within Dunes City. The portion outside the City limits abuts Honeyman State Park, one of the most important and

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<sup>1</sup> *Lane County Coastal Domestic Water Supply Study*, August 1979, Pages 28, 34, 41-42, & 55

visited state parks in Oregon. Part of Siltcoos Lake is adjacent to or within the Siuslaw National Forest and the Dunes National Recreation Area. Siltcoos Lake and Woahink Lakes have shoreline within or very near to county, state or federal parks or recreation areas of regional, national or international reputation.

3. These lakes are the primary sources of domestic water for a significant number of residents, their visitors and families, and other visitors to the area. Area groundwater is a similar primary source. Dunes City lacks a municipal water system or water treatment facilities. The people drinking from these combined sources number in the thousands.
4. The surface and groundwaters of Dunes City are entirely within a sensitive aquifer that is at risk for contamination as designated by Oregon Dept. of Environmental Quality. Various “source water assessment” studies have determined that a significant amount of Dunes City lands adjacent to Siltcoos and Woahink Lakes are or should be within “sensitive area” designations because of spill contamination, high soil erosion potentials, high runoff potentials, and high permeability soils. At least one such study has identified areas within a thousand feet of Woahink and Siltcoos Lakes as being in such a designation. In recognition of the value and unique characteristics of the lake, Woahink was identified by the U.S. Congress as a priority for action in the Estuaries and Clean Water Act of 2000, being one of only 19 lakes so recognized nationally.<sup>2</sup>

#### Development Pressures

5. Dunes City has no wastewater treatment facilities. Housing and commercial interests rely on individual septic systems and the carrying capacity of the land to protect the area's water supply. Current minimum lot size for partitions and subdivisions is one acre. PUDs allow for clustering of residences while retaining an overall density of one residence per acre. Until 2005, there has never been a PUD application.
6. Over the past twenty years just two subdivisions were developed. The historical rate of new buildings in Dunes City has been approximately 10–11 lots a year. During 2005, development applications for partitions, planned unit developments (PUDs) and subdivisions, representing 98 new lots, were proposed in Dunes City. All of these developments proposed by these applications were in the Woahink drainage. Included was a PUD application that counted approximately 10 acres of the surface area of Little Woahink Lake as a “common area” resulting in an application that had 42 lots, averaging 0.6 acre of land area each, all served by subsurface disposal systems. This project fronted on Little Woahink Lake that drains directly into Woahink Lake through an important inventoried significant wetland. This development has resulted in excessive run off and siltation into this small water body that feeds Woahink Lake.<sup>3</sup>

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<sup>2</sup> Center for Lakes and Reservoirs, Workshop on Woahink Lake Summary, May 2001

<sup>3</sup> Testimony of G.J.Wasserburg PhD, before the Dunes City Council March 2, 2006.

## Water Quality Concerns –Generally

7. Lake eutrophication is one of the most well–studied ecological phenomena. Excess input of nutrients, especially phosphorous, is almost always the cause of lake eutrophication. According to a recent book published under the *Excellence in Ecology* series: “Eutrophication is a syndrome caused by over-enrichment with phosphorus ...Excess inputs of phosphorus are the most common cause of lake eutrophication.”<sup>4</sup>
8. The impacts of lake eutrophication are well known and cause many forms of public harm. Lake eutrophication kills or injures oxygen-dependent aquatic species, including fish, through severe, even total, depletion of oxygen in the bottom layer (hypolimnion) of lakes.<sup>5</sup> Lake eutrophication reduces aesthetic value by causing appearance changes, including increased turbidity, discoloration, foaming, and odor and may also causes chemical and microbial changes in water quality that can impart to water an obnoxious and unpalatable taste. Odor profiles and intensity commonly show a relationship to phosphorus.<sup>6</sup>
9. Input of excess nutrients is almost always associated with human activity. Nutrients are in Dunes City soils and are released or added through human activity, including soil disturbance associated with new developments. Nutrients enter surface waters and ground waters and ultimately flow to wetlands or lakes. They enter these critical areas either in solution in water or attached to sediments. Surges of surface water runoff in areas of development are associated with sediment surges. Sediments moving downward to wetlands or lakes can smother life-forms that beneficially uptake these nutrients and can transport the phosphorus directly into lake waters. Groundwater also transports phosphorus ultimately to wetlands and lakes. Phosphorus and other nutrients and contaminants ultimately deposit in lake or wetland sediment areas to the extent that they are not flushed from the system, or taken up by algae or other plants or life forms. An experienced member the Board of the Heceta Water District, who formerly worked for the Oregon Department of Environmental Quality, serving for a time with John R. Churchill, the federal EPA coordinator for the Section 208 Nonpoint Source Pollution program, states: “There is no doubt. The science is clear. The experience is clear. Homes inside the watershed of a lake means pollution of that lake. The level of development has a direct correlation to the level of pollution.”<sup>7</sup>
10. The area’s sandy soils easily carry surface and ground waters to the lake and wetlands. Dunes City soils lack sufficiently disseminated clay particles to which phosphorus can bind and thus be retained and prevented from rapidly flowing through the groundwater into wetlands and lakes. The “sandy soils” of the Dunes

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<sup>4</sup> Mark Chernaik, Ph.D, “Basis for a moratorium on development in Dunes City, Oregon,” pp. 4-5.

<sup>5</sup> *Ibid.*, pg. 4.

<sup>6</sup> *Ibid.*, pg. 3–4.

<sup>7</sup> Debby A. Todd, Letter to the Dunes City Council and Planning Commission dated March 18, 2006.

City area promote infiltration, drainage, and groundwater flows, and thus result in relatively quick phosphorus and other contamination of surface and groundwater flows into wetlands or lakes. Structures that retain surface water runoff and promote biological or plant up-take of phosphorus beneficially reduce nutrient loading in surface water or groundwater flows.

The City's Comprehensive Plan succinctly states the cause of rising concern for the impacts of increasing numbers of septic systems within our fragile watershed. "Carrying capacity is the level of use that can be accommodated without irreversible damage to or impairment of the natural resources or their quality. The carrying capacity, therefore, will be based on the soil capacity."<sup>8</sup> Most of the systems currently being installed are substantially of the same design as many of those installed 50 years ago, despite many recent advances in subsurface waste water systems. Rising nutrient levels in lake waters point towards the possibility that carrying capacity is being exceeded.

The high permeability of sands and sandy aquifers in the Dunes City area permit rapid transfer from the ground water to the lake without the amelioration obtained by long transit times through distributed surface reactive clays necessary to obtain good water purification. Surface runoff gives essentially direct input to the lake.<sup>9</sup>

The rate of lake infilling is controlled by a variety of processes including the slope and the plant cover that can greatly decrease or impede the transport processes. Even on relatively gentle slopes, the rate and amount of infill into the lake is drastically affected by removal of ground cover and trees. An example of this is pertinent to the case of Woahink Lake which shows extremely turbid waters (almost chocolate colored) in the northern branches of Woahink Lake during the heavy rainy season that is the direct result of the property owner denuding land assigned to forests by the County without applying obvious well established preventive measures that are in general practice.

Denudation will certainly occur with any construction unless proper measures are strictly and regularly applied to prevent excessive run off. Excavation with the creation of high relief (steep slopes) is also a cause of greatly enhanced run off. This is often caused by road construction in areas of high relief and will cause incision in the ground by runoff drainage and then flow of debris into the lake.

The ground water contains all the compounds and colloids produced or added to the upper soil layers. These then filter downward through the vadose zone into the water table. These chemical complexes include those naturally produced within the upper soil layers and those added from fertilizer, septic tank drain fields, septic tank leakage, animal wastes, detergents and pesticides that have not been decomposed by bacterial action in the septic tank itself or which simply pass

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<sup>8</sup> Dunes City Comprehensive Plan (September, 1997), Chapter IV.B.2.a(i) – The Man-Made Environment, p. 46.

