

**HYDROLOGY AND WATER QUALITY REPORT  
EXISTING CONDITIONS ANALYSIS  
IN SUPPORT OF THE INITIAL STUDY/  
MITIGATED NEGATIVE DECLARATION  
FOR  
BORREGO SPRINGS LIBRARY AND PARK PROJECT  
BORREGO SPRINGS  
SAN DIEGO COUNTY, CALIFORNIA**

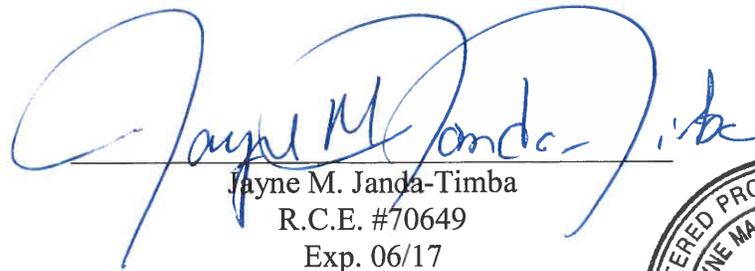
**Job Number 17547**

**September 4, 2015  
Revised: November 11, 2015**

**RICK**  
RICK ENGINEERING COMPANY  
ENGINEERING COMPANY  
RICK ENGINEERING CO

**HYDROLOGY AND WATER QUALITY REPORT  
EXISTING CONDITIONS ANALYSIS  
IN SUPPORT OF THE INITIAL STUDY/MITIGATED NEGATIVE  
DECLARATION  
FOR  
BORREGO SPRINGS LIBRARY AND PARK PROJECT  
BORREGO SPRINGS  
SAN DIEGO COUNTY, CALIFORNIA**

**Job Number 17547**

  
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## 1.0 INTRODUCTION

This report describes existing storm water drainage and storm water quality conditions surrounding the proposed Borrego Springs Library and Park Project (herein “project”) site in Borrego Springs, an unincorporated community in San Diego County, California. The proposed project is approximately 20.5 acres, including a 2.8 acre site for a library (with the possibility of an attached sheriff substation and expanded community room) and a 17.7 acre park, and is bounded by Country Club Road to the north and east, and undeveloped land to the south and west. Church Lane (also known as Sunset Road) runs between the library/sheriff substation and park sites. See Attachment A for the proposed location of the project site. This report is in support of the California Environmental Quality Act (CEQA) Initial Study for the project.

In the pre-project condition, the project site is vacant and undeveloped. There is no impervious area within the property. In the post-project condition, the project site will include a library/sheriff substation and park, and associated parking. Sidewalks and curb and gutter will be constructed along Country Club Road.

This report addresses the potential impacts of the project with regard to surface water hydrology and surface water quality based on items c, d, e, f, g, and h of Title 14, Chapter 3, Appendix G (Environmental Checklist Form) of the Guidelines for Implementation of CEQA. The surface water hydrologic analysis identifies surface water runoff and drainage characteristics, and identifies mitigation measures for impacts regarding flooding, erosion and siltation. The surface water quality analysis identifies anticipated pollutants from pre-project and post-project land uses, and identifies mitigation measures for impacts to surface water quality.

Pursuant to the Environmental Checklist Form, thresholds of significance applicable to the hydrology and water quality issues discussed in this report are whether the project would:

- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?
- e) Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- f) Otherwise substantially degrade water quality?
- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- h) Place within a 100-year flood hazard area, structures that would impede or redirect flood flows?

The storm water drainage analysis, Section 2.0, provides qualitative description of local (on-site / off-site) existing runoff patterns at the project site. The storm water quality analysis, Section 3.0, provides qualitative description of local (on-site) existing runoff characteristics, receiving water characteristics, and sensitivity of the receiving waters. Section 4.0 describes current regulations, policies and programs applicable to storm water drainage, floodplain management, and storm water quality in Borrego Springs that will dictate design criteria and standards for the Borrego Springs Library/Sheriff Substation and Park Project. Section 5.0 is a summary of the findings in this report.

## **2.0 GENERAL DRAINAGE CONDITIONS**

The project is located within the Hellhole Canyon alluvial fan within the Anza Borrego Hydrologic Unit, Borrego Hydrologic Area, Borrego Sink Hydrologic Subarea, which ultimately discharges to the Salton Sea. There is no storm water conveyance system in the area, and most storm water is likely to infiltrate or evaporate. Attachment B contains a regional drainage patterns exhibit, which identifies the project within the Hellhole Canyon Alluvial Fan drainage path, and a local and on-site drainage patterns exhibit, which identifies an existing wash and drainage patterns on-site. The area around the project is generally flat with a gentle slope southeast. There is a high point off-site at the Borrego Lutheran Church to the west of the project site. There is a defined wash that drains to the site from the west across Sunset Road along the southerly portion of the library/sheriff substation site, across the park site and discharges to Country Club Road to the east. The site is subject to erratic flooding due to the nature of alluvial fan flooding patterns. There is the potential to receive sediment on the westerly edge of the project from the alluvial fan drainage.

### **Pre-Project Drainage**

In the pre-project condition, the project site is undeveloped. There are no existing drainage structures on-site. There is a dirt berm on the northeast perimeter of the site, along Country Club Road. Pre-project storm water is likely to infiltrate or evaporate, or any storm water leaving the site is likely to collect against the dirt berm on-site then flow from northwest to southeast parallel to Country Club Road. Due to the nature of alluvial fan drainage, there is potential for sediment to be deposited on-site, and/or there is the potential that if storm water leaves the site, it could convey a large amount of sediment off-site.

## **Post-Project Drainage**

The project involves constructing a library building (with the possibility of an expanded community room in the library and an attached sheriff substation), a park, and associated parking area. The project also includes the installation of curb and gutter and paved sidewalks along Country Club Road. Storm water runoff generated at the site will likely discharge to the east, then follow the curb and gutter southerly in Country Club Road. Storm water delivered to the site from the west will likely be diverted around the site either southerly to the wash on the south side of the proposed library/sheriff substation site, or northerly to Country Club Road, otherwise it must be conveyed through the site.

The project will create impervious surfaces and alter drainage flow patterns at the project site. The addition of impervious surfaces will increase the amount of runoff generated at the site by removing areas where storm water may currently infiltrate in the pre-project condition. Additionally it can be expected that new constructed areas will be graded to drain, therefore runoff that may currently evaporate in the pre-project condition if ponded against the existing berm along Country Club Road will drain offsite in the post-project condition. The combination of increased runoff generated by new impervious surfaces and alteration of the drainage flow pattern will increase runoff discharged from the site. Drainage flow patterns in the vicinity of the project may also be altered by re-directing runoff that is delivered from westerly offsite area around the site or concentrating this runoff through the site, and by concentrating runoff generated onsite. Drainage flow patterns would also be altered by the contoured berms/mounds shown on the Conceptual Park Site Plan, which appear to be near the existing wash.

