

B. TOPOGRAPHY & GRADING

1. Topographic Characteristics

The rezoning site is relatively flat, with a uniform downward slope across the property from northeast to southwest; it is traversed by one (1) well-defined natural drainage swale and two (2) marginally defined ones, all of which flow in the same northeast-to-southwest direction. These drainages are discussed in more detail in Section I.C (Hydrology) of this Site Analysis. See Exhibit I-B.1a-e for existing-condition topography.

a. Restricted Peaks & Ridges

There are no restricted peaks or ridges on the property.

b. Rock Outcroppings, etc.

There are no rock outcroppings, etc. on the subject property.

c. Slope of 15% or Greater

The rezoning site contains no (0) slopes of fifteen percent (15%) or greater, and which are both longer than fifty feet (50') when measured in any horizontal direction, and taller than seven and one half feet (7.5') when measured vertically.

d. Other Significant Topographic Features

Other than the three aforementioned natural drainage swales that traverse the site, there are no significant or remarkable topographic features on the property.

e. Existing Grading and/or Ground Disturbance

The majority of the site is natural desert. Some minor ground disturbance has occurred along the Hardy Road street frontage, as well as within a segment of dirt roadway that exists along the property's south boundary.

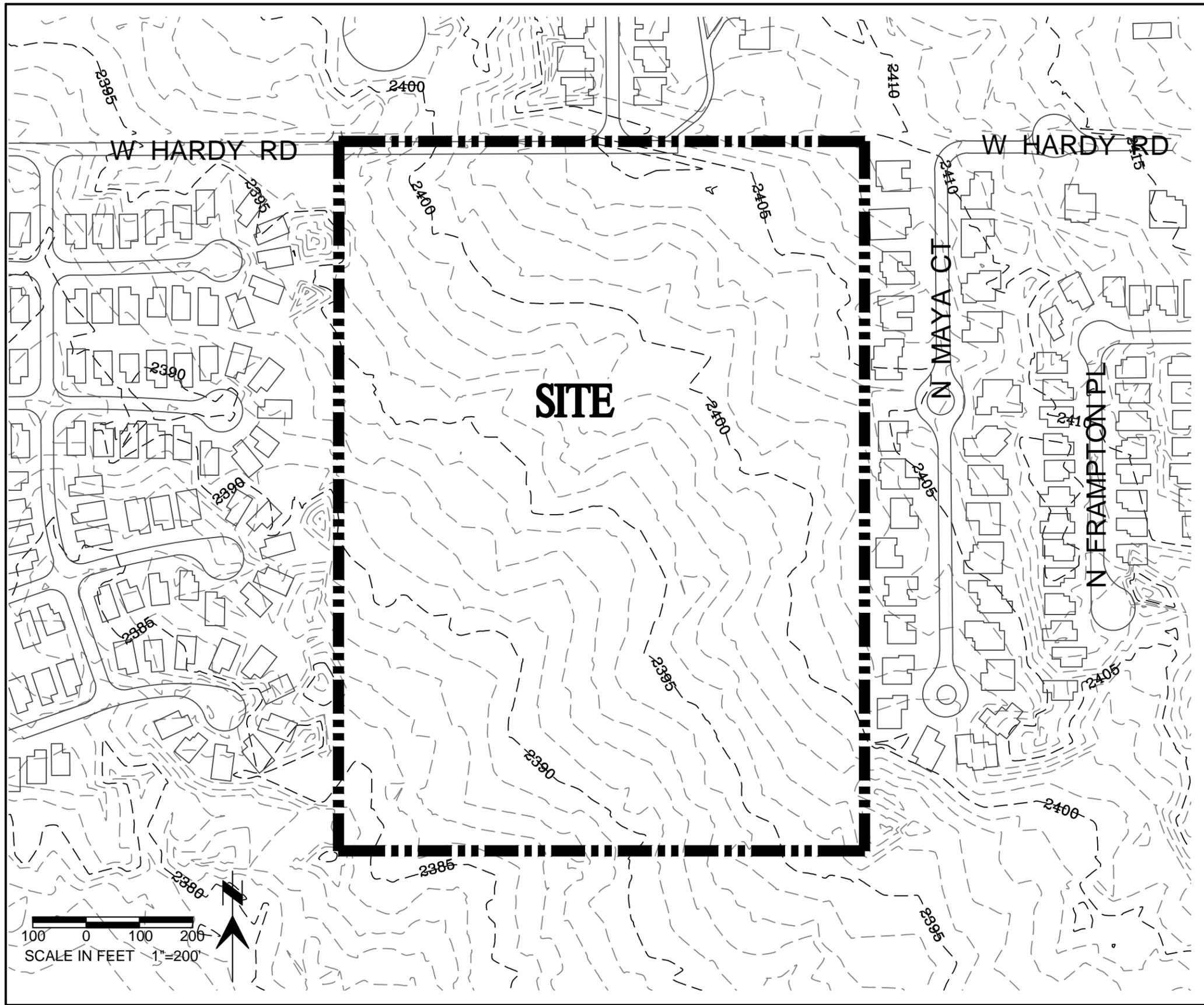
2. Pre-Development Average Cross-Slope

The average cross-slope calculation for the subject property, in accordance with Chapter 18.61 (Hillside Development Zone), is as follows:

$$\frac{(1' \text{ Contour Interval}) \times (19,565' \text{ Total Length of Contours}) \times (0.0023 \text{ Conversion})}{\text{-----}}$$

(30.00 AC Total Site Area)

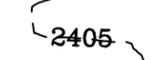
The resultant Average Cross Slope (ACS) = 1.50%.



LEGEND



Rezoning Site



Existing Condition Topographic Contour
(1' Interval)

Average Cross Slope = 1.50%

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 STRATEGIC GUIDANCE
 ENTITLEMENT PROCESSES
