



Town Council Agenda Information Memorandum

Meeting Date: August 6, 2025

Agenda Item Type:

- | | | |
|---|--|--|
| ☐ Consent Agenda | ☒ Informational Presentation | ☐ Discussion Item |
| ☐ Action/Decision Item | ☐ Executive Session Request | ☐ Other: |

Requesting Department: Utilities Department **Staff Resource:** Utilities Director Jeff Low

Agenda Title: Wastewater Master Plan Final Report Presentation

Attached Documents: Wastewater Master Plan

Estimated Presentation Time: 15 Minutes

Estimated Discussion Time: 5 Minutes

Reviewed By:

- | | | | | |
|--|---|--|----------------------------------|---------------------------------|
| ☒ Town Manager | ☒ Legal | ☐ Risk Management | ☐ Finance | ☐ Other: |
|--|---|--|----------------------------------|---------------------------------|

Financial Review (if applicable):

- Funding Source / GL Account Number:
- Approved in the FY25 Budget? ☐ Yes ☐ No ☒ N/A ☐ Other:
- Is this an approved CIP Project? ☐ Yes ☐ No ☒ N/A ☐ Other:

Background Information:

On December 6, 2023, the Town Council awarded Contract No. 2023-185 to Water Works Engineers for the Town of Camp Verde's Wastewater Master Plan, GIS Update, and Wastewater Treatment Plant Evaluation. Since then, the Wastewater Division has actively supported the project by providing essential resources, including as-built drawings, plant electrical usage data, and sampling information. Additionally, staff have participated in multiple project meetings to ensure progress.

Rob Bryant, Principal Engineer from Water Works Engineers, will present the findings of the final master plan study.

Connection to the [FY25-FY30 Strategic Plan](#)

Completing the Wastewater Master Plan was identified as a specific goal within the Town's FY25–FY30 Strategic Plan.

Question(s) before the Council:

- Does Council have any questions for staff or Water Works Engineers?

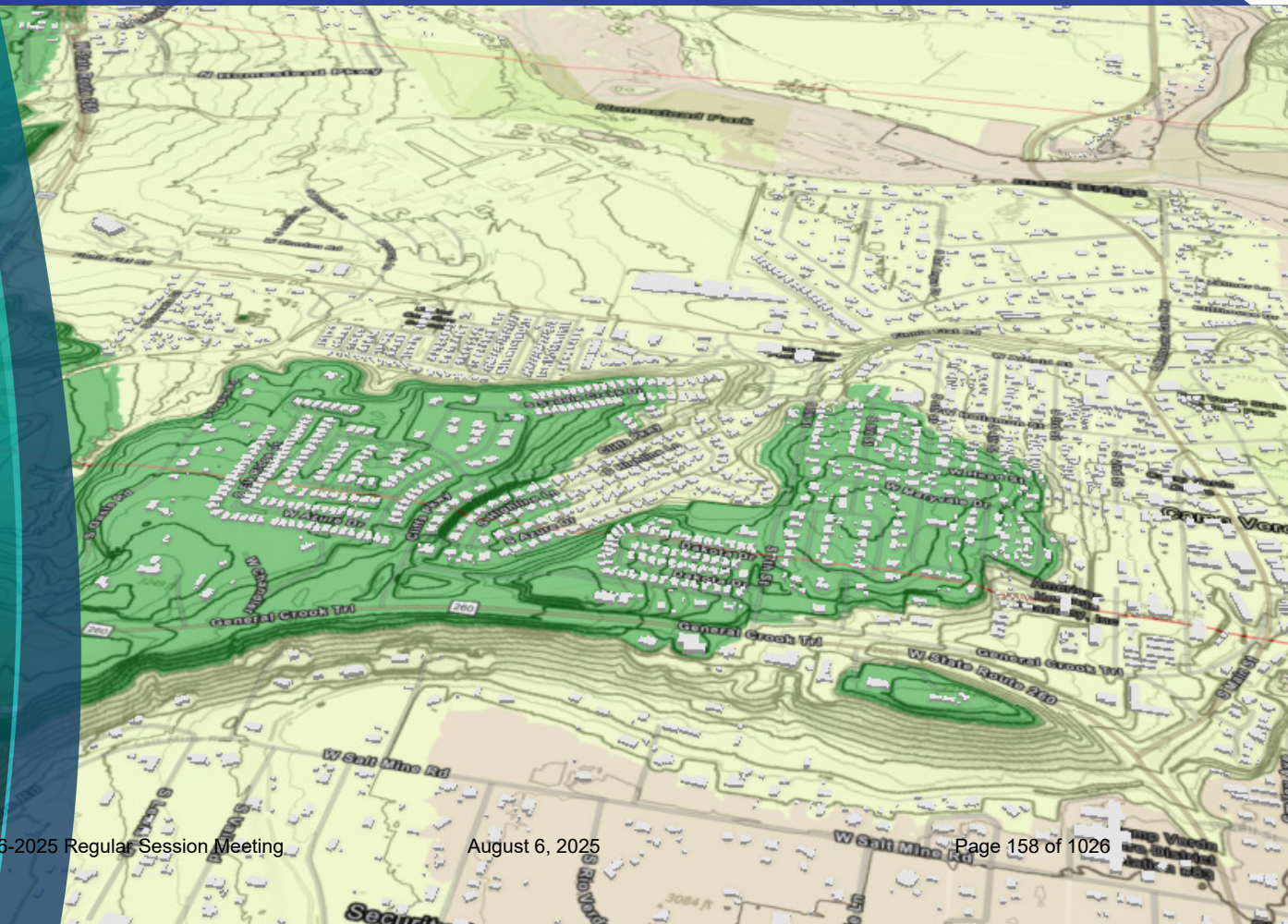


WASTEWATER MASTER PLAN

MAY 2025



WATERWORKS
ENGINEERS



Wastewater System Master Plan

Table of Contents

SECTION 1.	Introduction	1
1.1	Background	1
SECTION 2.	Existing Wastewater Infrastructure	2
2.1	System Overview	2
2.2	Gravity Sewer Mains and Manholes	2
2.3	Lift Stations and Force Mains	3
2.4	Wastewater Treatment Facility	4
2.4.1	Septage Receiving Station	6
2.4.2	Effluent Management	6
2.4.3	Existing Wastewater and Effluent Permits	7
2.4.4	PFAS Monitoring	10
2.4.5	Power Consumption	10
SECTION 3.	Planning	11
3.1	Planning Horizons	11
3.2	Existing Service Areas	11
3.2.1	Town	11
3.2.2	Yavapai Apache Nation	11
3.3	2050 and Buildout Service Areas	12
3.4	Wastewater Flow by Land Use	12
3.5	Population Projections	13
SECTION 4.	Wastewater Flow Analysis	14
4.1	Historic Wastewater Flows	14
4.1.1	Wastewater Flow vs. Water Demand	16
4.2	Plant Flow and Loading	17
4.3	Wet Weather Flow	19
4.4	Diurnal Pattern	20
4.5	Peaking Factors	21
4.6	2050 Wastewater Plant Flow Projections	22
4.7	Buildout Wastewater Plant Flow Projections	24
SECTION 5.	Hydraulic Modeling and Analysis	25
5.1	Modeling Software Selection	25
5.2	GIS Database and Model Development	25
5.3	Wastewater Loading	25
5.4	Gravity Sewer Mains and Manholes	25
5.5	Lift Stations and Force Mains	26
5.6	Model Calibration	26
5.7	Model Scenarios	26
5.8	Model Results	26
SECTION 6.	Future Wastewater Infrastructure	27
6.1	Design Criteria	27

Wastewater System Master Plan

6.2	2050 Wastewater System	28
6.3	Buildout Wastewater System	30
6.4	2050 Gravity Mains	32
6.5	I-17 Crossing Bottleneck.....	32
6.5.1	Capacity Analysis	33
6.5.2	New Treatment Facility	35
6.5.3	Equalization Basin.....	35
6.5.4	Upsize Downstream Sewer Mains	36
6.5.5	Recommendation	37
6.6	2050 Lift Stations and Force Mains	37
6.6.6	2050 Lift Station 1 Capacity	38
6.7	Buildout Lift Stations and Force Mains.....	39
6.8	2050 Treatment Plant Capacity	40
6.9	Equalization Basin.....	43
6.10	Existing Blowers Evaluation	44
6.11	Effluent Management	45
SECTION 7.	Capital Improvement Plans.....	46
7.1	Funding.....	46
SECTION 8.	Appendix.....	54

List of Figures

Figure 1-1	Town of Camp Verde Location ²	1
Figure 2-1	Town of Camp Verde Wastewater System Layout	2
Figure 2-2	Treatment Facility Site Plan.....	5
Figure 2-3	Process Flow of WRF	6
Figure 3-1	TOCV Population Projection	14
Figure 4-1	Average Daily Flow per Month	15
Figure 4-2	2024 Daily Flow	15
Figure 4-3	Wastewater Flow vs. Water Demand.....	17
Figure 4-4	Wet Weather Event from March – April 2024	20
Figure 4-5	Collection System Diurnal Curve	21
Figure 4-6	2050 Projected Main Plant Wastewater Flow.....	23
Figure 4-7	2050 Projected Main Plant Capacity	24
Figure 6-1	2050 Wastewater System	29
Figure 6-2	Buildout Wastewater System	31
Figure 6-3	I-17 Crossing.....	33
Figure 6-4	2050 Projected Flow at I-17 Crossing.....	34
Figure 6-5	Projected Flow Growth at I-17 Crossing.....	35
Figure 6-6	Equalization Volume Stored	36
Figure 6-7	2050 Force Main Schematic	37
Figure 6-8	Lift Station 1 Pump and System Curves.....	39

Wastewater System Master Plan

List of Tables

Table 2-1 Existing Sewer Mains	3
Table 2-2 Existing Sewer Mains	3
Table 2-3 Existing Lift Stations.....	4
Table 2-4 Distribution of Effluent Based on Quality	7
Table 2-5 Existing Permit.....	7
Table 2-6 Routine Discharge Sampling Locations.....	8
Table 2-7 Routine Discharge Monitoring.....	8
Table 2-8 Class A+ and Class B+ Reclaimed Water Monitoring	9
Table 2-9 PFAS Sampling Results.....	10
Table 2-10 Projected Power Needs	11
Table 3-1 Wastewater Generation Demand by Land Use Type	12
Table 3-2 Population Projections	13
Table 4-1 Existing Treatment Facility Flow Statistics	16
Table 4-2 Existing Treatment Facility Flows and Loading	18
Table 4-3 Average Monthly Septage Flow	18
Table 4-4 2023 Historic Peaking Factors	21
Table 4-5 2050 Projected Wastewater Plant Flow	22
Table 4-6 2050 Projected Main Plant Wastewater Flow	23
Table 4-7 Buildout Flow Projections.....	24
Table 6-1 Recommended Infrastructure Design Criteria.....	27
Table 6-2 2050 Flows at I-17 Crossing.....	33
Table 6-3 Assumed Equalization Basin Flow Pattern.....	36
Table 6-4 2050 Lift Station Summary	38
Table 6-5 Buildout Lift Station Summary.....	39
Table 6-6 Buildout Process Expansion Summary.....	40
Table 6-7 Airflow Requirement Summary	44
Table 6-8 Estimated Volume of Ponds	45
Table 6-9 Effluent Water Balance Study.....	45
Table 7-1 Capacity Fees.....	47
Table 7-2 Camp Verde CIP Improvements	48

Appendices

Appendix A Existing Conditions Overall Layout

Appendix B APP Permit

Appendix C Existing Service Area

Appendix D 2050 Service Area

Wastewater System Master Plan

Appendix E Buildout Plant Service Area

Appendix F Land Use

Appendix G Diurnal Curves and Flow Monitoring

Appendix H Equalization Basin (I-17)

Appendix I Design Recommendations

Appendix J 2050 System Layout

Appendix K BioWin Model Report

Appendix L Water Balance

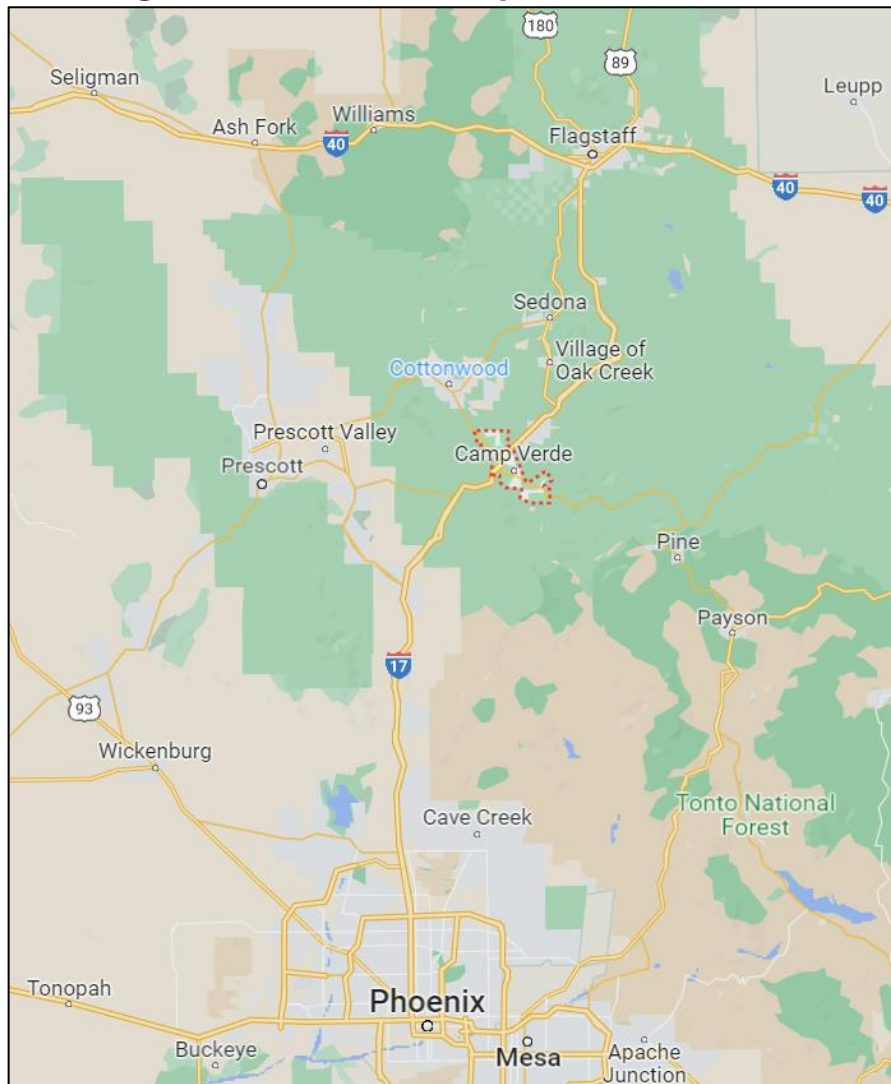
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SECTION 1. Introduction

1.1 Background

The Town of Camp Verde (the Town or TOCV) is located in the Verde Valley along eighteen miles of the Verde River, in Yavapai County, Arizona. The Town was settled in 1865 and has a population of approximately 12,000 people¹. Elevations in the Town range from 3,000 to 3,600 feet above sea level. Nearby cities are Prescott to the West, Cottonwood to the Northwest, and Sedona to the Northeast. The Town of Camp Verde encompasses approximately 42.6 square miles. TOCV and surrounding communities in central Arizona are shown on Figure 1-1.

Figure 1-1 Town of Camp Verde Location²



¹ 2020 US Census, ²Google

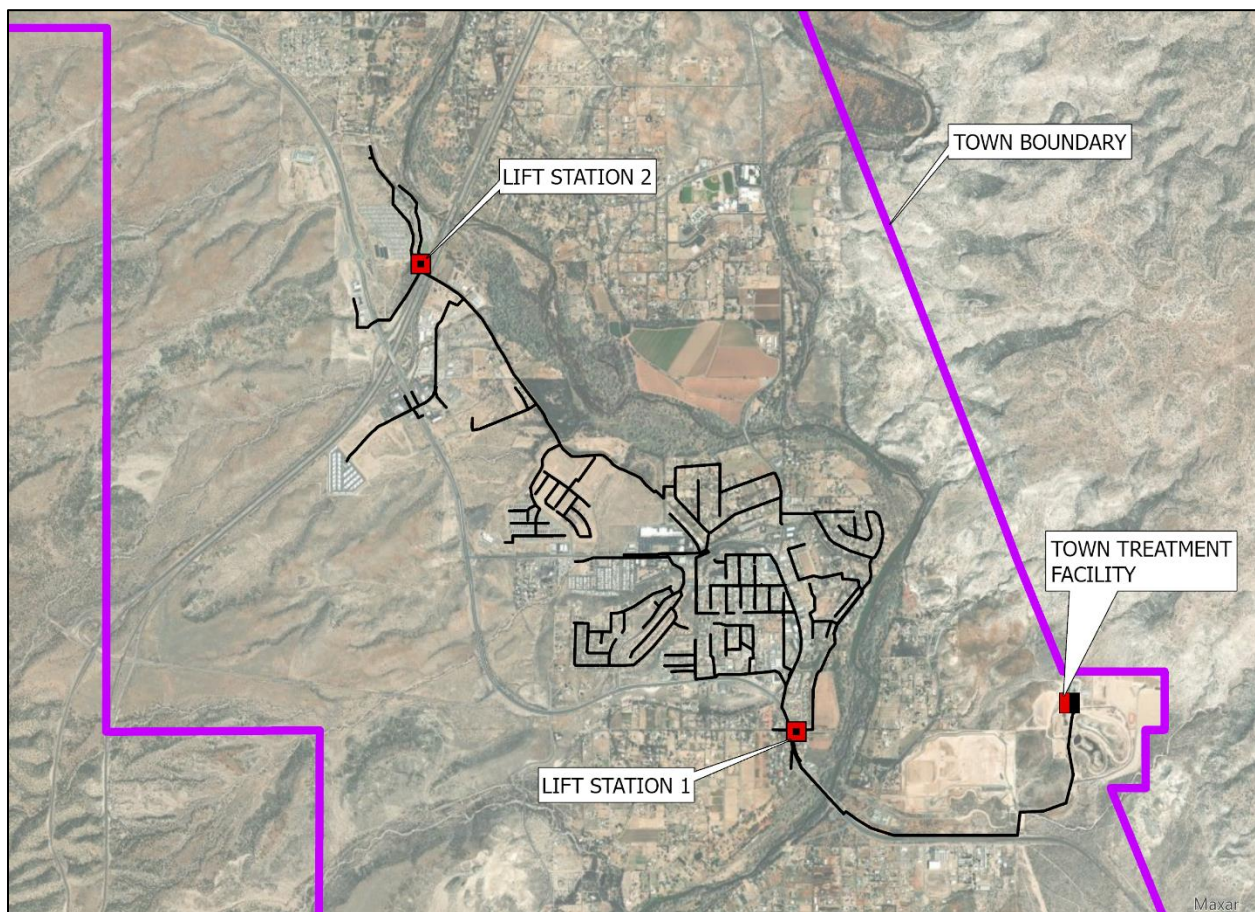
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SECTION 2. Existing Wastewater Infrastructure

2.1 System Overview

The existing wastewater system comprises gravity sewer mains, two lift stations, and a wastewater treatment facility. The existing system serves approximately 1,300 acres of the Town and collected and treated an average of 265,000 gallons per day in 2024. The overall system layout is shown in Figure 2-1. A more detailed figure of the wastewater system, including pipe sizes, is included in Appendix A.

Figure 2-1 Town of Camp Verde Wastewater System Layout



2.2 Gravity Sewer Mains and Manholes

A gravity sewer main network conveys wastewater from the Town's residents and businesses. Wastewater generally flows towards the Verde River, where it is intercepted by a sewer trunk main that conveys wastewater south along the Verde River to the lift station near the intersection of Highway 260 and Salt Mine Road. It is pumped from the lift station to the treatment facility. The size

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and overall lengths of the gravity sewer mains are summarized in Table 2-1. There are also various small-diameter service lines and cleanouts not included in the table.

Table 2-1 Existing Sewer Mains

Pipe Diameter	Overall Quantities, LF
8	91,068
10	931
12	2,754
15	597
18	18,242
Total	113,592

There are 534 existing manholes in the wastewater system. The Town has an ongoing condition assessment program in which the manholes are examined and scanned with a LIDAR and camera system. After scanning, each manhole is graded for structural integrity. The summary of the overall condition of the manhole structures is shown in Table 2-2. For more information about the existing manhole conditions, refer to the ongoing assessment reports by RH Borden and Associates.

Table 2-2 Existing Sewer Mains

Riser/Structure Condition	Overall Number	Percent of Total
Good	497	93%
Poor	1	1%
Fair	14	2%
No Data	22	4%
Total	534	100%

2.3 Lift Stations and Force Mains

The Town operates two lift stations and associated force mains. Lift Station 1 is located near the intersection of Highway 260 and Salt Mine Road. Lift Station 1 pumps the entire Town's wastewater across the Verde River to the treatment facility, approximately 2 miles away. Lift Station 2 is located just north of Interstate 17 at the Verde Ranch RV Resort. This lift station only serves a large campground and RV park, and pumps wastewater to a nearby gravity sewer manhole. Engineering plans are currently being developed for Lift Station 3 which will be located near Old Highway 279 and Altman Parkway. The two lift stations' characteristics are summarized in Table 2-3.

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Table 2-3 Existing Lift Stations

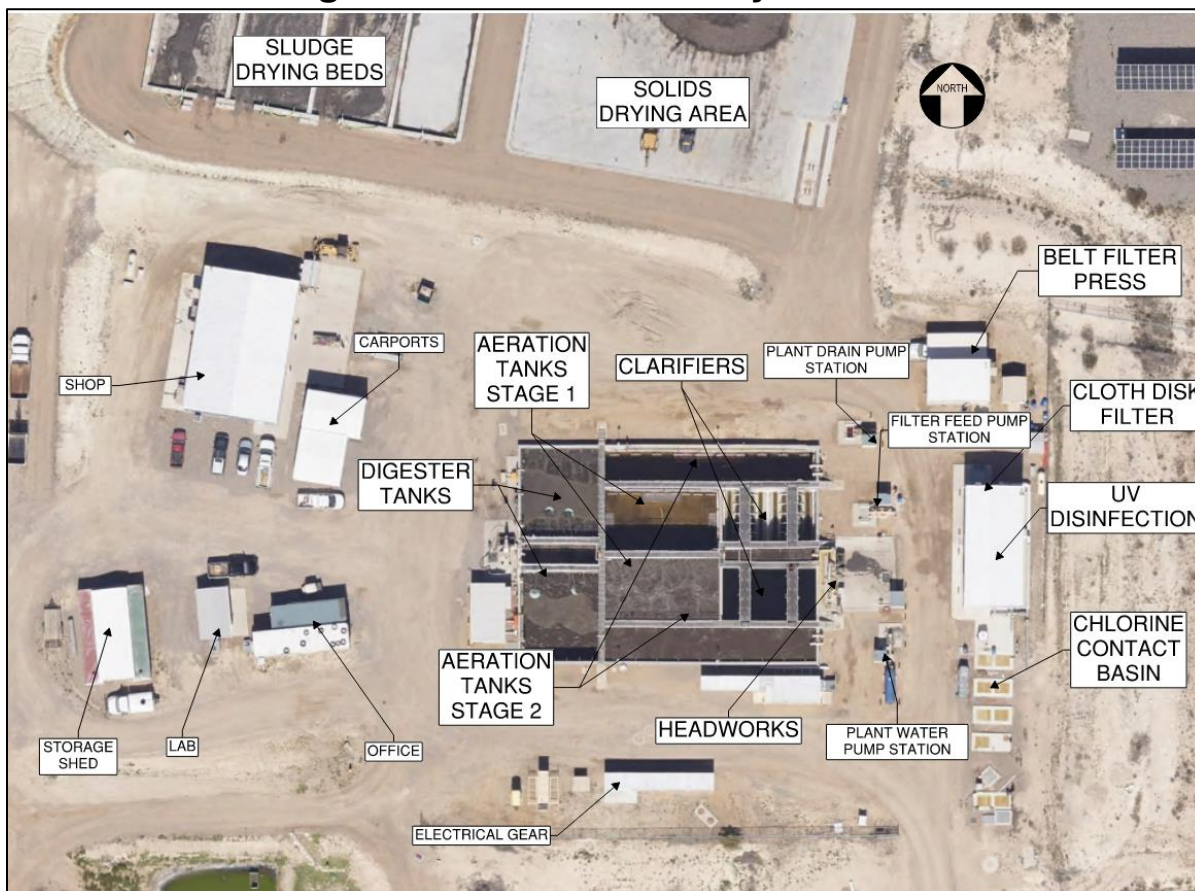
Lift Station	Location	Pumps	Pump Head, ft	Flow, gpm	Force Main Diameter, In	Force Main Length, LF	Force Main Material
1	Near Verde River and HWY 260	3	210	500	8" (Active) 12" (Inactive)	~10,000	8" PVC 12" DIP
2	North of I17	2	190	1200	12"	~200	Ductile Iron

2.4 Wastewater Treatment Facility

The Town operates one wastewater treatment facility east of the Downtown area and the Verde River. The Town of Camp Verde Water Reclamation Facility (WRF) is currently permitted to treat 0.65 million gallons per day (MGD) with a design capacity of 1.3 MGD at build-out. The overall site plan is shown in Figure 2-2. The treatment process at the WRF consists of headworks with bar screens, an extended aeration treatment train with nitrification and denitrification, clarifiers, ultraviolet disinfection, chlorine contact basins, a septage receiving station, and an effluent pump station. The process flow diagram of the WRF is shown in Figure 2-3.

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Figure 2-2 Treatment Facility Site Plan



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Table 2-4 Distribution of Effluent Based on Quality

Turbidity Level (NTU)	Process Bypassed	Effluent Class	Effluent Destination
NTU < 2	-----	A+	Sports Complex via irrigation pond
2 < NTU < 5	UV Disinfection	A+	Sports Complex via irrigation pond
NTU > 5	UV Disinfection and CCB	B+	Evaporation Basin and/or Truck Fill Station

As shown in the table above, no processes are bypassed if the turbidity level is below two NTUs. If the turbidity level is between two and five NTUs, the UV disinfection process is bypassed. In both cases, the effluent is considered A+ and is distributed to the irrigation pond. From there, it will be pumped to the sports complex directly west of the facility. The pond is equipped with a temporary pump with plans to install a permanent pump in the future.

If the turbidity level is above 5 NTU, the UV disinfection and chlorine contact basins are bypassed. The effluent is considered B+ and is distributed to the evaporation basin or the truck fill station on site. The B+ effluent is left to evaporate in the evaporation basin or is used for construction around the Town via the truck fill station.

Future effluent management will consider additional reuse and potential recharge.

There is also discussion about constructing a reclaimed water line down Main Street. This line would be used to irrigate the plants along Main Street, along with the town park. There would also be a truck fill station along this line that would be used for construction purposes.

Recharge wells would require a detailed study of the aquifer and groundwater impacts in the area. Typically, these must be sufficiently far away from the Verde River. Recent regulations regarding direct potable reuse will likely aid in this disposal option. However, after treating to the level to meet these requirements, the water could be used locally as potable water.

2.4.3 Existing Wastewater and Effluent Permits

Table 2-5 Existing Permit

Permit Type	Permit Number	Licensing Time Frame – LTF Number
Aquifer Protection Permit (APP)	101360	82369

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Under the current APP permit, there are eight discharge facilities. These facilities include Camp Verde WRF, North Evaporation Basin, South Evaporation Basin, Sludge Dewatering Lagoon #1, Sludge Dewatering Lagoon #2, Sludge Drying Beds, Solids Drying Area, and the Truck Fill Station/Reuse for construction water. The APP permit is found in Appendix B. Use of the sludge dewatering lagoons stopped when the extended aeration treatment train began. All sludge has been removed from the lagoons, and they are being repurposed to store and dewater sludge. The repurposing of the lagoons is currently in progress.

The routine discharge monitoring is outlined in Table 2-7.

Table 2-6 Routine Discharge Sampling Locations

Sampling Point #	Sampling Point Identification	Latitude (North)	Longitude (West)
1	Sampler at the downstream end of the backup chlorination system	34° 33' 23"	111° 49' 56"
2	Flow meter located downstream of the disinfection system	34° 33' 23"	111° 49' 56"

Table 2-7 Routine Discharge Monitoring

Parameter	Alert Level (AL)	Discharge Limit (DL)	Units	Sampling Frequency	Reporting Frequency
Total Daily Flow	NA	NA	mgd ¹	Daily	Quarterly
Total Flow: Monthly Average	0.618	0.650	mgd	Monthly Calculation	Quarterly
Reuse Flow: Daily	NA	NA	mgd	Daily	Quarterly
Reuse Flow: Monthly Average	0.494	0.650	mgd	Monthly Calculation	Quarterly
Evaporation Pond Flow: Daily	NA	NA	mgd	Daily	Quarterly
Evaporation Pond Flow: Monthly Average	0.494	0.650	mgd	Monthly Calculation	Quarterly
Fecal Coliform: Single Sample Maximum	NA	23.0	CFU ²	Daily	Quarterly

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Parameter	Alert Level (AL)	Discharge Limit (DL)	Units	Sampling Frequency	Reporting Frequency
Fecal Coliform: 4 of 7 samples in a week	NA	Non-detect	CFU	Weekly Evaluation	Quarterly
Total Nitrogen: 5 sample rolling geometric mean	8.0	10.0	mg/L ³	Monthly Calculation	Quarterly
Cyanide (as free cyanide)	0.16	0.2	mg/L	Quarterly	Quarterly
Fluoride	3.2	4.0	mg/L	Quarterly	Quarterly

1. Million Gallons per Day
2. Colony Forming Units
3. milligrams per Liter

The reclaimed water monitoring for Class A+ and Class B+ effluent is outlined in Table 2-8. The reclaimed water monitoring is to be performed in addition to the routine monitoring outlined in Table 2-7. As stated above, the Class A+ effluent is used to irrigate the sports complex, and the Class B+ effluent is distributed to the evaporation basins to evaporate or is used at the truck fill station for construction.

Table 2-8 Class A+ and Class B+ Reclaimed Water Monitoring

Parameter	Class A+ DL	Class B+ DL	Sampling Frequency	Reporting Frequency
Fecal Coliform: Single Sample Maximum (CFU)	23	800	Daily	Quarterly
Fecal Coliform: 4 of last 7 samples (CFU)	Non-detect	200	Daily Evaluation	Quarterly
Total Nitrogen: 5 sample rolling geometric mean (mg/L)	10	10	Monthly Calculation	Quarterly
Turbidity: Single Reading (NTU ¹)	5	NA	Daily	Quarterly
Turbidity: 24-hour Average (PFU ²)	2	NA	Daily Calculation	Quarterly

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Parameter	Class A+ DL	Class B+ DL	Sampling Frequency	Reporting Frequency
Enteric Virus: 4 of last 7 samples (CFU)	Non-detect	NA	Monthly/ Suspended	Quarterly

1. Nephelometric Turbidity Unit
2. Plaque Forming Unit

2.4.4 PFAS Monitoring

It is recommended to begin monitoring for per/polyfluoroalkyl substances (PFAs). The recommended method for monitoring is utilizing EPA's Method 537. This method is acceptable and widely used as it is more cost-effective. Method 537 has a quicker turnaround time for results than Method 1633, which is normally used for non-drinking water. Either method will detect the levels of PFAs in the effluent.

Recent PFAs sampling conducted on 8/22/2024 showed the results displayed in Table 2-9.

Table 2-9 PFAS Sampling Results

Parameter	Result, ug/L (24H3308-01)	Result, ug/L (24H3308-02)	PQL, ug/L
PFBS	11	12	2.6
PFOS	87.8	8.8	6.9
PFBA	7.3	5.1	3.4
PFHpA	3.7	3.8	1.7
PFHxA	22	23	2.6
PFOA	24	24	4.3
PFPeA	46	49	1.7

The PFA concentrations within the effluent should be understood when considering future effluent uses.

2.4.5 Power Consumption

The plant is supplied with power by Arizona Public Service (APS). The service to the WRF is 1200 amps or 956 kW. The generator is rated for 600 amps or 478 kW. With a safety factor of two to

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account for the inrush current, in 2024, the WRF used an average of 29% of the APS service and an average of 59% of the generator capacity.

The power consumption for the projected plant capacities is shown in Table 2-10. The data shows that additional generator capacity is needed before the 0.65 MGD expansion and more service capacity is needed before the 1.3 MGD expansion.

Table 2-10 Projected Power Needs

	2023	0.65 MGD	1.3 MGD	1.7 MGD
Flow, mgd	0.262	0.65	1.3	1.7
kW	280	695	1390	1818

SECTION 3. Planning

3.1 Planning Horizons

Both the 2050 and buildout conditions were analyzed for this report. Through discussions with the Town, it was determined that 2050 provides a practical horizon for planning, development, and design purposes. Therefore, most of the analysis and planning discussed in this report are primarily focused on 2050 conditions. Buildout is considered too far into the future to be of great practical value for planning and design; new infrastructure based on the buildout conditions will likely be oversized for many years and may even exceed its service life before the full capacity is utilized.

3.2 Existing Service Areas

3.2.1 Town

The Town's current designated service area per the Northern Arizona Council of Governments Section 208 Water Quality Management Plan is approximately 2,500 acres. However, the Town's effective service area, or the area presently served by the Town's wastewater infrastructure is approximately 1,300 acres. The remainder of the Town's designated service area utilizes private septic tanks. There are currently no known active plans to install wastewater infrastructure to serve these areas.

In recent years, the Town has begun planning to extend the Town's wastewater infrastructure to the north of I-17. These plans and analyses have been incorporated into this report as needed.

3.2.2 Yavapai Apache Nation

The Tunlii plant, owned and operated by the Yavapai Apache Nation (YAN), also provides wastewater service to portions of its own administrative area and several parcels outside its administrative area. In particular, it provides wastewater services to the Yavapai County courthouse, the Sheriff's facilities, FrameTec and several businesses located near the intersection of Highway 260 and the Forest 372 Route. YAN also provides services to the middle Verde YAN area east of the Verde River.

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It is also understood that a small lagoon-based treatment facility located east of the Verde River provides services to some of the Middle Verde Area YAN administrative area east of the Verde River as well as some portions of the Town.

The Town's existing effective and designated service areas, along with existing YAN effective service area and YAN boundary are shown in Appendix C.

3.3 2050 and Buildout Service Areas

It is assumed that by 2050 all areas within the Town boundary west of the Verde River will be served by a centrally treated wastewater system and that no significant development will be allowed to be constructed without being connected to the wastewater system (i.e. no heavy use of septic systems). A figure showing the 2050 wastewater system service area, providers, and anticipated treatment facilities is shown in Appendix D.

At Buildout, it is anticipated that all businesses and residents within the Town boundary will have wastewater service. It is assumed that all residents and businesses currently using septic systems will be connected to a centrally treated wastewater collection system. It is anticipated that the Town, YAN, and the Verde Lakes Water Corporation will provide the service. A figure showing the buildout service area, providers, and anticipated treatment facilities is shown in Appendix E.

3.4 Wastewater Flow by Land Use

The various land use and zoning designations from the Town and Yavapai County were analyzed and consolidated into land use types to project wastewater generation on a gallons per acre per day basis, as shown in Table 3-1. For planning purposes, the wastewater generation rate is assumed to be 2/3 of the assumed water demand developed for the TOCV Water Master Plan. For this analysis, it was assumed that the YAN areas are equivalent to a mix of low-density residential development and commercial areas (75% residential, 25% commercial). A figure showing the assumed land uses throughout the Town Boundary is included in Appendix F.

Table 3-1 Wastewater Generation Demand by Land Use Type

Land Use Type	Assumed Lot Size (Acres)	Dwellings per Acre, Units	Generation per Dwelling, gpd	gpd/acre
Rural Residential	3	0.33	183	61
Low Density Residential	1.25	0.80	183	146
Medium Density Residential	0.2	5.00	183	913
YAN (Current, Land Swap)	-	-	-	309
Commercial	-	-	-	800

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Land Use Type	Assumed Lot Size (Acres)	Dwellings per Acre, Units	Generation per Dwelling, gpd	gpd/acre
PAD	-	-	-	1,840
Open Space / US Forest Service	-	-	-	0
ROW	-	-	-	0
State Land Department	-	-	-	913
State Use	-	-	-	219

These wastewater generation rates were applied to land use to develop buildout and 2050 flow projections discussed in Section 4.6.

3.5 Population Projections

The TOCV requested a medium and high projection for population growth. The medium projection annualized growth rate used is 1.5%. This was derived from the Regional Economic Development Center at Yavapai College using the Lightcast Q1 Data Set, using a range of 2019-2030. The high projection annualized growth rate used is 2.5%. This is a conservative estimate to ensure the Town will have the facilities online ahead of the development demand.

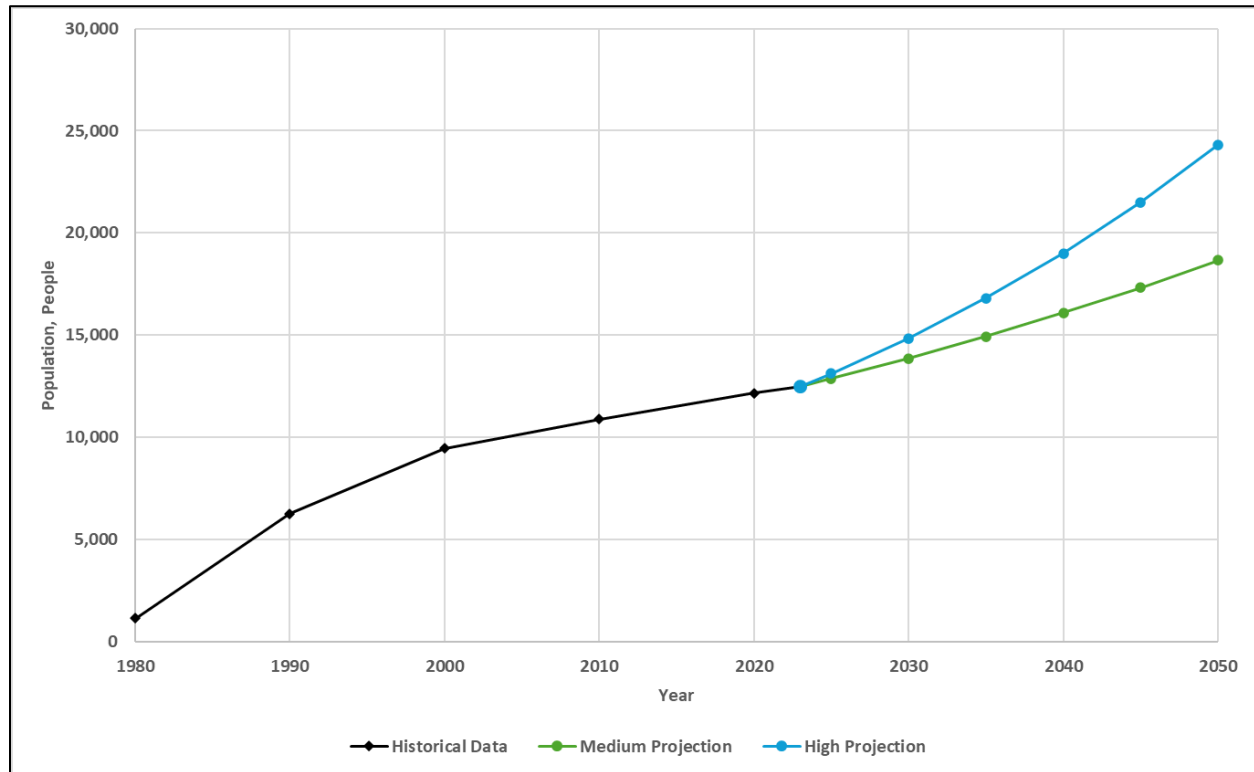
Table 3-2 displays the population projections through 2050. The projections start with the population of the TOCV in 2023 of 12,489, based on the US Census as of July 1, 2023. Figure 3-1 shows the historical data through 2023 and the medium and high rates of growth.

Table 3-2 Population Projections

Year	Medium Projection		High Projection	
	Population, people	Annualized Growth Rate, %	Population, people	Annualized Growth Rate, %
2023	12,489	1.50%	12,489	2.50%
2025	12,866	1.50%	12,994	2.50%
2030	13,861	1.50%	14,346	2.50%
2035	14,932	1.50%	15,839	2.50%
2040	16,086	1.50%	17,488	2.50%
2045	17,329	1.50%	19,308	2.50%
2050	18,669	1.50%	21,317	2.50%

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Figure 3-1 TOCV Population Projection



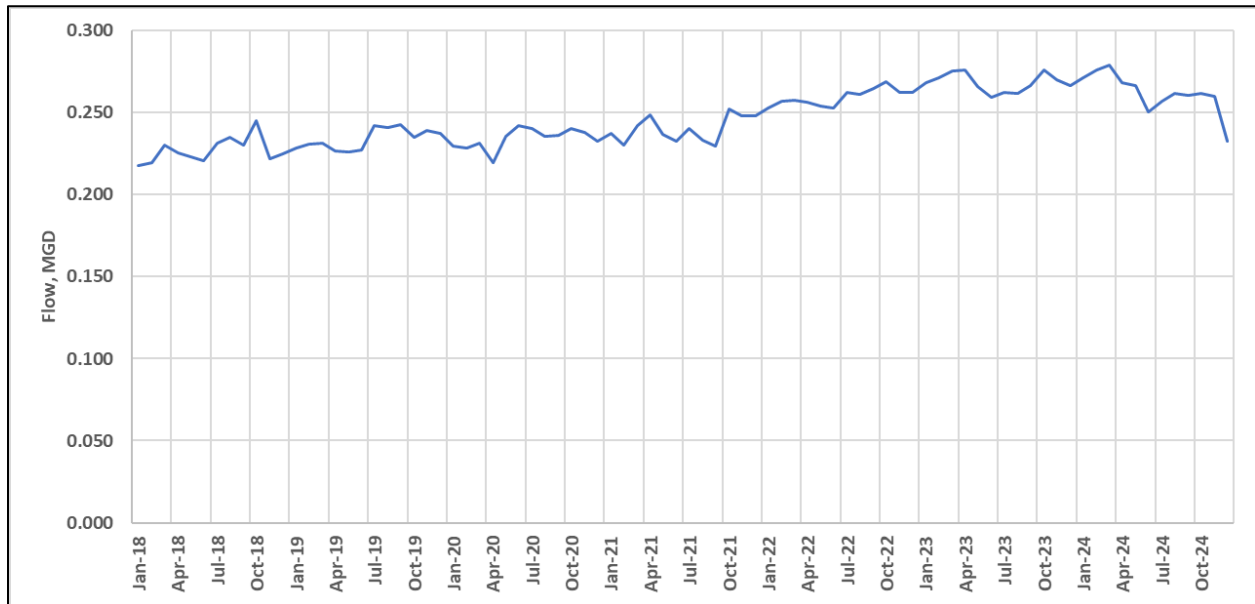
SECTION 4. Wastewater Flow Analysis

4.1 Historic Wastewater Flows

Wastewater flows generated by the existing service area and received at the wastewater treatment plant have been trending upward for several years. The average daily flows per month between January 2018 and December 2024 are shown in Figure 4-1.

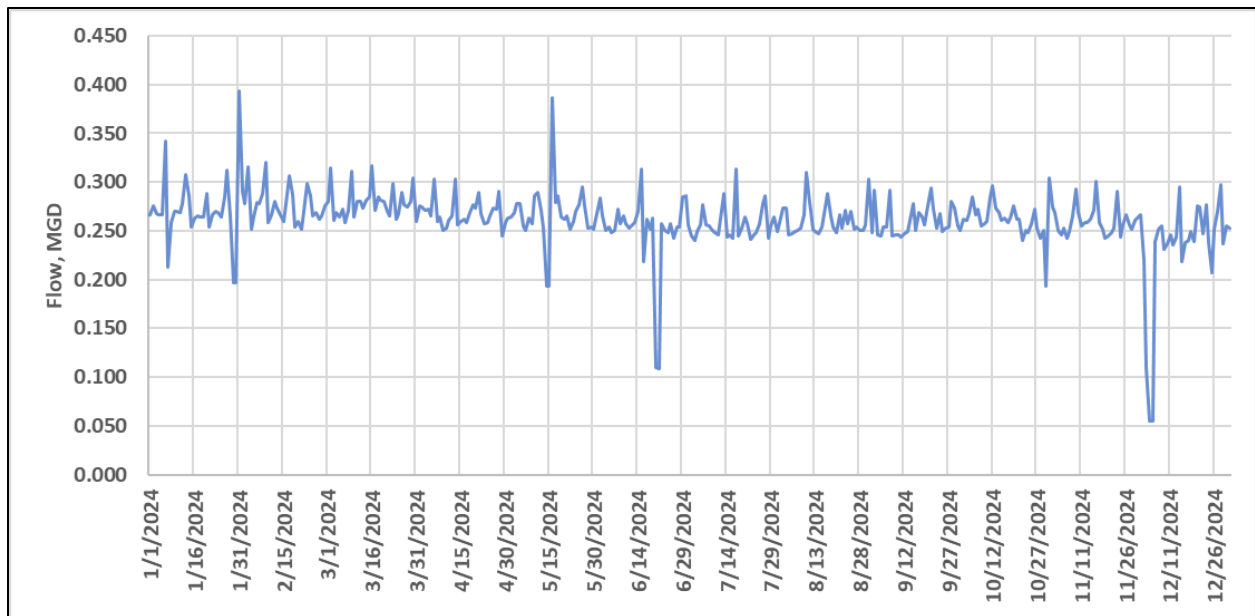
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Figure 4-1 Average Daily Flow per Month



The daily flows received at the treatment facility between January 1, 2024, and December 31, 2024, are shown in Figure 4-2.

Figure 4-2 2024 Daily Flow



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Table 4-1 presents a brief statistical analysis of the wastewater flows received at the wastewater treatment facility. Using data from water customers in the wastewater service area as a stand-in for wastewater flow data, it is estimated that approximately 60% of wastewater currently generated in the service area is from residential customers and 40% is generated by commercial customers.

Table 4-1 Existing Treatment Facility Flow Statistics

Flow Condition	Flow, MGD	Flow Factor (% of Average)
Min	0.141	0.53
8% (synthetic Avg day, min month)	0.245	0.92
Avg	0.267	1.00
92% (synthetic Avg day, max month)	0.307	1.15
Max	0.364	1.36
Average Day, Max Month	0.276	1.03
Average Day, Min Month	0.259	0.97

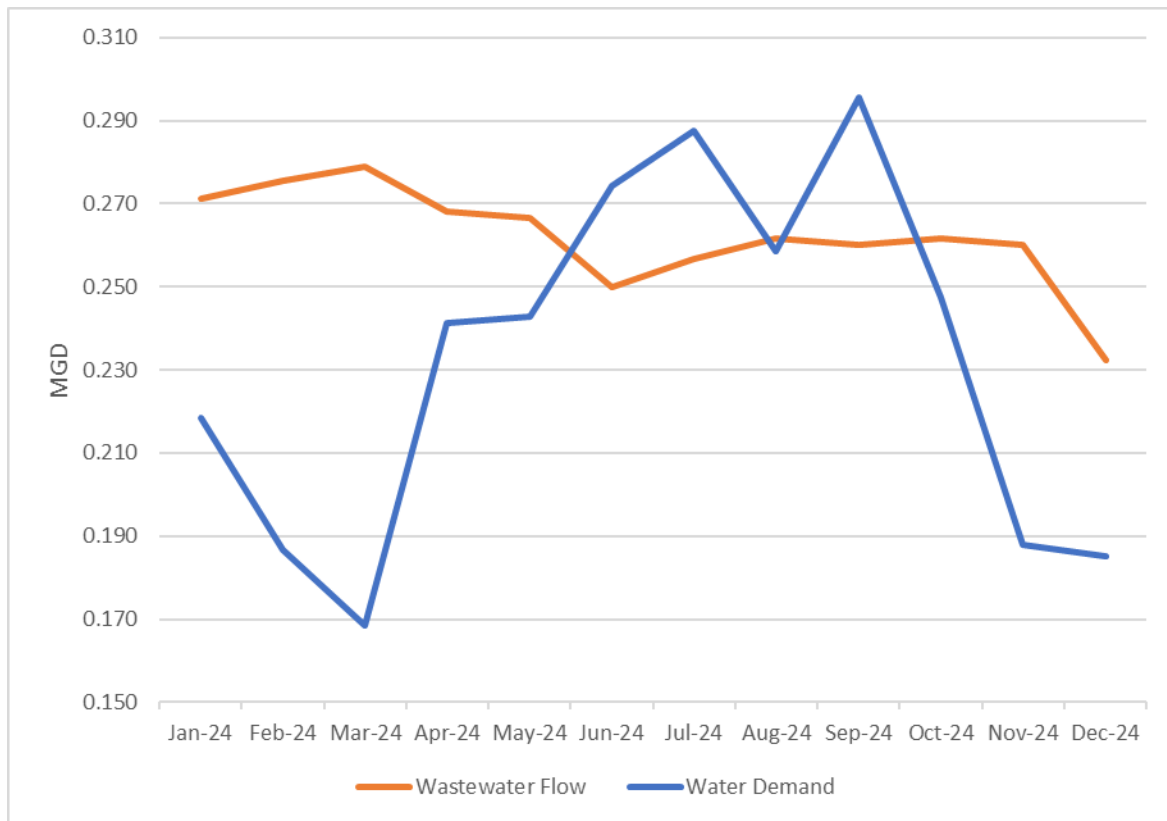
4.1.1 Wastewater Flow vs. Water Demand

For planning purposes, the amount of wastewater flow generated is typically assumed to be 60-85% of the water demand for a particular customer or area. The remainder of the water demand is used outdoors or consumed in such a way that it is not returned to the wastewater system.

In Camp Verde, the wastewater flow received at the plant was larger than the water demand from the wastewater service area for a portion of 2024. The water demand and wastewater flow for the wastewater service area is plotted in Figure 4-3.

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Figure 4-3 Wastewater Flow vs. Water Demand



After discussions with the Town engineering and operations staff, it was determined that this occurs because there are several wastewater customers that use minimal amounts of metered potable water from the Town water system, while contributing large amounts of wastewater flow to the Town wastewater system. These customers include a car wash, a large RV resort, and a marijuana growing/processing facility. The “extra” wastewater originates from private wells used by these customers that are unmetered by the Town.

The slow decline in wastewater flow shown in Figure 4-3 after April, comes from the decrease in late spring and summer use at the RV resort. The RV resort is understood to have high occupancy rates in winter and spring seasons, and a far lower occupancy rate in the summer and early fall. The spike in water demand occurring in April is due to increased summer use.

4.2 Plant Flow and Loading

Plant flow was analyzed from January 2024 to December 2024 to determine flow data. Lab samples from this same period were used to determine plant loading of total suspended solids (TSS), biological oxygen demand (BOD) and ammonia. The lab data was analyzed to determine max loading. The month that experienced the highest BOD showed ammonia and TSS levels that were

Wastewater System Master Plan

below 92%. This was the same for the month with the highest TSS level, showing BOD and ammonia levels below 92%. The same trend occurred in the month with the highest ammonia levels. Due to this, the synthetic 92nd percentile was used for max loading in all three cases. The results are displayed in Table 4-2.

Table 4-2 Existing Treatment Facility Flows and Loading

WWTP Flows		Units	Value
AAD Flow (Plant Data Jan 2024-Dec 2024)		0.258	MGD
ADMM Flow (Plant Data Jan 2024 - Dec 2024)		0.301	MGD
Influent BOD (Lab Data Jan 2024 - Dec 2024)	Average	323	mg/L
		713	lb/d
	Synthetic 92%	448	mg/L
		1134	lb/d
Influent TSS (Lab Data Jan 2024 - Dec 2024)	Average	226	mg/L
		493	lb/d
	Synthetic 92%	270	mg/L
		579	lb/d
Influent Ammonia as N (Lab Data Jan 2024 - Dec 2024)	Average	41.9	mg/L
		91.7	lb/d
	Synthetic 92%	46.9	mg/L
		108.0	lb/d

The plant also receives septage that is treated in the Septage Receiving Tank to reduce nitrogen concentrations. The average septage flow received from January 2024 to December 2024 is shown in Table 4-3.

Table 4-3 Average Monthly Septage Flow

Month	Average Flow per Month, gpd
Jan-24	8,527
Feb-24	11,115
Mar-24	10,121
Apr-24	10,122
May-24	6,527
Jun-24	5,804
Jul-24	4,351
Aug-24	5,260
Sep-24	3,678
Oct-24	5,520

Wastewater System Master Plan

Nov-24	5,129
Dec-24	4,763
12-month average	6,743

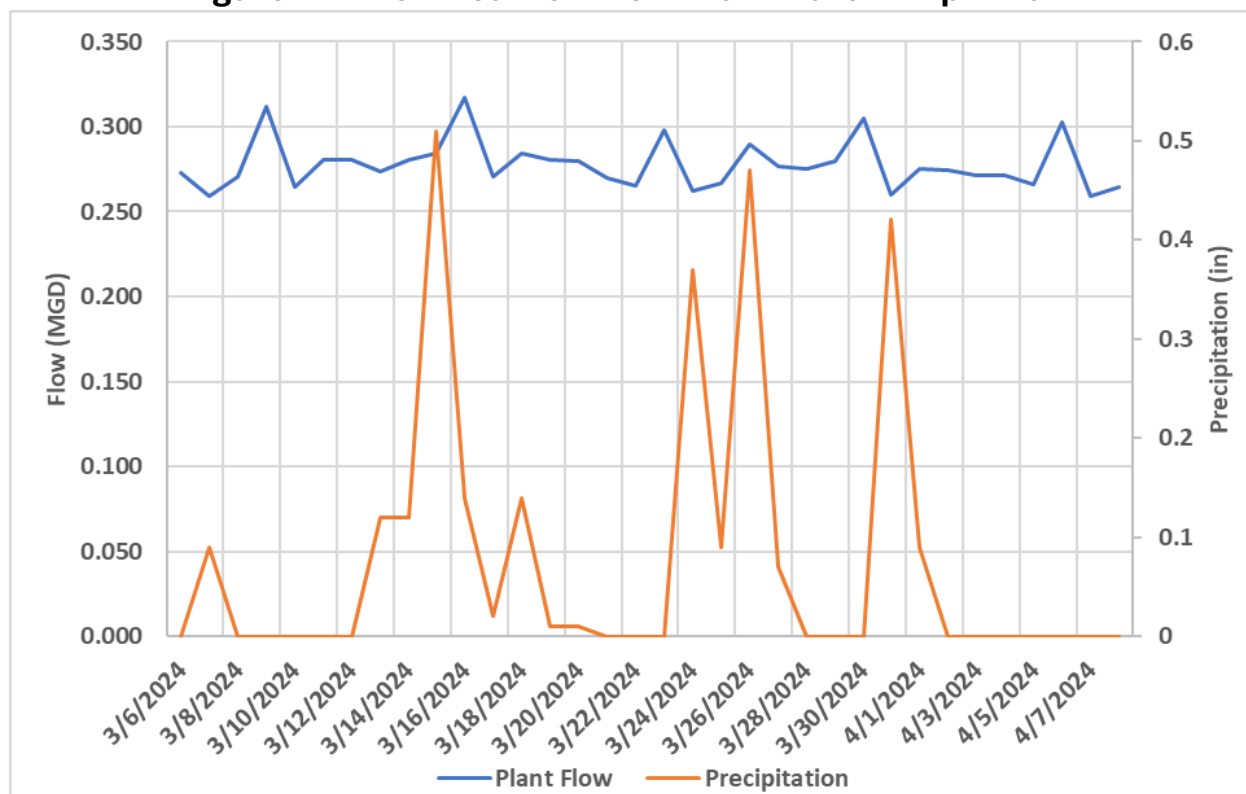
The secondary treatment process consists of conventional activated sludge (using the Aero-Mod process) that achieves nitrification and denitrification. The current operation only uses one of the Aero-Mod trains. Modeling of the system was completed using the BioWin modeling program. The model processes were calibrated to match the Aero-Mod process and operations data. A dynamic model with diurnal flow was created based on the influent pump station (IPS) data. According to the modeling results, the existing plant is capable of treating wastewater up to 0.65 MGD with one train of the Aero-Mod.

4.3 Wet Weather Flow

Influent flows at the WRF from January 2024 to December 2024 were analyzed to determine the effect of rainfall within the TOCV service area. For this, precipitation information was collected from the Weather Underground, a community-based weather data recording organization. Rainfall data was collected from the Verde Ridge – KAZCAMP58 weather station from January 2024 to December 2024. A comparison was performed with the rainfall and plant flow data during the same period. This was done to determine if rainfall affects the Town's wastewater system. A rain event was considered a wet weather event if there was a total of 0.5 inches or more of precipitation over three days. Using this method, it was found that there were five such wet weather events during the period of analysis. Graphs were made for each wet weather event to observe the effect. A graph showing the wet weather event that occurred from March to April 2024 is shown in Figure 4-4. The weather events in orange show no visible effect on the plant flow in blue.

Wastewater System Master Plan

Figure 4-4 Wet Weather Event from March – April 2024



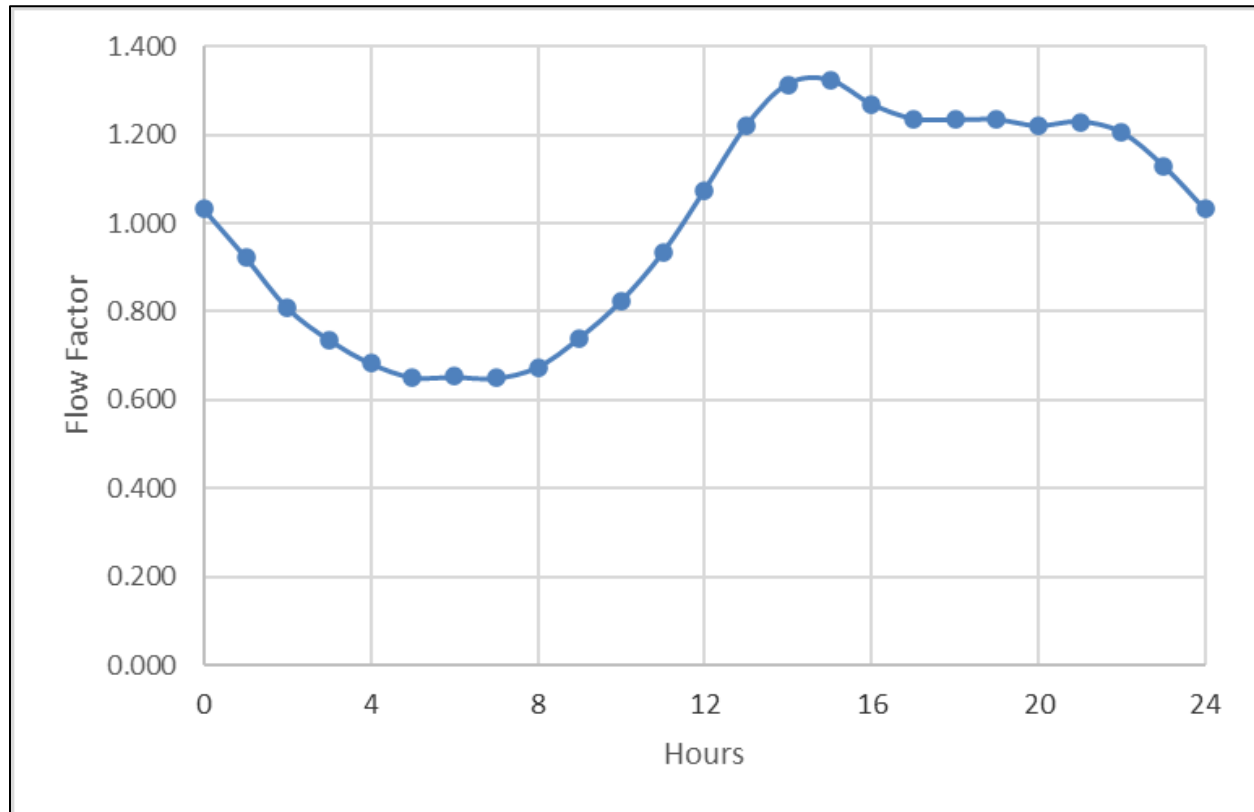
This is typical of all the wet weather events that occurred during the period analyzed. This shows that very little inflow or infiltration into the wastewater system occurs. Town operations and engineering staff also stated they see little effect from rainfall on the wastewater collection system. To limit inflow, Town staff have planned on equipping all manholes in flood-prone areas with hinged, rain-tight, PAMREX sewer lids.

4.4 Diurnal Pattern

Four flow meters were placed in manholes in the wastewater collection system to collect flow data at those locations and develop diurnal curves. The flow meter locations and subsequent curves developed from each are included in Appendix G. These curves were applied to the appropriate upstream areas in the hydraulic model to develop a general diurnal pattern for the entire wastewater collection system. Specifically, this diurnal curve is experienced at Lift Station 1 and the Town's treatment facility. This is shown in Figure 4-5. The hydraulic model is discussed in detail in SECTION 5.

Wastewater System Master Plan

Figure 4-5 Collection System Diurnal Curve



4.5 Peaking Factors

Peaking factors are applied to average flows to calculate a peak flow that is used to analyze and determine the capacity and appropriate size of wastewater infrastructure. Through analysis of historic plant and the flow meter data, it was determined that the Town's historic wastewater collection system peaking factor is approximately 1.80 times the average flow during December 2022 through November 2023. This was determined using the max flow day factor for the study period (1.36 x daily average) multiplied by the peak hour flow factor (1.32 x flow) determined when analyzing the diurnal curve and flow meter data.

Table 4-4 2023 Historic Peaking Factors

Daily Peak Hour Peaking Factor	Max Day Peaking Factor	Resultant Peaking Factor
1.32	1.36	1.80

Wastewater System Master Plan

For planning purposes, the population-based peaking factor provided by the Arizona Administrative Code R18-9-E301 will be used when evaluating future infrastructure. In most cases, this will result in a greater, or more conservative, peaking factor, particularly with smaller flows and infrastructure.

4.6 2050 Wastewater Plant Flow Projections

In 2050, the Town is anticipated to provide wastewater service to all areas south and west of the Verde River, including a portion of county land just north of the Town boundary, but excluding the areas around the Tunlil plant operated by YAN. Wastewater flow growth was determined based on the following concepts:

- Future wastewater flows are based on land use.
- The Town's residential population is growing annually by 1%. By 2050, all residents would live in the Town's water service area, which is larger than the wastewater service area.
- The existing ratio of residential to commercial flows (60% residential, 40% commercial) will be maintained through 2050.

The wastewater flow projections shown in Table 4-5 are based on land use, the anticipated service areas, and population projections.

