

ORIGINAL
JOHNSON UTILITIES L.L



5230 East Shea Boulevard * Scottsdale, Arizc
PH: (480) 998-3300; FAX: (480) 483-7908

28DE

April 4, 2007

Arizona Corporation Commission
DOCKETED

APR 10 2007

Linda Jaress
Utilities Division
Arizona Corporation Commission
1200 W. Washington Street
Phoenix, Arizona 85007

DOCKETED BY	nr
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RE: Johnson Utilities Company- Application to extend a Certificate of Convenience and Necessity. Docket No. WS-02987A-06-0667

Dear Ms. Jaress,

This letter is in response to your Insufficiency Letter dated March 7, 2007 regarding the above captioned matter. We will respond serially to your requests without restating them.

1. The report prepared by Olsson Associates for Walker Butte Unit/Phase 1 included flow calculations from the remaining phases of this project. The remaining phases will be treated by the Anthem WWTP and not Section 11. We requested Olsson Associates to revise their report and it is attached hereto as Attachment 1. For WWTP capacity purposes ADEQ requires us to use 187.2 average gallons per day per dwelling unit in a subdivision. The average total flow that we will be committing to at Section 11 from this subdivision will be 244,296 gallons a day. We are currently in the process of preparing an application to increase our Section 11 Aquifer Protection Permit (APP) to 4.5 MGD. The Central Arizona Association of Governments (CAAG) has already approved the Section 11 plant for 17 MGD at build out in our latest 208 plan amendment.
2. The Preliminary Water and Sewer report submitted as Attachment 9 in our first response was for the Montessa project. The revised report stating the system will be owned by Johnson Utilities is attached hereto as Attachment 2.
3. The Designation of Assured Water Supply which covers the Pinal AMA was submitted with the original CC&N application as Attachment 9

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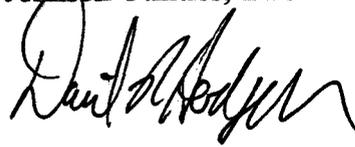
JOHNSON UTILITIES L.L.C

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If Staff needs any additional information or clarification to satisfy any of the deficiencies, please contact me at 480-998-3300.

Sincerely,
Johnson Utilities, LLC



Daniel Hodges

Enclosure

Cc: Docket Control
Jian Liu
Dick Sallquist

ATTACHMENT 1

Preliminary Wastewater Report

For

WALKER BUTTE PHASE I

Prepared For:

**United Engineering Group
4505 E. Chandler Blvd., Suite 170
Phoenix, AZ 85048**

Prepared By:

**Olsson Associates
7250 North 16th Street, Suite 210
Phoenix, AZ 85020
602-748-1000**



**May 25, 2006
Revised Aug. 9, 2006
Revised March 14, 2007**



OA #2005-1479

**Preliminary Wastewater Report
for
Walker Butte Phase I**

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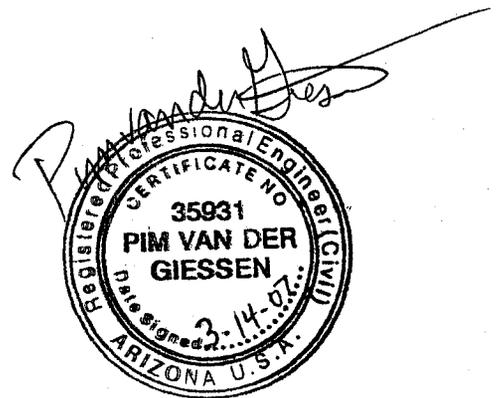
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Exhibits:

Exhibit 1	Master Sewer Map	Appendix A
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Appendix A	Design Documentation
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1.0 Introduction

Walker Butte Phase I is part of the larger 1720-acre master planned community located in the Town of Florence, Pinal County, Arizona. Phase 1 encompasses Sections 14 and 23 of Township 4 South, Range 8 East of the Gila and Salt River Meridian. The total area of Phase 1 is approximately 348-acres with 1305 single family homes and a 15-acre school site. The project abuts the Hiller Road alignment on the north, State Land on the west and east, and south of the Franklin Road alignment. Figure 1 presents the project location.