 LOCAL ADVICE & COUNSEL

GRS
 LANDSCAPE ARCHITECTS, LLC

Red Point Development, Inc.
 SOUTH SIDE HARDY RD, EAST OF THORNYDALE RD
 (Ownership Entities: Hardy-Thornydale I Associates, Fidelity National Title Trust #10760)
 REZONING: SR to CR-5

EXHIBIT I-B.1a-e
 TOPOGRAPHIC
 CHARACTERISTICS
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C. HYDROLOGY

1. Off-Site Watersheds

CMG Drainage Engineering, Inc. (CMG) has completed a comprehensive preliminary drainage assessment for four (4) specific properties controlled by Red Point Development, all of which are concurrently proceeding through the rezoning process. This CMG assessment is the source work used in this Site Analysis to present the specific hydrologic findings pertaining to the subject Hardy Road property. For this reason, the numbering of concentration points (e.g. CP-9) indicated in the Table below and on the accompanying exhibits has been taken as-is from the original CMG source work.

The findings presented here are based on the above assessment, the results of previous study information, such as FEMA/FIRM flood insurance mapping, as well as more recent hydrologic computations using the PC Hydro method.

The boundary of the off-site watersheds contributing stormwater to the subject Hardy Road property are shown on Exhibit I-C.1. Two (2) specific offsite watersheds were delineated for this property, both of which emanate approximately two miles to the northeast.

The surface drainage from these upstream watersheds results in three (3) concentrated flows that enter the property along its north and east boundaries (see Exhibit I-C.2 for the existing on-site drainage conditions discussed below). All three of the washes exist in their natural condition, except that a constructed channel is present off-site (within the adjacent Sunnyvale subdivision to the immediate west) between CP-12 and the subject property's southwest property corner.

CP-10 enters along the east property line. The upstream drainage area at CP-10 is 19.5 acres. CP-10 flows exit the property at CP-9, where the upstream drainage area is 37.8 acres.