Due to the potential for increased runoff and altered drainage patterns, mitigation measures will be necessary for increased runoff and altered drainage. The project must conform to the County of San Diego's requirements for drainage design presented in the "San Diego County Drainage Design Manual" dated July 2005, and any requirements imposed by the County of San Diego for mitigating potential increased delivery of storm water runoff to Country Club Road, Church Lane (also known as Sunset Road), and/or

the existing wash south of the project site. The project must also comply with the Post-Construction Water Balance Calculator (see discussion in Section 4.0 of this document), which will require practices that capture additional runoff generated in the post-construction condition. Although the primary purpose of the practices is water quality protection, any practices implemented to capture runoff generated will contribute to mitigation for drainage conditions.

When designing drainage features and any structural practices for runoff reduction, consideration must be given to the potential high sediment load expected in alluvial fan drainage. While impervious areas onsite will likely not be a source of sediment, the natural drainage from westerly offsite area can be expected to deposit sediment at the site. Since the site may be trapping sediment in the pre-project condition, diversion of runoff from westerly offsite area around the site could result in increased delivery of sediment to Country Club Road or increased sediment load in the wash south of the site. The County of San Diego will be responsible to review and approve drainage studies regarding the discharge of storm water runoff from the site, and diversion of runoff from westerly offsite areas around the site (if applicable).

Potential sediment-laden runoff from westerly offsite area should be diverted around any onsite structural mitigation measures proposed for mitigation of increased runoff (for example, if pervious paving or infiltration features are proposed to mitigate increased runoff generated from new impervious surfaces, storm water from offsite should not be conveyed across or through the features) because it could clog the features.

### **Floodplains**

The project is located in the County of San Diego, Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP) Community Number 060284, and appears on a Flood Insurance Rate Map (FIRM) Panel: 06073C 0645 G. The project is within the flow path of the Hellhole Canyon Alluvial Fan.

The Hellhole Canyon Alluvial Fan has been studied and documented in the FEMA “Flood Insurance Study for San Diego County, California and Unincorporated Areas,” (FIS). The initial FEMA analyses were performed for Hellhole Canyon in 1984.

Based on the FIS, the Hellhole Canyon alluvial fan encompasses approximately 4.8 square miles, measured from the apex of the alluvial fan to the Borrego Sink area. Drainage from this watershed is conveyed to an unnamed stream, then to the Borrego Sink.

FEMA Flood Zones within the project include Zone AO. “Zone AO” is an area subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Based on the FIRM, the expected depth of water at the project site for the 1-percent annual chance is 2 feet, flowing at 6 feet per second.

An exhibit showing FEMA Flood Zones and a copy of the FIRMette, which show portions of the FIRM Panels that include the project site, is included in Attachment C. The FIRMette is annotated with the project boundary and other pertinent information. Note that a FIRMette is a full-scale section of a FEMA Flood Insurance Rate Map (FIRM) that can be created online and is formatted to fit on printers (i.e., 8.5x11 inch or 11x17 inch paper size). The project proposes a concrete pad to be used for a volunteer to live in a mobile home, with connected water, a shade structure, and a photovoltaic/battery storage system for electricity use. This will place housing within a 100-year flood hazard area. The project will place structures that could impede or re-direct flood flows; therefore mitigation measures will be required. The project must comply with the County of San Diego’s regulations for construction within an alluvial fan. See Attachment D for excerpts from the County regulations.

### **3.0 GENERAL WATER QUALITY CONDITIONS**

#### **Pre-Project Water Quality**

In the existing condition, the project site is undeveloped and pervious. There are no sources of pollutants originating at the site from human activities.

Due to the overall drainage patterns of the region and alluvial fan flooding, pollutants from residential areas existing off-site could be conveyed to the site, and may or may not leave the site depending on whether stormwater infiltrates at the site or is conveyed through the site. The existing dirt berm along Country Club Road may trap trash within the site.

#### **Post-Project Water Quality**

The project proposes to create a library (with possible expanded community room), a possible attached sheriff substation, and a park with a dog park, with associated parking. There is a proposed dog park on the easterly edge of the park site. This could introduce the following new potential pollutants from human activities: nutrients, sediment, heavy metals, organic compounds, trash and debris, bacteria and viruses, and oil and grease. In addition to potentially generating new pollutants, increased runoff due to new impervious areas can increase transport of pollutants off-site. Mitigation measures will be necessary to prevent off-site transport of these new potential pollutants. The project must comply with the Post-Construction Water Balance Calculator (see discussion in Section 4.0 of this document), which will require practices that capture additional runoff (and pollutants) generated in the post-construction condition. Drainage features implemented for diversion of conveyance of storm water from westerly off-site area or through the site may also incidentally trap trash delivered to the site from off-site area, therefore the design of the drainage features should account for this possibility.

## **Receiving Waters**

The receiving water receiving storm water runoff from the Borrego Springs Library/Sheriff Substation and Park Project is an unnamed stream, which ultimately drains to the Borrego Sink. Attachment A contains a drainage region map, which identifies the drainage region and locations of existing channels. According to the “Water Quality Control Plan for the Colorado River Basin Region 7” (1994 and amendments) (herein “Basin Plan”), the project is located in the following hydrologic basin planning areas:

- **722.13:** Anza Borrego Hydrologic Unit (722), Borrego Hydrologic Area (.1), Borrego Sink Hydrologic Sub Area (.13)

## ***Beneficial Uses of Receiving Waters***

Beneficial uses are the uses of water necessary for the survival or well being of humans, plants and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals of humankind. Water quality objectives and beneficial uses can be found in the Basin Plan.

## **Beneficial Uses for Unnamed Stream**

Based on the Basin Plan, the following beneficial uses have been identified as intermittent for the unnamed stream in Hydrologic Unit Basin Number 722.13: Industrial Service Supply (IND), Ground Water Recharge (GWR), Non-Contact Water Recreation (REC-2), and Wildlife Habitat (WILD)

### ***303(d) List***

Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop a list of water quality limited segments. These waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that the above-mentioned jurisdictions establish priority rankings for water on the lists and develop action plans, called Total Maximum Daily Loads (TMDLs), to improve water quality.

Numerous studies of receiving water quality and sediment quality in the Colorado River Basin have been performed by several agencies, and the studies have found that beneficial uses are impacted by the existing water quality conditions. As a result some receiving waters have been listed for several pollutants and TMDLs are in place or in progress.

The receiving waters for the project, unnamed stream and Borrego Sink, are not currently listed as impaired based on California's List of Polluted Waters [California's 2008-2010 Section 303(d) List], a component of the California 2010 Integrated Report [Clean Water Act Section 303(d) List and 305(b) Report], approved by the USEPA on October 11, 2011. Because the receiving waters are not listed, no TMDLs are applicable.

#### **4.0 CURRENT REGULATIONS, POLICIES AND PROGRAMS**

This Section discusses existing policies and regulations that apply to drainage and water quality in the County of San Diego. Development projects in Borrego Springs are subject to requirements and design criteria outlined in these policies and regulations.

