

### PRELIMINARY WASTEWATER REPORT

**FOR** 

## "DISTRICT AT THE QUARTER"

# NEC OF N. GREENWAY HAYDEN LOOP & N. DIAL BLVD SCOTTSDALE, MARICOPA COUNTY, ARIZONA

#### PREPARED FOR:

KAPLAN ACQUISITIONS, LLC 7150 EAST CAMELBACK ROAD, SUITE 444 SCOTTDALE, MARICOPA COUNTY, ARIZONA 85251 BRADLEY
LINGVAI

ARIZONA U.S. ...

Dradly | Lingual

#### PREPARED BY:

BIG RED DOG ENGINEERING | CONSULTING, INC. 2021 E. 5<sup>TH</sup> STREET SUITE 110 AUSTIN, TEXAS 78702 ARIZONA ENGINEERING FIRM NO. 19744 BRD H001.008

**SUBMITTAL 2 - AUGUST 201** 



August 2016

H001.008

City of Scottsdale Planning and Development 7447 E Indian School Rd Scottsdale, AZ 85251

RE:

**Preliminary Engineering Report** 

District at the Quarter

NEC Greenway Hayden Loop & N. Dial Blvd Scottsdale, Maricopa County, Arizona City of Scottsdale
Water Resources Administration
9379 E. San Salvador
Scottsdale, AZ 85258

To Whom It May Concern:

Please let this letter and enclosed report serve as our formal Final Grading and Drainage Report for the proposed development, District at the Quarter, at the northeast corner of N. Greenway Hayden Loop and N. Dial Boulevard. The proposed development will include the demolition of the existing structures followed by the construction of a  $\pm$  620 unit multi-story apartment complex which will be composed of (2) buildings wrapped around (2) structural parking garages along with all associated grading, drainage, utility, landscape, and hardscape improvements.

The subject site is currently zoned Industrial Park (I-1) and is in the process of being rezoned to Planned Unit Development (PUD). The associated General Plan Amendment and Rezoning Applications are currently under as application numbers 3-GP-2016 and 8-ZN-2016.

Comments were issued on June 29, 2016, and are addressed in the Final Grading and Drainage Reports and include with this submittal package.

Please feel free to contact me at 832-730-1901 or at <a href="mailto:Patrick.Byrne@BIGREDDOG.com">Patrick.Byrne@BIGREDDOG.com</a> if you have any questions or concerns in regards to the information contained herein. We appreciate you working with us as we move forward with the associated development.

Sincerely.

**BIG RED DOG Engineering | Consulting** 

Patrick Byrne

Patrick Byrne Principal



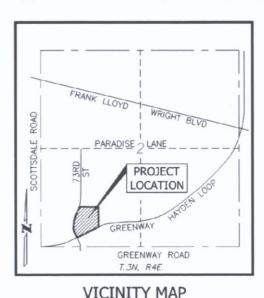
A. INTRODUCTION H001.008

#### 1. Site Location / Description

The subject site associated with this Preliminary Sanitary Report is for a proposed development, District at the Quarter, located at the northeast corner of N. Greenway Hayden Loop and N. Dial Blvd., in the Full Purpose Limits of the City of Scottsdale, AZ (see vicinity map and aerial below). The ±8.84 acre site is currently developed with a ±129,689 SF Office Building / Warehouse space, with associated utilities, desert landscaping, roadways and 4 retention ponds located throughout the site.

The proposed development will include the demolition of all existing structures followed by the construction of a  $\pm 620$  unit multi-story apartment complex which will be composed of (2) buildings wrapped around (2) structural parking garages along with all associated grading, drainage, utility, landscape, and hardscape improvements.

The subject site is currently zoned Industrial Park (I-1) and is in the process of being rezoned to Planned Unit Development (PUD). The associated General Plan Amendment and Rezoning Applications are currently underway as application numbers 3-GP-2016 and 8-ZN-2016.



NOT TO SCALE



#### 2. Purpose / Objective

The purpose of this Preliminary Sanitary Report is to identify and analyze the existing and proposed sanitary utility conditions and characteristics as it relates to the proposed development.

