PRELIMINARY WASTEWATER REPORT

Prepared for:
RD Olson Development
150 Schnebly Hill Road
Sedona, Arizona 86336

July 17, 2023

Prepared by:

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Your Ideas to Completion
Surveying • Engineering • Land Planning

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GENERAL LOCATION AND DESCRIPTION

Project Overview

The purpose of this report is to determine the projected wastewater flow from the proposed development of Oak Creek Resort and to provide the design for a private wastewater collection system. Wastewater from this project will flow into the existing gravity wastewater collection system operated and maintained by the City of Sedona. This report consists of the design and materials for a proposed 8-inch gravity wastewater collection system capable of transporting the projected wastewater effluent from the development to the existing City of Sedona wastewater collection system.

The proposed development of Oak Creek Resort will consist of 70 guest rooms, a lobby & check-in building, a restaurant & bar, a fitness & spa facility, a service building, and meeting space building.

Project Location

Oak Creek Resort will be a commercial development located within the City of Sedona, Coconino County, Arizona. The property is located north of the intersection of State Route 179 and Schnebly Hill Road and south of Bear Wallow Road and Schnebly Hill Road. The development is located on parcels as Assessor Parcel Number (APN) 401-12-016C, 401-11-001C, 401-11-002F, 401-18-031B, 401-18-031D, 401-18-031G, 401-18-001A, and 401-18-002C within a portion of Southwest ¼ of Section 8 and the Southeast ¼ of Section 7, Township 17 North, Range 6 East of the Gila and Salt River Base Meridian.

Property Owner/Developer — RD Olsen Development
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DESIGN OF WASTEWATER COLLECTION SYSTEM

Design Flow

The proposed wastewater collection system was designed based on the cumulative flow determined using Table 1: Unit Design Flows from the Arizona Administrative Code Section R18-9-E323. Criteria for determining the cumulative design flow is as follows:

- 81 Beds @ 50 gallons per day
- 4 one-bedroom apartments @ 200 gallons per day
- Restaurant with 60 seats at 66 gallons per day
- Peaking Factor of 3.6

	Average Day (gpd)	Peaking Factor	Peak (gpd)
Hotel	4,050	3.6	14,580
Apartment	800	3.6	2,880
Restaurant	3,960	3.6	14,256
Total	**8,810**	**3.6**	**31,716**

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Utilizing the ADEQ sewerage flows, the total average daily flow of **8,810** gallons will be routed through the proposed on-site gravity sewer system. The total peak flow is **31,716** gallons per day.

Design Criteria

1. The proposed gravity wastewater collection system was designed in accordance with Arizona Administrative Code Title 18, Chapter 9, Article 3 Aquifer Protection Permit: Part E Type 4 General Permits, Uniform Plumbing Code 2015 edition, and standard engineering practices.
2. Separation of wastewater collection system components from drinking water distribution system shall be in accordance with A.A.C. R18-5-502. According to the aforementioned section, a water main shall not be placed within 6 feet, horizontal distance, and below 2 feet, vertical distance, above the top of a sewer main unless extra protection is provided. Extra protection shall consist of construction of the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided. Alternative extra protection shall consist of encasing both the water and sewer in at least 6 inches of concrete for at least 10 feet beyond the area covered by this subsection C.1.a. A watermain shall not be placed within 2 feet horizontal and 2 feet below the sewer main. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be 6 feet, measured from the center of manhole.
3. A minimum 3-foot ground cover is required over sanitary sewer main lines according to A.A.C. R18-9-E301 subsection D.2.b while meeting the requirements of subsection D.2.h. for sewer bedding and trenching.
4. A minimum 1-foot cover is required over sewer service lines in accordance with Section 718.3 of the Uniform Plumbing Code.
5. Public Sewer main lines shall be a minimum of 8 inches in diameter according to A.A.C. R18-9-E301 subsection D.2.d. except for the first 400 feet of a dead-end sewer line with no potential for extension.
6. Sewer service lateral and water service line separation shall be in accordance with Section 720.1 of the Uniform Plumbing Code which states the bottom of the water pipe, at all points, shall be at least 12-inches above the top of the sewer line.
7. The sewer system in excessive slopes is designed according to A.A.C. R-18-9-E301 subsection D.2.f. According to the aforementioned section, any sewer line carrying a flow with a normal velocity of greater than 10 feet per second shall be constructed with ductile iron pipe or pipe with equivalent erosion resistance and structurally reinforces the receiving manhole or sewer main.
8. Each sewer line shall be tested per A.A.C. R-18-9-E301 subsection D.2.j.i. which states that each segment of sewer line shall be tested for leakage in accordance with ASTM F1417-92.
9. Each sewer line shall be tested according to A.A.C. R18-9-E301 subsection D.2.i. which states that a deflection test shall be performed for the total length of all sewer lines made of flexible

