DEVILS LAKE SEWER PROJECT OVERVIEW

When people use water, it does not go away. It becomes wastewater or sewage. The average water usage of the 1150 residences around the Lake (495 full-time and 655 part-time) is 89 gallons per day. That's over 37 million gallons per year. Fortunately, 50% of those residences are already on sewer and the contemplated project will convert an additional 442 predominantly single family homes to sewer. The remaining small percentage can be converted to sewer through local improvement districts. This has already happened in one area on the west side of the lake.

Wastewater contains viruses, bacteria, and other pathogens (disease organisms), nutrients (nitrogen, phosphorus, etc.), solids (inorganic and organic), chemicals (from cleaners, disinfectants, medications, etc.) and water. This wastewater must be treated. This may seem obvious, but implementing effective and economical treatment systems is not a quick and easy task. Wastewater treatment systems follow one of two general concepts: Decentralized systems (septic systems, including advance treatment or "alternative" systems) that treat the waste water on site; and centralized systems such as gravity, low pressure, and vacuum sewer systems that pump the wastewater to a centralized treatment plant.

Around Devils Lake, wastewater from virtually all the homes on the north and east sides of the lake is treated by septic systems; on the west side, mostly by gravity sewer with some areas still utilizing septic systems. Properly functioning septic systems are very effective at filtering out viruses, bacteria, and other pathogens and some chemicals. However, even properly functioning septic systems do not stop nitrogen and phosphorus from migrating into our lake.

Nitrogen and phosphorus, along with sunlight, are the ingredients necessary for algae blooms. There are three sources of nitrogen and phosphorus that we can control: fertilizer application, storm water runoff and septic systems.

To be effective we need to implement programs that address all three of these sources or more nitrogen and phosphorus will continue to enter our lake. If we don't, the resulting algae blooms will only worsen and our water quality will continue to be adversely affected, suppressing recreational use, and depressing property values. Devils Lake has been estimated to have an annual economic impact of $63 Million in Lincoln City. Loss of this revenue would affect the financial interests of almost everyone in our community in some way.

Fortunately, Lincoln City's sewer treatment plant has sufficient capacity to accept all of the wastewater generated by the homes around Devils Lake. So, we need a transport system to take the wastewater away from the lake to the treatment plant. Low-pressure sewer is the most effective and economical technology for meeting this need. A Devils Lake Pre-Design Sewer Report has already been prepared at a cost of $50,000 and is available online at www.dlwid.org/projects. The DLWID recently formed a sewer committee to help the DLWID inform and work with the community regarding implementation of a low-pressure sewer system for Devils Lake.

The DLWID is simultaneously pursuing an aeration project intended to reduce the effects of nitrogen and phosphorus already in the lake. A low-pressure sewer system will complement this aeration system by reducing the amount of nitrogen and phosphorus flowing from outside the lake into the lake.

It should be mentioned that the capacity of the system proposed in the pre-design report would be limited to the number of residences that already exist, with an allowance for approximately 19% growth.

Available water infrastructure is the main limiting factor on development as the City of Lincoln City will only permit the 85 lots with existing mainline taps to connect to water. In addition, the system as designed is limited by physical factors (flow distance and velocity, pressure tolerances, and elevation changes) to approximately the same number of existing lots and homes. In short, installation of the proposed low-pressure sewer system will not allow for any significant increase in development on the north and east sides of the lake.

As noted above, we also want to restrict nitrogen and phosphorus inflows into the lake from storm water runoff. This can be accomplished, at very little additional cost, by the installation of storm water separators as part of the sewer project. The sediments in storm water runoff contain nitrogen and phosphorus. Storm water separators are simple mechanisms installed at points of heavy drainage to separate out the sediments from storm water inflows. A storm water separator was installed as part of the low-pressure sewer system that was recently installed to serve 50 home sites near Regatta Park.

Of course, one big challenge is that it will take a lot of money to replace our septic systems with sewer and the community will have to determine whether this solution is financially acceptable. Essentially, we have to decide whether it will cost more to do nothing and continue to suffer the economic losses described above (plus the costs of maintenance and, eventually, replacement of our septic systems); or pay the cost of the design, construction, operation, and maintenance of a new sewer system.

We have two estimates for the construction cost for the "backbone" of a low-pressure system for the north and east side areas of the lake. They are $4.7 million and $7 million. The "backbone" includes only the main line in the road in front of the home and a lateral line from the main line to the homeowner's property line. The extension of the sewer line from the property line to the home and the balance of the costs (pump and tank, hook up, systems development charge, and decommissioning of the existing septic tank) will be in addition to this amount.

Based upon the preliminary information we have at this time, our best rough estimate of the total cost of the backbone and the additional costs mentioned above for a functioning low pressure system would be $25,000- $35,000 per property owner. These costs can be financed over 20 years, resulting in a monthly payment of anywhere between $130 to $200 per month per property owner, depending on the total cost and interest rate. Comparing these costs to future septic system costs, it should be noted that replacement of aging septic systems increasingly requires an advanced treatment system in areas with high ground water levels, poor soils, shallow soils over clay or bedrock, or limited space. All of these conditions exist around Devils Lake. The table at Ever Green Septic Design (link: egsd.com/stypes.html #advtcomp) shows that the lifetime cost of these advanced treatment systems is comparable to the above – described estimated total costs for sewer per homeowner.

There will undoubtedly also be monthly user fees for a new sewer system, just as there are user fees charged to sewer users inside the city.

Someone must be responsible for ownership, monitoring, operation, maintenance and the finances of wastewater treatment systems. Oregon has several legal structures that can be used for wastewater projects in unincorporated areas, such as a sanitary district, or a local improvement district. Each has advantages and disadvantages, but the most important feature of each is that no such district can be

formed, no sewer system can be installed, and no property owners can be assessed any costs without a majority vote in favor of the assessments by the property owners within any proposed sewer district.

As we move forward in the process and gather information from all sources and more accurately identify all of our costs and financing options, we will obtain more specific cost and financing information. A financial model will need to be constructed with these inputs to predict the viability of this project. Such a model will be required to obtain any financing and it will also serve as a good vehicle to educate the District and the public.

People always look for "free money" to pay for construction of wastewater treatment systems because in the 1970s federal construction grant funds were available. Today very few grants are available and have been replaced by low-interest loans, bonding, service fees and people paying out of their pocket as methods to finance most wastewater systems. There will apparently soon be a bill introduced in Congress for $1 trillion in infrastructure spending focused on public-private partnerships. It is impossible to predict whether any such bill will be enacted, but we will certainly want to search out and examine any opportunities that may be available to help defray the costs.