##### **Drainage**

Drainage design policies and procedures for construction in the County of San Diego are given in the “San Diego County Hydrology Manual,” dated June 2003 and the “San Diego County Drainage Design Manual,” dated July 2005. The Hydrology Manual provides a guide for designing drainage and drainage related facilities within the County of San Diego. The project must conform to the local drainage design policies. The County of San Diego will be responsible to enforce these policies.

##### **Floodplain Management**

###### ***National Flood Insurance Program (NFIP)***

The NFIP is a Federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods. Participation in the NFIP is based on an agreement between local communities and the Federal Government that states if a Community will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the Federal Government will make flood insurance available within the Community as a financial protection against flood losses.

In support of the NFIP, FEMA identifies flood hazard areas throughout the United States and its territories by producing Flood Hazard Boundary Maps (FHBMs), Flood Insurance Rate Maps (FIRMs), and Flood Boundary & Floodway Maps (FBFMs). Several areas of flood hazards are commonly identified on these maps. One of these areas is the Special Flood Hazard Area (SFHA) or high risk area defined as any land that would be inundated by the 100-year flood – the flood having a 1-percent chance of occurring in any given year (also referred to as the base flood). See Attachment B of this document for the SFHAs within the Borrego Springs Library/Sheriff Substation and Park Project. Development may take place within the SFHA, provided that development complies with local floodplain management ordinances, which must meet the minimum Federal requirements.

The County of San Diego is a participating Community in the NFIP. The project will need to comply with the “Floodplain Management Plan (FMP) for County of San Diego, California,” adopted August 2007. See Attachment D for excerpts from the FMP. The requirements in the FMP include elevating the lowest floor above the highest adjacent grade to at least as high as the depth number specified on the FIRM, placing mechanical and utility equipment above the depth of flooding, providing adequate drainage paths around structures on slopes to guide floodwater around and away from proposed structures, and not deflecting flood flow onto adjacent properties. The “San Diego County Code of Regulatory Ordinances Division 11: Flood Damage Prevention” also has regulations on construction within an alluvial fan. The requirements in the Flood Damage Prevention Ordinance include elevating the lowest floor, floodproofing the building below the base flood elevation, not causing a major disruption to the natural alluvial fan process, protecting foundations from erosion, and other requirements. See Attachment D for excerpts from the Flood Damage Prevention Ordinance. The County of San Diego will be responsible to review the design and enforce floodplain regulations.

## Water Quality

### *Construction*

The project site is greater than 1 acre and therefore will be subject to the requirements of the State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002 (herein “Construction General Permit”), or a future SWRCB Order reissuing the Construction General Permit. For coverage under the Construction General Permit, the County of San Diego is required to submit to the SWRCB a Notice of Intent (NOI) to comply with the Construction General Permit, and develop a Storm Water Pollution Prevention Plan (SWPPP) describing the Best Management Practices (BMPs) to be used during and after construction to prevent the discharge of sediment and other pollutants in storm water runoff from the project. There is the potential that storm water may be discharged from the site during construction, and there is the potential for pollutants such as sediment, trash or construction materials to be conveyed off-site by tracking or by wind.

To address water quality concerns during construction, a site-specific SWPPP for the project must be prepared prior to the commencement of construction of the project. Section XIV of the Construction General Permit describes the elements that must be contained in a SWPPP. The County of San Diego will be the responsible party for the SWPPP. The SWPPP must describe site-specific BMPs, typically including good housekeeping practices, sediment controls and erosion controls. Good housekeeping practices include street sweeping, waste disposal, vehicle and equipment maintenance, and scheduling. Sediment controls include silt fence, fiber roll, gravel bag berms, wind erosion controls, and stabilized construction entrances. Erosion controls include stabilizing inactive areas and slopes, and preservation of existing vegetation. Construction BMPs must be selected, constructed and maintained so as to comply with all applicable ordinances and guidance documents.

### ***Post-Construction***

The project is in an unincorporated area of California not covered under an adopted Phase 1 or Phase 2 SUSMP requirements, therefore the project will need to comply with the Construction General Permit Order No. 2009-0006-DWQ Post Construction Water Balance Performance Standard. The Post-Construction Water Balance Calculator will need to be completed including information on the county where the project is located, the soil type at the project site, the existing and proposed land use types, total site area, sub-watershed, existing and proposed impervious areas. The Post-Construction Water Balance Calculator suggests various non-structural practices to capture additional stormwater runoff generated in the post-construction condition, such as porous pavement, tree planting, downspout disconnection, green roofs, stream buffers, vegetated swales, rain barrels and cisterns and landscaping soil quality. The Regional Water Board must approve the non-structural practices used to capture runoff.

### **Other Programs**

#### ***County of San Diego General Plan: Borrego Springs Community Plan***

The County of San Diego General Plan: Borrego Springs Community Plan adopted August 3, 2011, presents goals and policies for surface, groundwater and watersheds in the Conservation and Open Space section, and goals and policies for flooding in the Safety section. Relevant excerpts are included in Attachment E. The Borrego Springs Community Plan encourages xeriscape landscaping in residential and business developments.

## 5.0 SUMMARY AND CONCLUSIONS

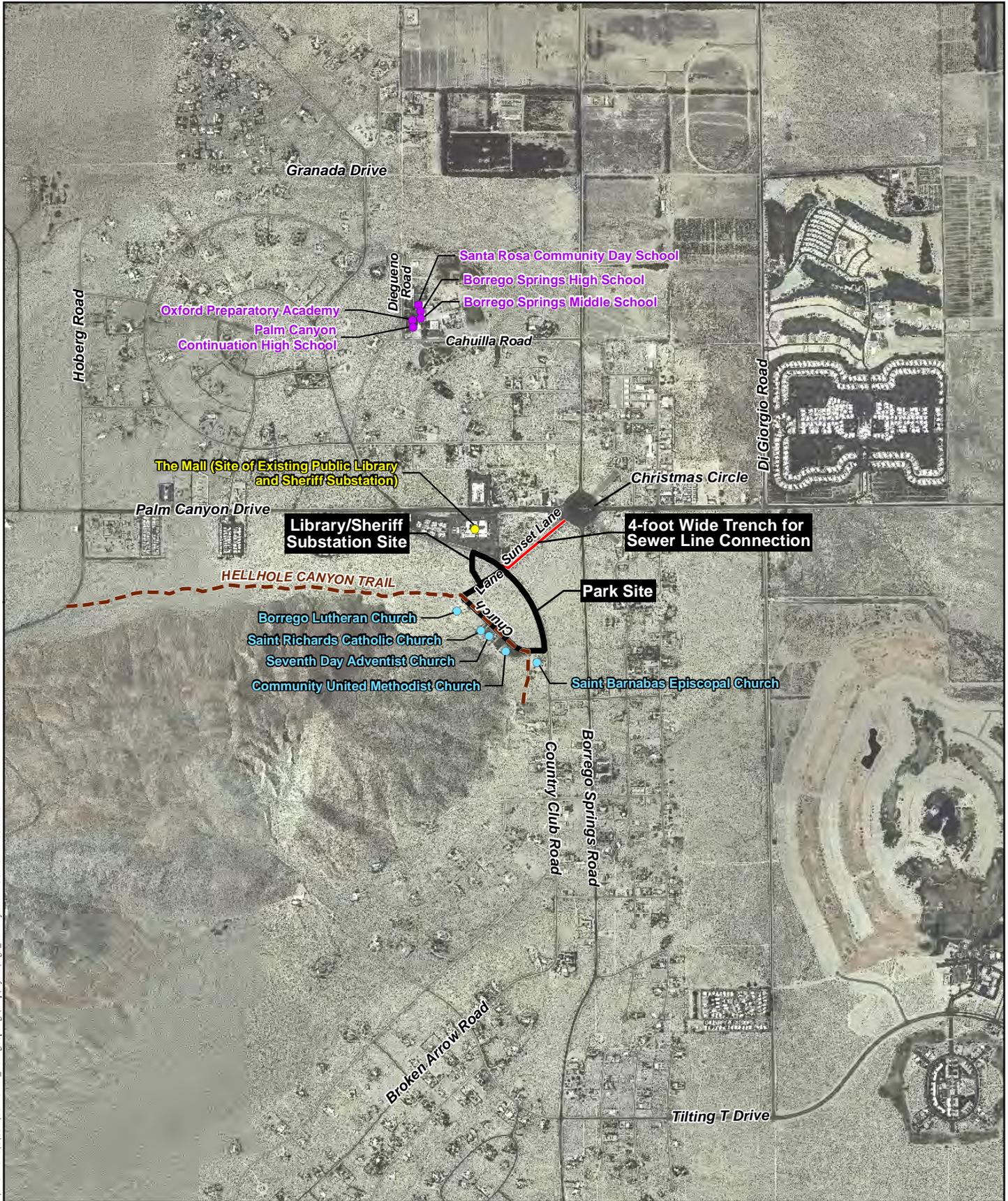
This report summarizes drainage and storm water quality for the Borrego Springs Library/Sheriff Substation and Park Project. The project proposes the construction of a library building (with the possibility of an attached sheriff substation and expanded community room) and a public park with associated parking areas on an approximately 20.5 acre lot in Borrego Springs, California. The following are findings and conclusions of this report:

- The project will create impervious surfaces and alter drainage flow patterns at the project site.
- Since the site may be trapping sediment in the pre-project condition, diversion of runoff from westerly off-site area around the site could result in increased delivery of sediment to Country Club Road or increased sediment load in the wash south of the site.
- Due to the potential for increased runoff and altered drainage patterns, mitigation measures will be necessary for increased runoff and altered drainage. The project must conform to the County of San Diego's requirements for drainage design presented in the "San Diego County Drainage Design Manual" dated July 2005, and any requirements imposed by the County of San Diego for mitigating potential increased delivery of storm water runoff to Country Club Road, Sunset Road, and/or the existing wash south of the project site.
- This could introduce the following new potential pollutants from human activities: nutrients, sediment, heavy metals, organic compounds, trash and debris, bacteria and viruses, and oil and grease.
- Mitigation measures will be necessary to prevent off-site transport of these new potential pollutants. The project must comply with the Post-Construction Water Balance Calculator (see discussion in Section 4.0 of this document), which will require practices that capture additional runoff (and pollutants) generated in the post-construction condition.

- The project proposes a concrete pad for a mobile home for a volunteer to live in, therefore it will place housing within a 100-year flood hazard area. The project will place structures that could impede or re-direct flood flows, therefore mitigation measures will be required. The project must comply with the County of San Diego's regulations for construction within an alluvial fan.

**ATTACHMENT A**

**Project Vicinity Map**  
**Library/Sheriff Substation Site Plan**  
**Conceptual Park Site Plan**



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## Project Vicinity Map

BORREGO SPRINGS LIBRARY AND PARK PROJECT



Figure 1



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# Library/Sheriff Substation Site Plan

BORREGO SPRINGS LIBRARY AND PARK PROJECT

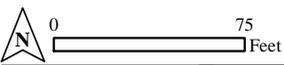
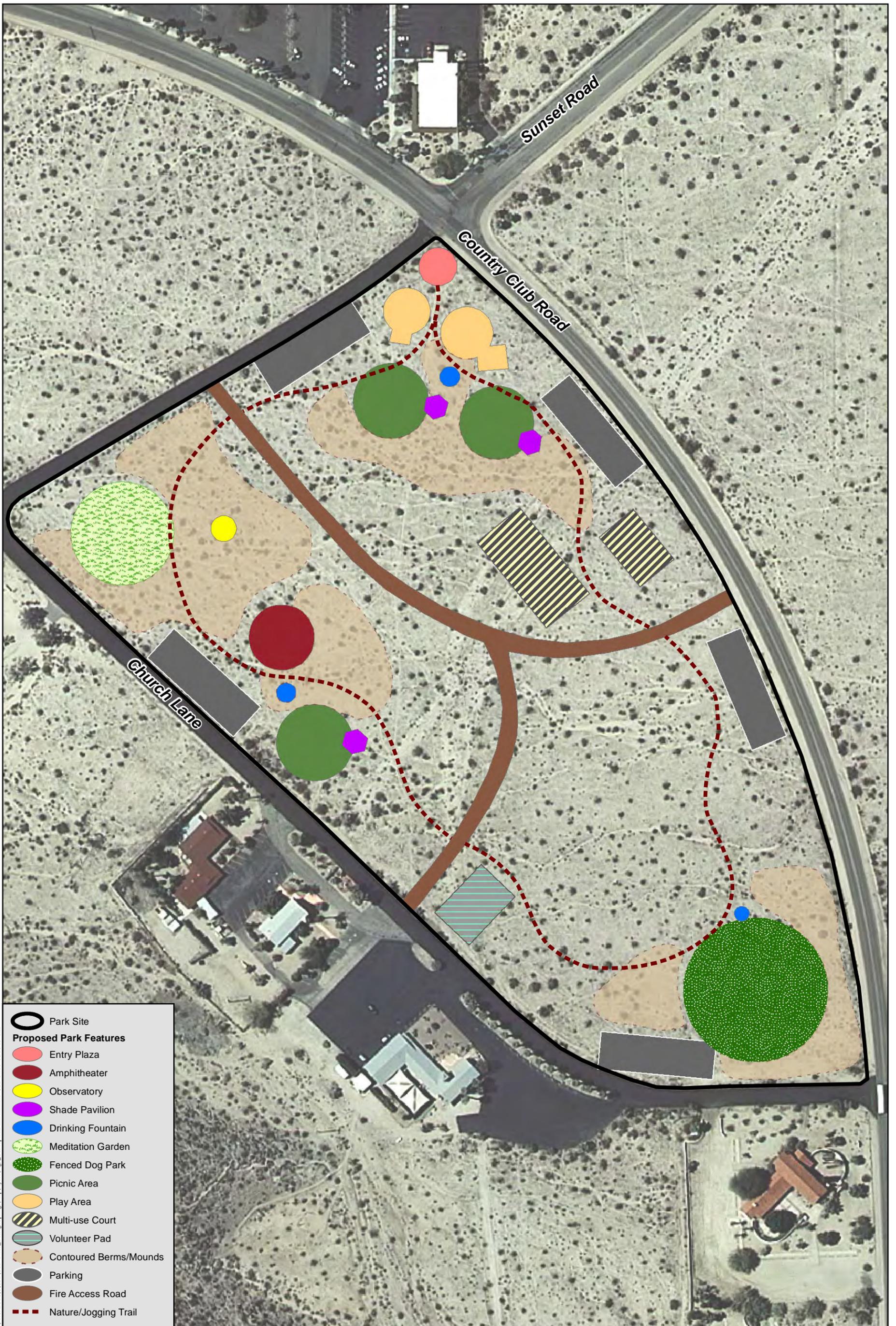


