June 29, 2021

TO: Robert Pennington, PRMD, Professional Geologist, Planning Division, Natural Resources

FROM: Matthew O'Connor, PhD, PG #6847 CEG #2449 (Exp. 10-31-21)
President, O'Connor Environmental, Inc.

William Creed, Hydrologist
O'Connor Environmental, Inc.

SUBJECT: Water Use Estimate for Muir Wood Adolescent & Family Services, LLC,
1743 Skillman Lane, Petaluma (APN 048-250-002)

Muir Wood Adolescent and Family Services, LLC is seeking a conditional use permit by waiver to expand the subject existing residential community care facility on Skillman Lane. The facility is located in a developed rural-residential area and neighbors have expressed concerns about water usage from the expanded facility. This memorandum has been prepared to document estimated water use for the facility. Dr. Matt O'Connor is a Professional Geologist (#6847) and Certified Engineering Geologist (#2449) licensed in the state of California. Dr. O'Connor and Mr. Creed have extensive experience with groundwater resources in the County of Sonoma. O'Connor Environmental Inc. (OEI) has prepared approximately 100 groundwater analyses conforming to County of Sonoma General Plan Policy WR-2e over the past 17 years, and I am familiar with PRMD policy and practices regarding water use, wells and groundwater resources.

The subject parcel is located on Skillman Lane approximately two miles northwest of the City of Petaluma (Figure 1). Water is supplied by a private well located at the southeast corner of the property (County Permit WEL09-0066). The subject parcel and the surrounding areas are within Groundwater Availability Zone 2, identified by the County of Sonoma as a major natural recharge area. The project parcel is also located within the Petaluma Valley Groundwater Basin, a medium priority basin under the State Groundwater Management Act (SGMA). The project well is completed in the Pliocene to Miocene-aged Wilson Grove Formation, one of the principal aquifers within Sonoma County. Other wells on neighboring parcels are likely completed within the same aquifer.

The project parcel currently contains a six-bed community care facility. Residents use water primarily for cooking, cleaning, and personal hygiene. Indoors, water is also used by three floor staff who work standard eight-hour shifts and who do not reside at the facility. Staff involved with other aspect of this business, such as management, teaching, and therapy, do not regularly work at the subject parcel. Outdoors, water is used to irrigate a 1,468 ft^2 lawn as well as a few de-minimis landscaped areas which the applicant reports to be planted with drought-tolerant species (Figure 2). This facility has already implemented numerous water conservation measures. These include the installation of water efficient appliances such as low-flow toilets, shower heads, and tankless water heaters as well at the use of a bottled water service for drinking water. The facility also reduces water use by contracting with a linen service to clean bedding and towels offsite and by taking residents to an off-site laundromat for personal laundry.

The applicant is seeking a conditional use permit to expand the facility to 10 beds. This increase in capacity will not require a physical expansion of the existing buildings or construction of new buildings. In accordance with state requirements, up to three new floor staff will be hired. Existing water efficiency measures will be retained and no increase in outdoor landscaping is proposed.

Water use is estimated for the facility both in the existing and proposed conditions. Per-capita water use for facility residents is presumed to be comparable to indoor per-capita residential water use from nearby municipalities. Within the facility, residents use water for the same purposes as in a typical residence and, like many residences within nearby municipalities, this facility has high-efficiency appliances and fixtures.

Estimates of residential per-capita water use are obtained for nearby municipalities from the State Water Resources Control Board's Conservation Portal. Monthly per-capita use rates are available for the City of Petaluma and City of Rohnert Park for June 2014 – March 2021. From this data, indoor per-capita water use is estimated as the winter (December - March) base rate when water use for outdoor landscaping is minimal. Using this approach, indoor per-capita water use is estimated to be 50 gallons per person per day (gpcd) for the City of Rohnert Park and 57 gpcd for the City of Petaluma (Figure 2). For the purposes of this memo, per-capita facility use rates are estimated as the higher 57 gpcd rate from the City of Petaluma. This estimated use rate is slightly lower than estimates of indoor water use developed by the County of Sonoma for rural residences under Procedure 8-2-1. Under this procedure, indoor water use for a rural primary residence is estimated to be 0.20 acre-ft/yr, equivalent to approximately 85 gpcd.

Per capita water use at the community care facility, which has implemented numerous water efficiency measures, is likely to be somewhat lower. Additionally, both residences within the municipal service areas and the rural residences surveyed by the County have indoor water uses which the community care facility does not. The facility does not wash laundry onsite and drinking water is provided by a bottled water service, not groundwater. As a result, per-capita indoor water use at the facility may be lower than 57 gpcd.