<sup>9</sup> Testimony of G.J. Wasserburg, PhD, before the Dunes City Council, March 2, 2006.

through the soil system. All of these compounds that are not decomposed or transferred directly into the lake by run off then pass into the ground water system and flow directly into the lake in a rather short time. The effectiveness of so-called “sand filters” depends critically on the amount of distributed clays on/between the sand grains and the rate of water flow through the vadose zone. This requires testing of both the soil-vadose zone flow rates and sufficient spacing between septic tank systems and in the distance of these systems from the lake with consideration of the flow rate by a hydrological study at each site.<sup>10</sup>

11. Water quality problems worsened by phosphorus loading are accelerated where lake sediments are overlain by anoxic water. Studies in lake chemistry clearly show that under very low or no-oxygen (anaerobic) conditions, lake sediments release phosphorus, which under aerobic conditions would otherwise be held in sediments. Such anaerobic release of phosphorus can significantly add to phosphorus levels available in lake waters for use by algae and other life forms. Decreased oxygen levels in the hypolimnium (lower lake levels) cause lake sediments to release more phosphorus. Under these conditions, the lake’s sediments act as a reservoir of continued phosphorus input into the lake’s waters, establishing a recycling dynamic that locks in worsening eutrophic conditions.<sup>11</sup> This process becomes a self-sustaining nutrient loop that does not need additional phosphorus loading to worsen lake conditions.

Lakes metabolize through phases where nutrients increase and water quality declines. Phosphorus is most significant nutrient. It acts as a fertilizer for life forms. For lakes located in U.S. EPA Aggregate Ecoregion II, Western Forested Mountains, which includes lakes in Dunes City, the U.S. EPA has recommended a nutrient water quality criteria for total phosphorous of 8.75 ug/L and for chlorophyll a of 1.9 micrograms per liter.<sup>12</sup> According to Woahink Lake volunteer water tester Mark Chandler, “As more nutrients enter the water body more algal growth takes place; the algae dies off, sinks to the bottom and decomposes. This decomposition depletes the oxygen at the bottom, creating an anoxic or low oxygen condition. That triggers the release of nutrients from the sediment, which then further stimulates algal growth. This feedback cycle can cause an acceleration of lake water deterioration.”<sup>13</sup> As this change progresses, it significantly undermines water quality and directly impacts water-related values or interests. The ground waters and surface waters of the City are impacted by this nutrient process as are the wetlands.

12. Noted limnologist Dr. Steve Carpenter states that a sigmoid dependence on phosphorus levels mean that as a lake becomes more eutrophied, relatively small additional inputs of phosphorus can cause a very large shift in the lake’s trophic

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<sup>10</sup> *Ibid.*

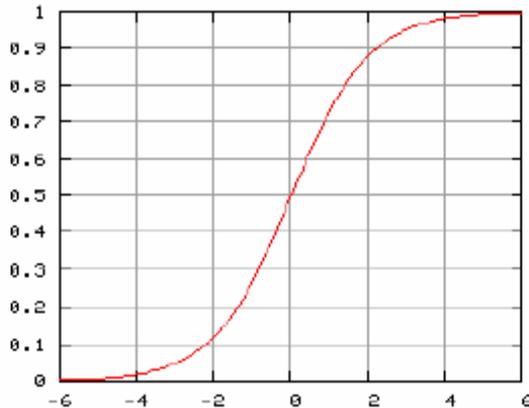
<sup>11</sup> Chernaik, p. 7.

<sup>12</sup> U.S. EPA (2002) “Summary Table for the Nutrient Criteria Documents.”

<sup>13</sup> Testimony of Mark Chandler before the Dunes City Council, March 2, 2006.

state.<sup>14</sup> Thus, when a lake is in a mesotrophic phase an increase in recycling levels of phosphorus can shift its state to eutrophic.

The following graph, containing arbitrary units, depicts the typical shape of a sigmoid function:



In the case of lake eutrophication, the horizontal axis represents the amount of phosphorous loading and the vertical axis represents the trophic state of the lake. The mid-point '0' of the graph represents the amount of phosphorous loading that is just enough to shift the lake to a eutrophic state. As is evident, in certain cases when a lake is in a mesotrophic state (approaching the midpoint), a small increase in phosphorus loading can abruptly shift a lake to a eutrophic state.

13. Nutrient impacts on down-stream wetlands and lake water are cumulative and a successful recovery path is frequently without guarantee.<sup>15</sup> Numerous case studies show that lake eutrophication is often irreversible and the works of limnologist Dr. S. Carpenter summarizing these case studies are persuasive: "We now have decades of experience with managing eutrophication in hundreds of lakes around the world .... In many cases, however, the degree of eutrophication has not responded to reductions of phosphorus..."<sup>16</sup>
14. Lake eutrophication causes deterioration of drinking water by increasing the numbers of pathogenic microbes that can cause human death and illness through exposure. This can include colonies of blue-green algae species forms of *Microcystis* or *Anabaena*, that form floating masses on the water called "algal

<sup>14</sup> Carpenter, Steve, "Regime Shifts in Lake Ecosystems Pattern and Variation," (2005), pg. 9.

<sup>15</sup> Joseph Eilers, et al., "Tenmile Lakes Nutrient Study – Phase II Report," November, 2002, pp. 126–7.

<sup>16</sup> Carpenter, pg. 9.

blooms.” Microcystis organisms may produce a potent liver toxin, and Anabaena species frequently produce a neurotoxin, both of which can be harmful to humans and animals. Ingestion and even contact with such waters is not recommended.<sup>17</sup> Oregon Department of Human Services information states “If toxic algae is swallowed it can cause diarrhea, nausea, cramps, fainting, numbness, dizziness, tingling, and paralysis. Skin contact can cause rashes or irritation. Children and pets are at greatest risk.”<sup>18</sup>

15. Cryptosporidium and Plesiomonas shigelloides are other additional pathogens that proliferate in lakes experiencing eutrophication. As stated by U.S. EPA: "Cryptosporidium has caused several large waterborne disease outbreaks of gastrointestinal illness, with symptoms that include diarrhea, nausea, and/or stomach cramps. People with severely weakened immune systems (that is, severely immuno-compromised) are likely to have more severe and more persistent symptoms than healthy individuals. Moreover, Cryptosporidium has been a contributing cause of death in some immuno-compromised people."<sup>19</sup> Cryptosporidium is associated with sewage or septic loading. As the US Food and Drug Administration states: “Most human P. shigelloides infections are suspected to be waterborne....Gastroenteritis is the disease with which P. shigelloides has been implicated. P. shigelloides gastroenteritis is usually a mild self-limiting disease with fever, chills, abdominal pain, nausea, diarrhea, or vomiting.”<sup>20</sup> Recently, a documented case of Cryptosporidium was reported along Woahink Lake.<sup>21</sup>

Dunes City has found that the above-described conditions have occurred at Woahink Lake and Siltcoos Lake and has initiated a volunteer water monitoring program utilizing residents to monitor protocols for various nutrients or other parameter. The volunteers have been trained by the Volunteer Monitoring Specialist, Water Quality Section, Oregon Dept. of Environmental Quality, and by monitoring specialists with the Siuslaw Watershed Council and the Ten Mile Lakes Basin Partnership. The design, protocols, and implementation of City monitoring program are detailed in the “Draft Dunes City Water Monitoring Project, Quality Assurance Project Plan.”

#### Water Quality Concerns –Woahink Lake

16. Woahink was once classified as Oligatrophic, or nutrient poor, but has undergone significant change relative to its presettlement condition and exhibits significant tropic changes. It now can be considered Mesotrophic with higher nutrient levels, trending toward Eutrophic. This eutrophication brings on greater low oxygen

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<sup>17</sup> Oregon Department of Human Services “Blue-green Algae Advisories.”

<sup>18</sup> Oregon Department of Human Services “Blue-Green Algae Health Concerns in Oregon.”

<sup>19</sup> U.S. EPA “Safe Drinking Water – Guidance for people with severely weakened immune systems.”

<sup>20</sup> U.S. FDA, Plesiomonas shigelloides.