Figure 2



### Conceptual Park Site Plan

BORREGO SPRINGS LIBRARY AND PARK PROJECT

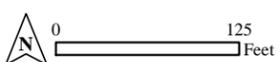


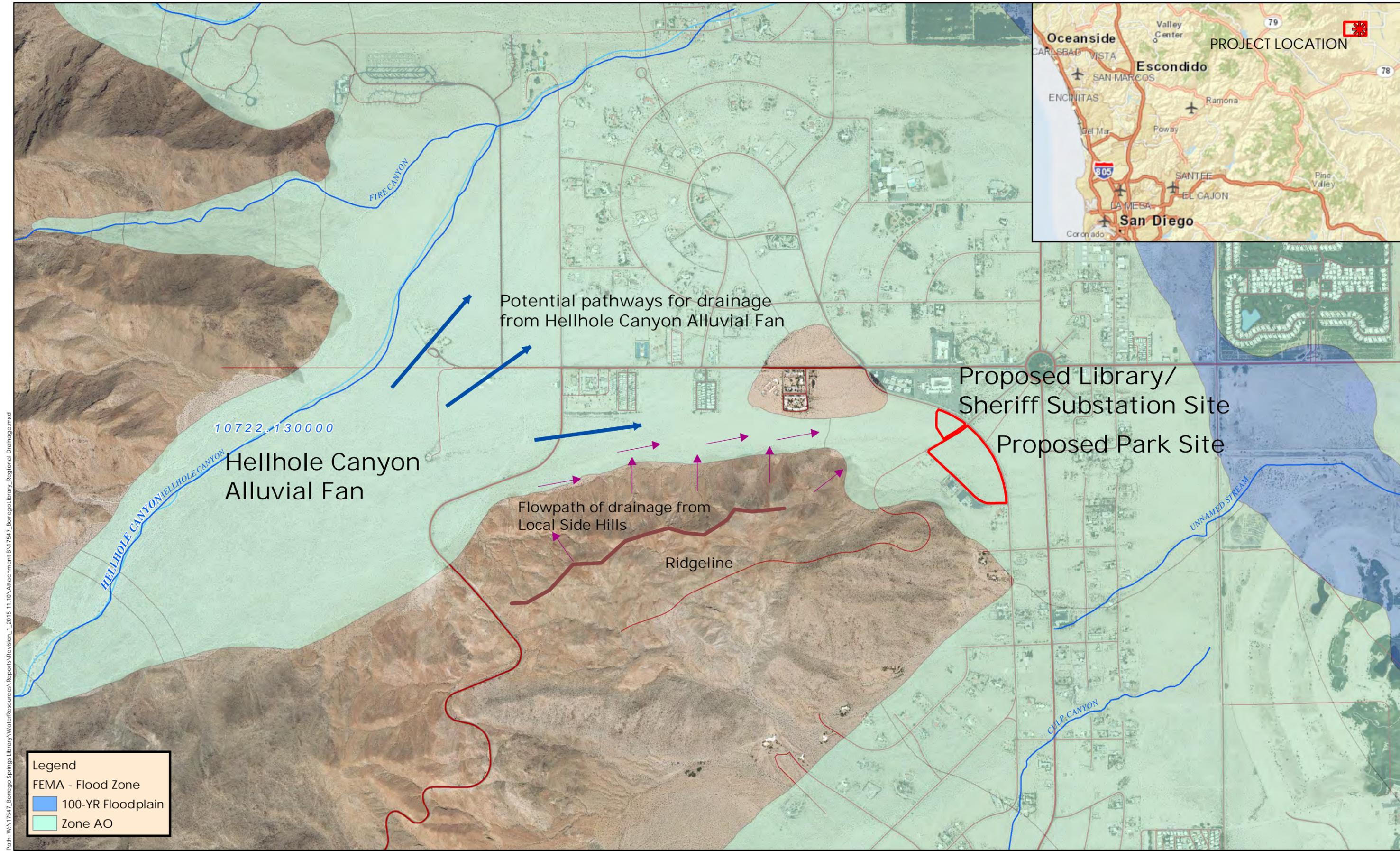
Figure 3

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**ATTACHMENT B**

**Regional Drainage Patterns Exhibit for Borrego Springs Library/Sheriff Substation  
and Park Project**

**Local and On-Site Drainage Patterns for Borrego Springs Library/Sheriff  
Substation and Park Project**



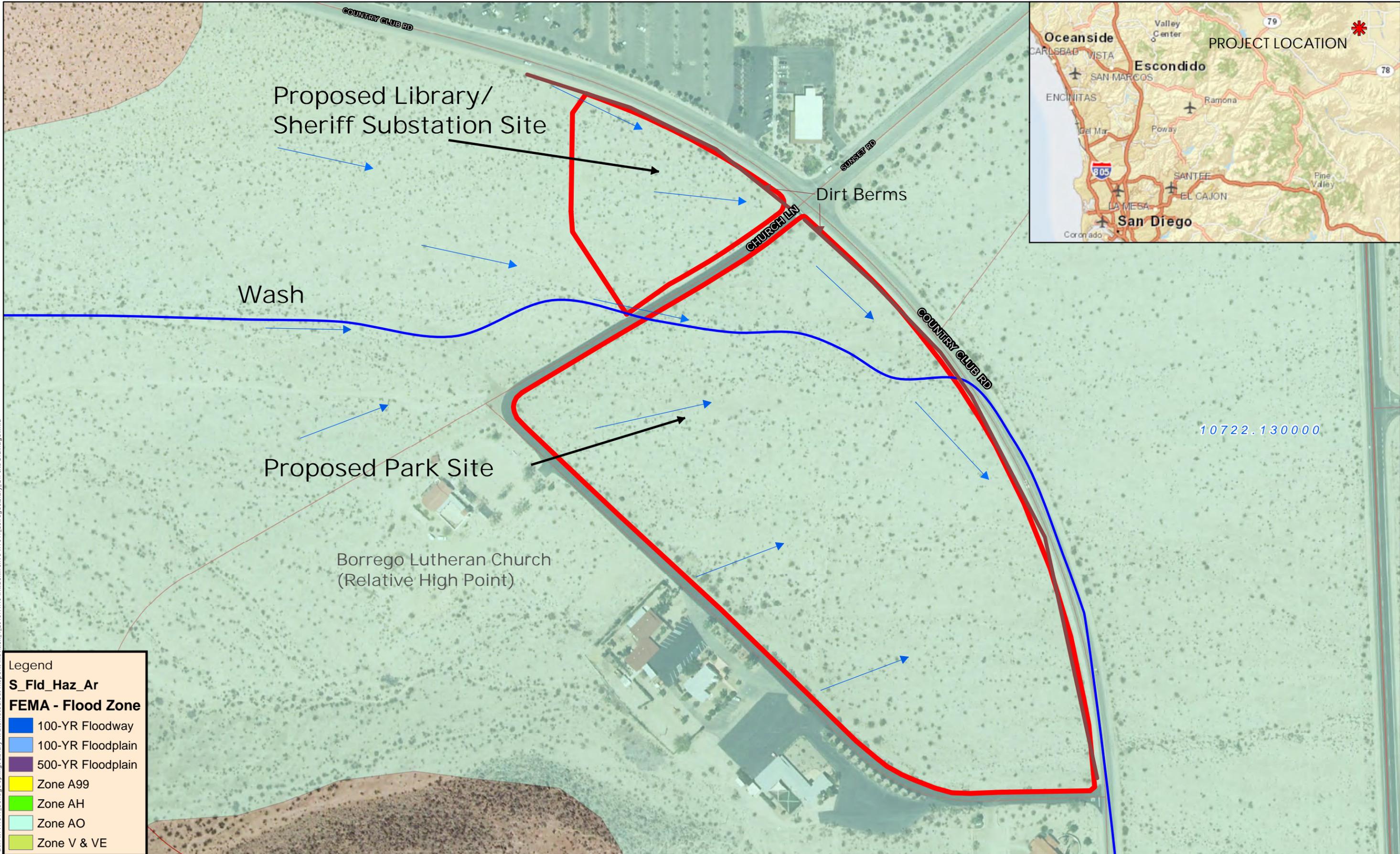
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**Legend**  
 FEMA - Flood Zone  
 100-YR Floodplain  
 Zone AO