#### **B. DESIGN DOCUMENTATION**

#### 1. Design Criteria

District at the Quarter is to be designed to meet the requirements of the following:

BIG RED DOG Engineering and Consulting | 512-669-5560 | www.BIGREDDOG.com

#### **Table of Contents**

A.	Introduct	ion   1

- 1. Site Location / Description | 1
- 2. Purpose / Objective | 1
- B. Design Documentation | 1
  - 1. Design Criteria | 1
  - 2. Methodologies | 2
- C. Existing Conditions | 2
  - 1. Zoning / Land Use | 2
  - 2. Existing Topography / Vegetation | 2
  - 3. Existing Utilities | 2
- D. Proposed Conditions | 2
  - 1. Proposed Sanitary Layout Phase 1 | 2
  - 2. Proposed Sanitary Layout Phase 2 | 2
  - 3. Maintenance | 3
- E. Computations | 3
  - 1. Average Day Sewer Demand and Peak Flor for Existing Building | 3
  - 2. Average Day Sewer Demand and Peak Flow for Phase 1 of Proposed Development | 3
  - 3. Average Day Sewer Demand and Peak Flow for Phase 2 of Proposed Development | 4
  - 4. Combined Demand for Proposed Development | 4
- F. Design Documentation | 5
- G. Summary | 6
- H. References | 6

## **Appendix**

Aerial Map | 1

Existing Conditions | 2

Overall Site Plan w/ Phasing | 3

Preliminary Sanitary Sewer | 4



BIG RED DOG Engineering and Consulting | 512-669-5560 | www.BIGREDDOG.com

- City of Scottsdale Design Standard and Policies Manual (2010)
- MAG Uniform Standard Specifications for Public Work Construction (2016 Rev. to 2015 Ed.)
- City of Scottsdale Supplement to MAG Uniform Standard Specifications for Public Work Construction (2015)
- International Fire Code (2012)

#### 2. Methodologies

Design standards were taken from Section 7-1.403 of the City of Scottsdale Design Standards and Policies: Chapter 7 – Wastewater. Average and Peak value factors can be seen on Figure 7.1-2 Average Day Sewer Demand in Gallons.

#### C. EXISTING CONDITIONS

#### 1. Zoning / Land Use

The  $\pm 8.84$  acre site is currently zoned (I-1) Industrial Park district and is currently developed with a  $\pm$  129,689 SF office building / warehouse, with all associated parking, desert landscaping, utilities, and stormwater retention ponds. The site is currently in the process of being rezoned to Planned Unit Development (PUD). The associated General Plan Amendment and Rezoning Applications are currently underway as application numbers 3-GP-2016 and 8-ZN-2016.

#### 2. Existing Topography / Vegetation

The highest elevation point is 1,486 feet, along the northeast property line, with the lowest at 1,477 feet along the southwest property line, above Mean Sea Level. The site generally slopes from northeast to southwest. The site is fully developed but the required landscaping within the parking lots is made up of desert landscape area.

#### 3. Existing Utilities

The existing sanitary system consists of a 15-inch VCP sewer main located northwest of the site and extends along N. Greenway Hayden Loop. A 10-inch VCP sewer main is also located to the west of the site along N. Dial Boulevard. An 8-inch VCP southwest of the site collects the flow and connects it to the 15-inch VCP located along N Greenway Hayden Loop. Two 8-inch VCP mains to the west of the site merge and connect the flow to the 10-inch VCP located along N. Dial Boulevard. Reference the *Existing Conditions* in the Appendix as **Exhibit 2**.

#### D. PROPOSED CONDITIONS

#### 1. Proposed Sanitary Layout - Phase 1

Multiple sanitary sewer stubs are proposed in the N. Dial Blvd ROW to the restaurant, and south of the restaurant to the proposed development. The final stub in Phase 1 will occur along the south property line from N. Greenway Hayden Loop to the development. A *Preliminary Sanitary Sewer Layout* is in the Appendix of this report as **Exhibit 3**.