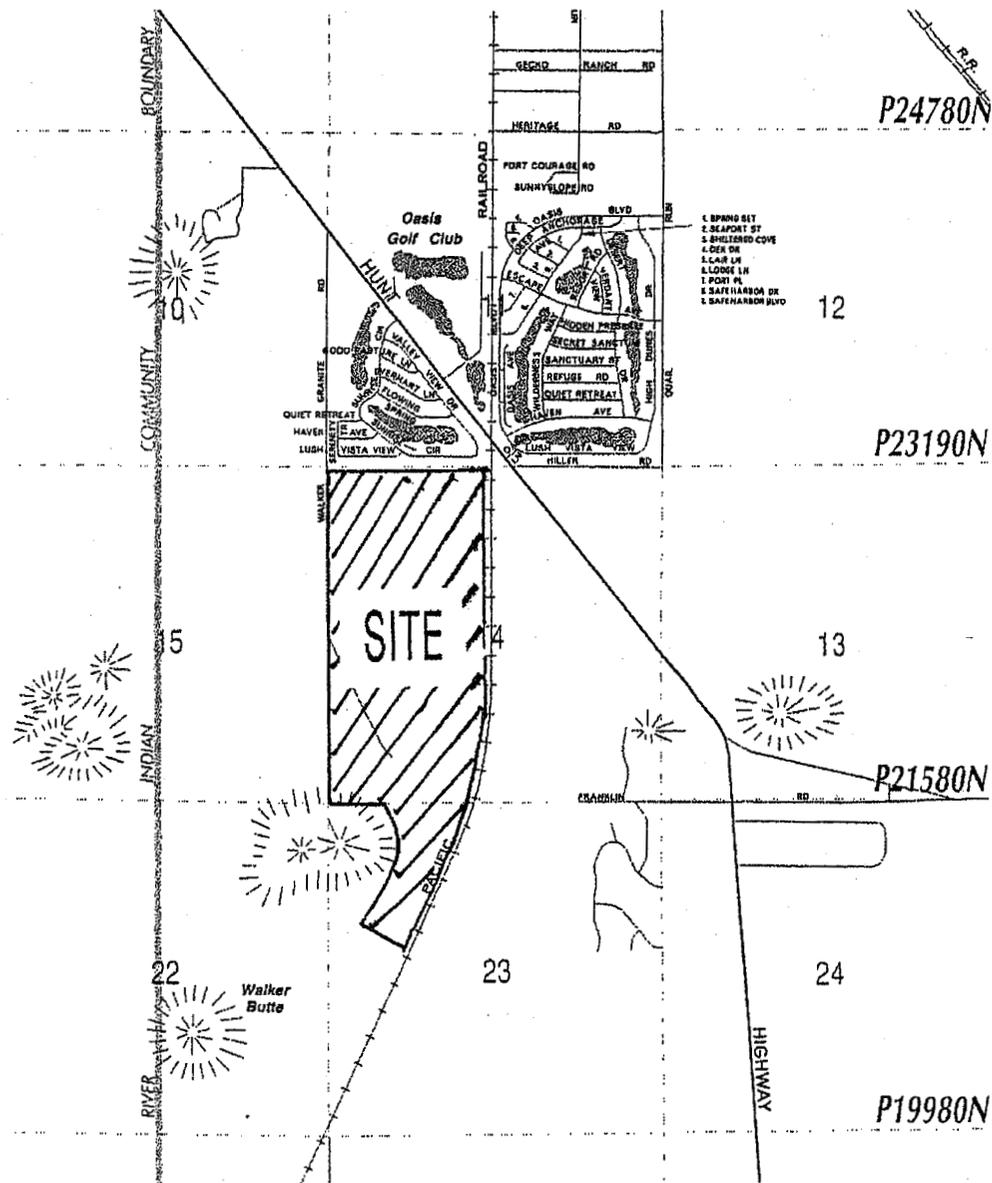


Figure 1. Project Location Map

The majority of Walker Butte is located within the CC&N area of Johnson Utility Companies (JUC). JUC has agreed to expand its CC&N to include the entire Walker Butte Project including additional wastewater infrastructure and sewage treatment capacity at an existing wastewater treatment plant. This preliminary wastewater report is prepared for compliance with JUC, Town, County, and State agencies design requirements for wastewater. The Walker Butte Phase I Planned Unit Development consists of a plan for single family development with additional sewer contribution upstream from future Walker Butte development including single family, multi-family, commercial, and public facilities. Phase I consists of only single family residential development and a 15-acre school site.