Table 4-5 2050 Projected Wastewater Plant Flow

Facility	Average Day Flow, gpd
Alcantara (Town)	281,000
Main Plant (Town)	1,240,000
Total	1,521,000

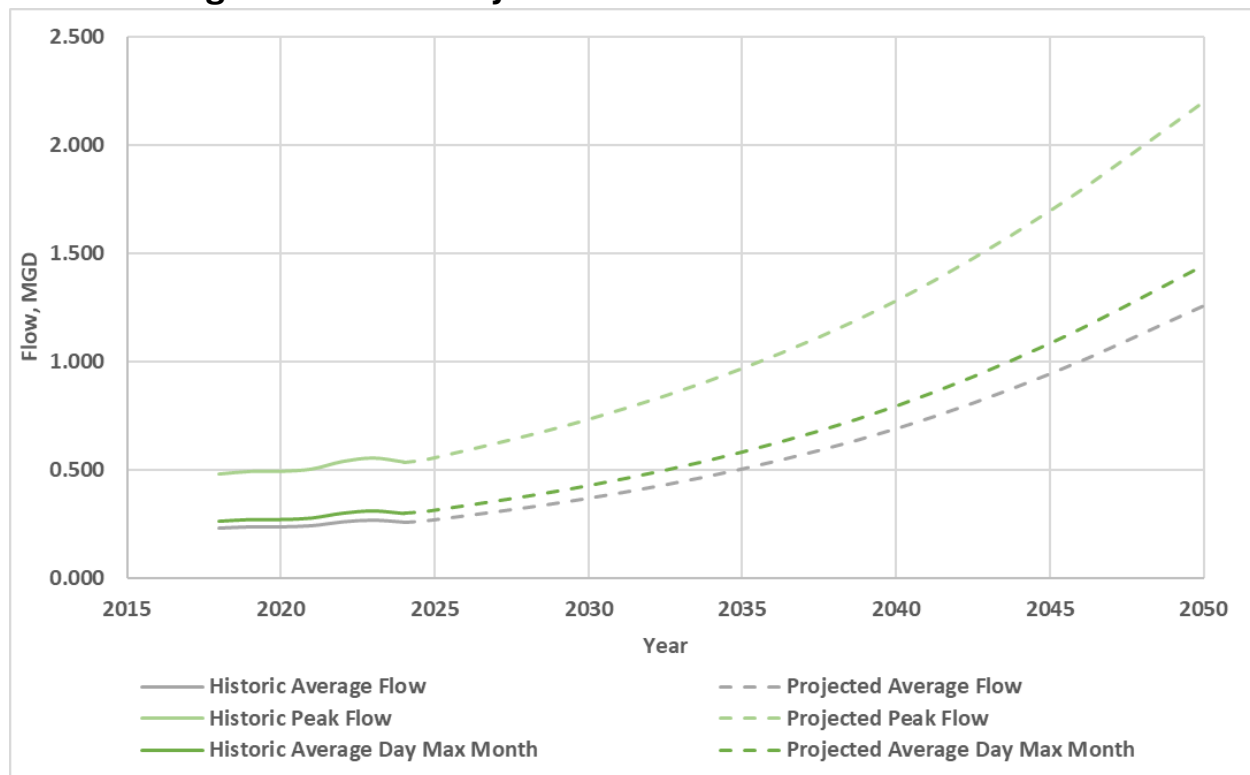
The projected flow to the main plant is tabulated in Table 4-6. The table includes average day, average day max month based on the historic average day max month peaking factor, and peak flow based on ADEQ peaking factors. For the ADEQ peaking factor, it is assumed that the wastewater generated per person per day will decrease over time. In existing conditions, it is assumed that a person will generate 80 gallons of wastewater per day. It is also assumed that the flow per person will decrease to 70 gallons per day by 2050. The projected flow is shown graphically in Figure 4-6.

Wastewater System Master Plan

Table 4-6 2050 Projected Main Plant Wastewater Flow

Year	Avg Flow, MGD	2023 Max Month Factor	Average Day Max Month, MGD	Assumed gal/person	Equiv. Total Population	ADEQ Peaking Factor	Peak Flow, MGD
2024	0.258	1.15	0.30	80	3,224	2.07	0.53
2025	0.270	1.15	0.31	79.26	3,411	2.06	0.56
2030	0.369	1.15	0.42	77.41	4,770	1.99	0.73
2035	0.504	1.15	0.58	75.56	6,676	1.92	0.97
2040	0.689	1.15	0.79	73.70	9,349	1.86	1.28
2045	0.941	1.15	1.08	71.85	13,100	1.80	1.70
2050	1.25	1.15	1.44	70	17,922	1.75	2.20

Figure 4-6 2050 Projected Main Plant Wastewater Flow

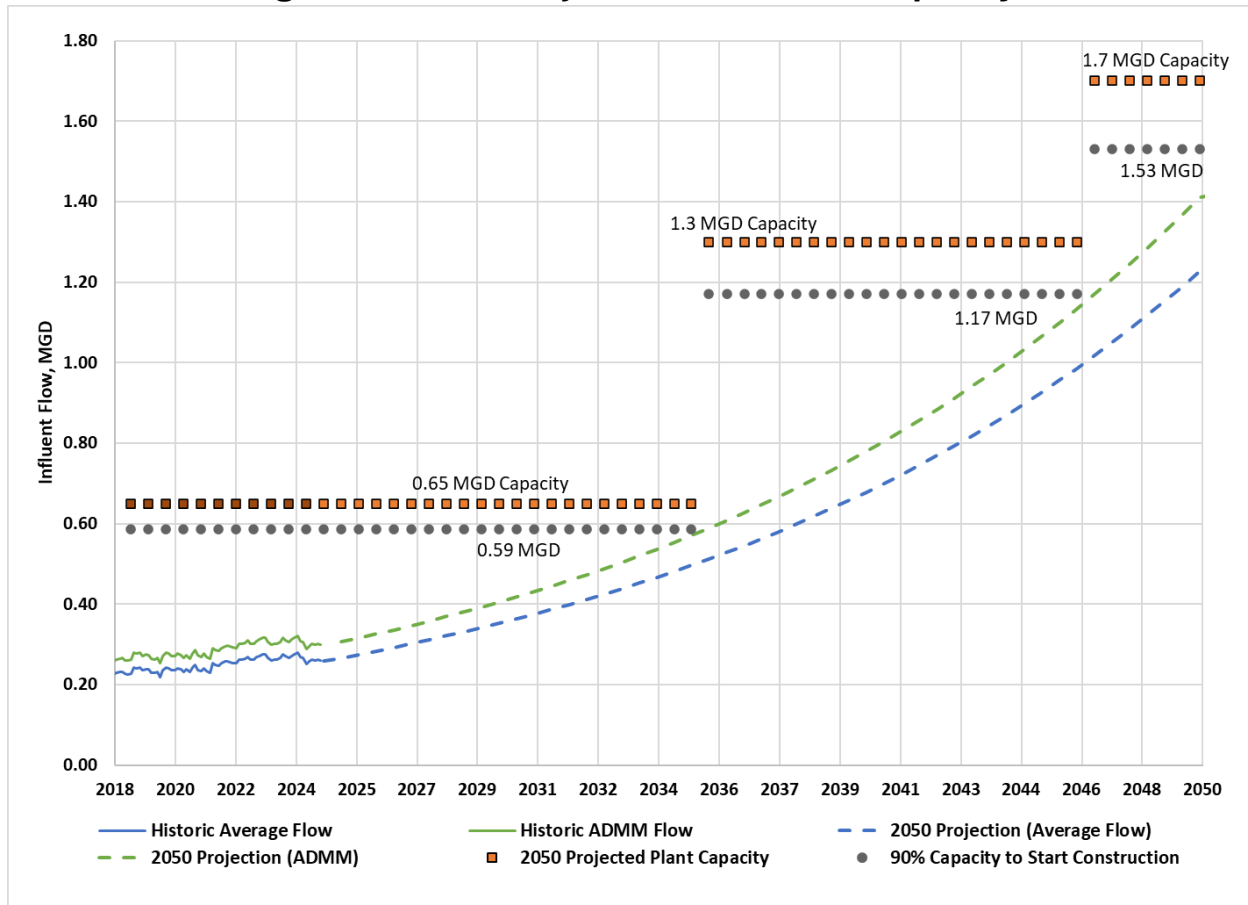


The main plant is currently permitted up to 0.65 MGD treatment capacity and up to 1.3 MGD for Phase II, as discussed in Section 2.4. Typically, construction for the next phase should start when the plant's ADMM flow reaches 90% design capacity. According to the 2050 wastewater flow projection, the plant's ADMM flow will reach 90% capacity of 0.65 MGD (0.59 MGD) by 2035, and

Wastewater System Master Plan

90% capacity for 1.3 MGD (1.17 MGD) by 2046. A new permit for a designed capacity of 1.7 MGD is required once the plant reaches 1.17 MGD capacity. The main plant's capacity for the projected 2050 wastewater flow is shown in Figure 4-7.

Figure 4-7 2050 Projected Main Plant Capacity



4.7 Buildout Wastewater Plant Flow Projections

In buildout conditions, it is anticipated that the entire Town will be served by a centralized wastewater collection system. Table 4-7 shows the buildout wastewater flow projections for the entire Town. These include areas served by the Town, YAN, and the Verde Lakes Water Company.

Table 4-7 Buildout Flow Projections

Service Provider	Facility	Avg. Day Flow, MGD
Town	Alcantara	0.94
	Main Plant	4.08
	New Plant	0.69
	Town Subtotal	5.71
YAN	Tunlii	0.27

Wastewater System Master Plan

	Lagoon Plant	0.93
	YAN Subtotal	1.20
Verde Lakes Water Corp.	Verde Lakes	0.44
Total	-	7.35

SECTION 5. Hydraulic Modeling and Analysis

5.1 Modeling Software Selection

A hydraulic computer model of the wastewater system was developed using Aquatwin Sewer by Aquanuity.

5.2 GIS Database and Model Development

A GIS database of the Town's wastewater system developed alongside this Master Plan was used as the basis for a hydraulic computer model of the wastewater collection system. The GIS database incorporated information from as-built drawings, an aerial survey, parts of a previous GIS database, and other sources as appropriate.

Both existing and future conditions scenarios were modeled for a variety of flows and development conditions. The future conditions scenarios incorporate the capital improvement projects in SECTION 6 of this report.

5.3 Wastewater Loading

For the existing conditions, wastewater flow was assigned, or loaded, to manholes located throughout the collection system according to geolocated water meter demand data provided by the Town. The water demand attributed to a location was then adjusted so the overall wastewater flow for the system matched the Town's average flow of 0.267 MGD. Wastewater flow for future conditions was attributed to the model based on land use as discussed in Section 3.4 and Section 4.6.

5.4 Gravity Sewer Mains and Manholes

The locations and elevations of existing gravity sewer mains and manholes were imported into Aquatwin based on data from the aerial survey and field condition assessments. The data was supplemented by additional field data and as-built drawings as needed.

Future gravity mains and manholes were placed throughout the anticipated 2050 service area to act as trunk mains for additional connections. The elevations are such that a slightly greater than minimum slope is maintained. In most cases, at least 8' of cover is maintained, except for the gravity sewer main leading from Lift Station 3. In most locations, the future sewer depth is less than

Wastewater System Master Plan

15'. However, some short stretches of up to 25' depth will be required due to local topography. Additional analysis and design of the final sewer locations may reduce the constructed depth.

5.5 Lift Stations and Force Mains

Lift stations were modeled using a method that does not use actual pump curves, pump controls, or wet well characteristics. Instead, the pumps were arranged to automatically transfer all flow to the downstream location.

5.6 Model Calibration

The steady state average day model flows in the existing conditions were adjusted to approximately match the data provided from the flow monitoring analysis used to develop a diurnal curve for the system.

5.7 Model Scenarios

Two development conditions were explicitly modeled in steady-state scenarios. These were the existing conditions and the 2050 conditions. In the 2050 model it was assumed that all the improvements listed in the Capital Improvements Plan in SECTION 7 were fully implemented. Aquatwin Sewer does not require separate scenarios to be run using separate peaking factors. Instead, a single scenario provides results showing both average day and peak hour conditions. The peaking factors used in the steady state conditions were those listed in the Arizona Administrative Code R18-9-E301, which is based on an equivalent population. Wet weather scenarios were not included because of the minimal influence of rainfall events.

5.8 Model Results

The model results indicate the existing wastewater collection system has sufficient capacity to convey the existing flows without exceeding any d/D requirements.

The future conditions were modeled both with and without the equalization basin located at proposed Lift Station 3, as discussed in Section 6.5. As modeled, the results indicate that the projected peak flow will exceed the conveyance capacity directly downstream of the I-17 Crossing unless the flow is attenuated or capacity is increased. The model results also show that a segment of the downstream trunk main installed near the lift station may reach a d/D of approximately 0.9-1.0 if the equalization basin is not installed.

It should be noted that elevations assigned to this portion of the existing 21-inch trunk main indicate they are installed at slopes below the allowable minimum. This is somewhat unlikely and may indicate that flawed data was used when the model was constructed. The existing mains are calculated to have sufficient capacity for the future peak flow if they were installed at the minimum allowable slope. Therefore, it is recommended that the 21-inch main is surveyed when the equalization basin discussed in Section 6.5 is considered.

Wastewater System Master Plan

The model results show that an equalization basin installed near proposed Lift Station 3 can successfully reduce the flow downstream so the existing sewer mains can convey the projected peak flows at acceptable d/D ratios. Figures showing the projected 2050 peak flow d/D ratios with and without the equalization basin are included in Appendix H.

SECTION 6. Future Wastewater Infrastructure

6.1 Design Criteria

The recommended design and analysis criteria for the wastewater system infrastructure are summarized below in Table 6-1. Appendix I contains a comparison of these recommendations along with the City of Cottonwood and the City of Prescott.

Table 6-1 Recommended Infrastructure Design Criteria

Design Parameter	Recommended
Gravity Main Velocity (full flow)	2 ft/s < V < 10 ft/s
Force Main Velocity	3 ft/s < V < 7 ft/s
d/D for new gravity sewer (<12")	0.50
d/D for new gravity sewer (>=12")	0.75
max d/D for existing mains	0.75
Gravity Main Roughness	n = 0.013
Force Main Roughness	c = 120
Design Flows	See Table 3-1 for general Land Use
	per AAC for specific uses
Per Capita Wastewater Generation	80 gallons / person
Dry Weather Peaking Factor (New Developments)	per AAC Table
Wet Weather Peaking Factor (New Developments)	N/A

Wastewater System Master Plan

6.2 2050 Wastewater System

The conceptual layout of the Town's 2050 backbone wastewater system is shown in Figure 6-1. As shown in the figure, the Town will serve all areas west of or south of the Verde River and a small portion of county land north of the Town boundary. A more detailed figure is included in Appendix J.

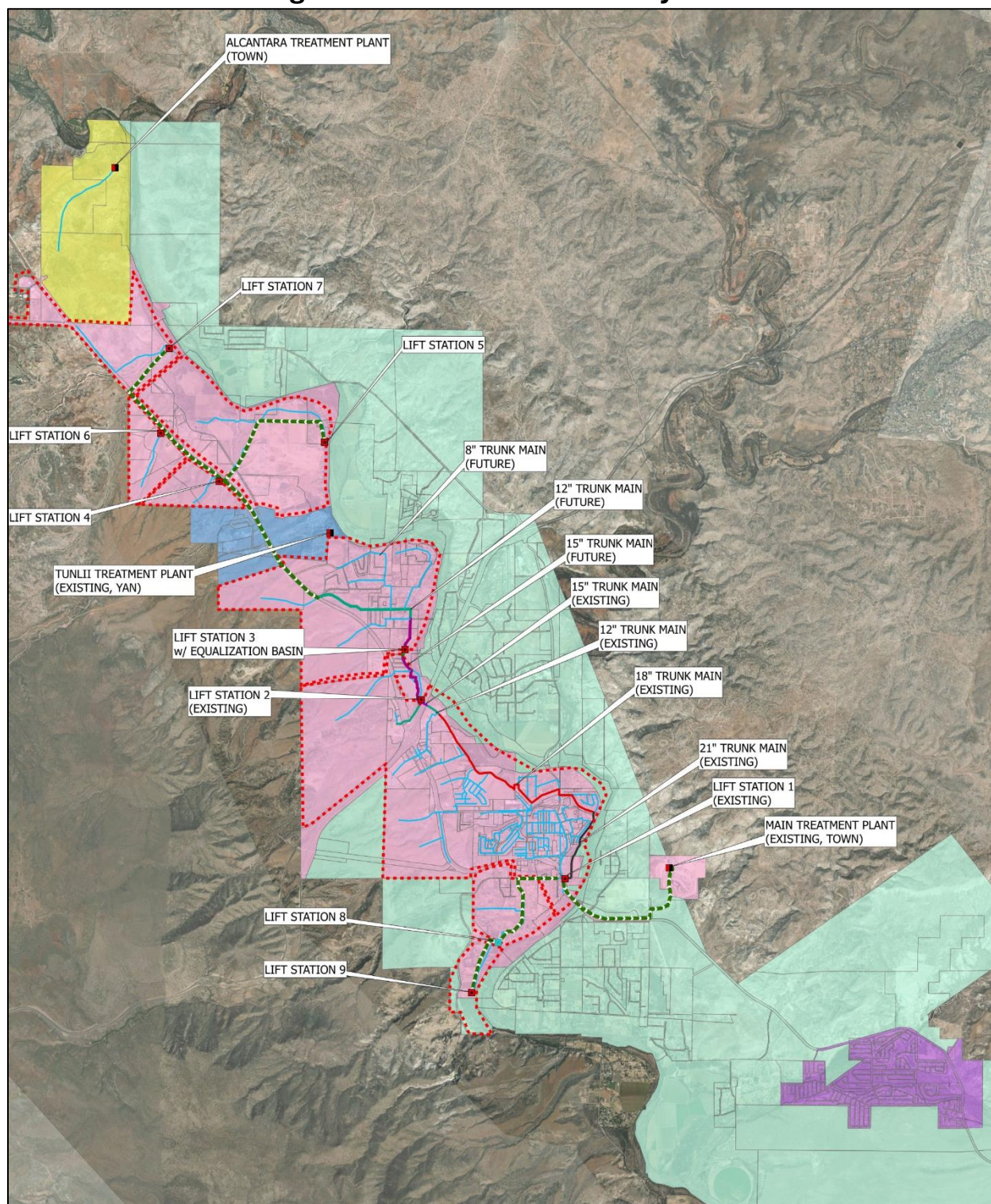
Ground elevations in the 2050 service generally decrease north to south, and from the Town boundary towards the Verde River. However, the slopes are broken due to many ridges and dry washes perpendicular to the river. This creates many natural, disconnected gravity sewer basins with the lowest point near the Verde River. From the bottom of each basin, lift stations will be needed to pump wastewater to Highway 260, and south along the highway to a point where it can be discharged to the gravity collection system, which will convey it to the Town's main treatment facility.

Wastewater from the County area north of the Town boundary will flow to a new treatment facility near the Alcantara winery and resort. It is understood that Town officials have held discussions with potential developers regarding this facility.

The system as depicted in Figure 6-1 and the figure in Appendix J is meant to be the basis for future detailed engineering design as the system expands over time. The future sewer main alignments show trunk or backbone sewer mains required to serve larger areas, not particular streets or neighborhoods. Final sewer main alignments, basin boundaries, pipe sizes, manhole inverts, and lift station locations will need to be carefully evaluated and finalized as the wastewater system develops.

Wastewater System Master Plan

Figure 6-1 2050 Wastewater System



Wastewater System Master Plan

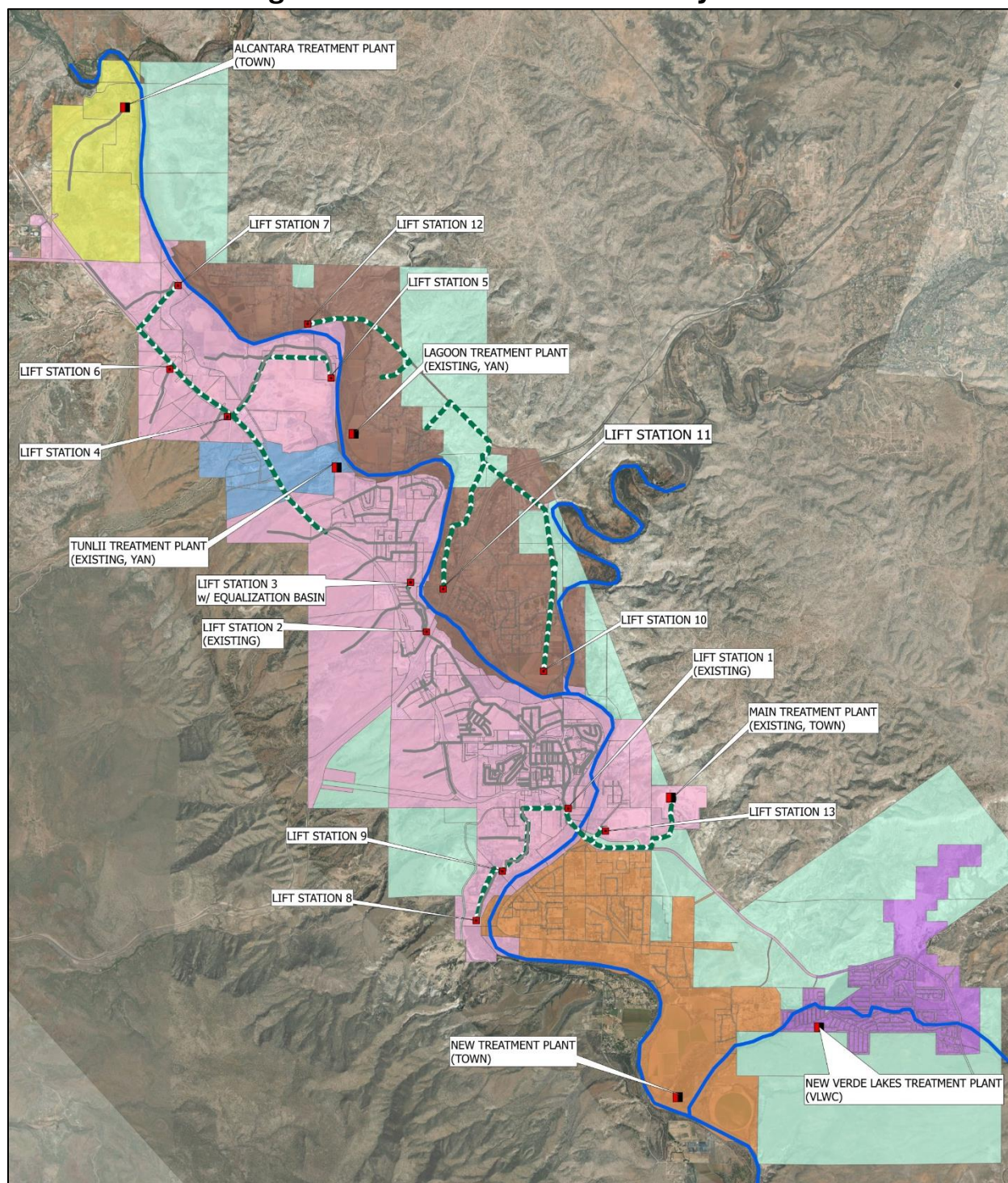
It is understood that the High View development will install two long-term but temporary package treatment plants that will treat wastewater flows from those developments. However, it is also understood that those treatment plants will be converted into lift stations prior to 2050. For this reason, the two package treatment plants are not shown in the figure.

6.3 Buildout Wastewater System

The conceptual layout of the Town's buildout wastewater system is shown in Figure 6-2. As shown in the figure, all areas within the Town boundary, except for forest service lands, are anticipated to be served by a centralized wastewater collection and treatment system in the buildout condition. The figure shows several new lift stations and treatment facilities operated by the Town and others. The figure generally does not show gravity sewer mains since the figure depicts a condition that is outside the 2050 planning horizon.

Wastewater System Master Plan

Figure 6-2 Buildout Wastewater System



Wastewater System Master Plan

6.4 2050 Gravity Mains

Existing sewer mains and proposed gravity trunk mains required in 2050 are shown in Figure 6-1. The figure in Appendix J shows the 2050 system layout in greater detail. The trunk mains are sized for 2050 peak flows, based on the 2050 flow projections and ADEQ peaking factors. The figures do not depict the numerous local sewer mains and laterals that will be required to convey flow to the trunk mains.

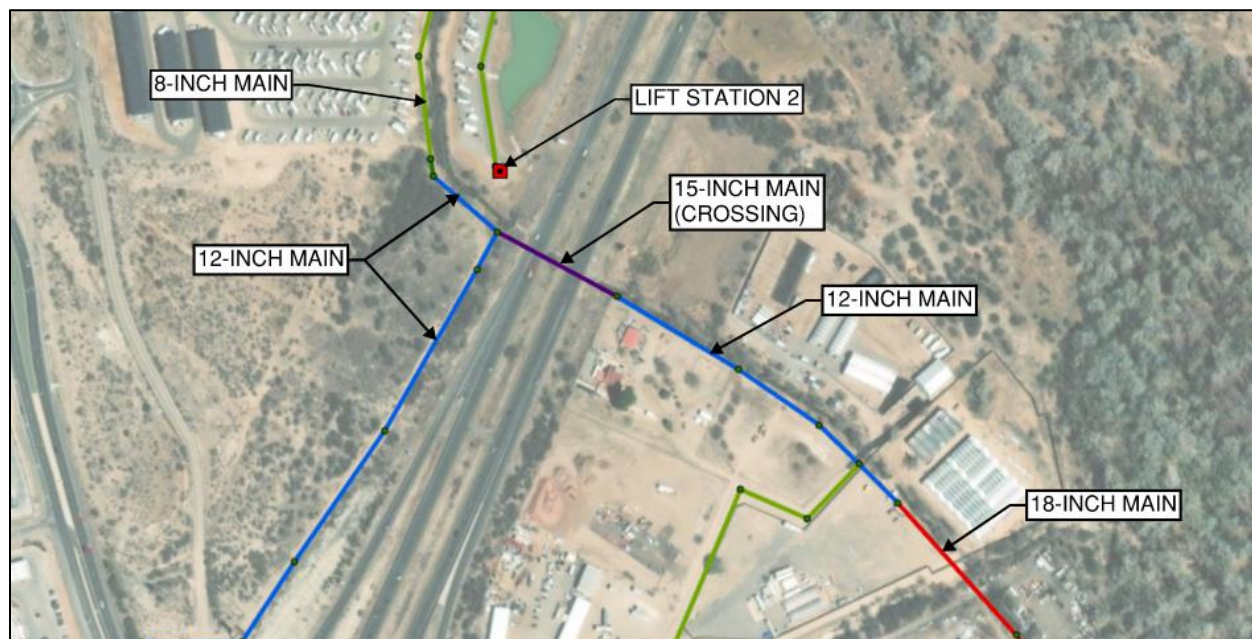
In developed areas, the trunk mains generally follow existing or likely future rights of way, or are shown between buildings or along property lines in developed areas of the Town. The trunk mains shown in currently undeveloped areas follow likely alignments required by topographic conditions. Alignments were chosen to minimize required depth and to enable the maximum service areas. The trunk mains were assumed to have an 8-foot minimum depth in most locations. This will enable additional local mains and service laterals to tie into them and also allow for some flexibility at final design.

6.5 I-17 Crossing Bottleneck

The existing wastewater system backbone was installed in 2006. It consists of 12-inch through 21-inch mains that increase in size as the pipes approach Lift Station 1. There is a bottleneck caused by the existing gravity sewer mains both upstream and downstream of the 15-inch crossing underneath I-17. At this location, 12-inch and 8-inch sewer mains are installed leading to the crossing, and approximately 1,200 LF of 12-inch sewer main is installed downstream of the crossing. These pipe sizes create a bottleneck in the gravity collection system that limits the amount of wastewater that can be generated upstream of the crossing without requiring improvements.

Wastewater System Master Plan

Figure 6-3 I-17 Crossing



6.5.1 Capacity Analysis

Average day flows at the crossing in 2050 are projected to be 0.71 MGD, which equals a 1.28 MGD peak flow using historic peaking factors and curves. The downstream capacity of the 12-inch main is approximately 0.92 MGD, which is equivalent to an average day flow of 0.51 MGD. These flows are shown in Table 6-2.

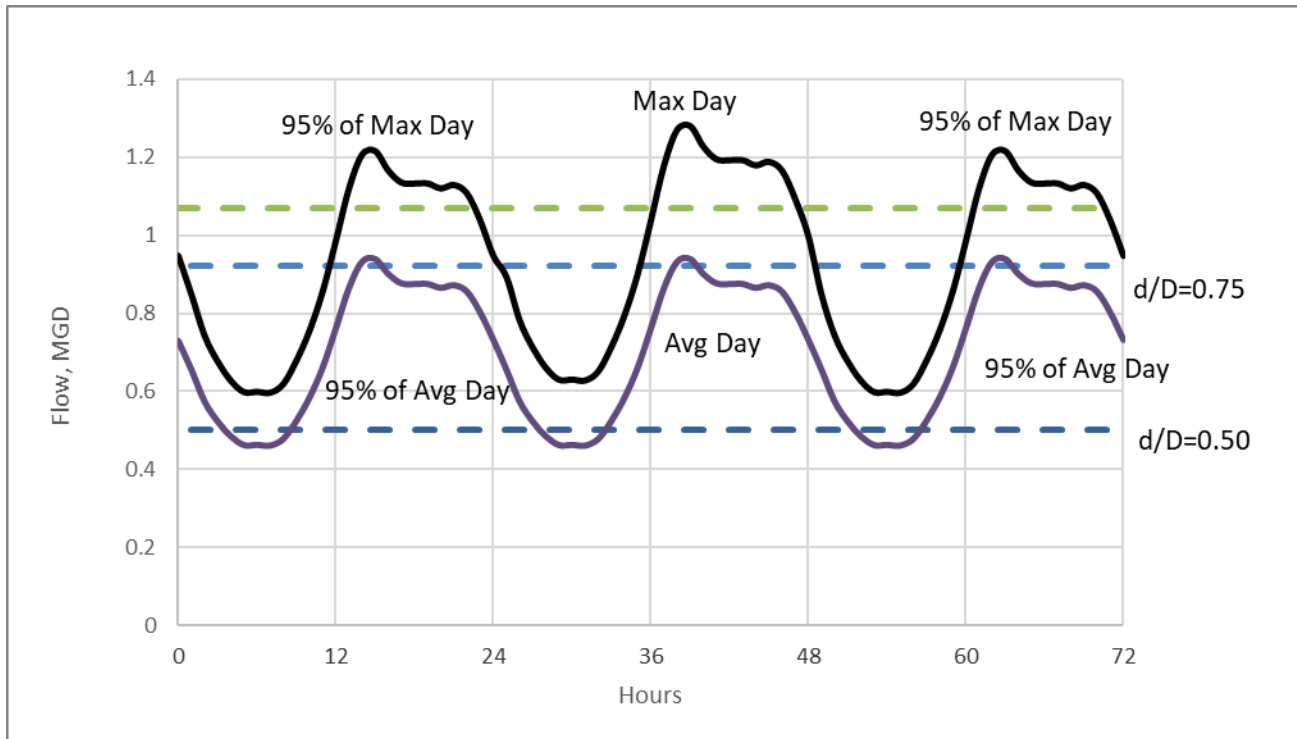
Table 6-2 2050 Flows at I-17 Crossing

Projected Avg Day Flow, MGD	Projected Peak Hour Avg Day, MGD	Projected Max Day Flow, MGD	Projected Peak Hour Max Day, MGD	Downstream Capacity (d/D =0.75), MGD	Downstream Capacity Equivalent Avg Day Flow, MGD
0.71	0.94	0.97	1.28	0.92	0.51

Figure 6-4 graphically depicts projected flows at the crossing on average and max day conditions while incorporating the diurnal pattern shown in Section 4.4. The average and max day curves are preceded and followed by a day with 95% of that flow. Capacity at different d/D values for the downstream 12-inch main is also shown. As shown on the table and figure, the 0.75 d/D will be exceeded on an average day basis as well as a maximum day basis. This means that additional capacity will be required, or flow must be attenuated.

Wastewater System Master Plan

Figure 6-4 2050 Projected Flow at I-17 Crossing

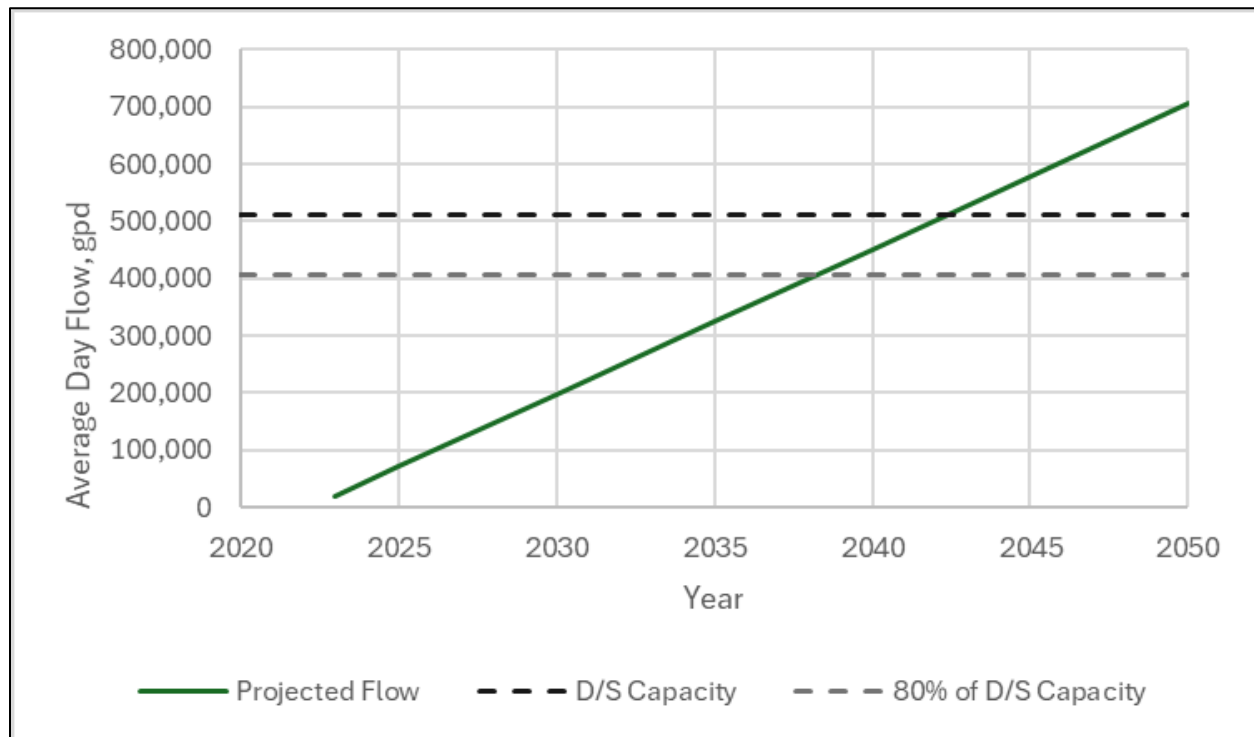


For this report, it is recommended that detailed analysis and design of new infrastructure begin when flows at the crossing reach 408,000 gallons per day or 283 gpm (80% of average day downstream capacity). Average flows at the crossing are currently estimated to be only 20,000 gallons per day based on hydraulic modeling. However, it must be noted that the existing flows are understood to be highly variable and seasonal due to the Verde Ranch RV Resort and the Verde Ranch Car Wash. Both of these businesses are known to use water sources not monitored by the Town, which makes the use of metered water as a substitute for actual wastewater flows not applicable.

The projected flow growth at the crossing is shown in Figure 6-5, assuming a straight-line growth between 2023 and 2050. However, actual growth will likely be “lumpy” and varied due to the expansion of the upstream wastewater system and new developments coming online. According to the figure, 80% of downstream capacity (downstream capacity is $d/D=0.75$) will be reached around 2038 and the existing capacity will be exceeded around 2042. However, flow monitoring of the crossing should begin when the wastewater system north of I-17 starts to significantly expand. The 12-inch section of main should also be carefully surveyed so that the exact capacity can be calculated based on the actual existing conditions. This will help the Town recognize when planning and design of new infrastructure should begin and the options more thoroughly evaluated.

Wastewater System Master Plan

Figure 6-5 Projected Flow Growth at I-17 Crossing



Three options for mitigating the downstream bottleneck were preliminarily analyzed. These included the installation of a treatment facility north of I-17, which would reduce flow downstream, the installation of an equalization basin north of I-17 that will attenuate the flow peaks, and the installation of parallel or upsized pipes downstream of I-17 to add capacity.

6.5.2 New Treatment Facility

The first option considered was the installation of a treatment facility north of I-17. The facility would need to be large enough and positioned in such a location that it can intercept and treat flows from upstream areas. This facility will have large upfront capital costs and ongoing maintenance costs.

6.5.3 Equalization Basin

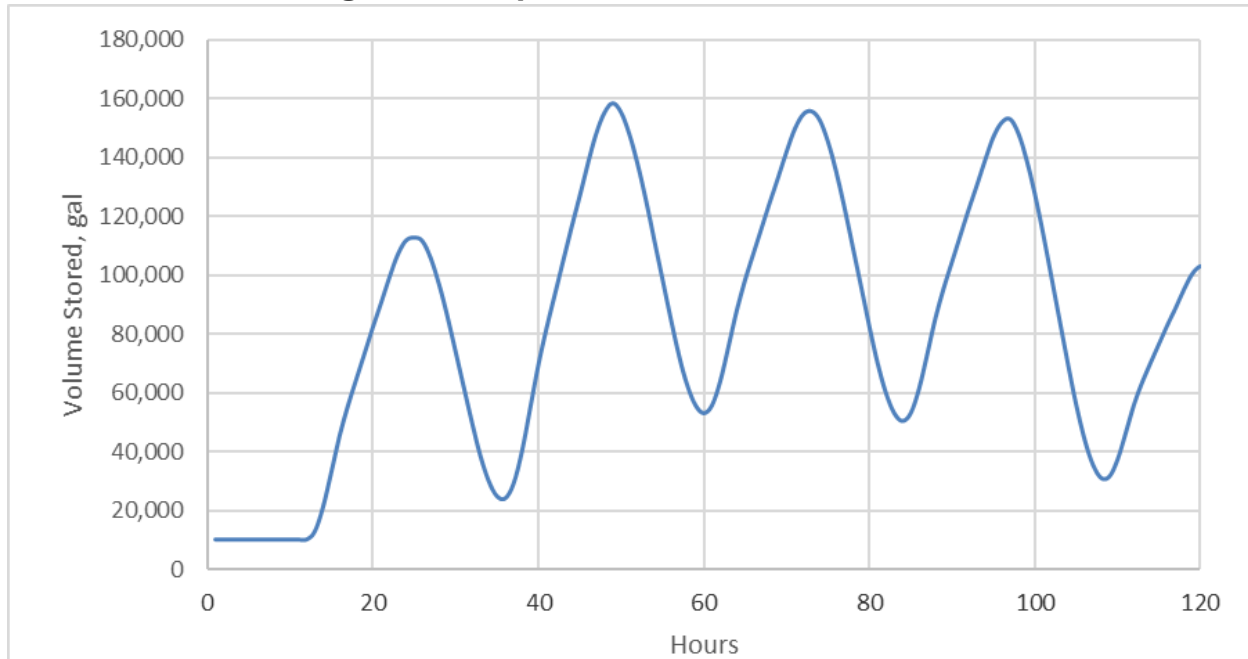
The second option considered was the installation of an equalization basin upstream of the I-17 crossing at the anticipated location of Lift Station 3. When using the patterns and flow in Figure 6-4 and Table 6-3 it can be determined that a 160,000-gallon equalization basin will be needed around 2043, depending on how quickly the area develops. Figure 6-6 illustrates the volume stored in an equalization basin over a 4-day period. As shown in the figure, the volume stored decreases over time as it is slowly pumped out at a rate to match the downstream capacity of 0.92 MGD.

Wastewater System Master Plan

Table 6-3 Assumed Equalization Basin Flow Pattern

Day	Day 1	Day 2	Day 3	Day 4	Day 5
% of Max Day	95%	100%	95%	95%	90%

Figure 6-6 Equalization Volume Stored



A 160,000-gallon equalization basin would have a 20' x 60' footprint and would be 20' deep. The basin would need to be covered, and additional needed equipment would include odor control, level control, and electrical gear. It is anticipated that the Lift Station 3 pumps can be used to pump wastewater from the basins.

6.5.4 Upsize Downstream Sewer Mains

The bottleneck downstream of the crossing may also be eliminated by upsizing or installing new parallel downstream sewer mains. Replacing the existing 12-inch sewer main with a 15-inch sewer main installed at minimum slope would increase the capacity to approximately 1.43 MGD, which would be sufficient for the 2050 peak flow. Or, a parallel main could be installed alongside the existing sewer main to add the required capacity. However, installing a parallel main will do nothing to attenuate any peak flow that exceeds the main capacity near Lift Station 1.

Wastewater System Master Plan

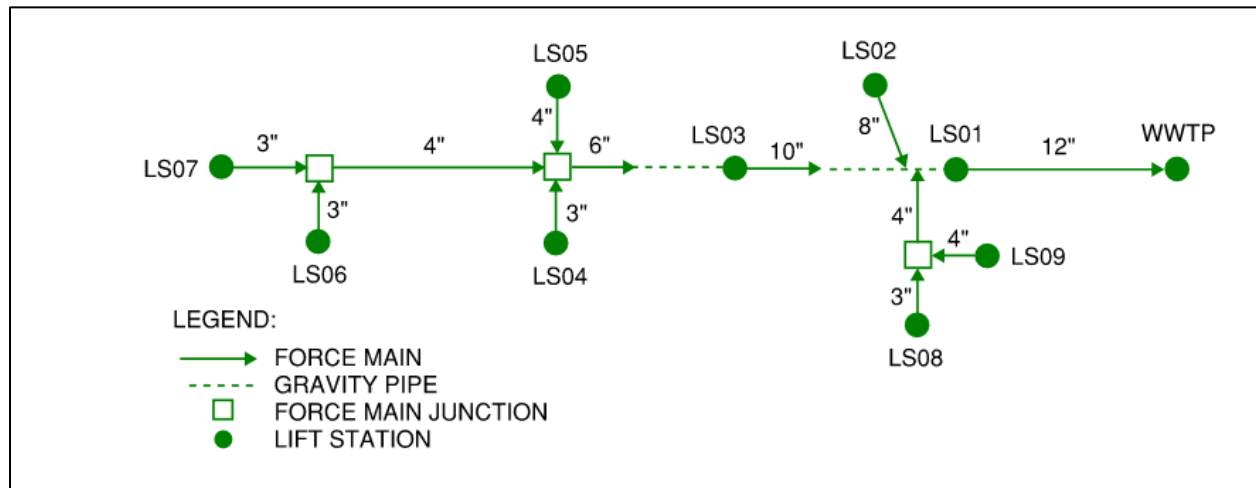
6.5.5 Recommendation

The new treatment facility, equalization basin, and upsizing of downstream sewer mains were all considered and evaluated. It is recommended that an equalization basin be installed near Lift Station 3. This is recommended because it will provide the most operational flexibility for the Town, and may be expanded with additional needs. The lift station will also reduce peak flow for all locations downstream, rather than adding capacity to a particular location. As discussed previously, it appears portions of the trunk main may be installed with shallow slopes near Lift Station 1. If this is true, the equalization basin will also help to attenuate the peak flows through this segment of the trunk main.

6.6 2050 Lift Stations and Force Mains

It is anticipated that seven new lift stations will be needed for the wastewater system to convey flow south to the Town's main treatment facility in addition to the existing two lift stations in 2050. The approximate locations are shown in Figure 6-1. Lift Station 4 and Lift Station 6, shown on the figure, are expected to replace the packaged treatment plants installed for the High View development. It is anticipated that multiple lift stations will pump into a single force main since much of the force main will be installed along Highway 260. A schematic of the anticipated lift station and force main system is shown in Figure 6-7. The anticipated force main diameters are also shown.

Figure 6-7 2050 Force Main Schematic



Since flows will increase over time as the area develops and new lift stations are added, the installation of one large and one small force main is recommended. This will enable the force main to be switched from the small force main to the large force main as additional capacity is needed. Table 6-4 presents a summary of the flows and force mains required for each lift station and force main as depicted above.

Wastewater System Master Plan

Table 6-4 2050 Lift Station Summary

Lift Station	Local Avg Flow, gpd	ADEQ Peaking Factor	Local Peak Flow, gpd	Local Force Main, in	Local Force Main Velocity, ft/s	Combined Downstream Force Main, in	Combined Downstream Force Main Velocity, ft/s
LS01	1,224,113	1.76	2,157,126	12"	4.25	NA	NA
LS02	486,027	1.91	930,430	8"	4.12	NA	NA
LS03	559,896	2.56	1,433,335	10"	4.07	NA	NA
LS04	50,405	2.48	124,938	3"	3.94	6"	6.05
LS05	165,683	2.15	355,537	4"	6.30		
LS06	74,941	2.36	176,671	3"	5.57	4"	6.68
LS07	101,851	2.27	231,305	3"	4.10		
LS08	40,676	2.55	103,684	3"	3.27	4"	5.47
LS09	100,407	2.27	228,416	4"	4.05		

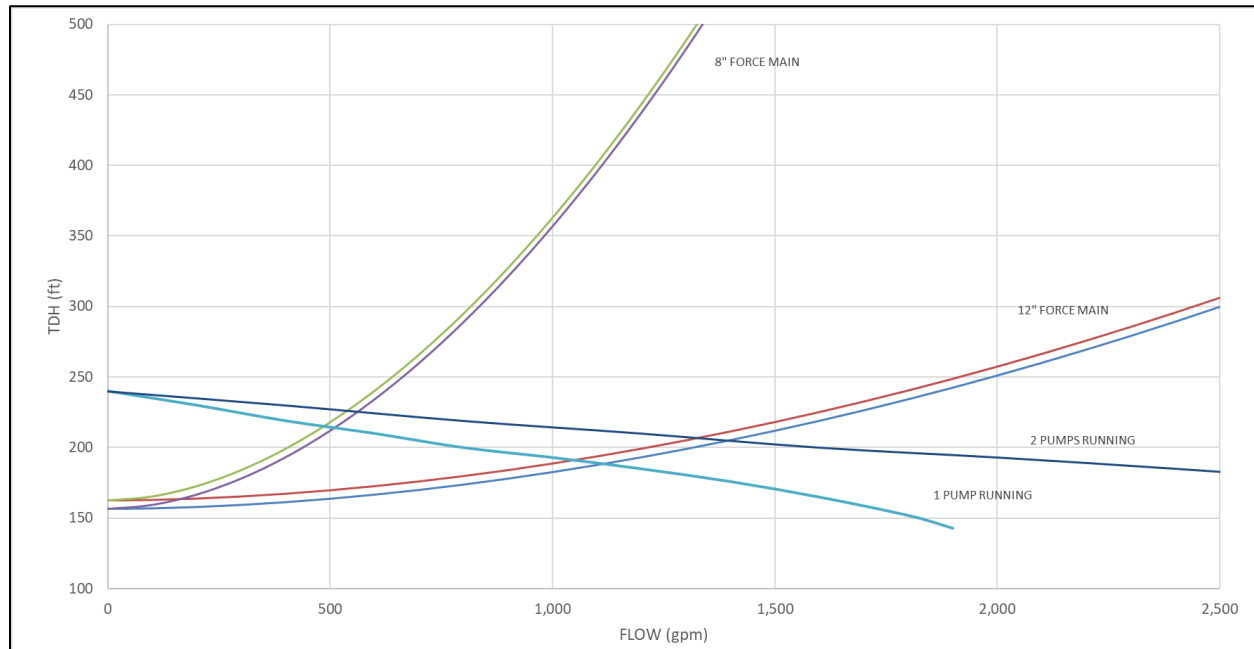
Additional local, privately owned and operated lift stations not shown here may also be required for individual developments and homeowners. These lift stations may be required if a new development is located and planned in such a way that the Town's wastewater collection system cannot serve them. The developers, owners, and homeowners associations of these areas will be responsible for the design, construction, operation, and maintenance of these lift stations.

6.6.6 2050 Lift Station 1 Capacity

Lift Station 1 currently pumps through an existing 8-inch force main to the Town's wastewater treatment plant. There is also an existing 12-inch force main that is not currently used. Figure 6-8 shows the pump and system curves for Lift Station 1 assuming either one or two pumps are running of the three total installed. The figure illustrates that the existing pumps can convey approximately 550 gpm (792,000 gpd) through the 8-inch force main. According to the main plant flow projections shown in Table 4-6, this will be sufficient for peak flow until the 2025-2030 timeframe. At this point, the pumps will either have to be upsized or the 12-inch force main will need to be used. As also shown in the figure and Table 4-6, the existing pumps and 12-inch force main will be sufficient for approximately 1,400 gpm peak flow (2.02 MGD), which is projected to be sufficient until the 2045-2050 timeframe. Please note that the wet well size was not included in this analysis.

Wastewater System Master Plan

Figure 6-8 Lift Station 1 Pump and System Curves



6.7 Buildout Lift Stations and Force Mains

Additional lift stations and capacity for existing lift stations will be needed at buildout. Below, Table 6-5 shows the requirements of each lift station, based on the locations shown in Figure 6-1 and the buildout flows based on land use.

Table 6-5 Buildout Lift Station Summary

Lift Station	Total Avg Flow, gpd	ADEQ Peaking Factor	Total Peak Flow, gpd	Force Main Diameter, in	Peak Flow Force Main Velocity, ft/s
LS01	3,572,621	1.62	5,795,248	16	6.42
LS02	1,294,835	1.75	2,263,610	12	4.46
LS03	1,489,841	2.56	3,813,993	16	4.23
LS04	112,031	2.25	251,554	4	4.46
LS05	442,442	1.93	854,955	6	6.74
LS06	165,641	2.15	355,457	4	6.30
LS07	260,039	2.04	530,965	4	9.41

Wastewater System Master Plan

Lift Station	Total Avg Flow, gpd	ADEQ Peaking Factor	Total Peak Flow, gpd	Force Main Diameter, in	Peak Flow Force Main Velocity, ft/s
LS08	228,289	2.07	472,744	6	3.73
LS09	350,583	1.98	693,684	6	5.47
LS10	468,519	1.92	900,184	6	7.09
LS11	149,990	2.17	325,530	4	5.77
LS12	98,939	2.28	225,476	4	4.00
LS13	459,169	1.93	883,993	6	6.97

6.8 2050 Treatment Plant Capacity

As discussed in Section 2.4 the existing treatment plant is permitted up to 1.3 MGD design capacity. This section describes all the process units and any modifications required for the Phase 2, 1.3 MGD design capacity. The design criteria follow ADEQ Bulletin Number 11 as amended by BADCT and the latest WEF Manual of Practice (MOP) 8 handbook. Table 6-6 summarizes the main process units expansions from existing to 2050.

Table 6-6 Buildout Process Expansion Summary

	Existing	Phase 1 – 0.65 MGD	Phase 2 – 1.3 MGD	2050
Flows				
AAD flow, mgd	0.27	0.57	1.13	1.24
ADMM flow, mgd	0.31	0.65	1.30	1.42
PH flow, mgd	0.45	0.96	1.92	2.17
Aeration Basins				
No. of Duty Aero-Mod Unit	1	1	2	2

Wastewater System Master Plan

	Existing	Phase 1 – 0.65 MGD	Phase 2 – 1.3 MGD	2050
Anoxic Zone Volume, cft	4,480	4,480	4,480	4,480
Aeration Zone Volume, cft	43,710	43,710	87,420	87,420
Total Volume, cft	48,190	48,190	91,900	91,900
Secondary Clarifier				
Existing No. of Clarifiers	2	2	2	2
Surface Area (Each), sf	960			
Number of Duty Units	1	1	2	2
Surface Overflow Rate at AAD flow, gpd/sf	278	589	589	643
Surface Overflow Rate at PH flow, gpd/sf	473	1,001	1,001	1,093
Note: Surface Overflow Rate should not exceed 800 gpm/sf at AAD flow and 1,200 gpm/sf at PH flow per ADEQ Bulletin No. 11 and WEF MOP 8.				
Filters				
Existing No. of Filters	1	1	1	1
Disk per Filter Unit	6			
Filter Area per Disk, sf	50			
Hydraulic Loading Rate at AAD flow, gpm/sf	0.62	1.31	2.62	2.86
Hydraulic Loading Rate at PH flow, gpm/sf	1.05	2.22	4.45	4.86
Note: Hydraulic loading rate should not exceed 10 gpm/sf per Title 22 Report.				
UV				

Wastewater System Master Plan

	Existing	Phase 1 – 0.65 MGD	Phase 2 – 1.3 MGD	2050
Minimum hourly flow, mgd	0.35			
PH flow, mgd	1.08			
No. of Duty Units	1	2	4	4
No. of Standby Units	1	1	1	1
Total No. of Units	2	3	5	5
Chlorine Contact Basin				
Channel Width, ft	7.8			
Channel Length, ft	16.5			
Water Depth, ft	9.3			
Volume per Train, cft	1,190			
Contact Time at AAD flow, min	30			
No. of Duty Units for AAD flow	1	2	3	3
Contact Time at PH flow, min	15			
No. of Duty Units for PH flow	2	3	5	5
Total No. of Units (Existing/New)	4/0	4/0	4/1	5/0
Septage Receiving Tank				
Septage flow, gpd	11,961	25,321	50,643	55,327
Tank Volume (each), gal	40,691			
No. of Duty Units	1	2	3	3
HRT, d	1.6	1.5	1.1	1.0

Wastewater System Master Plan

	Existing	Phase 1 – 0.65 MGD	Phase 2 – 1.3 MGD	2050
Digester				
Septage + WAS flow, gpd	25,311	53,582	107,165	117,077
Tank Volume (each), gal	157,678			
No. of Duty Units	2	2	4	4
HRT, d	12	5.9	5.9	5.4
Belt Filter Press				
Flow, gpm	19	39	79	86
Solids, ppd	4,479	9,482	18,964	20,718
BFP Size, m	1.5			
No. of Duty Units	1	2	3	3
No. of Standby Units	1	1	1	1
Total No. of Units (Existing/New)	1/1	2/0	2/1	3/0

6.9 Equalization Basin

The main plant could benefit from providing an equalization basin upstream of the main process units. This would reduce the peak hour flows significantly and allow the facility to operate more uniformly and offset daily peak flows and low flow overnight. This will flatten the flow pattern, ease the operation of wasting, filtration, and chemical/UV dosing.

Phase	AAD Flow, MGD	EQ Basin Size, gal
Current	0.3	25,000
Phase 1	0.7	60,000
Phase 2	1.3	110,000

Wastewater System Master Plan

2050	1.42	120,000
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6.10 Existing Blowers Evaluation

The main plant currently has five (5) existing blowers for the aeration process, and recently purchased three (3) more. The blower capacity is 536 scfm each. With one blower offline, the current firm blower capacity is 3,752 scfm. These blowers provide air for the Aero-Mod system, including the selector tank and the aeration tanks. The airflow rate requirement for each phase is summarized in Table 6-7.

Table 6-7 Airflow Requirement Summary

	Existing	Phase 1 – 0.65 MGD	Phase 2 – 1.3 MGD
Airflow Requirement, scfm ¹	610	900	6,500
Blowers (duty/standby)	2/6	2/6	8/0
¹ Airflow requirement is based on BioWin Models.			

Based on the calibrated BioWin Models, the existing eight (8) blowers are sufficient to provide air to the aeration zones for Phase 1 (0.65 MGD). Based on the BioWin Model, it is estimated that the existing blowers can provide air to a maximum capacity of 0.75 MGD (projected to occur in late 2038). There is a significant jump in airflow requirement from Phase 1 to Phase 2 based on model results. High nitrate concentration was observed in the model for Phase 2 (1.3 MGD) in the effluent due to insufficient anoxic zones for denitrification. To combat the high nitrate concentrations, 20% of the septage is diverted to a second-stage aeration tank as a carbon supplement to aid in denitrification. The septage flow contributes to high airflow requirements because septage is high in organic matter and hence requires high airflow to provide sufficient oxygen.

Currently, the first-stage aeration tanks have fine-bubble diffusers, and the second-stage aeration tanks have coarse-bubble diffusers. Airflow requirements can be reduced if second-stage aeration tanks convert to fine-bubble diffusers. Oxygen transfer efficiency is higher in fine-bubble diffusers, therefore, the airflow requirements are lower, and the existing blowers will be sufficient. See Appendix K for BioWin modeling results.

Wastewater System Master Plan

6.11 Effluent Management

A water balance of the ponds was conducted. Data from April 2022 through March 2024 was used. The estimated volume of the ponds is shown in Table 6-8. The parameters used for the water balance were the average effluent for each month of the study, ratioed up for future flows, average precipitation, irrigation, evaporation, and infiltration. A summary for one year of the water balance study is shown in Table 6-9. The study showed that ponds can properly store effluent up to 0.4 mgd. The storage in the ponds is not sufficient to handle flows above this. It is recommended to explore a AZPDES outfall to accommodate additional effluent. The full water balance results can be found in Appendix L.

Table 6-8 Estimated Volume of Ponds

Parameter	Dimensions
Area, ft ²	476,949
Depth, ft	7
Volume, ft ³	3,338,643
Volume, mg	25

Table 6-9 Effluent Water Balance Study

Parameter	Result
Future Effluent (+), mg	141.04
Precipitation (+), mg	3.43
Irrigation (-), mg	17.31
Evaporation (-), mg	37.42
Infiltration (-),mg	78.13
Net Volume, mg ¹	20.81
Current Effluent Flow, mg/mo * (mgd)	8.62 (0.29)
Future Effluent Flow, mg/mo ^{2*}	11.8
Future Effluent Flow, mgd	0.39

Wastewater System Master Plan

Parameter	Result
1. Single Month Maximum is 25 mg	
2. Limited by available existing storage and infiltration rates	
* 1 Year Average	

SECTION 7. Capital Improvement Plans

The Capital Improvement Plan (CIP) outlines projects required to meet future water flows within the Town of Camp Verde wastewater system. The CIP is packaged into recommended projects for 2025 through 2050 based on current needs and future development.

The following cost estimates shown in Table 7-2 are for construction-related costs and do not include land/ROW acquisitions (if needed), permitting, or internal Town costs for the subject projects. Some of the following projects and costs are driven by and funded by developers, while others will utilize grants and loans as funding sources. Costs associated with developer-driven projects may be listed here and are the developer's responsibility. As discussed, approximately 95,000 ft of gravity sewer has been identified for replacement over the next 25 years. The annual pipe replacement cost is averaged over the years. The costs are presented in both 2024 dollars and in future dollars, assuming a 3% inflation rate.

7.1 Funding

Funding needs to take place for operation, maintenance, and upgrades to the water system. Funding will be a combination of utilities' rates, impact fees, and capacity fees. The impact fee is calculated based on costs for plant expansion and upgrades to the sewer system. Table 7-1 shows the approved 2025 impact fee per meter size; the impact fees for Cottonwood, AZ, and Clarkdale, AZ, two similarly sized communities, are shown for comparison.