material to ensure that the installation meets or exceeds the manufacturer's recommendations and results be recorded.

10. Each sewer line shall be tested according to A.A.C. R18-9-E301 subsection D.2.k. which states that the sewer line shall be tested for uniform slope by lamp lighting, remote camera or similar method and results be recorded.
11. Each manhole shall be tested according to A.A.C. R18-9-E301 subsection D.3.e. which states that each manhole be tested using one of the following test protocols: Watertight Testing, Negative Air Pressure Testing, or Holiday Testing.

Design Specifications

1. The proposed wastewater collection system will be constructed using SDR 26 pipe for the 8-inch on-site collection main lines and 4-inch lateral service lines.
2. Proposed pre-cast sewer manholes will be installed in accordance with MAG Standard Detail 420-1 & 420-2.
3. A typical 8-inch SDR 26 sewer pipe at a minimum slope of 1.0 percent has a capacity of 0.85 MGD. The proposed 8-inch sewer collection system serving the development has a calculated design flow of 8,810 gallon per day, which is significantly lower than the maximum flow capacity of a typical 8-inch sewer pipe. With a Manning's Roughness Coefficient of 0.013 the proposed 8-inch pipe flowing full will have a velocity of 3.8 feet per second.
4. All sewer service connections will be a 4-inch PVC SDR 26 pipe with a double cleanout and a 45-degree wye at the sewer main connection. The separation requirements do not apply to building plumbing, or individual house service connections per A.A.C. R18-5-502 subsection C.4.
5. Manholes will be spaced at no greater than 500 feet intervals for all sewer main lines. All sewer service laterals will have 4-inch cleanouts spaced no greater than 100 feet along their length and end with a 4-inch cleanout.
6. Units with finished floor elevations below the next downhill manhole rim elevation will be equipped with an approved backflow preventer valve.