This report reviews current sewer infrastructure and determines if Walker Butte's contributing wastewater flow will not jeopardize current system capacity. According to previous discussions with JUC, wastewater treatment and sewer line sizes will be accommodated in infrastructure development prior to the completion of Walker Butte. The report provides wastewater system design criteria following JUC, Town of Florence, Arizona and Federal requirements (Arizona Administrative Code by the Arizona Department of Environmental Quality Bulletin 11 and Title 18, Chapter 9 of the Aquifer Protection Permit). The report presents a preliminary wastewater plan and analysis of the proposed sewer lines in Walker Butte Phase I to ensure that the entire system is capable of conveying required design peak flows.

2.0 Wastewater Design Criteria

The design of the sewer system follows Johnson Utility Company, Town of Florence City Code, Town Engineer criteria, ADEQ's Bulletin 11, and the Arizona Administrative Code. A summary of design criteria is presented in this section for proposed development of Walker Butte Unit 1.

2.1 Design Population

Based on information provided from the Walker Butte Unit 1 Preliminary Plat, 1305 single family homes and a school are proposed. Offsite sewer contribution upstream of Phase I is not considered since this development's sewer contribution is directed to another wastewater treatment plant. Tables 1 and 3 below show wastewater demand design parameters for residential and commercial/schools. For purposes of this report, mixed use may either be commercial or residential. The more conservative value of residential (15 DU/Acre) was used

Table 1. Residential Sewer Design Parameters

Residential Classif.	Lot Density (DU/AC)	Population (People/DU)	ADWF (GPCD)
Single Family	1.0,3.5,4.0,4.5	2.6	80
Multi-Family	8	2.6	80
Cluster	22	2.6	80

The residential peaking factor is based on the upstream population that the sewer line is serving according to the Arizona Administrative Code R18-9-E301D as shown below in Table 2.

Table 2. Residential Peaking Factors

Upstream Population	Peaking Factor
100	3.62
200	3.14
300	2.90
400	2.74
500	2.64
600	2.56
700	2.50
800	2.46
900	2.42
1000	2.38
1001 to 10,000	$PF=(6.330 \times P^{-0.231}) + 1.094$
10,001 to 100,000	$PF=(6.177 \times P^{-0.233}) + 1.128$

Table 3. Commercial/School Sewer Design Parameters

Commercial/School Contribution (GPAD)	Peaking Factor
1000	3.0

2.2 Gravity Sewer Design

The following criteria are provided in list form for design of gravity sewer system for Walker Butte:

1. Sewer lines shall be PVC SDR-35 material.
2. Typically, the minimum sewer line size is 8-inch diameter with one exception. The size line may be 6-inch for a dead end sewer line not exceeding 150-feet with no potential for extension and sewer line capacity not exceeded.
3. Manholes shall be installed at the end of each line, at all changes in grade, size, or alignment, and at all intersections that have incoming sewer lines.
4. Maximum manhole spacing is 500-feet for sewer line 18-inches or less in diameter.
5. A minimum 0.1' fall in manhole is required unless the appropriate flow through manhole of MAG is adopted.

6. Drop manholes are acceptable and shall be specified per MAG standards.
7. The minimum sewer line cover for 6-inch or greater diameter pipe is 4-feet.
8. The minimum horizontal distance from outside to outside of pipe walls, of six-feet shall be maintained between parallel water, sewer and storm drain lines.
9. The minimum pipe slopes shall be based on the minimum velocity of 2.0 fps when flowing full and not to exceed 10 fps. The following velocities are based on a Manning's "n" of 0.013

Pipe Size	Minimum Slope
8 inch	0.0033 ft/ft
10 inch	0.0024 ft/ft
12 inch	0.0019 ft/ft
15 inch	0.0014 ft/ft
18 inch	0.0011 ft/ft
21 inch	0.0009 ft/ft
24 inch	0.00077 ft/ft

10. When sewer invert is less than 10-feet deep, a 4-foot diameter shaft with 24-inch cover shall be used. When exceeding an invert of 10-feet deep, a 5-foot diameter shaft with 30-inch cover shall be used.
11. Sewer lines shall be placed in public right-of-way or dedicated easements (minimum 12-foot width).
12. Standard location for sewer line within right of way is 6-feet north or east of the street centerline.
13. Sewer line may cross and re-cross the road centerline a short distance as long as a 10-foot separation is maintained with the waterline.
14. Curved sewer lines are not allowed.
15. Manholes cannot be located in areas subject to more than incidental runoff from rain falling in the immediate vicinity unless the manhole cover assembly is designed to restrict or eliminate storm water inflow.