#### 2. Proposed Sanitary Layout - Phase 2

Sanitary lines are proposed in the fire lane along the northern and eastern property lines. These lines will stub from N. Greenway Hayden Loop and N. Dial Blvd. from the proposed lines in the fire



lane, multiple stubs are then proposed to the development. One more stub will occur in N. Dial Blvd. and will tie into the proposed building north of the interior drive aisle. A *Preliminary Sanitary Sewer Layout* is in the Appendix of this report as **Exhibit 3**.

#### 3. Maintenance

Sanitary infrastructure associated with Phase I will solely be service connections to existing lines within N Dial Blvd. and N Greenway Hayden Loop and therefore no public sanitary infrastructure is proposed with Phase I.

Phase II will require public sanitary lines to be installed within the 20' utility easement within the fire lane on the north and east side of the subject site. These lines will convey flows from the Phase II Building to N Dial Blvd. and N Greenway Hayden Loop and will be maintained by the City of Scottsdale.

#### **E. COMPUTATIONS**

#### 1. Average Day Sewer Demand and Peak Flow for Existing Building

The calculation for the average day sewer demand and peak flow for existing conditions are based off Design Flows located in Chapter 7 Section 7-1.403. Per the aforementioned table, "office" and "industrial" uses have a flow demand of 0.5 gallons per sf.

Average Day Demand 
$$= \left(\frac{gpd}{sf}\right) * (sf)$$
  
 $= (0.5) * (129,689)$   
 $= 64,845 \text{ gpd}$   
Peak Flow  $= (\text{Peaking Factor}) * (\text{Average Day Demand})$   
 $= (3) * (64,845)$   
 $= 194,535 \text{ gpd}$ 

#### 2. Average Day Sewer Demand and Peak Flow for Phase 1 of Proposed Development.

The proposed development consists of two phases with a total of 620 apartment units. Phase 1 contains 330 apartment units, 5,000 sf of restaurant space, a 5,373 sf fitness center, and 7,000 sf club house. Calculations for the proposed development are based of Design Flows Chapter 7 Section 7-1.403.

#### **Apartment**

Average Day Demand = 
$$\left(100 \frac{gpc}{d}\right) * (Demand Per Unit) * (Units)$$
  
=  $(100) * (2.5) * (330)$   
=  $82,500 \text{ gpd}$   
Peak Flow =  $(Peak Factor) * (Average Day Demand)$   
=  $(4) * (82,500)$   
=  $330,000 \text{ gpd}$ 



#### Restaurant

Average Day Demand 
$$=(\frac{gpd}{sf})*(sf)$$

$$= (1.2) * (5,000)$$
  
= 6,000 gpd

$$= (6) * (6,000)$$
  
= 36,000 gpd

#### **Fitness Center**

Average Day Demand = 
$$\left(\frac{g}{sf}\right) * (sf)$$

$$= (0.4) * (5,373)$$
  
= 2, 149. 2 gpd

$$= (3) * (2,149.2)$$
  
= 6,447.6 gpd

#### **Club House**

Average Day Demand = 
$$\left(\frac{g}{sf}\right) * (sf)$$

$$= (0.4) * (7,000)$$
  
= 2,800 gpd

#### Combined

$$= 82,500 + 6,000 + 2,149.2 + 2,800$$

$$= 93,449.2 \text{ gpd}$$

$$= 330,000 + 36,000 + 6,447.6 + 8,400$$

= 380,848 gpd

#### 3. Average Day Sewer Demand and Peak Flow for Phase 2 of Proposed Development.

The proposed development consists of two phases with a total of 620 apartment units. Phase 2 contains 290 apartment units, and a 2,500 sf deck club. Calculations for the proposed development are based of Design Flows Chapter 7 Section 7-1.403.