<sup>21</sup> Holly Martin February 27, 2006 Declaration Regarding Cryptosporidium.

- conditions, which trigger further releases of phosphorus from bottom sediments; this feedback loop accelerates degradation of water quality.
17. Changes to Siltcoos and Woahink Lakes have been noted in various studies, including a 1999 study by the U.S. Forest Service, Siuslaw National Forest states: “If nutrient levels continue to increase relatively unchecked by State or County officials, problems such as those in Tenmile Lake south of this watershed will begin to take place. In Tenmile Lake, toxic algal blooms (*Microcystis*) have made water unsafe for drinking or recreation during certain times of year with uncertainty of its long-term effects on public safety and the viability of local tourism.”<sup>22</sup>
  18. A 2001 Portland State University Study notes: “Erosion in the watershed contributes sediment to the arms of the lakes. Continued high sediment loading to Woahink Lake will eventually lead to changes in the lake trophic state and degradation of water quality.”<sup>23</sup> That the study further notes there are “Critical Problems to Address” and that in Woahink Lake, this includes “nutrient loading to the lake to prevent further increase in productivity and the potential for hypolimnetic dissolved oxygen depletion that could lead to irreversible degradation of the lake.”<sup>24</sup>
  19. The City has found many indicators, including increases in phytoplankton and macrophytes, which demonstrate that nutrient levels have gone up in Woahink Lake. An experienced limnologist, and other residents, have noted a clear and “extensive development of submersed aquatic vegetation in the shallower areas.”<sup>25</sup> Macrophyte or aquatic weed development is recognized as an indicator of decreasing water quality by consensus among water-related agencies.
  20. Woahink Lake experienced a well-documented algal bloom during the summer of 2005, which resulted very serious impacts to the water supply.<sup>26</sup> During this time, the monitoring volunteers recorded the lowest secchi disc reading, measuring water clarity, ever seen at the central Atlas monitoring site and this was the lowest level ever recorded there since regular monitoring began in 1989.<sup>27</sup> In describing what they saw, the testers noted that the “water was very green with algae”. Similar blooms in other lakes (e.g. Ten Mile and Mercer Lakes) have been found to be associated with the introduction of sediment or nutrients into the waters.
  21. Water quality monitoring of Lake Woahink through December of 2005 continue to show elevated levels of phosphorus in the range of 10.5 to 12.4 ug/L, well exceeding the U.S. EPA recommended criteria of 8.75. On June 1, 2005, chlorophyll a levels in the lake were 7.6 ug/L, over four times the U.S. EPA

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<sup>22</sup> Siuslaw National Forest, Coastal Lakes Watershed Analysis,” January 1999, pp. 48–9.

<sup>23</sup> Mark Sytsma and Carrie Haag, “Oregon Lake Watch Final Report 2000,” Portland State University (2001), pg 10.

<sup>24</sup> *Ibid.*, at pg 22.

<sup>25</sup> Testimony of John Maciolek, PhD, before the Dunes City Council, March 2, 2006.

<sup>26</sup> Testimony of Susie Nevetta et al., before the Dunes City Council, March 2, 2006.

<sup>27</sup> Testimony of John Maciolek, PhD, before the Dunes City Council, March 2, 2006.

recommended criteria of 1.9 ug/L.<sup>28</sup> Problems continue to plague users of Woahink water with over a dozen complaints about obnoxious smell and taste in April 2006. A sample taken on April 5, 2006 also exceeded the chlorophyll-a criteria recommended by EPA for lakes and ambient water quality criteria recommendations, U.S. E.P.A., Dec. 2000)

22. Little Woahink Lake drains through an important inventoried significant wetland directly into Woahink Lake. It has been documented that the construction of a road located adjacent to Little Woahink Lake in the fall of 2005 and early 2006 produced pronounced erosion, pools of muddy water at culvert locations, and sedimentation flows down the roadside, into the lake and adjoining wetland. The sedimentation from this construction, which was associated with a proposed PUD, was so severe that residents downstream in Woahink Lake had water filters literally clogged with sediment as a result. Any worsening of Woahink Lake waters will impact Siltcoos Lake waters since Siltcoos receives all the flows from Woahink Lake.
23. The Woahink Lake Darlingtonia bogs have been designated as a significant natural area by the Oregon Natural Heritage Program. Woahink lake has two of the best quality Darlingtonia bogs, including one at the north end through which the outlet from Little Woahink Lake enters Woahink Lake, and the other at the end of Summerbell arm.<sup>29</sup>

#### Water Quality Concerns –Siltcoos Lake

24. Even before consideration of new Dunes City development impacts, the waters of Siltcoos Lake are already impaired and at risk. Siltcoos fails certain water quality standards and has been listed as an impaired water body under Section 303(d) of the Clean Water Act. It is listed under Record ID 2773 in DEQ's Water Quality Limited Database and DEQ's TMDL Documents for "aquatic weeds or algae."<sup>30</sup>  
The 303(d) listing of Siltcoos Lake will involve various state agencies and other jurisdictions establishing a water-quality implementation plan to reduce nonpoint nutrient pollution. These plans will consider the cumulative impact from all nutrient sources including groundwater and point and nonpoint pollution sources from the City.<sup>31</sup> Limits on point and nonpoint sources will be controlled through various water quality implementation plans. Land developments that involve more than one acre of disturbed soil will be required to obtain TMDL process permits.<sup>32</sup>
25. The DEQ TMDL process in the Mid Coast Basin has been the subject of a Consent Order resulting from delay in initiating TMDL planning for 303(d) impaired waters. Because of that consent order, DEQ has committed to initiate TMDL processes on all Mid Coast water bodies listed on the 1998 303(d) list within 10 years. (See DEQ Fact sheet Oct. 2001)

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<sup>28</sup> Univ. of Washington Oceanography Technical Services, Feb. 8 and April 11, 2006; and June 6, 2005.

<sup>29</sup> Dunes City Comprehensive Plan (September 1997), Policy B9, Pgs 9 & 40.

<sup>30</sup> Coastal Lakes Watershed Analysis, Siuslaw National Forest Service (January 1999), Pages 51 & 57.

<sup>31</sup> See DEQ TMDL Fact Sheet 2003.

<sup>32</sup> DEQ Fact Sheet – <http://www.deq.state.or.us/wq/wqfact/303d List.pdf>.

Mandatory DEQ–TMDL planning for Siltcoos Lake will occur in the near-future in view of the terms of the consent order. Dunes City will be a mandatory participant in the TMDL process as a "Designated Management Authority" (DMA) having jurisdiction of part of the shores along, and some islands within, Siltcoos Lake. That TMDL planning will likely involve setting pollution loads for phosphorus loading limits from point and nonpoint sources associated with that DMA. Such planning will probably include the pollutant loading from development, including partitions, PUDs and subdivisions. Failure to plan by any DMA is an enforceable violation of state rules under OAR 340-042. The Council further notes that state-wide Goal #6, requires that, "All waste and process discharges from future development when combined with discharges from existing developments shall not threaten to violate, or violate applicable state or federal environmental quality statutes, rules and standards."<sup>33</sup>

26. Development in Dunes City that occurs before implementation of the Siltcoos TMDL process would, via the process of cumulative loading, create a strong likelihood that later TMDL planning efforts would be impacted. To the extent Siltcoos Lake drainage development goes forward before TMDL planning and adds pollutant loading to Siltcoos Lake, later development projects within Dunes City subject to prospective TMDL review must accept reduced loading in order to meet TMDL limits. In the case of Tenmile Lake, TMDL implementation, experience shows that little or no residual loading was left to allocate to later uses that discharge phosphorus. In short, when limits of loading are reached, the TMDL process enforces those limits.

Residential development in Dunes City that is permitted to proceed under existing regulations and absent comprehensive water-quality-protection BMPs and rules may thus harm, impair or impact future residential development subject to TMDL implementation permit. Such pre-TMDL development may also become the subject of TMDL implementation planning and have to further reduce their nutrient loadings. Such impacts would cause substantial harm to Dunes City and represent a great risk of uncertainty to property owners in the future.