2.3 Sewer Lift Station Design

The following criteria are provided in list form for design of sewer lift stations for Walker Butte:

1. The City of Scottsdale design criteria shall be used as a guideline.

3.0 Onsite Sewer System

Upon evaluating the sewer demand based on the Walker Butte Phase I Preliminary Plat, the total dwelling units is 1,305 with a total population of 3398 people.

Exhibit 1 shows a sewer plan of the proposed sewer lines in Walker Butte Phase I. Calculations for wastewater demand is provided in the Appendix which is based on number of residential lots or acreage of commercial parcels served by each pipe. A sewer design spreadsheet is developed to calculate the wastewater flow generated from the residential homes. Based on criteria as provided in this report, the sewer system will be mostly served by 8" lines with a minimum slope of 0.0033 feet/foot. As cumulative flow increases, the pipe size will increase to maintain capacity. In general, the trunk sewer system invert elevations were set 12-feet below existing ground. A sewer pipe sizing worksheet is provided in the Appendix which shows design capacity for all sewer lines larger than 8-inch diameter. The Phase 1 units are small enough as not to require any size larger than 8-inch at a minimum slope of 0.0033 ft/ft unless additional offsite flow is contributed.

A trunk line will be installed along the landscape tract between the residential lots and the railway. This trunk line will cross some retention areas. However, the manholes will be elevated about the 100-year water surface elevation and some will be water-tight if necessary.

All the flows will be delivered to a lift station at the Northeast corner, which is identified on the Master Sewer Map. This lift station will pump the sewage to the Section 11 WWTP via an 8" force main. Calculations as provided in the appendix showing lift station size, pump size, flow in, flow out, fill cycle and empty times. A summary below shows the lift station characteristics proposed:

Table 4 Lift Station Summary

Storage Height	Dia.	Volume	Q _{pump}	Q _{in}	Fill Time	Cycle Time	Empty Time
ft	ft	ft ³	gpm	gpm	min	min	min
6	8	268	500	420	1.96	10.18	12.14

As identified on Exhibit 1, sewer will be discharged to the Wastewater Treatment Plant (WWTP) in Section 11 of the same Township and Range north of Hunt Highway. An 8-inch forcemain is proposed to deliver wastewater to the existing forcemain in Hunt Highway from the Phase 1 Lift Station.

4.0 Offsite Sewer System

Based on demand calculations, 420 gallons per minute sewage flow will leave Walker Butte (per Exhibit 1). The proposed 8" sewer force-main is approximately 1 mile in length that will connect the lift station to the existing forcemain in Hunt Highway. JUC will upsize the force main in Hunt Highway to deliver the flow to the WWTP in Section 11 if necessary. No additional offsite flows were considered in this analysis.

5.0 Conclusions and Recommendations

This report presents the required information to support sewer infrastructure development for Walker Butte Unit 1 in compliance with JUC, City, County, and State regulations. In summary, 1,305 residential homes and school will contribute wastewater flow to JUC existing infrastructure. OA anticipates that there will be one sewer exit point from Walker Butte Unit 1 where 420 gallons per minute flow will be directed to Section 11's WWTP. According to conversations with JUC, wastewater flow from Walker Butte is anticipated and the wastewater treatment plant is sized to accept Walker Butte's demand. Existing sewer lines will either be able to handle the anticipated flows or be upsized to handle Walker Butte wastewater flows. The onsite system has been designed to carry the anticipated capacity. One lift station is expected onsite with sewer force-mains carrying wastewater to the existing infrastructure in Hunt Highway.

Appendix A

Design Documentation

Walker Butte Phase 1 Sewer Pipe Minimum Slope Calculations

- Assume 2 ft/sec minimum velocity
- Assume PVC pipe, with Manning's n = 0.013

Manning's Equation:

$$V = \frac{k}{n} \times R^{\frac{2}{3}} \times S^{\frac{1}{2}}$$

where:

V = 2 ft/s

k = 1.486

n = 0.013

R = hydraulic radius = area/wetted perimeter = D/4 (circular pipe)

D = pipe diameter

S = minimum slope

Solve for S:

$$S = \left[\frac{V}{\frac{1.486}{n} \times \left(\frac{D}{4}\right)^{\frac{2}{3}}} \right]^2$$

Pipe Diameter (in)	Minimum Slope (ft/ft)
6	0.00490
8	0.00334
10	0.00248
12	0.00194
15	0.00144
18	0.00113
21	0.00092
24	0.00077

