

## Threewind – Water Capacity Analysis

9/19/19

### **Narrative**

This analysis accompanies the development of Threewind, a master planned subdivision located on Tax Lot 7200 on tax map 151005DC.

No allotment of water capacity was analyzed for undeveloped properties in the 2017 Water Capital Facilities Plan Update, therefore Section 6 of “2016 Wastewater Capital Facilities Plan Update” published by the City of Sisters will be used to determine the water capacity to allot to the property. In this report, undeveloped land was assigned EDU’s with the rates shown in table 1, depending on the current zoning of the property.

Table 1: EDU Designation

<i>Description</i>	<i>FT.<sup>2</sup>/EDU</i>
Commercial	5,000
Multi-Family Res.	5,000
Industrial	20,000
Residential	10,000
Open Space	20,000
City Parks	30,000
Schools	10,000
Public Facilities	10,000

Existing zoning of Threewind is 7.48 acres of Commercial Space. Using these rates, EDU’s for the property can be allotted as follows:

$$\left( 7.48 \text{ acres} * 43560 \frac{\text{sf}}{\text{acre}} / 5,000 \frac{\text{sf}}{\text{edu}} \right) = 65.2 \text{ EDU}$$

According to section 6.3 of “2016 Wastewater Capital Facilities Plan Update”, the current system has capacity for 65.2 EDU’s allotted to the site at projected 2035 flows at full build-out.

Water usage for the city is analyzed in section 5.2 of the 2017 Water Capital Facilities Plan Update. Table 5.2 outlines the city’s water production demands based on production records from 2014-2016.

Table 5.2: Water Production Demands (2016)

Demand Parameter	Current Demand (mgd)	Ratio of Demand Parameter to ADD	Estimated Production Flow per Capita <sup>1</sup> (gpcd)
ADD	0.717	1.00	300
MMD	1.420	1.980	594
MDD	1.987	2.771	831
PHD	3.545	4.944	1483

<sup>1</sup> Based on Population of 2390 and 2016 water usage records.

Assuming 2.61 persons per household<sup>2</sup>, the following maximum daily demand could be assumed for the Threewind Property:

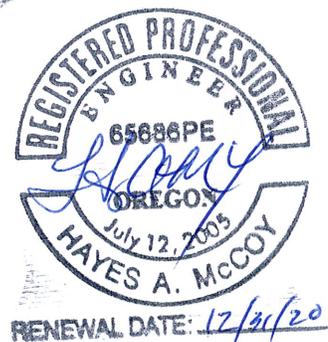
$$65.2 \text{ EDU} * 2.61 \frac{\text{person}}{\text{EDU}} * 831 \text{ gpcd} = 0.14 \frac{\text{MGal}}{\text{Day}} = 98.2 \text{ gal/min}$$

Maximum day demand based on a 2016 population estimate of 2,390 persons was 1.987 MGal/day, or 1379.86 gpm. The latest certified population estimate from Portland State's Population Research Center, dated July 1<sup>st</sup>, 2018, estimates the population of Sisters at 2,725 people. Therefore, the current adjusted maximum daily demand for the city water system is 2.26 MGal/Day, or 1573.27 gpm. Therefore, maximum daily demand for the City of Sisters water system can be estimated at 1671.48 gpm at full build out of the Threewind Master Plan.

The city's current water system has a combined capacity of 3060 gpm when utilizing all three wells. Therefore, the current water system remains adequate to supply the city and the Threewind Master Plan development at full build out, with no offsite mitigation required.

Sincerely,

H.A. McCoy Engineering & Surveying, LLC



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<sup>2</sup>: Estimated persons per household acquired from US Census Bureau