27. In the Source Water Assessment for Dunes City, Siltcoos Lake is listed at high risk for turbidity because of "siltation and algae blooms that are both currently causing problems with water filtration."<sup>34</sup> Further, Siltcoos Lake was found to have the highest concentrations of chlorophyll-a, total nitrogen, total phosphorus, and the lowest clarity among the 5 coastal lakes studied in 1996 by Dr. Richard Petersen, Portland State University.<sup>35</sup>
28. Tenmile Lake, a similar Coastal lake south of Siltcoos Lake, is 303(d) listed for the same reasons as Siltcoos Lake. It has experienced toxic algal blooms and was the subject of Oregon Health Division health hazard advisories.<sup>36</sup> The Tenmile

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<sup>33</sup> OAR 660-015-0000(6).

<sup>34</sup> Lane Council of Governments (December 2002), "Source Water Assessment for Dunes City," pg 25.

<sup>35</sup> Richard Petersen, "Trophic Conditions in 5 Oregon Lakes," Portland State University – Oregon Department of Environmental Quality, 1997.

<sup>36</sup> Oregon DEQ Fact Sheet: Tenmile Lakes Septic Systems. <http://www.deq.state.or.us/wq/wqfact/tenmilelakes.pdf>

TMDL development and implementation process has resulted in expenditures in excess of \$ 750,000.

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**ORS 197.520(3)(a) – EXISTING DEVELOPMENT ORDINANCES AND REGULATIONS ARE INADEQUATE TO PREVENT IRREVOCABLE HARM.**

Irrevocable Harm

29. A significant portion of Dunes City residents and thousands of visitors get their water from either Siltcoos or Woahink Lake, or local ground waters, and many individuals use these waters for water-contact recreational purposes and have a justifiable need to know that these waters are safe from serious disease and bacterial infection. Residents require assurance that clean safe potable water will be available in the future, and that the Council will, to the limits of its powers, seek preservation of Siltcoos and Woahink Lake as safe viable water bodies. Public safety and health issues are of paramount concern and repeated reported incidents of water-related illness or disease should not be a prerequisite to implementing a Limited Moratorium seeking improvements to city water-quality related ordinances.
30. New residential growth inevitably entails the addition of common residential chemicals and fertilizers to nutrient and contaminant loading. The Oregon State Legislature has pre-empted local governments from enacting ordinances controlling the use of many such chemicals, limiting community options to protect their waters and wetlands.
31. During the summer of 2005, an algal bloom on Woahink Lake lasted for more than 2 months resulting in "wide-spread" impacts to lake water users with the lake water having a foul "nauseating" smell and taste causing residents to fear failing water systems, to obtain new water filtration and treatment equipment, to obtain and carry bottled water for cooking and drinking, and make numerous calls seeking water system repair persons.<sup>37</sup> Algal growth inside water systems and house system components like sinks and toilets caused lengthy problems. A survey conducted by the Woahink Lake Association, a voluntary association of some lake residents, documented that 25% of the membership experienced problems with their water that were associated with this algal bloom.<sup>38</sup> Some residents literally thought dead fish were caught in their filter screens. State-of-the-art water filtration systems had no ability to alter the taste or "nauseating" odor when waters were used for washing, bathing, toilets or any other purpose. Hair and skin were left with odors after washing. Bottled drinking water did not solve the other customary water needs of households. Mercer Lake and Tenmile Lake have been the subject of algal blooms resulting in severe health advisories, as noted above. An experienced limnologist with thirty years of Coastal

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<sup>37</sup> Testimony of Mark Chandler *et al.* before the Dunes City Council, March 2, 2006.

<sup>38</sup> Nevetta testimony of March 2, 2006.

- experience witnessed toxic blue-green algae blooms in 1991 on Siltcoos Lake and has stated, “anyone that takes his drinking water...should be concerned...”<sup>39</sup>
32. Tenmile Lakes, south of Dunes City, experienced toxic algal blooms resulting in Oregon Health Division Health Hazard Advisories recommending no contact with the waters and no use of the waters for drinking.<sup>40</sup> Such an advisory would severely impact the Dunes City area, parks, visitors and residents.
  33. Since 2004, there has been a reported case of *Plesiomonas Shigelloides* and a case of *Chytrsporidium* associated with Woahink Lake. The symptoms from these cases were sufficient to merit medical intervention and a culturing to identify the organism. These diseases are reportable to the Center for Disease Control and can be associated with drinking water or water-related exposure. The cultured case of *Plesiomonas Shigelloides* concerned a one-year-old infant whose grandmother experienced similar symptoms. They both resided in Dunes City and their domestic water came from Woahink Lake. An Oregon Clinic, Gastroenterology Division representative, relaying test results to the *Cryptosporidium* patient, confirmed that the *Cryptosporidium* infection came from drinking water out of Woahink Lake.<sup>41</sup>
  34. Based upon evidence of algal blooms, some water-related illness or diseases, in Woahink lake, and the 303(d) impaired listing of Siltcoos Lake, and other evidence, the City has ample and responsible reasons to consider prompt and direct action to reduce nutrient loading and other contamination into the lakes to avoid further exacerbating threats to the City's drinking water supplies from the lakes and groundwater and the health and vitality of our small community.
  35. The analysis of Dr. Mark Chernaik shows, conservatively, that Woahink Lake can tolerate an additional phosphorus loading of only 112 kilograms per year (kg/year) before the onset of severe and irreversible eutrophication.<sup>42</sup>
  36. Approval of pending applications for development in Dunes City in 2005 and 2006 would exceed this additional phosphorus loading that Lake Woahink can tolerate if such development proceeds without regard to best management practices (BMPs).<sup>43</sup>
  37. The Oregon Department of Environmental Quality assumes that each conventional septic tank system built in sandy, coastal soils will discharge 0.80 kg/yr to nearby lakes. Application of BMPs can reduce this phosphorous loading by at least 80%. Thus, conventional septic tank systems built without regard to BMPs would discharge an additional 0.64 kg/year per unit (0.80 kg/yr x 80%) compared to septic tank systems that adhere to BMPs.<sup>44</sup>

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<sup>39</sup> Dr. D. Larson, PhD, presentation at Dunes City City Hall, January 28, 2006.

<sup>40</sup> Oregon DEQ Fact Sheet: Tenmile Lakes Septic Systems.

<sup>41</sup> Martin declaration of February 27, 2006.

<sup>42</sup> Chernaik, pg. 15.

<sup>43</sup> *Ibid.*, pg 14.

<sup>44</sup> *Ibid.*, pg 13.

38. A recent study of the U.S. Geological Survey shows that conventional lawn and yard maintenance activities on lakeshore property discharges an additional 0.435 kg/acre/year of phosphorous to nearby lakes compared to lawn and yard maintenance activities from lakeshore property that adhere to BMPs.<sup>45</sup>
39. In 2005, Dunes City received applications for the development of approximately 98 lots in the natural drainage area of Woahink Lake.<sup>46</sup> If these lots were developed at a density of 1.4 acres per unit, then such development would add an additional 122 kg/year of phosphorous ([98 units x 0.64 kg/year per unit] + [98 units x 1.4 acres/unit x 0.435 kg/acre/year]). This exceeds the additional phosphorus loading that Lake Woahink can tolerate. If these lots were to be developed at a density of 1.0 acres per unit, then such development would add an additional 102 kg/year of phosphorous ([98 units x 0.64 kg/year per unit] + [98 units x 1.0 acres/unit x 0.435 kg/acre/year]), leaving virtually no margin (only 10 kg/year of phosphorous) for future development.
40. As of March 2006, partition applications covering 25 acres and comprising 8 lots have been submitted.<sup>47</sup> Development of these lots (even at this low density) would add an additional 16 kg/year of phosphorous ([8 units x 0.64 kg/year per unit] + [25 acres x 0.435 kg/acre/year]). Therefore, development of applications submitted in 2005 and so far in 2006 would discharge an additional 118-138 kg/year (102-122 + 16 kg/year) of phosphorous. This exceeds, by a considerable extent, the additional phosphorus loading that Lake Woahink can tolerate.
41. It is clear that development of less than one-quarter of the inventoried buildable lands in Dunes City (428 lots)<sup>48</sup> cannot proceed without jeopardizing the natural resources of Dunes City. Phosphorus discharges from development already subject to pending applications exceed the additional phosphorus loading that Lake Woahink can tolerate, leaving no margin for future development.
42. It can be further concluded that there is a high degree of probability that Woahink Lake is on the verge of irrevocable harm when considering the evidence of septic systems failures such as the City Hall, the wide-spread algal bloom of 2005, sedimentation and direct water impacts from documented examples of poor development planning, and lake chemistry associated with phosphorus recycling. Additionally, there is a high degree of probability that Woahink Lake will shift to an irreversible eutrophic condition if new development and occupation were to occur in Dunes City without regard to reducing loading from best management practices when viewing the evidence of algal blooms, or anaerobic water chemistry, and estimated loading from such development.