#### **Apartment**

Average Day Demand = 
$$\left(100 \frac{gpc}{d}\right) * (Demand Per Unit) * (Units)$$

$$=(100)*(2.5)*(290)$$

= 72,500 gpd

**Peak Flow** = (Peak Factor) \* (Average Day Demand)

= (4) \* (72,500) = **290**, **000** gpd

#### **Deck Club**

Average Day Demand  $= \left(\frac{g}{sf}\right) * (sf)$ 

= (1.2) \* (2,500)= 3,000 gpd

**Peak Flow** = (Peak Factor) \* (Average Day Demand)

= (6) \* (3,000)= 18,000 gpd

#### Combined

Average Day Demand = Apartment + Deck Club

= 72,500 + 3,000= **75,500 gpd** 

**Peak Flow** = Apartment + Deck Club

= 290,000 + 18,000 = **308,000 gpd** 

#### 4. Combined Demand for Proposed Development

The combined development consists of 620 Apartment units, a Restaurant, Fitness Center, Club House, and Deck Club.

Average Day Demand = Phase 1 + Phase 2

= 93,449.2 + 97,500 = **190**, **949**. **2 gpd** 

**Peak Flow** = Phase 1 + Phase 2

= 380,848 + 308,000 = **688**, **848** gpd

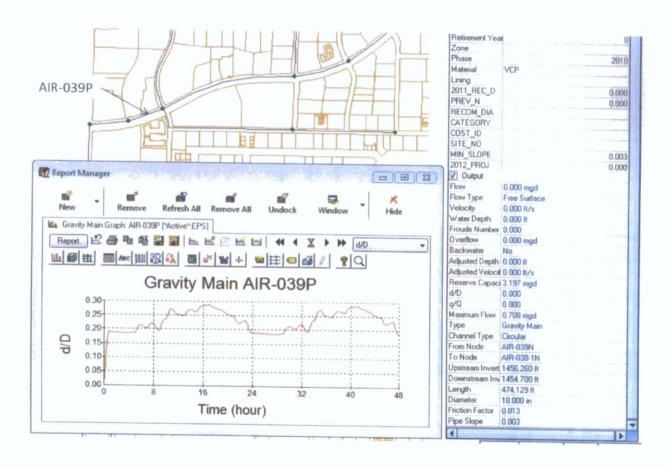


#### F. DESIGN DOCUMENTATION

Design of the sanitary infrastructure has been done according to The City of Scottsdale Design Standards and Policies Manual: Chapter 7 – Wastewater, as well as Maricopa Associate of Governments (MAG) Uniform Standard Specifications and Details for Public Works Construction. The design complies with pipe size, material, location/placement, design flows and hydraulic requirements, as pointed out in the above references design manuals.

Per coordination with the City of Scottsdale, offsite sanitary sewer analysis is not required.

#### 8-ZN-2016 District at the Quarter – Master Planned Offsite Sewer Flows (2035 DWF)



#### **G. SUMMARY**

This Preliminary Sanitary Report outlines the existing and proposed conditions of the ±8.84 acre development located at the northeast corner of N. Greenway Hayden Loop and N. Dial Blvd, to include calculations and infrastructure layout. Current infrastructure has been captured from the City of Scottsdale GIS and design is in accordance with the design manuals referenced in Section H. References.

BIG RED DOG has proposed two stub located at N. Greenway Hayden Loop, as well as four stubs from N. Dial Blvd. The fire lane will contain sanitary lines along the northern and eastern property line with multiple stubs to the proposed buildings.

Demand Scenario		
	Existing Conditions (gpd)	Proposed Conditions (gpd)
Average Daily Flow	64,845	190,449.2
Peak Flow	194,535	695,848