Wastewater System Master Plan

Table 7-1 Capacity Fees

Meter Size, in	Proposed 2024	2022	2024
	Camp Verde	Cottonwood	Clarkdale
0.625 / 0.75	\$ 4,500	\$ 4,502	\$ 5,527
1	\$ 7,515	\$ 7,518	\$ 9,895
1.5	\$ 14,985	\$ 14,992	\$ 19,740
2	\$ 23,984	\$ 23,995	\$ 31,794
3	\$ 45,000	\$ 45,020	\$ 63,638

Wastewater System Master Plan

Table 7-2 Camp Verde CIP Improvements

Year	ID	Project	Description	Estimated Construction Cost / Cost Sharing				Total Project Cost
				Town	YAN	Developer	Grants/Partnerships	
2025	1	Blower Addition Building and Installation	To prepare for the future growth of the Town sewer treatment, staff needs to prepare the north side blower building to add additional aeration to the aeration basin. The new building will provide connections as well as shelter for the new blowers already purchased.	\$191,000	\$0	\$0	\$0	\$191,000
2025	2	Black Bridge Loop Sewer Main Extension - Project Design (1/3)	The new sewer mains will provide sewer service to residents who have been levied for the district improvements for more than 10 years. Allows future expansion to the north adjacent to Montezuma Castle HWY and connection of the restrooms at Rezzonico Park. To be completed in 2027.	\$200,000	\$0	\$0	\$0	\$200,000
2025	3	Wastewater Treatment Plant Administration Building	The current office is a single – wide mobile style office. The office is small and in disrepair. Will replace with a tough-shed style building atop a poured-in-place slab.	\$85,000	\$0	\$0	\$0	\$85,000
2025	4	Wastewater Treatment Plant Control Panels Upgrade	WWTP Control Panels have outdated technology. These need to be updated. 90% of plant controls are out of date. If failure occurs, parts are not available to repair system. The operation of the plant is maintained based on Updated Controls.	\$206,250	\$0	\$0	\$0	\$206,250
2025	5	Sludge Drying Bed Liner Installation & Septic Hauling Station	The Town was issued a Notice of Violation regarding final inspection of the Sludge Drying Beds. ADEQ has requested that the Town install liners in each basin to prevent any infiltration below the liner.	\$550,000	\$0	\$0	\$0	\$550,000
2025	6	Northbound Sewer Collection System Expansion - Obtain sewer easement for Phase 1/2 and finalize design (1/5)	Expand the sewer system northwest along the Highway 260 corridor to convert septic areas into the Town sewer system and provide sewer for future development in the area. Removal of septic systems from older residential areas provides more sewer connections options for development within Town limits. To be completed in 2029.	\$200,000	\$0	\$0	\$0	\$200,000
2025	7	Wastewater Master Plan	The Master Plan will help to determine collection system and treatment system capacities for future development. The Town currently does not have a Wastewater–CAD Model to use for system design and diagnostics, which is a much-needed addition to the toolbox in sizing pipes, flows, lift station pumps, and treatment.	\$191,000	\$0	\$0	\$0	\$191,000

Wastewater System Master Plan

2025	8	Septage Receiving Station	Install new septage receiving station to replace existing station.	\$500,000	\$0	\$0	\$0	\$500,000
2025	9	SCADA Upgrades	Upgrade existing SCADA systems to improve continuous monitoring of system.	\$150,000				\$150,000
2025 Subtotals:				\$2,273,250	\$0	\$0	\$0	\$2,273,250
2026	1	Black Bridge Loop Sewer Main Extension - Construction Sewer Main(2/3)	The new sewer mains will provide sewer service to residents who have been levied for the district improvements for more than 10 years. Allows future expansion to the north adjacent to Montezuma Castle HWY and connection of the restrooms at Rezzonico Park. To be completed in 2027.	\$800,000	\$0	\$0	\$0	\$800,000
2026	3	Wastewater John Deer Compact Track Loader	Purchase new Track loader, equipment is specially made for maintaining sludge drying area. The new equipment provides for safety and more productive movement of sludge and solid movement at the plant.	\$122,000	\$0	\$0	\$0	\$122,000
2026	4	Northbound Sewer Collection System Expansion - Phase 1 Project Construction (2/5)	Expand the sewer system northwest along the Highway 260 corridor to convert septic areas into the Town sewer system and provide sewer for future development in the area. Removal of septic systems from older residential areas provides more sewer connections options for development within Town limits. Lift Station 3 is part of this improvement. To be completed in 2029.	\$4,400,000	\$0	\$0	\$1,100,000	\$5,500,000
2026	5	SCADA Upgrades	Upgrade existing SCADA systems to improve continuous monitoring of system.	\$150,000	\$0	\$0	\$0	\$150,000
2026 Subtotals:				\$5,472,000	\$0	\$0	\$1,100,000	\$6,572,000
2027	1	Black Bridge Loop Sewer Main Extension - Construction Sewer Main (2/3)	The new sewer mains will provide sewer service to residents who have been levied for the district improvements for more than 10 years. Allows future expansion to the north adjacent to Montezuma Castle HWY and connection of the restrooms at Rezzonico Park. To be completed in 2027.	\$764,909	\$0	\$0	\$0	\$764,909
2027	2	Gravity Sewer Main Pipe Replacement	This project will replace approximately 5,000 linear feet of aged, small undersized gravity mains and add new 8, 12, or 15-inch diameter gravity mains.	\$327,818	\$0	\$0	\$0	\$327,818
2027	4	Northbound Sewer Collection System Expansion - Phase 2 and Phase 3 Final Design (3/5)	Expand the sewer system northwest along the Highway 260 corridor to convert septic areas into the Town sewer system and provide sewer for future development in the area. Removal of septic systems from older residential areas provides more sewer connections options for development within Town limits. To be completed in 2029.	\$327,818	\$0	\$0	\$0	\$327,818

Wastewater System Master Plan

2027 Subtotals:				\$1,420,545	\$0	\$0	\$0	\$1,420,545
2028	1	Gravity Sewer Main Pipe Replacement	This project will replace approximately 5,000 linear feet of aged, small undersized gravity mains and add new 8, 12, or 15-inch diameter gravity mains	\$337,653	\$0	\$0	\$0	\$337,653
2028	3	Hydro Vac Truck	Purchase a new Hydro Vac Truck.	\$562,754	\$0	\$0	\$0	\$562,754
2028	5	Wastewater JLG 1055	Purchase new JLG 1055 Lift for use in lifting aeration filters at the plant. At this time, staff must rent this item and put employees at risk to remove the filters to replace them. The expectations for running and operating the Wastewater Plant by the community is a safe environment for plant employees.	\$252,114	\$0	\$0	\$0	\$252,114
2028	6	Northbound Sewer Collection System Expansion - Phase 2 Construction (4/5)	Expand the sewer system northwest along the Highway 260 corridor to convert septic areas into the Town sewer system and provide sewer for future development in the area. Removal of septic systems from older residential areas provides more sewer connections options for development within Town limits. To be completed in 2029.	\$6,753,053	\$0	\$0	\$0	\$6,753,053
2028 Subtotals:				\$7,905,574	\$0	\$0	\$0	\$7,905,574
2029	1	Gravity Sewer Main Pipe Replacement	This project will replace approximately 5,000 linear feet of aged, small undersized gravity mains and add new 8, 12, or 15-inch diameter gravity mains	\$347,782	\$0	\$0	\$0	\$347,782
2029	3	Northbound Sewer Collection System Expansion - Phase 3 Construction Continued (5/5)	Expand the sewer system northwest along the Highway 260 corridor to convert septic areas into the Town sewer system and provide sewer for future development in the area. Removal of septic systems from older residential areas provides more sewer connections options for development within Town limits. To be completed in 2029.	\$3,477,822	\$0	\$3,477,822	\$0	\$6,955,644
2029 Subtotals:				\$3,825,604	\$0	\$3,477,822	\$0	\$7,303,427
2030	1	SCADA Upgrades	Upgrade existing SCADA systems to improve continuous monitoring of system.	\$179,108	\$0	\$0	\$0	\$179,108
2030	2	Gravity Sewer Main Pipe Replacement	This project will replace approximately 5,000 linear feet each year of aged, small undersized gravity mains and add new 8, 12, or 15-inch diameter gravity mains	\$1,791,078	\$0	\$0	\$0	\$1,791,078

Wastewater System Master Plan

2030	3	Refurbish Pumps at Lift Station 1	Refurbish one pump each year at Lift Station 1, starting in 2030.	\$214,929	\$0	\$0	\$0	\$214,929
2030	4	0.65 MGD WWTF Expansion	Begin the process of the needed 0.65 MGD expansion to the WWTF in 2030 to be completed by 2034.	\$19,403,350	\$0	\$0	\$19,403,350	\$38,806,700
2030	5	3/4 or 1-Ton Pickup Truck	Purchase a new Pickup Truck.	\$179,108	\$0	\$0	\$0	\$179,108
2030	6	Gravity Sewer Main	Install 10,000 feet of 8-inch gravity sewer main to serve the already developed Salt Mine area south of Hwy 260. This is dependent on the installation of LS09.	\$3,462,752	\$0	\$0	\$0	\$3,462,752
2030	7	Lift Station 9	New lift station to serve the already developed Salt Mine area south of Hwy 260. Depends on LS08.	\$382,097	\$0	\$382,097	\$0	\$764,193
2030	8	Force Main	This force main is needed for Lift Station 9. Install 7000 feet of 4-inch pipe.	\$725,387	\$0	\$725,387	\$0	\$1,450,774
2030 Subtotals:				\$26,337,809	\$0	\$1,107,484	\$19,403,350	\$46,848,642
2035	1	SCADA Upgrades	Upgrade existing SCADA systems to improve continuous monitoring of system.	\$207,635	\$0	\$0	\$0	\$207,635
2035	2	Gravity Sewer Main Pipe Replacement	This project will replace approximately 5,000 linear feet each year of aged, small undersized gravity mains and add new 8, 12, or 15-inch diameter gravity mains.	\$2,076,351	\$0	\$0	\$0	\$2,076,351
2035	3	Gravity Sewer Main	Install 22,000 feet of 8-inch gravity sewer main to serve the undeveloped Salt Mine area west of Hwy 260. This will tie into the existing gravity sewer system serving the Verde Ranch Estate Development. Install an additional gravity sewer main in the already developed Salt Mine area south of Hwy 260. This will depend on the installation of LS08 and LS09.	\$1,578,027	\$0	\$7,336,440	\$0	\$8,914,466
2035	4	Lift Station 8	New lift station to serve the already developed Salt Mine area south of Hwy 260.	\$401,428	\$0	\$0	\$0	\$401,428
2035	5	Force Main	This force main is needed for Lift Station 8. Install 4000 feet of 3-inch pipe.	\$1,591,869	\$0	\$0	\$0	\$1,591,869
2035	6	3/4 or 1-Ton Pickup Truck	Purchase a new Pickup Truck.	\$207,635	\$0	\$0	\$0	\$207,635
2035 Subtotals:				\$6,062,944	\$0	\$7,336,440	\$0	\$13,399,384

Wastewater System Master Plan

2040	1	SCADA Upgrades	Upgrade existing SCADA systems to improve continuous monitoring of system.	\$240,706	\$0	\$0	\$0	\$240,706
2040	2	Gravity Sewer Main Pipe Replacement	This project will replace approximately 5,000 linear feet each year of aged, small undersized gravity mains and add new 8, 12, or 15-inch diameter gravity mains.	\$2,407,060	\$0	\$0	\$0	\$2,407,060
2040	3	Replace Pumps at Lift Station 1	Replace one pump each year at Lift Station 1, starting in 2030.	\$577,694	\$0	\$0	\$0	\$577,694
2040	4	Gravity Sewer Main	Install 21,000 feet of 8- and 15-inch gravity sewer main west of Hwy 260 to serve the YAN properties anticipated to be acquired through a land swap with the US Forest Service. Install the gravity sewer main to serve the County area north of the Town boundary and the Alcantara area. This is dependent upon the Alcantara WWTP being installed.	\$263,172	\$5,937,414	\$3,851,295	\$0	\$10,051,881
2040	5	Lift Station 4	High View packaged treatment plant converted into lift station.	\$561,647	\$0	\$0	\$0	\$561,647
2040	6	Lift Station 5	Serves YAN area outside of current Tunlii WRF Service area.	\$1,604,706	\$0	\$0	\$0	\$1,604,706
2040	7	Force Main	This force main is needed for Lift Station 4 and 5. Install 9000 feet of 6-inch pipe.	\$3,048,942	\$0	\$0	\$0	\$3,048,942
2040	8	3/4 or 1-Ton Pickup Truck	Purchase a new Pickup Truck.	\$240,706	\$0	\$0	\$0	\$240,706
2040 Subtotals:				\$8,944,634	\$5,937,414	\$3,851,295	\$0	\$18,733,343
2045	1	SCADA Upgrades	Upgrade existing SCADA systems to improve continuous monitoring of system.	\$279,044	\$0	\$0	\$0	\$279,044
2045	2	Gravity Sewer Main Pipe Replacement	This project will replace approximately 5,000 linear feet each year of aged, small undersized gravity mains and add new 8, 12, or 15-inch diameter gravity mains.	\$2,790,442	\$0	\$0	\$0	\$2,790,442
2045	3	Lift Station 6	High View packaged treatment plant converted into lift station.	\$0	\$0	\$0	\$0	\$0
2045	4	Force Main	This force main is needed for Lift Station 6. Install 14,000 feet of 4-inch pipe.	\$1,562,647	\$2,976,471	\$0	\$0	\$4,539,119
2045	5	Equalization Basin	Install 160,000-gallon equalization basin to attenuate high flows south of I-17 crossing	\$2,083,530	\$0	\$0	\$0	\$2,083,530

Wastewater System Master Plan

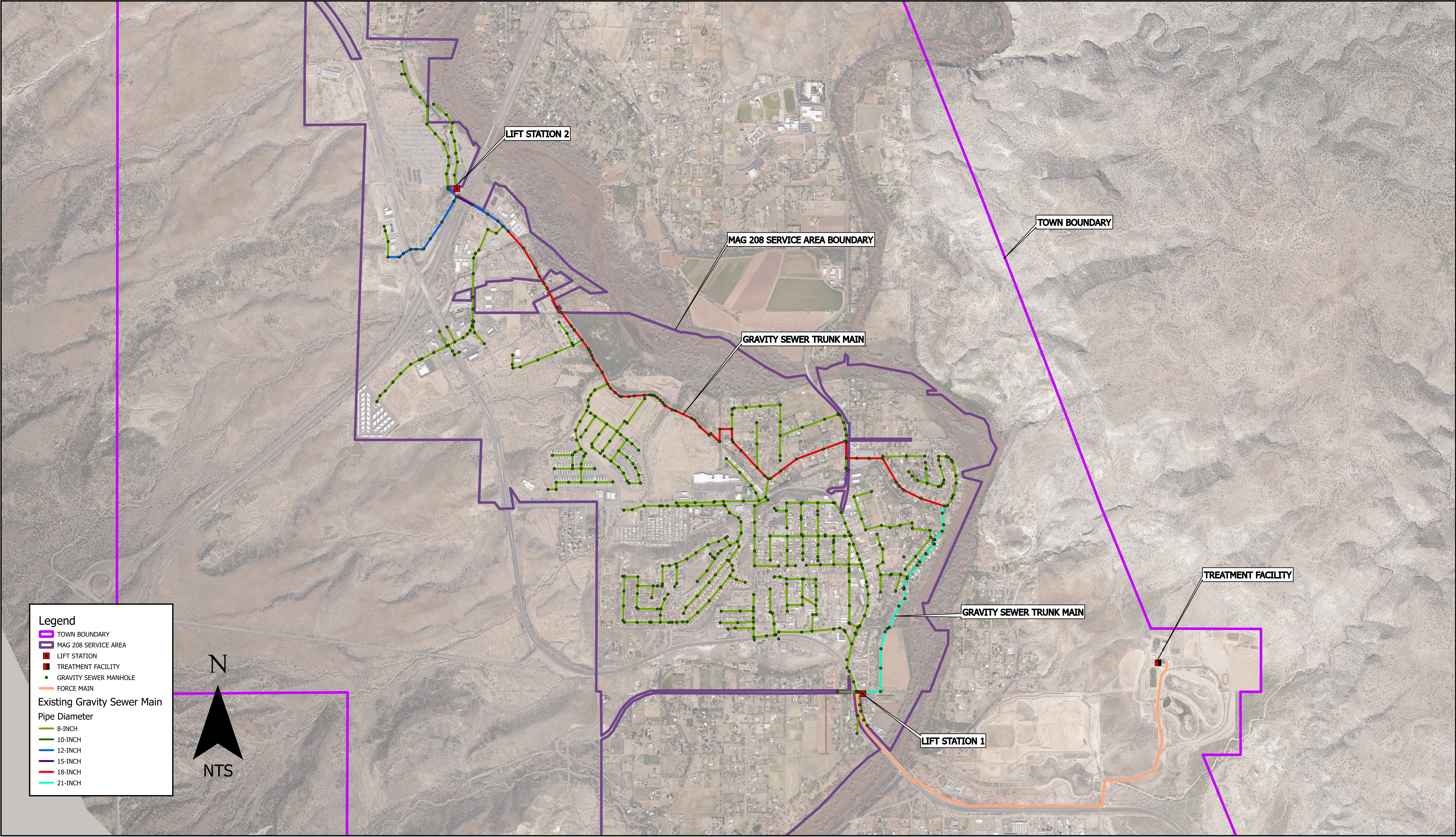
2045	6	0.4 MGD Expansion	Begin the process of the needed 0.4 MGD expansion to the WWTF in 2043 to be completed by 2046.	\$2,083,530	\$0	\$0	\$0	\$2,083,530
2045	7	3/4- or 1-Ton Pickup Truck	Purchase a new Pickup Truck.	\$279,044	\$0	\$0	\$0	\$279,044
2045 Subtotals:				\$9,078,238	\$2,976,471	\$0	\$0	\$12,054,709
2050	1	SCADA Upgrades	Upgrade existing SCADA systems to improve continuous monitoring of system.	\$323,489	\$0	\$0	\$0	\$323,489
2050	2	Gravity Sewer Main Pipe Replacement	This project will replace approximately 5,000 linear feet each year of aged, small undersized gravity mains and add new 8, 12, or 15-inch diameter gravity mains	\$3,234,887	\$0	\$0	\$0	\$3,234,887
2050	3	Gravity Sewer Main	Install 9,000 feet of 8-inch gravity sewer main to serve the area around Mongini and the future YAN property just south and west of Mongini. This is dependent on the installation of LS07.	\$5,822,796	\$0	\$0	\$0	\$5,822,796
2050	4	Lift Station 7	New lift station to serve the area around Mongini and the future YAN property just south and west of Mongini	\$1,386,746	\$0	\$0	\$0	\$1,386,746
2050	5	Force Main	This force main is needed for Lift Station 7. Install 7,000 feet of 4-inch pipe.	\$1,272,389	\$1,272,389	\$0	\$0	\$2,544,778
2050	6	3/4- or 1-Ton Pickup Truck	Purchase a new Pickup Truck.	\$323,489	\$0	\$0	\$0	\$323,489
2050 Subtotals:				\$12,363,796	\$1,272,389	\$0	\$0	\$13,636,185
Grand Totals:				\$83,984,393	\$10,186,274	\$15,773,041	\$20,503,350	\$130,447,058

Wastewater System Master Plan

SECTION 8. Appendix

Wastewater System Master Plan

Appendix A Existing Conditions Overall Layout



EXISTING WASTEWATER SYSTEM LAYOUT
TOWN OF CAMP VERDE WASTEWATER MASTER PLAN
CAMP VERDE, AZ
SEPTEMBER 2024

Wastewater System Master Plan

Appendix B APP Permit



Douglas A. Ducey
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY



Misael Cabrera
Director

Via Electronic Mail

November 22, 2021

Town of Camp Verde
Attn: Troy Odell, P.E., Deputy Public Works Director
395 South Main Street,
Camp Verde, Arizona, 86322
Troy.odell@campverde.az.gov

Re: **Aquifer Protection Permit (APP) Significant Amendment Issuance
Town of Camp Verde Water Reclamation Facility
Inventory Number: 101360 LTF ID: 82369**

Dear Mr. Odell,

Enclosed is a signed copy of the Aquifer Protection Permit (APP) and Executive Summary for the above referenced facility. This permit was developed pursuant to A.A.C. Title 18, Chapter 11, Article 4, Aquifer Water Quality Standards, and A.A.C. Title 18, Chapter 9, Article 1, APP rules. If you have any questions regarding this permit or the facility, please feel free to contact me at Gutierrez.Diana@azdeq.gov or 602-771-4141.

Sincerely,

Diana Gutierrez

Diana Gutierrez, Project Manager
APP Unit, Groundwater Protection Value Stream,
Water Quality Division, ADEQ

Enclosures: Final Signed Permit
Executive Summary

cc (via electronic mail):

Naveen Savarirayan, Value Stream Manager, GPVS, WQD, ADEQ
Mohamed Hegazy, Associate Environmental Engineer, APP Unit, GPVS, WQD, ADEQ
Shivani Shah, Environmental Engineer, APP Unit, GPVS, WQD, ADEQ
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Steve Baker, AZDHS
Chet Teague, Wastewater Division Manager, Town of Camp Verde

Town of Camp Verde Water Reclamation Facility
Aquifer Protection Permit No. P-101360
Place ID 1403, LTF No. 82369
Significant Amendment

I. Introduction:

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit (APP) for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18-9-A213. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards (AWQS) at the Point of Compliance (POC); and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

II. Permittee

Town of Camp Verde
395 South Main Street
Camp Verde, Arizona 86322

III. Facility Name & Location:

Town of Camp Verde Water Reclamation Facility
880 S. Cowboy Trail
Camp Verde, Arizona, 86322

IV. Facility Description:

The Town of Camp Verde is authorized to operate the Camp Verde Water Reclamation Facility, with a design capacity of 1.3 million gallons per day (mgd) at full build-out; however, permitted flow shall be limited to 0.65 mgd until adequate disposal capacity is demonstrated under an APP amendment, as per Section 3.0, Compliance Schedule, Item No. 6.

Phase I WRF: The design capacity of the Phase I WRF is 0.65 mgd. The treatment process for the Phase I WRF consists of the headworks with bar screens, an extended aeration treatment train with nitrification and denitrification, clarifiers, ultraviolet (UV) disinfection, a backup chlorination system, a septage receiving station, and an effluent pump station. Filtration shall be provided as necessary to meet the discharge standards. Effluent may be disposed by infiltration and evaporation in the Duck Ponds, or delivered for beneficial reuse under a valid Recycled Water Permit.

The facility consists of two (2) aerobic sludge digesters and a belt press for sludge dewatering. The sludge is treated through the south aerobic digester and dewatered through a belt press. The two (2) treatment lagoons from the existing Lagoon Plant will be repurposed as sludge dewatering lagoons to store and dewater the waste activated sludge from the aerobic digester. The septage will

be digested in the north aerobic digester and then dried through the eight (8) new sludge drying beds. The facility will be adding two (2) new concrete-paved drying area (solids drying areas) for composting and miscellaneous solid handling activities. Solids from the screenings, grit and scum, shall be haul off-site for management and disposal.

Phase II WRF: The design capacity of the Phase II WRF is 1.30 mgd. The treatment process shall consist of the headworks with bar screens, two (2) 0.65 mgd extended aeration treatment trains with nitrification and denitrification, clarifiers, ultraviolet (UV) disinfection, a backup chlorination system, a septage receiving station, an effluent pump station, two (2) aerobic digesters, a belt press for sludge dewatering, two (2) sludge drying lagoons, eight (8) sludge drying beds and two (2) solids handling areas. Filtration shall be provided as necessary to meet the discharge standards. Effluent shall be disposed by infiltration and evaporation in the Duck Ponds, or delivered for beneficial reuse under a valid Recycled Water Permit. All industrial hookups and other non-residential hookups to the treatment system shall be authorized according to the applicable federal, state or local regulations.

V. Amendment Description:

The purpose of this amendment is to:

1. Update the Facility Address in Section 1.1 of the Permit.
2. Update the Annual Registration Fee Flow Rate in Section 1.1 and 2.1 to the current rate of 0.65 mgd instead of the full build-out amount of 1.35 mgd.
3. Remove CSI No.5 from the previous Permit because this Amendment increases the flow rate to 0.65 mgd.
4. Remove all Interim WRF language from the permit and the previous permit Table 1A for the Interim WRF.
5. Sections 2.2.5 and 2.5.3 of the Permit, update reclaimed water classification and monitoring to Class A+ to the Irrigation Storage Pond and irrigation reuse at the Sports Complex, while maintaining the Class B+ to the existing evaporation/infiltration ponds and truck fill station for construction water reuse.
6. Section 3.0, add Compliance Schedule Item No. 8, for the permittee to submit well abandonment documents for conceptual POC No.2 which was abandoned due to the location in the middle of the concrete lined sludge drying/processing area.
7. Section 3.0, add Compliance Schedule Item No. 9, for the permittee to submit an updated contingency plan within 90 days of permit issuance.
8. Section 4.2, update monitoring for total metals to dissolved metals in the Groundwater Monitoring Tables 12 and 13 for POCs 1 and 3. This change is to establish consistent groundwater quality monitoring standards between Aquifer Protection Permits that are aligned with widely accepted practices within the scientific community and ADEQ substantive policy. Analyzing for dissolved metals provides a more accurate measurement of the water quality by filtering out particulate matter that may have come from external sources (well casings, sampling equipment, etc.).
9. Section 4.2, Table 14, replace performance levels of three linear feet for both freeboard for sludge lagoons and duck pond freeboard to performance levels of three vertical feet.

The permit category for this amendment was determined to be an “Significant Amendment” in accordance with A.A.C. R18-9-A211(B)(2)(b), “A physical change in a permitted facility or a change in its method of operation results in: an increase in design flow of a sewage treatment facility.”

VI. Regulatory Status

The Facility was last inspected on 8/26/21 and was determined to be in compliance at the time of inspection.

VII. Best Available Demonstrated Control Technology (BADCT):

The treatment train, sludge drying beds and solids handling area at WRF is designed to meet the treatment performance criteria for new facilities as specified in Arizona Administrative Code R18-9-B204. The sludge drying lagoons meets the performance criteria for existing facilities as specified in Arizona Administrative Code R18-9-B205.

VIII. Compliance with Aquifer Water Quality Standards (AWQS):

To ensure that site operations do not result in violation of Aquifer Water Quality Standards at the point of compliance, representative samples of the effluent shall be collected at the Sampler at the downstream end of the back-up chlorination system (see Section 4.2, Tables 8 and 9, in the permit).

Reclaimed monitoring for Class A+ reuse is required under permit Section 4.2, Table 10 for Fecal Coliform, Total Nitrogen, Turbidity, and Enteric Virus. Reclaimed monitoring for Class B+ reuse is required under permit Section 4.2, Table 11 for Fecal Coliform and Total Nitrogen.

Groundwater monitoring is required under this permit per Section 4.2, Tables 12 and 13 for Fecal Coliform, nitrogen species, metals and organic compounds.

Facility inspection and operational monitoring will be performed on a routine basis (see Section 4.2, Table 14, in the permit).

STATE OF ARIZONA
AQUIFER PROTECTION PERMIT NO. P-101360
PLACE ID 1403, LTF 82369
SIGNIFICANT AMENDMENT

1.0 AUTHORIZATION

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Articles 1, 2, and 3, Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 1 and 2, A.A.C. Title 18, Chapter 11, Article 4 and amendments thereto, and the conditions set forth in this permit, the Arizona Department of Environmental Quality (ADEQ) hereby authorizes the Town of Camp Verde to operate the Town of Camp Verde Water Reclamation Facility located at 1300 Payson Highway, in Camp Verde, Arizona, in Yavapai County, over groundwater of the Verde River Basin in Township 13 N, Range 5 E, Section 4 of the Gila and Salt River Baseline and Meridian.

This permit becomes effective on the date of the Water Quality Division Director's signature and shall be valid for the life of the facility (operational, closure, and post-closure periods) unless suspended or revoked pursuant to A.A.C. R18-9-A213. The permittee shall construct, operate and maintain the permitted facilities:

1. Following all the conditions of this permit including the design and operational information documented or referenced below, and
2. Such that Aquifer Water Quality Standards (AWQS) are not violated at the applicable point(s) of compliance (POC) set forth below or if an AWQS for a pollutant has been exceeded in an aquifer at the time of permit issuance, that no additional degradation of the aquifer relative to that pollutant and as determined at the applicable POC occurs as a result of the discharge from the facility.

1.1. PERMITTEE INFORMATION

Facility Name: Town of Camp Verde Water Reclamation Facility
Facility Address: 880 S. Cowboy Trail
Camp Verde, Arizona, 86322
County: Yavapai
Permitted Flow Rate: 0.65 million gallons per day (mgd)
Permittee: Town of Camp Verde
Permittee Address: 395 South Main Street
Camp Verde, Arizona 86322
Facility Contact: Troy Odell, P.E., Deputy Public Works Director
Emergency Phone No.: 928-554-0820
Latitude/Longitude: 34° 33' 24.54" N / 111° 49' 57.42" W
Legal Description: Township 13 N, Range 5 E, Section 4, Gila and Salt River Baseline and Meridian

1.2. AUTHORIZING SIGNATURE


Randall Matas, Deputy Director

Water Quality Division

Arizona Department of Environmental Quality

Signed this 22 day of November, 2021

THIS AMENDED PERMIT SUPERSEDES ALL PREVIOUS PERMITS

TABLE OF CONTENTS

1.0	AUTHORIZATION	1
1.1.	PERMITTEE INFORMATION	1
1.2.	AUTHORIZING SIGNATURE	1
2.0	SPECIFIC CONDITIONS	4
2.1.	FACILITY / SITE DESCRIPTION	4
2.1.1.	Annual Registration Fee	5
2.1.2.	Financial Capability	5
2.2.	BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)	5
2.2.1.	Engineering Design	6
2.2.2.	Site-Specific Characteristics	6
2.2.3.	Pre-Operational Requirements	6
2.2.4.	Operational Requirements	6
2.2.5.	Reclaimed Water Classification	7
2.2.6.	Certified Areawide Water Quality Management Plan Conformance	7
2.3.	DISCHARGE LIMITATIONS	7
2.4.	POINT OF COMPLIANCE (POC)	8
2.5.	MONITORING REQUIREMENTS	8
2.5.1.	Pre-Operational Monitoring	8
2.5.2.	Routine Discharge Monitoring	8
2.5.3.	Reclaimed Water Monitoring	8
2.5.4.	Facility / Operational Monitoring	9
2.5.5.	Groundwater Monitoring and Sampling Protocols	9
2.5.5.1.	POC Well Replacement	9
2.5.6.	Surface Water Monitoring and Sampling Protocols	9
2.5.7.	Analytical Methodology	10
2.5.8.	Installation and Maintenance of Monitoring Equipment	10
2.6.	CONTINGENCY PLAN REQUIREMENTS	10
2.6.1.	General Contingency Plan Requirements	10
2.6.2.	Exceeding of Alert Levels and Performance Levels	11
2.6.2.1.	Exceeding of Performance Levels Set for Operational Conditions	11
2.6.2.2.	Exceeding of Alert Levels (ALs) Set for Discharge Monitoring	12
2.6.2.2.1.	Exceeding Permit Flow Limit	12
2.6.2.3.	Exceeding of Alert Levels in Groundwater Monitoring	12
2.6.2.3.1.	Alert Levels for Indicator Parameters	12
2.6.2.3.2.	Alert Levels for Pollutants with Numeric Aquifer Water Quality Standards	13
2.6.2.3.3.	Alert Levels to Protect Downgradient Users from Pollutants without Numeric Aquifer Water Quality Standards	14
2.6.2.3.4.	Alert Level for Groundwater Level	14
2.6.3.	Discharge Limit Violation	14
2.6.4.	Aquifer Quality Limit Violation	15
2.6.5.	Emergency Response and Contingency Requirements for Unauthorized Discharges	15
2.6.5.1.	Duty to Respond	15
2.6.5.2.	Discharge of Hazardous Substances or Toxic Pollutants	16
2.6.5.3.	Discharge of Non-Hazardous Materials	16
2.6.5.4.	Reporting Requirements	16
2.6.6.	Corrective Actions	16
2.7.	REPORTING AND RECORDKEEPING REQUIREMENTS	17
2.7.1.	Self-Monitoring Report Form	17
2.7.2.	Operation Inspection / Log Book Recordkeeping	17
2.7.3.	Permit Violation and Alert Level Status Reporting	18

2.7.4.	Operational, Other or Miscellaneous Reporting	18
2.7.5.	Reporting Location.....	18
2.7.6.	Reporting Deadline.....	19
2.7.7.	Changes to Facility Information in Section 1.0	19
2.8.	TEMPORARY CESSATION	19
2.9.	CLOSURE	19
2.9.1.	Closure Plan	20
2.9.2.	Closure Completion.....	20
2.10.	POST-CLOSURE	20
2.10.1.	Post-Closure Plan	20
2.10.2.	Post-Closure Completion.....	20
3.0	COMPLIANCE SCHEDULE	21
4.0	TABLES OF MONITORING REQUIREMENTS	23
4.1.	PRE-OPERATIONAL MONITORING (OR CONSTRUCTION REQUIREMENTS)	23
4.2.	COMPLIANCE OR OPERATIONAL MONITORING	23
5.0	REFERENCES AND PERTINENT INFORMATION	34
6.0	NOTIFICATION PROVISIONS.....	35
6.1.	ANNUAL REGISTRATION FEES.....	35
6.2.	DUTY TO COMPLY	35
6.3.	DUTY TO PROVIDE INFORMATION	35
6.4.	COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS.....	35
6.5.	TECHNICAL AND FINANCIAL CAPABILITY	35
6.6.	REPORTING OF BANKRUPTCY OR ENVIRONMENTAL ENFORCEMENT	35
6.7.	MONITORING AND RECORDS	35
6.8.	INSPECTION AND ENTRY.....	36
6.9.	DUTY TO MODIFY	36
6.10.	PERMIT ACTION: AMENDMENT, TRANSFER, SUSPENSION, AND REVOCATION	36
7.0	ADDITIONAL PERMIT CONDITIONS	36
7.1.	OTHER INFORMATION	36
7.2.	SEVERABILITY	36
7.3.	PERMIT TRANSFER.....	36

TABLE OF TABLES

TABLE 1: DISCHARGING FACILITIES	4
TABLE 2: POINT(S) OF COMPLIANCE.....	8
TABLE 3: ACCELERATED MONITORING - ALERT LEVEL EXCEEDANCE	13
TABLE 4: ACCELERATED MONITORING - AQUIFER QUALITY LIMIT VIOLATION.....	15
TABLE 5: QUARTERLY REPORTING DEADLINES	19
TABLE 6: (SEMI-)ANNUAL REPORTING DEADLINES	19
TABLE 7: COMPLIANCE SCHEDULE ITEMS.....	21
TABLE 8: ROUTINE DISCHARGE MONITORING – PHASE I (0.65 MGD)	23
TABLE 9: ROUTINE DISCHARGE MONITORING – PHASE II (1.3 MGD)	25
TABLE 10: RECLAIMED WATER MONITORING – CLASS A+	27
TABLE 11: RECLAIMED WATER MONITORING – CLASS B+	28
TABLE 12: GROUNDWATER MONITORING – POC No. 1	29
TABLE 13: GROUNDWATER MONITORING – POC No. 3	31
TABLE 14: FACILITY INSPECTION AND OPERATIONAL MONITORING	33

2.0 SPECIFIC CONDITIONS

[A.R.S. §§ 49-203(4), 49-241(A)]

2.1. FACILITY / SITE DESCRIPTION

[A.R.S. § 49-243(K)(8) and A.A.C. R18-5-114]

The Town of Camp Verde is authorized to operate the Camp Verde Water Reclamation Facility, with a design capacity of 1.3 million gallons per day (mgd) at full build-out; however, permitted flow shall be limited to 0.65 mgd until adequate disposal capacity is demonstrated under an APP amendment, as per Section 3.0, Compliance Schedule, Item No. 6.

Phase I WRF: The design capacity of the Phase I WRF is 0.65 mgd. The treatment process for the Phase I WRF consists of the headworks with bar screens, an extended aeration treatment train with nitrification and denitrification, clarifiers, ultraviolet (UV) disinfection, a backup chlorination system, a septage receiving station, and an effluent pump station. Filtration shall be provided as necessary to meet the discharge standards. Effluent may be disposed by infiltration and evaporation in the Duck Ponds, or delivered for beneficial reuse under a valid Recycled Water Permit.

The facility consists of two (2) aerobic sludge digesters and a belt press for sludge dewatering. The sludge is treated through the south aerobic digester and dewatered through a belt press. The two (2) treatment lagoons from the existing Lagoon Plant will be repurposed as sludge dewatering lagoons to store and dewater the waste activated sludge from the aerobic digester. The septage will be digested in the north aerobic digester and then dried through the eight (8) new sludge drying beds. The facility will be adding two (2) new concrete-paved drying area (solids drying areas) for composting and miscellaneous solid handling activities. Solids from the screenings, grit and scum, shall be haul off-site for management and disposal.

Phase II WRF: The design capacity of the Phase II WRF is 1.30 mgd. The treatment process shall consist of the headworks with bar screens, two (2) 0.65 mgd extended aeration treatment trains with nitrification and denitrification, clarifiers, ultraviolet (UV) disinfection, a backup chlorination system, a septage receiving station, an effluent pump station, two (2) aerobic digesters, a belt press for sludge dewatering, two (2) sludge drying lagoons, eight (8) sludge drying beds and two (2) solids handling areas. Filtration shall be provided as necessary to meet the discharge standards. Effluent shall be disposed by infiltration and evaporation in the Duck Ponds, or delivered for beneficial reuse under a valid Recycled Water Permit. All industrial hookups and other non-residential hookups to the treatment system shall be authorized according to the applicable federal, state or local regulations.

The site includes the following permitted discharging facilities:

Table 1: DISCHARGING FACILITIES		
Facility	Latitude	Longitude
Camp Verde WRF	34° 33' 24.54" N	111° 49' 57.42" W
North Duck Pond	34° 33' 17.64" N	111° 49' 48.12" W
South Duck Pond	34° 33' 11.82" N	111° 49' 52.14" W
Sludge Dewatering Lagoon #1	34° 33' 18.5" N	111° 50' 01.8" W
Sludge Dewatering Lagoon #2	34° 33' 20.5" N	111° 49' 59.7" W
Sludge Drying Beds	34° 33' 27.2" N	111° 49' 59.4" W
Solids Drying Areas	34° 33' 26.8" N	111° 49' 57.75" W
Truck Fill Station/Re-Use for Construction Water	34° 33' 15" N	111° 49' 50" W

2.1.1. Annual Registration Fee

[A.R.S. § 49-242 and A.A.C. R18-14-104]

The annual registration fee for this permit is payable to ADEQ each year. The annual registration fee flow rate is established by the permitted flow rate identified in Section 1.1. If the facility is not constructed or is incapable of discharge, the permittee may be eligible for reduced fees pursuant to A.A.C. R18-14-104(A), Table 2. Send all correspondence requesting reduced fees to the Groundwater Protection Value Stream. Please reference the permit number, LTF number, and the reason for requesting reduced fees under this rule.

2.1.2. Financial Capability

[A.R.S. § 49-243(N) and A.A.C. R18-9-A203]

The permittee has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The estimated dollar amount for facility closure is \$1,283,897.00. The financial capability was demonstrated through A.A.C. R18-9-A203(B)(1) and (2).

2.2. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

[A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]

The treatment train, sludge drying beds and solids handling area at WRF is designed to meet the treatment performance criteria for new facilities as specified in Arizona Administrative Code R18-9-B204. The sludge drying lagoons meets the performance criteria for existing facilities as specified in Arizona Administrative Code R18-9-B205.

- **Sludge Dewatering Lagoons:** The existing Lagoon Plant was in operation for 30 years prior to commencement of extended aeration treatment train and then lagoons were put in cessation. The lagoons were believed to be underlain with clay soil. The facility has removed all sludge from the lagoon. The lagoons will be repurposed to store and dewater the sludge. The lagoon depth will be adjusted to 6 feet (ft) by placing the suitable material excavated during construction of the sludge drying beds and solids handling areas. The Sludge dewatering lagoons will be sized 420 ft long by 145 ft wide with a total depth of 6 ft. A trench drain will be provided along the midline at the bottom of each dewatering lagoon to collect underdrainage from dewatering sludge. The underdrainage will be returned to the headworks.

The soil underlying of the sludge drying lagoons are clay soil with low permeability and the facility has demonstrated the BADCT as follows:

- The well drillers log for well downgradient of the lagoons shows the 0-160 ft of clay and 160-190 ft of limestone. The other well downgradient of duck ponds shows the 0-7 ft of yellow clay, 7-8 ft of clay mixed with some rocks, 8-24 ft. of yellow clay and then 0-139 ft of hard white lime.
- The depth of the lagoon will be reduced to 6 ft. There will be less volume of sludge i.e. less head in the lagoon compared to when operated as treatment lagoons.
- The facility has been conducting groundwater monitoring at the Point of Compliance well which is downgradient to these lagoons for the past 12 years. The monitoring results shows that the nitrates and other constituents were never exceeded the AWQS despite of operation of these treatment lagoons over 30 years. The facility will continue to monitor groundwater at this Point of Compliance well.
- The facility will be testing the soil below existing lagoons and the fill material to determine the soil classification and permeability per the Compliance Schedule Item #1.
- **Sludge Drying Beds:** The facility will consist of eight 145 ft long by 33 ft wide sludge drying beds. The sludge drying beds will be constructed of concrete. Each sludge drying bed will be provided with one feed line and two underdrain lines. The underdrainage will be returned to the headworks. The freeboard of 6 inches will be maintained at the sludge drying beds.

- **Solids Drying Area:** This area will be 150 ft wide and 300 ft long and will be divided in two areas. This area is constructed of concrete.

2.2.1. Engineering Design

The sludge handling units were designed as per the design report prepared and stamped, dated, and signed (sealed) by Troy Odell, P.E. (Professional Engineer) Camp Verde Sanitary District dated August 28, 2019 and subsequent sealed submittals that served as additions to the design report.

The WRF was designed as per the design report prepared by Eric T. Laurin, P.E., of Coe and Van Loo Engineering, Inc., dated April 6, 2006 and subsequent sealed submittals that served as additions to the design report.

2.2.2. Site-Specific Characteristics

Not applicable.

2.2.3. Pre-Operational Requirements

Prior to utilizing the Sludge Dewatering Lagoons soil samples shall be tested and analyzed per Section 3.0 , Compliance Schedule, item 1. Prior to utilizing the Sludge Dewatering Lagoons, the Engineer's Certificate of Completion which confirms that the modifications were constructed according to the Department-approved design report or plans and specifications, per Section 3.0, Compliance Schedule, item 2. Prior to utilizing the Sludge Drying Beds, the Engineer's Certificate of Completion which confirms that they were constructed according to the Department-approved design report or plans and specifications, per Section 3.0, Compliance Schedule, item 3. Prior to utilizing the Sludge Handling Areas, the Engineer's Certificate of Completion which confirms that they were constructed according to the Department-approved design report or plans and specifications, per Section 3.0, Compliance Schedule, item 4. The permittee shall submit the Engineer's Certificate of Completion that confirms the Phase II facility was constructed according to the Department-approved design report or plans and specifications, per Section 3.0, Compliance Schedule, item 5. The permittee shall submit an APP amendment application to increase the flow limit in Table 8 to 1.3 mgd per Section 3.0, Compliance Schedule, item 6. The permittee shall notify ADEQ of the commencement of discharge under Table 9 per Section 3.0, Compliance Schedule, item 7.

2.2.4. Operational Requirements

1. The permittee shall maintain a copy of the up-to-date operations and maintenance manual at the treatment facility site at all times; the manual shall be available upon request during inspections by ADEQ personnel.
2. The pollution control structures shall be inspected for the items listed in Section 4.2, Table 14: FACILITY INSPECTION AND OPERATIONAL MONITORING
3. If any damage of the pollution control structures is identified during inspection, proper repair procedures shall be performed. All repair procedures and materials used shall be documented in the facility log book as per Section 2.7.2 and reported to ADEQ in the event of a violation or exceedance as per Section 2.7.3.

2.2.5. Reclaimed Water Classification

[A.A.C. R18-9-B701(C)(2)(a), A.A.C. R18-11-303 through 307]

The treatment facility is rated as producing reclaimed water meeting the Class A+ Reclaimed Water Quality Standards (A.A.C. R18-11, Article 3) for discharge to the Irrigation Storage Pond and for irrigating reuse at the Sports Complex which may be used for any allowable Class A, B, or C use under a valid reclaimed water permit (A.A.C. R18-9, Article 7). The treatment facility is rated as producing reclaimed water meeting the Class B+ Reclaimed Water Quality Standards (A.A.C. R18-11, Article 3) for discharge to the Duck Ponds and for the Truck Fill Station which may be used for any allowable Class B, or C use under a valid reclaimed water permit (A.A.C. R18-9, Article 7). The WRF will not be producing two classes of effluent at the same time, but will be producing A+ or B+ depending on the effluent water quality. The effluent will be diverted to Class A+ uses only if it meets Class A+ requirements. However, if the effluent only meets Class B+ requirements, it will be diverted to Class B+ uses.

2.2.6. Certified Areawide Water Quality Management Plan Conformance

[A.A.C. R18-9-A201(B)(6)(a)]

Facility operations must conform to the approved Certified Areawide Water Quality Management Plan according to the 208 consistency determination in place at the time of permit issuance.

2.3. DISCHARGE LIMITATIONS

[A.R.S. §§ 49-201(14), 49-243 and A.A.C. R18-9-A205(B)]

1. The permittee is authorized to operate the WRF with a maximum average annual flow of 0.65 mgd for the Phase I WRF and 1.3 mgd for the Phase II WRF. The facility may increase flows once adequate disposal capacity has been demonstrated under an APP amendment as per Section 3.0, Compliance Schedule, Item No. 6. Two tables are listed in Section 4.2 for discharge monitoring: Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd) and Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd). The permittee shall use the monitoring table which is commensurate with the phase in use at the time. Upon construction of each phase, the permittee shall discontinue monitoring required in the previous phase. Monitoring is not required for phases not yet constructed.
2. The permittee shall notify all users that the materials authorized to be disposed of through the treatment facility are typical household sewage and pre-treated commercial wastewater and shall not include motor oil, gasoline, paints, varnishes, hazardous wastes, solvents, pesticides, fertilizers or other materials not generally associated with toilet flushing, food preparation, laundry facilities and personal hygiene.
3. The permittee shall operate and maintain all permitted facilities to prevent unauthorized discharges pursuant to A.R.S. § 49-201(12) resulting from failure or bypassing of applicable BADCT.
4. Specific discharge limitations are listed in Section 4.2, Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd), Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd), Table 10: RECLAIMED WATER MONITORING – CLASS A+, and Table 11: RECLAIMED WATER MONITORING – CLASS B+.

2.4. POINT OF COMPLIANCE (POC)

[A.R.S. § 49-244]

The non-hazardous Points of Compliance (POCs) have been established at the following locations:

PLANT →

S. WELL →

POC #	POC Location	Latitude (North)	Longitude (West)
1	Sludge Dewatering Lagoons	34° 33' 16" N	111° 51' 00" W
2	Immediately south of the extended aeration plant (Conceptual)	34° 33' 26" N	111° 49' 57" W
3	South of the South Duck Pond	34° 33' 08" N	111° 49' 54" W

Groundwater monitoring is required at the point of compliance wells. #1 and #3. POC #2 well is a conceptual well, monitoring is not required except as a contingency action. The director may require an amendment of this permit to install a monitoring well if there is cause or concern that groundwater quality may be impacted at the POC. The Director may amend this permit to designate additional points of compliance if information on groundwater gradients or groundwater usage indicates the need.

2.5. MONITORING REQUIREMENTS

[A.R.S. § 49-243(K)(1), A.A.C. R18-9-A206(A)]

Unless otherwise specified in this permit, all monitoring required in this permit shall continue for the duration of the permit, regardless of the status of the facility. Unless otherwise provided, monitoring shall commence the first full monitoring period following permit issuance. All sampling, preservation and holding times shall be in accordance with currently accepted standards of professional practice. Trip blanks, equipment blanks and duplicate samples shall also be obtained, and Chain-of-Custody procedures shall be followed, in accordance with currently accepted standards of professional practice. Copies of laboratory analyses and Chain-of-Custody forms shall be maintained at the permitted facility. Upon request, these documents shall be made immediately available for review by ADEQ personnel.

2.5.1. Pre-Operational Monitoring

Not applicable.

2.5.2. Routine Discharge Monitoring

The permittee shall monitor the effluent according to Section 4.2, Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd) and Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd). Representative samples of the effluent shall be collected at the point of discharge from the disinfection system.

2.5.3. Reclaimed Water Monitoring

The permittee shall monitor the reclaimed water according to the Reclaimed Water Monitoring Tables in Section 4.2, Table 10: RECLAIMED WATER MONITORING – CLASS A+ and Table 11: RECLAIMED WATER MONITORING – CLASS B+ in addition to the routine discharge monitoring parameters listed in Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd) and Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd). Representative samples of the reclaimed water shall be collected at the point of discharge from the disinfection system.

2.5.4. Facility / Operational Monitoring

Operational monitoring inspections shall be conducted according to Section 4.2, Table 14: FACILITY INSPECTION AND OPERATIONAL MONITORING.

If any damage of the pollution control structures is identified during inspection, proper repair procedures shall be performed. All repair procedures and materials used shall be documented in the facility log book as per Section 2.7.2 and reported to ADEQ in case of a violation or exceedance as per Section 2.7.3.

2.5.5. Groundwater Monitoring and Sampling Protocols

Static water levels shall be measured and recorded prior to sampling. Wells shall be purged of at least three borehole volumes (as calculated using the static water level) or until field parameters (pH, temperature, conductivity) are stable, whichever represents the greater volume. If evacuation results in the well going dry, the well shall be allowed to recover to 80 percent of the original borehole volume, or for 24 hours, whichever is shorter, prior to sampling. If after 24 hours there is not sufficient water for sampling, the well shall be recorded as "dry" for the monitoring event. An explanation for reduced pumping volumes, a record of the volume pumped, and modified sampling procedures shall be reported and submitted with the SMRF.

The permittee may conduct the sampling using low-flow purging methods in accordance with EPA, USGS, or DOD protocols. The well must be purged until indicator parameters stabilize. Indicator parameters shall include dissolved oxygen, turbidity, pH, temperature, and conductivity.

As a third alternative method for sampling within POC wells with very low recharge rates, the permittee may conduct the sampling using no-purge sampling techniques using HydraSleeve™ or similar type methodology. The use of HydraSleeve™ or similar type samplers shall follow accepted EPA, USGS, or DOD protocols. In addition, the HydraSleeve™ or similar type sampler shall be placed just below the water table.

2.5.5.1. POC Well Replacement

In the event that one or more of the designated POC wells should become unusable or inaccessible due to damage, exceedance of an alert level (AL) for water level as required by Section 2.6.2.3.4, or any other event, a replacement POC well shall be constructed and installed upon approval by ADEQ. If the replacement well is fifty feet or less from the original well, the ALs and/or aquifer quality limits (AQLs) calculated for the designated POC well shall apply to the replacement well.

2.5.6. Surface Water Monitoring and Sampling Protocols

Routine surface water monitoring is not required under the terms of this permit.

2.5.7. Analytical Methodology

All samples collected for compliance monitoring shall be analyzed using Arizona state-approved methods. If no state-approved method exists, then any appropriate EPA-approved method shall be used. Regardless of the method used, the detection limits must be sufficient to determine compliance with the regulatory limits of the parameters specified in this permit. If all methods have detection limits higher than the applicable limit, the permittee shall follow the applicable contingency requirements of Section 2.6 and may propose "other actions" including amending the permit to set higher limits. Analyses shall be performed by a laboratory licensed by the Arizona Department of Health Services, Office of Laboratory Licensure and Certification unless exempted under A.R.S. 36-495.02. For results to be considered valid, all analytical work shall meet quality control standards specified in the approved methods. A list of state-certified laboratories in Arizona can be obtained at the address below:

Arizona Department of Health Services
Office of Laboratory Licensure and Certification
250 North 17th Avenue
Phoenix, Arizona 85007
Phone: (602) 364-0720

2.5.8. Installation and Maintenance of Monitoring Equipment

Monitoring equipment required by this permit shall be installed and maintained so that representative samples required by the permit can be collected. If new groundwater wells are determined to be necessary, the construction details shall be submitted to the Groundwater Protection Value Stream for approval prior to installation and the permit shall be amended to include any new monitoring points.

2.6. CONTINGENCY PLAN REQUIREMENTS

[A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

2.6.1. General Contingency Plan Requirements

At least one copy of this permit and the approved contingency and emergency response plan submitted in the application shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

Any AL exceedance, or violation of an AQL, DL, or other permit condition shall be reported to ADEQ following the reporting requirements in Section 2.7.3, unless more specific reporting requirements are set forth in Section 2.6.2 through 2.6.5.

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL or DL. Where verification sampling is specified in this permit, it is the option of the permittee to perform such sampling. If verification sampling is not conducted within the timeframe allotted, ADEQ and the permittee shall presume the initial sampling result to be confirmed as if verification sampling had been conducted. The permittee is responsible for compliance with contingency plans relating to the exceedance of an AL or violation of a DL, AQL or any other permit condition. The permittee is subject to enforcement action for the failure to comply with any contingency actions in this permit.

2.6.2. Exceeding of Alert Levels and Performance Levels

2.6.2.1. Exceeding of Performance Levels Set for Operational Conditions

For freeboard performance levels, the permittee shall comply with the requirements as specified in Section 4.2, Table 14: FACILITY INSPECTION AND OPERATIONAL MONITORING to prevent the overtopping of an impoundment or sludge drying bed. If an impoundment or sludge drying bed is overtopped, the permittee shall follow the requirements in Section 2.6.5.3 and the reporting requirements of Section 2.7.3.

If a performance level set in Section 4.2, Table 14: FACILITY INSPECTION AND OPERATIONAL MONITORING has been exceeded the permittee shall:

1. Notify the Groundwater Protection Value Stream within five (5) days of becoming aware of the exceedance.
2. Submit a written report to the Groundwater Protection Value Stream within 30 days after becoming aware of the exceedance. The report shall document all of the following:
 - a. A description of the exceedance and the cause of the exceedance;
 - b. The period of the exceedance, including exact date(s) and time(s), if known, and the anticipated time period during which the exceedance is expected to continue;
 - c. Any action taken or planned to mitigate the effects of the exceedance or spill, or to eliminate or prevent recurrence of the exceedance or spill;
 - d. Any monitoring activity or other information which indicates that any pollutants would be reasonably expected to cause a violation of an AWQS; and
 - e. Any malfunction or failure of pollution control devices or other equipment or process.
3. The facility is no longer on alert status once the operational indicator no longer indicates that a performance level is being exceeded. The permittee shall, however, complete all tasks necessary to return the facility to its pre-alert operating condition.

2.6.2.2. Exceeding of Alert Levels (ALs) Set for Discharge Monitoring

1. If an AL set in Section 4.2, Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd) and Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd) has been exceeded, the permittee shall immediately investigate to determine the cause. The investigation shall include the following:
 - a. Inspection, testing, and assessment of the current condition of all treatment or pollutant discharge control systems that may have contributed to the exceedance;
 - b. Review of recent process logs, reports, and other operational control information to identify any unusual occurrences; and
 - c. If the investigation procedures indicated in (a) and (b) above fail to reveal the cause of the exceedance, the permittee shall sample individual waste streams composing the wastewater for the parameter(s) in question, if necessary to identify the cause of the exceedance.
2. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 5.0 and specific contingency measures identified in Section 2.6 to resolve any problems identified by the investigation which may have led to the AL exceedance. To implement any other corrective action the permittee shall obtain prior approval from ADEQ according to Section 2.6.6.
3. Within thirty days of an AL exceedance, the permittee shall submit the laboratory results to the Groundwater Protection Value Stream along with a summary of the findings of the investigation, the cause of the exceedance, and actions taken to resolve the problem.
4. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.

2.6.2.2.1. Exceeding Permit Flow Limit

If the AL for average monthly flow in Section 4.2, Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd) and Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd) has been exceeded, the permittee shall:

1. If the AL for average monthly flow in Section 4.2, Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd), has been exceeded, the permittee shall begin Phase II construction, or submit a report detailing the reasons construction of the next phase is not necessary. Acceptance of the report instead of beginning Phase I construction required ADEQ approval.
2. If the AL for average monthly flow in Section 4.2, Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd), has been exceeded, the permittee shall submit an APP amendment application to expand the WRF to ADEQ, or submit a report detailing the reasons an expansion is not necessary. Acceptance of the report instead of an application for expansion required ADEQ approval.

2.6.2.3. Exceeding of Alert Levels in Groundwater Monitoring

2.6.2.3.1. Alert Levels for Indicator Parameters

No ALs have been established for indicator parameters.

2.6.2.3.2. Alert Levels for Pollutants with Numeric Aquifer Water Quality Standards

1. In the case of an exceedance of an AL for a pollutant set in Section 4.2, Table 12: GROUNDWATER MONITORING – POC No. 1 and Table 13: GROUNDWATER MONITORING – POC No. 3, the permittee may conduct verification sampling for those pollutant(s) that exceeded their respective AL(s) within five (5) days of becoming aware of the exceedance. The permittee may use results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling confirms the AL exceedance or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring for each pollutant exceeding its' respective AL(s) as follows:

Table 3: ACCELERATED MONITORING - ALERT LEVEL EXCEEDANCE	
Specified Monitoring Frequency	Monitoring Frequency for AL Exceedance
Daily	Daily
Weekly	Daily
Monthly	Weekly
Quarterly	Monthly
Semi-annually	Quarterly
Annually	Quarterly

In addition, the permittee shall immediately initiate an investigation of the cause of the AL exceedance, including inspection of all discharging units and all related pollution control devices, review of any operational and maintenance practices that might have resulted in an unexpected discharge, and hydrologic review of groundwater conditions including upgradient water quality.

3. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 5.0 and specific contingency measures identified in Section 2.6 to resolve any problems identified by the investigation which may have led to an AL exceedance. To implement any other corrective action the permittee shall obtain prior approval from ADEQ according to Section 2.6.6. Alternatively, the permittee may submit a technical demonstration, subject to written approval by the Groundwater Protection Value Stream, that although an AL has been exceeded, the pollutant(s) that exceeded their respective AL(s) are not reasonably expected to cause a violation of an AQL. The demonstration may propose a revised AL or monitoring frequency, for those pollutant(s) that exceeded their respective AL(s), for approval in writing by the Groundwater Protection Value Stream.
4. Within 30 days after confirmation of an AL exceedance, for each pollutant that exceeded an AL, the permittee shall submit the laboratory results to the Groundwater Protection Value Stream along with a summary of the findings of the investigation, the cause of the exceedance, and actions taken to resolve the problem.
5. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.
6. For each pollutant that exceeded an AL, the increased monitoring required as a result of an AL exceedance may be reduced to the monitoring frequency in Section 4.2, Table 12: GROUNDWATER MONITORING – POC No. 1 and Table 13: GROUNDWATER MONITORING – POC No. 3 if the results of four sequential sampling events of those pollutants demonstrate that they did not exceed the AL.

7. If the increased monitoring required as a result of an AL exceedance continues for more than six (6) sequential sampling events, the permittee shall submit to ADEQ a second report documenting an investigation of each pollutant which continued to exceed an AL. This report is due within 30 days of the receipt of laboratory results of the sixth sampling event.

2.6.2.3.3. Alert Levels to Protect Downgradient Users from Pollutants without Numeric Aquifer Water Quality Standards

Not required at time of issuance.

2.6.2.3.4. Alert Level for Groundwater Level

Not required at time of issuance.

2.6.3. Discharge Limit Violation

1. If a DL set in Section 4.2, Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd) or Table 10: RECLAIMED WATER MONITORING and Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd) has been violated, the permittee shall immediately investigate to determine the cause. The investigation shall include the following:
 - a. Inspection, testing, and assessment of the current condition of all treatment or pollutant discharge control systems that may have contributed to the violation;
 - b. Review of recent process logs, reports, and other operational control information to identify any unusual occurrences;
 - c. If the investigation procedures indicated in (a) and (b) above fail to reveal the cause of the violation, the permittee shall sample individual waste streams composing the wastewater for the parameters in violation, as necessary to identify the cause of the violation.

The permittee shall submit a report to the Groundwater Protection Value Stream according to Section 2.7.3, which includes a summary of the findings of the investigation, the cause of the violation, and actions taken to resolve the problem. The permittee shall consider and ADEQ may require corrective action that may include control of the source of discharge, cleanup of affected soil, surface water or groundwater, notification of downstream or downgradient users who may be directly affected by the discharge, and mitigation of the impact of pollutants on existing uses of the aquifer. Corrective actions shall either be specifically identified in this permit, included in an ADEQ-approved contingency plan, or separately approved according to Section 2.6.6.

2. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

2.6.4. Aquifer Quality Limit Violation

1. If an AQL set in Section 4.2, Table 12: GROUNDWATER MONITORING – POC No. 1 and Table 13: GROUNDWATER MONITORING – POC No. 3 has been exceeded, the permittee may conduct verification sampling for those pollutant(s) that were above their respective AQL(s) within five (5) days of becoming aware of the exceedance. The permittee may use results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling does not confirm an AQL exceedance, no further action is needed under this Section.
3. If verification sampling confirms that an AQL was exceeded for any parameter or if the permittee opts not to perform verification sampling, then, the permittee shall increase the frequency of monitoring for those parameters as follows:

Table 4: ACCELERATED MONITORING - AQUIFER QUALITY LIMIT VIOLATION	
Specified Monitoring Frequency	Monitoring Frequency for AQL Violation
Daily	Daily
Weekly	Daily
Monthly	Weekly
Quarterly	Monthly
Semi-annually	Quarterly
Annually	Quarterly

In addition, the permittee shall immediately initiate an evaluation for the cause of the violation, including inspection of all discharging units and all related pollution control devices, and review of any operational and maintenance practices that might have resulted in unexpected discharge.

The permittee also shall submit a report according to Section 2.7.3, which includes a summary of the findings of the investigation, the cause of the violation, and actions taken to resolve the problem. A verified exceedance of an AQL will be considered a violation unless the permittee demonstrates within 30 days that the exceedance was not caused or contributed to by pollutants discharged from the facility. Unless the permittee has demonstrated that the exceedance was not caused or contributed to by pollutants discharged from the facility, the permittee shall consider and ADEQ may require corrective action that may include control of the source of discharge, cleanup of affected soil, surface water, or groundwater, and mitigation of the impact of pollutants on existing uses of the aquifer. Corrective actions shall either be specifically identified in this permit, included in an ADEQ approved contingency plan, or separately approved according to Section 2.6.6.

4. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.
5. The increased monitoring for those pollutant(s) required as a result of an AQL exceedance may be reduced to the original sampling frequency for each respective pollutant, if the results of three (3) sequential sampling events demonstrate that the parameter(s) does not exceed their respective AQL(s), and upon ADEQ approval.

2.6.5. Emergency Response and Contingency Requirements for Unauthorized Discharges

[A.R.S. § 49-201(12) AND PURSUANT TO A.R.S. § 49-241]

2.6.5.1. Duty to Respond

The permittee shall act immediately to correct any condition resulting from a discharge pursuant to A.R.S. § 49-201(12) if that condition could pose an imminent and substantial endangerment to public health or the environment.

2.6.5.2. Discharge of Hazardous Substances or Toxic Pollutants

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of suspected hazardous substances (A.R.S. § 49-201(19)) or toxic pollutants (A.R.S. § 49-243(I)) on the facility site, the permittee shall promptly isolate the area and attempt to identify the discharged material. The permittee shall record information, including name, nature of exposure and follow-up medical treatment, if necessary, on persons who may have been exposed during the incident. The permittee shall notify the Groundwater Protection Value Stream within 24 hours of discovering the discharge of hazardous material which (a) has the potential to cause an AWQS or AQL exceedance, or (b) could pose an endangerment to public health or the environment.

2.6.5.3. Discharge of Non-Hazardous Materials

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of non-hazardous materials from the facility, the permittee shall promptly attempt to cease the discharge and isolate the discharged material. Discharged material shall be removed and the site cleaned up as soon as possible. The permittee shall notify the Groundwater Protection Value Stream within 24 hours of discovering the discharge of non-hazardous material which has the potential to cause an AQL exceedance, or could pose an endangerment to public health or the environment.

2.6.5.4. Reporting Requirements

The permittee shall submit a written report for any unauthorized discharges reported under Sections 2.6.5.2 and 2.6.5.3 to the Groundwater Protection Value Stream within 30 days of the discharge or as required by subsequent ADEQ action. The report shall summarize the event, including any human exposure, and facility response activities and include all information specified in Section 2.7.3. If a notice is issued by ADEQ subsequent to the discharge notification, any additional information requested in the notice shall also be submitted within the time frame specified in the notice. Upon review of the submitted report, ADEQ may require additional monitoring or corrective actions.

2.6.6. Corrective Actions

Specific contingency measures identified in Section 2.6 have already been approved by ADEQ and do not require written approval to implement.

With the exception of emergency response actions taken under Section 2.6.5, the permittee shall obtain written approval from the Groundwater Protection Value Stream prior to implementing a corrective action to accomplish any of the following goals in response to exceedance of an AL, AQL, DL, or other permit condition:

1. Control of the source of an unauthorized discharge;
2. Soil cleanup;
3. Cleanup of affected surface waters;
4. Cleanup of affected parts of the aquifer;
5. Mitigation to limit the impact of pollutants on existing uses of the aquifer.

Within 30 days of completion of any corrective action, the operator shall submit to the Groundwater Protection Value Stream, a written report describing the causes, impacts, and actions taken to resolve the problem.

2.7. REPORTING AND RECORDKEEPING REQUIREMENTS

[A.R.S. § 49-243(K)(2), A.A.C. R18-9-A206(B), R18-9-A207, and R18-5-104]

2.7.1. Self-Monitoring Report Form

1. The permittee shall complete the **Self-Monitoring Reporting Forms (SMRFs)** provided by ADEQ, and submit the completed report through the myDEQ online reporting system. The permittee shall use the format devised by ADEQ.
2. The permittee shall complete the SMRF to the extent that the information reported may be entered on the form. If no information is required during a reporting period, the permittee shall enter "not required" on the form, include an explanation, and submit the form to the Groundwater Protection Value Stream.
3. The tables contained in Section 4.0 list the monitoring parameters and the frequencies for reporting results on the SMRF:
 - a. Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd)
 - b. Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd)
 - c. Table 10: RECLAMIED WATER MONITORING – CLASS A+
 - d. Table 11: RECLAMIED WATER MONITORING – CLASS B+
 - e. Table 12: GROUNDWATER MONITORING – POC No. 1
 - f. Table 13: GROUNDWATER MONITORING – POC No. 3

The parameters listed in the above-identified tables from Section 4.0 are the only parameters for which SMRF reporting is required.

2.7.2. Operation Inspection / Log Book Recordkeeping

A signed copy of this permit shall be maintained at all times at the location where day-to-day decisions regarding the operation of the facility are made. A log book (paper copies, forms, or electronic data) of the inspections and measurements required by this permit shall be maintained at the location where day-to-day decisions are made regarding the operation of the facility. The log book shall be retained for ten years from the date of each inspection, and upon request, the permit and the log book shall be made immediately available for review by ADEQ personnel. The information in the log book shall include, but not be limited to, the following information as applicable:

1. Name of inspector;
2. Date and shift inspection were conducted;
3. Condition of applicable facility components;
4. Any damage or malfunction, and the date and time any repairs were performed;
5. Documentation of sampling date and time; and
6. Any other information required by this permit to be entered in the log book.
7. Monitoring records for each measurement shall comply with A.A.C. R18-9-A206(B)(2).