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<sup>45</sup> U.S. Geological Survey (2002) "Effects of Lawn Fertilizer on Nutrient Concentration in Runoff from Lakeshore Lawns, Lauderdale Lakes, Wisconsin." USGS Water-Resources Investigations Report 02-4130.

<sup>46</sup> This includes the Little Woahink planned unit development (PUD) consisting of 42 units. If the Little Woahink PUD is resubmitted in 2006, then this would add another 42 lots in 2006 rather than 2005.

<sup>47</sup> These 8 lots would likely be further partitioned or subdivided.

<sup>48</sup> Lane Council of Governments (2005), "Dunes City Buildable Lands Inventory."

Run-off from developments in Dune City and in adjacent areas where deforestation has occurred have caused significant increases in turbidity. This has been documented in detail for the north arm of the lake due to activities in 1997–98 and now in 2005–2006 for Little Woahink Lake.<sup>49</sup> The North arm of Woahink has also shown major algal blooms in 2006.<sup>50</sup> It follows that any developments that do not strictly follow BMPs will result in run-off into the lake with excessive silt and nutrients.

### Existing Ordinances and Regulations Are Inadequate

43. The City Council notes that its comprehensive plan clearly states the need for the best available standards of protective measures, “Due to the scenic and recreational character of the area and due to the fact that both Woahink and Siltcoos Lakes are sources of drinking water the highest control standards should be maintained.”<sup>51</sup>

Further, Goal Six of Oregon's Statewide Planning Goals & Guidelines states: “To maintain and improve the quality of ...water and land resources of the state: All waste and process discharges from future development, when combined with such discharges from existing developments shall not threaten to violate, or violate applicable state or federal environmental quality statutes, rules and standards. With respect to the... water and land resources of the applicable... river basins described or included in state environmental quality statutes, rules, standards and implementation plans, such discharges shall not (1) exceed the carrying capacity of such resources, considering long range needs; (2) degrade such resources; or (3) threaten the availability of such resources.”<sup>52</sup>

The need for measures necessary to conserve the quality and beneficial uses of the water resources of the City is further articulated in its Comprehensive Plan, “Nonpoint Source Pollution (NPS) can be defined as discharged pollution (such as suspended solids, sediments, and nutrients) which enter surface water and groundwater in a diffuse manner that degrades water quality. NPS is often caused by poor land use practices and can include erosion, improper use of herbicides and pesticides, polluted urban runoff, and poor maintenance of septic tanks. The degradation occurs with the accumulation of many small actions but the combined cumulative impact can be serious. NPS is one of the major sources of contamination the city will have to address.”<sup>53</sup> However current ordinances fail to adequately address these concerns that are expressed

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<sup>49</sup> Testimony of G.J.Wasserburg PhD, before the Dunes City Council March 2, 2006.

<sup>50</sup> Testimony of Mark Chandler *et al.* before the Dunes City Council, March 2, 2006.

<sup>51</sup> Dunes City Comprehensive Plan (September, 1997), Chapter II.B – Population and Economy, p. 27.

<sup>52</sup> OAR 660-015-0000(6).

<sup>53</sup> Dunes City Comprehensive Plan (September, 1997), Chapter IV.B.2a(vi), p. 49.

nearly identically on page 1.1 of the comprehensive DLCD and DEQ document “Water Quality Model Code and Guidebook.”

44. There is an inherent uncertainty about how much additional phosphorus would shift Woahink or Siltcoos Lakes (all Woahink waters draining into Siltcoos Lake) to eutrophic conditions. In these cases, responsible lake management science stresses the need to stay far away from the threshold. The City agrees with the statement of noted limnologist Dr. Stephen Carpenter, “Hence the best management strategy is a precautionary one that stays away from situations that could cause a regime shift. ... Successful approaches for managing ecosystems subject to regime shifts seem to combine learning with precaution. ... Precaution implies avoidance of conditions that are likely to produce costly or damaging regime shifts.”<sup>54</sup>

Rising nutrient levels, the recent occurrence of algal blooms, increasing weeds, and presence of disease causing pathogens in our lake waters are predictable indicators of irrevocable harm.

A. Subsurface Waste Disposal

45. Dunes City has no wastewater treatment facilities. Residents and commercial businesses exclusively use subsurface waste disposal systems for waste treatment. Dunes City has no septic design criteria, installation standards or ordinances of its own. It generally defers to the standards or criteria set by Lane County or the State of Oregon that do not reflect best practices for the highly permeable soils and nearness of the lakes and wetlands. Higher standards and criteria are needed to reduce nutrient flows to ground waters, wetlands and the lakes.

Dunes City’s recently adopted Septic Ordinance<sup>55</sup> exhibits a general lack of scientific criteria and standards which could be applied in a site specific manner, enforced with an initial system inspection and follow-up procedures, and with meaningful penalties for non-compliance. A resolution is needed to implement the ordinance, after which it will take some time to set up and implement the record-keeping needed to monitor its performance. These tasks can be put into effect well within the limited moratorium time frame.

Numerous recent advances in the efficiency of subsurface systems in removal of detrimental nutrients bring acceptable standards within reach of an adequate set of ordinances.

B. Soil Erosion

46. The Dunes City Comprehensive Plan mandates that the city upgrade ordinances and enforcement of such ordinances to address erosion problems. To date,

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<sup>54</sup> Carpenter, pg. 17.

<sup>55</sup> Ordinance #173, adopted March 9, 2006.

- however, erosion control ordinances have not been strengthened and the proposed revision (Ord. 155) of land use ordinances does not do so.
47. Dunes City ordinances lack clear prohibitions against soil erosion as well as meaningful and clear standards or mechanisms to prevent, limit or control surface erosion. There are no provisions for effective site review or erosion plans. The primary ordinance, 154.05, does not prevent erosion, it merely declares erosion "detrimental" in certain instances. In all instances where erosion remains on the lands of the project owner it is not even "detrimental." Further, under ordinance 151.052, such language as "As soon as practicable" and "where necessary" provide neither standards nor useful guidelines for development. Clearer ordinances have not been developed in the nine years since the comprehensive plan was updated and are now not being considered in the proposed ordinance revisions.
  48. Other municipalities or model codes have examples of effective erosion control ordinances with specific standards and criteria for water quality protection. The Department of Land Conservation and Development and Oregon Department of Environmental Quality Manual "Water Quality Model Code and Guidebook" (2000) (WQMCAG) is one model, which has been adopted by the city of Troutdale, Oregon.<sup>56</sup>
  49. Troutdale's code includes specific standards for development in local specific areas draining into water bodies vital to the community.<sup>57</sup> It employs the requirement for a site-specific erosion control plan for any development exceeding a minimum stated size or with slopes exceeding 5%. Developments falling below these thresholds are required to utilize a standard defined erosion control plan. Further, both plans include strict standards for the length of time disturbed soils can be exposed.
  50. The WQMCAG publication and Troutdale code include compliance time schedules of planned measures, identify a specific person responsible for carrying out the plan, and mandate daily inspections during rainy periods and record-keeping requirements. Higher standards of treatment can be required for developments of over 10 acres or if steep or constrained slopes are involved. A financial guarantee is required to secure implementation of the erosion control plan except in the case of very small developments.
  51. Curry County, Oregon very recently adopted amendments to its zoning ordinance that require new development to file an erosion prevention and sediment control plan.<sup>58</sup> This requirement applies to any development that disturbs 800 sq. ft. or more soil, or creates the lesser of 2000 sq. ft. or 25% of lot area of impervious surface. This plan "shall include specific interim and permanent measures that will prevent erosion and control sediment." It also must include strategies to minimize removal of vegetation and must be prepared by a geologist for slopes over 15%. Another key feature of Curry County's new code is that final

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<sup>56</sup> City of Troutdale Development Code, Section 5.600.