#### H. REFERENCES

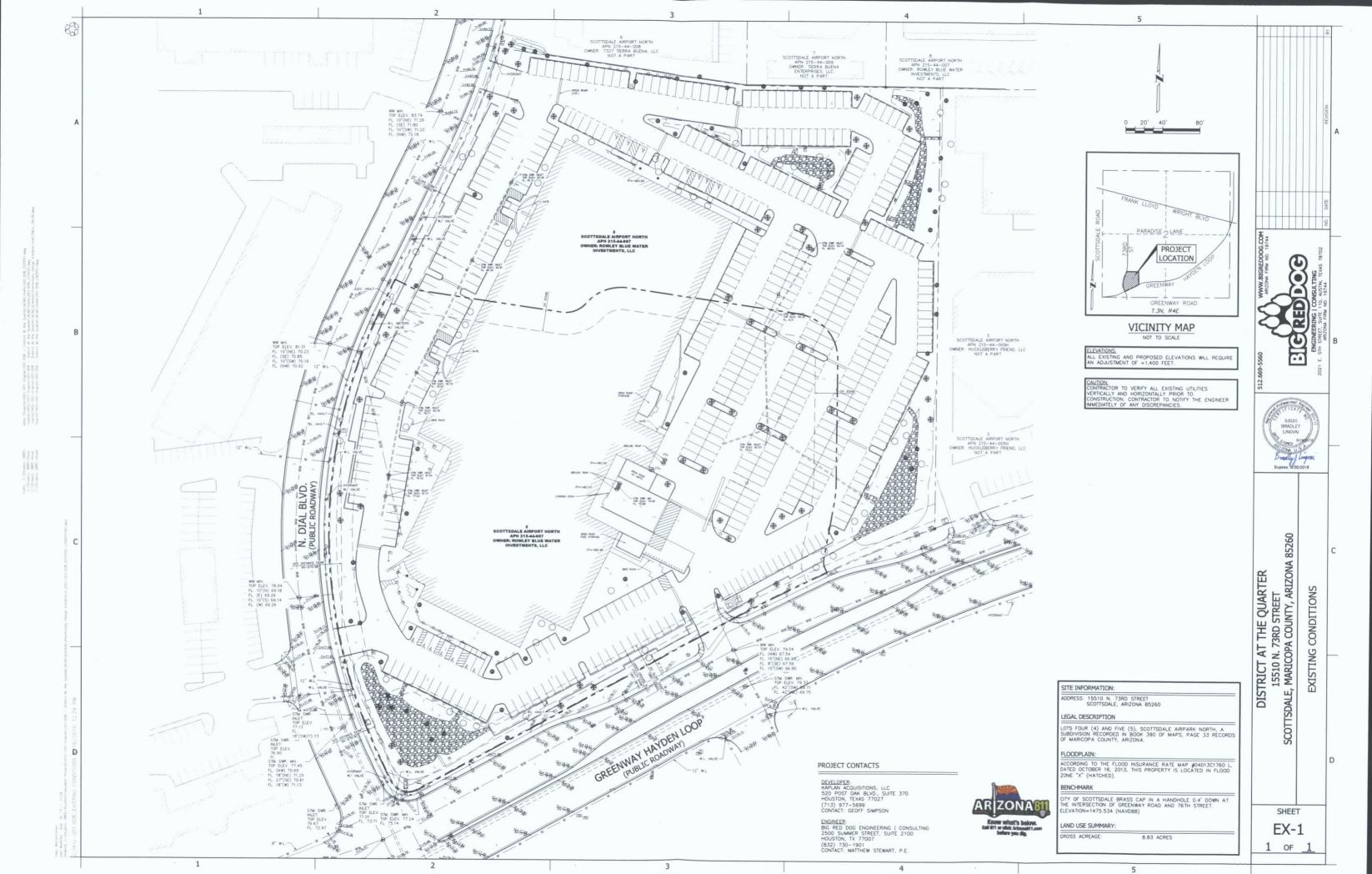
City of Scottsdale, Design Standards and Policies Manual: Chapter 7 – Wastewater – January 2010

MAG Uniform Standard Specifications and Details for Public Works Construction – January 2016

Scottsdale Geographic Information Systems - Water and Sewer Quarter Section Map 35-45