2.7.3. Permit Violation and Alert Level Status Reporting

1. The permittee shall notify the Groundwater Protection Value Stream within five (5) days (except as provided in Section 2.6.5) of becoming aware of an AL exceedance, or violation of any permit condition, AQL, or DL for which notification requirements are not specified in Sections 2.6.2 through 2.6.5.
2. The permittee shall submit a written report to the Groundwater Protection Value Stream within 30 days of becoming aware of the violation of any permit condition, AQL, or DL. The report shall document all of the following:
 - a. Identification and description of the permit condition for which there has been a violation and a description of the cause;
 - b. The period of violation including exact date(s) and time(s), if known, and the anticipated time period during which the violation is expected to continue;
 - c. Any corrective action taken or planned to mitigate the effects of the violation, or to eliminate or prevent a recurrence of the violation;
 - d. Any monitoring activity or other information which indicates that any pollutants would be reasonably expected to cause a violation of an AWQS;
 - e. Proposed changes to the monitoring which include changes in constituents or increased frequency of monitoring; and
 - f. Description of any malfunction or failure of pollution control devices or other equipment or processes.

2.7.4. Operational, Other or Miscellaneous Reporting

The permittee shall record the information as required in Section 4.2, Table 14: FACILITY INSPECTION AND OPERATIONAL MONITORING in the facility log book as per Section 2.7.2, and report to the Groundwater Protection Value Stream any violations or exceedances as per Section 2.7.3.

If the treatment facility is classified for reclaimed water under this permit, the permittee shall submit the reclaimed water monitoring results and flow volumes to any of the following in accordance with A.A.C. R18-9-B701(C)(2)(c):

1. Any reclaimed water agent who has contracted for delivery of reclaimed water from the permittee; and
2. Any end user who has not waived interest in receiving this information.

2.7.5. Reporting Location

All Self-Monitoring Report Forms (SMRFs) shall be submitted through the myDEQ portal accessible on the ADEQ website at: <http://www.azdeq.gov/welcome-mydeq>

All other documents required by this permit shall be mailed to:

The Arizona Department of Environmental Quality
Groundwater Protection Value Stream
Mail Code 5415B-3
1110 West Washington Street
Phoenix, Arizona 85007
Phone (602) 771-4571

2.7.6. Reporting Deadline

The following table lists the quarterly report due dates:

Table 5: QUARTERLY REPORTING DEADLINES	
Monitoring Conducted During Quarter:	Quarterly Report Due By:
January-March	April 30
April-June	July 30
July-September	October 30
October-December	January 30

The following table lists the semi-annual and annual report due dates if applicable:

Table 6: (SEMI-)ANNUAL REPORTING DEADLINES	
Monitoring Conducted:	Report Due By:
Semi-annual: January-June	July 30
Semi-annual: July-December	January 30
Annual: January-December	January 30

2.7.7. Changes to Facility Information in Section 1.0

The Groundwater Protection Value Stream shall be notified within ten days of any change of facility information including Facility Name, Permittee Name, Mailing or Street Address, Facility Contact Person, certified operator in direct responsible charge or Emergency Telephone Number.

2.8. Temporary Cessation

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A209(A)]

The permittee shall give written notice to the Groundwater Protection Value Stream before ceasing operation of the facility for a period of 60 days or greater. The permittee shall take the following measures upon temporary cessation:

1. If applicable, direct the wastewater flows from the facility to another state-approved wastewater treatment facility;
2. Correct the problem that caused the temporary cessation of the facility; and
3. Notify the Groundwater Protection Value Stream with a monthly facility status report describing the activities conducted on the treatment facility to correct the problem.
4. Submittal of Self-Monitoring Report Forms (SMRFs) is still required; report "temporary cessation" in the comment section.

At the time of notification the permittee shall submit for ADEQ approval a plan for maintenance of discharge control systems and for monitoring during the period of temporary cessation. Immediately following ADEQ approval, the permittee shall implement the approved plan. If necessary, ADEQ shall amend permit conditions to incorporate conditions to address temporary cessation. During the period of temporary cessation, the permittee shall provide written notice to the Groundwater Protection Value Stream of the operational status of the facility every three years. If the permittee intends to permanently cease operation of any facility, the permittee shall submit closure notification, as set forth in Section 2.9 below.

2.9. Closure

[A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(B)]

For a facility addressed under this permit, the permittee shall give written notice of closure to the Groundwater Protection Value Stream of the intent to cease operation without resuming activity for which the facility was designed or operated. Submittal of SMRFs is still required; report "closure in process" in the comment section.

2.9.1. Closure Plan

Within 90 days following notification of closure, the permittee shall submit for approval to the Groundwater Protection Value Stream, a closure plan which meets the requirements of A.R.S. § 49-252 and A.A.C. R18-9-A209(B)(3).

If the closure plan achieves clean-closure immediately, ADEQ shall issue a letter of approval to the permittee. If the closure plan contains a schedule for bringing the facility to a clean-closure configuration at a future date, ADEQ may incorporate any part of the schedule as an amendment to this permit.

2.9.2. Closure Completion

Upon completion of closure activities, the permittee shall give written notice to the Groundwater Protection Value Stream indicating that the approved closure plan has been implemented fully and providing supporting documentation to demonstrate that clean-closure has been achieved (soil sample results, verification sampling results, groundwater data, as applicable). If clean-closure has been achieved, ADEQ shall issue a letter of approval to the permittee at that time. If any of the following conditions apply, the permittee shall follow the terms of post-closure stated in this permit:

1. Clean-closure cannot be achieved at the time of closure notification or within one year thereafter under a diligent schedule of closure actions;
2. Further action is necessary to keep the facility in compliance with the AWQS at the applicable POC or, for any pollutant for which the AWQS was exceeded at the time this permit was issued, further action is necessary to prevent the facility from further degrading the aquifer at the applicable POC with respect to that pollutant;
3. Remedial, mitigative or corrective actions or controls are necessary to comply with A.R.S. § 49-201(30) and Title 49, Chapter 2, Article 3;
4. Further action is necessary to meet property use restrictions.
5. SMRF submittals are still required until Clean Closure is issued.

2.10. Post-closure

[A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9 A209(C)]

Post-closure requirements shall be established based on a review of facility closure actions and will be subject to review and approval by the Groundwater Protection Value Stream.

In the event clean-closure cannot be achieved pursuant to A.R.S. § 49-252, the permittee shall submit for approval to the Groundwater Protection Value Stream a post-closure plan that addresses post-closure maintenance and monitoring actions at the facility. The post-closure plan shall meet all requirements of A.R.S. §§ 49-201(30) and 49-252 and A.A.C. R18-9-A209(C). Upon approval of the post-closure plan, this permit shall be amended or a new permit shall be issued to incorporate all post-closure controls and monitoring activities of the post-closure plan.

2.10.1. Post-Closure Plan

A specific post-closure plan may be required upon the review of the closure plan.

2.10.2. Post-Closure Completion

Not required at the time of permit issuance.

3.0 COMPLIANCE SCHEDULE

[A.R.S. § 49-243(K)(5) and A.A.C. R18-9-A208]

Unless otherwise indicated, for each compliance schedule item listed below, the permittee shall submit the required information to the Groundwater Protection Value Stream.

Table 7: COMPLIANCE SCHEDULE ITEMS			
No.	Description	Due By:	Permit Amendment Required?
Soil Testing			
1	The permittee shall collect the soil samples from each treatment lagoon and soil samples from the fill material which will be used to adjust lagoon depth. The soil samples shall be tested to determine the soil classification and the hydraulic conductivity. The permittee shall submit the soil testing results to the Department.	Prior to utilizing the Sludge Dewatering Lagoons and within 90 days after completion of back filling	No
Engineer's Certificate of Completion			
2	The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion, in a format approved by the Department, which confirms that the modifications for Sludge Dewatering Lagoons are performed according to the Department-approved design report or plans and specifications, as applicable.	Prior to utilizing the Sludge Dewatering Lagoons and within 90 days after completion of construction.	No
3	The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion, in a format approved by the Department, which confirms that the Sludge Drying Beds are constructed according to the Department-approved design report or plans and specifications, as applicable.	Prior to utilizing the Sludge Drying Beds and within 90 days after completion of construction.	No
4	The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion, in a format approved by the Department, which confirms that the Solids Drying Areas are constructed according to the Department-approved design report or plans and specifications, as applicable.	Prior to utilizing the Sludge Handling Areas and within 90 days after completion of construction	No
Phase II WRF			
5	The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion, in a format approved by the Department, which confirms that the Phase II facility is constructed according to the Department-approved design report or plans and specifications, as applicable.	Prior to discharge under Table 9, and within 90 days after completion of Phase II construction.	No

Table 7: COMPLIANCE SCHEDULE ITEMS

6	The permittee shall submit an APP amendment application to increase the flow limit in Table 9 to 1.3 mgd. The Demonstration shall include a documentation the facility has adequate setbacks for a design flow of 1.3 mgd and at least 1.3 mgd of disposal capacity.	At least 90 days prior to the anticipated date of permit issuance.	Yes
7	The permittee shall notify ADEQ of the commencement of discharge under Table 8.	Within 15 days after the commencement of discharge under Table 8.	No
POC Well No.2			
8	The permittee shall submit well abandonment documents for conceptual POC Well No. 2.	Within 60 days of permit issuance.	No
Contingency Plan			
9	The permittee shall submit an updated Contingency Plan.	Within 90 days of permit issuance.	No

4.0 TABLES OF MONITORING REQUIREMENTS

4.1. PRE-OPERATIONAL MONITORING (OR CONSTRUCTION REQUIREMENTS)

Not applicable.

4.2. COMPLIANCE OR OPERATIONAL MONITORING

Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd)¹

Sampling Point Number	Sampling Point Identification			Latitude (North)	Longitude (West)
1	Sampler at the downstream end of the back-up chlorination system			34° 33' 23"	111° 49' 56"
2	Flow meter located downstream of the disinfection system			34° 33' 23"	111° 49' 56"
Parameter	Alert Level (AL)	Discharge Limit (DL)	Units	Sampling Frequency	Reporting Frequency
Total Flow ² : Daily ³	Not Applicable ⁴	Not Applicable	mgd ⁵	Daily	Quarterly
Total Flow: Monthly Average ⁶	0.618	0.650	mgd	Monthly Calculation	Quarterly
Reuse Flow: Daily	Not Applicable	Not Applicable	mgd	Daily	Quarterly
Reuse Flow: Monthly Average	0.494	0.650	mgd	Monthly Calculation	Quarterly
Duck Pond Flow: Daily	Not Applicable	Not applicable	mgd	Daily	Quarterly
Duck Pond Flow: Monthly Average	0.494	0.650	mgd	Monthly Calculation	Quarterly
Fecal Coliform: Single sample maximum	Not Applicable	23.0	CFU ⁷	Daily ⁸	Quarterly
Fecal Coliform: four (4) of seven (7) samples in a week ⁹	Not Applicable	Non-detect ¹⁰	CFU	Weekly Evaluation	Quarterly
Total Nitrogen ¹¹ : Five-sample rolling geometric mean ¹²	8.0	10.0	mg/l ¹³	Monthly Calculation	Quarterly
Cyanide (as free cyanide)	0.16	0.2	mg/l	Quarterly	Quarterly
Fluoride	3.2	4.0	mg/l	Quarterly	Quarterly

¹ The facility shall monitor under this Table until the permittee demonstrates that the facility has at least 1.30 mgd of disposal capacity per Section 3.0, item 6 of the Compliance Schedule.

² Total flow for all methods of disposal (Reuse and the Duck Ponds)

³ Total Daily Flow shall be measured using a continuous recording flow meter that totals the flows daily.

⁴ Not Applicable means that monitoring is required, but no limits have been specified at the time of permit issuance

⁵ mgd = million gallons per day

⁶ Monthly Average means the calculated average of daily flow values in a month

⁷ CFU = Colony Forming Units / 100 ml sample. For CFU, a value of <1.0 shall be considered to be non-detect.

⁸ For fecal coliform, "daily" sampling means every day in which a sample can practicably be obtained and delivered in sufficient time for proper analysis, provided that no less than four samples in each week are obtained and analyzed

⁹ Week means a seven-day period starting on Sunday and ending on the following Saturday. The reporting form for this parameter consists of 13 weeks per quarter

¹⁰ Fecal coliform 4 of 7 samples requires entering "Compliance" or "Non-compliance" on the SMRF for each week of the reporting period. Evaluate the daily fecal coliform results for that week (Sunday through Saturday). If, of these seven days, four or more of the daily fecal coliform results are non-detect, report "Compliance" for that week's entry on the SMRF. If three or fewer of the daily fecal coliform results are non-detect, report "Non-compliance" for that week's entry on the SMRF

¹¹ Total Nitrogen = Nitrate as N + Nitrite as N + Total Kjeldahl Nitrogen

¹² The five-sample rolling geometric mean is determined by multiplying the five (5) most recent monthly sample values together then taking the fifth root of the product. Example: $GM_5 = \sqrt[5]{(m_1)(m_2)(m_3)(m_4)(m_5)}$

¹³ mg/l = milligrams per liter

Table 8: ROUTINE DISCHARGE MONITORING-- Phase I (0.65 mgd) (Continued)

Sampling Point Number	Sampling Point Identification			Latitude (North)	Longitude (West)
1	Sampler at the downstream end of the back-up chlorination system			34° 33' 23"	111° 49' 56"
2	Flow meter located downstream of the disinfection system			34° 33' 23"	111° 49' 56"
Parameter	Alert Level	Discharge Limit	Units	Sampling Frequency	Reporting Frequency
Metals (Total)					
Antimony	0.0048	0.006	mg/l	Quarterly	Quarterly
Arsenic	0.04	0.05	mg/l	Quarterly	Quarterly
Barium	1.60	2.00	mg/l	Quarterly	Quarterly
Beryllium	0.0032	0.004	mg/l	Quarterly	Quarterly
Cadmium	0.004	0.005	mg/l	Quarterly	Quarterly
Chromium	0.08	0.1	mg/l	Quarterly	Quarterly
Lead	0.04	0.05	mg/l	Quarterly	Quarterly
Mercury	0.0016	0.002	mg/l	Quarterly	Quarterly
Nickel	0.08	0.1	mg/l	Quarterly	Quarterly
Selenium	0.04	0.05	mg/l	Quarterly	Quarterly
Thallium	0.0016	0.002	mg/l	Quarterly	Quarterly
Volatile and Semi-Volatile Organic Compounds (VOCs and SVOCs)					
Benzene	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
Carbon tetrachloride	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
o-Dichlorobenzene	0.48	0.6	mg/l	Semi-Annually	Semi-Annually
para-Dichlorobenzene	0.06	0.075	mg/l	Semi-Annually	Semi-Annually
1,2-Dichloroethane	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
1,1-Dichloroethylene	0.0056	0.007	mg/l	Semi-Annually	Semi-Annually
cis-1,2-Dichloroethylene	0.056	0.07	mg/l	Semi-Annually	Semi-Annually
trans-1,2-Dichloroethylene	0.08	0.1	mg/l	Semi-Annually	Semi-Annually
Dichloromethane	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
1,2-Dichloropropane	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
Ethylbenzene	0.56	0.7	mg/l	Semi-Annually	Semi-Annually
Hexachlorobenzene	0.0008	0.001	mg/l	Semi-Annually	Semi-Annually
Hexachlorocyclopentadiene	0.04	0.05	mg/l	Semi-Annually	Semi-Annually
Monochlorobenzene	0.08	0.1	mg/l	Semi-Annually	Semi-Annually
Styrene	0.08	0.1	mg/l	Semi-Annually	Semi-Annually
Tetrachloroethylene	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
Toluene	0.8	1.0	mg/l	Semi-Annually	Semi-Annually
Trihalomethanes (total) ¹⁴	0.08	0.1	mg/l	Semi-Annually	Semi-Annually
1,1,1-Trichloroethane	0.16	0.2	mg/l	Semi-Annually	Semi-Annually
1,2,4 - Trichlorobenzene	0.056	0.07	mg/l	Semi-Annually	Semi-Annually
1,1,2 - Trichloroethane	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
Trichloroethylene	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
Vinyl Chloride	0.0016	0.002	mg/l	Semi-Annually	Semi-Annually
Xylenes (Total)	8.0	10.0	mg/l	Semi-Annually	Semi-Annually

¹⁴ Total Trihalomethanes (TTHMs) are comprised of Bromoform, Bromodichloromethane, Chloroform, and Dibromochloromethane

Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd)¹⁵

Sampling Point Number	Sampling Point Identification			Latitude (North)	Longitude (West)
1	Sampler at the downstream end of the back-up chlorination system			34° 33' 23"	111° 49' 56"
2	Flow meter located downstream of the disinfection system			34° 33' 23"	111° 49' 56"
Parameter	Alert Level (AL)	Discharge Limit (DL)	Units	Sampling Frequency	Reporting Frequency
Total Flow ¹⁶ ; Daily ¹⁷	Not Applicable ¹⁸	Not Applicable	mgd ¹⁹	Daily	Quarterly
Total Flow: Monthly Average ²⁰	1.235	1.30	mgd	Monthly Calculation	Quarterly
Reuse Flow: Daily	Not Applicable	Not Applicable	mgd	Daily	Quarterly
Reuse Flow: Monthly Average	1.235	1.30	mgd	Monthly Calculation	Quarterly
Duck Pond Flow: Daily	Not Applicable	Not applicable	mgd	Daily	Quarterly
Duck Pond Flow: Monthly Average	1.235	1.30	mgd	Monthly Calculation	Quarterly
Fecal Coliform: Single sample maximum	Not Applicable	23.0	CFU ²¹	Daily ²²	Quarterly
Fecal Coliform: four (4) of seven (7) samples in a week ²³	Not Applicable	Non-detect ²⁴	CFU	Weekly Evaluation	Quarterly
Total Nitrogen ²⁵ : Five-sample rolling geometric mean ²⁶	8.0	10.0	mg/l ²⁷	Monthly Calculation	Quarterly
Cyanide (as free cyanide)	0.16	0.2	mg/l	Quarterly	Quarterly
Fluoride	3.2	4.0	mg/l	Quarterly	Quarterly

¹⁵ Permittee may begin monitoring under this Table per Section 3.0, item 7 of the Compliance Schedule.

¹⁶ Total flow for all methods of disposal (Reuse and the Duck Ponds)

¹⁷ Total Daily Flow shall be measured using a continuous recording flow meter that totals the flows daily.

¹⁸ Not Applicable means that monitoring is required, but no limits have been specified at the time of permit issuance

¹⁹ mgd = million gallons per day

²⁰ Monthly Average means the calculated average of daily flow values in a month

²¹ CFU = Colony Forming Units / 100 ml sample. For CFU, a value of <1.0 shall be considered to be non-detect.

²² For fecal coliform, "daily" sampling means every day in which a sample can practicably be obtained and delivered in sufficient time for proper analysis, provided that no less than four samples in each week are obtained and analyzed

²³ Week means a seven-day period starting on Sunday and ending on the following Saturday. The reporting form for this parameter consists of 13 weeks per quarter

²⁴ Fecal coliform 4 of 7 samples requires entering "Compliance" or "Non-compliance" on the SMRF for each week of the reporting period. Evaluate the daily fecal coliform results for that week (Sunday through Saturday). If, of these seven days, four or more of the daily fecal coliform results are non-detect, report "Compliance" for that week's entry on the SMRF. If three or fewer of the daily fecal coliform results are non-detect, report "Non-compliance" for that week's entry on the SMRF

²⁵ Total Nitrogen = Nitrate as N + Nitrite as N + Total Kjeldahl Nitrogen

²⁶ The five-sample rolling geometric mean is determined by multiplying the five (5) most recent monthly sample values together then taking the fifth root of the product. Example: $GM_5 = \sqrt[5]{(m_1)(m_2)(m_3)(m_4)(m_5)}$

²⁷ mg/l = milligrams per liter

Table 9: ROUTINE DISCHARGE MONITORING- Phase II (1.3 mgd) (Continued)

Sampling Point Number	Sampling Point Identification			Latitude (North)	Longitude (West)
1	Sampler at the downstream end of the back-up chlorination system			34° 33' 23"	111° 49' 56"
2	Flow meter located downstream of the disinfection system			34° 33' 23"	111° 49' 56"
Parameter	Alert Level	Discharge Limit	Units	Sampling Frequency	Reporting Frequency
Metals (Total)					
Antimony	0.0048	0.006	mg/l	Quarterly	Quarterly
Arsenic	0.04	0.05	mg/l	Quarterly	Quarterly
Barium	1.60	2.00	mg/l	Quarterly	Quarterly
Beryllium	0.0032	0.004	mg/l	Quarterly	Quarterly
Cadmium	0.004	0.005	mg/l	Quarterly	Quarterly
Chromium	0.08	0.1	mg/l	Quarterly	Quarterly
Lead	0.04	0.05	mg/l	Quarterly	Quarterly
Mercury	0.0016	0.002	mg/l	Quarterly	Quarterly
Nickel	0.08	0.1	mg/l	Quarterly	Quarterly
Selenium	0.04	0.05	mg/l	Quarterly	Quarterly
Thallium	0.0016	0.002	mg/l	Quarterly	Quarterly
Volatile and Semi-Volatile Organic Compounds (VOCs and SVOCs)					
Benzene	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
Carbon tetrachloride	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
o-Dichlorobenzene	0.48	0.6	mg/l	Semi-Annually	Semi-Annually
para-Dichlorobenzene	0.06	0.075	mg/l	Semi-Annually	Semi-Annually
1,2-Dichloroethane	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
1,1-Dichloroethylene	0.0056	0.007	mg/l	Semi-Annually	Semi-Annually
cis-1,2-Dichloroethylene	0.056	0.07	mg/l	Semi-Annually	Semi-Annually
trans-1,2-Dichloroethylene	0.08	0.1	mg/l	Semi-Annually	Semi-Annually
Dichloromethane	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
1,2-Dichloropropane	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
Ethylbenzene	0.56	0.7	mg/l	Semi-Annually	Semi-Annually
Hexachlorobenzene	0.0008	0.001	mg/l	Semi-Annually	Semi-Annually
Hexachlorocyclopentadiene	0.04	0.05	mg/l	Semi-Annually	Semi-Annually
Monochlorobenzene	0.08	0.1	mg/l	Semi-Annually	Semi-Annually
Styrene	0.08	0.1	mg/l	Semi-Annually	Semi-Annually
Tetrachloroethylene	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
Toluene	0.8	1.0	mg/l	Semi-Annually	Semi-Annually
Trihalomethanes (total) ²⁸	0.08	0.1	mg/l	Semi-Annually	Semi-Annually
1,1,1-Trichloroethane	0.16	0.2	mg/l	Semi-Annually	Semi-Annually
1,2,4 - Trichlorobenzene	0.056	0.07	mg/l	Semi-Annually	Semi-Annually
1,1,2 - Trichloroethane	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
Trichloroethylene	0.004	0.005	mg/l	Semi-Annually	Semi-Annually
Vinyl Chloride	0.0016	0.002	mg/l	Semi-Annually	Semi-Annually
Xylenes (Total)	8.0	10.0	mg/l	Semi-Annually	Semi-Annually

²⁸ Total Trihalomethanes (TTHMs) are comprised of Bromoform, Bromodichloromethane, Chloroform, and Dibromochloromethane

Table 10: RECLAIMED WATER MONITORING – CLASS A+²⁹

Reclaimed water monitoring under Table 10 shall be performed in addition to routine discharge monitoring required under Section 4.2, Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd) and Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd)

Sampling Point Number	Sampling Point Identification		Latitude (North)	Longitude (West)
1	Sampler at the downstream end of the back-up chlorination system		34° 33' 23"	111° 49' 56"
Parameter	Discharge Limit (DL)	Units	Sampling Frequency	Reporting Frequency
Fecal Coliform Single-sample maximum:	23	CFU ³⁰	Daily ³¹	Quarterly
Fecal Coliform: Four (4) of last seven (7) samples	Non-detect ³²	CFU	Daily Evaluation	Quarterly
Total Nitrogen ³³ : Five-sample rolling geometric mean ³⁴	10.0	mg/l ³⁵	Monthly Calculation	Quarterly
Turbidity ³⁶ : Single reading	5.0	NTU ³⁷	Daily ³⁸	Quarterly
Turbidity: 24-hour average	2.0	PFU ³⁹	Daily Calculation	Quarterly
Enteric Virus ⁴⁰ : Four (4) of last seven (7) samples	Non-detect	CFU ⁴¹	Monthly / Suspended ⁴²	Quarterly

²⁹ The permittee shall monitor for Class A+ Reclaimed Water Monitoring for discharge to the Irrigation Storage Pond and irrigation reuse at the Sports Complex. The WRF will not be producing two classes of effluent at the same time, but will be producing A+ or B+ depending on the effluent water quality. The effluent will be diverted to Class A+ uses only if it meets Class A+ requirements. However, if the effluent only meets Class B+ requirements, it will be diverted to Class B+ uses.

³⁰ CFU = Colony Forming Units per 100 ml. For CFU, a value of <1.0 shall be considered to be non-detect.

³¹ For fecal coliform, "daily" sampling means every day in which a sample can practicably be obtained and delivered in sufficient time for proper analysis, provided that no less than four (4) samples in each seven-day period are obtained and analyzed.

³² Non-detect requires entering "Compliance" or "Non-compliance" on the SMRF for each day of the reporting period. Evaluate the daily fecal coliform result along with the six (6) previous sample results. If four (4) or more of those results are non-detect, report "Compliance" for that day's entry on the SMRF. If four (4) or more of those results have detections of fecal coliform, report "Non-compliance" for that day's entry

³³ Total Nitrogen is the sum of Nitrate as N, Nitrite as N, and Total Kjeldahl Nitrogen (TKN)

³⁴ The five-sample rolling geometric mean is determined by multiplying the five (5) most recent monthly sample values together then taking the fifth root of the product. Example: $GM_5 = \sqrt[5]{(m_1)(m_2)(m_3)(m_4)(m_5)}$

³⁵ mg/l = milligrams per liter

³⁶ Turbidimeter shall be placed at a point in the wastewater treatment process after filtration and immediately before disinfection and shall have a signal averaging time not exceeding 120 seconds. All exceedances must be explained and submitted to the Department with the corresponding quarterly SMRF; occasional spikes due to back-flushing or instrument malfunction shall not be considered an exceedance

³⁷ NTU = Nephelometric Turbidity Units

³⁸ For the single turbidity reading, daily means the maximum reading during the 24-hour period.

³⁹ Plaque Forming Units per 40 Liters.

⁴⁰ Initial monthly enteric virus sampling shall be performed to indicate four (4) out of seven (7) sample results of non-detect.

⁴¹ CFU = Colony Forming Units / 100 ml sample. For CFU, a value of <1.0 shall be considered to be non-detect.

⁴² Enteric virus sampling shall resume only when the discharge limit for the 24-hour average for turbidity is exceeded for two (2) consecutive 24-hour monitoring periods. Monthly enteric virus monitoring shall continue until four (4) out of seven (7) consecutive sample results show no detection. During times when enteric virus sampling is suspended, enter "suspended" in the appropriate space on the SMRF

Table 11: RECLAIMED WATER MONITORING – CLASS B+⁴³

Reclaimed water monitoring under Table 11 shall be performed in addition to routine discharge monitoring required under Section 4.2, Table 8: ROUTINE DISCHARGE MONITORING – Phase I (0.65 mgd) and Table 9: ROUTINE DISCHARGE MONITORING – Phase II (1.3 mgd)

Sampling Point Number	Sampling Point Identification		Latitude (North)	Longitude (West)
I	Sampler at the downstream end of the back-up chlorination system		34° 33' 23"	111° 49' 56"
Parameter	Discharge Limit (DL)	Units	Sampling Frequency	Reporting Frequency
Fecal Coliform Single-sample maximum:	800	CFU ⁴⁴	Daily ⁴⁵	Quarterly
Fecal Coliform: Four (4) of last seven (7) samples	200	CFU	Daily Evaluation ⁴⁶	Quarterly
Total Nitrogen ⁴⁷ : Five-sample rolling geometric mean ⁴⁸	10.0	mg/l ⁴⁹	Monthly Calculation	Quarterly

⁴³ The permittee shall monitor for Class B+ Reclaimed Water Monitoring for discharge to the Duck Ponds and the Truck Fill Station.

⁴⁴ CFU = Colony Forming Units per 100 ml. For CFU, a value of <1.0 shall be considered to be non-detect. The WRF will not be producing two classes of effluent at the same time, but will be producing A+ or B+ depending on the effluent water quality. The effluent will be diverted to Class A+ uses only if it meets Class A+ requirements. However, if the effluent only meets Class B+ requirements, it will be diverted to Class B+ uses.

⁴⁵ For fecal coliform, "daily" sampling means every day in which a sample can practicably be obtained and delivered in sufficient time for proper analysis, provided that no less than four (4) samples in each seven-day period are obtained and analyzed.

⁴⁶ Requires entering "Compliance" or "Non-compliance" on the SMRF for each day of the reporting period. Evaluate the daily fecal coliform result along with the six (6) previous sample results. If four (4) or more of those results are equal to or less than 200 CFU, report "Compliance" for that day's entry on the SMRF. If four (4) or more of those results are greater than 200 CFU, report "Non-compliance" for that day's entry.

⁴⁷ Total Nitrogen is the sum of Nitrate as N, Nitrite as N, and Total Kjeldahl Nitrogen (TKN)

⁴⁸ The five-sample rolling geometric mean is determined by multiplying the five (5) most recent monthly sample values together then taking the fifth root of the product. Example: $GM_5 = \sqrt[5]{(m_1)(m_2)(m_3)(m_4)(m_5)}$

⁴⁹ mg/l = milligrams per liter

Table 12: GROUNDWATER MONITORING – POC No. 1

Sampling Point Number	Sampling Point Identification			Latitude (North)	Longitude (West)
3	POC No. 1 Located at the south end of the lagoon plant			34° 33' 16"	111° 51' 00"
Parameter	Alert Level (AL)	Aquifer Quality Limit (AQL)	Units	Sampling Frequency	Reporting Frequency
Total Nitrogen ⁵⁰ :	8.0	10.0	mg/l ⁵¹	Monthly Calculation	Quarterly
Nitrate-Nitrite as N	8.0	10.0	mg/l	Monthly Calculation	Quarterly
Total Kjeldahl Nitrogen (TKN)	Not Applicable ⁵²	Not Applicable	mg/l	Monthly	Quarterly
Fecal Coliform	Not Applicable	Non-detect ⁵³	CFU ⁵⁴	Monthly	Quarterly
Cyanide (as free cyanide)	0.16	0.2	mg/l	Annually	Annually
Fluoride	Not Applicable	14.2	mg/l	Annually	Annually
Metals (Dissolved)					
Antimony	0.0048	0.006	mg/l	Annually	Annually
Arsenic	Not Applicable	0.0723	mg/l	Annually	Annually
Barium	1.60	2.00	mg/l	Annually	Annually
Beryllium	0.0032	0.004	mg/l	Annually	Annually
Cadmium	0.004	0.005	mg/l	Annually	Annually
Chromium	0.08	0.1	mg/l	Annually	Annually
Lead	0.04	0.05	mg/l	Annually	Annually
Mercury	0.0016	0.002	mg/l	Annually	Annually
Nickel	0.08	0.1	mg/l	Annually	Annually
Selenium	0.04	0.05	mg/l	Annually	Annually
Thallium	0.0016	0.002	mg/l	Annually	Annually

⁵⁰ Total Nitrogen is the sum of Nitrate as N, Nitrite as N, and Total Kjeldahl Nitrogen (TKN)

⁵¹ mg/l = milligrams per liter

⁵² Not Applicable means that monitoring is required, but no limits have been specified at the time of permit issuance

⁵³ For CFU, a value of <1.0 shall be considered to be non-detect

⁵⁴ CFU = Colony Forming Units per 100 ml

Table 12: GROUNDWATER MONITORING – POC No. 1 (Continued)

Sampling Point Number	Sampling Point Identification			Latitude (North)	Longitude (West)
3	POC No. 1 Located at the south end of the lagoon plant			34° 33' 16"	111° 51' 00"
Parameter	Alert Level (AL)	Aquifer Quality Limit (AQL)	Units	Sampling Frequency	Reporting Frequency
Volatile and Semi-Volatile Organic Compounds (VOCs and SVOCs)					
Benzene	0.004	0.005	mg/l	Annually	Annually
Carbon tetrachloride	0.004	0.005	mg/l	Annually	Annually
o-Dichlorobenzene	0.48	0.6	mg/l	Annually	Annually
para-Dichlorobenzene	0.06	0.075	mg/l	Annually	Annually
1,2-Dichloroethane	0.004	0.005	mg/l	Annually	Annually
1,1-Dichloroethylene	0.0056	0.007	mg/l	Annually	Annually
cis-1,2-Dichloroethylene	0.056	0.07	mg/l	Annually	Annually
trans-1,2-Dichloroethylene	0.08	0.1	mg/l	Annually	Annually
Dichloromethane	0.004	0.005	mg/l	Annually	Annually
1,2-Dichloropropane	0.004	0.005	mg/l	Annually	Annually
Ethylbenzene	0.56	0.7	mg/l	Annually	Annually
Hexachlorobenzene	0.0008	0.001	mg/l	Annually	Annually
Hexachlorocyclopentadiene	0.04	0.05	mg/l	Annually	Annually
Monochlorobenzene	0.08	0.1	mg/l	Annually	Annually
Styrene	0.08	0.1	mg/l	Annually	Annually
Tetrachloroethylene	0.004	0.005	mg/l	Annually	Annually
Toluene	0.8	1.0	mg/l	Annually	Annually
Trihalomethanes (total) ⁵⁵	0.08	0.1	mg/l	Annually	Annually
1,1,1-Trichloroethane	0.16	0.2	mg/l	Annually	Annually
1,2,4 - Trichlorobenzene	0.056	0.07	mg/l	Annually	Annually
1,1,2 - Trichloroethane	0.004	0.005	mg/l	Annually	Annually
Trichloroethylene	0.004	0.005	mg/l	Annually	Annually
Vinyl Chloride	0.0016	0.002	mg/l	Annually	Annually
Xylenes (Total)	8.0	10.0	mg/l	Annually	Annually

⁵⁵ Total Trihalomethanes are comprised of Bromoform, Bromodichloromethane, Chloroform, and Dibromochloromethane.

Table 13: GROUNDWATER MONITORING – POC No. 3

Sampling Point Number	Sampling Point Identification			Latitude (North)	Longitude (West)
4	POC No. 3 Located at the south of the South Duck Pond			34° 33' 08"	111° 49' 54"
Parameter	Alert Level (AL)	Aquifer Quality Limit (AQL)	Units	Sampling Frequency	Reporting Frequency
Total Nitrogen ⁵⁶ :	8.0	10.0	mg/l ⁵⁷	Monthly Calculation	Quarterly
Nitrate-Nitrite as N	8.0	10.0	mg/l	Monthly Calculation	Quarterly
Total Kjeldahl Nitrogen (TKN)	Not Applicable ⁵⁸	Not Applicable	mg/l	Monthly	Quarterly
Fecal Coliform	Not Applicable	Non-detect ⁵⁹	CFU ⁶⁰	Monthly	Quarterly
Cyanide (as free cyanide)	0.16	0.2	mg/l	Annually	Annually
Fluoride	3.2	4.0	mg/l	Annually	Annually
Metals (Dissolved)					
Antimony	0.0048	0.006	mg/l	Annually	Annually
Arsenic	Not Applicable	0.0644	mg/l	Annually	Annually
Barium	1.60	2.00	mg/l	Annually	Annually
Beryllium	0.0032	0.004	mg/l	Annually	Annually
Cadmium	0.004	0.005	mg/l	Annually	Annually
Chromium	0.08	0.1	mg/l	Annually	Annually
Lead	0.04	0.05	mg/l	Annually	Annually
Mercury	0.0016	0.002	mg/l	Annually	Annually
Nickel	0.08	0.1	mg/l	Annually	Annually
Selenium	0.04	0.05	mg/l	Annually	Annually
Thallium	0.0016	0.002	mg/l	Annually	Annually

⁵⁶ Total Nitrogen is the sum of Nitrate as N, Nitrite as N, and Total Kjeldahl Nitrogen (TKN)

⁵⁷ mg/l = milligrams per liter

⁵⁸ Not Applicable means that monitoring is required, but no limits have been specified at the time of permit issuance

⁵⁹ For CFU, a value of <1.0 shall be considered to be non-detect

⁶⁰ CFU = Colony Forming Units per 100 ml

Table 13: GROUNDWATER MONITORING – POC No. 3 (Continued)

Sampling Point Number	Sampling Point Identification			Latitude (North)	Longitude (West)
4	POC No. 3 Located at the south of the South Duck Pond			34° 33' 08"	111° 49' 54"
Parameter	Alert Level (AL)	Aquifer Quality Limit (AQL)	Units	Sampling Frequency	Reporting Frequency
Volatile and Semi-Volatile Organic Compounds (VOCs and SVOCs)					
Benzene	0.004	0.005	mg/l	Annually	Annually
Carbon tetrachloride	0.004	0.005	mg/l	Annually	Annually
o-Dichlorobenzene	0.48	0.6	mg/l	Annually	Annually
para-Dichlorobenzene	0.06	0.075	mg/l	Annually	Annually
1,2-Dichloroethane	0.004	0.005	mg/l	Annually	Annually
1,1-Dichloroethylene	0.0056	0.007	mg/l	Annually	Annually
cis-1,2-Dichloroethylene	0.056	0.07	mg/l	Annually	Annually
trans-1,2-Dichloroethylene	0.08	0.1	mg/l	Annually	Annually
Dichloromethane	0.004	0.005	mg/l	Annually	Annually
1,2-Dichloropropane	0.004	0.005	mg/l	Annually	Annually
Ethylbenzene	0.56	0.7	mg/l	Annually	Annually
Hexachlorobenzene	0.0008	0.001	mg/l	Annually	Annually
Hexachlorocyclopentadiene	0.04	0.05	mg/l	Annually	Annually
Monochlorobenzene	0.08	0.1	mg/l	Annually	Annually
Styrene	0.08	0.1	mg/l	Annually	Annually
Tetrachloroethylene	0.004	0.005	mg/l	Annually	Annually
Toluene	0.8	1.0	mg/l	Annually	Annually
Trihalomethanes (total) ⁶¹	0.08	0.1	mg/l	Annually	Annually
1,1,1-Trichloroethane	0.16	0.2	mg/l	Annually	Annually
1,2,4 - Trichlorobenzene	0.056	0.07	mg/l	Annually	Annually
1,1,2 - Trichloroethane	0.004	0.005	mg/l	Annually	Annually
Trichloroethylene	0.004	0.005	mg/l	Annually	Annually
Vinyl Chloride	0.0016	0.002	mg/l	Annually	Annually
Xylenes (Total)	8.0	10.0	mg/l	Annually	Annually

⁶¹ Total Trihalomethanes are comprised of Bromoform, Bromodichloromethane, Chloroform, and Dibromochloromethane.

Table 14: FACILITY INSPECTION AND OPERATIONAL MONITORING

The permittee shall record the inspection performance levels in a log book as per Section 2.7.2, and report any violations or exceedances as per Section 2.7.3. In the case of an exceedance, identify which structure exceeds the performance level in the log book.

Pollution Control Structure/Parameter	Performance Level	Inspection Frequency	Reporting Frequency
Treatment Plant Components	Good working condition	Weekly	See Section 2.7.3
Freeboard for Sludge Lagoon	Three (3) Vertical Feet	Weekly	
Freeboard for Sludge Drying Beds	Six (6) Inches	Weekly	
Duck Pond Freeboard	Three (3) Vertical Feet	Weekly	
Duck Pond Berm Integrity	No visible structural damage, breach, or erosion of embankments	Weekly	

5.0 REFERENCES AND PERTINENT INFORMATION

The terms and conditions set forth in this permit have been developed based upon the information contained in the following, which are on file with the Department:

APP Application, dated: 6/10/2021

Contingency Plan, dated: 2/24/2020

6.0 NOTIFICATION PROVISIONS

6.1. Annual Registration Fees

The permittee is notified of the obligation to pay an Annual Registration Fee to ADEQ. The Annual Registration Fee is based on the amount of daily influent or discharge of pollutants in gallons per day (gpd) as established by A.R.S. § 49-242.

6.2. Duty to Comply

[A.R.S. §§ 49-221 through 263]

The permittee is notified of the obligation to comply with all conditions of this permit and all applicable provisions of Title 49, Chapter 2, Articles 1, 2 and 3 of the Arizona Revised Statutes, Title 18, Chapter 9, Articles 1 through 4, and Title 18, Chapter 11, Article 4 of the Arizona Administrative Code. Any permit non-compliance constitutes a violation and is grounds for an enforcement action pursuant to Title 49, Chapter 2, Article 4 or permit amendment, suspension, or revocation.

6.3. Duty to Provide Information

[A.R.S. §§ 49-243(K)(2) and 49-243(K)(8)]

The permittee shall furnish to the Director, or an authorized representative, within a time specified, any information which the Director may request to determine whether cause exists for amending or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

6.4. Compliance with Aquifer Water Quality Standards

[A.R.S. §§ 49-243(B)(2) and 49-243(B)(3)]

The permittee shall not cause or contribute to a violation of an Aquifer Water Quality Standard (AWQS) at the applicable point of compliance (POC) for the facility. Where, at the time of issuance of the permit, an aquifer already exceeds an AWQS for a pollutant, the permittee shall not discharge that pollutant so as to further degrade, at the applicable point of compliance for the facility, the water quality of any aquifer for that pollutant.

6.5. Technical and Financial Capability

[A.R.S. §§ 49-243(K)(8) and 49-243(N) and A.A.C. R18-9-A202(B) and R18-9-A203(E) and (F)]

The permittee shall have and maintain the technical and financial capability necessary to fully carry out the terms and conditions of this permit. Any bond, insurance policy, trust fund, or other financial assurance mechanism provided as a demonstration of financial capability in the permit application, pursuant to A.A.C. R18-9-A203(C), shall be in effect prior to any discharge authorized by this permit and shall remain in effect for the duration of the permit.

6.6. Reporting of Bankruptcy or Environmental Enforcement

[A.A.C. R18-9-A207(C)]

The permittee shall notify the Director within five days after the occurrence of any one of the following:

1. the filing of bankruptcy by the permittee; or
2. the entry of any order or judgment not issued by the Director against the permittee for the enforcement of any environmental protection statute or rule.

6.7. Monitoring and Records

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A206]

The permittee shall conduct any monitoring activity necessary to assure compliance with this permit, with the applicable water quality standards established pursuant to A.R.S. §§ 49-221 and 49-223 and §§ 49-241 through 49-252.

6.8. Inspection and Entry

[A.R.S. §§ 49-1009, 49-203(B), and 49-243(K)(8)]

In accordance with A.R.S. §§ 41-1009 and 49-203(B), the permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to enter and inspect the facility as reasonably necessary to ensure compliance with Title 49, Chapter 2, Article 3 of the Arizona Revised Statutes, and Title 18, Chapter 9, Articles 1 through 4 of the Arizona Administrative Code and the terms and conditions of this permit.

6.9. Duty to Modify

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A211]

The permittee shall apply for and receive a written amendment before deviating from any of the designs or operational practices authorized by this permit.

6.10. Permit Action: Amendment, Transfer, Suspension, and Revocation

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

This permit may be amended, transferred, suspended, or revoked for cause, under the rules of the Department. The permittee shall notify the Groundwater Protection Value Stream in writing within 15 days after any change in the owner or operator of the facility. The notification shall state the permit number, the name of the facility, the date of property transfer, and the name, address, and phone number where the new owner or operator can be reached. The operator shall advise the new owner or operators of the terms of this permit and the need for permit transfer in accordance with the rules.

7.0. ADDITIONAL PERMIT CONDITIONS

7.1. Other Information

[A.R.S. § 49-243(K)(8)]

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, the permittee shall promptly submit the correct facts or information.

7.2. Severability

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

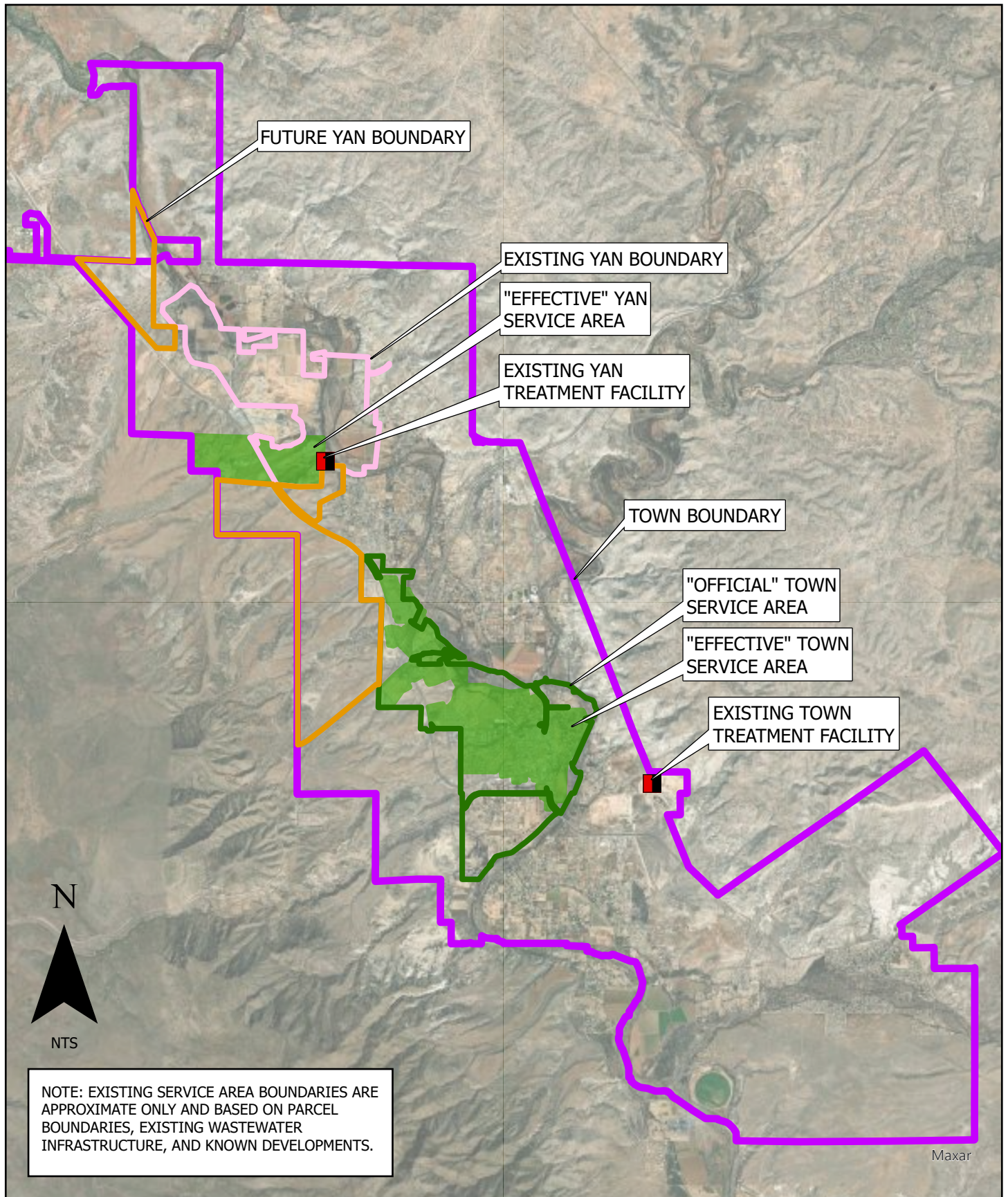
The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby. The filing of a request by the permittee for a permit action does not stay or suspend the effectiveness of any existing permit condition.

7.3. Permit Transfer

This permit may not be transferred to any other person except after notice to and approval of the transfer by the Department. No transfer shall be approved until the applicant complies with all transfer requirements as specified in A.A.C. R18-9-A212(B) and (C).

Wastewater System Master Plan

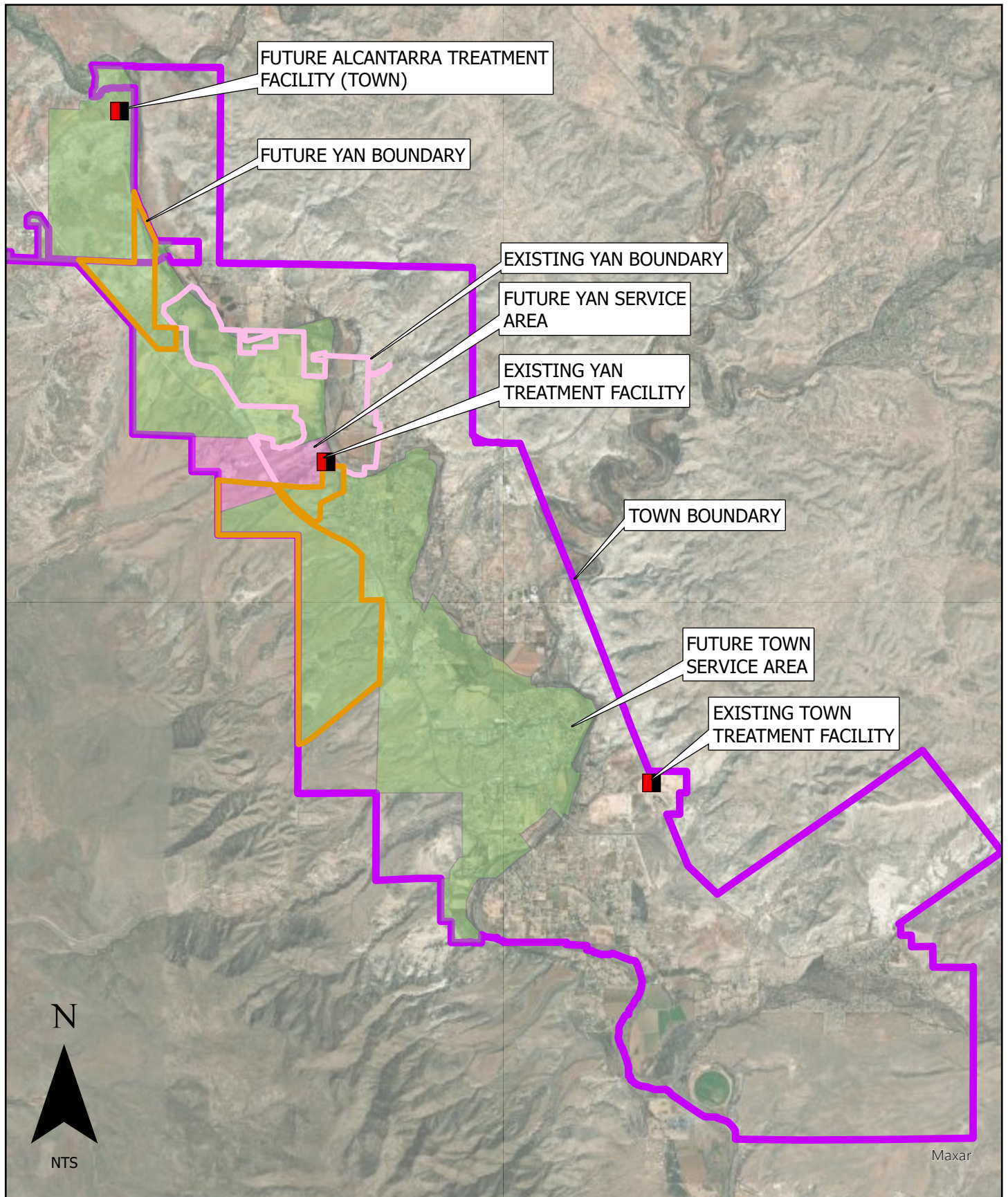
Appendix C Existing Service Area



SERVICE AREA BOUNDARIES
TOWN OF CAMP VERDE WASTEWATER MASTER PLAN
CAMP VERDE, AZ
SEPTEMBER 2024

Wastewater System Master Plan

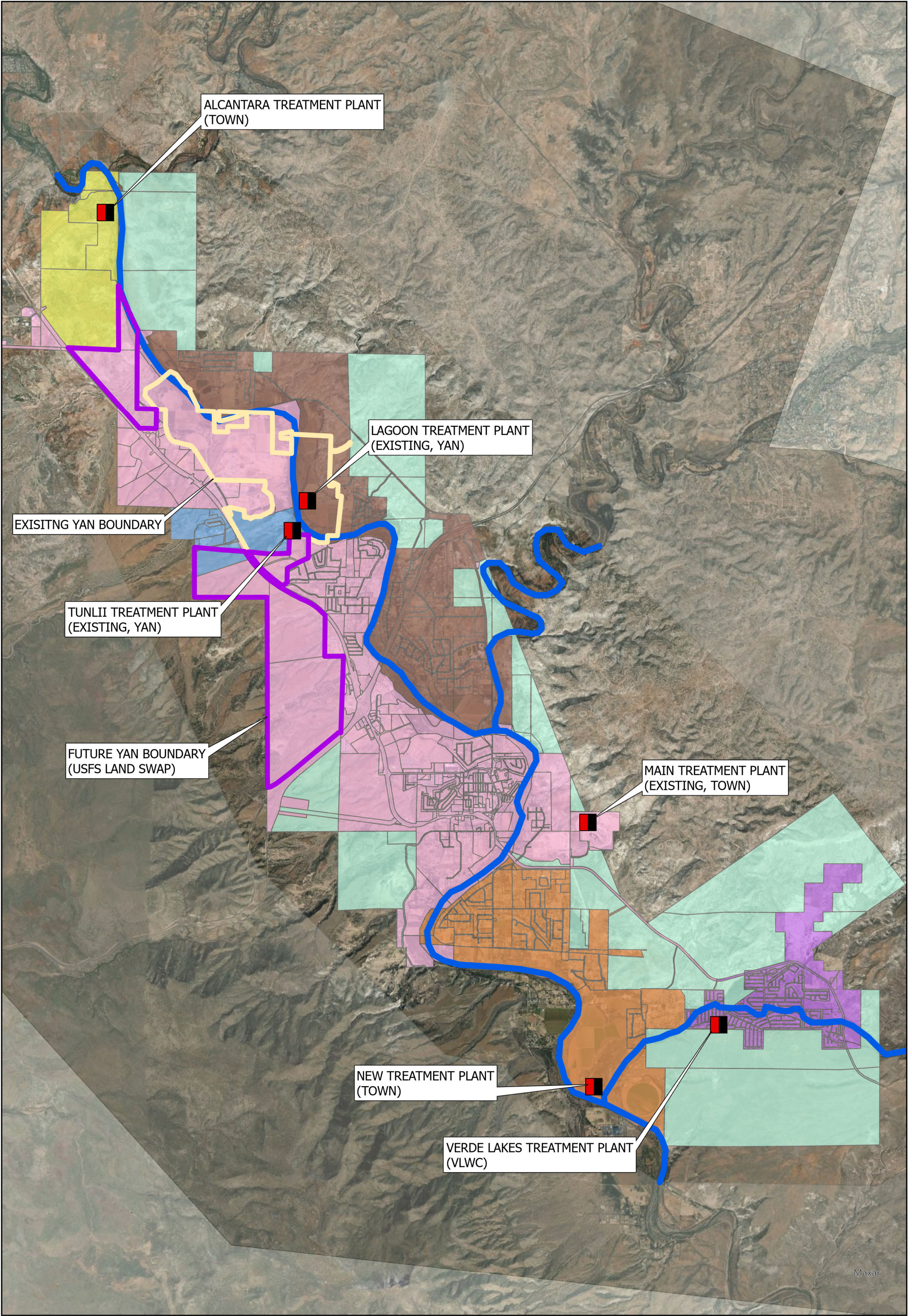
Appendix D 2050 Service Area



2050 SERVICE AREA BOUNDARIES
TOWN OF CAMP VERDE WASTEWATER MASTER PLAN
CAMP VERDE, AZ
SEPTEMBER 2024

Wastewater System Master Plan

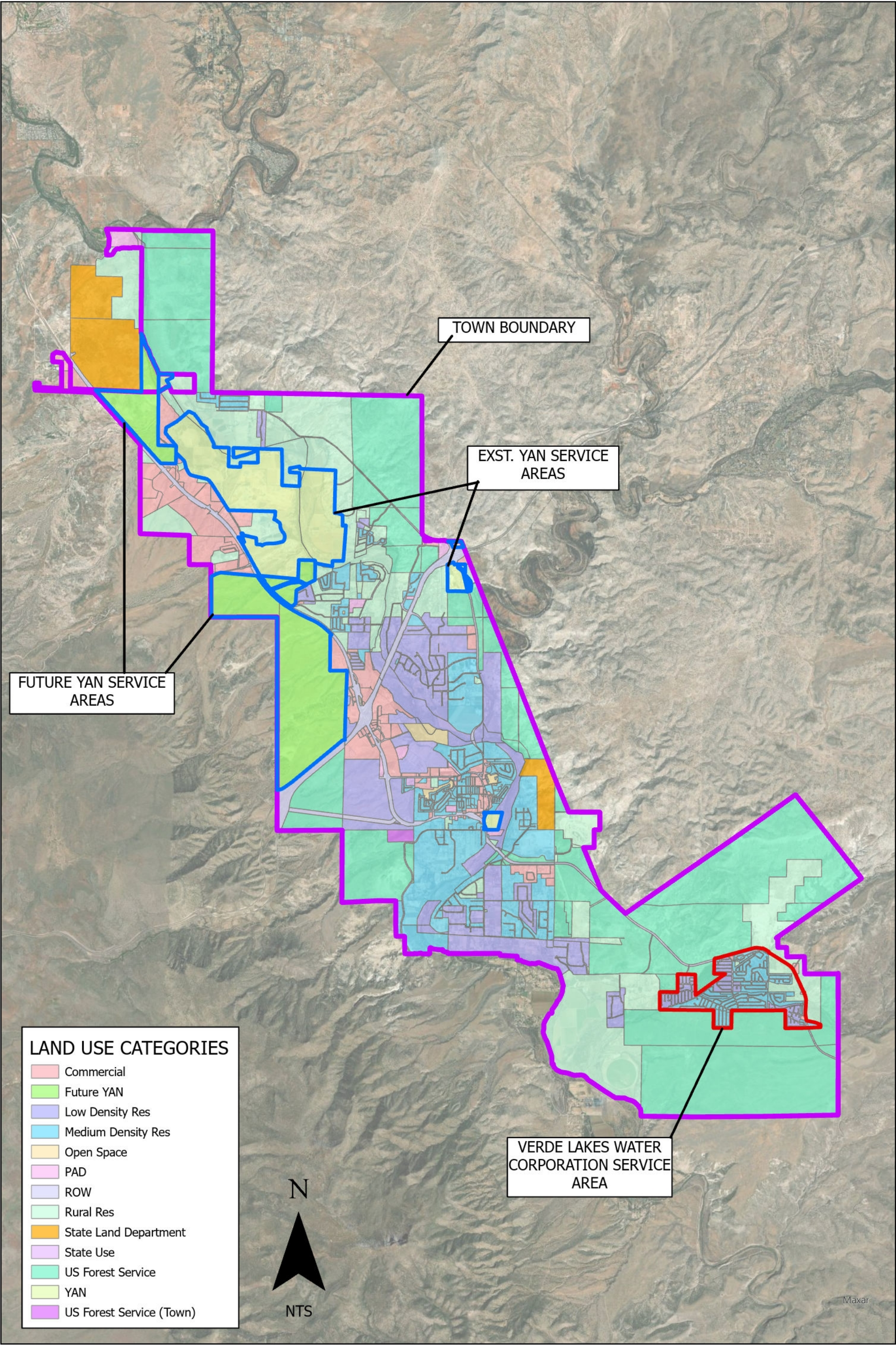
Appendix E Buildout Plant Service Area



**BUILDOUT TREATMENT PLANT SERVICE AREAS
TOWN OF CAMP VERDE WASTEWATER MASTER PLAN
CAMP VERDE, AZ
SEPTEMBER 2024**

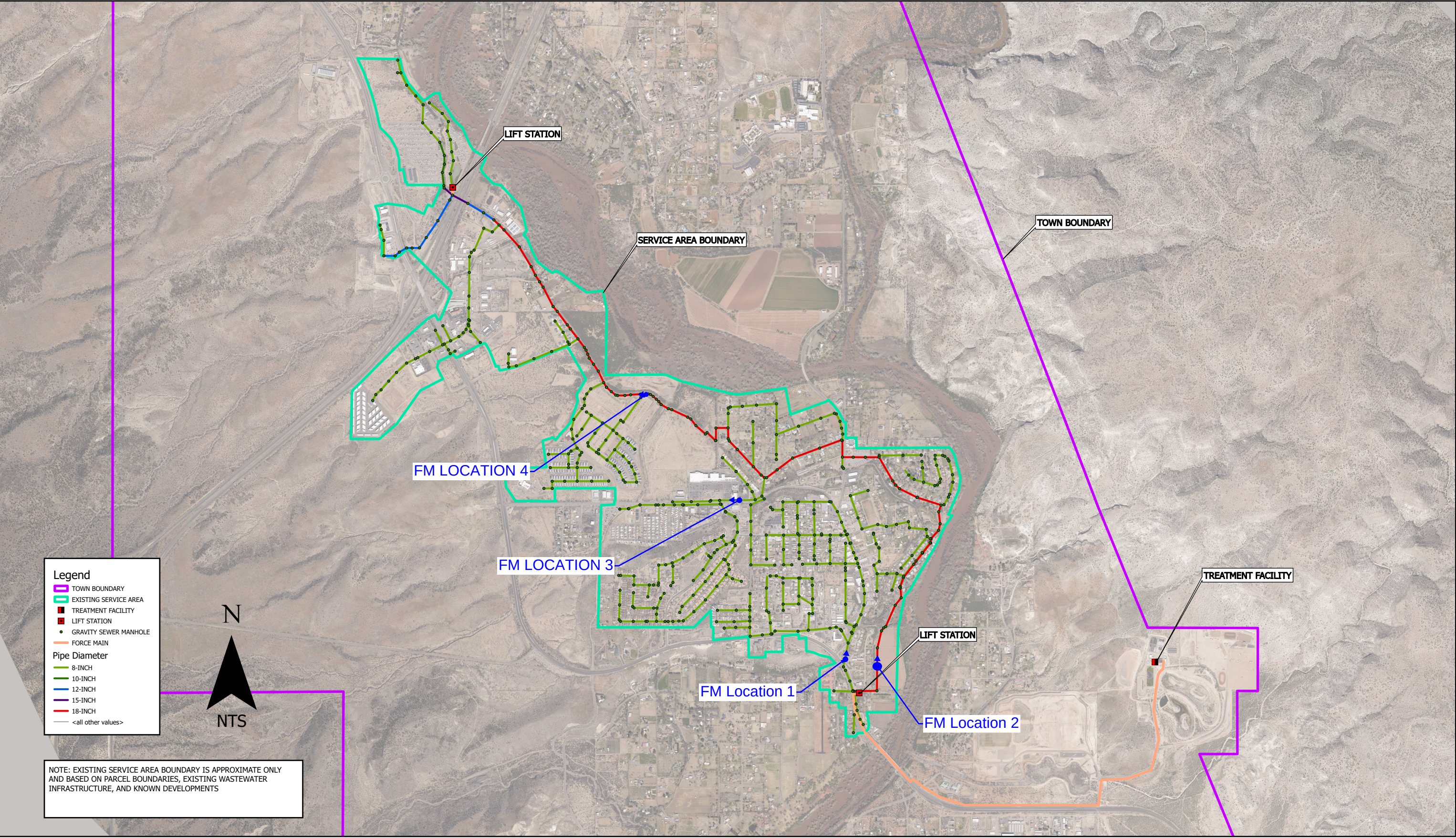
Wastewater System Master Plan

Appendix F Land Use

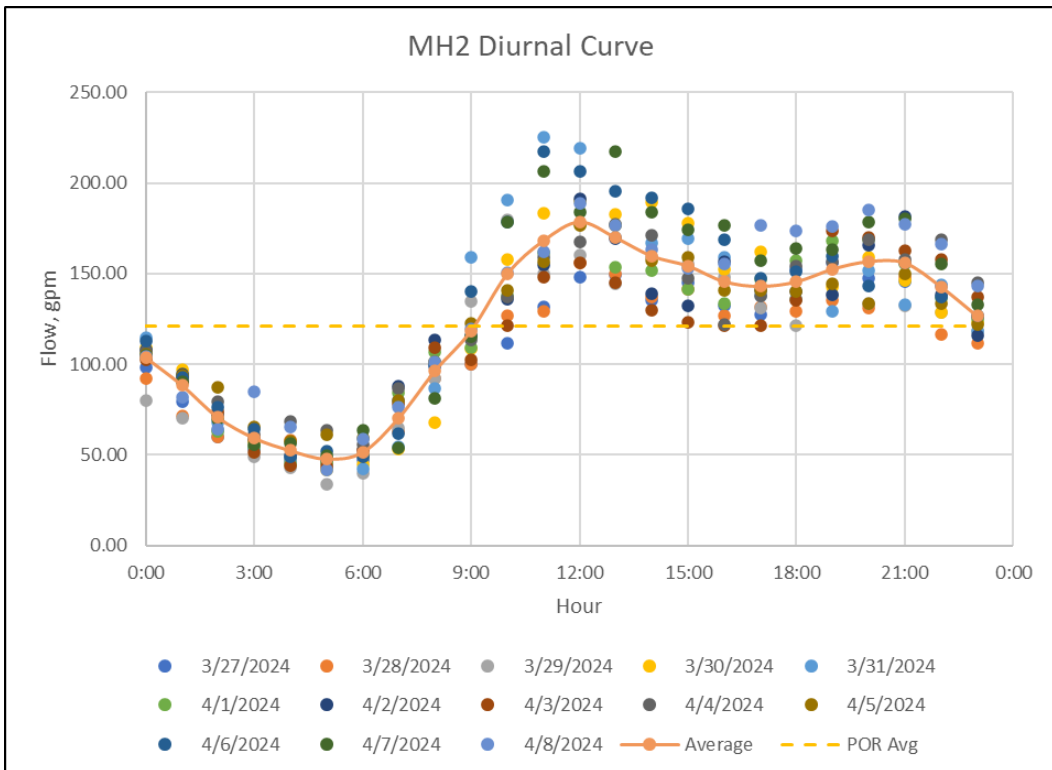
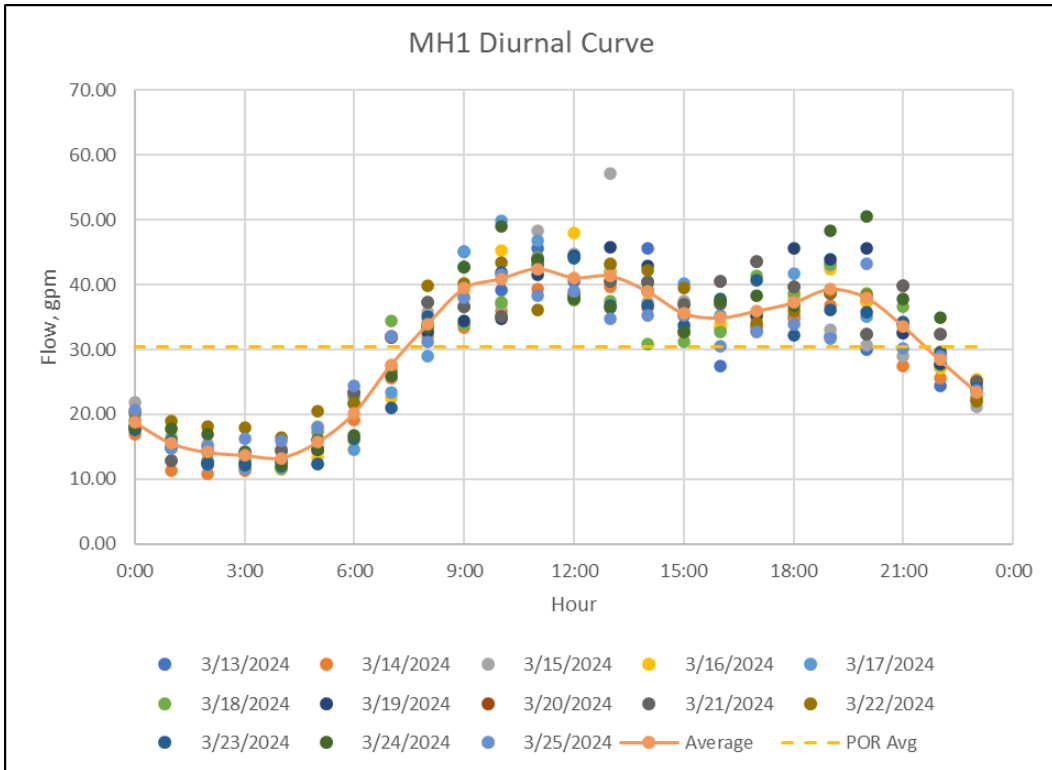