<sup>57</sup> *Ibid.*, Sec. 5.616.

<sup>58</sup> Curry County Ordinance No. 06-02, effective March 6, 2006.

subdivision plats and lot titles are recorded with the requirement that all development must be consistent with the erosion and sediment plan and subsequent owners are obligated to maintain improvements made as part of the plan.

52. No provisions for a site specific erosion control plan in the current or proposed revised Dunes City Code puts the beneficial use of our water at grave risk and risks further erosion problems, such as is currently taking place at Little Woahink Lake.

C. Site Review

53. Dunes City ordinances call for site review on development of slopes over 12% grade and “may require” an engineer’s report on these slopes.<sup>59</sup> Without the specific requirement of an expert engineer’s report, the City is exposed to great risk of erosion damage. Further, no upper limit is specified on slope grades beyond which no development is allowable. At present there is no language that addresses standards for the percentage of area disturbance on different gradients. Since destructive erosion and landslides increases dramatically with the gradient, this lack of criteria puts the city’s water resources at risk for sedimentation and increased nutrient loading. The WQMCAG cited above, and developed for the state of Oregon, suggests code that applies density restrictions on constrained slopes (w% to x% gradient) and prohibits development on newly recorded steep slope lots (y% to z% gradient), the local jurisdiction applying appropriate gradients.

This model code requires the following for development on constrained slopes:

1. Impervious surface limits
2. Cut and fill limits
3. Vegetation standards
4. Submission of following documentation:
  - A. Hydrology and geology reports
  - B. Soils report
  - C. Grading plan
  - D. Vegetation report
  - E. Certification of runoff and sedimentation levels

D. Non-point Source and Stormwater Management

54. The Dunes City code has no requirement for stormwater or erosion control plans nor does it require initial or final inspections regarding either of these elements of proper planning. Dunes City does not utilize an organized or comprehensive approach to planning, permitting, and review processes regarding erosion control, sedimentation or surface water or storm runoff. The details of ordinance

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<sup>59</sup> Section 156.106(B)(1), Dunes City Code. (Ordinance 50, July 13, 1978).

- 156.218.(C) “Criteria for site review evaluation.” makes no mention of planning for stormwater.
55. The Dunes City comprehensive plan identifies non-point source pollution as a major concern that is often the product of poor land use practices; and calls for new development, including road building, to provide a stormwater management system.<sup>60</sup>
  56. Dunes City lacks an ordinance addressing the prohibition of fertilizer use containing phosphorus within its minimal 50-foot riparian overlay zone or within its 1000 foot sensitive zone. And the use of these fertilizers in such close proximity to lakes, streams, and wetlands is very likely a significant source of detrimental nutrient loading to these water bodies.
  57. Dunes City’s regulations on drainage (Ch. 155.104) require only “drainage facilities... adequate for the purpose of proper drainage of the subdivision area or areas affected thereby.” This provision falls far short of the comprehensive plan mandate “shall provide a storm water management system consistent with sound engineering practice.” The objective of compliance with this ordinance would be simply to get the water off of the subject property and surrounding area. Further standard of “the preservation of healthful and convenient surroundings and conditions for residents of the subdivision area and the benefit of the general public” lacks specific guidelines or standards and is meaningless and unenforceable. Further, it fails to address consequences to down stream properties or the water resources of the city of “drainage” of sediment and nutrient-laden runoff. Standards are needed to ensure the well being of adjacent properties.
  58. A survey of the ordinances of other jurisdictions points to the widespread adoption of comprehensive and specific stormwater management plans. This is particularly applied in municipalities and counties with valued water resources. In fact the U. S. Environmental Protection Agency is now requiring small cities that operate regulated separate storm sewer systems to develop, implement, and enforce a program to reduce pollutants in post-construction runoff in any development that disturbs one acre or more of soil. While Dunes City doesn’t fall under the requirements of this rule; the City would benefit from best management practices that are required of affected small cities.
  59. Ordinances utilizing Best Management Practices (BMPs) can be developed by adoption of specific structural and non-structural runoff mitigation measures or by performance-based standards. Many structural BMPs are directed at improving infiltration of runoff into the ground. For the highly permeable sandy soils and short distances to lake waters in Dunes City, this approach may serve only to introduce pollutants into our drinking water aquifer. Structural BMPs that integrate vegetative uptake of nutrients and other pollutants would be effective measures for the City. The City must specify the use of vegetated conveyances to

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<sup>60</sup> Dunes City Comprehensive Plan (September, 1997), Chapter IB, Policy B9, page 7 and Chapter IV.B.2.a.(vi), page 49.

- the maximum extent possible. It should further interpret “maximum extent possible” as indicating the need for site-specific reviews.<sup>61</sup>
60. The City Council notes that other jurisdictions routinely provide for a systematic storm water management approach. Thus, the Waukesha County, Wisconsin, Storm Water Management and Erosion Control Ordinance provides: “Experience has shown that it is important that storm water be included in the early phases of site planning, because it can have major impacts on the final layout, design and landscaping plans.”<sup>62</sup>
  61. Waukesha County requires separate grading, stormwater, and erosion control plans with final inspections to check for compliance with these required plans. Best management practices are an integral part of these plans, with maintenance agreements to guarantee that installed treatment facilities are kept fully functional. A final site inspection is required in the Waukesha County ordinance.
  62. The state of Maryland specifies a number of structural and non-structural stormwater management measures, and gives local jurisdictions the latitude to utilize one or more of them in their mandated stormwater management plan.<sup>63</sup>
  63. Vegetative biological uptake structural Best Management Practices (BMPs) serve the dual purpose of filtering sediments and removing nutrients from stormwater. These measures include Bioretention/Rain Gardens, Grassed Swales, Vegetated Filter Strips, Berms, Wet Meadows, Wet Basins and Constructed Wetlands. These standards can be established with a matrix of dozens of native species to be used in vegetative stormwater management measures in different soil and moisture conditions.<sup>64</sup>
  64. Non-structural BMPs take the form of development policies such as limitation on the area of impervious surface allowed in new construction. (See the municipality of Stratham, New Hampshire and Whatcom County, Washington, specifying limits of 10 to 20% impervious coverage; See Aquifer District Ordinance, Stratham, NH and Whatcom County Code Sec. 20.71.300)
  65. A limitation on impervious surface establishes a larger vegetated surface in any given area. This attenuates surface flow velocity and volume, and increases sediment and nutrient removal by increasing biological uptake of nutrients.
  66. The City Council notes a performance-based approach to surface water management relies on quantitative analysis of surface water to measure parameters such as nitrogen, phosphorus, and total suspended solids. Under a performance-based approach these specified loads can be achieved through a variety of BMPs. The high permeability and proximity to drinking water sources

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<sup>61</sup> See Section 302 of the Phase II Stormwater Model Ordinance for North Carolina.

<sup>62</sup> Waukesha County Storm Water Management and Erosion Control Ordinance, Waukesha County Code – Chapter 14, Article VIII.

<sup>63</sup> Code of Maryland Regulations, Sec. 26.17.02.08.