CP-11 flows enter the site along the north property boundary. The upstream drainage area at CP-11 is 29.8 acres. CP-11 exits the property at CP-8, where the upstream drainage area is 41.2 acres.

CP-12 is the location where the largest flow enters the site (at its extreme northwest corner) via a dip section in Hardy Road. The upstream drainage area at CP-12 is 83.5 acres. Storm flows draining to CP-12 enter an existing improved channel (within the adjacent Sunnyvale subdivision) that drains southward along the entire west boundary of the subject property to CP-20. The storm run-off draining through the subject site via CP-9 & CP-10, together with the other flows conveyed to this existing off-site channel (CP-11 & CP-12), all combine to exit the site at CP-20. The cumulative upstream drainage area where this combined flow exits the property at CP-20 (at the extreme southwest corner of the subject site) is 162.5 acres.

2. Off-Site Natural or Man-Made Features

There is only a small number of constructed channels and detention basins within the upstream contributing watersheds. None of these are significant and there are no remarkable natural features within the contributing watersheds. No offsite features will be affected by the surface drainage traversing the property

3. Acreages & Discharges of Watersheds

The upstream areas of the offsite watersheds contributing to this parcel were described above in Item 1. They are summarized in the following Table, along with their existing (pre-development) 100-year peak discharges.

| Summary of 100-Year Peak Discharges | | |
|--|------------------------|-----------------------|
| Concentration Point Number | Q ₁₀₀ (cfs) | Drainage Area (Acres) |
| 9 | 188 | 37.8 |
| 10 | 105 | 19.5 |
| 11 | 139 | 29.8 |
| 12 | 263 | 83.5 |
| 20 | 534 | 162.5 |

4. On-Site Hydrology

The rezoning site is vacant and undeveloped in the existing condition. The project parcel consists of 100% pervious soils of hydrologic soil Types A, B & C. See Exhibit I.C.4a-g in support of the following:

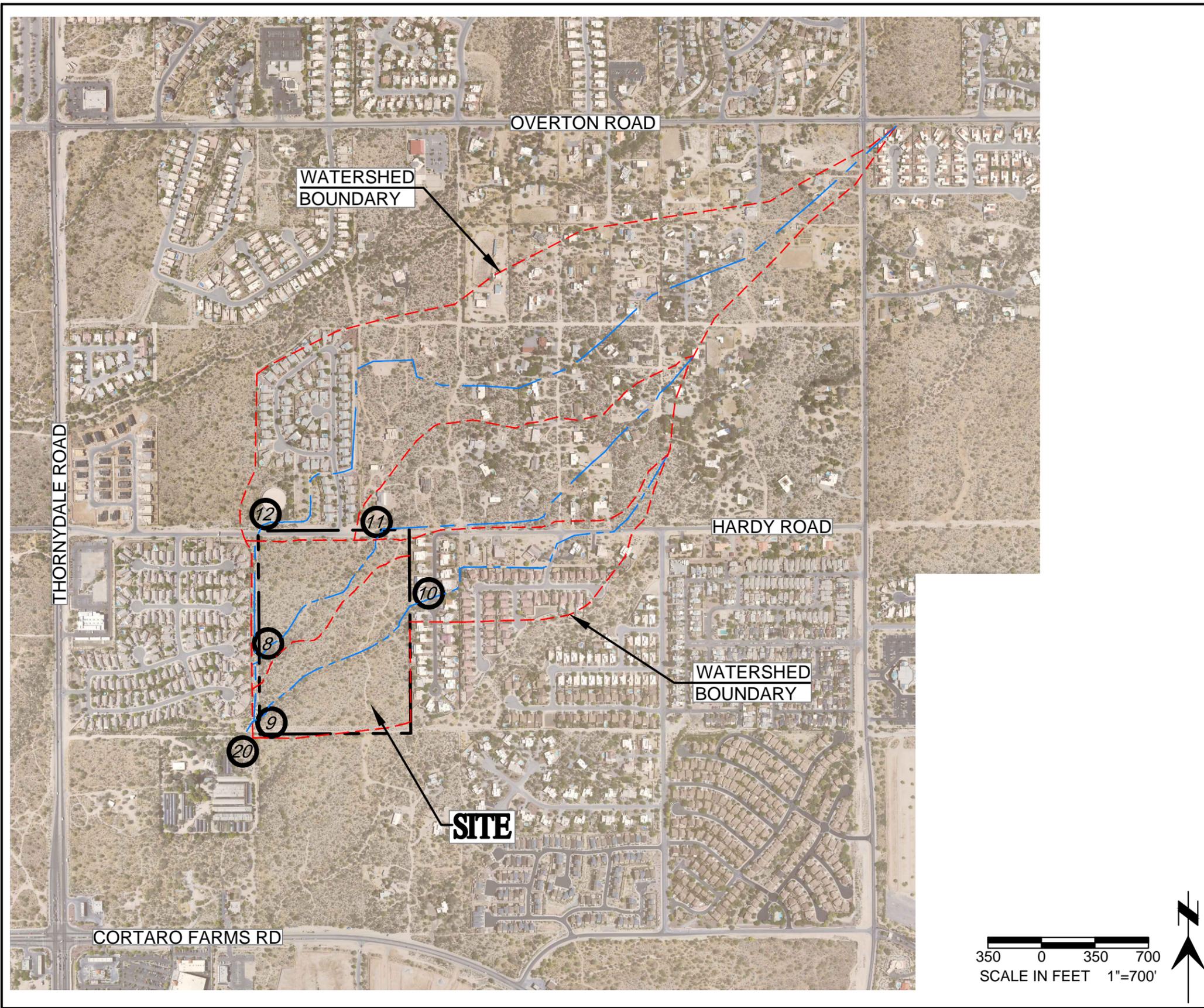
- a. The approximate 100-year regulatory floodplains have been delineated on the Exhibit for the washes in excess of 100 cfs traversing the site.
- b. No FEMA mapped floodplains exist on this property.
- c. The site includes three (3) concentration points (CP-10, 11 & 12) with peak discharges in excess of 100 cfs entering the site. Peak discharges were determined by the Pima County Regional Flood Control District (PCRFCDD) hydrology methods and the PC-Hydro computer program.
- d. The existing washes traversing the site exit the property in their natural state.
- e. The site contains riparian habitat area regulated per the Pima County RFCDD Flood Hazard Map; same is delineated on Exhibit I-C.2.
- f. The site contains no existing hydraulic structures or manmade hydraulic features.

- g. There are no sources of perennial surface water located on the site.
- h. According to Pima County Ordinance No. 2010 FC-5, 16.28.030, erosion hazard and building setback distances are required for the above-described watercourses traversing the property.

5. Qualitative Description of Downstream Drainage Conditions

The on-site washes exit the subject site in their natural condition, but then immediately enter a constructed drainage channel within the adjacent Sunnyvale subdivision. This constructed channel flows southward along the entire western boundary of the subject property, ultimately outletting its flows downstream of the subject site's southwest corner.

Exhibits to Follow



LEGEND

-  Rezoning Site
-  Watershed Boundary
-  Flow Centerline
-  Concentration Point (CP)

WATERSHED SUMMARY TABLE

| CONCENTRATION POINT ID | Q100 (CFS) | DA (AC) |
|------------------------|------------|---------|
| 8 (incl. CP-11) | 153 | 41.2 |
| 9 (incl. CP-10) | 188 | 37.8 |
| 10 | 105 | 19.5 |
| 11 | 139 | 29.8 |
| 12 | 263 | 83.5 |
| 20 (incl. CP-8,9 & 12) | 534 | 162.5 |

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EXHIBIT I-C.1
 OFFSITE HYDROLOGY
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