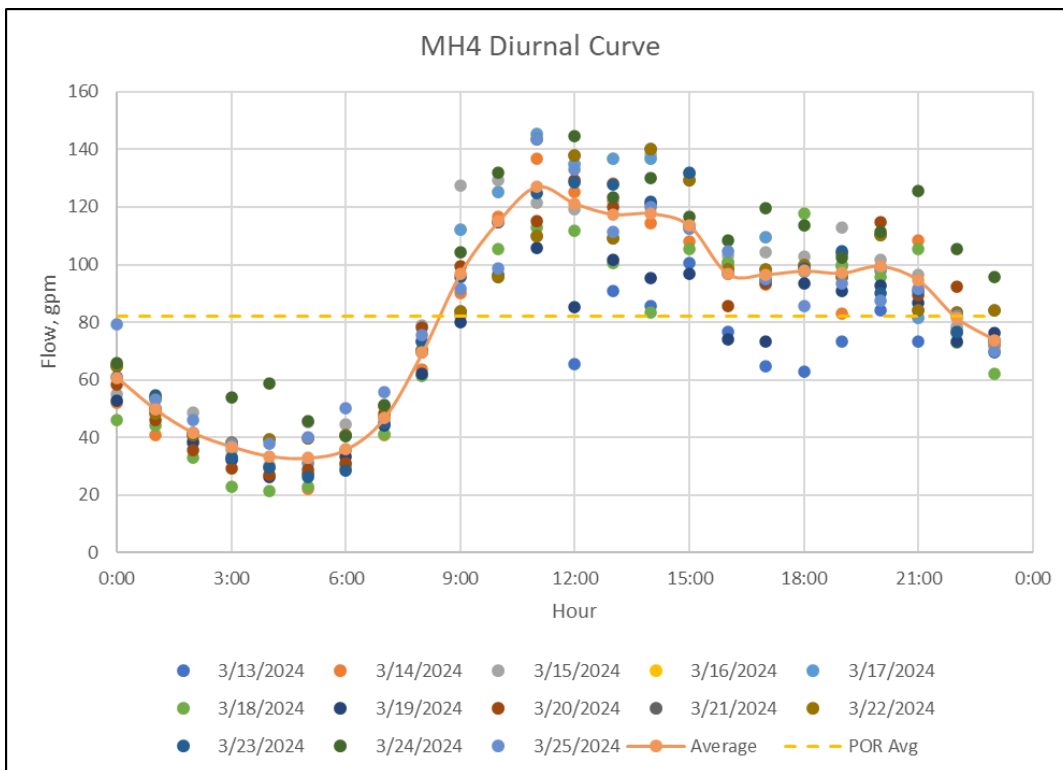
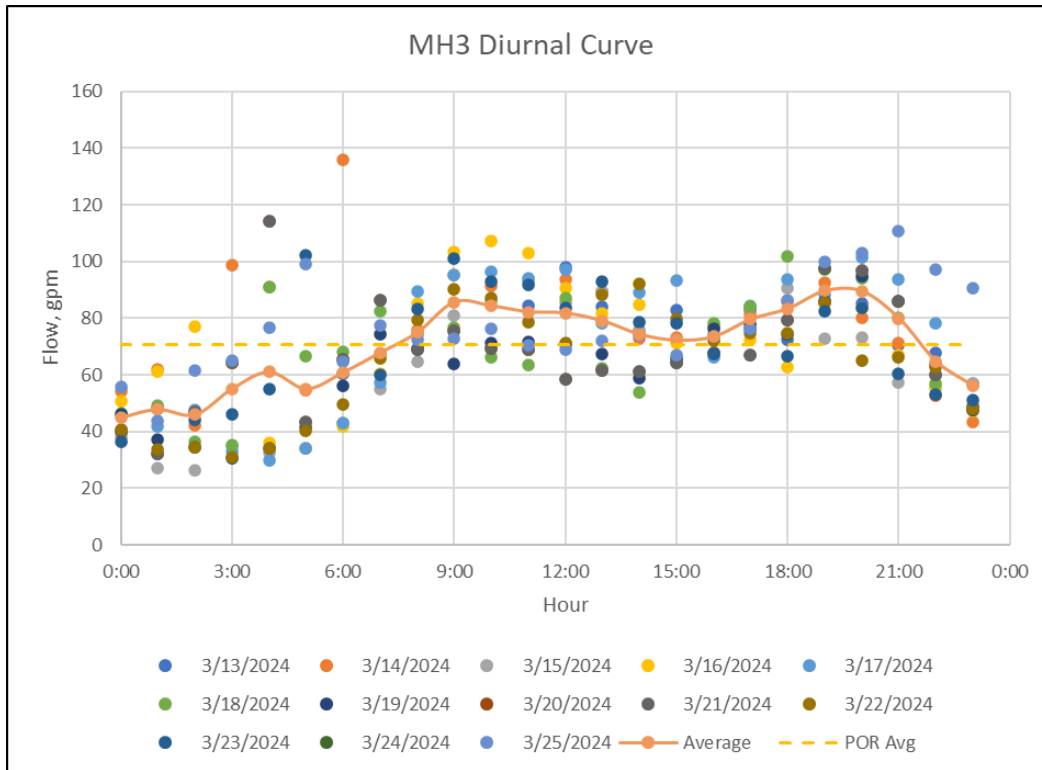
Wastewater System Master Plan

Appendix G Diurnal Curves and Flow Monitoring



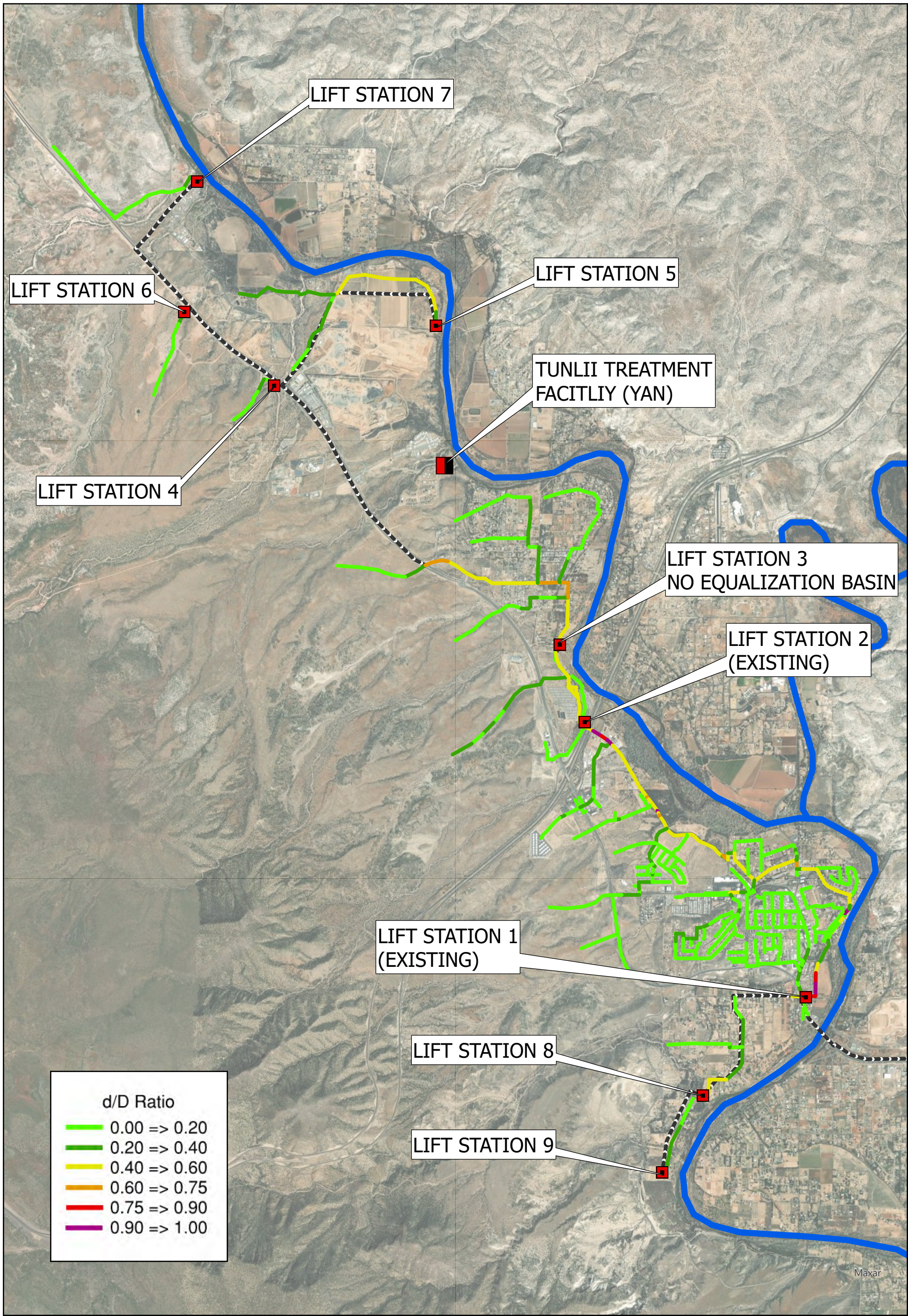
EXISTING WASTEWATER SYSTEM LAYOUT
TOWN OF CAMP VERDE WASTEWATER MASTER PLAN
CAMP VERDE, AZ
DECEMBER 2023



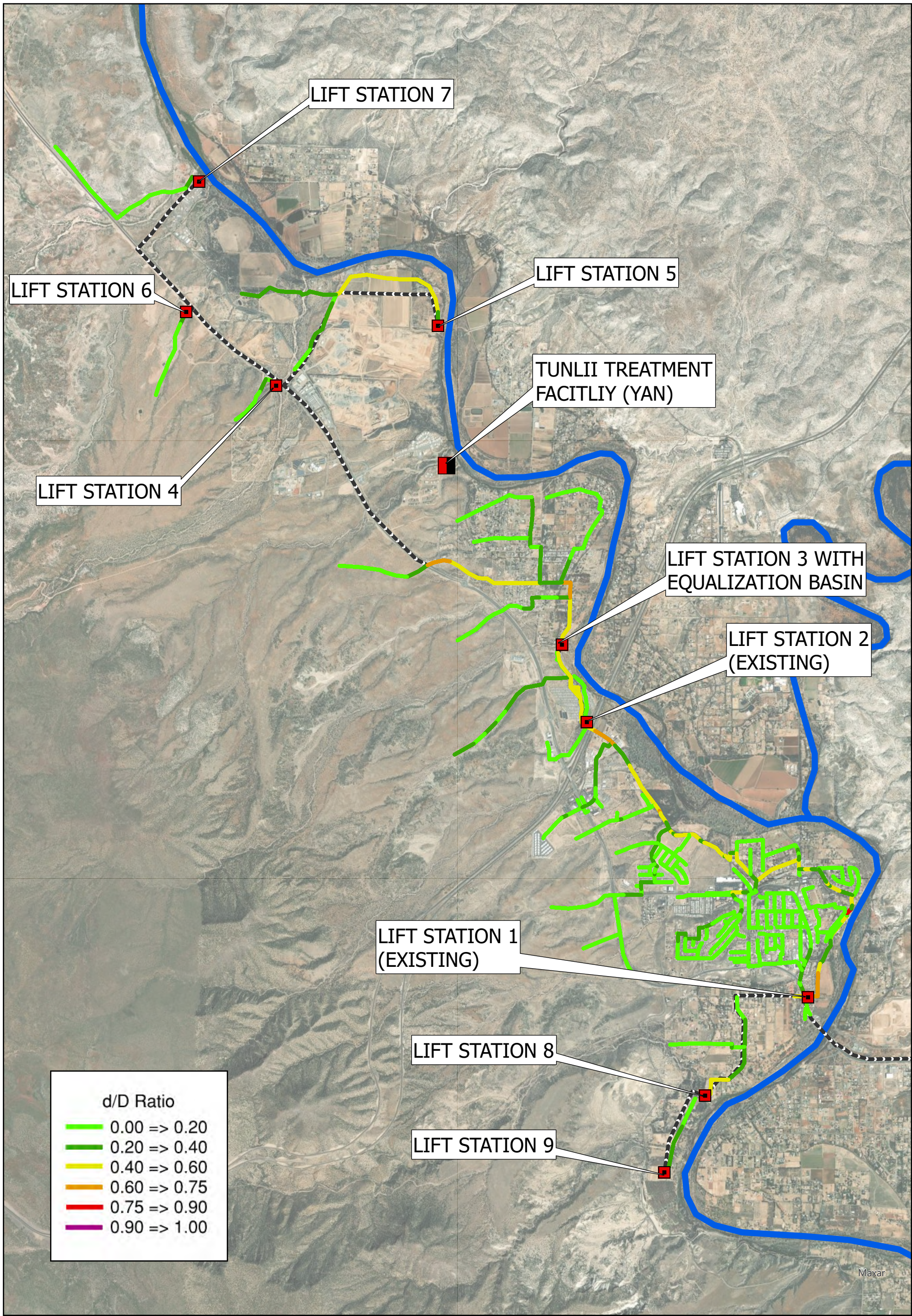


Wastewater System Master Plan

Appendix H Equalization Basin (I-17)



2050 d/D RATIOS WITHOUT EQUALIZATION BASIN
TOWN OF CAMP VERDE WASTEWATER MASTER PLAN
CAMP VERDE, AZ
SEPTEMBER 2024



2050 d/D RATIOS WITH EQUALIZATION BASIN
TOWN OF CAMP VERDE WASTEWATER MASTER PLAN
CAMP VERDE, AZ
SEPTEMBER 2024

Wastewater System Master Plan

Appendix I Design Recommendations

General Gravity Sewer Design

Design Parameter	City of Cottonwood ¹	City of Prescott ²	Recommended
Gravity Main Velocity	2 ft/s < V < 10 ft/s	2 ft/s < V < 10 ft/s (never >15ft/s)	2 ft/s < V < 10 ft/s
Force Main Velocity	3 ft/s < V < 7 ft/s	-	3 ft/s < V < 7 ft/s
d/D for new gravity sewer (<12")	0.50	0.50	0.50
d/D for new gravity sewer (>=12")	0.75	0.75	0.75
max d/D for existing mains	0.90	-	0.75
Gravity Main Roughness	n = 0.013	-	n = 0.013
Force Main Roughness	c = 120 (max)	-	c = 120
Design Flows	No general land Use flows provided.	See table.	See table. 2/3 of Water Master Plan for planning purposes.
	per AAC for specific uses	per AAC for specific uses	per AAC for specific uses
Dry Weather Peaking Factor (New Developments)	per AAC Table	per AAC Table	per AAC Table
Wet Weather Peaking Factor (New Developments)	Dry Weather Peak +10%	Dry Weather Peak +10%	N/A

1. Cottonwood 2023 Engineering Design Standards Manual

2. 2016 City of Prescott General Engineering Standards manual and Water and Wastewater Models Report

Minimum Pipe Slopes

Pipe Size	ADEQ Bulletin 11 (Assuming n=0.013)	Cottonwood	Prescott	Recommended
8	0.0033	0.005	0.0034 (0.005 preferred)	0.0034
10	0.0024	0.0025	0.0025	0.0025
12	0.0019	0.0020	0.0020	0.0020
14		0.0016	0.0016	0.0016
16		0.0014	0.0014	0.0014
18	0.0011 (0.0011)	0.0012	0.0012	0.0012
20		0.0010	0.0010	0.0010
24		0.0008	0.0008	0.0008

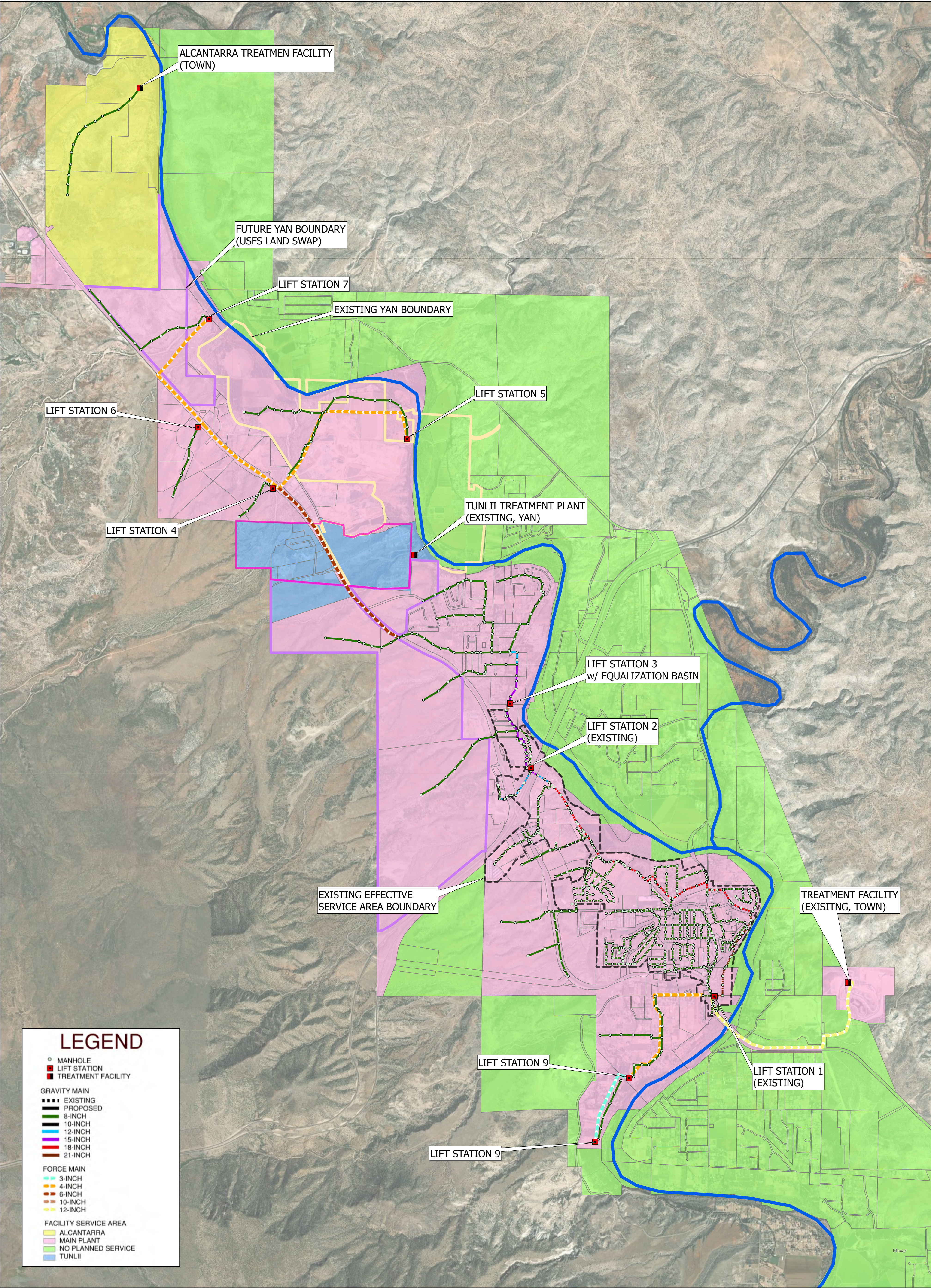
Note: Prescott and Cottonwood based on 2.0 ft/s (flowing full) plus 0.0001 ft/ft.

Wastewater Generation by Land Use

Land Use Type	Prescott	Recommended (2/3 Water Demand)
Industrial, gpad	60-470	N/A
Business General (Commercial), gpad	430-1,585	800
Rural Residential, gpad	105	60
Low Density Residential, gpad	125-260	145
Medium Density Residential, gpad	335-340	904
Multi-Family, gpad	555-560	-
PAD, gpad	-	1,840
YAN, gpad	-	309

Wastewater System Master Plan

Appendix J 2050 System Layout



Wastewater System Master Plan

Appendix K BioWin Model Report

Operating data Average (flow/time weighted as required)

Element name	Average DO Setpoint [mg/L]
Digester	0.1

Aeration equipment parameters

Element name	k1 in C = k1(PC)^ 0.25 + k2	k2 in C = k1(PC)^ 0.25 + k2	Y in Kla = C Usg ^ Y - Usg in [m3/(m2 d)]	Area of one diffuser	Diffuser mountin g height	Min. air flow rate per diffuser ft3/min (20C, 1 atm)	Max. air flow rate per diffuser ft3/min (20C, 1 atm)	'A' in diffuser pressure drop = A + B*(Qa/Di ff) + C*(Qa/Di ff)^2	'B' in diffuser pressure drop = A + B*(Qa/Di ff) + C*(Qa/Di ff)^2	'C' in diffuser pressure drop = A + B*(Qa/Di ff) + C*(Qa/Di ff)^2
Digester	0.0500	0.3800	1.0000	0.0380	0.4572	1.1772	29.4289	0.9997	0	0

Configuration information for all Bioreactor units

Physical data

Element name	Volume [gallons]	Area [ft2]	Depth [ft]	# of diffusers
Selector	3.351E+4	279.9772	16.000	8
Aeration Tank 1st Stage	1.649E+5	1378.0294	16.000	72
Aeration Tank 2nd Stage Zone 1	8.100E+4	676.7579	16.000	40
Aeration Tank 2nd Stage Zone 2	8.100E+4	676.7579	16.000	40
Septage	4.070E+4	340.0499	16.000	12

Operating data Average (flow/time weighted as required)

Element name	Average DO Setpoint [mg/L]
Selector	0.1
Aeration Tank 1st Stage	1.0
Aeration Tank 2nd Stage Zone 1	0.5
Aeration Tank 2nd Stage Zone 2	0.1
Septage	0.1

Aeration equipment parameters

Element name	k_1 in C = $k_1(PC)^{0.25} + k_2$	k_2 in C = $k_1(PC)^{0.25} + k_2$	Y in $Kla = C Usg \wedge Y - Usg$ in $[m^3/(m^2 d)]$	Area of one diffuser	Diffuser mounting height	Min. air flow rate per diffuser ft^3/min (20C, 1 atm)	Max. air flow rate per diffuser ft^3/min (20C, 1 atm)	'A' in diffuser pressure drop = A + $B^*(Qa/Diff) + C^*(Qa/Diff)^2$	'B' in diffuser pressure drop = A + $B^*(Qa/Diff) + C^*(Qa/Diff)^2$	'C' in diffuser pressure drop = A + $B^*(Qa/Diff) + C^*(Qa/Diff)^2$
Selector	0.0500	0.3800	1.0000	0.0380	0.7620	1.1772	29.4289	0.9997	0	0
Aeration Tank 1st Stage	1.2400	0.8960	0.8880	1.2500	0.4572	0.2943	30.0000	2.9999	0	0
Aeration Tank 2nd Stage Zone 1	0.0500	0.3800	1.0000	1.2500	0.4572	1.1772	29.4289	0.9997	0	0
Aeration Tank 2nd Stage Zone 2	0.0500	0.3800	1.0000	0.0380	0.4572	1.1772	29.4289	0.9997	0	0
Septage	0.0500	0.3800	1.0000	0.5382	0.2500	1.1772	40.0000	0.9997	0	0

Configuration information for all Influent - BOD units

Operating data Average (flow/time weighted as required)

Element name	Influent
Flow	282652.7776
BOD - Total Carbonaceous mgBOD/L	391.00
Volatile suspended solids mg/L	144.00
Total suspended solids mg/L	191.00
N - Total Kjeldahl Nitrogen mgN/L	66.00
P - Total P mgP/L	6.50
S - Total S mgS/L	10.00
N - Nitrate mgN/L	0
pH	7.30
Alkalinity mmol/L	6.00
Metal soluble - Calcium mg/L	80.00
Metal soluble - Magnesium mg/L	15.00
Gas - Dissolved oxygen mg/L	0

Element name	Influent
Fbs - Readily biodegradable (including Acetate) [gCOD/g of total COD]	0.1600
Fac - Acetate [gCOD/g of readily biodegradable COD]	0.1500
Fxsp - Non-colloidal slowly biodegradable [gCOD/g of slowly degradable COD]	0.3362
Fus - Unbiodegradable soluble [gCOD/g of total COD]	0.0500
Fup - Unbiodegradable particulate [gCOD/g of total COD]	0.1300
Fcel - Cellulose fraction of unbiodegradable particulate [gCOD/gCOD]	0.5000
Fna - Ammonia [gNH3-N/gTKN]	0.6600
Fnox - Particulate organic nitrogen [gN/g Organic N]	0.5000
Fnus - Soluble unbiodegradable TKN [gN/gTKN]	0.0200
FupN - N:COD ratio for unbiodegradable part. COD [gN/gCOD]	0.0700
Fpo4 - Phosphate [gPO4-P/gTP]	0.5000
FupP - P:COD ratio for unbiodegradable part. COD [gP/gCOD]	0.0220
Fsr - Reduced sulfur [H2S] [gS/gS]	0.1500
FZbh - Ordinary heterotrophic COD fraction [gCOD/g of total COD]	0.0200
FZbm - Methyloctrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZao - Ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZno - Nitrite oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZaao - Anaerobic ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4

FZppa - Phosphorus accumulating COD fraction [gCOD/g of total COD]	1.000E-4
FZpa - Propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZam - Acetoclastic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZhm - Hydrogenotrophic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZso - Sulfur oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZsrpa - Sulfur reducing propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZsra - Sulfur reducing acetotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZsrh - Sulfur reducing hydrogenotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZe - Endogenous products COD fraction [gCOD/g of total COD]	0

Configuration information for all Clarifier - Ideal units

Physical data

Element name	Volume[gallons]	Area[ft2]	Depth[ft]
Clarifier	1.149E+5	960.0000	16.000

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Clarifier	Flow paced	200.00 %

Element name	Average Temperature	Reactive	Percent removal	Blanket fraction
Clarifier	Uses global setting	No	99.90	0.50

Configuration information for all Influent - COD units

Operating data Average (flow/time weighted as required)

Element name	Septage
Flow	11961
COD - Total mgCOD/L	31900.00
N - Total Kjeldahl Nitrogen mgN/L	588.00
P - Total P mgP/L	210.00
S - Total S mgS/L	0
N - Nitrate mgN/L	0
pH	7.30
Alkalinity mmol/L	50.00
ISS Total mgISS/L	3835.00
Metal soluble - Calcium mg/L	80.00
Metal soluble - Magnesium mg/L	15.00
Gas - Dissolved oxygen mg/L	0

Element name	Septage
Fbs - Readily biodegradable (including Acetate) [gCOD/g of total COD]	0.2500
Fac - Acetate [gCOD/g of readily biodegradable COD]	2.000E-3
Fxsp - Non-colloidal slowly biodegradable [gCOD/g of slowly degradable COD]	0.8400
Fus - Unbiodegradable soluble [gCOD/g of total COD]	1.000E-3
Fup - Unbiodegradable particulate [gCOD/g of total COD]	5.000E-3
Fcel - Cellulose fraction of unbiodegradable particulate [gCOD/gCOD]	0.5000
Fna - Ammonia [gNH3-N/gTKN]	0.1650
Fnox - Particulate organic nitrogen [gN/g Organic N]	0.5000
Fnus - Soluble unbiodegradable TKN [gN/gTKN]	0.0200
FupN - N:COD ratio for unbiodegradable part. COD [gN/gCOD]	0.0700
Fpo4 - Phosphate [gPO4-P/gTP]	0.4290
FupP - P:COD ratio for unbiodegradable part. COD [gP/gCOD]	0.0220
Fsr - Reduced sulfur [H2S] [gS/gS]	0
FZbh - Ordinary heterotrophic COD fraction [gCOD/g of total COD]	0.0200
FZbm - Methylothetic COD fraction [gCOD/g of total COD]	1.000E-4
FZao - Ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4

FZno - Nitrite oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZaao - Anaerobic ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZppa - Phosphorus accumulating COD fraction [gCOD/g of total COD]	1.000E-4
FZpa - Propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZam - Acetoclastic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZhm - Hydrogenotrophic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZso - Sulfur oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZsrpa - Sulfur reducing propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZsra - Sulfur reducing acetotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZsrh - Sulfur reducing hydrogenotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZe - Endogenous products COD fraction [gCOD/g of total COD]	0

Configuration information for all Separator - Dewatering unit units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Belt Filter Press	Fraction	0.11
Filter	Flow paced	2.50 %

Element name	Percent removal
Belt Filter Press	99.70
Filter	95.00

Configuration information for all Clarifier - Point (volumeless) units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Decanter	Fraction	0.66

Element name	Percent removal
Decanter	99.80

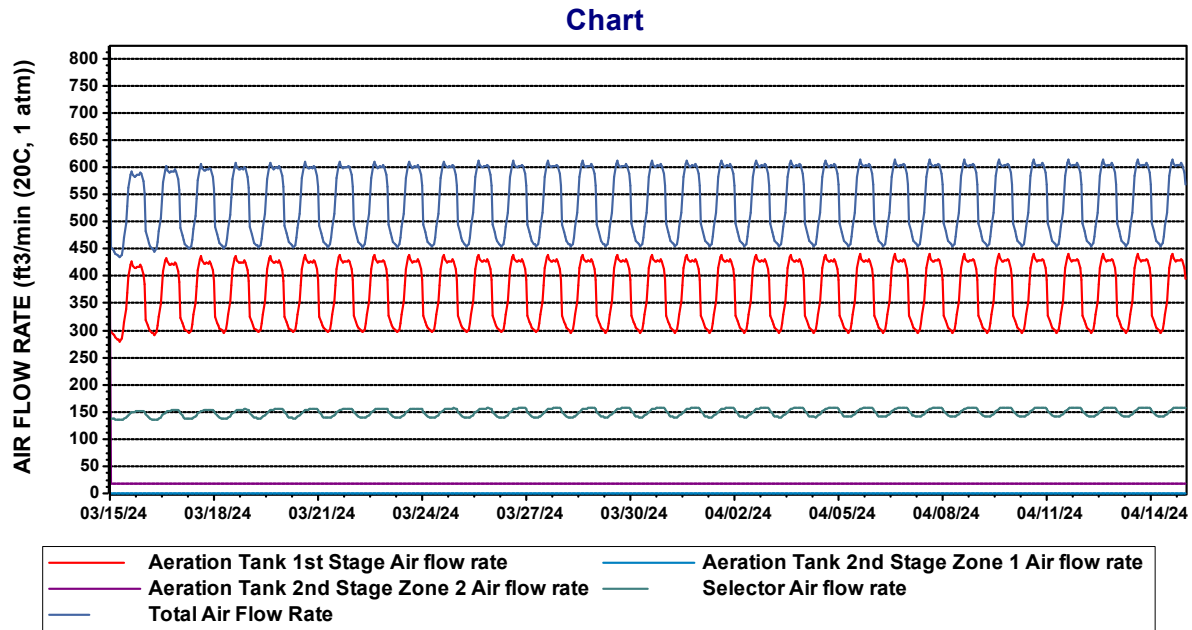
Configuration information for all Splitter units

Operating data Average (flow/time weighted as required)

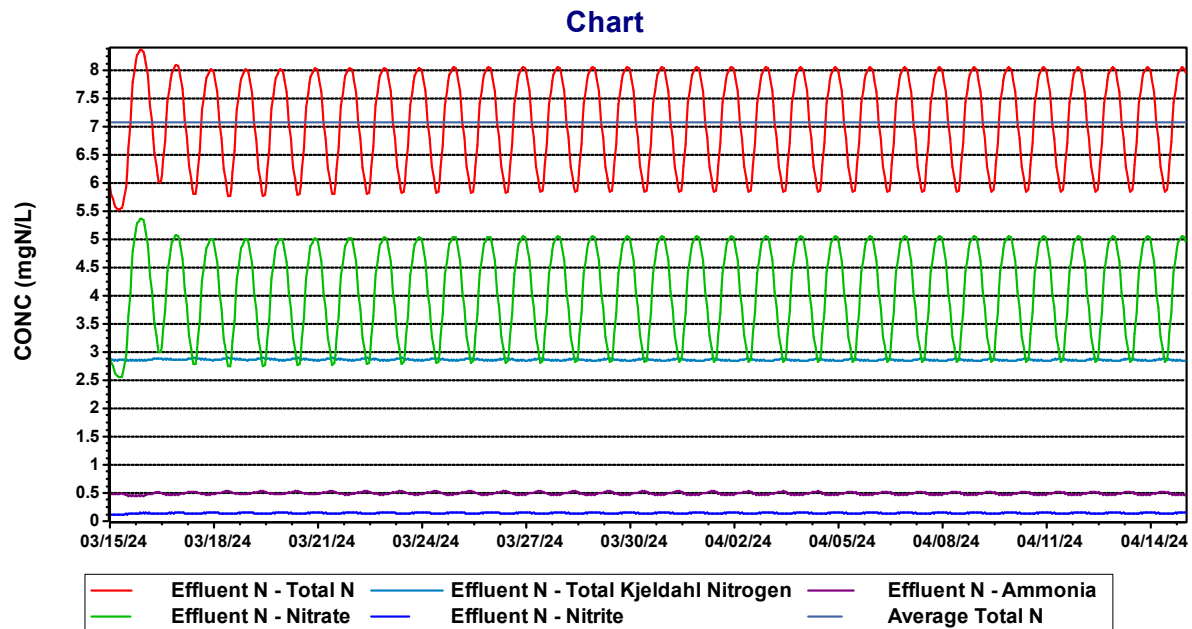
Element name	Split method	Average Split specification
WAS split	Flow paced	4.00 %

BioWin Album

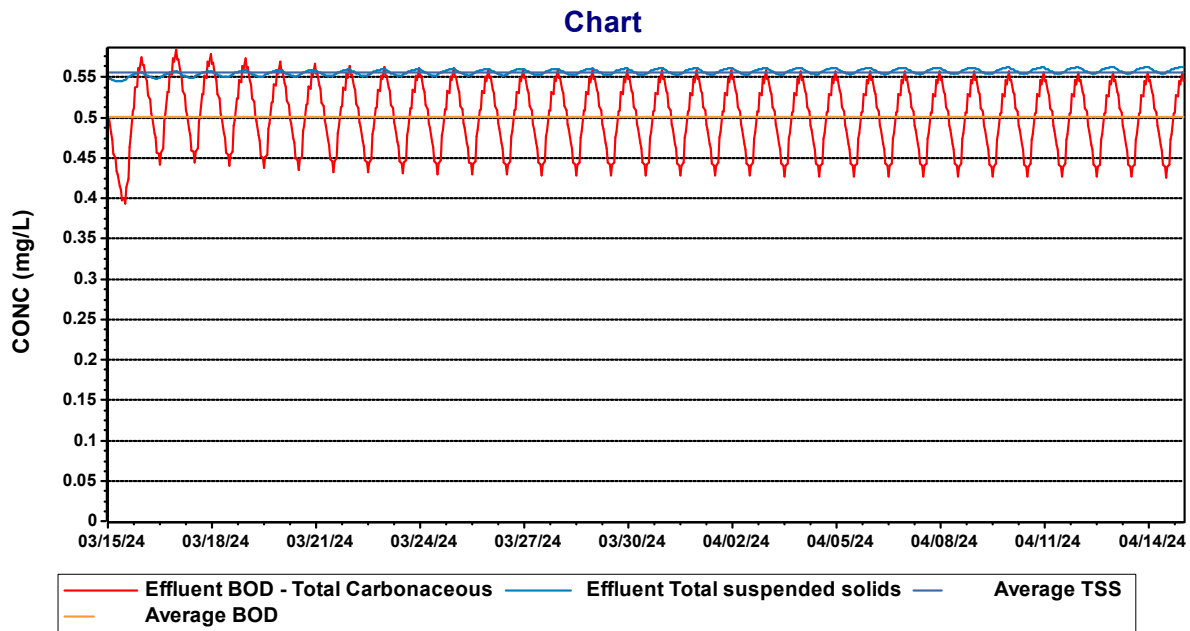
Album page - Airflow Rate



Album page - Effluent N concentrations



Album page - TSS & BOD



Global Parameters (Same for all model)

Common

Name	Default	Value	
Hydrolysis rate [1/d]	2.1000	2.1000	1.0290
Hydrolysis half sat. [-]	0.0600	0.0600	1.0000
External organics hydrolysis rate [1/d]	2.1000	2.1000	1.0290
External organics hydrolysis half sat. [-]	0.0600	0.0600	1.0000
Anoxic hydrolysis factor [-]	0.2800	0.2800	1.0000
Anaerobic hydrolysis factor (AS) [-]	0.0400	0.0400	1.0000
Anaerobic hydrolysis factor (AD) [-]	0.5000	0.5000	1.0000
Adsorption rate of colloids [L/(mgCOD d)]	0.1500	0.1500	1.0290
Ammonification rate [L/(mgCOD d)]	0.0800	0.0800	1.0290
Assimilative nitrate/nitrite reduction rate [1/d]	0.5000	0.5000	1.0000
Endogenous products decay rate [1/d]	0	0	1.0000

Ammonia oxidizing

Name	Default	Value	
Max. spec. growth rate [1/d]	0.9000	0.9000	1.0720
Substrate (NH4) half sat. [mgN/L]	0.7000	0.7000	1.0000
Byproduct NH4 logistic slope [-]	50.0000	50.0000	1.0000
Byproduct NH4 inflection point [mgN/L]	1.4000	1.4000	1.0000
Denite DO half sat. [mg/L]	0.1000	0.1000	1.0000
Denite HNO2 half sat. [mgN/L]	5.000E-6	5.000E-6	1.0000
Aerobic decay rate [1/d]	0.1700	0.1700	1.0290
Anoxic/anaerobic decay rate [1/d]	0.0800	0.0800	1.0290
KiHNO2 [mmol/L]	5.000E-3	5.000E-3	1.0000

Nitrite oxidizing

Name	Default	Value	
Max. spec. growth rate [1/d]	0.7000	0.7000	1.0600
Substrate (NO2) half sat. [mgN/L]	0.1000	0.1000	1.0000
Aerobic decay rate [1/d]	0.1700	0.1700	1.0290
Anoxic/anaerobic decay rate [1/d]	0.0800	0.0800	1.0290
KiNH3 [mmol/L]	0.0750	0.0750	1.0000

Anaerobic ammonia oxidizing

Name	Default	Value	
Max. spec. growth rate [1/d]	0.2000	0.2000	1.1000
Substrate (NH4) half sat. [mgN/L]	2.0000	2.0000	1.0000
Substrate (NO2) half sat. [mgN/L]	1.0000	1.0000	1.0000
Aerobic decay rate [1/d]	0.0190	0.0190	1.0290

Anoxic/anaerobic decay rate [1/d]	9.500E-3	9.500E-3	1.0290
Ki Nitrite [mgN/L]	1000.0000	1000.0000	1.0000
Nitrite sensitivity constant [L / (d mgN)]	0.0160	0.0160	1.0000

Ordinary heterotrophic

Name	Default	Value	
Max. spec. growth rate [1/d]	3.2000	4.0000	1.0290
Substrate half sat. [mgCOD/L]	5.0000	5.0000	1.0000
Anoxic growth factor [-]	0.5000	0.5000	1.0000
Denite N2 producers (NO3 or NO2) [-]	0.5000	0.5000	1.0000
Aerobic decay rate [1/d]	0.6200	0.8000	1.0290
Anoxic decay rate [1/d]	0.2330	0.4000	1.0290
Anaerobic decay rate [1/d]	0.1310	0.1310	1.0290
Fermentation rate [1/d]	1.6000	1.6000	1.0290
Fermentation half sat. [mgCOD/L]	5.0000	5.0000	1.0000
Fermentation growth factor (AS) [-]	0.2500	0.2500	1.0000
Free nitrous acid inhibition [mol/L]	1.000E-7	1.000E-7	1.0000

Heterotrophic on industrial COD

Name	Default	Value	
Maximum specific growth rate on Ind #1 COD [1/d]	4.3000	4.3000	1.0290
Substrate (Ind #1) half sat. [mgCOD/L]	1.0000	1.0000	1.0000
Inhibition coefficient for Ind #1 [mgCOD/L]	60.0000	60.0000	1.0000
Anaerobic growth factor for Ind #1 [mgCOD/L]	0.0500	0.0500	1.0000
Maximum specific growth rate on Ind #2 COD [1/d]	1.5000	1.5000	1.0290
Substrate (Ind #2) half sat. [mgCOD/L]	30.0000	30.0000	1.0000
Inhibition coefficient for Ind #2 [mgCOD/L]	3000.0000	3000.0000	1.0000
Anaerobic growth factor for Ind #2 [mgCOD/L]	0.0500	0.0500	1.0000
Maximum specific growth rate on Ind #3 COD [1/d]	4.3000	4.3000	1.0290

Substrate (Ind #3) half sat. [mgCOD/L]	1.0000	1.0000	1.0000
Inhibition coefficient for Ind #3 COD [mgCOD/L]	60.0000	60.0000	1.0000
Anaerobic growth factor for Ind #3 [mgCOD/L]	0.0500	0.0500	1.0000
Maximum specific growth rate on adsorbed hydrocarbon COD [1/d]	2.0000	2.0000	1.0290
Substrate (adsorbed hydrocarbon) half sat. [-]	0.1500	0.1500	1.0000
Anaerobic growth factor for adsorbed hydrocarbons [mgCOD/L]	0.0100	0.0100	1.0000
Adsorption rate of soluble hydrocarbons [l/(mgCOD d)]	0.2000	0.2000	1.0000

Methyilotrophic

Name	Default	Value	
Max. spec. growth rate [1/d]	1.3000	1.3000	1.0720
Methanol half sat. [mgCOD/L]	0.5000	0.5000	1.0000
Denite N2 producers (NO3 or NO2) [-]	0.5000	0.5000	1.0000
Aerobic decay rate [1/d]	0.0400	0.0400	1.0290
Anoxic/anaerobic decay rate [1/d]	0.0300	0.0300	1.0290
Free nitrous acid inhibition [mmol/L]	1.000E-7	1.000E-7	1.0000

Phosphorus accumulating

Name	Default	Value	
Max. spec. growth rate [1/d]	0.9500	0.9500	1.0000
Max. spec. growth rate, P-limited [1/d]	0.4200	0.4200	1.0000
Substrate half sat. [mgCOD(PHA)/mgCOD(Zbp)]	0.1000	0.1000	1.0000
Substrate half sat., P-limited [mgCOD(PHA)/mgCOD(Zbp)]	0.0500	0.0500	1.0000
Magnesium half sat. [mgMg/L]	0.1000	0.1000	1.0000
Cation half sat. [mmol/L]	0.1000	0.1000	1.0000
Calcium half sat. [mgCa/L]	0.1000	0.1000	1.0000
Aerobic/anoxic decay rate [1/d]	0.1000	0.1000	1.0000
Aerobic/anoxic maintenance rate [1/d]	0	0	1.0000
Anaerobic decay rate [1/d]	0.0400	0.0400	1.0000

Anaerobic maintenance rate [1/d]	0	0	1.0000
Sequestration rate [1/d]	4.5000	4.5000	1.0000
Anoxic growth factor [-]	0.3300	0.3300	1.0000

Propionic acetogenic

Name	Default	Value	
Max. spec. growth rate [1/d]	0.2500	0.2500	1.0290
Substrate half sat. [mgCOD/L]	10.0000	10.0000	1.0000
Acetate inhibition [mgCOD/L]	10000.0000	10000.0000	1.0000
Anaerobic decay rate [1/d]	0.0500	0.0500	1.0290
Aerobic/anoxic decay rate [1/d]	0.5200	0.5200	1.0290

Methanogenic

Name	Default	Value	
Acetoclastic max. spec. growth rate [1/d]	0.3000	0.3000	1.0290
H2-utilizing max. spec. growth rate [1/d]	1.4000	1.4000	1.0290
Acetoclastic substrate half sat. [mgCOD/L]	100.0000	100.0000	1.0000
Acetoclastic methanol half sat. [mgCOD/L]	0.5000	0.5000	1.0000
H2-utilizing CO2 half sat. [mmol/L]	0.1000	0.1000	1.0000
H2-utilizing substrate half sat. [mgCOD/L]	1.0000	1.0000	1.0000
H2-utilizing methanol half sat. [mgCOD/L]	0.5000	0.5000	1.0000
Acetoclastic propionic inhibition [mgCOD/L]	10000.0000	10000.0000	1.0000
Acetoclastic anaerobic decay rate [1/d]	0.1300	0.1300	1.0290
Acetoclastic aerobic/anoxic decay rate [1/d]	0.6000	0.6000	1.0290
H2-utilizing anaerobic decay rate [1/d]	0.1300	0.1300	1.0290
H2-utilizing aerobic/anoxic decay rate [1/d]	2.8000	2.8000	1.0290

Sulfur oxidizing

Name	Default	Value	
Maximum specific growth rate (sulfide) [1/d]	0.7500	0.7500	1.0290
Maximum specific growth rate (sulfur) [1/d]	0.1000	0.1000	1.0290
Substrate (H2S) half sat. [mgS/L]	1.0000	1.0000	1.0000
Substrate (sulfur) half sat. [mgS/L]	1.0000	1.0000	1.0000
Anoxic growth factor [-]	0.5000	0.5000	1.0000
Decay rate [1/d]	0.0400	0.0400	1.0290

Sulfur reducing

Name	Default	Value	
Propionic max. spec. growth rate [1/d]	0.5830	0.5830	1.0350
Propionic acid half sat. [mgCOD/L]	295.0000	295.0000	1.0000
Hydrogen sulfide inhibition coefficient [mgS/L]	185.0000	185.0000	1.0000
Sulfate (SO4=) half sat. [mgS/L]	2.4700	2.4700	1.0000
Decay rate [1/d]	0.0185	0.0185	1.0350
Acetotrophic max. spec. growth rate [1/d]	0.6120	0.6120	1.0350
Acetic acid half sat. [mgCOD/L]	24.0000	24.0000	1.0000
Hydrogen sulfide inhibition coefficient [mgS/L]	164.0000	164.0000	1.0000
Sulfate (SO4=) half sat. [mgS/L]	6.4100	6.4100	1.0000
Decay rate [1/d]	0.0275	0.0275	1.0350
Hydrogenotrophic max. spec. growth rate with SO4= [1/d]	2.8000	2.8000	1.0350
Hydrogenotrophic max. spec. growth rate with S [1/d]	0.1000	0.1000	1.0350
Hydrogen half sat. [mgCOD/L]	0.0700	0.0700	1.0000
Hydrogen sulfide inhibition coefficient [mgS/L]	550.0000	550.0000	1.0000
Sulfate (SO4=) half sat. [mgS/L]	6.4100	6.4100	1.0000
Sulfur (S) half sat. [mgS/L]	50.0000	50.0000	1.0000
Decay rate [1/d]	0.0600	0.0600	1.0350

pH

Name	Default	Value
Ordinary heterotrophic low pH limit [-]	4.0000	4.0000
Ordinary heterotrophic high pH limit [-]	10.0000	10.0000
Methyilotrophic low pH limit [-]	4.0000	4.0000
Methyilotrophic high pH limit [-]	10.0000	10.0000
Autotrophic low pH limit [-]	5.5000	5.5000
Autotrophic high pH limit [-]	9.5000	9.5000
Phosphorus accumulating low pH limit [-]	4.0000	4.0000
Phosphorus accumulating high pH limit [-]	10.0000	10.0000
Ordinary heterotrophic low pH limit (anaerobic) [-]	5.5000	5.5000
Ordinary heterotrophic high pH limit (anaerobic) [-]	8.5000	8.5000
Propionic acetogenic low pH limit [-]	4.0000	4.0000
Propionic acetogenic high pH limit [-]	10.0000	10.0000
Acetoclastic methanogenic low pH limit [-]	5.0000	5.0000
Acetoclastic methanogenic high pH limit [-]	9.0000	9.0000
H2-utilizing methanogenic low pH limit [-]	5.0000	5.0000
H2-utilizing methanogenic high pH limit [-]	9.0000	9.0000

Switches

Name	Default	Value
Ordinary heterotrophic DO half sat. [mgO2/L]	0.1500	0.1500
Phosphorus accumulating DO half sat. [mgO2/L]	0.0500	0.0500
Anoxic/anaerobic NOx half sat. [mgN/L]	0.1500	0.1500
Ammonia oxidizing DO half sat. [mgO2/L]	0.2500	0.2500
Nitrite oxidizing DO half sat. [mgO2/L]	0.5000	0.5000
Anaerobic ammonia oxidizing DO half sat. [mgO2/L]	0.0100	0.0100
Sulfur oxidizing sulfate pathway DO half sat. [mgO2/L]	0.2500	0.2500
Sulfur oxidizing sulfur pathway DO half sat. [mgO2/L]	0.0500	0.0500
Anoxic NO3(->NO2) half sat. [mgN/L]	0.1000	0.1000
Anoxic NO3(->N2) half sat. [mgN/L]	0.0500	0.0500
Anoxic NO2(->N2) half sat. (mgN/L)	0.0100	0.0100

NH3 nutrient half sat. [mgN/L]	5.000E-3	5.000E-3
PolyP half sat. [mgP/mgCOD]	0.0100	0.0100
VFA sequestration half sat. [mgCOD/L]	5.0000	5.0000
P uptake half sat. [mgP/L]	0.1500	0.1500
P nutrient half sat. [mgP/L]	1.000E-3	1.000E-3
Autotrophic CO2 half sat. [mmol/L]	0.1000	0.1000
H2 low/high half sat. [mgCOD/L]	1.0000	1.0000
Propionic acetogenic H2 inhibition [mgCOD/L]	5.0000	5.0000
Synthesis anion/cation half sat. [meq/L]	0.0100	0.0100

Common

Name	Default	Value
Biomass/Endog Ca content (gCa/gCOD)	3.912E-3	3.912E-3
Biomass/Endog Mg content (gMg/gCOD)	3.912E-3	3.912E-3
Biomass/Endog other cations content (mol/gCOD)	5.115E-4	5.115E-4
Biomass/Endog other Anions content (mol/gCOD)	1.410E-4	1.410E-4
N in endogenous residue [mgN/mgCOD]	0.0700	0.0700
P in endogenous residue [mgP/mgCOD]	0.0220	0.0220
Ca content of slowly biodegradable (gCa/gCOD)	3.912E-3	3.912E-3
Mg content of slowly biodegradable (gMg/gCOD)	3.700E-4	3.700E-4
Endogenous residue COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200
Particulate substrate COD:VSS ratio [mgCOD/mgVSS]	1.6327	1.6327
Particulate inert COD:VSS ratio [mgCOD/mgVSS]	1.6000	1.6000
Cellulose COD:VSS ratio [mgCOD/mgVSS]	1.4000	1.4000
External organic COD:VSS ratio [mgCOD/mgVSS]	1.6000	1.6000
Molecular weight of other anions [mg/mmol]	35.5000	35.5000
Molecular weight of other cations [mg/mmol]	39.0983	39.0983

Ammonia oxidizing

Name	Default	Value
Yield [mgCOD/mgN]	0.1500	0.1500
Denite NO2 fraction as TEA [-]	0.5000	0.5000
Byproduct NH4 fraction to N2O [-]	2.500E-3	2.500E-3
N in biomass [mgN/mgCOD]	0.0700	0.0700
P in biomass [mgP/mgCOD]	0.0220	0.0220
Fraction to endogenous residue [-]	0.0800	0.0800
COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200

Nitrite oxidizing

Name	Default	Value
Yield [mgCOD/mgN]	0.0900	0.0900
N in biomass [mgN/mgCOD]	0.0700	0.0700
P in biomass [mgP/mgCOD]	0.0220	0.0220
Fraction to endogenous residue [-]	0.0800	0.0800
COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200

Anaerobic ammonia oxidizing

Name	Default	Value
Yield [mgCOD/mgN]	0.1140	0.1140
Nitrate production [mgN/mgBiomassCOD]	2.2800	2.2800
N in biomass [mgN/mgCOD]	0.0700	0.0700
P in biomass [mgP/mgCOD]	0.0220	0.0220
Fraction to endogenous residue [-]	0.0800	0.0800
COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200

Ordinary heterotrophic

Name	Default	Value
Yield (aerobic) [-]	0.6660	0.3000
Yield (fermentation, low H2) [-]	0.1000	0.1000
Yield (fermentation, high H2) [-]	0.1000	0.1000
H2 yield (fermentation low H2) [-]	0.3500	0.3500
H2 yield (fermentation high H2) [-]	0	0
Propionate yield (fermentation, low H2) [-]	0	0
Propionate yield (fermentation, high H2) [-]	0.7000	0.7000
CO2 yield (fermentation, low H2) [-]	0.7000	0.7000
CO2 yield (fermentation, high H2) [-]	0	0
N in biomass [mgN/mgCOD]	0.0700	0.0700
P in biomass [mgP/mgCOD]	0.0220	0.0220
Endogenous fraction - aerobic [-]	0.0800	0.0800
Endogenous fraction - anoxic [-]	0.1030	0.1030
Endogenous fraction - anaerobic [-]	0.1840	0.1840
COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200
Yield (anoxic) [-]	0.5400	0.2000
Yield propionic (aerobic) [-]	0.6400	0.6400
Yield propionic (anoxic) [-]	0.4600	0.4600
Yield acetic (aerobic) [-]	0.6000	0.6000
Yield acetic (anoxic) [-]	0.4300	0.4300
Yield methanol (aerobic) [-]	0.5000	0.5000
Adsorp. max. [-]	1.0000	1.0000
Max fraction to N2O at high FNA over nitrate [-]	0.0500	0.0500
Max fraction to N2O at high FNA over nitrite [-]	0.1000	0.1000

Ordinary heterotrophic on industrial COD

Name	Default	Value
Yield Ind #1 COD (Aerobic) [-]	0.5000	0.5000
Yield Ind #1 COD (Anoxic) [-]	0.4000	0.4000
Yield Ind #1 COD (Anaerobic) [-]	0.0400	0.0400

COD:Mole ratio - Ind #1 COD [gCOD/Mol]	224.0000	224.0000
Yield Ind #2 COD (Aerobic) [-]	0.5000	0.5000
Yield Ind #2 COD (Anoxic) [-]	0.4000	0.4000
Yield Ind #2 COD (Anaerobic) [-]	0.0500	0.0500
COD:Mole ratio - Ind #2 COD [gCOD/Mol]	240.0000	240.0000
Yield on Ind #3 COD (Aerobic) [-]	0.5000	0.5000
Yield on Ind #3 COD (Anoxic) [-]	0.4000	0.4000
Yield on Ind #3 COD (Anaerobic) [-]	0.0400	0.0400
COD:Mole ratio - Ind #3 COD [gCOD/Mol]	288.0000	288.0000
Yield enmeshed hydrocarbons (Aerobic) [-]	0.5000	0.5000
Yield enmeshed hydrocarbons (Anoxic) [-]	0.4000	0.4000
Yield enmeshed hydrocarbons (Anaerobic) [-]	0.0400	0.0400
COD:Mole ratio - Hydrocarbon COD [gCOD/Mol]	336.0000	336.0000
Hydrocarbon COD:VSS ratio [mgCOD/mgVSS]	3.2000	3.2000
Max. hydrocarbon adsorp. ratio [-]	1.0000	1.0000
Yield of Ind #1 on Ind #3 COD (Aerobic) [-]	0	0
Yield of Ind #1 on Ind #3 COD (Anoxic) [-]	0	0
Hydrocarbon Yield on Ind #3 COD (Aerobic) [-]	0	0
Hydrocarbon Yield on Ind #3 COD (Anoxic) [-]	0	0

Methylotrophic

Name	Default	Value
Yield (anoxic) [-]	0.4000	0.4000
N in biomass [mgN/mgCOD]	0.0700	0.0700
P in biomass [mgP/mgCOD]	0.0220	0.0220
Fraction to endogenous residue [-]	0.0800	0.0800
COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200
Max fraction to N2O at high FNA over nitrate [-]	0.1000	0.1000
Max fraction to N2O at high FNA over nitrite [-]	0.1500	0.1500

Phosphorus accumulating

Name	Default	Value
Yield (aerobic) [-]	0.6390	0.6390
Yield (anoxic) [-]	0.5200	0.5200
Aerobic P/PHA uptake [mgP/mgCOD]	0.9300	0.9300
Anoxic P/PHA uptake [mgP/mgCOD]	0.3500	0.3500
Yield of PHA on Ac sequestration [-]	0.8890	0.8890
N in biomass [mgN/mgCOD]	0.0700	0.0700
N in sol. inert [mgN/mgCOD]	0.0700	0.0700
P in biomass [mgP/mgCOD]	0.0220	0.0220
Fraction to endogenous part. [-]	0.2500	0.2500
Inert fraction of endogenous sol. [-]	0.2000	0.2000
P/Ac release ratio [mgP/mgCOD]	0.5100	0.5100
COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200
Yield of low PP [-]	0.9400	0.9400
Mg to P mole ratio in polyphosphate [mmolMg/mmolP]	0.3000	0.3000
Cation to P mole ratio in polyphosphate [meq/mmolP]	0.1500	0.1500
Ca to P mole ratio in polyphosphate [mmolCa/mmolP]	0.0500	0.0500

Propionic acetogenic

Name	Default	Value
Yield [-]	0.1000	0.1000
H2 yield [-]	0.4000	0.4000
CO2 yield [-]	1.0000	1.0000
N in biomass [mgN/mgCOD]	0.0700	0.0700
P in biomass [mgP/mgCOD]	0.0220	0.0220
Fraction to endogenous residue [-]	0.0800	0.0800
COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200

Methanogenic

Name	Default	Value
Acetoclastic yield [-]	0.1000	0.1000
Acetoclastic yield on methanol[-]	0.1000	0.1000
H2-utilizing yield [-]	0.1000	0.1000
H2-utilizing yield on methanol [-]	0.1000	0.1000
N in acetoclastic biomass [mgN/mgCOD]	0.0700	0.0700
N in H2-utilizing biomass [mgN/mgCOD]	0.0700	0.0700
P in acetoclastic biomass [mgP/mgCOD]	0.0220	0.0220
P in H2-utilizing biomass [mgP/mgCOD]	0.0220	0.0220
Acetoclastic fraction to endog. residue [-]	0.0800	0.0800
H2-utilizing fraction to endog. residue [-]	0.0800	0.0800
Acetoclastic COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200
H2-utilizing COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200