Walker Butte Phase 1 Sewer Pipe Capacity Calculations

- Assume 2 ft/sec minimum velocity
- Assume PVC pipe, with Manning's n = 0.013
- For single family, assume 2.6 persons/unit, 80 gallon/person per day
Peak usage per SFR = 2.6 * 80 * PF (varies)
Peaking Factor = 6.33 * (population)^{-0.231} + 1.094
- For commercial, assume 3000 gallon/acre per day
Peak usage per commercial acre = 3000 * 3 = 9000 gpd = 6.250 gpm

Manning's Equation:

$$Q = V \times A = \frac{k}{n} \times R^{\frac{2}{3}} \times S^{\frac{1}{2}} \times A = \frac{k}{n} \times \left(\frac{D}{4}\right)^{\frac{2}{3}} \times S^{\frac{1}{2}} \times A$$

where: V = 2 ft/s
 k = 1.486
 n = 0.013
 R = hydraulic radius = area/wetted perimeter = D/4 (circular pipe)
 D = pipe diameter
 S = minimum slope

[D] Pipe Diameter (in)	[S] Min Slope (ft/ft)	[V] Min Velocity (ft/s)	[A] Area (ft ²)	[Q] Capacity (cfs)	[Q] Capacity (gpm)	[PF] Peaking Factor	[HU] Housing Units Served	Commercial Acres Served (ac)
6	0.00490	2.0	0.1963	0.393	176	2.32	467	28
8	0.00334	2.0	0.3491	0.698	313	2.15	896	50
10	0.00248	2.0	0.5454	1.091	490	2.03	1484	78
12	0.00194	2.0	0.7854	1.571	705	1.95	2224	112
15	0.00144	2.0	1.2272	2.454	1,102	1.86	3644	176
18	0.00113	2.0	1.7671	3.534	1,586	1.79	5453	253
21	0.00092	2.0	2.4053	4.811	2,159	1.74	7636	345
24	0.00077	2.0	3.1416	6.283	2,820	1.70	10208	451

Capacity of Walker Butte Phase 1 Stubs

- Assume 2 ft/sec minimum velocity
- Assume PVC pipe, with Manning's n = 0.013

Design Parameters:

Single Family Residence (SFR): 2.6 persons/D.U. @ 80 gallons/day per person
 Multi-Family (MF): 2.6 persons/D.U. @ 80 gallons/day per person
 Commercial: 3000 gallons/acre per day

Onsite Parcel Contribution

Units Served	Single Family (du)	Exceeds Minimum for 8" PIPE? ¹
1	113	NO
2	113	NO
3	229	NO
4	187	NO
5	170	NO
6	101	NO
7	122	NO
8	175	NO
9	95	NO

Note 1: Based on Capacity Calculation for 8" pipe at 0.0033 ft/ft slope, a maximum of 896 units may be served

Offsite Contribution

Node	Units Served	School & Pub. Fac. ¹ (acres)	Total Residential (du)	Total Commercial** (acres)	Q Commercial	
					(gpd)	(gpm)
MH-31 (South)	DD	15	0	15.00	45000	31.3

Notes:

1. Dwelling Units based on Planned Unit Development Narrative dated January 28, 2005 by UEG and Lazarus
2. Mixed Use considered residential since more conservative
3. Commercial Contribution = Acres x 3000

Walker Butte Phase 1 Sewer Pipe Sizing

- Assume 2 ft/sec minimum velocity
- Assume PVC pipe, with Manning's n = 0.013

Design Parameters:

Single Family Residence (SFR): 2.6 persons/D.U. @ 80 gallons/day per person
 Commercial/School: 3000 gallons/acre per day