Scale in Feet  
 0 1,300 2,600  
 North

Regional Drainage Patterns Exhibit for Borrego Springs Library/Sheriff Substation and Park Project  
 Federal Emergency Management Agency National Flood Hazard Layer Basemap

Date of Exhibit: 08.11.2015  
 DigitalGlobe Aerial Image: 05.2012



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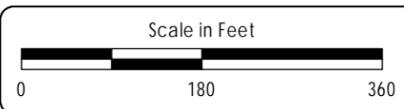
**Legend**

**S\_Fld\_Haz\_Ar**

**FEMA - Flood Zone**

- 100-YR Floodway
- 100-YR Floodplain
- 500-YR Floodplain
- Zone A99
- Zone AH
- Zone AO
- Zone V & VE

10722.130000



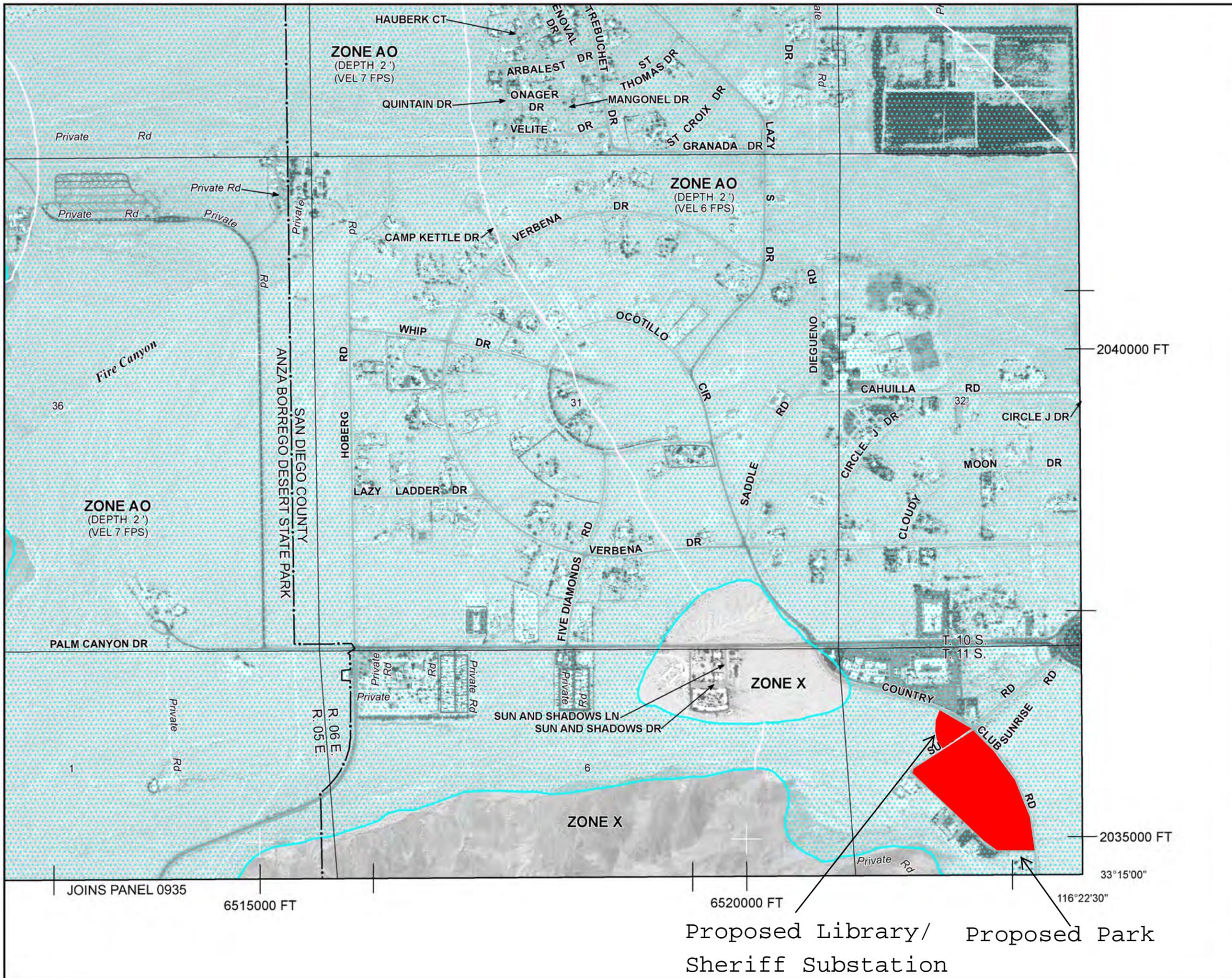
# Local and On-Site Drainage Patterns for Borrego Springs Library/Sheriff Substation and Park Project

Federal Emergency Management Agency National Flood Hazard Layer Basemap

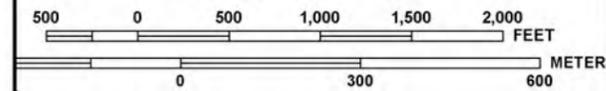
Date of Exhibit: 08.11.2015  
DigitalGlobe Aerial Image: 05.2012

**ATTACHMENT C**

**Annotated FIRMette**



MAP SCALE 1" = 1000'



**NFIP** PANEL 0645G

**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM**  
FLOOD INSURANCE RATE MAP  
SAN DIEGO COUNTY,  
CALIFORNIA  
AND INCORPORATED AREAS

PANEL 645 OF 2375  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO COUNTY	060284	0645	G

Notice to User: The Map Number shown below should be used when placing map orders, the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
06073C0645G

**MAP REVISED**  
MAY 16, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

**ATTACHMENT D**

**Excerpts from County of San Diego Floodplain Management Plan**

training of their staff. San Diego County currently has a 99/99 rating under the Building Code Effectiveness Grading Schedule (BCEGS).