Sulfur oxidizing

Name	Default	Value
Yield (aerobic) [mgCOD/mgS]	0.5000	0.5000
Yield (Anoxic) [mgCOD/mgS]	0.3500	0.3500
N in biomass [mgN/mgCOD]	0.0700	0.0700
P in biomass [mgP/mgCOD]	0.0220	0.0220
Fraction to endogenous residue [-]	0.0800	0.0800
COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200

Sulfur reducing

Name	Default	Value
Yield [mgCOD/mg H2 COD]	0.0712	0.0712
Yield [mgCOD/mg Ac COD]	0.0470	0.0470
Yield [mgCOD/mg Pr COD]	0.0384	0.0384

N in biomass [mgN/mgCOD]	0.0700	0.0700
P in biomass [mgP/mgCOD]	0.0220	0.0220
Fraction to endogenous residue [-]	0.0800	0.0800
COD:VSS ratio [mgCOD/mgVSS]	1.4200	1.4200

General

Name	Default	Value
Tank head loss per metre of length (from flow) [m/m]	2.500E-3	2.500E-3
BOD calculation rate constant for Xsc degradation [/d]	0.5000	0.5000
BOD calculation rate constant for Xsp (and hydrocarbon) degradation [/d]	0.5000	0.5000
BOD calculation rate constant for Xeo degradation [/d]	0.5000	0.5000

Heating fuel/Chemical Costs

Name	Default	Value
Methanol [\$/gal]	1.6656	1.6656
Ferric chloride [\$/lb Fe]	0.5307	0.5307
Ferric sulfate [\$/lb Fe]	0.3583	0.3583
Ferrous chloride [\$/lb Fe]	0.2767	0.2767
Ferrous sulfate [\$/lb Fe]	1.0750	1.0750
Aluminum sulfate [\$/lb Al]	0.7666	0.7666
Aluminum chloride [\$/lb Al]	0.8981	0.8981
Poly Aluminum Chloride (PAC) [\$/lb Al]	0.5307	0.5307
Natural gas [\$/MMBTU]	3.1652	3.1652
Heating oil [\$/gal]	1.8927	1.8927
Diesel [\$/gal]	2.6498	2.6498
Custom fuel [\$/gal]	3.7854	3.7854
Biogas sale price [\$/MMBTU]	2.1101	2.1101

Anaerobic digester

Name	Default	Value
Bubble rise velocity (anaerobic digester) [cm/s]	23.9000	23.9000
Bubble Sauter mean diameter (anaerobic digester) [cm]	0.3500	0.3500
Anaerobic digester gas hold-up factor []	1.0000	1.0000

Combined Heat and Power (CHP) engine

Name	Default	Value
Methane heat of combustion [kJ/mole]	800.0000	800.0000
Hydrogen heat of combustion [kJ/mole]	240.0000	240.0000
CHP engine heat price [\$/kWh]	0	0
CHP engine power price [\$/kWh]	0.1500	0.1500

Calorific values of heating fuels

Name	Default	Value
Calorific value of natural gas [kJ/kg]	48000	48000
Calorific value of heating fuel oil [kJ/kg]	42000	42000
Calorific value of diesel [kJ/kg]	46000	46000
Calorific value of custom fuel [kJ/kg]	32000	32000

Density of liquid heating fuels

Mass transfer

Name	Default	Value	
KI for H2 [m/d]	17.0000	17.0000	1.0240
KI for CO2 [m/d]	10.0000	10.0000	1.0240
KI for NH3 [m/d]	1.0000	1.0000	1.0240
KI for CH4 [m/d]	8.0000	8.0000	1.0240
KI for N2 [m/d]	15.0000	15.0000	1.0240
KI for N2O [m/d]	8.0000	8.0000	1.0240
KI for H2S [m/d]	1.0000	1.0000	1.0240
KI for Ind #1 COD [m/d]	0	0	1.0240
KI for Ind #2 COD [m/d]	0.5000	0.5000	1.0240
KI for Ind #3 COD [m/d]	0	0	1.0240
KI for O2 [m/d]	13.0000	13.0000	1.0240

Henry's law constants

Name	Default	Value	
CO2 [M/atm]	3.4000E-2	3.4000E-2	2400.0000
O2 [M/atm]	1.3000E-3	1.3000E-3	1500.0000
N2 [M/atm]	6.5000E-4	6.5000E-4	1300.0000
N2O [M/atm]	2.5000E-2	2.5000E-2	2600.0000
NH3 [M/atm]	5.8000E+1	5.8000E+1	4100.0000
CH4 [M/atm]	1.4000E-3	1.4000E-3	1600.0000
H2 [M/atm]	7.8000E-4	7.8000E-4	500.0000
H2S [M/Atm]	1.0000E-1	1.0000E-1	2200.0000
Ind 1 [M/Atm]	1.9000E+3	1.9000E+3	7300.0000
Ind 2 [M/Atm]	1.8000E-1	1.8000E-1	2200.0000
Ind 3 [M/Atm]	1.5000E-1	1.5000E-1	1900.0000

Properties constants

Name	Default	Value
K in Viscosity = $K e^{(E_a/RT)}$ [Pa s]	6.849E-7	6.849E-7
Ea in Viscosity = $K e^{(E_a/RT)}$ [J/mol]	1.780E+4	1.780E+4
Y in ML Viscosity = H2O viscosity * (1+A*MLSS^Y) [-]	1.0000	1.0000
A in ML Viscosity = H2O viscosity * (1+A*MLSS^Y) [m3/g]	1.000E-7	1.000E-7
A in ML Density = H2O density + A*MLSS [(kg/m3)/(g/m3)]	3.248E-4	3.248E-4
A in Antoine eqn. [T in K, P in Bar {NIST}]	5.2000	5.2000
B in Antoine eqn. [T in K, P in Bar {NIST}]	1734.0000	1734.0000
C in Antoine eqn. [T in K, P in Bar {NIST}]	-39.5000	-39.5000

Metal salt solution densities

Name	Default	Value
Ferric chloride solution density [kg/m3]	3820.0000	3820.0000
Ferric sulfate solution density [kg/m3]	4800.0000	4800.0000
Ferrous chloride solution density [kg/m3]	3160.0000	3160.0000
Ferrous sulfate solution density [kg/m3]	1150.0000	1150.0000
Aluminum sulfate solution density [kg/m3]	1950.0000	1950.0000
Aluminum chloride solution density [kg/m3]	2480.0000	2480.0000

Mineral precipitation rates

Name	Default	Value	
Vivianite precipitation rate [L/(mol d)]	1.000E+5	1.000E+5	1.0240
Vivianite redissolution rate [L/(mol d)]	1.000E+5	1.000E+5	1.0240
Vivianite half sat. [mgTSS/L]	0.0100	0.0100	1.0000
FeS precipitation rate [L/(mol d)]	1000.0000	1000.0000	1.0240
FeS redissolution rate [L/(mol d)]	10.0000	10.0000	1.0240
FeS half sat. [mgTSS/L]	0.1000	0.1000	1.0000
Struvite precipitation rate [L^2/(mol^2 d)]	3.000E+10	3.000E+10	1.0240
Struvite redissolution rate [L^2/(mol^2 d)]	3.000E+11	3.000E+11	1.0240

Struvite half sat. [mgTSS/L]	1.0000	1.0000	1.0000
Brushite precipitation rate [L/(mol d)]	1.000E+6	1.000E+6	1.0000
Brushite redissolution rate [L/(mol d)]	10000.0000	10000.0000	1.0000
Brushite half sat. [mgTSS/L]	1.0000	1.0000	1.0000
HAP precipitation rate [g/d]	5.000E-4	5.000E-4	1.0000

Mineral precipitation constants

Name	Default	Value
Vivianite solubility product [mol/L]^5	1.710E-36	1.710E-36
FeS solubility product [mol/L]^2	4.258E-4	4.258E-4
Struvite solubility product [mol/L]^3	6.918E-14	6.918E-14
Brushite solubility product [mol/L]^2	2.490E-7	2.490E-7

Fe rates

Name	Default	Value	
A in aging rate = $A * \exp(-G/B)$ [1/d]	16.1550	16.1550	1.0000
B in aging rate = $A * \exp(-G/B)$ [1/s]	57.3000	57.3000	1.0000
HFO(L) aging rate factor	2.500E-4	2.500E-4	1.0000
HFO(H) with H2PO4- bound aging factor []	1.000E-5	1.000E-5	1.0000
HFO(L) with H2PO4- bound aging factor []	0.4000	0.4000	1.0000
H2PO4- coprecipitation rate [mol/(L d)]	1.500E-9	1.500E-9	1.0000
H2PO4- Adsorption rate [mol/(L d)]	2.000E-11	2.000E-11	1.0000
H+ competition for HFO(H) protonation sites [L/(mmol . d)]	1000.0000	1000.0000	1.0000
H+ competition for HFO(L) protonation sites [L/(mmol . d)]	100.0000	100.0000	1.0000

Fe constants

Name	Default	Value
Ferric active site factor(high) [{mol Sites}/{mol HFO(H)}]	4.0000	4.0000
Ferric active site factor(low) [{mol Sites}/{mol HFO(L)}]	2.4000	2.4000
H+ competition level for Fe(OH)3 [mol/L]	7.000E-7	7.000E-7
Equilibrium constant for FeOH3-H2PO4- [{mf HFO(H).H2PO4}/{(mol H2PO4-){mf HFO(H)}^2}]	2.000E-9	2.000E-9
Colloidal COD removed with Ferric [gCOD/Fe active site]	80.0000	80.0000
Minimum residual P level with iron addition [mgP/L]	0.0150	0.0150
HFO(H) with H2PO4- P release factor	10000.0000	10000.0000
HFO(L) with H2PO4- P release factor	10000.0000	10000.0000

Fe RedOx rates

Name	Default	Value	
Iron reduction using acetic acid	1.000E-7	1.000E-7	1.0000
Half Sat. acetic acid	0.5000	0.5000	1.0000
Iron reduction using propionic acid	1.000E-7	1.000E-7	1.0000
Half Sat. propionic acid	0.5000	0.5000	1.0000
Iron reduction using dissolved hydrogen gas	1.000E-7	1.000E-7	1.0000
Half Sat. dissolved hydrogen gas	0.5000	0.5000	1.0000
Iron reduction using hydrogen sulfide	5.000E-5	5.000E-5	1.0000
Half Sat. hydrogen sulfide	0.5000	0.5000	1.0000
Iron oxidation rate (aerobic)	1.000E-3	1.000E-3	1.0000
Abiotic iron reduction using acetic acid	2.000E-5	2.000E-5	1.0000
Abiotic iron reduction using propionic acid	2.000E-5	2.000E-5	1.0000
Abiotic iron reduction using dissolved hydrogen gas	2.000E-5	2.000E-5	1.0000
Abiotic iron reduction using hydrogen sulfide	2.000E-5	2.000E-5	1.0000
Abiotic iron oxidation rate (aerobic)	1.0000	1.0000	1.0000

CEPT rates

Name	Default	Value
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HFO colloidal adsorption rate	1.0000	1.0000	1.0000
Residual Xsc for adsorption to HFO	5.0000	5.0000	1.0000
Slope for Xsc residual	1.0000	1.0000	1.0000
HAO colloidal adsorption rate	1.0000	1.0000	1.0000
Residual Xsc for adsorption to HAO	5.0000	5.0000	1.0000
Slope for Xsc residual	1.0000	1.0000	1.0000

Al rates

Name	Default	Value	
A in aging rate = $A * \exp(-G/B)$ [1/d]	16.1550	16.1550	1.0000
B in aging rate = $A * \exp(-G/B)$ [1/s]	57.3000	57.3000	1.0000
HAO(L) aging rate factor	2.500E-4	2.500E-4	1.0000
HAO(H) with H2PO4- bound aging factor []	1.000E-5	1.000E-5	1.0000
HAO(L) with H2PO4- bound aging factor []	0.4000	0.4000	1.0000
H2PO4- coprecipitation rate [mol/(L d)]	1.500E-9	1.500E-9	1.0000
H2PO4- Adsorption rate [mol /(L d)]	1.000E-9	1.000E-9	1.0000

Al constants

Name	Default	Value
Al active site factor(high) [{mol Sites}/{mol HAO(H)}]	3.0000	3.0000
Al active site factor(low) [{mol Sites}/{mol HAO(L)}]	1.5000	1.5000
Equilibrium constant for $AlOH_3-H_2PO_4-$ [{mf HAO(H).H2PO4-}/{(mol H2PO4-){mf HAO(H)}^2}]	8.000E-10	8.000E-10
Colloidal COD removed with Al [gCOD/Al active site]	30.0000	30.0000
Minimum residual P level with Al addition [mgP/L]	0.0150	0.0150
HAO(H) with H2PO4- P release factor	10000.0000	10000.0000
HAO(L) with H2PO4- P release factor	10000.0000	10000.0000

Pipe and pump parameters

Name	Default	Value
Static head [ft]	0.8202	0.8202
Pipe length (headloss calc.s) [ft]	164.0420	164.0420
Pipe inside diameter [in]	19.68504	19.68504
K(fittings) - Total minor losses K	5.0000	5.0000
Pipe roughness [in]	0.00787	0.00787
'A' in overall pump efficiency = $A + B*Q + C*(Q^2)$ [-]	0.8500	0.8500
'B' in overall pump efficiency = $A + B*Q + C*(Q^2)$ [-]/(gal/d)]	0	0
'C' in overall pump efficiency = $A + B*Q + C*(Q^2)$ [-]/(gal/d)^2]	0	0

Fittings and loss coefficients ('K' values)

Name	Default	Value
Pipe entrance (bellmouth)	0.0500	1.0000
90° bend	0.7500	5.0000
45° bend	0.3000	2.0000
Butterfly valve (open)	0.3000	1.0000
Non-return valve	1.0000	0
Outlet (bellmouth)	0.2000	1.0000

Aeration

Name	Default	Value
Surface pressure [kPa]	101.3250	101.3250
Fractional effective saturation depth (Fed) [-]	0.3250	0.3250
Supply gas CO2 content [vol. %]	0.0400	0.0400
Supply gas O2 [vol. %]	20.9500	20.9500
Off-gas CO2 [vol. %]	2.0000	2.0000
Off-gas O2 [vol. %]	18.8000	18.8000
Off-gas H2 [vol. %]	0	0

Off-gas NH3 [vol. %]	0	0
Off-gas CH4 [vol. %]	0	0
Off-gas N2O [vol. %]	0	0
Surface turbulence factor [-]	2.0000	2.0000
Set point controller gain []	1.0000	1.0000

MABR Membrane effective diffusivities

Name	Default	Value	
O2 [m2/s]	2.500E-11	2.500E-11	1.0000
N2 [m2/s]	1.900E-11	1.900E-11	1.0000
CO2 [m2/s]	1.960E-11	1.960E-11	1.0000
H2 [m2/s]	5.850E-11	5.850E-11	1.0000
CH4 [m2/s]	1.963E-11	1.963E-11	1.0000
NH3 [m2/s]	2.000E-11	2.000E-11	1.0000
N2O [m2/s]	1.607E-11	1.607E-11	1.0000
H2S [m2/s]	1.530E-11	1.530E-11	1.0000
Ind 1 [m2/s]	7.240E-12	7.240E-12	1.0000
Ind 2 [m2/s]	8.900E-12	8.900E-12	1.0000
Ind 3 [m2/s]	7.960E-12	7.960E-12	1.0000

MABR Membrane transfer factors

Name	Default	Value	
O2 []	1.0000	1.0000	1.0000
N2 []	1.0000	1.0000	1.0000
CO2 []	1.0000	1.0000	1.0000
H2 []	1.0000	1.0000	1.0000
CH4 []	1.0000	1.0000	1.0000
NH3 []	1.0000	1.0000	1.0000
N2O []	1.0000	1.0000	1.0000

H2S []	1.0000	1.0000	1.0000
Ind 1 []	1.0000	1.0000	1.0000
Ind 2 []	1.0000	1.0000	1.0000
Ind 3 []	1.0000	1.0000	1.0000

Blower

Name	Default	Value
Intake filter pressure drop [psi]	0.5076	0.5076
Pressure drop through distribution system (piping/valves) [psi]	0.4351	0.4351
Adiabatic/polytropic compression exponent (1.4 for adiabatic)	1.4000	1.4000
'A' in blower efficiency = $A + B \cdot Q_a + C \cdot (Q_a^2) [-]$	0.7500	0.7500
'B' in blower efficiency = $A + B \cdot Q_a + C \cdot (Q_a^2) [-] / (\text{ft}^3/\text{min} (20\text{C}, 1 \text{ atm}))]$	0	0
'C' in blower efficiency = $A + B \cdot Q_a + C \cdot (Q_a^2) [-] / (\text{ft}^3/\text{min} (20\text{C}, 1 \text{ atm}))^2]$	0	0

Diffuser

Name	Default	Value
k1 in $C = k1(PC)^{0.25} + k2$	1.2400	1.2400
k2 in $C = k1(PC)^{0.25} + k2$	0.8960	0.8960
Y in $Kla = C \cdot U_{sg}^Y - U_{sg}$ in $[m^3/(m^2 \cdot d)]$	0.8880	0.8880
Area of one diffuser [ft ²]	0.4413	0.4413
Diffuser mounting height [ft]	0.8202	0.8202
Min. air flow rate per diffuser ft ³ /min (20C, 1 atm)	0.2943	0.2943
Max. air flow rate per diffuser ft ³ /min (20C, 1 atm)	5.8858	5.8858
'A' in diffuser pressure drop = $A + B \cdot (Q_a/\text{Diff}) + C \cdot (Q_a/\text{Diff})^2$ [psi]	0.4351	0.4351
'B' in diffuser pressure drop = $A + B \cdot (Q_a/\text{Diff}) + C \cdot (Q_a/\text{Diff})^2 [\text{psi}/(\text{ft}^3/\text{min} (20\text{C}, 1 \text{ atm}))]$	0	0
'C' in diffuser pressure drop = $A + B \cdot (Q_a/\text{Diff}) + C \cdot (Q_a/\text{Diff})^2 [\text{psi}/(\text{ft}^3/\text{min} (20\text{C}, 1 \text{ atm}))^2]$	0	0

Surface aerators

Name	Default	Value
Surface aerator Std. oxygen transfer rate [lb O ₂ /(hp hr)]	2.46697	2.46697

Modified Vesilind

Name	Default	Value
Maximum Vesilind settling velocity (Vo) [ft/min]	0.387	0.387
Vesilind hindered zone settling parameter (K) [L/g]	0.370	0.370
Clarification switching function [mg/L]	100.000	100.000
Specified TSS conc.for height calc. [mg/L]	2500.000	2500.000
Maximum compactability constant [mg/L]	15000.000	15000.000
Maximum compactability slope [L/mg]	0.010	0.010

Double exponential

Name	Default	Value
Maximum Vesilind settling velocity (Vo) [ft/min]	0.934	0.934
Maximum (practical) settling velocity (Vo') [ft/min]	0.615	0.615
Hindered zone settling parameter (Kh) [L/g]	0.400	0.400
Flocculent zone settling parameter (Kf) [L/g]	2.500	2.500
Maximum non-settleable TSS [mg/L]	20.0000	20.0000
Non-settleable fraction [-]	1.000E-3	1.000E-3
Specified TSS conc. for height calc. [mg/L]	2500.0000	2500.0000

Emission factors

Name	Default	Value
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Carbon dioxide equivalence of nitrous oxide	296.0000	296.0000
Carbon dioxide equivalence of methane	23.0000	23.0000

Biofilm general

Name	Default	Value	
Attachment rate [g / (m2 d)]	8.0000	8.0000	1.0000
Attachment TSS half sat. [mg/L]	100.0000	100.0000	1.0000
Detachment rate [g/(m3 d)]	8000.0000	8000.0000	1.0000
Solids movement factor []	10.0000	10.0000	1.0000
Diffusion neta []	0.8000	0.8000	1.0000
Thin film limit [mm]	0.5000	0.5000	1.0000
Thick film limit [mm]	3.0000	3.0000	1.0000
Assumed Film thickness for tank volume correction (temp independent) [mm]	1.2500	1.2500	1.0000
Film surface area to media area ratio - Max.[]	1.0000	1.0000	1.0000
Minimum biofilm conc. for streamer formation [gTSS/m2]	4.0000	4.0000	1.0000

Maximum biofilm concentrations [mg/L]

Name	Default	Value	
Biomass - Ordinary heterotrophic	5.000E+4	5.000E+4	1.0000
Biomass - Methyilotrophic	5.000E+4	5.000E+4	1.0000
Biomass - Ammonia oxidizing	1.000E+5	1.000E+5	1.0000
Biomass - Nitrite oxidizing	1.000E+5	1.000E+5	1.0000
Biomass - Anaerobic ammonia oxidizing	5.000E+4	5.000E+4	1.0000
Biomass - Phosphorus accumulating	5.000E+4	5.000E+4	1.0000
Biomass - Propionic acetogenic	5.000E+4	5.000E+4	1.0000
Biomass - Acetoclastic methanogenic	5.000E+4	5.000E+4	1.0000
Biomass - Hydrogenotrophic methanogenic	5.000E+4	5.000E+4	1.0000
Biomass - Endogenous products	3.000E+4	3.000E+4	1.0000
CODp - Slowly degradable particulate	5000.0000	5000.0000	1.0000

CODp - Slowly degradable colloidal	4000.0000	4000.0000	1.0000
CODp - Degradable external organics	5000.0000	5000.0000	1.0000
CODp - Undegradable non-cellulose	5000.0000	5000.0000	1.0000
CODp - Undegradable cellulose	5000.0000	5000.0000	1.0000
N - Particulate degradable organic	0	0	1.0000
P - Particulate degradable organic	0	0	1.0000
N - Particulate degradable external organics	0	0	1.0000
P - Particulate degradable external organics	0	0	1.0000
N - Particulate undegradable	0	0	1.0000
P - Particulate undegradable	0	0	1.0000
CODp - Stored PHA	5000.0000	5000.0000	1.0000
P - Releasable stored polyP	1.150E+6	1.150E+6	1.0000
P - Unreleasable stored polyP	1.150E+6	1.150E+6	1.0000
CODs - Complex readily degradable	0	0	1.0000
CODs - Acetate	0	0	1.0000
CODs - Propionate	0	0	1.0000
CODs - Methanol	0	0	1.0000
Gas - Dissolved hydrogen	0	0	1.0000
Gas - Dissolved methane	0	0	1.0000
N - Ammonia	0	0	1.0000
N - Soluble degradable organic	0	0	1.0000
Gas - Dissolved nitrous oxide	0	0	1.0000
N - Nitrite	0	0	1.0000
N - Nitrate	0	0	1.0000
Gas - Dissolved nitrogen	0	0	1.0000
P - Soluble phosphate	0	0	1.0000
CODs - Undegradable	0	0	1.0000
N - Soluble undegradable organic	0	0	1.0000
Influent inorganic suspended solids	1.300E+6	1.300E+6	1.0000
Precipitate - Struvite	8.500E+5	8.500E+5	1.0000
Precipitate - Brushite	1.165E+6	1.165E+6	1.0000
Precipitate - Hydroxy - apatite	1.600E+6	1.600E+6	1.0000
Precipitate - Vivianite	1.340E+6	1.340E+6	1.0000
HFO - High surface	5.000E+4	5.000E+4	1.0000
HFO - Low surface	5.000E+4	5.000E+4	1.0000

HFO - High with H2PO4- adsorbed	5.000E+4	5.000E+4	1.0000
HFO - Low with H2PO4- adsorbed	5.000E+4	5.000E+4	1.0000
HFO - Aged	5.000E+4	5.000E+4	1.0000
HFO - Low with H+ adsorbed	5.000E+4	5.000E+4	1.0000
HFO - High with H+ adsorbed	5.000E+4	5.000E+4	1.0000
HAO - High surface	5.000E+4	5.000E+4	1.0000
HAO - Low surface	5.000E+4	5.000E+4	1.0000
HAO - High with H2PO4- adsorbed	5.000E+4	5.000E+4	1.0000
HAO - Low with H2PO4- adsorbed	5.000E+4	5.000E+4	1.0000
HAO - Aged	5.000E+4	5.000E+4	1.0000
P - Bound on aged HMO	5.000E+4	5.000E+4	1.0000
Metal soluble - Magnesium	0	0	1.0000
Metal soluble - Calcium	0	0	1.0000
Metal soluble - Ferric	0	0	1.0000
Metal soluble - Ferrous	0	0	1.0000
Metal soluble - Aluminum	0	0	1.0000
Other Cations (strong bases)	0	0	1.0000
Other Anions (strong acids)	0	0	1.0000
Gas - Dissolved total CO2	0	0	1.0000
User defined - UD1	0	0	1.0000
User defined - UD2	0	0	1.0000
User defined - UD3	5.000E+4	5.000E+4	1.0000
User defined - UD4	5.000E+4	5.000E+4	1.0000
Biomass - Sulfur oxidizing	1.000E+5	1.000E+5	1.0000
Biomass - Sulfur reducing propionic acetogenic	5.000E+4	5.000E+4	1.0000
Biomass - Sulfur reducing acetotrophic	5.000E+4	5.000E+4	1.0000
Biomass - Sulfur reducing hydrogenotrophic	1.000E+5	1.000E+5	1.0000
Gas - Dissolved total sulfides	0	0	1.0000
S - Soluble sulfate	0	0	1.0000
S - Particulate elemental sulfur	5.000E+4	5.000E+4	1.0000
Precipitate - Ferrous sulfide	5.000E+4	5.000E+4	1.0000
CODp - Adsorbed hydrocarbon	5.000E+4	5.000E+4	1.0000
CODs - Degradable volatile ind. #1	0	0	1.0000
CODs - Degradable volatile ind. #2	0	0	1.0000
CODs - Degradable volatile ind. #3	0	0	1.0000

CODs - Soluble hydrocarbon	0	0	1.0000
Gas - Dissolved oxygen	0	0	1.0000

Effective diffusivities [m2/s]

Name	Default	Value	
Biomass - Ordinary heterotrophic	5.000E-14	5.000E-14	1.0290
Biomass - Methylothetic	5.000E-14	5.000E-14	1.0290
Biomass - Ammonia oxidizing	5.000E-14	5.000E-14	1.0290
Biomass - Nitrite oxidizing	5.000E-14	5.000E-14	1.0290
Biomass - Anaerobic ammonia oxidizing	5.000E-14	5.000E-14	1.0290
Biomass - Phosphorus accumulating	5.000E-14	5.000E-14	1.0290
Biomass - Propionic acetogenic	5.000E-14	5.000E-14	1.0290
Biomass - Acetoclastic methanogenic	5.000E-14	5.000E-14	1.0290
Biomass - Hydrogenotrophic methanogenic	5.000E-14	5.000E-14	1.0290
Biomass - Endogenous products	5.000E-14	5.000E-14	1.0290
CODp - Slowly degradable particulate	5.000E-14	5.000E-14	1.0290
CODp - Slowly degradable colloidal	5.000E-10	5.000E-10	1.0290
CODp - Degradable external organics	5.000E-14	5.000E-14	1.0290
CODp - Undegradable non-cellulose	5.000E-14	5.000E-14	1.0290
CODp - Undegradable cellulose	5.000E-14	5.000E-14	1.0290
N - Particulate degradable organic	5.000E-14	5.000E-14	1.0290
P - Particulate degradable organic	5.000E-14	5.000E-14	1.0290
N - Particulate degradable external organics	5.000E-14	5.000E-14	1.0290
P - Particulate degradable external organics	5.000E-14	5.000E-14	1.0290
N - Particulate undegradable	5.000E-14	5.000E-14	1.0290
P - Particulate undegradable	5.000E-14	5.000E-14	1.0290
CODp - Stored PHA	5.000E-14	5.000E-14	1.0290
P - Releasable stored polyP	5.000E-14	5.000E-14	1.0290
P - Unreleasable stored polyP	5.000E-14	5.000E-14	1.0290
CODs - Complex readily degradable	6.900E-10	6.900E-10	1.0290
CODs - Acetate	1.240E-9	1.240E-9	1.0290
CODs - Propionate	8.300E-10	8.300E-10	1.0290

CODs - Methanol	1.600E-9	1.600E-9	1.0290
Gas - Dissolved hydrogen	5.850E-9	5.850E-9	1.0290
Gas - Dissolved methane	1.963E-9	1.963E-9	1.0290
N - Ammonia	2.000E-9	2.000E-9	1.0290
N - Soluble degradable organic	1.370E-9	1.370E-9	1.0290
Gas - Dissolved nitrous oxide	1.607E-9	1.607E-9	1.0290
N - Nitrite	2.980E-9	2.980E-9	1.0290
N - Nitrate	2.980E-9	2.980E-9	1.0290
Gas - Dissolved nitrogen	1.900E-9	1.900E-9	1.0290
P - Soluble phosphate	2.000E-9	2.000E-9	1.0290
CODs - Undegradable	6.900E-10	6.900E-10	1.0290
N - Soluble undegradable organic	6.850E-10	6.850E-10	1.0290
Influent inorganic suspended solids	5.000E-14	5.000E-14	1.0290
Precipitate - Struvite	5.000E-14	5.000E-14	1.0290
Precipitate - Brushite	5.000E-14	5.000E-14	1.0290
Precipitate - Hydroxy - apatite	5.000E-14	5.000E-14	1.0290
Precipitate - Vivianite	5.000E-14	5.000E-14	1.0290
HFO - High surface	5.000E-14	5.000E-14	1.0290
HFO - Low surface	5.000E-14	5.000E-14	1.0290
HFO - High with H ₂ PO ₄ - adsorbed	5.000E-14	5.000E-14	1.0290
HFO - Low with H ₂ PO ₄ - adsorbed	5.000E-14	5.000E-14	1.0290
HFO - Aged	5.000E-14	5.000E-14	1.0290
HFO - Low with H ⁺ adsorbed	5.000E-14	5.000E-14	1.0290
HFO - High with H ⁺ adsorbed	5.000E-14	5.000E-14	1.0290
HAO - High surface	5.000E-14	5.000E-14	1.0290
HAO - Low surface	5.000E-14	5.000E-14	1.0290
HAO - High with H ₂ PO ₄ - adsorbed	5.000E-14	5.000E-14	1.0290
HAO - Low with H ₂ PO ₄ - adsorbed	5.000E-14	5.000E-14	1.0290
HAO - Aged	5.000E-14	5.000E-14	1.0290
P - Bound on aged HMO	5.000E-14	5.000E-14	1.0290
Metal soluble - Magnesium	7.200E-10	7.200E-10	1.0290
Metal soluble - Calcium	7.200E-10	7.200E-10	1.0290
Metal soluble - Ferric	4.800E-10	4.800E-10	1.0290
Metal soluble - Ferrous	4.800E-10	4.800E-10	1.0290
Metal soluble - Aluminum	4.800E-10	4.800E-10	1.0290

Other Cations (strong bases)	1.440E-9	1.440E-9	1.0290
Other Anions (strong acids)	1.440E-9	1.440E-9	1.0290
Gas - Dissolved total CO2	1.960E-9	1.960E-9	1.0290
User defined - UD1	6.900E-10	6.900E-10	1.0290
User defined - UD2	6.900E-10	6.900E-10	1.0290
User defined - UD3	5.000E-14	5.000E-14	1.0290
User defined - UD4	5.000E-14	5.000E-14	1.0290
Biomass - Sulfur oxidizing	5.000E-14	5.000E-14	1.0290
Biomass - Sulfur reducing propionic acetogenic	5.000E-14	5.000E-14	1.0290
Biomass - Sulfur reducing acetotrophic	5.000E-14	5.000E-14	1.0290
Biomass - Sulfur reducing hydrogenotrophic	5.000E-14	5.000E-14	1.0290
Gas - Dissolved total sulfides	1.530E-9	1.530E-9	1.0290
S - Soluble sulfate	2.130E-10	2.130E-10	1.0290
S - Particulate elemental sulfur	5.000E-14	5.000E-14	1.0290
Precipitate - Ferrous sulfide	5.000E-14	5.000E-14	1.0290
CODp - Adsorbed hydrocarbon	5.000E-14	5.000E-14	1.0290
CODs - Degradable volatile ind. #1	7.240E-10	7.240E-10	1.0290
CODs - Degradable volatile ind. #2	8.900E-10	8.900E-10	1.0290
CODs - Degradable volatile ind. #3	7.960E-10	7.960E-10	1.0290
CODs - Soluble hydrocarbon	7.120E-10	7.120E-10	1.0290
Gas - Dissolved oxygen	2.500E-9	2.500E-9	1.0290

EPS Strength coefficients []

Name	Default	Value	
Biomass - Ordinary heterotrophic	1.0000	1.0000	1.0000
Biomass - Methyloctrophic	1.0000	1.0000	1.0000
Biomass - Ammonia oxidizing	5.0000	5.0000	1.0000
Biomass - Nitrite oxidizing	25.0000	25.0000	1.0000
Biomass - Anaerobic ammonia oxidizing	10.0000	10.0000	1.0000
Biomass - Phosphorus accumulating	1.0000	1.0000	1.0000
Biomass - Propionic acetogenic	1.0000	1.0000	1.0000
Biomass - Acetoclastic methanogenic	1.0000	1.0000	1.0000

Biomass - Hydrogenotrophic methanogenic	1.0000	1.0000	1.0000
Biomass - Endogenous products	1.0000	1.0000	1.0000
CODp - Slowly degradable particulate	1.0000	1.0000	1.0000
CODp - Slowly degradable colloidal	1.0000	1.0000	1.0000
CODp - Degradable external organics	1.0000	1.0000	1.0000
CODp - Undegradable non-cellulose	1.0000	1.0000	1.0000
CODp - Undegradable cellulose	1.0000	1.0000	1.0000
N - Particulate degradable organic	1.0000	1.0000	1.0000
P - Particulate degradable organic	1.0000	1.0000	1.0000
N - Particulate degradable external organics	1.0000	1.0000	1.0000
P - Particulate degradable external organics	1.0000	1.0000	1.0000
N - Particulate undegradable	1.0000	1.0000	1.0000
P - Particulate undegradable	1.0000	1.0000	1.0000
CODp - Stored PHA	1.0000	1.0000	1.0000
P - Releasable stored polyP	1.0000	1.0000	1.0000
P - Unreleasable stored polyP	1.0000	1.0000	1.0000
CODs - Complex readily degradable	0	0	1.0000
CODs - Acetate	0	0	1.0000
CODs - Propionate	0	0	1.0000
CODs - Methanol	0	0	1.0000
Gas - Dissolved hydrogen	0	0	1.0000
Gas - Dissolved methane	0	0	1.0000
N - Ammonia	0	0	1.0000
N - Soluble degradable organic	0	0	1.0000
Gas - Dissolved nitrous oxide	0	0	1.0000
N - Nitrite	0	0	1.0000
N - Nitrate	0	0	1.0000
Gas - Dissolved nitrogen	0	0	1.0000
P - Soluble phosphate	0	0	1.0000
CODs - Undegradable	0	0	1.0000
N - Soluble undegradable organic	0	0	1.0000
Influent inorganic suspended solids	0.3300	0.3300	1.0000
Precipitate - Struvite	1.0000	1.0000	1.0000
Precipitate - Brushite	1.0000	1.0000	1.0000
Precipitate - Hydroxy - apatite	1.0000	1.0000	1.0000

Precipitate - Vivianite	1.0000	1.0000	1.0000
HFO - High surface	1.0000	1.0000	1.0000
HFO - Low surface	1.0000	1.0000	1.0000
HFO - High with H ₂ PO ₄ - adsorbed	1.0000	1.0000	1.0000
HFO - Low with H ₂ PO ₄ - adsorbed	1.0000	1.0000	1.0000
HFO - Aged	1.0000	1.0000	1.0000
HFO - Low with H+ adsorbed	1.0000	1.0000	1.0000
HFO - High with H+ adsorbed	1.0000	1.0000	1.0000
HAO - High surface	1.0000	1.0000	1.0000
HAO - Low surface	1.0000	1.0000	1.0000
HAO - High with H ₂ PO ₄ - adsorbed	1.0000	1.0000	1.0000
HAO - Low with H ₂ PO ₄ - adsorbed	1.0000	1.0000	1.0000
HAO - Aged	1.0000	1.0000	1.0000
P - Bound on aged HMO	1.0000	1.0000	1.0000
Metal soluble - Magnesium	0	0	1.0000
Metal soluble - Calcium	0	0	1.0000
Metal soluble - Ferric	0	0	1.0000
Metal soluble - Ferrous	0	0	1.0000
Metal soluble - Aluminum	0	0	1.0000
Other Cations (strong bases)	0	0	1.0000
Other Anions (strong acids)	0	0	1.0000
Gas - Dissolved total CO ₂	0	0	1.0000
User defined - UD1	0	0	1.0000
User defined - UD2	0	0	1.0000
User defined - UD3	1.0000	1.0000	1.0000
User defined - UD4	1.0000	1.0000	1.0000
Biomass - Sulfur oxidizing	1.0000	1.0000	1.0000
Biomass - Sulfur reducing propionic acetogenic	1.0000	1.0000	1.0000
Biomass - Sulfur reducing acetotrophic	1.0000	1.0000	1.0000
Biomass - Sulfur reducing hydrogenotrophic	1.0000	1.0000	1.0000
Gas - Dissolved total sulfides	0	0	1.0000
S - Soluble sulfate	0	0	1.0000
S - Particulate elemental sulfur	1.0000	1.0000	1.0000
Precipitate - Ferrous sulfide	1.0000	1.0000	1.0000
CODp - Adsorbed hydrocarbon	1.0000	1.0000	1.0000

CODs - Degradable volatile ind. #1	0	0	1.0000
CODs - Degradable volatile ind. #2	0	0	1.0000
CODs - Degradable volatile ind. #3	0	0	1.0000
CODs - Soluble hydrocarbon	0	0	1.0000
Gas - Dissolved oxygen	0	0	1.0000

BioWin user and configuration data

Project details

Project name: 23-087 Camp Verde Project ref.: 23-074

Plant name: Camp Verde User name: jackiek

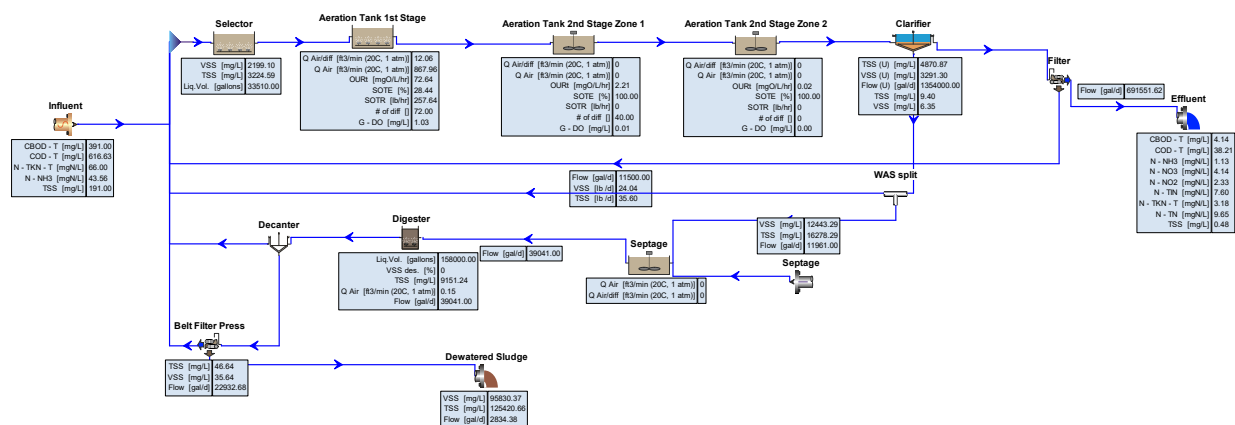
Created: 3/15/2024

Saved: 8/21/2024

SRT: **** days

Temperature: 20.0°C

Flowsheet



Configuration information for all Digester - Aerobic units

Physical data

Element name	Volume [gallons]	Area [ft2]	Depth [ft]	# of diffusers
Digester	1.580E+5	1320.0956	16.000	48

Operating data Average (flow/time weighted as required)

Element name	Average DO Setpoint [mg/L]
Digester	0.1

Aeration equipment parameters

Element name	k_1 in C = $k_1(PC)^{0.25} + k_2$	k_2 in C = $k_1(PC)^{0.25} + k_2$	Y in $Kla = C Usg$ $^Y - Usg$ in $[m^3/(m^2 d)]$	Area of one diffuser	Diffuser mounting height	Min. air flow rate per diffuser ft^3/min (20C, 1 atm)	Max. air flow rate per diffuser ft^3/min (20C, 1 atm)	'A' in diffuser pressure drop = A + $B^*(Qa/Diff)^2$ + $C^*(Qa/Diff)^2$	'B' in diffuser pressure drop = A + $B^*(Qa/Diff)^2$ + $C^*(Qa/Diff)^2$	'C' in diffuser pressure drop = A + $B^*(Qa/Diff)^2$ + $C^*(Qa/Diff)^2$
Digester	0.0500	0.3800	1.0000	0.0380	0.4572	1.1772	29.4289	0.9997	0	0

Configuration information for all Bioreactor units

Physical data

Element name	Volume [gallons]	Area [ft2]	Depth [ft]	# of diffusers
Selector	3.351E+4	279.9772	16.000	8
Aeration Tank 1st Stage	1.650E+5	1378.5808	16.000	72
Aeration Tank 2nd Stage Zone 1	8.100E+4	676.7579	16.000	40
Aeration Tank 2nd Stage Zone 2	8.100E+4	676.7579	16.000	Un-aerated
Septage	4.070E+4	340.0499	16.000	Un-aerated

Operating data Average (flow/time weighted as required)

Element name	Average DO Setpoint [mg/L]
Selector	0.1
Aeration Tank 1st Stage	1.0
Aeration Tank 2nd Stage Zone 1	1.0
Aeration Tank 2nd Stage Zone 2	0
Septage	0

Aeration equipment parameters

Element name	k_1 in C = $k_1(PC)^{0.25 + k_2}$	k_2 in C = $k_1(PC)^{0.25 + k_2}$	Y in $Kla = C Usg \wedge Y - Usg$ in $[m^3/(m^2 d)]$	Area of one diffuser	Diffuser mounting height	Min. air flow rate per diffuser (20C, 1 atm)	Max. air flow rate per diffuser (20C, 1 atm)	'A' in diffuser pressure drop = A + $B^*(Qa/Diff)^2$ + $C^*(Qa/Diff)^2$	'B' in diffuser pressure drop = A + $B^*(Qa/Diff)^2$ + $C^*(Qa/Diff)^2$	'C' in diffuser pressure drop = A + $B^*(Qa/Diff)^2$ + $C^*(Qa/Diff)^2$
Selector	0.0500	0.3800	1.0000	0.0380	0.7620	1.1772	29.4289	0.9997	0	0
Aeration Tank 1st Stage	1.2400	0.8960	0.8880	1.2500	0.4572	0.2943	30.0000	2.9999	0	0
Aeration Tank 2nd Stage Zone 1	0.0500	0.3800	1.0000	1.2500	0.4572	1.1772	29.4289	0.9997	0	0
Aeration Tank 2nd Stage Zone 2	0.0500	0.3800	1.0000	0.0380	0.4572	1.1772	29.4289	0.9997	0	0
Septage	0.0500	0.3800	1.0000	0.5382	0.2500	1.1772	40.0000	0.9997	0	0

Configuration information for all Influent - BOD units

Operating data Average (flow/time weighted as required)

Element name	Influent
Flow	668097.2225
BOD - Total Carbonaceous mgBOD/L	391.00
Volatile suspended solids mg/L	144.00
Total suspended solids mg/L	191.00
N - Total Kjeldahl Nitrogen mgN/L	66.00
P - Total P mgP/L	6.50
S - Total S mgS/L	10.00
N - Nitrate mgN/L	0
pH	7.30
Alkalinity mmol/L	6.00
Metal soluble - Calcium mg/L	80.00
Metal soluble - Magnesium mg/L	15.00
Gas - Dissolved oxygen mg/L	0

Element name	Influent
Fbs - Readily biodegradable (including Acetate) [gCOD/g of total COD]	0.1600
Fac - Acetate [gCOD/g of readily biodegradable COD]	0.1500
Fxsp - Non-colloidal slowly biodegradable [gCOD/g of slowly degradable COD]	0.3362
Fus - Unbiodegradable soluble [gCOD/g of total COD]	0.0500
Fup - Unbiodegradable particulate [gCOD/g of total COD]	0.1300
Fcel - Cellulose fraction of unbiodegradable particulate [gCOD/gCOD]	0.5000
Fna - Ammonia [gNH3-N/gTKN]	0.6600
Fnox - Particulate organic nitrogen [gN/g Organic N]	0.5000
Fnus - Soluble unbiodegradable TKN [gN/gTKN]	0.0200
FupN - N:COD ratio for unbiodegradable part. COD [gN/gCOD]	0.0700
Fpo4 - Phosphate [gPO4-P/gTP]	0.5000
FupP - P:COD ratio for unbiodegradable part. COD [gP/gCOD]	0.0220
Fsr - Reduced sulfur [H2S] [gS/gS]	0.1500
FZbh - Ordinary heterotrophic COD fraction [gCOD/g of total COD]	0.0200
FZbm - Methyilotrophic COD fraction [gCOD/g of total COD]	1.000E-4

FZao - Ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZno - Nitrite oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZaao - Anaerobic ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZppa - Phosphorus accumulating COD fraction [gCOD/g of total COD]	1.000E-4
FZpa - Propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZam - Acetoclastic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZhm - Hydrogenotrophic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZso - Sulfur oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZsrpa - Sulfur reducing propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZsra - Sulfur reducing acetotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZsrh - Sulfur reducing hydrogenotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZe - Endogenous products COD fraction [gCOD/g of total COD]	0

Configuration information for all Clarifier - Ideal units

Physical data

Element name	Volume[gallons]	Area[ft2]	Depth[ft]
Clarifier	1.149E+5	960.0000	16.000

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Clarifier	Flow paced	200.00 %

Element name	Average Temperature	Reactive	Percent removal	Blanket fraction
Clarifier	Uses global setting	No	99.90	0.50

Configuration information for all Influent - COD units

Operating data Average (flow/time weighted as required)

Element name	Septage
Flow	11961
COD - Total mgCOD/L	31900.00
N - Total Kjeldahl Nitrogen mgN/L	588.00
P - Total P mgP/L	210.00
S - Total S mgS/L	0
N - Nitrate mgN/L	0
pH	7.30
Alkalinity mmol/L	50.00
ISS Total mgISS/L	3835.00
Metal soluble - Calcium mg/L	80.00
Metal soluble - Magnesium mg/L	15.00
Gas - Dissolved oxygen mg/L	0

Element name	Septage
Fbs - Readily biodegradable (including Acetate) [gCOD/g of total COD]	0.2500
Fac - Acetate [gCOD/g of readily biodegradable COD]	2.000E-3
Fxsp - Non-colloidal slowly biodegradable [gCOD/g of slowly degradable COD]	0.8400
Fus - Unbiodegradable soluble [gCOD/g of total COD]	1.000E-3
Fup - Unbiodegradable particulate [gCOD/g of total COD]	5.000E-3
Fcel - Cellulose fraction of unbiodegradable particulate [gCOD/gCOD]	0.5000
Fna - Ammonia [gNH3-N/gTKN]	0.1650
Fnox - Particulate organic nitrogen [gN/g Organic N]	0.5000
Fnus - Soluble unbiodegradable TKN [gN/gTKN]	0.0200
FupN - N:COD ratio for unbiodegradable part. COD [gN/gCOD]	0.0700
Fpo4 - Phosphate [gPO4-P/gTP]	0.4290
FupP - P:COD ratio for unbiodegradable part. COD [gP/gCOD]	0.0220

Fsr - Reduced sulfur [H2S] [gS/gS]	0
FZbh - Ordinary heterotrophic COD fraction [gCOD/g of total COD]	0.0200
FZbm - Methylophilic COD fraction [gCOD/g of total COD]	1.000E-4
FZao - Ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZno - Nitrite oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZaao - Anaerobic ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZppa - Phosphorus accumulating COD fraction [gCOD/g of total COD]	1.000E-4
FZpa - Propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZam - Acetoclastic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZhm - Hydrogenotrophic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZso - Sulfur oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZsrpa - Sulfur reducing propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZsra - Sulfur reducing acetotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZsrh - Sulfur reducing hydrogenotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZe - Endogenous products COD fraction [gCOD/g of total COD]	0

Configuration information for all Separator - Dewatering unit units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Belt Filter Press	Fraction	0.11
Filter	Flow paced	2.50 %

Element name	Percent removal
Belt Filter Press	99.70
Filter	95.00

Configuration information for all Clarifier - Point (volumeless) units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Decanter	Fraction	0.66

Element name	Percent removal
Decanter	99.80

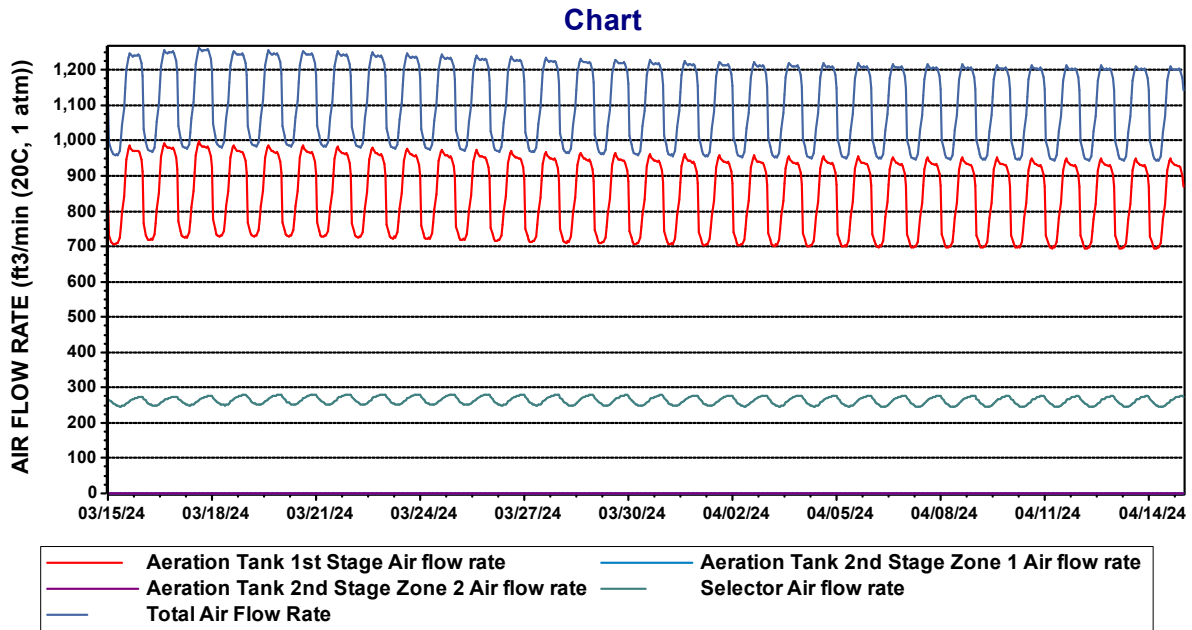
Configuration information for all Splitter units

Operating data Average (flow/time weighted as required)

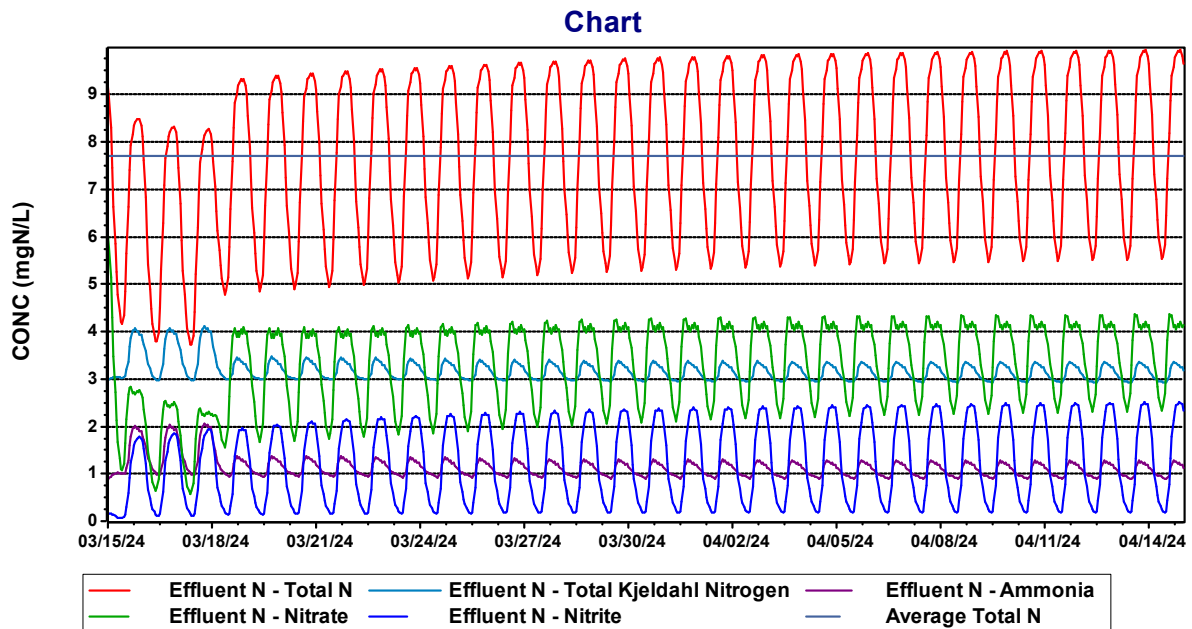
Element name	Split method	Average Split specification
WAS split	Flow paced	4.00 %

BioWin Album

Album page - Airflow Rate



Album page - Effluent N concentrations



BioWin user and configuration data

Project details

Project name: 23-087 Camp Verde Project ref.: 23-074

Plant name: Camp Verde User name: jackiek

Created: 3/15/2024

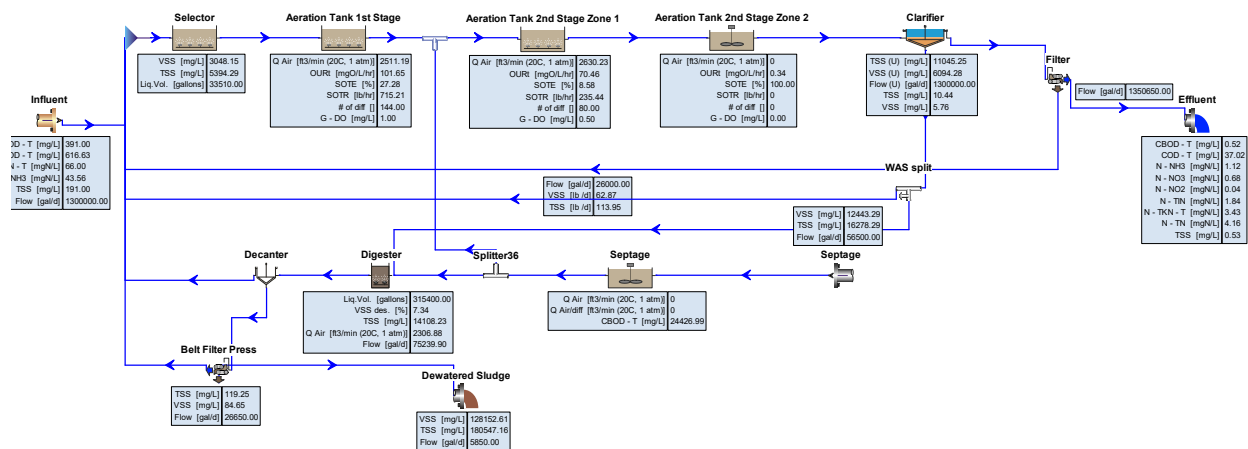
Saved: 8/21/2024

Steady state solution

Target SRT: 3.50 days SRT #0: 3.50 days

Temperature: 20.0°C

Flowsheet



Configuration information for all Digester - Aerobic units

Physical data

Element name	Volume [gallons]	Area [ft2]	Depth [ft]	# of diffusers
Digester	3.154E+5	2635.1781	16.000	96

Operating data Average (flow/time weighted as required)

Element name	Average DO Setpoint [mg/L]
Digester	0.1

Aeration equipment parameters

Element name	k1 in C = k1(PC)^ 0.25 + k2	k2 in C = k1(PC)^ 0.25 + k2	Y in Kla = C Usg ^ Y - Usg in [m3/(m2 d)]	Area of one diffuser	Diffuser mountin g height	Min. air flow rate per diffuser ft3/min (20C, 1 atm)	Max. air flow rate per diffuser ft3/min (20C, 1 atm)	'A' in diffuser pressure drop = A + B*(Qa/Di ff) + C*(Qa/Di ff)^2	'B' in diffuser pressure drop = A + B*(Qa/Di ff) + C*(Qa/Di ff)^2	'C' in diffuser pressure drop = A + B*(Qa/Di ff) + C*(Qa/Di ff)^2
Digester	0.0500	0.3800	1.0000	0.0380	0.4572	1.1772	29.4289	0.9997	0	0

Configuration information for all Bioreactor units

Physical data

Element name	Volume [gallons]	Area [ft2]	Depth [ft]	# of diffusers
Selector	3.351E+4	279.9772	16.000	8
Aeration Tank 1st Stage	3.299E+5	2756.3261	16.000	144
Aeration Tank 2nd Stage Zone 1	1.620E+5	1353.5157	16.000	80
Aeration Tank 2nd Stage Zone 2	1.620E+5	1353.5157	16.000	Un-aerated

Septage	4.069E+4	339.9664	16.000	Un-aerated
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Operating data Average (flow/time weighted as required)

Element name	Average DO Setpoint [mg/L]
Selector	0.1
Aeration Tank 1st Stage	1.0
Aeration Tank 2nd Stage Zone 1	0.5
Aeration Tank 2nd Stage Zone 2	0
Septage	0

Aeration equipment parameters

Element name	k1 in C = k1(PC)^ 0.25 + k2	k2 in C = k1(PC)^ 0.25 + k2	Y in Kla = C Usg ^ Y - Usg in [m3/(m2 d)]	Area of one diffuser	Diffuser mountin g height	Min. air flow rate per diffuser ft3/min (20C, 1 atm)	Max. air flow rate per diffuser ft3/min (20C, 1 atm)	'A' in diffuser pressure drop = A + B*(Qa/Di ff) + C*(Qa/Di ff)^2	'B' in diffuser pressure drop = A + B*(Qa/Di ff) + C*(Qa/Di ff)^2	'C' in diffuser pressure drop = A + B*(Qa/Di ff) + C*(Qa/Di ff)^2
Selector	0.0500	0.3800	1.0000	0.0380	0.7620	1.1772	29.4289	0.9997	0	0
Aeration Tank 1st Stage	1.2400	0.8960	0.8880	1.2500	0.4572	0.2943	30.0000	2.9999	0	0
Aeration Tank 2nd Stage Zone 1	0.0500	0.3800	1.0000	1.2500	0.4572	1.1772	29.4289	0.9997	0	0
Aeration Tank 2nd Stage Zone 2	0.0500	0.3800	1.0000	0.0380	0.4572	1.1772	29.4289	0.9997	0	0
Septage	0.0500	0.3800	1.0000	0.5382	0.2500	1.1772	40.0000	0.9997	0	0

Configuration information for all Influent - BOD units

Operating data Average (flow/time weighted as required)

Element name	Influent
Flow	1300000
BOD - Total Carbonaceous mgBOD/L	391.00
Volatile suspended solids mg/L	144.00
Total suspended solids mg/L	191.00
N - Total Kjeldahl Nitrogen mgN/L	66.00
P - Total P mgP/L	6.50
S - Total S mgS/L	10.00
N - Nitrate mgN/L	0
pH	7.30
Alkalinity mmol/L	6.00
Metal soluble - Calcium mg/L	80.00
Metal soluble - Magnesium mg/L	15.00
Gas - Dissolved oxygen mg/L	0

Element name	Influent
Fbs - Readily biodegradable (including Acetate) [gCOD/g of total COD]	0.1600
Fac - Acetate [gCOD/g of readily biodegradable COD]	0.1500
Fxsp - Non-colloidal slowly biodegradable [gCOD/g of slowly degradable COD]	0.3362
Fus - Unbiodegradable soluble [gCOD/g of total COD]	0.0500
Fup - Unbiodegradable particulate [gCOD/g of total COD]	0.1300
Fcel - Cellulose fraction of unbiodegradable particulate [gCOD/gCOD]	0.5000
Fna - Ammonia [gNH3-N/gTKN]	0.6600
Fnox - Particulate organic nitrogen [gN/g Organic N]	0.5000
Fnus - Soluble unbiodegradable TKN [gN/gTKN]	0.0200
FupN - N:COD ratio for unbiodegradable part. COD [gN/gCOD]	0.0700
Fpo4 - Phosphate [gPO4-P/gTP]	0.5000
FupP - P:COD ratio for unbiodegradable part. COD [gP/gCOD]	0.0220

Fsr - Reduced sulfur [H2S] [gS/gS]	0.1500
FZbh - Ordinary heterotrophic COD fraction [gCOD/g of total COD]	0.0200
FZbm - Methylophilic COD fraction [gCOD/g of total COD]	1.000E-4
FZao - Ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZno - Nitrite oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZaao - Anaerobic ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZppa - Phosphorus accumulating COD fraction [gCOD/g of total COD]	1.000E-4
FZpa - Propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZam - Acetoclastic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZhm - Hydrogenotrophic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZso - Sulfur oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZsrpa - Sulfur reducing propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZsra - Sulfur reducing acetotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZsrh - Sulfur reducing hydrogenotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZe - Endogenous products COD fraction [gCOD/g of total COD]	0

Configuration information for all Clarifier - Ideal units

Physical data

Element name	Volume[gallons]	Area[ft2]	Depth[ft]
Clarifier	2.298E+5	1919.9871	16.000

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Clarifier	Flow paced	100.00 %

Element name	Average Temperature	Reactive	Percent removal	Blanket fraction
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Clarifier	Uses global setting	No	99.90	0.50
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Configuration information for all Influent - COD units

Operating data Average (flow/time weighted as required)

Element name	Septage
Flow	56500
COD - Total mgCOD/L	31900.00
N - Total Kjeldahl Nitrogen mgN/L	588.00
P - Total P mgP/L	210.00
S - Total S mgS/L	0
N - Nitrate mgN/L	0
pH	7.30
Alkalinity mmol/L	50.00
ISS Total mgISS/L	3835.00
Metal soluble - Calcium mg/L	80.00
Metal soluble - Magnesium mg/L	15.00
Gas - Dissolved oxygen mg/L	0

Element name	Septage
Fbs - Readily biodegradable (including Acetate) [gCOD/g of total COD]	0.2500
Fac - Acetate [gCOD/g of readily biodegradable COD]	2.000E-3
Fxsp - Non-colloidal slowly biodegradable [gCOD/g of slowly degradable COD]	0.8400
Fus - Unbiodegradable soluble [gCOD/g of total COD]	1.000E-3
Fup - Unbiodegradable particulate [gCOD/g of total COD]	5.000E-3
Fcel - Cellulose fraction of unbiodegradable particulate [gCOD/gCOD]	0.5000
Fna - Ammonia [gNH3-N/gTKN]	0.1650
Fnox - Particulate organic nitrogen [gN/g Organic N]	0.5000
Fnus - Soluble unbiodegradable TKN [gN/gTKN]	0.0200
FupN - N:COD ratio for unbiodegradable part. COD [gN/gCOD]	0.0700

Fpo4 - Phosphate [gPO4-P/gTP]	0.4290
FupP - P:COD ratio for unbiodegradable part. COD [gP/gCOD]	0.0220
Fsr - Reduced sulfur [H2S] [gS/gS]	0
FZbh - Ordinary heterotrophic COD fraction [gCOD/g of total COD]	0.0200
FZbm - Methylophobic COD fraction [gCOD/g of total COD]	1.000E-4
FZao - Ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZno - Nitrite oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZaao - Anaerobic ammonia oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZppa - Phosphorus accumulating COD fraction [gCOD/g of total COD]	1.000E-4
FZpa - Propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZam - Acetoclastic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZhm - Hydrogenotrophic methanogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZso - Sulfur oxidizing COD fraction [gCOD/g of total COD]	1.000E-4
FZsrpa - Sulfur reducing propionic acetogenic COD fraction [gCOD/g of total COD]	1.000E-4
FZsra - Sulfur reducing acetotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZsrh - Sulfur reducing hydrogenotrophic COD fraction [gCOD/g of total COD]	1.000E-4
FZe - Endogenous products COD fraction [gCOD/g of total COD]	0

Configuration information for all Separator - Dewatering unit units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Belt Filter Press	Fraction	0.18
Filter	Flow paced	2.00 %

Element name	Percent removal
Belt Filter Press	99.70
Filter	95.00

Configuration information for all Clarifier - Point (volumeless) units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
Decanter	Flow paced	2.50 %

Element name	Percent removal
Decanter	99.80

Configuration information for all Splitter units

Operating data Average (flow/time weighted as required)

Element name	Split method	Average Split specification
WAS split	Flowrate [Side]	30039.9019958183
Splitter36	Flow paced	20.00 %

Wastewater System Master Plan

Appendix L Water Balance

EFFLUENT WATER BALANCE

Current, mg/mo	8.62	1.364	Future Ratio				
Future, mg/mo	11.8	0.39	Maximum Effluent, mgd				
Evaporation Ponds - Future							
Month-Year	Effluent (+), mg	Precipitation (+), mg	Irrigation (-), mg	Evaporation (-), mg	Infiltration (-),mg	Net Volume, mg	Cumulative Volume, mg
Apr-22	10.18	0.00	1.35	3.05	6.42	0.00	0.00
May-22	10.43	0.00	2.21	3.78	6.64	0.00	0
Jun-22	10.42	0.19	3.21	4.76	6.42	0.00	0
Jul-22	9.37	0.49	4.53	5.16	6.64	0.00	0
Aug-22	10.30	0.66	3.58	4.65	6.64	0.00	0
Sep-22	10.57	0.47	2.66	4.24	6.42	0.00	0
Oct-22	10.48	0.48	3.39	2.87	6.64	0.00	0
Nov-22	10.37	0.07	1.22	1.79	6.42	1.00	1
Dec-22	10.90	0.51	0.67	1.50	6.64	2.60	4
Jan-23	10.21	0.77	0.12	1.32	6.64	2.91	7
Feb-23	9.38	0.34	0.02	1.59	5.99	2.12	9
Mar-23	12.74	0.78	0.27	1.85	6.64	4.76	13
Apr-23	12.98	0.00	0.77	2.90	6.42	2.89	16
May-23	11.10	0.36	2.79	3.48	6.64	0.00	15
Jun-23	10.68	0.00	2.92	4.11	6.42	0.00	12
Jul-23	11.77	0.22	4.78	5.56	6.64	0.00	7
Aug-23	12.99	0.84	1.63	4.82	6.64	0.74	8
Sep-23	12.57	0.41	0.89	3.98	6.42	1.69	10
Oct-23	12.03	0.01	2.15	3.23	6.64	0.01	10
Nov-23	11.88	0.14	0.84	2.26	6.42	2.50	12
Dec-23	12.46	0.12	0.21	1.71	6.64	4.03	16
Jan-24	10.92	0.12	0.12	1.48	6.64	2.80	19
Feb-24	11.12	0.60	0.11	1.92	5.99	3.70	23
Mar-24	10.54	0.62	0.12	1.97	6.64	2.45	25

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**MEETING DATE:** August 6, 2025**AGENDA ITEM TYPE:**

- | | | |
|---|--|--|
| ☐ Consent Agenda | ☒ Informational Presentation | ☐ Discussion Item |
| ☐ Action/Decision Item | ☐ Executive Session Request | ☐ Other: |

REQUESTING DEPARTMENT: Public Works**STAFF RESOURCE:** Martin Smith, CIP Project Manager**AGENDA TITLE:** Presentation on the Status of the Sports Complex Phase 1 Improvement Projects.**ATTACHED DOCUMENTS:**

- Presentation slides

ESTIMATED PRESENTATION TIME: 15 minutes **ESTIMATED DISCUSSION TIME:** 15 minutes**REVIEWED BY:**

- | | | | | |
|--|---|--|----------------------------------|---------------------------------|
| ☒ Town Manager | ☒ Legal | ☐ Risk Management | ☐ Finance | ☐ Other: |
|--|---|--|----------------------------------|---------------------------------|

FINANCIAL REVIEW (if applicable):

- Funding Source / GL Account Number: CIP
- Approved in the FY25 Budget? ☒ Yes ☐ No ☐ N/A ☐ Other:
- Is this an approved CIP Project? ☒ Yes ☐ No ☐ N/A ☐ Other:

BACKGROUND INFORMATION:

Staff continues to advance the completion of Phase 1 of the Sports Complex. While the park is currently open to the public and available for use, several infrastructure elements and amenities remain under construction or unfinished.