Manhole ID	Units Served	No. of Lots	Area Population	Cumulative Upstream Population	Average Daily Flow (gpd)	Peak Factor	Peak Daily Flow (gpd)	Peak Daily Flow (gpm)	Cumulative Peak Flow (gpm)	Pipe Diameter (in)	Min Slope (ft/ft)	Min Velocity (ft/s)	Capacity (gpm)	% of Capacity
to Lift Station														
1			0	3398	271,840	2.06	605,422	420.4	420.4	10	0.00240	2.0	490	85.8%
2	1, 2, 9	259	674	2724	217,920	2.11	505,310	350.9	350.9	10	0.00240	2.0	490	71.6%
3	2	30	78	2646	211,680	2.12	493,581	342.8	342.8	10	0.00240	2.0	490	70.0%
4	2	32	84	2562	204,960	2.13	480,912	334.0	334.0	10	0.00240	2.0	490	68.2%
5	2	137	357	2205	176,400	2.16	426,596	296.2	296.2	8	0.00330	2.0	313.0	94.6%
6			0	2205	176,400	2.16	426,596	296.2	296.2	8	0.00330	2.0	313.0	94.6%
7			0	2205	176,400	2.16	426,596	296.2	296.2	8	0.00330	2.0	313.0	94.6%
8			0	2205	176,400	2.16	426,596	296.2	296.2	8	0.00330	2.0	313.0	94.6%
9	3, 8	267	695	1510	120,800	2.26	318,125	220.9	220.9	8	0.00330	2.0	313.0	70.6%
10			0	1510	120,800	2.26	318,125	220.9	220.9	8	0.00330	2.0	313.0	70.6%
11			0	1510	120,800	2.26	318,125	220.9	220.9	8	0.00330	2.0	313.0	70.6%
12	4	68	177	1333	106,640	2.30	289,746	201.2	201.2	8	0.00330	2.0	313.0	64.3%
13			0	1333	106,640	2.30	289,746	201.2	201.2	8	0.00330	2.0	313.0	64.3%
14	4, 7	241	627	706	56,480	2.49	185,353	128.7	128.7	8	0.00330	2.0	313.0	41.1%
15			0	706	56,480	2.49	185,353	128.7	128.7	8	0.00330	2.0	313.0	41.1%
16	5	170	442	264	21,120	2.84	104,978	72.9	72.9	8	0.00330	2.0	313.0	23.3%
17			0	264	21,120	2.84	104,978	72.9	72.9	8	0.00330	2.0	313.0	23.3%
18			0	264	21,120	2.84	104,978	72.9	72.9	8	0.00330	2.0	313.0	23.3%
19			0	264	21,120	2.84	104,978	72.9	72.9	8	0.00330	2.0	313.0	23.3%
20			0	264	21,120	2.84	104,978	72.9	72.9	8	0.00330	2.0	313.0	23.3%
21			0	264	21,120	2.84	104,978	72.9	72.9	8	0.00330	2.0	313.0	23.3%
22	6	36	94	170	13,600	3.03	86,163	59.8	59.8	8	0.00330	2.0	313.0	19.1%
23	6	21	55	115	9,200	3.21	74,526	51.8	51.8	8	0.00330	2.0	313.0	16.5%
24	6	24	63	52	4,160	3.64	60,122	41.8	41.8	8	0.00330	2.0	313.0	13.3%
25			0	52	4,160	3.64	60,122	41.8	41.8	8	0.00330	2.0	313.0	13.3%
26	6	20	52	0	0	0.00	45,000	31.3	31.3	8	0.00330	2.0	313.0	10.0%
27			0	0	0	0.00	45,000	31.3	31.3	8	0.00330	2.0	313.0	10.0%
28	school	1	0	0	0	0.00	45,000	31.3	31.3	8	0.00330	2.0	313.0	10.0%

Notes:

1. Offsite contribution calculation for MH 31 is calculated in Capacity of Walker Butte Phase 1 Stubbs

WALKER BUTTE PHASE 1 WET WELL DESIGN

VOLUME GIVEN CYCLE TIME AND FLOWS

$$t = V / (Q_{\text{pump}} - Q_{\text{in}}) + V / Q_{\text{in}}$$

t (min)	Q _{in} (gpm)	Q _{pump} (gpm)	Volume	
			(gal)	(ft ³)
30	420	500	2007.2	268.3

MINIMUM VOLUME GIVEN CYCLE TIME IN MINUTES

$$t = 4V / Q_{\text{out}}$$

t (min)	Q _{pump} (gpm)	Volume	
		(gal)	(ft ³)
6.5	500	812.5	108.6

CYCLE TIME GIVEN VOLUME AND FLOW

$$t = V / (Q_{\text{pump}} - Q_{\text{in}}) + V / Q_{\text{in}}$$

Volume (gal)	Q _{in} (gpm)	Q _{pump} (gpm)	Fill Time (min)	Cycle Time (min)	Empty Time (min)
812.5	420	500	1.96	10.18	12.14

Wet Well Height Calculation

$$H = \text{Volume} / \text{Area}$$

Diameter	8 ft
Area	50 ft ²
Height, H	6 ft

ATTACHMENT 2



Preliminary Water and Sewer Report
for
MONTESSA

Town of Florence
PINAL COUNTY, ARIZONA

Prepared for: **B & B2 LLC**
699 S. Mill Ave., #320
Tempe, AZ 85281
(480) 929-0444
Contact: Blake McKee