#### **8.1.4 Floodplain Construction Standards**

Zoning and open space preservation work to keep damage-prone development *out* of hazardous or sensitive areas. Building construction and special use regulations impose construction standards on what is allowed to be built *in* the floodplain.

The NFIP operates through a partnership between the federal Government, the states, and individual communities. Participation in the NFIP is voluntary. In participating communities, affordable, federally backed flood insurance is made available to property owners and renters. In return, each community adopts and enforces a floodplain management ordinance or law, which it uses to define regulatory floodplains and control floodplain development, including new construction, substantial improvement of existing buildings, and repairs of substantially damaged buildings.

FEMA's NFIP sets minimum requirements for participating communities' building construction regulations. The NFIP minimum requirements are summarized in the box on the next page.

##### Current Practice in San Diego County:

The Legislature of the State of California has in Government Code Sections 65302, 65560, and 65800 conferred upon local governmental units authority to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry. These sections serve as the authority for the adoption of the Flood Damage Prevention Ordinance.

San Diego County's ordinance meets the minimum NFIP requirements spelled out in the box on the next page.

The Director of Public Works has been designated to administer and implement the flood damage prevention ordinance by granting or denying development permits in accordance with its provisions. Floodplain regulation enforcement is shared with the County's Building Department. The Department reviews permit applications and site plans, conducts field inspections, reviews elevation certificates, engineering certifications and other documentation to determine compliance with federal, state and local regulations.

### **Minimum Regulatory Requirements Imposed by Communities Participating in the NFIP**

Newly Constructed, Substantially Damaged, and Substantially Improved Buildings in the SFHA:

- Building sites must be reasonably safe from flooding.
- Buildings must be:
  1. Designed (or modified) and anchored to prevent flotation, collapse, and lateral movement of the building resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy,
  2. Constructed with materials resistant to damage from immersion in flood waters,
  3. Constructed with methods and practices that minimize flood damage, and
  4. Constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent flood water from entering or accumulating within their components.

Subdivisions and Other New Development in the SFHA:

- All proposals for subdivisions and other new development in the SFHA must be consistent with the need to minimize flood damage within the flood-prone area.
- All public utilities and facilities must be located and constructed to minimize or eliminate flood damage.
- Adequate drainage must be provided for all such subdivisions and new developments in order to reduce exposure to flood hazards.

Additional Minimum Requirements for Buildings in A Zones:

Building Elevation in Zones AE and A1-A30. The top of the lowest floor, including the basement floor, of all newly constructed, substantially damaged, and substantially improved buildings must be at or above the BFE.

Enclosures Below the Lowest Floor in Zones AE, A1-A30, AO, and A. Enclosed space below the lowest floors of newly constructed, substantially damaged, and substantially improved buildings may be used only for parking of vehicles, access to the building, or storage. The walls of such areas must be equipped with openings designed to allow the automatic entry and exit of flood waters.

Additional Minimum Requirements for Buildings in V Zones:

The additional minimum requirements regarding newly constructed, substantially damaged, and substantially improved buildings in Zones VE, V1-V30, and V pertain to **Siting** : All newly constructed buildings must be located landward of the reach of mean high tide. **Building Elevation:** All newly constructed, substantially damaged, and substantially improved buildings must be elevated on pilings, posts, piers, or columns so that the bottom of the lowest horizontal structural member of the lowest floor is at or above the BFE. **Foundation Design:** A registered engineer or architect must develop or review the structural design, construction specifications, and plans for construction and must certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the building elevation and foundation design standards described above. **Use of Fill:** Fill may not be used for the structural support of any building within Zones VE, V1-V30, and V.

### **8.1.5 Alluvial Fan Regulations**

Alluvial fan flows are subject to lateral migration and sudden relocation during the course of a flood, and may not even follow the same path in subsequent floods; in any flood event, however, a part of the fan will always be subject to flood hazards. Thus, it is generally not appropriate to utilize the location of past flow paths in the prediction of future hazards.

The full range of hazards that may be encountered on fans include:

- high-velocity flow (as high as 15-30 feet per second), producing significant hydrodynamic forces (pressure against buildings caused by the movement of flowing water)
- erosion/scour (to depths of several feet)
- deposition of sediment and debris (depths of 15-20 feet have been observed)
- debris flows/impact forces
- mudflows
- inundation, producing hydrostatic/buoyant forces (pressure against buildings caused by standing water)
- flash flooding (little, if any, warning times)

#### Current Practice in San Diego County:

On October 17, 1989, the Board of Supervisors accepted the Boyle Engineering Report, Borrego Valley Flood Management Report, which specifically deals with flood protection on alluvial fans in Borrego Springs.

Box Canyon, Unnamed Canyon, Coyote Canyon, El Vado Canyon, Henderson Canyon, Borrego Palm Canyon, Fire Canyon, Hellhole Canyon, Dry Canyon, and Culp-Tubb Canyon complexes have been analyzed and mapped by the County to assist in designing flood protection on these alluvial fans. These areas are shown on the FEMA FIRM.

The NFIP identifies alluvial fan hazards on FIRMs as Zone AO and provides information on flood depths and velocities. AO zones are Special Flood Hazards Areas (SFHA) subject to inundation by 1% annual chance (100-year) sheet-type flow, which are sometimes associated with high velocities.

The community's FIRM identifies AO zones with depths and velocities, construction within those alluvial fan areas are subject to certain regulations (in addition to those which apply to *all* SFHA's) found in Chapter 44 of the Code of Federal Regulations, Part 60.3:

- Elevate lowest floor (including basement) above the highest adjacent grade to at least as high as the depth number specified on the FIRM. (It is recommended, however, that the depth of flow assumed for a particular site should take into consideration local topographic anomalies when determining the elevation of any flood protection measure.)
- Mechanical and utility equipment must also be placed above the depth of flooding.
- Provide adequate drainage paths around structures on slopes, to guide floodwater around and away from proposed structures.
- Do not deflect flood flow onto adjacent properties.

The provisions of Section 60.3 are *minimum* requirements; buildings constructed according to these rules alone will not provide adequate protection against high velocities or debris loads unless additional measures are undertaken.

When the zoning provides for one-half acre lots or larger and where the alluvial fan depths are two feet or less, new construction and substantial improvement of any structure in Zone AO or within the alluvial fan boundaries shown on the Borrego Valley Alluvial Fans map and FIRM, shall have the lowest floor elevated above the highest adjacent grade at least as high as the depth number specified in feet on the Borrego Valley Alluvial Fans map and FIRM. Depths of one foot and velocity of 8 feet/second are to be used unless more specific information is available.