This presentation will provide Council with an overview of recent progress, current activities, and upcoming milestones related to the project. The update will highlight work completed to date, identify remaining components of Phase 1, and outline the timeline and next steps for bringing the project to full completion.

The goal is to ensure Council remains informed on the development status and is aware of what to expect in the near term as the complex moves toward full operational readiness.

CONNECTION TO THE FY25-FY30 STRATEGIC PLAN

This project complies with the Community Infrastructure section described in the Strategic Plan.

QUESTION(S) BEFORE THE COUNCIL:

- Does Council have any questions for staff?

Camp Verde Sports Complex Site Improvements

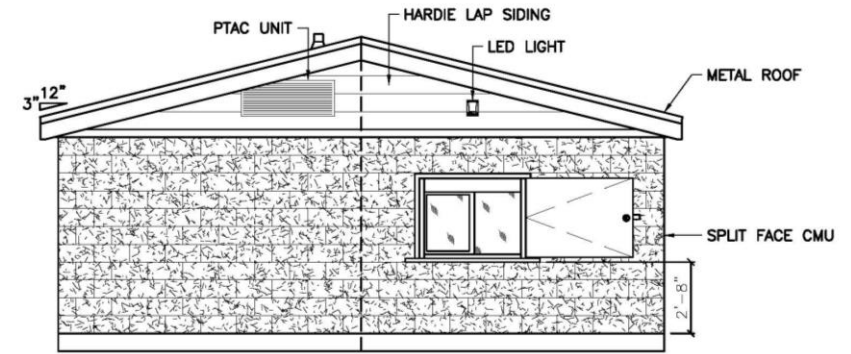
Town Council Update
July 16, 2025



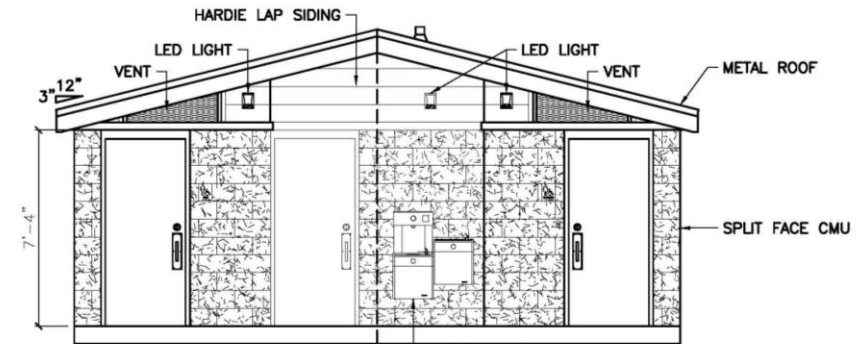
Concession Stand / Restroom Building

Past Activities:

- July 2023 – Bid of Westervelt design
- March 2024 – Direction to proceed with alternative design
- April 2024 – Approval of floor plan
- July 2024 – Award of contract to CorWorth Restroom Facilities
- October 2024 – Selection of building colors
- April 2025 – ADOH approval of building plans

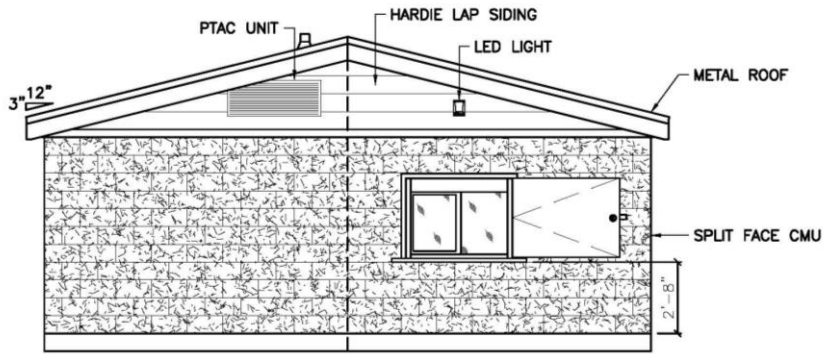


② REAR ELEVATION
Scale: 1/4" = 1'-0"

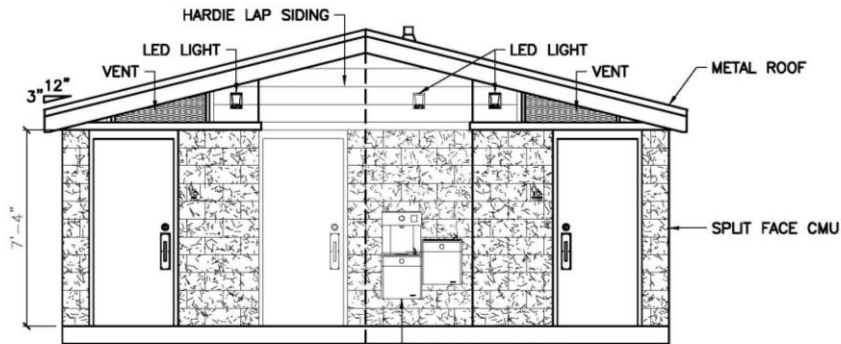


① FRONT ELEVATION
Scale: 1/4" = 1'-0"

Concession Stand / Restroom Building



② REAR ELEVATION
Scale: 1/4" = 1'-0"



08-06-2025 Regular Session Meeting
① FRONT ELEVATION
Scale: 1/4" = 1'-0"

Current Activities:

- Electric service being installed
- Geotechnical report completed
- Foundation in design
- Construction of foundation
- Delivery / Installation of building

A wide, flat green field under a cloudy sky with hills in the background. The field is a vibrant green, and the sky is filled with large, grey clouds. In the distance, there are several hills or mountains with a rocky, greyish-brown appearance. A few small buildings and a white truck are visible on the left side of the field.

Promenade, Walkway, and Parking Lot

Promenade & Walkway

- Previous Council action
- To be completed after Concession / Restroom Building installation
- Install pvc sleeves for future electric or irrigation needs
- Installation of flagpole
- Installation of lighting



Parking Lot



- Previous Council action
- Installation of lighting
- Installation of ADA parking
- Installation of concrete curb
- Installation of chip seal
- Parking space striping



Lift Station & Force Main Improvements

Lift Station & Force Main



Past Activities:

- July 2024 – Award of bids for materials purchases
- August 2024 – Award of bid for wet well purchase
- October 2024 – Award of bid for pumps purchase
- March 2025 – Award of bid for revised materials purchase
- May 2025 – Award of bid for electric service to lift station

Lift Station & Force Main

Current Activities:

- Currently under construction.
- Force main construction is complete.
- Lift station installation in progress.



A photograph of a golf course at sunset. In the foreground, several large, circular irrigation heads are spraying water in wide arcs across a green lawn. In the background, a range of blue mountains is visible under a sky with soft, colorful clouds. A tall, slender light pole with multiple lamps at the top stands on the right side of the frame.

Irrigation Improvements

Irrigation Improvements

Past Activities:

- July 2024 – Award of bids for materials purchases
- March 2025 – Award of bids for materials, pumps, and pump building
- June 2025 – Award of bid for pump building slab construction



Irrigation Improvements

Current Activities:

- Pump building slab pending construction
- Pump building arrival / installation mid-August
- Final irrigation improvements plans completed
- Grading of retention pond / install pond liner
- Install underground piping
- Install retaining wall





Electrical Improvements

Electrical Improvements

Past Activities:

- March 2025 – Award of bid for concession stand electrical service
- May 2025 – Award of bids for lift station and irrigation pump electrical services



Electrical Improvements



Current Activities:

- Irrigation pump electric service under construction
- Lift Station electrical service under construction
- Concession Stand electrical service under construction.
- Perimeter 50-amp outlets pending

A wide-angle photograph of a desert landscape during sunset. The sun is low on the horizon, casting a warm orange glow across the sky and the desert floor. Several saguaro cacti are visible, with one large, multi-armed cactus in the foreground on the right. The background shows rolling hills and mountains under a sky filled with wispy clouds.

Landscaping Improvements

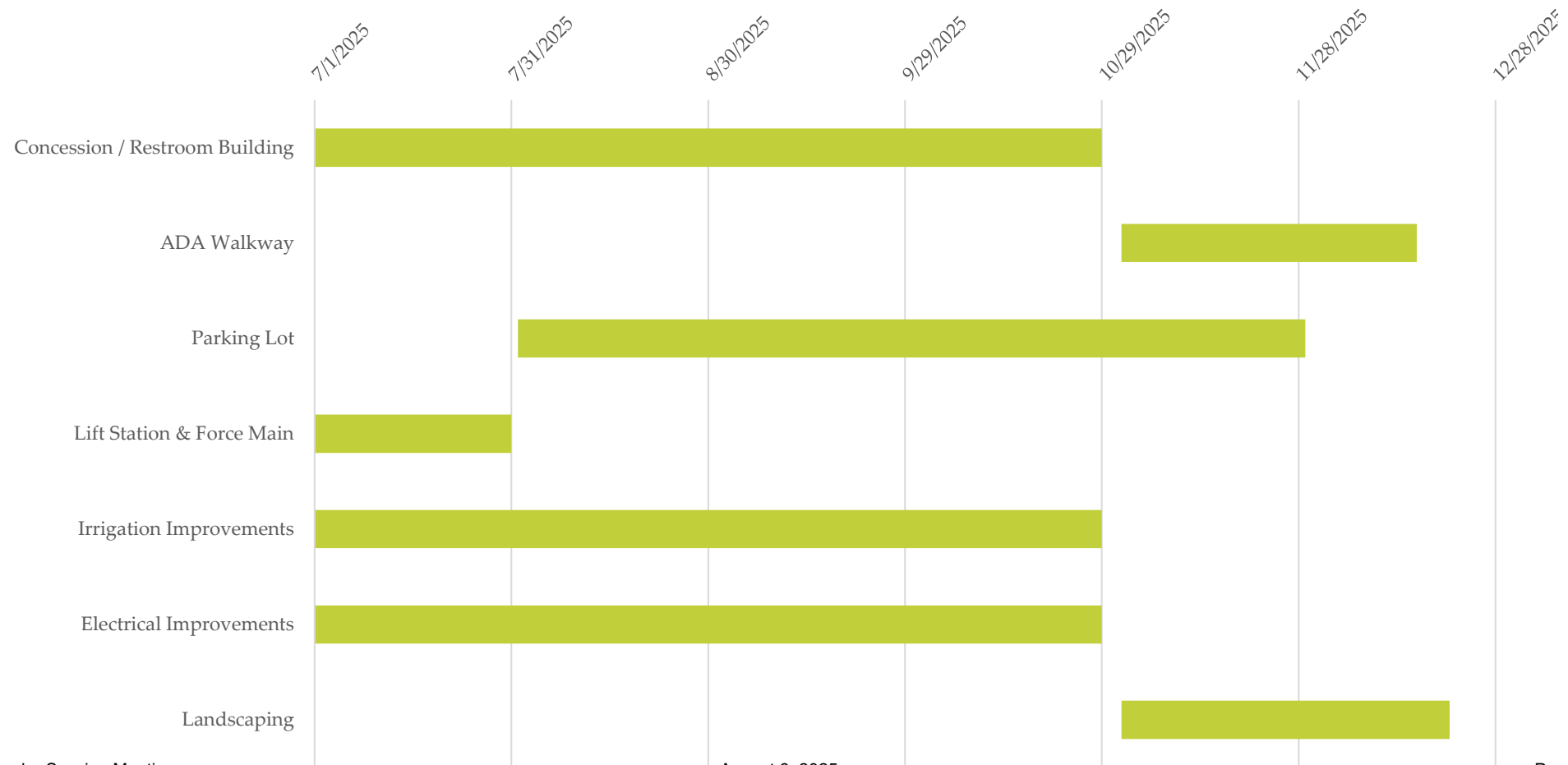
Landscape Improvements

Current Activities:

- Plant shade trees throughout park
- \$10,000 APS tree grant / \$4,350 donated from Hauser Farms
- To be completed after main irrigation improvements are complete
- Will require irrigation lines run to each tree location
- Landscaping between walkway and baseball fields
- Possible landscaping of curb islands in parking lot



Construction Schedule





Remaining Budget

- AZ State Parks Grant: \$1,210,160
- Possible remaining expenses: \$2,439,995
- Probable Town Match shortage: \$19,674
- Grant completely consumed



No.	Description	Individual Cost	Project Cost	Notes
1	Concession Stand Electric	\$ 89,185.03		Under construction
2	Concession Stand Foundation	\$ 65,000.00	\$ 158,685.03	Needs bid and constructed
3	Concession Stand Foundation Design	\$ 4,500.00		In design with SEC
4	ADA Walkway Concrete	\$ 400,000.00	\$ 627,450.00	Pending installation of concession stand - needs bid
5	ADA Parking Area	\$ 90,000.00		Curb & gutter, sidewalk, concrete slab, striping
6	ADA Walkway Landscaping	\$ 40,000.00		Somebody needs to make a decision what this looks like
7	ADA Walkway Lighting	\$ 94,950.00		May incur additional cost due to Community Development
8	Flag Pole	\$ 2,500.00		Donated by APS - will have installation costs
9	Parking lot curb & gutter	\$ 65,000.00	\$ 430,470.00	Necessary for drainage / Protect light poles
10	Parking lot chip seal	\$ 125,000.00		Necessary for stabilized parking surface
11	Parking lot striping	\$ 15,000.00		Necessary to delineate parking spaces
12	Parking lot lighting	\$ 216,970.00		May incur additional cost due to Community Development
13	Parking lot landscaping	\$ 8,500.00		Inside curb islands / Somebody needs to make a decision what this looks like
14	Lift Station / Force Main Construction	\$ 341,570.00	\$ 399,953.77	Will overrun due to extra parts needed
15	Lift Station Electric	\$ 41,234.00		Under construction
16	Lift Station fencing	\$ 3,609.77		Waiting for completion of lift station
17	Wet well coating	\$ 13,540.00		Waiting for completion of lift station
18	Irrigation Electric	\$ 69,662.00	\$ 543,436.73	Under construction
19	Irrigation Pump Building	\$ 42,399.00		Scheduled to be delivered and installed mid-August
20	Irrigation Pump Building Slab	\$ 52,000.00		Bid awarded to Ligon Excavation / pending construction
21	Irrigation Pond Grading	\$ 250,000.00		Waiting on plans from Town Engineer
22	Irrigation Pond Liner	\$ 50,000.00		Will need new quotes, council approval, ordered and installed
23	Irrigation Piping Materials	\$ 79,375.73		Likely to overrun if town supplies materials
24	Irrigation To Proposed Trees	\$ 50,000.00	\$ 50,000.00	Pending irrigation system improvements / needs bid
25	Shade Trees	\$ -		\$10,000 from APS, \$4,350 from Hauser Farms - May have incidental material/installation costs
26	Perimeter Electrical Outlets	\$ 150,000.00	\$ 150,000.00	Needs bid and constructed
27	Drainage improvements	\$ 45,000.00	\$ 65,000.00	Necessary to mitigate ongoing drainage challenges
28	Erosion Control for ditches	\$ 10,000.00		Necessary to mitigate ongoing drainage challenges
29	Erosion control for slopes	\$ 10,000.00		Necessary to mitigate ongoing drainage challenges
30	Archeological Monitoring	\$ 15,000.00	\$ 15,000.00	Required for any excavation payable through the grant

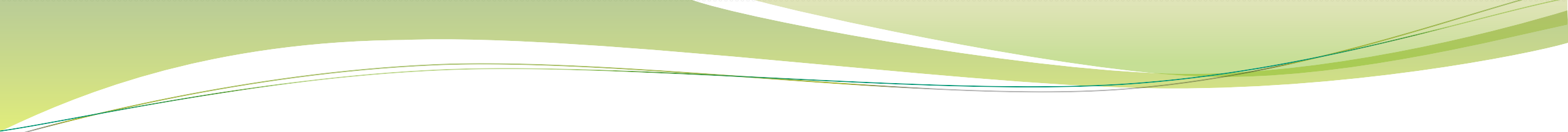
TOTAL: \$ 2,439,995.53

08-06-2025 Regular Session Meeting Grant Funding Currently Remaining: \$ 1,210,160.80

August 6, 2025

Page 364 of 1026

Funding Shortage: \$ (19,673.93)



Questions?

Contact: Martin Smith

CIP Project Manager

(928) 554-0822

martin.smith@campverde.az.gov

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TOWN COUNCIL AGENDA INFORMATION MEMORANDUM

MEETING DATE: August 6, 2025

AGENDA ITEM TYPE:

- | | | |
|---|--|--|
| ☐ Consent Agenda | ☒ Informational Presentation | ☐ Discussion Item |
| ☐ Action/Decision Item | ☐ Executive Session Request | ☐ Other: |

REQUESTING DEPARTMENT: Public Works

STAFF RESOURCE: Public Works Director Ken Krebbs

AGENDA TITLE: Proclamation declaring the month of August 2025 as National Emergency Management Awareness Month.

ATTACHED DOCUMENTS:

- Proclamation

ESTIMATED PRESENTATION TIME: 5 minutes

ESTIMATED DISCUSSION TIME: 5 minutes

REVIEWED BY:

- | | | | | |
|--|---|--|----------------------------------|---------------------------------|
| ☒ Town Manager | ☒ Legal | ☐ Risk Management | ☐ Finance | ☐ Other: |
|--|---|--|----------------------------------|---------------------------------|

FINANCIAL REVIEW (if applicable):

- Funding Source / GL Account Number: N/A
- Approved in the FY25 Budget? ☐ Yes ☐ No ☒ N/A ☐ Other:
- Is this an approved CIP Project? ☐ Yes ☐ No ☒ N/A ☐ Other:

BACKGROUND INFORMATION:

National Emergency Management Awareness Month, observed each August, highlights the critical role emergency managers play in preparing for, responding to, and recovering from disasters. With the support of national organizations such as the International Association of Emergency Managers (IAEM), the National Emergency Management Association (NEMA), and Big City Emergency Managers (BCEM), this awareness month encourages communities across the country to acknowledge and appreciate the dedication and expertise of emergency management professionals.

In Camp Verde, we recognize the efforts of emergency personnel and support staff who play a vital role in maintaining public safety and ensuring community resilience. This proclamation serves not only to thank them for their service but also to encourage residents to take proactive steps in personal and family preparedness.

QUESTION(S) BEFORE THE COUNCIL:

- Does Council have any questions for Staff?



Town of Camp Verde Proclamation

WHEREAS, emergencies and disasters can occur unexpectedly, posing significant threats to life, property, and the environment; and

WHEREAS, local emergency managers, emergency managers across all sectors, community leaders, State governments, and the Federal Emergency Management Agency (FEMA) dedicate countless hours to developing preparedness, response, recovery, and mitigation programs to protect the lives and property of all persons living in the United States and U.S. territories; and

WHEREAS, emergency managers across the United States and U.S. territories are charged with establishing and maintaining the capabilities necessary to effectively direct, coordinate, and support emergency and disaster response and recovery efforts; and

WHEREAS, the mission areas of prevention, protection, mitigation, response, and recovery align with the core capabilities identified in the National Preparedness Goal; and

WHEREAS, the emergency managers serve the nation by responding to countless emergencies and disasters each year, demonstrating commitment, compassion, and professionalism in protecting the public; and

WHEREAS, the efforts of our nation's emergency managers have helped millions of community members across the United States recover, rebuild, and become more resilient in the face of adversity:

NOW, THEREFORE, I, Marie Moore, Mayor of the Town of Camp Verde, on the behalf of the Town Council and the residents of Camp Verde, do hereby designate the month of August 2025 as

"National Emergency Management Awareness Month"

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Seal of the Town of Camp Verde on this 6th day of August 2025.

Marie Moore, Mayor

Attest:

Leah Rhodes, Town Clerk



Town Council

Agenda Information Memorandum

Meeting Date: August 6, 2025

Agenda Item Type:

- | | | |
|---|--|--|
| ☐ Consent Agenda | ☒ Informational Presentation | ☐ Discussion Item |
| ☐ Action/Decision Item | ☐ Executive Session Request | ☐ Other: |

Requesting Department: Community Development

Staff Resource: Town Manager Miranda Fisher

Agenda Title: Presentation of General Plan Draft Elements: Circulation & Transportation

Attached Documents: Draft element chapters: Circulation & Transportation

Estimated Presentation Time: 5 minutes

Estimated Discussion Time: 10 minutes

Reviewed By:

- | | | | | |
|--|---|--|----------------------------------|---------------------------------|
| ☒ Town Manager | ☒ Legal | ☐ Risk Management | ☐ Finance | ☐ Other: |
|--|---|--|----------------------------------|---------------------------------|

Financial Review (if applicable): N/A

- Funding Source / GL Account Number:
- Approved in the FY25 Budget? ☐ Yes ☐ No ☐ N/A ☐ Other:
- Is this an approved CIP Project? ☐ Yes ☐ No ☐ N/A ☐ Other:

Background Information:

The Technical Advisory Committee for the General Plan has been working on drafting the element chapters. These chapters represent the core policy areas required by Arizona Revised Statutes, along with supplemental elements that reflect the Town's vision, values, and community priorities. As drafts are finalized, Town staff will make them publicly available and present them to the Commissions and Council for initial review and input.

The Circulation & Transportation element was presented to the Parks & Recreation Commission on July 7th and to the Planning & Zoning Commission on July 24th. The draft chapter is also available on the Town's website and has been shared through the Town's social media channels to encourage public review and feedback. [General Plan | Town of Camp Verde, AZ](#)

We encourage the Council to share these chapters with friends, family, and members of the community to help broaden public input. Comments may be submitted to GeneralPlan@campverde.az.gov.

Connection to the [FY25-FY30 Strategic Plan](#)

The General Plan element chapters serve as a policy framework for guiding key priorities identified in the Strategic Plan.

Question(s) before the Council:

- Does the Council have any initial questions, comments or feedback on the Circulation and Transportation chapter?

Section ## TRANSPORTATION & CIRCULATION ELEMENT

Section ## Introduction:

Transportation and circulation in the Town of Camp Verde are critical components of the community's overall functionality, quality of life, and long-term economic vitality. Strategically located at the intersection of Interstate 17 and State Route 260, Camp Verde serves as a regional hub for both residents and visitors traveling through central Arizona. This positioning offers significant advantages for commerce, tourism, and regional access, while also placing increasing demands on the Town's transportation infrastructure.

The Town's circulation system must accommodate a diverse range of users, including local commuters, commerce traffic, tourists, bicyclists, Yavapai-Apache Nation transit riders, and pedestrians, all within a context that balances rural character with the pressures of economic development. Camp Verde's continued growth, combined with the increasing volume of regional pass-through traffic, necessitates a coordinated and forward-thinking approach to transportation planning.

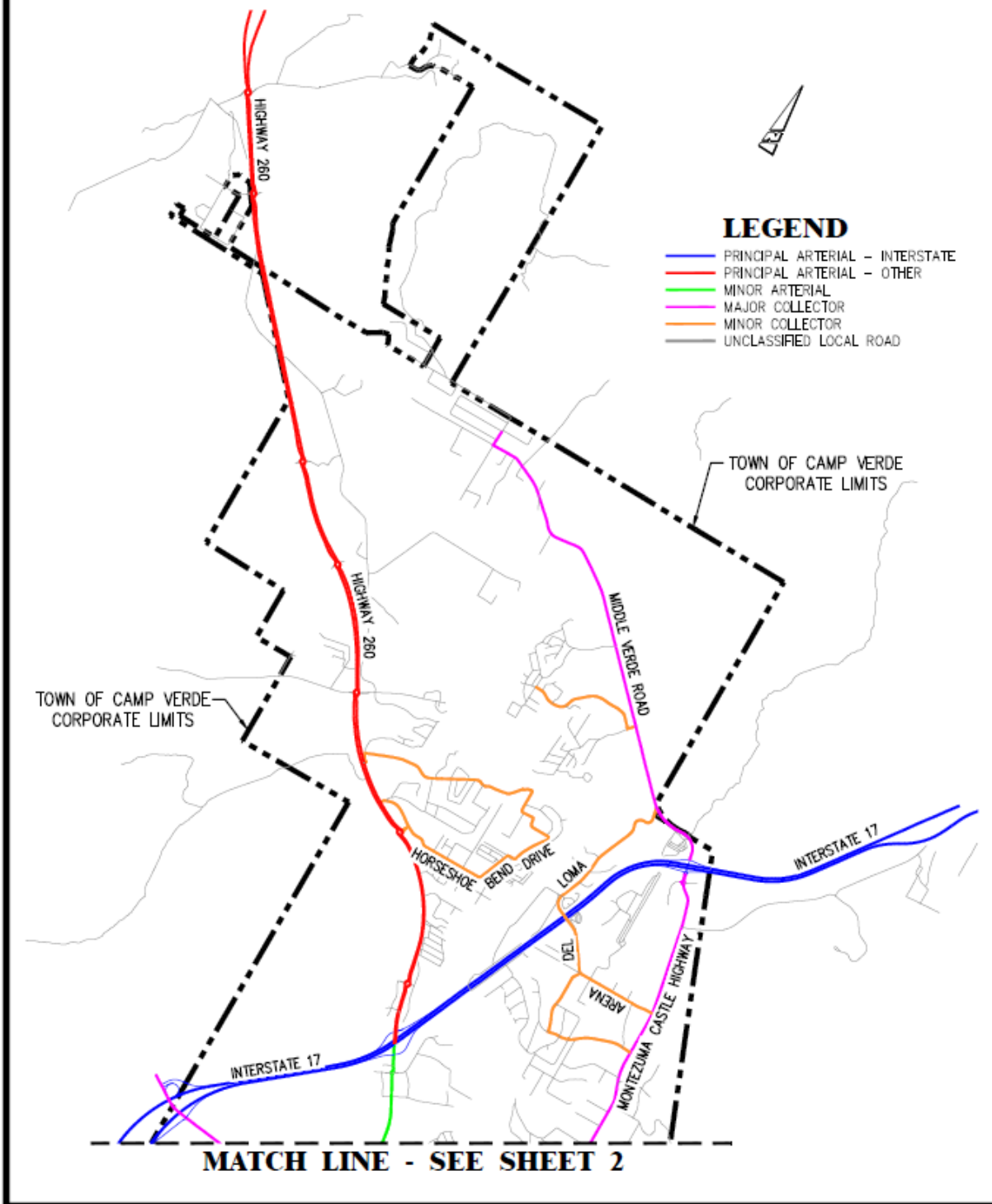
This element chapter presents a comprehensive overview of the Town's transportation infrastructure, patterns of use, planned improvements, and strategic goals for the future.

Section ## Guiding Principles:

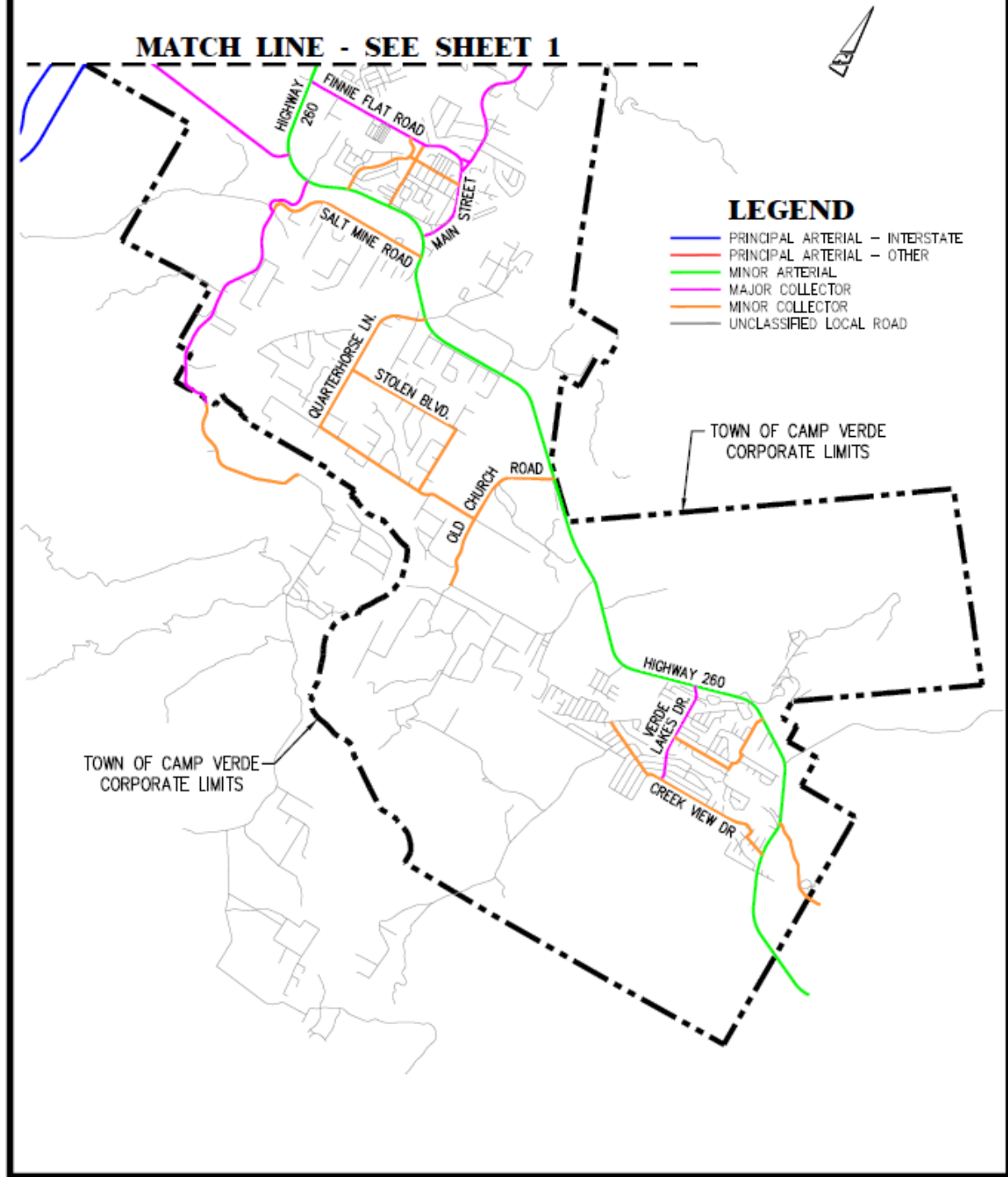
The Town of Camp Verde's approach to transportation is guided by core principles that prioritize safety, accessibility, efficiency and supports the General Plan. These principles reflect the community's values and serve as the foundation for transportation planning, project prioritization, and long-range visioning:

- **Connective:** Foster a transportation network that connects neighborhoods, commercial centers, schools, parks, and regional destinations efficiently and intuitively.
- **Safe:** Ensure all users, including but not limited to motorists, pedestrians, and bicyclists, can move through the community safely.
- **Accessible:** Expand transportation access to underserved populations, including low-income residents, seniors, and people with disabilities.
- **Maintained:** Protect and maintain existing infrastructure through timely maintenance and strategic capital improvements.
- **Resilient:** Invest in transportation systems that can withstand environmental stressors and adapt to future growth.
- **Collaborative:** Strengthen partnerships with regional agencies, the Yavapai-Apache Nation, and the private sector to leverage funding and expertise.

TOWN OF CAMP VERDE ROADWAY CLASSIFICATION MAP



TOWN OF CAMP VERDE ROADWAY CLASSIFICATION MAP



Section #.# Discussion:

A. Historical Context

Camp Verde's transportation development is deeply rooted in its history. The Town was originally established as a military fort in the 1860s to secure settlement in the Verde Valley, and over time, civilian settlers created a community grounded in agriculture, ranching, and trade. The indigenous peoples who preceded early settlers engaged in agriculture, trade, hunting, fishing, and gathering. They relied on horses and established foot trails as their primary modes of transportation, many of which later evolved into the roadways we use today. As transportation needs evolved, so did the infrastructure. Roads that once served horse-drawn wagons and military movements eventually supported trucks hauling produce, tourists visiting Montezuma Castle National Monument, and daily commuter traffic.

A key piece of Camp Verde's regional transportation evolution was the development of what is now known as State Route 260 (SR-260). The origins of this corridor trace back to the 1870s with the construction of the General Crook Trail, a military supply route connecting Fort Verde and Fort Apache. This early trail established a critical east-west connection across the central part of Arizona, laying the foundation for modern roadways in the region.

However, the most dramatic transformation occurred with the construction of Interstate 17 (I-17) in the 1970s, positioning Camp Verde as a pivotal north-south travel corridor between Phoenix and Flagstaff. This shift not only changed the physical layout of the Town but also significantly influenced patterns of growth, commerce, and accessibility, integrating Camp Verde deeper into the broader regional economy. *(Image Source: LoopNet Commercial Real Estate).*



B. Existing Conditions

Roadway Network

Camp Verde's transportation system is predominantly auto-oriented, supported by a network of arterial highways, collector roads, and local streets. Spanning more than 43 square miles, the Town's expansive and varied landscape, which includes rural subdivisions, agricultural lands, and scenic natural areas, shapes both the character of the community and the complexity of its transportation needs. This geographic spread presents unique challenges and opportunities in planning and maintaining an efficient, connected roadway network that serves a dispersed population.

Interstate 17 (I-17) serves as the Town's most significant transportation asset, bisecting the community with three access points: Exits 285 (General Crook Trail), 287 (State Route 260), and 289 (Middle Verde Road). These interchanges facilitate the daily movement of residents, tourists, and commercial freight and serve as gateways into the Town's residential neighborhoods, commercial corridors, and visitor destinations. (*Image Source: AA Roads*).



Running east to west, State Route 260 (SR-260) serves as another critical link, connecting Camp Verde with jurisdictions like Cottonwood and Clarkdale to the north and Strawberry-Pine and Payson to the southeast. This corridor not only supports substantial daily commuter traffic but also acts as a primary freight and tourism route, with high volumes especially noticeable during weekends and peak seasons.

Main Street once served as the primary highway through Camp Verde before the construction of the SR-260 bypass. As the original alignment of SR260, it was the main thoroughfare for residents, travelers, and freight. With the completion of the bypass, Main Street transitioned into a local route, allowing it to evolve into a more community-focused corridor. Today, local routes such as Main Street function as the heart of the Heritage Character Area, hosting community events, small businesses, and pedestrian-oriented

activity. Finnie Flat Road and Montezuma Castle Highway operate as major collector roads, bridging the gap between residential and commercial areas and guiding visitors toward natural and cultural landmarks such as Montezuma Castle National Monument.

In addition to the Town-maintained roadway system, Camp Verde also contains a number of privately owned roads within its municipal boundaries. These roads are typically located within private developments or historically subdivided areas and are not maintained by the Town. As a result, property owners or homeowner associations are responsible for upkeep. While these roads serve local travel needs, their condition and maintenance standards can vary widely and present unique challenges in emergency response, drainage control, and integration into the broader circulation network.

Traffic Volumes

Traffic volume data from the Arizona Department of Transportation (ADOT) provides insight into how heavily Camp Verde's roads are used. Average Annual Daily Traffic (AADT) volumes for I-17 in the Camp Verde vicinity show consistently high levels of vehicle movement. Exit 285 (General Crook Trail) sees approximately 34,711 vehicles per day, while Exits 287 (SR-260) and 289 (Middle Verde Road) report daily volumes of 34,853 and 33,842 respectively. These numbers underscore the importance of I-17 as a backbone for regional mobility.

Similarly, SR-260 within Town limits sees substantial use. Between Cherry Creek Road and Exit 287, the AADT is estimated at 15,329 vehicles. Projections by ADOT estimate this number will increase to over 25,000 vehicles per day by the year 2042, reflecting anticipated population growth and commercial development across the Verde Valley.

Street Conditions

Camp Verde's road conditions are evaluated using the Pavement Condition Index (PCI), a nationwide standard for measuring road surface integrity. A recent survey revealed the Town's average PCI rating is just 36.2, with the majority of Camp Verde's roadways (approximately 90%) falling into the "Poor" to "Serious" condition categories. Such conditions demand significant rehabilitation to ensure the safety and efficiency of the transportation network.

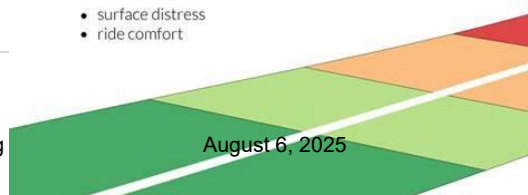
The Public Works Department Streets Division is tasked with managing road maintenance. Historically, the Streets Division has faced financial challenges, but the Town is actively working to adjust Highway User Revenue Funds (HURF) allocations to bolster financial support and improve long-term roadway conditions. *(Image Source: City of Tempe, AZ)*

Pavement Quality Index (PQI) Defined

Excellent	Good	Fair	Poor
100 - 80	79 - 60	59 - 40	39 - 20

PQI scores take into account:

- surface distress
- ride comfort



Safety and Congestion

Although Camp Verde is not generally characterized by urban-level congestion, traffic chokepoints do exist, especially during peak tourism periods. Exits 285 (General Crook Trail) and 287 (SR-260) along I-17 are consistently busy, with Exit 287, serving the Finnie Flat commercial area, experiencing the highest levels of local congestion. The tri-intersection of Finnie Flat Road, Main Street, and Montezuma Castle Highway is also a known trouble spot for traffic flow and safety, and it has become a focal point for planned improvements. Additionally, there have been noted concerns about speeding and cut-through traffic in quieter neighborhoods, prompting the Town to consider future traffic-calming strategies in residential zones.

C. Multimodal and Non-Motorized Transportation

Pedestrian and Bicycle Infrastructure

Camp Verde lacks a comprehensive and connected pedestrian and bicycle network. While certain areas, such as the Heritage Character Area, have benefited from recent sidewalk improvements, many other parts of Town remain underserved in terms of non-motorized infrastructure. This limited connectivity poses challenges for residents who do not have access to a personal vehicle and restricts opportunities for alternative transportation.

Improving walkability and bike accessibility has been identified as a key priority through the Town's Character Area planning process. Strategies under consideration include expanding sidewalks and bike lanes, adding pedestrian amenities like benches and shade structures, implementing traffic-calming measures, expansion of public transit, and hosting community events that promote active transportation. Where appropriate, the Town will also prioritize the protection of bike lanes with physical barriers to improve cyclist safety and encourage broader use.

These efforts reflect a broader vision to create a safer and more accessible transportation network throughout Camp Verde. This vision is further supported by the *Urban Upland Trails* document, which outlines potential routes and design standards for enhancing non-motorized trail connectivity across the community.

Barriers to Access

Physical barriers to active transportation are evident throughout the Town. ADA-accessible sidewalks are absent in large portions of the community, and many neighborhoods lack pedestrian crossings across busy arterials like SR-260 or Montezuma Castle Highway. The disjointed nature of existing paths makes it difficult to travel safely and efficiently by foot or bicycle from residential areas to commercial or recreational destinations.

Future Vision

Long-range planning efforts currently underway, including the Verde Valley Master Transportation Plan and the Parks and Recreation Master Plan, will outline a forward-looking vision for a more connected, accessible, and equitable transportation system in Camp Verde. Conceptual proposals include the development of multi-use paths along State Route 260 and Montezuma Castle Highway, greenway trails linking neighborhoods to the Verde River, and expanded sidewalk coverage throughout key business and civic corridors. These improvements are intended to promote walkability, encourage active transportation, and ensure safer mobility options for residents and visitors alike. As the Town continues to grow, these planning documents will serve as roadmaps for creating a more sustainable and inclusive transportation network.

D. Public and Regional Transportation

Public transit options in Camp Verde are limited, though efforts are underway to expand services in partnership with regional stakeholders. The Yavapai-Apache Nation operates a network of fixed-route buses that provide essential connections for both tribal and non-tribal residents, serving key destinations such as medical centers, shopping areas, and employment hubs throughout the region. Due to the Town's rural nature and low population density, rideshare services are not readily available, further limiting transportation options for those without access to a personal vehicle. (Image Source: YAN Transit)



In addition, intercity bus operators like Groome Transportation and Greyhound provide service to major cities including Phoenix and Flagstaff, offering viable options for residents who rely on longer-distance travel.

Looking ahead, the Town is exploring opportunities to collaborate with the Yavapai-Apache Nation on expanding local and regional transit solutions as a part of the Department of Transportation's Thriving Communities Grant. This partnership aims to improve transportation access for underserved populations, including seniors, low-income households, and those without a private vehicle.

E. Parking

As Camp Verde continues to grow as a destination for tourism, commerce, and residential development, the availability and functionality of parking have become increasingly important components of the Town's overall transportation network. A well-planned parking system supports local businesses, improves access to community facilities, and reduces unnecessary congestion caused by vehicles circulating in search of parking. In areas where pedestrian activity is prioritized, such as the Heritage Character Area, parking should be located nearby but thoughtfully separated from the main corridors to minimize congestion and preserve walkability. Removing on-street parking in these zones can help reduce traffic congestion and create a more welcoming, pedestrian-focused environment.

Camp Verde's current parking inventory consists of a mix of on-street spaces, municipal lots, and informal parking areas, particularly in the Heritage Character Area and near high-traffic civic destinations. While overall demand is generally manageable, peak periods, including special events and seasonal tourism surges, highlight gaps in availability and accessibility, especially on Main Street.

F. Investment and Capital Improvements

Capital Improvement Projects

Camp Verde is making strategic investments in its transportation network through a series of capital improvement projects outlined in the five-year funding plan starting Fiscal Year 2025.

A \$896,500 grant awarded through the Arizona Statewide Mobility and Access for Reliable Transportation (SMART) program is currently funding the design phase of the Finnie Flat Road and Montezuma Castle Highway Improvement Project. This initiative, with an anticipated total cost exceeding \$20 million, aims to enhance pedestrian accessibility, improve roadway safety, and reduce congestion along one of the Town's most heavily traveled corridors. These upgrades will also help support long-term economic growth by strengthening infrastructure in a primary commercial area.

In tandem, the Town has developed 90% design plans for the Main Street Reconstruction Project, which will address aging underground utilities, failing surface infrastructure, and persistent drainage issues. The total cost for this project is expected to exceed \$15 million.

To help fund construction, the Town is pursuing a federal Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant.

Several smaller-scale but high-impact projects are also underway. One such project is the 7th Street Sidewalk Extension, which will extend pedestrian access south toward General Crook Trail. This project is being funded through Yavapai County's Community Development Block Grant program and will serve an area designated as low-income, improving mobility and safety for nearby residents.

Additionally, the Town has initiated the Verde Lakes Drive Sidewalk Improvements Project. This project will install new curb, gutter, and sidewalk along the west side of Verde Lakes Drive between SR-260 and Catclaw Drive. The design is being completed in-house by Town staff, while construction is being funded through the Northern Arizona Council of Governments' Transportation Improvement Program. The Town is scheduled to receive \$664,780 in Fiscal Year 2026 for the construction phase of this important pedestrian improvement.

These ongoing and planned investments demonstrate Camp Verde's commitment to improving mobility, safety, and connectivity through targeted infrastructure improvements that benefit both residents and visitors.

Road Preservation Ordinance

Recognizing the importance of protecting new infrastructure investments, the Town has adopted Ordinance 24-A497 that restricts cutting or trenching into recently paved roads. Under this policy, asphalt less than seven years old and chip seal surfaces less than three years old are protected unless specific permission is granted. If granted, the utility or contractor is required to repave the full affected lane for a minimum of 25 feet in either direction of the trench to preserve the road's integrity and appearance.

Ongoing Maintenance

Routine maintenance remains a priority. The Town annually contracts street striping services to improve visibility and road safety. Camp Verde also operates an annual chip seal program, which significantly extends pavement life and reduces the need for costly reconstructions. These efforts reflect the Town's focus on preservation, even amid times where resource are limited.

G. Funding and Advocacy

Camp Verde participates actively in regional advocacy efforts through organizations like the Arizona Department of Transportation (ADOT), the League of Arizona Cities and Towns (LACT), and Northern Arizona Council of Governments (NACOG). The Town has submitted both the Main Street and Montezuma Castle Highway projects for inclusion in NACOG's Regional Priority Project List (RPPL), which serves as a tool to lobby state and federal legislators for increased rural transportation funding.

As of FY2025, NACOG has \$21.9 million in available funding, prioritizing projects that improve regional access, economic resilience, and safety. Camp Verde's inclusion in these advocacy efforts ensures that its needs as a rural community are heard and considered in statewide transportation planning.

Section ## Goals and Implementation Strategies:

Goal #1: Improve Roadway Conditions Across the Network

- Identify and prioritize streets with the lowest Pavement Condition Index ratings for resurfacing or reconstruction.
- Establish a formal Pavement Management Program that includes annual condition assessments and capital planning for resurfacing cycles.
- Enforce Ordinance 24-A497, which restricts the cutting of newly paved or chip-sealed roads to preserve surface integrity. Where permitted, utility trench repairs must follow high-quality restoration standards.

Goal #2: Enhance Safety and Reduce Congestion at Key Intersections

- Advance the design and eventual construction of the critical Finnie Flat Road, Main Street, and Montezuma Castle Highway intersection, where existing congestion and safety concerns are most acute.
- Implement traffic-calming strategies in neighborhoods affected by excessive speeds or high levels of cut-through traffic.
- Upgrade signage, striping, and intersection technology to modern standards that improve visibility, reduce congestion, and support smoother traffic flow.
- Conduct a comprehensive parking study to analyze current capacity, utilization, and future needs in areas of high demand such as the Heritage Character Area.

Goal #3: Expand Multimodal Infrastructure and Accessibility

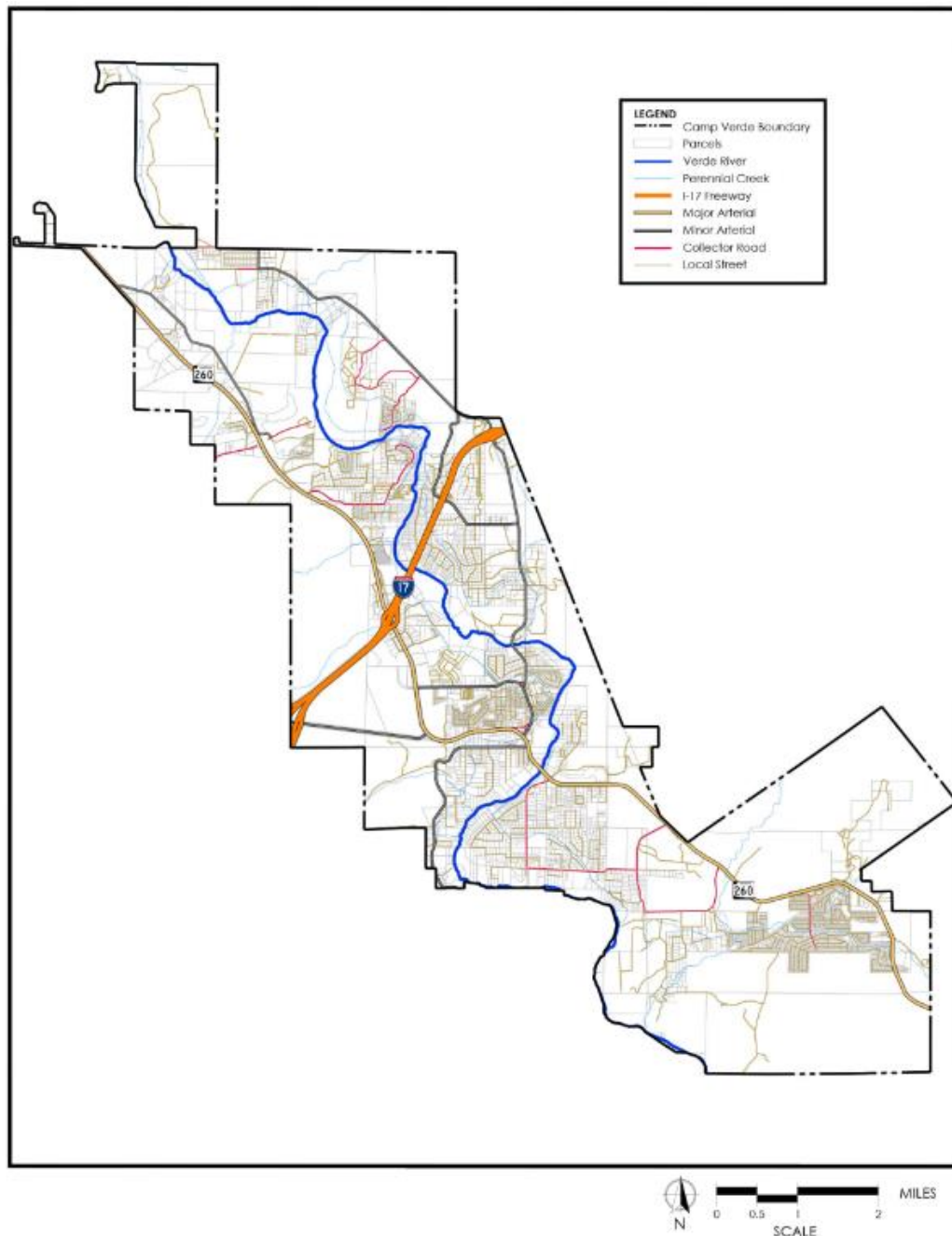
- Develop and implement a community-wide sidewalk, trail, and pathway connectivity plan to close gaps and improve safe pedestrian circulation.
- Construct new multimodal paths along high-volume corridors such as State Route 260 and Montezuma Castle Highway that link residential areas with schools, parks, and commercial nodes.
- Develop clear wayfinding signage and public information tools to better guide residents and visitors to available parking locations.

Goal #4: Increase Access to Regional and Public Transit

- Continue working in close partnership with the Yavapai-Apache Nation to expand local and regional fixed-route transit services.
- Formally adopt and integrate the Northern Arizona Council of Governments' Verde Valley Master Transportation Plan into Town operations to support coordinated planning and service delivery.

Goal #5: Secure Funding for Transportation Projects

- Actively pursue grants such as the Rebuilding American Infrastructure with Sustainability and Equity program and Community Development Block Grants.
- Continue submitting shovel-ready projects to the Northern Arizona Council of Governments' Regional Priority Project List to position Camp Verde for funding consideration.
- Establish infrastructure development agreements with private developers to ensure new growth supports improvements to the public transportation system.



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Town Council

Agenda Information Memorandum

Meeting Date: August 6, 2025

Agenda Item Type:

- | | | |
|---|--|--|
| ☐ Consent Agenda | ☒ Informational Presentation | ☐ Discussion Item |
| ☐ Action/Decision Item | ☐ Executive Session Request | ☐ Other: |

Requesting Department: Town Manager

Staff Resource: Town Manager Miranda Fisher

Agenda Title: Status update on agenda items discussed by Town Council in Q2 2025.

Attached Documents:

- Q1 2025 Council Actions & Implementation Status Report

Estimated Presentation Time: 10 minutes

Estimated Discussion Time: 5 minutes

Reviewed By:

- | | | | | |
|---------------------------------------|---|--|----------------------------------|---------------------------------|
| ☐ Town Manager | ☒ Legal | ☐ Risk Management | ☐ Finance | ☐ Other: |
|---------------------------------------|---|--|----------------------------------|---------------------------------|

Financial Review (if applicable):

- Funding Source / GL Account Number:
- Approved in the FY25 Budget? ☐ Yes ☐ No ☐ N/A ☐ Other:
- Is this an approved CIP Project? ☐ Yes ☐ No ☐ N/A ☐ Other:

Background Information:

At the request of Councilor Bolton, the Town Manager will provide a quarterly update on the status of agenda items approved in the preceding quarter. The attached report offers a comprehensive summary of actions taken by the Town Council during the second quarter of 2025 (April – June), along with the current status of each initiative.

Connection to the [FY25-FY30 Strategic Plan](#)

This report reflects the Town's continued commitment to advancing Council priorities and achieving strategic goals.

Question(s) before the Council:

- Does the Council have any questions for staff?

Q2 2025 Council Action Status Report

This report provides a comprehensive summary of some of the actions taken by the Town Council in the second quarter of 2025 (April – June) and the current status of those initiatives.

REGULAR SESSION: APRIL 2, 2025

Discussion, consideration, and possible approval of Resolution 2025-1171, approving a Development Agreement between the Town of Camp Verde and Verde Commercial LLC for the development of approximately 58.86 acres of real property identified as parcel number 403-22-035Q.

Status Update: Following execution of the Development Agreement, Town staff finalized the \$2 million WIFA grant to fund construction of 500,000-gallon water storage tanks and a pump station on land provided through the Verde Commercial Subdivision.

Public Hearing: Discussion, consideration, and possible Approval of Ordinance 2025-A503, an ordinance of the Mayor and Common Council of the Town of Camp Verde, Yavapai County, Arizona, amending the Planning and Zoning Ordinance, Part Two - Zoning Classifications, Section 203 – Use Districts, Subsection L, Planned Area Development Overlay District, related to exempting subdivisions developing on vacant lots twenty (20) acres or more from the Planned Area Development process; providing for repeal of conflicting ordinances; providing for severability; and setting an effective date.

Status Update: This ordinance became effective May 2, 2025.

Public Hearing: Discussion, consideration, and possible approval of Ordinance 2024-A497, an ordinance of the Mayor and Common Council of the Town of Camp Verde, Yavapai County, Arizona, amending the Code of Camp Verde, Arizona, Chapter 7 Building, Article 7-5 Road Specifications and Detail, related to renumbering the article and adding a section regarding restrictions on work in newly paved or resurfaced public roadways and rights-of-way.

Status Update: This ordinance became effective May 2, 2025.

SPECIAL SESSION: APRIL 9, 2025

Public Hearing: Discussion, consideration, and possible approval for a Use Permit to operate a Recreational Vehicle Park with conditions, located at 1738 Arena Del Loma Road (APN 404-18-178Q).

Status Update: Town staff are currently working with the applicant through the Development Standards Review process.

REGULAR SESSION: APRIL 16, 2025

Public Hearing: Discussion, consideration, and possible approval of Resolution 2025-1169, a Resolution of the Mayor and Common Council of Camp Verde, Yavapai County, Arizona, for Preliminary Plat 20240487, Equestrian Estates Subdivision Phase-2 for the property generally located at the corner of Paso Fino Way and Belgian Way (APN 403-20-002B).

Status Update: Town staff are working with the applicant on their final plat.

Public Hearing: Discussion, consideration, and possible approval of Resolution 2025-1168, a Resolution of the Mayor and Common Council of Camp Verde, Yavapai County, Arizona, for Preliminary Plat 20250032M, Verde Commercial Subdivision for the property generally located off North George Rothrock Road (APN 403-22-035Q).

Status Update: Town staff are working with the applicant on their final plat.

Discussion, consideration and possible direction to Town staff regarding the renovation of the Heritage Pool facility or construction of a new aquatic facility at the Sports Complex.

Status Update: Repairs to the Heritage Pool were completed in time for opening Memorial Day weekend. However, ongoing mechanical issues have resulted in intermittent closures. On July 8, 2025, Town staff presented renovation plans to the Camp Verde Unified School District (CVUSD) Board, which is evaluating internally before scheduling a joint session. Their internal work session date will be set on August 12, 2025.

Discussion, consideration, and possible approval for RFP 2025-207 to organize, produce, manage and execute a concert series.

Status Update: Town staff are preparing a Professional Services Agreement with Christian Berry, the RFP sole respondent. The first of three outdoor concerts is targeted for September 2025.

Discussion, consideration and possible approval of the updated FY25-30 Strategic Plan and the FY26 Action Plan. Staff Resource: Town Manager Miranda Fisher.

Status Update: Implementation of the FY26 Action Plan is underway. A full progress report will be provided at the September 17, 2025 Council meeting.

REGULAR SESSION: MAY 7, 2025

Consideration, and possible approval to purchase three (3) new Ford Explorer Patrol Units through Enterprise, not to exceed \$180,000.00 from the FY26 CIP budget.

Status Update: The three vehicles have been purchased and are currently being outfitted for patrol use. While the project was selected for Congressionally Directed Spending (CDS), staff proceeded with the purchase due to timing needs. If CDS funds are awarded, an additional three units will be acquired this fiscal year.

Consideration, and possible approval of Request for Proposal #2025-208 for auditor services.

Status Update: Council awarded the contract to CLA. Staff are drafting the engagement agreement to begin the FY25 audit this fall.

Discussion, consideration, and possible award of Bid No. 25-206, Dickison Circle Waterline Relocation Project, to Ligon Excavation in the amount of \$291,389.76.

Status Update: Staff are coordinating with contractors and ADOT on implementation of this waterline relocation project.

Public Hearing: Discussion, consideration, and possible approval of Resolution 2025-1167, a Resolution of the Mayor and Common Council of the Town of Camp Verde, Yavapai County, Arizona, approving Use Permit 20240465M, with conditions, for Tom Boggess of Verde 17, LLC (Mariposa RV Resort) for assessor's parcel number (APN) 403-23-104T consisting of 17.41 acres.

Status Update: The applicant is preparing for the Development Standards Review.

Public Hearing: Discussion, consideration, and possible approval of Ordinance 2025-A502, an ordinance of the Mayor and Common Council of the Town of Camp Verde, Yavapai County, Arizona, amending the Planning and Zoning Ordinance, Part Two – Zoning Classifications, Section 203 – Use Districts, Subsections B – R1-District; C – R2 – District, D – R-R District, and E – RS District, all related to use permits for RV Parks; providing for repeal of conflicting ordinances; providing for severability; and setting an effective date.

Status Update: This ordinance became effective June 7, 2025.

Discussion, consideration, and possible approval of Resolution 2025-1178 approving the Congressionally Directed Spending priorities.

Status Update: The Town submitted ten applications. The three police vehicles and Verde Lakes

repeater were selected to advance. Due to project urgency, staff are proceeding with these CIP items now, with CDS funds to be used to purchase three additional vehicles and a repeater for Highway 260 North if awarded.

SPECIAL SESSION: MAY 14, 2025

Discussion, consideration, and possible direction regarding contracting with Sustainability Partners for funding Capital Improvement Projects.