In addition to water use by facility residents, water is used by floor staff and for outdoor landscaping. Based on standard rates from Procedure 8-2-1, staff are estimated to use 15 gallons/shift. Because the facility has low flow toilets and other fixtures, the actual per-shift use rate may be lower. Also based on standard rates from Procedure 8-2-1, the approximately 1,468 ft^2 lawn is estimated to be irrigated at a rate of 3.6 acre-ft/acre/yr. Other landscaping is reported to be drought tolerant and was considered to be a de-minimis water use.

Based on these use rates, water use in the existing condition is estimated to be 0.55 acre-ft/yr. Using standard rural water use rates from Procedure 8-2-1, this is comparable to a typical primary rural residence with landscaping. Following the proposed expansion, water use is estimated to increase by 0.31 acre-ft/yr to 0.86 acre-ft/yr (Table 1). This increase is comparable to adding an accessory dwelling and pool. Total water use is comparable to many neighboring parcels which have a primary residence, accessory dwelling(s), and additional land uses.

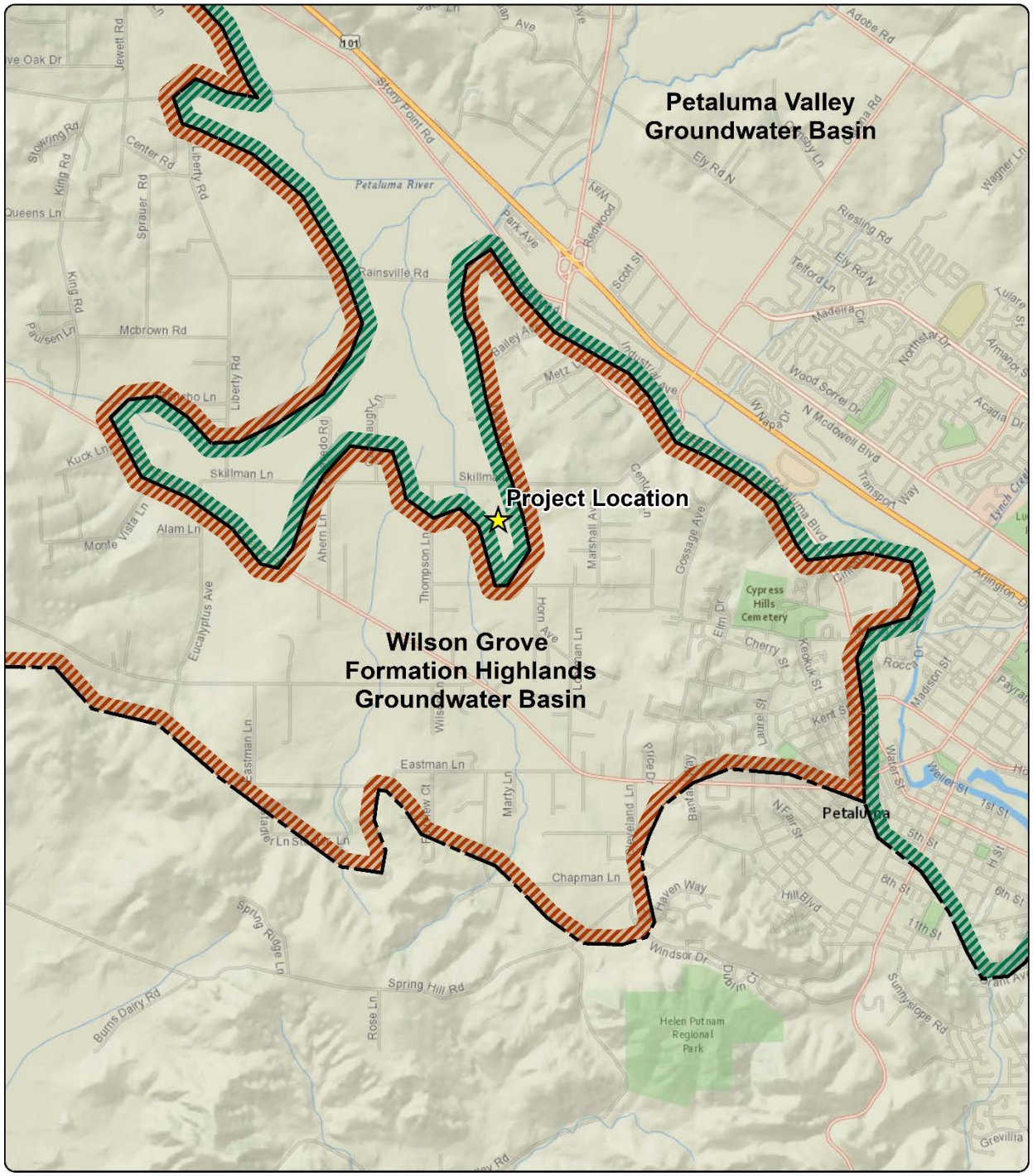

Figure 1: Project location and SGMA Groundwater Basins.