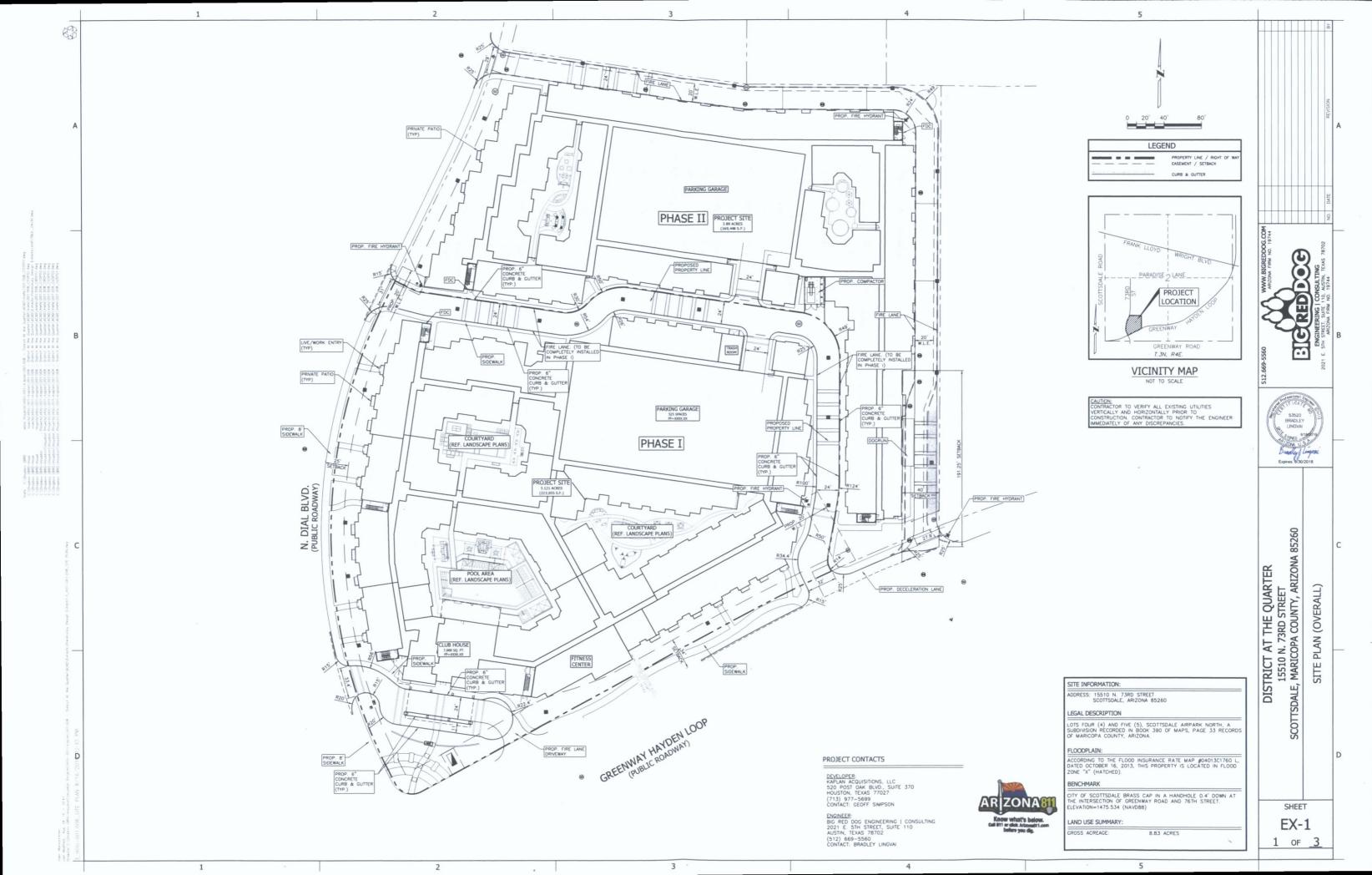
Aerial Map | 1

Existing Conditions | 2





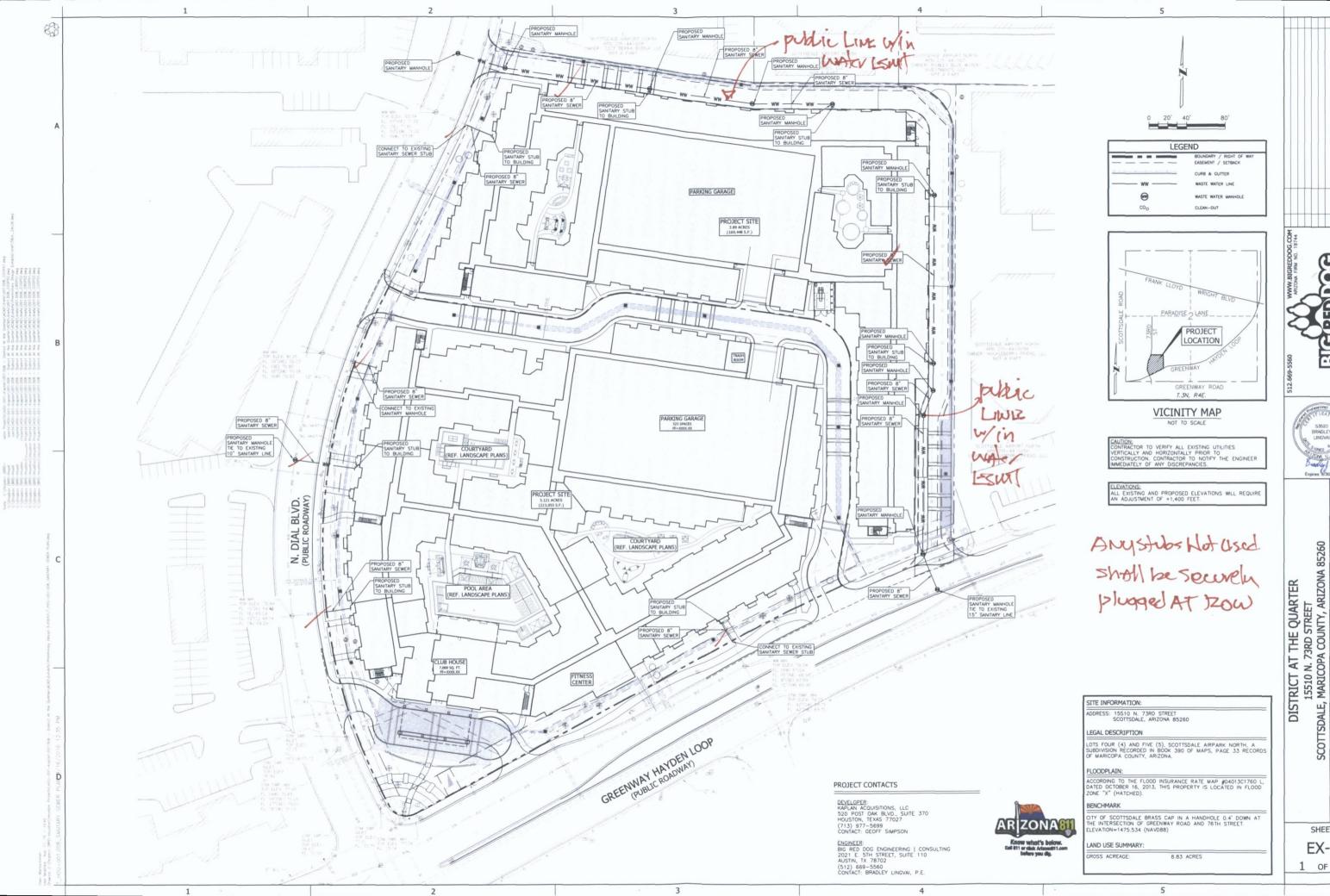
Overall Site Plan w/ Phasing | 3





## Preliminary Sanitary Sewer, 4

- EX 1 | OVERALL SANITARY LAYOUT
- EX 2 | PHASE I SANITARY LAYOYUT
- EX 3 | PHASE II SANITARY LAYOUT



PRELIMINARY SANITARY SEWER PLAN (OVERALL)

SHEET EX-1

1 of 3