Status Update: The Town Attorney is drafting a contract addendum to accompany Sustainability Partner's engagement agreement. Given Council's lack of interest in using Black Bridge Loop as the project that could be funded through the Sustainability Partner's model, staff are evaluating the feasibility of using their funding structure for a water loop project near the Highway 260/I-17 interchange.

Discussion, consideration and possible direction regarding a potential increase to the bed tax.

Status Update: Council expressed interest in increasing the bed tax to 5%. A public hearing is required, and staff anticipate scheduling it for October 2025, following the 60-day noticing period.

Discussion, consideration and possible direction regarding budgeting in FY26 CIP for an impact fee study.

Status Update: Council approved \$100,000 in CIP funds for the study. The RFP is scheduled for Council approval on August 6, 2025.

REGULAR SESSION: MAY 21, 2025

Discussion, consideration, and possible award of Sports Complex Irrigation Electrical Improvements Project to Connolly Electric in the amount of \$76,700.

Status Update: Construction at the Sports Complex is ongoing. A full project update will be shared at the August 6, 2025 Council meeting.

Discussion, consideration, and possible award of Sports Complex Lift Station Electrical Improvements Project to Connolly Electric in the amount of \$45,400.

Status Update: Construction at the Sports Complex is ongoing. A full project update will be shared at the August 6, 2025 Council meeting.

Discussion, consideration, and possible adoption of Resolution 2025-1183, approving the Planning Fee Refund, Waiver, and Reduction Policy.

Status Update: Three refund requests submitted by John Bassous were partially approved under the new policy, and Finance completed the disbursements.

Discussion, consideration, and possible recommended approval Resolution 2025-1180, supporting the Town's participation in the National Fitness Campaign and committing to securing the necessary match funding.

Status Update: The Town of Camp Verde was awarded a \$50,000 grant through the National Fitness Campaign (NFC) to support installation of an outdoor Fitness Court®. To move forward with accepting the award, the Town was required to secure a local match of approximately \$120,000–\$150,000 by July 9, 2025.

Following review, it was determined that the Fitness Court® was not an eligible expense under the current Arizona State Parks Sports Complex grant. Therefore, the project would need to be fully funded through the Town's Capital Improvement Program (CIP). After consulting with Finance Director Michael Showers, CIP Project Manager Martin Smith, and Public Works Director Ken Krebbs, it was concluded that committing funds at this time could compromise the delivery of other critical capital projects.

Given the potential for construction contingencies or change orders, staff recommended that the Town retain financial flexibility until all ongoing CIP projects are completed. As a result, the Town was unable to allocate matching funds by the original deadline.

Town Manager Miranda Fisher notified the National Fitness Campaign of the situation, and NFC responded by extending the funding deadline to November 12, 2025. This extension gives the Town additional time to assess year-end CIP balances for the Sports Complex and seek alternative grant funding sources to potentially move the project forward.

Discussion, consideration and possible adoption of Ordinance 2025-A504, an Ordinance of the Town Council of the Town of Camp Verde, Yavapai County Arizona, establishing a policy of conducting criminal record checks for prospective Town Employees and Volunteers.

Status Update: This ordinance became effective June 21, 2025.

SPECIAL SESSION: MAY 28, 2025

Discussion, consideration, and possible award of bid for the Dickison Circle Drainage Improvements Project culvert materials to Pacific Corrugated Pipe Company for \$254,509.48.

Status Update: Staff continue to coordinate with the contractors and ADOT on installation of the new culvert.

Discussion, consideration, and possible approval of Resolution 2025-1182 accepting a permanent public water utility easement and a temporary construction easement for parcel 403-23-430B and 403-23-425B located within Verde Ranch Estates, Camp Verde, Arizona 86322, for the purpose of construction of the Sycamore Villas 12-inch water main extension project.

Status Update: The property owner is moving forward with the water main loop installation. The Town will share in the project costs.

Discussion about the impact of and resources available to address homelessness in Camp Verde. Staff Resource: Town Manager Miranda Fisher.

Status Update: Town staff are collaborating with the Verde Valley Homeless Coalition to explore how the Town can support local efforts to connect individuals experiencing homelessness with needed resources.

WORK SESSION: MAY 29, 2025

Review and discussion of the Town of Camp Verde Engineering Design Standards Manual.

Status Update: Staff are incorporating Council feedback into the updated Engineering Design Standards Manual, which is scheduled for final review and possible adoption on September 3, 2025.

REGULAR SESSION: JUNE 4, 2025

Discussion, consideration and possible approval to issue a Request for Statement of Qualifications for Engineering On-Call for Professional Services.

Status Update: Staff are reviewing and scoring the submissions. Recommendations for contract award will be brought before Council.

SPECIAL SESSION: JUNE 11, 2025

Discussion with the Copper Canyon Fire and Medical District Governing Board about the impact recreational vehicle parks and trailer parks have on the Fire District.

Status Update: Due to other high-priority items, staff and the Town Attorney have not yet evaluated ways to assist the Fire District with the funding challenges posed by parcel-based assessments. This will be prioritized in the coming months.

REGULAR SESSION: JUNE 18, 2025

Discussion, consideration and possible approval of Contract No. 25-209 with Water Works Engineers for engineering design and construction services for the Town of Camp Verde, Arizona Wastewater Plant Dryer Design and Construction Services, in an amount not to exceed \$85,049.00.

Status Update: Staff are working with Water Works Engineers and ADEQ to proceed with the decommissioning of the existing drying beds.

Discussion, consideration, and possible award of Bid No. 25-211, Sports Complex Irrigation Pump Building Slab Project to Ligon Excavation in the amount of \$50,208.00.

Status Update: Construction is ongoing. An overall project update will be provided at the August 6, 2025 Council meeting.

Town of Camp Verde Outstanding Citizen program and nomination process review.

Status Update: Based on Council feedback, staff are refining the program and will return with a revised proposal on September 3, 2025.

Discussion, consideration, and possible awarding of the FY25 \$50,000 Community Outreach Funds.

Status Update: All checks have been distributed to the selected recipients:

- The Bread of Life Missions, Inc.
- Society of St. Vincent de Paul
- Humane Society of Sedona, Inc.
- Verde Valley Homeless Coalition
- Calvary Chapel Camp Verde, CARE Ministry
- Verde Valley Senior Center
- Home for New Beginnings
- Verde Valley Sanctuary
- Hope Women's Center
- Manzanita Outreach
- Seventh-Day Adventist Food Pantry
- Senior Citizens of Camp Verde Inc.



TOWN COUNCIL AGENDA INFORMATION MEMORANDUM

MEETING DATE: August 6, 2025

AGENDA ITEM TYPE:

- | | | |
|--|---|--|
| ☐ Consent Agenda | ☐ Informational Presentation | ☐ Discussion Item |
| ☒ Action/Decision Item | ☐ Executive Session Request | ☐ Other: |

REQUESTING DEPARTMENT: Public Works

STAFF RESOURCE: Martin Smith, CIP Project Manager

AGENDA TITLE: Discussion, consideration, and possible ratification of Change Order One requested by Traffic Safety Inc. for the FY25 Street Striping Project, in the amount of \$14,484.59.

ATTACHED DOCUMENTS:

- Change Order One and documentation from the contractor
- Street Striping Project 24-198 Agreement

ESTIMATED PRESENTATION TIME: 5 minutes

ESTIMATED DISCUSSION TIME: 10 minutes

REVIEWED BY:

- | | | | | |
|--|---|--|----------------------------------|---------------------------------|
| ☒ Town Manager | ☒ Legal | ☐ Risk Management | ☐ Finance | ☐ Other: |
|--|---|--|----------------------------------|---------------------------------|

FINANCIAL REVIEW (if applicable):

- Funding Source / GL Account Number: 03-480-20-871400 (\$115,000 budgeted)
- Approved in the FY25 Budget? ☒ Yes ☐ No ☐ N/A ☐ Other:
- Is this an approved CIP Project? ☒ Yes ☐ No ☐ N/A ☐ Other:

BACKGROUND INFORMATION:

On March 5, 2025, the Town Council approved awarding the street striping project to Traffic Safety, Inc. in the amount of \$67,307.59 (Award of Bid No. 24-198). The scope of the project was to refresh all pavement striping on Town-maintained roadways. At the time of bidding, staff relied on quantity estimates from previous striping projects.

During the course of the work, the contractor discovered that the actual striping quantities were significantly higher than the original estimates. This discrepancy was brought to staff's attention, and the contractor indicated that an additional \$14,484.59 would be required to complete the project as intended, for a total project cost of \$81,792.18. Given that \$115,000 was budgeted for the project and the increased cost is still well below this amount, Town staff authorized the contractor to proceed in order to avoid delays.

Following the completion of the project, all the street striping that was included in the bid package was completed except for a small section of white edge line on Middle Verde Road between Arena Del Loma and the Distant Drums RV Park because the existing white line was still in good shape.

To prevent similar issues in the future, staff plans to acquire a GPS-based measuring tool and conduct a comprehensive audit of all pavement striping throughout the Town. The equipment (Jamar Technologies RAC Geo II) will cost approximately \$1,520 and will be funded through the Public Works operating



TOWN COUNCIL AGENDA INFORMATION MEMORANDUM

budget. The audit will be completed within the next year, ensuring more accurate quantity data is available for future bids. Another benefit of having this equipment is that it will also be used for measuring chip seal quantities.

CONNECTION TO THE FY25-FY30 STRATEGIC PLAN

This project complies with the Community Infrastructure section described in the Strategic Plan.

QUESTION(S) BEFORE THE COUNCIL:

- Does Council have any questions that staff can answer?

PROPOSED MOTION:

Move to approve the ratification of Change Order 1 requested by Traffic Safety Inc. for the FY25 Street Striping Project, in the amount of \$14,484.59.



Town of Camp Verde
Public Works Division
395 South Main Street
Camp Verde, AZ 86322
Tel: (928) 554-0820
www.campverde.az.gov

CHANGE ORDER

PROJECT: Project Title

TOCV Project No. 24-198

Contract Date: 3/19/2025

Change Order No: 1

TO: Traffic Safety, Inc.
8901 E. Laredo Drive
Prescott Valley, AZ 86314

Modify the Contract per the following Change Proposal Requests, which are attached to this Change Order.

Original CONTRACT PRICE	\$ 67,307.59
Original Owner's Allowance	\$ 6,118.87
Current Owner's Allowance adjusted by pervious Change Order	\$ 6,118.87
Reduction to Owner's Allowance per this Change Order	\$ 6,118.87
Remaining Owner's Allowance	\$ 0.00
Current Contract Price adjusted by previous Change Order	\$ 67,307.59
The Contract Price due to this Change Order will be (<u>Increased</u>) (Decreased) by:	\$ 14,484.59
The new Contract Price, including this Change Order will be:	\$ 81,792.18

The Contract Time to Substantial Completion will be (increased) (decreased) by 0 calendar days.

The Contract Time to Final Completion will be (increased) (decreased) by 0 calendar days.

The date for Substantial Completion of all Work will be TBD

The date for Final Completion of all Work will be TBD

Accepted for Contractor by: _____ Date: _____

Approved for Owner by: _____ Date: _____



Town of Camp Verde
Public Works Division
395 South Main Street
Camp Verde, AZ 86322
Tel: (928) 554-0820
www.campverde.az.gov

Reason for Change Order

During the course of the work, the contractor discovered that the actual striping quantities were significantly higher than the original estimates. This discrepancy was brought to staff's attention, and the contractor indicated that an additional \$15,000 would be required to complete the project as intended. Given that \$115,000 was budgeted for the project and the increased cost was still well below this amount, staff authorized the contractor to proceed in order to avoid delays.

Traffic Safety, Inc.
 8901 E. Laredo Drive
 Prescott Valley, AZ 86314

Invoice

Date	Invoice #
7/15/2025	4973

Bill To

Town Of Camp Verde
 Finance Dept.
 395 S. Main St
 Camp Verde, AZ 86322

P.O. No.	Terms	Project
	Net 30	00525 - Camp Verde Street Striping

Qty	Description	Rate	Amount
	Paint:		
467,122	4" Yellow Stripe	0.11	51,383.42T
135,862	4" White Stripe	0.12	16,303.44T
4,993	8" White Stripe	0.24	1,198.32T
	Thermoplastic:		
4,405	12" Crosswalk Stripe	1.80	7,929.00T
966	18" Stop Bar	3.00	2,898.00T
46	Turn Arrow	40.00	1,840.00T
3	Legend	80.00	240.00T
1	Back out taxes	-4,686.12	-4,686.12T
			0.00T
			0.00

Subtotal \$77,106.06

Sales Tax (6.0775%) \$4,686.12

Total \$81,792.18

Phone #	Fax #
928-775-0813	928-772-8570

TOWN OF CAMP STREET STRIPING PROJECT

24-198

AGREEMENT

THIS AGREEMENT, made and entered into this 5th day of March, 2025, by and between the **Town of Camp Verde**, Yavapai County, State of Arizona (herein called the "**Town**") acting herein by the **Mayor, Dee Jenkins**, and Common Council, party of the first part, and **Traffic Safety, Inc.** (herein called the "**Contractor**") party of the second part.

WITNESSETH THAT:

The Town of Camp Verde desires to engage the **Contractor** to render construction services (**Work**) for the Town of Camp Verde Street Striping Project #24-198, located within the Town of Camp Verde, Arizona 86322.

1. Work

The **Contractor** shall complete all **Work** as specified in these bid documents and set forth in the Plan Set, Specifications and Agreement General Provisions attached, or incorporated in this Agreement. The **Contractor** shall furnish the qualified personnel, materials, equipment and other items necessary to carry out the terms of this Agreement with regards to the performance of the **Work** and the Agreement. This A Works shall be accomplished in the agreed upon time per the Notice to Proceed per these Agreement Documents.

2. Access to Information

It is agreed that all information, data reports, records as exist, available and necessary for carrying out of the **Work** outlined in the Plan Set, Specifications and General Provisions have been furnished to the **Contractor** by the **Town** and its agencies. The **Contractor** hereby acknowledges receipt of the same. The **Town** and its agencies will cooperate with the **Contractor** in every way possible to facilitate the performance of the **Work** described herein with regards to any and all information required.

3. Project Manager - Administration

The **Town** has designated the Public Works Department and Town CIP Project Manager, as Project Administrator and Manager for this Project and Agreement. The Project Manager shall be empowered to perform all administrative functions as required for management of the project.

4. Agreement Time

Contract time for this project shall be **21 calendar days** to Final Completion. The Town of Camp Verde Project Manager shall contact the successful Contractor/Bidder once the project is formally awarded by the Town of Camp Verde Council and Mayor. The Project Manager will schedule a pre-construction meeting with the Contractor and Public Works staff. Prior to this meeting, the Contractor shall provide the Town of Camp Verde with performance and payment bonds for the total project as well as a detailed Project Work Schedule. At the pre-construction meeting the Town of Camp Verde Project Manager shall provide the Contractor/Bidder with a formal Notice to Proceed with the project starting dates, term of project, and project completion dates. The Notice to Proceed shall be signed by both the Contractor/Bidder and the Public Works Department. This will serve to establish a clear understanding of the project start date

and completion date for liquidated damages should the Agreement completion date be exceeded by the Contractor due to inadequate performance.

5. Compensation

The maximum amount of compensation and reimbursement to be paid to the **Contractor** for the completion of the **Work** as specified in this Agreement shall not exceed that amount given by the **Contractor** in their formal bid; which has been voted on by the Town of Camp Verde Council followed by their acknowledgement and acceptance by issuing the **Contractor** a formal **Notice of Award** for this Project. Any adjustments to Compensation for change orders or changes made to the **Work** by the **Town** shall be handled under an additional written Agreement between the **Town** and the **Contractor** and follow the Town of Camp Verde Financial Operations Guide and may be subject to approval/disapproval by the Town of Camp Verde Council.

6. Termination of Agreement

- a. If, for any reason, the **Contractor** shall fail to fulfill in a timely and proper manner his/her obligations under this Agreement, or if the **Contractor** shall violate any of the covenants, agreements, or stipulations of this Agreement, the TOWN shall thereupon have the right to terminate the Agreement by giving written notice to the **Contractor** of such termination and specifying the effective date thereof. In such event, all finished or unfinished site or structural improvements as well as all materials or equipment acquired or stored by the **Contractor** under this Agreement shall, at the option of the TOWN, become the TOWN's property and the **Contractor** shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder.

Notwithstanding the above, the **Contractor** shall not be relieved of liability to the TOWN for damages sustained by the TOWN by virtue of any breach of the Agreement by the **Contractor**, and the TOWN may withhold any payments to the Contractor for the purpose of set-off until such time as the exact amount of damages due the TOWN from the **Contractor** is determined.

- b. The TOWN may terminate this Agreement at any time by giving at least ten (10) days' notice in writing to the **Contractor**. If the Agreement is terminated by the TOWN as provided herein, the **Contractor** will be paid for the time expended and expenses incurred up to the termination date. If this Agreement is terminated due to the fault of the **Contractor**, all conditions relative to termination given within this Part 6 shall apply.
- c. This Agreement may be terminated as per A.R.S. §38-511, Conflict of Interest.

7. Miscellaneous Provisions

- a. This Agreement shall be construed under and in accordance with the laws of the State of Arizona, and all obligations of the parties created hereunder are performable in Camp Verde, Yavapai County, Arizona.
- b. This Agreement shall be binding upon and ensure to the benefit of the parties hereto and their respective heirs, executors, administrators, legal representatives, successors and assigns where permitted by this Agreement.

In any case one or more of the provisions contained in this Agreement shall, for any reason, be held to be invalid, illegal or unenforceable said holding shall not affect any

other provision hereof and this Agreement shall be construed as if such invalid, illegal, or unenforceable provision and never been contained herein.

- c. Action at law or in equity is necessary to enforce or interpret the terms of this Agreement, the prevailing party shall be entitled to recover, in addition to costs, such sum as the court including the appellate court, may adjudge reasonable as attorney fees.
- d. This Agreement represents the entire understanding of the TOWN and **Contractor** as to those matters contained in this Agreement, and no prior oral or written understanding shall be of any force or effect with respect to this Agreement. This Agreement may be amended only by mutual agreement of the parties hereto in writing to be attached to and incorporated into this Agreement.

8. Project Familiarity and Identification of Conflicts

In order to induce the TOWN to enter into this Agreement, **Contractor** makes the following representation:

- a. The **Contractor** has familiarized himself/herself with the nature and extent of the Agreement documents, work, site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance, or furnishing of the work.
- b. The **Contractor** has given the Project Manager a written notice of all conflicts, errors, or discrepancies discovered in the Agreement documents and the written resolution thereof by the Project Manager is acceptable to the **Contractor**.
- c. The **Contractor** has examined and carefully studied the Agreement documents and other related data identified in the bidding documents.
- d. The Contractor is familiar with and satisfied as to all federal, state and local laws and regulations that may affect cost, progress, performance and furnishing of the work.

9. Insurance/Bonding

The **Contractor** shall procure and maintain, at **Contractor's** sole expense, until completion of the Agreement, coverages as specified in the Agreement General Provisions within this Bidder Packet.

Certificate(s) of Insurance naming the Town of Camp Verde as Additional Insured verifying the minimum coverage's specified in the Agreement General Provisions within this Bidder Packet shall be delivered to the Town just prior to issuance of the Notice to Proceed. A Performance and Payment Bond with a Corporate Surety, each in the amount of 100% of the Agreement price shall be required for this Project. Performance and Payment Bonds must be executed and approved and submitted to the Town of Camp Verde at the Pre-Construction and Scheduling Meeting in exchange for the formal Notice to Proceed. The Notice to Proceed will not be issued without the submission of these bonds.

10. Indemnity

The **Contractor** agrees, to the fullest extent permitted by law, to indemnify, defend, save and hold harmless the Town of Camp Verde, its departments, agencies, boards, commissions, and its officers, officials, agents, and employees (hereinafter referred to as "Indemnities") from and against any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and costs of claim processing, investigation and litigation) (hereinafter referred to as "Claims") for bodily injury or personal injury (including death), or loss or damage to tangible or intangible property caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of **Contractor** or any of its owners, officers, directors, agents, employees or sub-contractors. This indemnity includes any claim or amount arising out of or recovered under the Workers' Compensation Law or arising out of the failure of such **Contractor** to conform to any federal, state or local law, statute, ordinance, rule, regulation or court decree. It is the specific intention of the parties that the Indemnatee shall, in all instances, except to the extent Claims arise from the negligent or willful acts or omissions of the Indemnatee, be indemnified by Contractor from and against any and all claims. It is agreed that **Contractor** will be responsible for primary loss investigation, defense and judgment costs where this indemnification is applicable. In consideration of the award of this Agreement, the **Contractor** agrees to waive all rights of subrogation against the Town of Camp Verde, its officers, officials, agents and employees for losses arising from the work performed by the **Contractor** for the TOWN.

11. Agreement Documents

All items and documents contained in or included with or attached to this Bidder Packet are a part of the Agreement Documents and are to be followed and/or completed by those bidding this project as required portions of the Agreement. In the event of conflicts between or among these documents, the documents shall be interpreted in the following order: The Agreement, the Agreement Special Provisions, the Agreement General Provisions, the Plan Set, Project Specifications and Special Notes, the Bid Schedule and Bid Totals, and last the Invitation for Bids; with each specific item or document serving as the most important for its own specific purposes.

IN WITNESSETH HEREOF, the parties have hereunto set their hands and seals.

For the Town of Camp Verde

Approved as to Form:



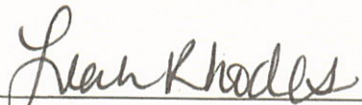
Town Attorney



Mayor, Dee Jenkins

3/13/25

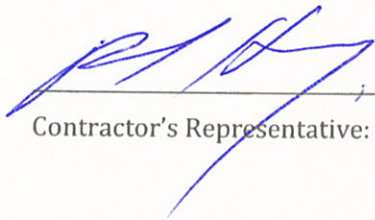
Attest:



Town Clerk, Leah Rhodes

3/13/25

For the Contractor:



Russel Hardy, President

Contractor's Representative: Signature/Name/Title

3/19/25

**Meeting Date:** August 6, 2025**Agenda Item Type:**

- | | | |
|--|---|--|
| ☐ Consent Agenda | ☐ Informational Presentation | ☐ Discussion Item |
| ☒ Action/Decision Item | ☐ Executive Session Request | ☐ Other: |

Requesting Department: Town Clerk**Staff Resource:** Town Clerk Leah Rhodes

Agenda Title: Public Hearing: Discussion, consideration and possible approval of a recommendation to the Arizona Department of Liquor Licenses and Control regarding an application for a Series 12, Restaurant Liquor License for Bullpen Grill and Watering Hole, located at 564 S. Main Street, #100, Camp Verde, Arizona, 86322.

Attached Documents: Liquor License Application**Estimated Presentation Time:** 5 minutes**Estimated Discussion Time:** 10 minutes**Reviewed By:**

- | | | | | |
|--|--------------------------------|--|----------------------------------|---------------------------------|
| ☒ Town Manager | ☐ Legal | ☐ Risk Management | ☐ Finance | ☐ Other: |
|--|--------------------------------|--|----------------------------------|---------------------------------|

Financial Review (if applicable): N/A

- Funding Source / GL Account Number:
- Approved in the FY25 Budget? ☐ Yes ☐ No ☒ N/A ☐ Other:
- Is this an approved CIP Project? ☐ Yes ☐ No ☒ N/A ☐ Other:

Background Information:

An application for a Series 12, Restaurant Liquor License, was submitted by Agent Jared Repinski for Bullpen Grill and Watering Hole, located at 564 S. Main Street, #100. The non-transferable, on-sale retail privileges liquor license allows the holder of a restaurant license to sell and serve all types of spiritous liquor solely for consumption on the premises of an establishment that derives at least forty percent (40%) of its gross revenue from the sale of food. Failure to meet the forty percent (40%) food requirement may result in revocation of the license.

Mr. Repinski has submitted all the necessary paperwork to the Town of Camp Verde and the Arizona Department of Liquor Licenses and Control. Mr. Repinski has paid all fees associated with the application.

Per Arizona Revised Statute §4-201, the application and public notice were posted for 20 days in a conspicuous place on the subject property. No comments for or against the application were received.

A copy of the attached application was distributed to the necessary Town Departments for review. Town Staff has no objection to the license's approval.

Question(s) before the Council:



Town Council Agenda Information Memorandum

- Does Council have any questions for staff?
- Does Council have any questions for the applicant?

Proposed Motion:

Move to **APPROVE** submitting to the Arizona Department of Liquor License and Control a recommendation of approval for a Series 12, Restaurant Liquor License for Bullpen Grill and Watering Hole, located at 564 S. Main Street, #100, Camp Verde, Arizona, 86322.

OR

Move to **DENY** submitting to the Arizona Department of Liquor License and Control a recommendation of approval.

State of Arizona
Department of Liquor Licenses and Control

Created 07/02/2025 @ 11:19:51 AM

Local Governing Body Report

LICENSE

Number: Type: 012 RESTAURANT
Name: BULLPEN GRILL AND WATERING HOLE
State: Pending
Issue Date: Expiration Date:
Original Issue Date:
Location: 564 S MAIN STREET
#100
CAMP VERDE, AZ 86322
USA
Mailing Address: PO BOX 6252
CHANDLER, AZ 85246
USA
Phone: [REDACTED]
Alt. Phone: [REDACTED]
Email: [REDACTED]

AGENT

Name: JARED MICHAEL REPINSKI
Gender: Male
Correspondence Address: PO BOX 6252
CHANDLER, AZ 85246
USA
Phone: [REDACTED]
Alt. Phone: [REDACTED]
Email: [REDACTED]

OWNER

Name: A & A DINNING LLC
Contact Name: JARED MICHAEL REPINSKI
Type: LIMITED LIABILITY COMPANY
AZ CC File Number: 23840072 State of Incorporation: AZ
Incorporation Date: 06/13/2025
Correspondence Address: PO BOX 6252
CHANDLER, AZ 85246
USA
Phone: [REDACTED]
Alt. Phone: [REDACTED]
Email: [REDACTED]

Officers / Stockholders

Page 1 of 3

60th day - 08/31/25
105th day - 10/09/2025

Name:
ANDREW FRANZ RAAB

Title:
Mgr-Member

% Interest:
100.00

A & A DINNING LLC - Mgr-Member

Name: ANDREW FRANZ RAAB
Gender: Male
Correspondence Address: PO BOX 6252
CHANDLER, AZ 85246
USA

Phone:
Alt. Phone:
Email:



APPLICATION INFORMATION

Application Number: 351945
Application Type: New Application
Created Date: 06/26/2025

QUESTIONS & ANSWERS

012 Restaurant

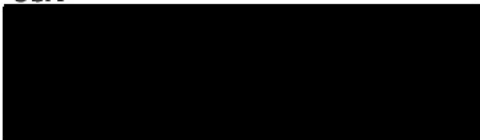
- 1) Are you applying for an Interim Permit (INP)?
Yes
What date are you taking ownership? Please upload the Interim Permit Notary page when you reach the upload page.
07/02/2025
- 2) Are you one of the following? Please indicate below.
Property Tenant
Subtenant
Property Owner
Property Purchaser
Property Management Company
TENANT
- 3) Is there a penalty if lease is not fulfilled?
Yes
What is the penalty?
ALL RIGHTS AND REMEDIES AFFORDED BY LAW OR EQUITY
- 4) Is the Business located within the incorporated limits of the city or town of which it is located?
Yes
- 5) What is the total money borrowed for the business not including the lease?
Please list each amount owed to lenders/individuals.
0
- 6) Are there walk-up or drive-through windows on the premises?
No
- 7) Does the establishment have a patio?
No
- 8) Is your licensed premises now closed due to construction, renovation or redesign or rebuild?
No
- 9) What type of business will this license be used for?
NEIGHBORHOOD RESTAURANT

State of Arizona
Department of Liquor Licenses and Control

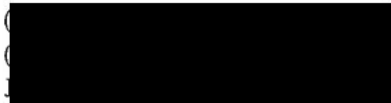
Created 07/02/2025 @ 11:20:17 AM

Local Governing Body Report

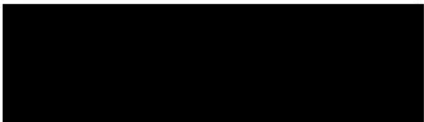
LICENSE

Number:	INP130033916	Type:	INP INTERIM PERMIT
Name:	BULLPEN GRILL AND WATERING HOLE		
State:	Active		
Issue Date:	07/02/2025	Expiration Date:	10/15/2025
Original Issue Date:	07/02/2025		
Location:	564 S MAIN STREET #100 CAMP VERDE, AZ 86322 USA		
Mailing Address:	PO BOX 6252 CHANDLER, AZ 85246 USA		
Phone:			
Alt. Phone:			
Email:			

AGENT

Name:	JARED MICHAEL REPINSKI
Gender:	Male
Correspondence Address:	PO BOX 6252 CHANDLER, AZ 85246 USA
Phone:	
Alt. Phone:	
Email:	

OWNER

Name:	A & A DINNING LLC		
Contact Name:	JARED MICHAEL REPINSKI		
Type:	LIMITED LIABILITY COMPANY		
AZ CC File Number:	23840072	State of Incorporation:	AZ
Incorporation Date:	06/13/2025		
Correspondence Address:	PO BOX 6252 CHANDLER, AZ 85246 USA		
Phone:			
Alt. Phone:			
Email:			

Officers / Stockholders

Name:
ANDREW FRANZ RAAB

Title:
Mgr-Member

% Interest:
100.00

A & A DINNING LLC - Mgr-Member

Name: ANDREW FRANZ RAAB
Gender: Male
Correspondence Address: PO BOX 6252
CHANDLER, AZ 85246
USA

Phone:
Alt. Phone:
Email:

APPLICATION INFORMATION

Application Number: 351946
Application Type: New Application
Created Date: 06/26/2025

QUESTIONS & ANSWERS

INP Interim Permit

- 1) Enter License Number currently at location
012130031654
- 2) Is the license currently in use?
Yes
- 3) Will you please submit section 5, page 6, of the license application when you reach the upload page?
Yes
A Document of type INTERIM NOTARY PAGE is required.

SECTION 5 Interim Permit

25 JUN 26 PM 1:40 AZD LLC

If you intend to operate business while the application is pending, you will need an interim permit pursuant to A.R.S. § 4-203.01. For approval of an interim permit: There must be a valid license of the same series currently issued to the location.

1. Current license number at the location: 012130031654 2. Is the license currently in use? ☒ Yes ☐ No
2. If the license is **NOT** currently in use, how long has it been since the license was last used at this location? _____

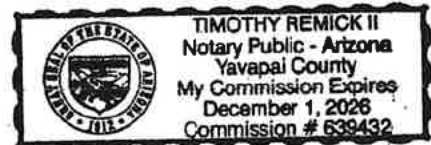
I (Print Full Name) Justin Andrew Chambers hereby declare that I am the Current Owner, Agent, or Controlling Person on the stated license and location.

Sign in front of Notary: _____

(Current Agent/Individual as listed on the license certificate)

6-19-25

State of Arizona
 County of Yavapai
 Signed before me on this 19th day of June, 2025.
 Notary Signature [Signature]
 My commission expires on Dec 01, 2026



Notary Seal

SECTION 6 Background Check

EACH PERSON LISTED MUST SUBMIT A QUESTIONNAIRE, FINGERPRINT CARD, AND \$22 PROCESSING FEE PER CARD.

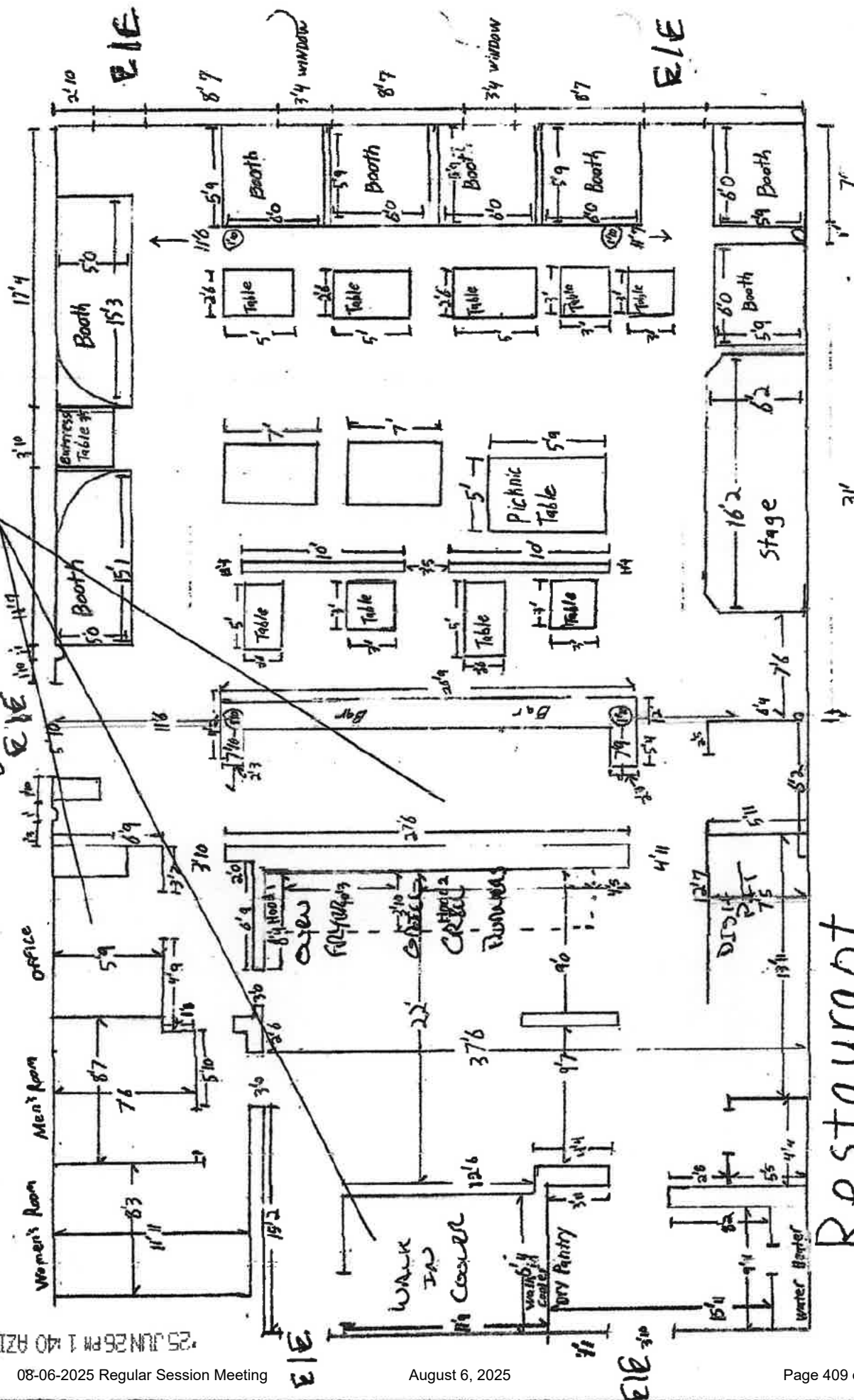
1. If the applicant is an entity, and not an individual, answer questions 1 a-b.

a) Date Incorporated/Organized: 6/13/2025 State where Incorporated/Organized: Arizona
 b) AZ Corporation or AZ L.L.C. Entity No: 23840072 Approval Date: 6/16/2025

2. List any individual or entity that owns a beneficial interest of 10% or more and/or controls the applicant or licensee. If the applicant is owned by another entity, attach an organizational chart showing the ownership structure.

Last	First	Middle	Title	%Owned	Mailing Address	City	State	Zip
Raab	Andrew	Franz	Member/Manager	100	564 S Main St, #100, Camp Verde, AZ, 86322			

(Attach additional sheet if necessary)



Restaurant Wingfield Plaza Camp Verde, AZ
564 Main Street



RESTAURANT/HOTEL/MOTEL OPERATION PLAN

Arizona Dept. of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

Type or Print with **Black Ink**

1. Name of restaurant (Please print): Bullpen Grill and Watering Hole

2. Must indicate the equipment below by Make, Model, and Capacity:

LIST ONLY THE FOLLOWING - NO ATTACHMENTS

Grill	72" Wells Charbroiler, 60" Wells Flattop Grill
Oven	Hobart Double Oven
Freezer	Avantco Double Door Reach-In Freezer
Refrigerator	7.5' Walk-In Cooler
Sink	2 Hand Sinks, Veggie Sink, 3 Compartment Sink
Dish Washing Facilities	Pro-Clean Diswasher
Food Preparation Counter (Dimensions)	12'x32" Prep Table
Other	Fryer

3. Attach a copy of your FULL menu with pricing **INCLUDING NON-ALCOHOLIC BEVERAGES**

4. What percentage of your public premises is used primarily for restaurant dining?

(Do not include kitchen, bar, hi-top tables, or game area.) 70 %

5. Does your restaurant have a bar area that is distinct and separate from the dining area? ☒ YES ☐ No

(If yes, what percentage of the public floor space does this area cover?) 30 %

6. List the **seating capacity** for:

a) Restaurant dining area of your premises: [76]

(DO NOT INCLUDE PATIO SEATING)

b) Bar area [+ 27]

TOTAL [= 103]

7. What type of dinnerware is primarily used in your restaurant? ☒ Reusable ☐ Disposable ☐ Both

8. Does your restaurant contain any **games, televisions, or any other entertainment**? ☒ YES ☐ No

If yes, specify what types and how many (examples: 4-TV's, 2-Pool Tables, 1-Video Game, etc.)

5 TV's

9. Do you have live entertainment or dancing? ☒ YES ☐ No

If yes, what type and how often (example: DJ-2 x a week, Karaoke-2 x a month, Live Band-1 x a month, etc.)

Live Band 4x a month

10. List number of employees for each position:

Position	How many
Cooks	4
Bartenders	4
Hostesses	1
Managers	1
Servers	1
Other ()	
Other ()	
Other ()	

I, (Print Full Name) Jared Michael Repinski, hereby swear under penalty of perjury and in compliance with A.R.S. § 4-210(A)(2) and (3) that I have read and understand the foregoing and verify that the information and statements that I have made herein are true and correct to the best of my knowledge.

Applicant Signature: _____





RECORDS REQUIRED FOR AUDIT RESTAURANT/HOTEL/MOTEL

Arizona Dept. of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

Type or Print with **Black** Ink

In the event of an audit, you will be asked to provide to the Department any documents necessary to determine compliance with A.R.S. §4-205.02(C). Such documents requested may include however, are not limited to:

Bulpen Grill and Watering Hole

1. Name of restaurant (Please print): _____
2. All invoices and receipts for the purchase of food and spirituous liquor for the licensed premises.
3. A list of **all** food and liquor vendors
4. The restaurant menu used during the audit period
5. A price list for alcoholic beverages during the audit period
6. Mark-up figures on food and alcoholic products during the audit period
7. A recent, **accurate** inventory of food and liquor (taken within two weeks of the Audit Interview Appointment)
8. Monthly Inventory Figures - beginning and ending figures for food and liquor
9. Chart of accounts (copy)
10. Financial Statements-Income Statements-Balance Sheets
11. **General Ledger**
 - A. Sales Journals/Monthly Sales Schedules
 - 1) Daily sales Reports (to include the name of each waitress/waiter, bartender, etc. with sales for that day)
 - 2) Daily Cash Register Tapes - Journal Tapes and Z-tapes
 - 3) Dated Guest Checks
 - 4) Coupons/Specials/Discounts
 - 5) Any other evidence to support income from food and liquor sales
 - B. Cash Receipts/Disbursement Journals
 - 1) Daily Bank Deposit Slips
 - 2) Bank Statements and canceled checks

12. **Tax Records**

- A. Transaction Privilege Sales, Use and Severance Tax Return (copies)
- B. Income Tax Return - city, state and federal (copies)
- C. Any supporting books, records, schedules or documents used in preparation of tax returns

13. Payroll Records

- A. Copies of all reports required by the State and Federal Government
- B. Employee Log (A.R.S. §4-119)
- C. Employee time cards (actual document used to sign in and out each work day)
- D. Payroll records for all employees showing hours worked each week and hourly wages

14. Off-site Catering Records (must be complete and separate from restaurant records)

- A. All documents which support the income derived from the sale of food off the license premises.
- B. All documents which support purchases made for food to be sold off the licensed premises.
- C. All coupons/specials/discounts

The sophistication of record keeping varies from establishment to establishment. Regardless of each licensee's accounting methods, the amount of gross revenue derived from the sale of food and liquor must be substantially documented.

**REVOCATION OF YOUR LIQUOR LICENSE MAY OCCUR IF YOU FAIL TO COMPLY WITH
A.R.S. §4-210(A)7 AND A.R.S. §4-205.02(G).**

A.R.S. §4-210(A)7

The licensee fails to keep for two years and make available to the department upon reasonable request all invoices, records, bills or other papers and documents relating to the purchase, sale and delivery of spirituous liquors and, in the case of a restaurant or hotel-motel licensee, all invoices, records, bills or other papers and documents relating to the purchase, sale and delivery of food.

A.R.S. §4-205.02(G)

For the purpose of this section:

1. "Restaurant" means an establishment which derives **at least forty percent (40%)** of its gross revenue from the sale of food
2. "Gross revenue" means the revenue derived from all sales of food and spirituous liquor on the licensed premises regardless of whether the sales of spirituous liquor are made under a restaurant license issued pursuant to this section or under any other license that has been issued for the premises pursuant to this article.

I, (Print Full Name) Jared Michael Repinski, hereby swear under penalty of perjury and in compliance with A.R.S. § 4-210(A)(2) and (3) that I have read and understand the foregoing and verify that the information and statements that I have made herein are true and correct to the best of my knowledge.

Applicant Signature: _____



MAKE A COPY OF THIS DOCUMENT AND KEEP IT WITH RECORDS REQUIRED BY THE STATE

The Bullpen Grill & Watering Hole Dinner Menu

Beginnings

Fried Pickle Spears \$12

Buttermilk Ranch

Wagyu Meatballs \$18

Tomato, Basil, Olive Oil, Crispy Bread

Roasted Pork Green Chili Posole \$14

Tomatillo, Onion, Jalapeño, Cabbage, Tortilla

Red Pepper Hummus \$16

Baby Carrots, Cucumber, Peppers, Olives Nann

Smoked Brisket Poutine \$17

Fries, Cheese Curd Caramelized Onions, Demi

Bacon Wrapped Shrimp \$19

Fig & Serrano Pepper Chutney

From the Garden

(Add Protein to Any Salad)

Beets Thrus Ways \$17

Red, Gold, Striped, Beets, Shallots
Candied Pecans Goat Cheese, Pear Vinaigrette

House Salad \$14

Greens, Carrots, Tomatoes, Onion, Cucumber

Caesar \$15

Caesar Vinaigrette, Black Pepper Croutons, Parm

Grilled Chicken \$10 Oven Roasted Salmon \$12

Sauteed Shrimp \$11

Desserts

Sticky Toffee Bread Pudding 8

Salted Caramel, Chantilly Cream

Casa Iron Skillet Cookie 7

Vanilla Bean Ice Cream, Hot Fudge

Entrees

Build Your Own Smash Burger* \$19

Chuck & Short Rib Blend, Lettuce, Tomato, Onion,
B&B Pickles

Sharp Cheddar or White Cheddar, Fries

BBQ Bacon Burger* \$20

Jalapeño Bacon Jam, Crispy Fried Onions,
Smoked Cheddar, Rosemary BBQ Sauce

Fish N Chips \$34

Beer Battered Halibut, French Fries, Lemon
Capper Tartar Sauce

24 Hour Braised Short Rib \$32

Potato Purée, Tri Color Carrots, Wild Mushrooms,
Red Wine Demi

Brick Pressed Deboned Half Chicken \$29

Sauteed String Beans, Brown Butter Gnocchi, Mini
Peppers Thyme Chicken Jus,

New York Strip Steak* \$42

Rainbow Fingerling Potatoes, Charred Asparagus,
Caramelized Onions

Pan Seared Salmon* \$32

Creamed Hominy, Zucchini, Blistered Tomatoes,
Mint & Cilantro Pesto

Smoked Meatloaf 24

Potato Purée or Roasted Potatoes, String Beans or
Carrots, Crispy Onions, Brown Gravy

Sides \$-Each

Roasted Potatoes, French Fries, Potato Carrots

Sauteed Wild Mushrooms, Charred Asparagus

Beverages

Now - Alcoholic 4

Coke, Diet Coke, Sprite Dr. Pepper, Root Beer
Iced Tea, Lemonade

House Specialty Cocktails

OIG Margarita 8

Tequila, Sweet & Sour Lime, Agave, Salt

Moscow Mule with a Twist 10

Vodka, Lime, Ginger Beer Cucumber Juice

Long Island Iced Tea 12

Vodka, Gin, White Rum, Tequila, Triple Sec Lemon
Juice, Rosemary Simple Syrup, Coke

Smoky Sex on the Beach 10

Vodka, Peach Schnapp, Cranberry Juice, Smoked
Orange Juice

Pomegranate Margarita 12

Mescal, Jalapeño, Lime

Apple Martini 8

Vodka, Apple Pucker, Sweet Vermouth

Bottled 5

Bud, Bud Light, Coors, Coors Light
Heineken, Corona, Paps

Draft Beer 5

Bud, Bud Light, Coors, Coors Light, Corona

Wine White 8

Pinot Grigio, White Zinfandel

Red Wine 8

Cabernet Sauvignon, Merlot Cabernet Blend

***Health and Human Services advises that consuming raw or undercooked meats, poultry, seafood, shellfish, or eggs may increase your risk of foodborne illness, especially if you have certain medical conditions.**



Arizona Dept. of Liquor Licenses and Control
<https://www.azliquor.gov>
 (602) 542-5141

DLLC USE ONLY

Fee:
Job #: 351945
Date Accepted:
CSR: ML

805-52+

current until 4/12/26

Personal Information Questionnaire

ATTENTION APPLICANT: This is a legally binding document. An investigation of your background will be conducted. Incomplete applications will not be accepted. False or misleading answers may result in the denial or revocation of a license or permit and could result in criminal prosecution.

THE COMPLETED QUESTIONNAIRE NEEDS TO BE SUBMITTED TO THE DEPARTMENT ALONG WITH A \$22. FEE, AND FD-258 FINGERPRINT CARD, THAT HAS BEEN SEALED IN AN ENVELOPE, AND SIGNED OR INITIALED BY THE FINGERPRINT TECHNICIAN, MUST INCLUDE THE FINGERPRINT VERIFICATION FORM. MUST BE COMPLETED BY A RECOGNIZED FINGERPRINT SERVICE OR LAW ENFORCEMENT AGENCY.

Agent: a person who is designated by an applicant or licensee to receive communications from the department and to file and sign documents submitted to the department on behalf of the applicant or licensee. An agent is not a manager.

A.R.S. §4-202(A).

Controlling Person: person directly or indirectly possessing control of an applicant or licensee.

A.R.S. §4-101(10).

Manager: An individual (not an entity) approved by the Department of Liquor who has the authority to organize, direct, carry out, control or to otherwise operate the day-to-day operations of a liquor-licensed business.

A.R.S. §4-101(22) and
 A.R.S. §4-202(C)

SECTION - 1 INDIVIDUAL INFORMATION

☒ **AGENT**

☐ **CONTROLLING PERSON**

☐ **MANAGER**

1. Name: Repinski Jared Michael
Last First Middle
2. Social Security #: [REDACTED] Birth Date: [REDACTED]
(NOT a public record) (NOT a public record)
3. Driver's License #: [REDACTED] State Issued: AZ
(NOT a public record)
5. Are you a resident of Arizona? ☒ Yes ☐ No Date of residency: 08 / 05 / 1998
6. Email address: [REDACTED]
7. Home Address: [REDACTED]
8. Daytime phone #: [REDACTED] Alternative phone #: [REDACTED]

SECTION 2 – LICENSED BUSINESS INFORMATION

1. License Number: _____
2. Business Name (doing business as): Bullpen Grill and Watering Hole
3. Business Address: 564 S. Main Street #100 Camp Verde, AZ 86322

SECTION 3 – DAY TO DAY OPERATION OF BUSINESS

*25 JUN 26 PM 1:41 AZDLLC

Must attach copies of Basic and Management Title 4 training certificates for person managing the day to day operation of the licensed business.

Who is managing the day to day operations? ☐ Agent ☒ Controlling Person ☐ Manager

Name of persons who will be handling the day to day operations: Andrew Franz Raab

SECTION 4 – BACKGROUND

If you answer "YES" to any Question 1 through 5 YOU MUST attach a signed statement. Give complete details including dates, agencies involved and dispositions. CHANGES TO QUESTIONS 1-5 MAY NOT BE ACCEPTED

1. Have you owned, or been a controlling person of any entities that held a liquor license in Arizona, or any jurisdiction, in the past 5 years? Yes ☐ No ☒
2. Have you been cited, arrested, indicted, convicted, or required to appear in court for violation of ANY criminal law or ordinance, regardless of the disposition, even if dismissed or expunged, within the past 5 years? Yes ☐ No ☒
3. Has an entity in which you are or have been a controlling person had an application or license rejected, denied, revoked, or suspended in or outside of Arizona within the last 5 years? A.R.S. §4-202(D) Yes ☐ No ☒
4. Have you had ANY administrative law citations, compliance actions, or consents, in any jurisdiction in the past 5 years? (Do not include civil traffic tickets)
A.R.S. §4-202, 4-210
**Administrative Law Violations are any civil penalties, fines, suspension, or revocations of your liquor license.* Yes ☐ No ☒
5. Has anyone EVER obtained a judgement against you the subject of which involved fraud or misrepresentation? Yes ☐ No ☒

I, (Print Full Name) Jared Michael Repinski hereby swear under penalty of perjury and in compliance with A.R.S. § 4-210(A)(2) and (3) that I have read and understand the foregoing and verify that the information and statements that I have made herein are true and correct to the best of my knowledge.

Signature: _____

Date: _____

6-23-2025



ALIEN STATUS

Arizona Dept. of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

Type or Print with Black Ink

Title IV of the federal Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (the "Act"), 8 U.S.C. § 1621, provides that, with certain exceptions, only United States citizens, United States non-citizen nationals, non-exempt "qualified aliens" (and sometimes only particular categories of qualified aliens), nonimmigrant, and certain aliens paroled into the United States are eligible to receive state, or local public benefits. With certain exceptions, a professional license and commercial license issued by a State agency is a State public benefit.

Arizona Revised Statutes § 41-1080 requires, in general, that a person applying for a license must submit documentation to the license agency that satisfactorily demonstrates the applicant's presence in the United States is authorized under federal law.

Directions: All applicants must complete Sections I, II, and IV. Applicants who are not U.S. citizens or nationals must also complete Section III.

Submit this completed form and a copy of one or more document(s) from the attached "Evidence of U.S. Citizenship, U.S. National Status, or Alien Status" with your application for license or renewal. If the document you submit does not contain a photograph, you must also provide a government issued document that contains your photograph. You must submit supporting legal documentation (i.e. marriage certificate) if the name on your evidence is not the same as your current legal name.

SECTION I – APPLICANT INFORMATION

Jared Michael Repinski

APPLICANT NAME (Print or type)

SECTION II – CITIZENSHIP OR NATIONAL STATUS DECLARATION

Are you a citizen or national of the United States? ☒ Yes ☐ No - If **yes**, indicate place of birth:

City **Flint** State **Michigan** COUNTRY **United States**

If you answered **Yes, 1)** Attach a legible copy of a document from the list below.

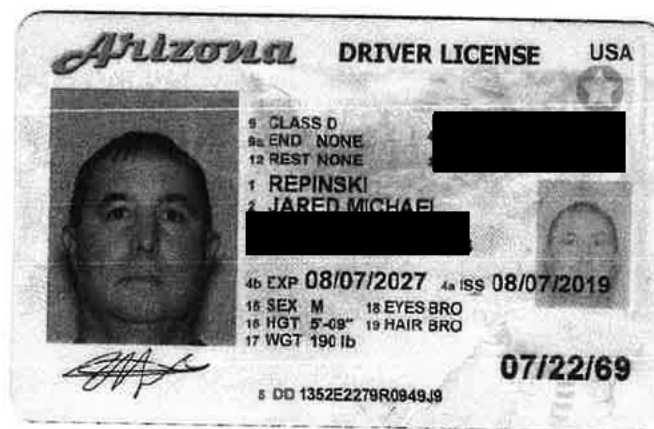
2) Name of document: **Driver's License**

If you answered **No**, you must complete Sections III.

You must submit supporting legal documentation (i.e. marriage certificate) if the name on your evidence is not the same as your current legal name.

Evidence showing authorized presence in the United State includes the following:

1. An Arizona driver license issued after 1996 or an Arizona non-operating identification card.
2. A driver license issued by a state that verifies lawful presence in the United States.
3. A birth certificate or delayed birth certificate showing birth in one of the 50 states, the District of Columbia, Puerto Rico (on or after Jan. 13, 1941), Guam, the U.S. Virgin Islands (on or after January 17, 1917), American Samoa, or the Northern Mariana Islands (on or after November 4, 1986, Northern Mariana Islands local time)
4. A United States certificate of birth abroad.
5. A United States passport. ***Passport must be signed***
6. A foreign passport with a United States visa.
7. An I-94 form with a photograph.
8. A United States citizenship and immigration services employment authorization document or refugee travel document.
9. A United States certificate of naturalization.
10. A United States certificate of citizenship.
11. A tribal certificate of Indian blood.
12. A tribal or bureau of Indian affairs affidavit of birth.
13. Any other license that is issued by the federal government, any other state government, an agency of this state or a political subdivision of this state that requires proof of citizenship or lawful alien status before issuing the license.





Arizona Dept. of Liquor Licenses and Control
<https://www.azliquor.gov>
 (602) 542-5141

DLLC USE ONLY

Fee:

Job #: 351945

Date Accepted:

CSR: ML

Personal Information Questionnaire

Pending 805-709

ATTENTION APPLICANT: This is a legally binding document. An investigation of your background will be conducted. Incomplete applications will not be accepted. False or misleading answers may result in the denial or revocation of a license or permit and could result in criminal prosecution.

THE COMPLETED QUESTIONNAIRE NEEDS TO BE SUBMITTED TO THE DEPARTMENT ALONG WITH A \$22. FEE, AND FD-258 FINGERPRINT CARD, THAT HAS BEEN SEALED IN AN ENVELOPE, AND SIGNED OR INITIALED BY THE FINGERPRINT TECHNICIAN, MUST INCLUDE THE FINGERPRINT VERIFICATION FORM. MUST BE COMPLETED BY A RECOGNIZED FINGERPRINT SERVICE OR LAW ENFORCEMENT AGENCY.

Agent: a person who is designated by an applicant or licensee to receive communications from the department and to file and sign documents submitted to the department on behalf of the applicant or licensee. An agent is not a manager.

A.R.S. §4-202(A).

Controlling Person: person directly or indirectly possessing control of an applicant or licensee.

A.R.S. §4-101(10).

Manager: An individual (not an entity) approved by the Department of Liquor who has the authority to organize, direct, carry out, control or to otherwise operate the day-to-day operations of a liquor-licensed business.

A.R.S. §4-101(22) and
 A.R.S. §4-202(C)

SECTION - 1 INDIVIDUAL INFORMATION

☐ AGENT

☒ CONTROLLING PERSON

☒ MANAGER

- Name: Raab Andrew Franz
 Last First Middle
- Social Security #: [REDACTED] Birth Date: [REDACTED]
 (NOT a public record) (NOT a public record)
- Driver's License #: [REDACTED] State Issued: AZ
 (NOT a public record)
- Are you a resident of Arizona? ☒ Yes ☐ No Date of residency: 01 / 23 / 2024
- Email address: [REDACTED]
- Home Address: 1 [REDACTED]
- Daytime phone #: [REDACTED] Alternative phone #: [REDACTED]

SECTION 2 – LICENSED BUSINESS INFORMATION

- Liquor License #: [REDACTED]
- Business Name (doing business as): Bullpen Grill and Watering Hole
- Business Address: 564 S. Main Street #100 Camp Verde, AZ 86322

SECTION 3 – DAY TO DAY OPERATION OF BUSINESS

Must attach copies of Basic and Management Title 4 training certificates for person managing the day to day operation of the licensed business.

Who is managing the day to day operations? ☐ Agent ☒ Controlling Person ☒ ^{AR} Manager

Name of persons who will be handling the day to day operations: _____

^{FRANZ}
ANDREW RAAB

SECTION 4 – BACKGROUND

If you answer "YES" to any Question 1 through 5 YOU MUST attach a signed statement. Give complete details including dates, agencies involved and dispositions. CHANGES TO QUESTIONS 1-5 MAY NOT BE ACCEPTED

1. Have you owned, or been a controlling person of any entities that held a liquor license in Arizona, or any jurisdiction, in the past 5 years? Yes ☐ No ☒
2. Have you been cited, arrested, indicted, convicted, or required to appear in court for violation of ANY criminal law or ordinance, regardless of the disposition, even if dismissed or expunged, within the past 5 years? Yes ☐ No ☒
3. Has an entity in which you are or have been a controlling person had an application or license rejected, denied, revoked, or suspended in or outside of Arizona within the last 5 years? A.R.S. §4-202(D) Yes ☐ No ☒
4. Have you had ANY administrative law citations, compliance actions, or consents, in any jurisdiction in the past 5 years? (Do not include civil traffic tickets)
A.R.S. §4-202, 4-210
**Administrative Law Violations are any civil penalties, fines, suspension, or revocations of your liquor license.* Yes ☐ No ☒
5. Has anyone EVER obtained a judgement against you the subject of which involved fraud or misrepresentation? Yes ☐ No ☒

I, (Print Full Name) Andrew Franz Raab hereby swear under penalty of perjury and in compliance with A.R.S. § 4-210(A)(2) and (3) that I have read and understand the foregoing and verify that the information and statements that I have made herein are true and correct to the best of my knowledge.

Signature: _____

Date: 6/22/2025



FINGERPRINT VERIFICATION FORM

Arizona Department of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

DLLC USE ONLY

Job #:	381 945
Date Accepted:	
CSR:	

805-709
Punking

ATTENTION FINGERPRINT TECHNICIAN:

Please follow the instructions below for fingerprinting this applicant.

1. Please fill out or ensure that the applicant has filled out all the required boxes on the fingerprint card prior to taking the fingerprints.
2. Request a valid, unexpired government-issued photo ID from the applicant and compare the physical descriptors on the applicant's photo ID to the applicant and to the information on the fingerprint card.
3. Fill out the information in the boxes below. **Please print clearly.**
4. Once the prints have been taken, place the fingerprint card and this form into the envelope and seal it. Please write your name or identification across the edge of the seal. Return the sealed envelope to the applicant.
Do not give the applicant the fingerprint card without first sealing it inside the envelope.
5. **Write applicants name on front of sealed envelope.**

PRINT the following information:

Date	Name of Applicant:	
6/20/25	Andrew Raab	
Name of Fingerprint Technician:		
Chelsea Martinez		
Fingerprint technician's Signature:		
C Martinez		
Fingerprint technician's Agency/company Name:		Phone Number:
Verde Valley Insurance		928-567-0335
Type of Photo ID Provided (check one):		
☒ Driver's License	☐ Passport	☐ Other (Please specify)

Certificate # ON-LINE

**Certificate of Completion
For
Title 4 BASIC Liquor Law Training**

☐ On-sale
☐ Off-sale
☒ On- and off-sale

A Certificate of Completion must be on a form provided by the Arizona Department of Liquor. Certificates are completed by a state-approved training provider and, when issued, the Certificate is signed by the course participant.
The State requires BASIC Title 4 training only as a prerequisite for MANAGEMENT Title 4 training or as a result of a liquor law violation. Persons required to have BASIC Title 4 training are listed at the base of this Certificate. Licensees sometimes require BASIC Title 4 Training a condition of employment.
A replacement Certificate of Completion for Title 4 training must be available through the training provider for two years after the training completion date.

Student Information

Andrew Raab

Full Name (please print)

Signature

06/21/2025

Training Completion Date

06/21/2028

Certificate Expiration Date
(three years from completion date)

Training Provider Information

US Liquor Laws

Company Name

P.O. Box 6965, Chandler, Arizona 85246

Mailing Address

(480) 709-8900

Daytime Contact Phone Number

I, Jared Repinski, certify that the above named individual did successfully complete

Instructor Name (please print)

Title 4 BASIC Training in accordance with A.R.S. §4-112(G)(2) and Arizona Administrative Code (A.A.C.) R19-1-103 using training course content and materials approved by the Arizona Department of Liquor Licenses and Control. I understand that misuse of this Certificate of Completion can result in the revocation of State-approval for the Title 4 Training Provider named in this section as provided by A.A.C. R19-1-103(E) and (F).

Instructor Signature

06 / 21 / 2025
Mo Date Year

Persons required to complete BASIC & MANAGEMENT Title 4 training: 1) owner(s) actively involved in the daily business operations of a liquor-licensed business of a series listed below
2) licensees, agents and managers actively involved in the daily business operations of a liquor-licensed business of a series listed below

In-state Microbrewery (series 3)
Conveyance (series 8)
Restaurant (series 12)

Government (series 5)
Liquor Store (series 9)
In-state Farm Winery (series 13)

Bar (series 6)
Private Club (series 14)

Beer & Wine Bar (series 7)
Hotel/Motel w/restaurant (series 11)
Beer & Wine Store (series 10)

Liquor license applications (initial and renewal) are not complete until valid Certificates of Completion for all required persons have been submitted to the Department of Liquor.

The questionnaire (which designates a manager to a location) and the agent change form (which assigns a new agent to active liquor licenses) are not complete until valid Certificates of Completion for all required persons have been submitted to the Department of Liquor.

July 11, 2013

Certificate # ON-LINE

Certificate of Completion For Title 4 MANAGEMENT Liquor Law Training

A Certificate of Completion must be on a form provided by the Arizona Department of Liquor. Certificates are completed by a state-approved training provider and, when issued, the Certificate is signed by the course participant.

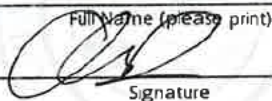
Basic Title 4 training is a prerequisite for MANAGEMENT Title 4 training. A valid Certificate of Completion for BASIC Title 4 training must be on file at the Department of Liquor and satisfactory completion of a State-approved BASIC Title 4 course must be verified by the training provider prior to issuing a Certificate of Completion for MANAGEMENT Title 4 training.

A replacement Certificate of Completion for Title 4 training must be available through the training provider for two years after the training completion date.

Student Information

Andrew Raab

Full Name (please print)



Signature

06/21/2025

Training Completion Date

06/21/2028

Certificate Expiration Date
(three years from completion date)

Training Provider Information

US Liquor Laws

Company Name

P.O. Box 6965 Chandler, Arizona 85246

Mailing Address

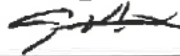
(480) 709-8900

Daytime Contact Phone Number

I, Jared Repinski, certify that the above named individual did successfully complete

Instructor Name (please print)

Title 4 MANAGEMENT Training in accordance with A.R.S. 54-112(G)(2) and Arizona Administrative Code (A.A.C.) R19-1-103 using training course content and materials approved by the Arizona Department of Liquor Licenses and Control. I understand that misuse of this Certificate of Completion can result in the revocation of State-approval for the Title 4 Training Provider named in this section as provided by A.A.C. R19-1-103(E) and (F).



Instructor Signature

06 / 21 / 2025

Mo Date Year

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