CONCLUSION

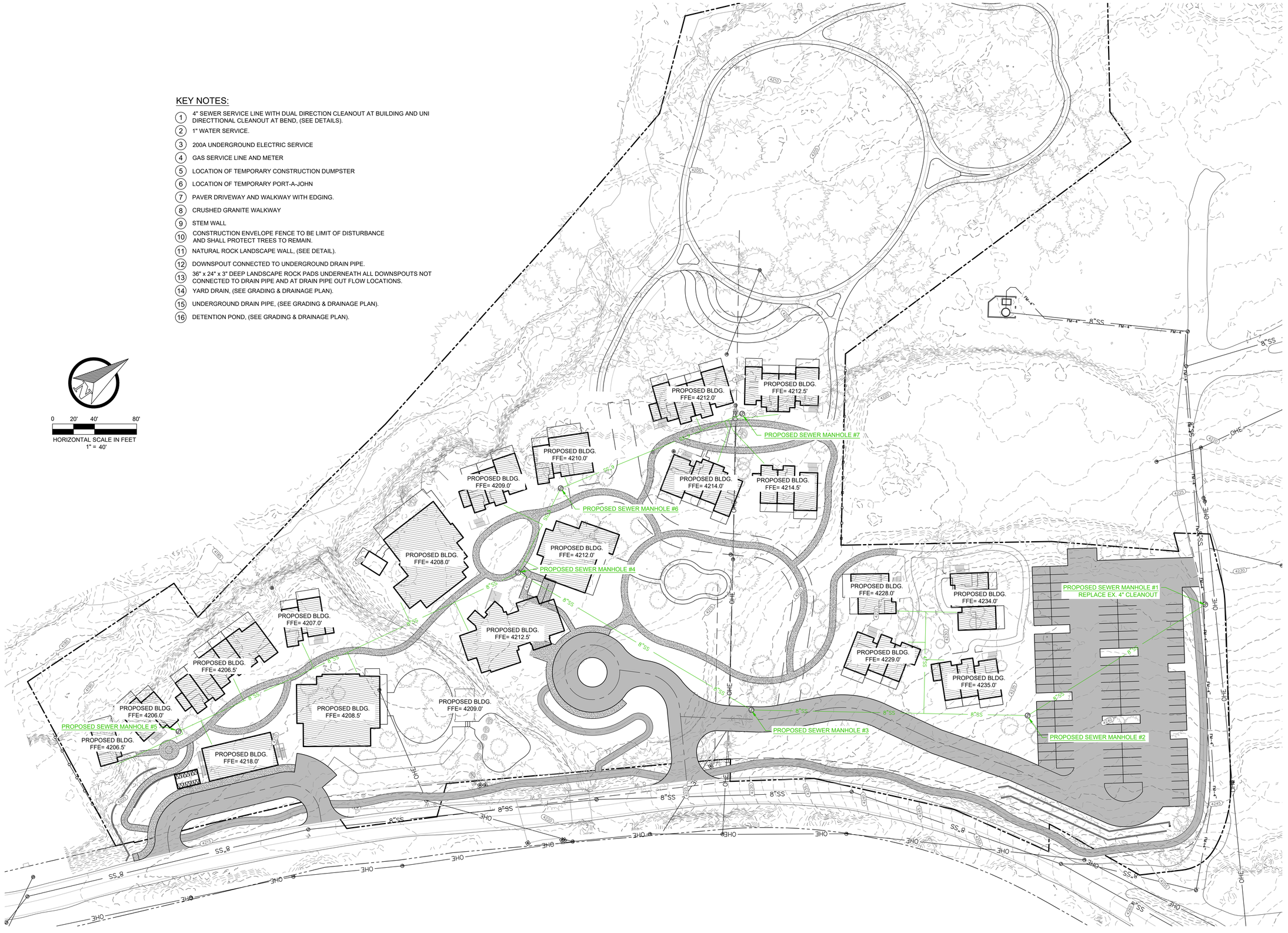
It is the engineer's opinion that the property be developed as shown on the approved construction plans. The wastewater system shown on the plans will satisfy the conditions for a cost-effective, low maintenance wastewater facility. The project complies with the City of Sedona and the Arizona Department of Environmental Quality wastewater regulations and standards.

Appendix A

Preliminary Utility Plan

KEY NOTES:

1. 4" SEWER SERVICE LINE WITH DUAL DIRECTION CLEANOUT AT BUILDING AND UNI DIRECTTIONAL CLEANOUT AT BEND, (SEE DETAILS).
2. 1" WATER SERVICE.
3. 200A UNDERGROUND ELECTRIC SERVICE
4. GAS SERVICE LINE AND METER
5. LOCATION OF TEMPORARY CONSTRUCTION DUMPSTER
6. LOCATION OF TEMPORARY PORT-A-JOHN
7. PAVER DRIVEWAY AND WALKWAY WITH EDGING.
8. CRUSHED GRANITE WALKWAY
9. STEM WALL
10. CONSTRUCTION ENVELOPE FENCE TO BE LIMIT OF DISTURBANCE AND SHALL PROTECT TREES TO REMAIN.
11. NATURAL ROCK LANDSCAPE WALL, (SEE DETAIL).
12. DOWNSPOUT CONNECTED TO UNDERGROUND DRAIN PIPE.
13. 36" x 24" x 3" DEEP LANDSCAPE ROCK PADS UNDERNEATH ALL DOWNSPOUTS NOT CONNECTED TO DRAIN PIPE AND AT DRAIN PIPE OUT FLOW LOCATIONS.
14. YARD DRAIN, (SEE GRADING & DRAINAGE PLAN).
15. UNDERGROUND DRAIN PIPE, (SEE GRADING & DRAINAGE PLAN).
16. DETENTION POND, (SEE GRADING & DRAINAGE PLAN).



PRELIMINARY

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SHEET TITLE: SANITARY SEWER PLAN

PROJECT TITLE:

OAK CREEK HERITAGE HOTEL

R.D. OLSON DEVELOPMENT

DRAWN BY:	TCH
SCALE:	1" = 40'
DATE:	DATE
PROJECT NO:	201106
SHEET NO.	C-1