Prepared by: **Sunrise Engineering, Inc.**
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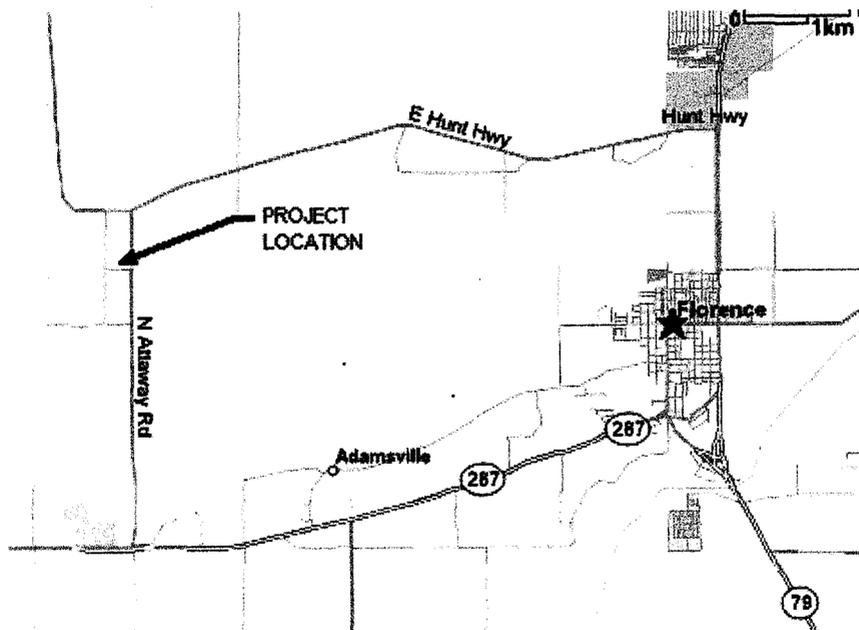
Date: **March, 2007**

1.0 Introduction

The purpose of this report is to present preliminary findings with respect to water and sewer service for the proposed development known as Montessa.

The project is in the Town of Florence and is located within the Southeast Quarter of the Northeast Quarter of Section 36, Township 4 South, Range 8 East (Gila and Salt River Meridian, Maricopa County, Arizona). More specifically, the site is on the West side of Attaway Road approximately 1400' South of the intersection of Attaway Road and Hunt Highway in Pinal County Arizona. See map below.

The existing condition is level undeveloped desert. There are no water and sewer facilities that front the parcel nor are there any facilities nearby.



2.0 Sewer Design and Offsite Connections

All design shall adhere to the Town of Florence, Johnson Utility and/or ADEQ standards as applicable.

It is early in the development of this parcel. However, sewer service for Montessa will be provided by Johnson Utilities. Sewer flows will gravity feed offsite and easterly to a lift station on the Monterra development located east of and adjacent to Attaway Road. A lift station there will pump sewage to the Johnson Utilities Waste Water Treatment Plant (WWTP) located in the Merrill Ranch/Anthem development.

3.0 Water Design and Offsite Connections

Water service will be provided by Johnson Utilities. All design shall adhere to the Town of Florence, Johnson Utility and/or ADEQ standards as applicable.

A 12" main will be extended south on Attaway Road from Johnson Utilities existing system. Within the subdivision all water lines will be 8" with some fire hydrant runs being 6".