<sup>64</sup> See Native Species for Use in Vegetative Stormwater BMP’s, Natural Land Trust, Pennsylvania, where over 40 species area used.

of the soils in Dunes City necessitates either a well proven technological approach or a performance based approach or a combination of both.<sup>65</sup>

E. Re-vegetation

67. Dunes City Code Section 151.048(D) "Excavation and Grading" addresses re-vegetation but states simply: "No graded or excavated surface shall be left abandoned or without re-vegetation for more than one year..." The WQMCAG model, as adopted by Troutdale, illustrates a reasonable standard: "During the rainy season (November through May), soils shall not be exposed for more than seven consecutive (7) days. All disturbed land areas which will remain unworked for 21 days or more during construction, shall be mulched and seeded."

Dunes City's Code exhibits a general lack of criteria and standards and a failure to employ proven best management practices, instead of standards that are applied in a site specific manner, enforced with initial site review as well as follow up procedures, and with meaningful penalties for non-compliance.

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**ORS 197.520(3)(b) – THE MORATORIUM IS LIMITED TO AVOID UNREASONABLE RESTRICTION OF NEEDED HOUSING.**

68. The City finds that 18 housing units will be needed each year to meet the demands of population growth.<sup>66</sup> Dunes City's vacancy rate of 16 percent suggests ample housing is available. As of March, 2003, 15 homes and 10 lots/vacant land were listed for sale. The average home construction rate from 1998 to 2004 was 12 homes, with construction permits for 11 single family dwellings and four mobile homes being issued in 2005. Three preliminary subdivision plats were also approved in 2005, adding 34 new building lots. A moratorium will have no effect on the City's supply of commercial and industrial facilities as the City has 16.6 acres of Commercial designated land and five of these acres are vacant. There is no recent occupation of properties for industrial use to demonstrate additional need. Nor will the moratorium on City acceptance of additional partition/PUD/subdivision development proposals place any restrictions on county or special districts.

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**ORS 197.520(3)(c) – ALTERNATIVE METHODS OF ACHIEVING THE OBJECTIVES OF THE MORATORIUM ARE UNSATISFACTORY.**

69. One of the goals of the City is to establish water-protection through related ordinances for a meaningful portion of available buildable lands, and that the massive surge in development applications requires expedient and decisive action by the City. The City Council believes that a coordinated set of Ordinances governing private property development as well as comprehensive storm water management and vegetative practices affecting city lands avoid a piecemeal

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<sup>65</sup> See, for instance, the Chapter 81 of the Tahoe Regional Planning Agency Code of Ordinances.

<sup>66</sup> Lane Council of Governments (2005), "Dunes City Buildable Lands Inventory," pg. 23.

approach to protecting water-quality values. The City Council also believes that ordinance concepts should not be viewed in isolation. Issues like sediment surges due to storm water surging requires a coordinated approach to surface water management or to avoid ground water contamination.

70. The City has inadequate planning staff with expertise that can assist in reviewing and drafting such a new comprehensive ordinance set, and so relies on volunteers. Based upon past experience with the CCI process, or committee process, redrafting single ordinance subject areas may take several years. The partial redraft of procedural standards regarding zoning in Title 155 has taken several years and remains incomplete. The draft of the new and limited septic inspection ordinance took over 3 years to complete. Due to the present serious concern of many citizens, a major effort is now underway to identify the explicit measures and the means of implementing them within the time frame of the proposed moratorium.
71. In view of the national, regional and state importance of these area waters and parks, including the Dunes National Recreation Area, the City ordinances are now inadequate to implement Oregon's Statewide Planning Goals #5 "To protect natural resources and conserve scenic and historic areas and open spaces."<sup>67</sup> and Goal 17, Coastal Shorelands; "Land use plans, implementing actions and permit reviews shall include consideration of the critical relationships between coastal shore lands and resources of coastal waters ... agencies shall within the limit of their authorities maintain the diverse environmental, economic, and social values of coastal shore lands and water quality of coastal waters. Within those limits, they shall also minimize man-induced sedimentation in estuaries, near shore ocean waters, and coastal lakes."<sup>68</sup>
72. Residential growth inevitably entails uses of common residential chemicals and fertilizers resulting in an increase of nutrient and contaminants loadings. The City also finds that the Oregon State Legislature has pre-empted local governments from enacting ordinances controlling the use of many such chemicals thereby limiting the options of communities trying to protect their groundwater and wetlands; Ordinances controlling chemical use have great difficulty in enforcement and compliance. More complex ordinances utilizing vegetative, or native vegetative concepts provide an incentive to use less chemicals or fertilizers use and are more effective. Those ordinances should be part of a comprehensive approach to vegetative aspects of nutrient and sediment controls.
73. The City Council adopted a septic system maintenance ordinance on March 9, 2006. This ordinance represents only the initial stages of a septic maintenance program that will take 5 years to fully implement. Unfortunately, the new ordinance will annually address a very small portion of the nutrient loading problem, since inspections do not have to occur in many instances for up to five years. Because the ordinance has no design or installation standards it does not reduce the relevant water quality impacts in a comprehensive manner.

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<sup>67</sup> OAR 660-015-0000(5).

<sup>68</sup> OAR 660-015-0010(2)].

74. The voters of Dunes City have rejected the creation of a municipal water system three times.<sup>69</sup> According to the City's Comprehensive Plan, residents are served by small community water systems, and more than 200 homes pump water directly from the lakes for domestic use.<sup>70</sup> The remainder utilize either wells or springs. The estimated cost of a water supply system is placed at approximately \$4,914,000 in 1992 dollars. The City finds that 100,000 lineal feet of piping, with a current cost of approximately \$100.00 per lineal foot installed, would cost in the neighborhood of \$10,000,000.<sup>71</sup> An adequate treatment plant would add substantially to this cost as would the personnel to staff and maintain it. The City's Comprehensive Plan cites the following conclusion of the Lane County Coastal Resource Inventory "...*The cost of installation of a sanitary sewer system is well beyond the means of the local communities in the lakes study area.*"<sup>72</sup>
75. Disincorporation of the City in order to establish large lot sizes under county minimum lot size rules is not an alternative to protecting water values. Attempting to establish larger lot sizes would result in Measure 37 claims for which there are no known funds to pay waivers.

Any number of alternative scenarios to mitigation of the pollutant loads to our lakes, wetlands and underground waters are possible. These alternatives could include an ordinance restricting use of fertilizers in the riparian zone or sensitive areas abutting the lakes, a vegetation management ordinance, public education programs, or other measures. While existing sources of pollutants are certainly significant and must be addressed where possible, the critical level of nutrient loading could be surpassed very soon, as was emphasized by the work Dr. Mark Chernaik. The limited staff time and resources of the city need to be focused on the development and implementation of adequate ordinances, which have been previously referred to. This urgency and needed focus reduces the value of all alternative approaches.

**ORS 197.520(3)(d) – THE NATURE AND SCOPE OF THE IRREVOCABLE PUBLIC HARM ARE SUCH THAT IT OUTWEIGHS THE ADVERSE EFFECTS ON OTHER AFFECTED LOCAL GOVERNMENTS THAT MAY RESULT FROM THE MORATORIUM.**

76. The moratorium is limited in scope, excluding development on single lots and land development projects already approved or for which applications have been received. These exempted lots (in excess of 80) exceed the usual or customary housing increase for the initial limited moratorium period as well as any possible extension. Thus there should be no shift in housing impacts to any other locality, including Lane County or the City of Florence, the only potentially affected local governments.

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<sup>69</sup> Dunes City Comprehensive Plan (September, 1997), Chapter IV.B.2.a.(ii), pg 47.

<sup>70</sup> *Ibid.*

<sup>71</sup> Testimony of Ralph Farnsworth before the Dunes City Council, March 2, 2006.

<sup>72</sup> Dunes City Comprehensive Plan (September, 1997), Chapter IV.B.2.a.(i), pg 46.