Figure 2: Water uses on the project parcel.

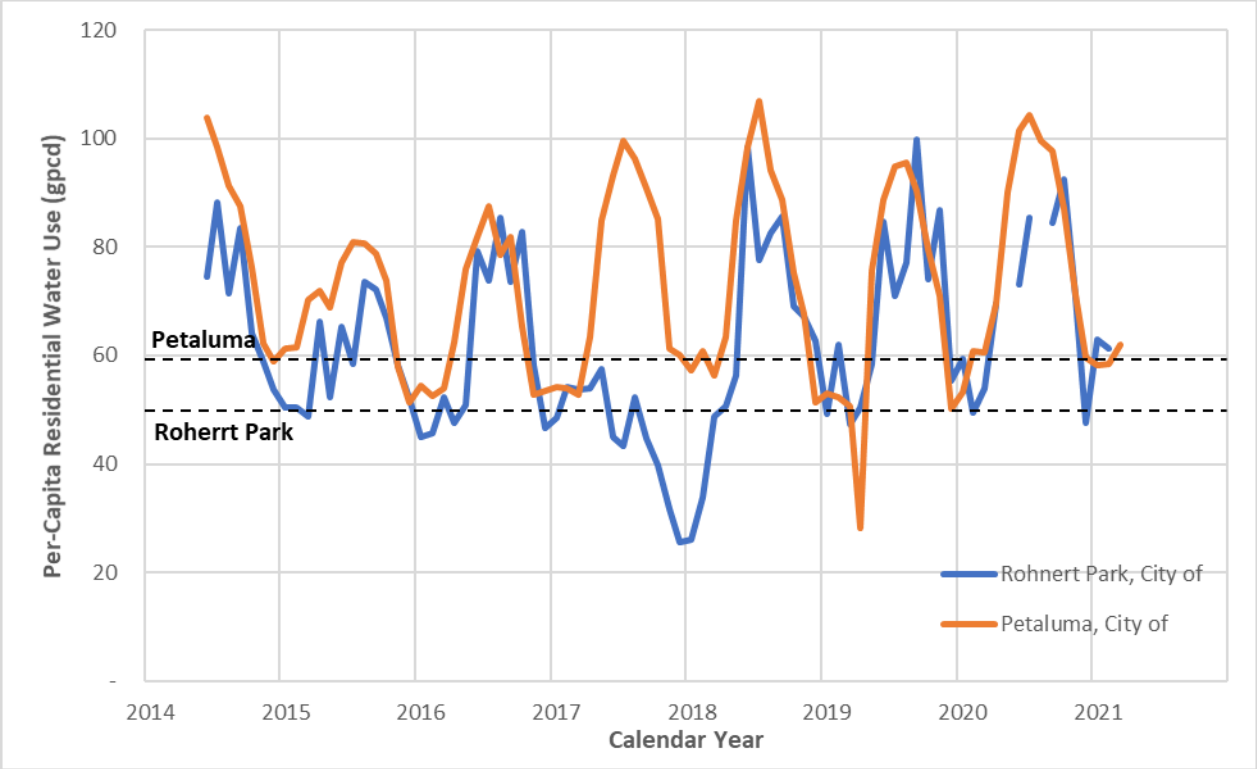

Figure 2: Monthly per-capita residential water use rates for selected municipal service areas. Dashed lines indicate average winter base rate for November – April period.

Table 1: Estimated water use for project parcel in existing and proposed conditions.

	# of Units	Use per Unit	Annual Water Use (AF/yr)
Existing Condition			**0.55**
Residences, Oversized	6 Residents	57 gal/resident/day	0.38
Residences, Primary	3 Staff Members	15 gal/shift @ 365 days/yr	0.05
Lawn, Additional	1,468 sq. ft.	3.60 AF/AF/yr.	0.12
Expanded Condition			**0.86**
Residences, Oversized	10 Residents	57 gal/resident/day	0.64
Residences, Primary	6 Staff Members	15 gal/shift @ 365 days/yr	0.10
Lawn, Additional	1,468 sq. ft.	3.60 AF/AF/yr.	0.12