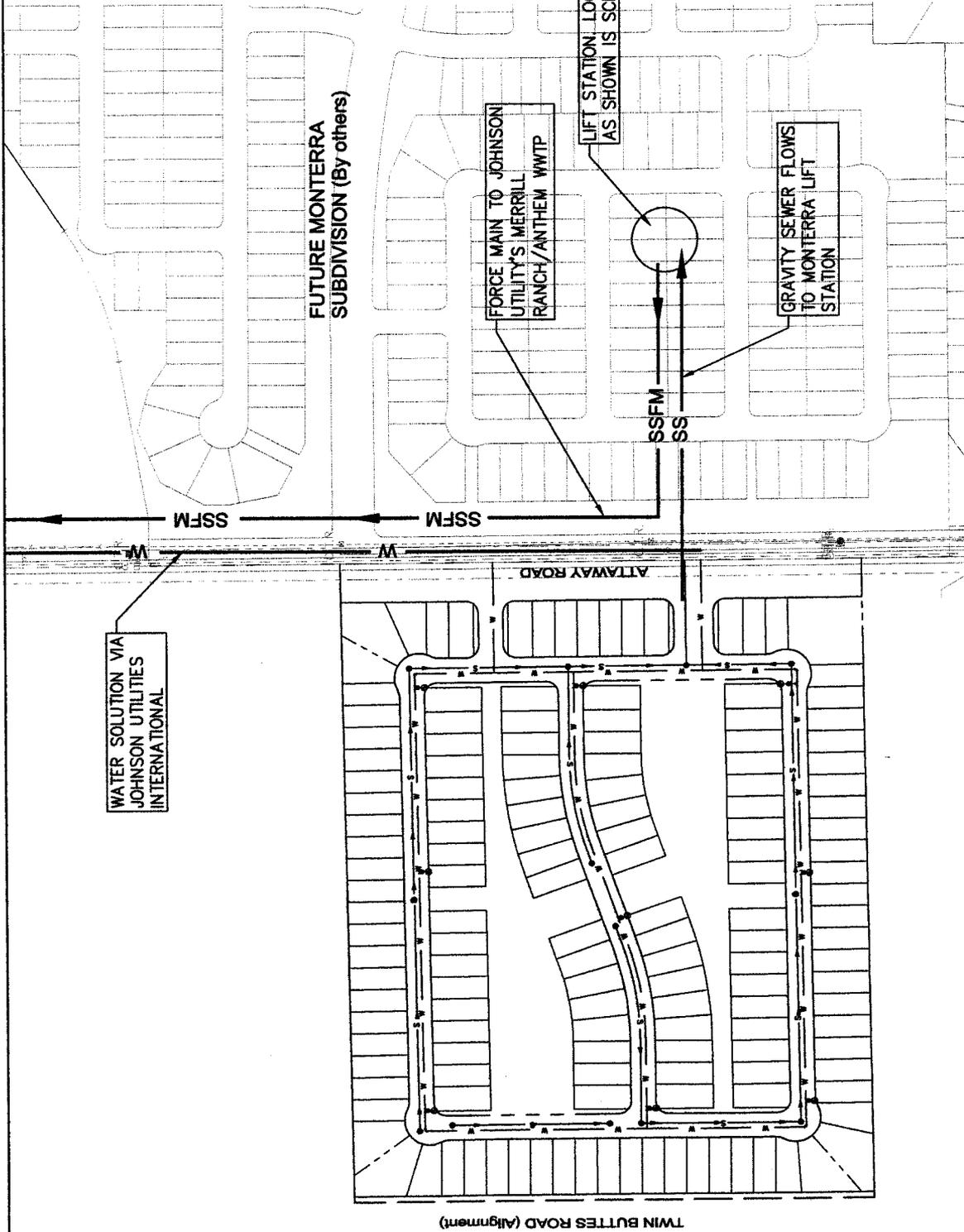
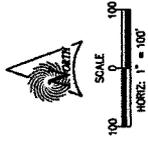
The alignment and sizes of the proposed waterlines are as shown in the Water and Sewer Exhibit. The water lines are located within the right of way or easement and service all the lots in the subdivision.

The minimum water line pipe diameter size of six inches is required to accommodate fire hydrants. The minimum waterline diameter is eight inches for dead-end hydrant lines longer than 300'. Sewer/Water Crossings were avoided when possible. However, all crossings shall conform to ADEQ APP R18-4-502.C. The water lines and sewer lines must have a minimum wall to wall horizontal separation of 6 feet and vertical separation of 2 feet in accordance with MAG Standard Detail 404.

During a shutdown, no more than 30 homes nor two fire hydrants shall be out of service. The maximum spacing for fire hydrants shall be 500 feet for this subdivision. Fire hydrants shall be constructed per MAG Standard Detail 360.

There is a minimum of three valves at all crosses, two at all tees, and one at each fire hydrant tee. No more than four valves shall be required to shut down any section of waterline in the system. All valve blocking shall be constructed per MAG Standard Detail 301.

The system shall be capable of sustaining the required amount of pressure during peak flows. There must also be available fire flow to the system given the required demand of 1,000 gallons per minute (gpm) per the Uniform Fire Code. An approximate minimum pressure of 20 pounds per square inch (psi) is desirable at all junctions in the system given this fire flow demand.



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MONTESSA
 Water and Sewer Exhibit
 B & B2 LLC
 SD Project Number: 01681
 March 9, 2007