77. The limited moratorium does not single out industrial or commercial properties and the current inventory of those lands exceeds past demand, so those lands remain available for development during any limited moratorium. Accordingly, there is no impact or shifting concerning those uses. The City has 16.6 acres of commercially designated land, 5 acres of which are vacant.<sup>73</sup> There is no indication of projected future industrial use. There is little commercial development except for a post office and tourist related industries in the Westlake area, and along Highway 101, all of which are well established. The imposition of a moratorium will not adversely affect the City's ability to provide for employment or economic development since no development of any kind offering employment is the subject of this moratorium.
78. Dunes City has no public facilities, services or schools, so the limited moratorium will have no impact regarding those issues and will not shift any burden on to other localities. Approximately 33 percent of the City's population is over age 55,<sup>74</sup> and a large percentage of retirees will not impact what are essentially no public facilities or services. This large percentage of senior citizens has a stabilizing effect in that their demands for schools, police, and other public services are low, while their income is steady. Florence offers public schools, a public library, an events center and a hospital, and there is no showing that those services will be impacted by the limited moratorium.

**ORS 197.520(3)(e) – THE CITY HAS THE RESOURCES TO DEVELOP ORDINANCES OR PLANS WITHIN THE TERM OF THE MORATORIUM.**

79. The community, by example, has spent in excess of 2000 hours through the CCI process and Water Quality Committee to revise part of its ordinances dealing with subdivision and zoning, and septic issues, and shows a repeated commitment to assist in improving ordinances. Meetings of planning bodies like the Water Quality Control Committee and the Planning Commission are attended and at one recent meeting a percentage of Dunes City population equivalent to 4000 people from Eugene were in attendance.
80. The chair of the Siuslaw Soil and Water Conservation District confirms the SWCD has established relationships with the City and experience in implementing Coordinated Resource Management Planning programs to further water-related planning processes, and that the SWCD could assist in the funding application process to obtain assistance in implementing the purposes of the temporary moratorium.<sup>75</sup>
81. The Oregon State DEQ is designating a special contact representative position to coordinate related water-quality related matters with Dunes City; and that this representative has funding resource information, has worked with the City and the Woahink Lake Association for years, and would welcome a funding proposal.

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<sup>73</sup> "Dunes City Buildable Lands Inventory," pg. 23.

<sup>74</sup> *Ibid.*, pg. 33.

<sup>75</sup> Testimony of Kevin Carroll before the Dunes City Council, March 2, 2006.

82. The DEQ conducted a Source Water Assessment for the Alderwood Water Development Company that identifies risks to local drinking water.<sup>76</sup> In addition, in 2002 the City adopted a Drinking Water Source Assessment plan prepared by the Lane Council of Governments.<sup>77</sup> These assessments document the need for further planning and serve as a pre-qualification step for Dunes City as an applicant for assistance.
83. The City has access to Lane Council of Governments (LCOG) staff that have significant national experience in development of water-quality-related BMPs and standards. LCOG has experience in obtaining grants to assist in ordinance development and has assisted the City with recent revisions of zoning and subdivision ordinances and, in 2002, prepared the "Dunes City Drinking Water Source Assessment and Potential Planning Strategies."
84. The Tenmile Lake TMDL process generated significant funding sources through DEQ and the Oregon Watershed Enhancement Board, and the Siltcoos Lake 303(d) listing situation should facilitate assistance in obtaining similar funding for Dunes City efforts.
85. The City Council finds that through the efforts of one city councilor an initial funding request has gone out to state agencies that most commonly provide the needed grants. Additionally that LCOG staff can enable the City to pursue immediate funding initiatives using these and other sources used by LCOG in the past.
86. The City Council finds that a process is underway to identify problems. Alternative ordinance concepts, examples and areas of concern have been identified, and the Council believes that 120 days provides sufficient time to prepare, hold hearings if needed, and adopt interim plans or ordinances, and related measures, necessary to meet City needs. Such efforts will lead to the adoption of comprehensive water-quality-related management procedures and practices.
87. The Dunes City Budget Committee has approved a total of \$8,500 for Ordinance compilation and revision in the July 1, 2006 to June 30 2007 fiscal year. This includes \$3,500 from the general fund and \$5,000 from planning assistance funding. The Budget Committee has also approved an allocation of \$129,000 to general operating contingencies; some part of which could be utilized in development of ordinances and regulations needed for adequate protection of the water resources of the city. Residents of the city have pledged, as an advance, an amount of \$ 3000 to begin immediate work on ordinance review and revision. This amount would be available to Dunes City by May 15, 2006 if the development moratorium is enacted, and reimbursed by July 15, 2006.
88. During the 120-day limited moratorium the City Council, in conjunction with volunteers (e.g., Water Quality Control Committee) and through current contractual arrangements with LCOG, will be able to:

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<sup>76</sup> Oregon DEQ and Oregon Department of Human Services, "Source Water Assessment Report: Alderwood Water District," (September 2001)

<sup>77</sup> "Source Water Assessment for Dunes City."

- a. Adopt and implement appropriate code changes to require higher standards for new subsurface waste disposal systems.
  - b. Identify portions of the current city code that need to be amended to incorporate best management practices regarding erosion control, storm water runoff, and vegetative stabilization during construction activities.
  - c. Fully implement “Septic System Maintenance Ordinance 173” to mitigate nutrient loading that will inevitably increase to some extent with any additional development.
  - d. Begin the application process to identify funding sources for grants to assist the city in developing a comprehensive scheme of water quality control through amendments to the Comprehensive Plan and land use regulations.
  - e. Conduct a census of key areas of the lakeshore that require erosion control and/or riparian protection.
  - f. Conduct an education outreach effort to alert citizens as to the dangers of inadequately maintained water and septic systems and improperly conducted development, along with information for immediate voluntary steps for improvement that are available.
  - g. Develop and implement a plan for cooperation and regular meetings with other governmental bodies responsible for lake quality and potential pollution sources not under the control of Dunes City.
  - h. Adopt and begin the implementation of temporary, preventive code standards for erosion and sediment control and will establish administrative mechanisms for appropriate engineering oversight to confirm compliance.
89. The City Council has assessed the resources available to the City and adopts the Proposed Timeline and Budget, Attachment A to these Findings, for meeting the objectives of the Ordinance 181.

## **CONCLUSIONS**

- 1. The City Council finds that a moratorium is not only necessary to address and mitigate the impact of new development upon water quality, but also necessary to provide the time and resources necessary to address ways to limit the continuing impact of existing development, including implementation, enforcement and refinement of septic ordinance 173, advancing the time table for compliance with same, and establishing programs of outreach to and education of existing property owners concerning the importance and methods of achieving slope stabilization,

low impact landscaping, stormwater management, limitation of riparian zone activities, and septic maintenance and upgrade. The City Council finds that without a building moratorium, it will have neither the time nor resources to make any significant progress towards these goals, as its staff and other resources will be consumed meeting statutorily mandated time tables for review and approval of new development applications.

2. The City Council finds that added development and residential use would result in actual and irrevocable damage through impacts on lake waters, groundwater, and wetlands.
3. Current ordinances governing such development and residential use are inadequate to avoid irrevocable public harm should applications for development be submitted and the uses commence.
4. The City finds that a limited moratorium is necessary to prepare and adopt interim plans and / or comprehensive regulations to prevent such impacts on important water-quality values, and to further existing efforts to secure federal and state funds for ordinance improvement.

The temporary moratorium, as already limited, is in the public interest and necessary, and that the failure to act immediately, in view of the large land development rush of completely new historical dimension for the City, would be unconscionable as well as contrary to twenty years of water-related studies, reports and recommendations from almost any agency having jurisdiction or authority in these types of matters.

5. The City Council concludes that irrevocable public harm results from impairment to important domestic drinking water and recreational water-contact sources of this magnitude, in light of the city's responsibility to protect water-related qualities and values, and prevent irreversible impact to the already special impaired status of Siltcoos Lake.
6. The City Council rejects the proposition that more human health incidents or more toxic algal blooms are necessary before a community may find a common vision to protect its most important resource: clean lake and ground waters.