A special engineering analysis is required for areas which have greater alluvial fan depths or more intense land use. In case of conflict(s) between the Borrego Valley Alluvial Fans map and FIRM, the more stringent of restrictions shall prevail and be deemed to govern.

Projects which impact alluvial washes must carry the flow from the wash around any structure or obstruction and redistribute the flow without adversely affecting adjoining property.

Projects in fan terminus alluvial washes must be designed so that any obstruction to flow will not cause a cumulative increase in the 1% annual chance (100-year) water surface of more than 0.5 feet.

A preliminary approval of the flood insurance rating should be obtained before construction approval.

Single structure protection is usually provided by one or more of the following methods. Each of these methods has advantages, disadvantages and design provisions that should be considered during the planning stage of a project:

- Piles, Columns, or Posts
  - Minimize the structure's exposure to flood hazards
  - Eliminate obstructions to natural flow paths
  - Do not significantly affect flood flow hydraulics
  - Size and number of piles must be adequate to provide structural support to building; must be embedded to sufficient depth, and be adequately anchored to both the structure and to subsoil/bedrock to withstand scour and erosion
  
- Fill
  - Should only be used in low to moderate velocity/depth conditions
  - Must be armored above and below grade to withstand scour, erosion, and debris impact and to protect the structure's foundation
  - Should be oriented parallel to expected flood flow to reduce debris damage, to avoid deflecting flow to adjacent or downstream property, and to minimize obstruction to flow
  - Can be landscaped

- Floodwalls or Berms
  - Should only be used in very low velocities/depths (sheet flow velocity of less than 5 feet per second/depth of less than 3 feet); should only be used near toe of fan or where large sedimentation and debris loads are not likely
  - Should be able to resist erosion at base and below grade
  - Should be oriented to avoid diversion of hazards to adjacent or down stream property
  - Can be effective when used as supplemental protection for elevated structures

### **8.1.6 Floodplain Mapping/Data Maintenance**

Identifying the floodplain is the first step in preventing flood problems. Most of the preventive and public information mitigation measures rely on a map to designate the areas affected and to help set appropriate protection standards.

The term “mapping” includes both a spatial display that shows the properties affected by flooding and the background data, such as discharges and flood elevations that are used as the basis for the map.

The nation’s primary floodplain mapping program is conducted by the DHS - FEMA for the NFIP. FIRMs and their accompanying Flood Insurance Studies provide data on the areas affected by the base or 1% annual chance (100-year) flood, the 0.2% annual chance (500-year) flood<sup>22</sup>, and the regulatory floodway.

#### Current Practice in San Diego County:

In addition to the FEMA FIRMs, the County of San Diego has developed its own flood maps that account for additional areas of known risk. The County flood maps delineate 1% annual chance (100-year) riverine flood boundaries and elevations for areas not studied by FEMA, and are used in addition to the FIRM in regulating development. The flood hazard information, including FEMA floodplain boundaries and flood zones as well as areas at risk of dam failure, are depicted on the website SanGIS (<http://www.sangis.org>). The online GIS data is available free of charge for online use or for purchase for download access and use with other applications.

The County participates in FEMA’s Cooperating Technical Partner (CTP) program. Under the CTP agreement with FEMA, the County is currently assisting in the development of updated countywide Digital FIRMs.

### **8.1.7 Floodplain Open Space Preservation**

Keeping the floodplain free from development is the best approach to preventing flood damage. Preserving vacant natural areas also has recreational benefits and preserves these areas’ natural and beneficial functions. These functions include:

- Storage of flood waters

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<sup>22</sup> Also referred to as the 1% and 0.2% floodplains, respectively

- Lowering peak flood flows by slowly releasing storm water over time
- Absorbing overland flood flow through infiltration
- Recharging aquifers through infiltration
- Filtration of hazardous materials and excessive nutrients
- Habitat for riparian species

Open space can be preserved through a variety of methods, including:

- Establishing parks in the floodplain
- Acquiring vacant flood-prone land
- Enacting restrictive zoning requirements to prevent construction of buildings
- Requiring buffers or setbacks from a waterway
- Purchasing or dedicating easements

The simplest method is to acquire lands and preserve them as parks. There are several alternatives to public acquisition and ownership of open space lands. One is a public-private partnership that shares the load of purchasing, developing, and managing the property. Often the financial and legal responsibility can be easier to manage through a public entity and the management is conducted by private non-profit or volunteer organizations.

Easements are another alternative to preserving open space. There are various types, including:

- Conservation (the owner agrees to keep it in a natural state)
- Public access (the owner agrees to allow public access across the land)
- Drainage (the owner agrees to keep the area open for flood flows)
- Maintenance (the owner agrees to allow maintenance crews on the property)

In all of these, the owner keeps possession of the land but benefits by a reduction in property taxes. The community benefits by increasing the amount of open space that can be preserved without paying for the full property value and being responsible for maintaining the land. Often a local land trust legally "holds" the easement and is responsible for the annual oversight.

Open space lands and easements do not always have to be purchased. Developers can be required to dedicate park land and flood flow, drainage, or maintenance easements. Maintenance easements also can be donated by existing streamside property owners in return for a community channel maintenance program.

#### Current Practice in San Diego County:

San Diego County has adopted an Open Space Element as part of its General Plan pursuant to Section 65560 through 65570 of the Government Code, which requires that "every city and county shall prepare, adopt and submit to the Secretary of the Resources Agency a local open space plan for the comprehensive and long-range preservation and conservation of open space land within its jurisdiction".

### **8.1.8 Low-Density Zoning**

Density ordinances can be applied within floodplains, in the surcharge area along the coast, or any other area that can be demonstrated as a high-risk zone. Local governments lower the

allowable intensity of development in hazardous areas to prevent intense private development within areas delineated as high-hazard.

There are two primary ways to regulate residential development density: set maximum housing density or set minimum lot size. In terms of floodplain development, both approaches are complemented by limits on the percentage of impervious surface within parcels.

#### Current Practice in San Diego County:

Most of San Diego County's zoning districts are traditional residential and commercial zones that do not require lots larger than 10,000 square feet for single-family residential use.

### **8.1.9 Subdivision Regulations**

Subdivision regulations govern the division of land for development or sale. In addition to controlling the configuration of parcels, they set standards for developer-built infrastructure. Many communities include developer exactions and impact fees/system development charges in their subdivision regulations.

Subdivision regulations can be used for mitigation purposes in several ways. They primarily prohibit the subdivision of land subject to flooding. When hazard zones can be identified on a map of the parcel, communities may require minimum distances between those zones and development. If land dedications are required as part of the subdivision regulation, they can be used to reserve hazard-prone land for non-intensive uses.

Subdivision regulations may also set a standard for public infrastructure that ensures it is adequate for the assessed risk. For example, the installation of adequate drainage and stormwater management facilities should be required in flood-prone areas. If local governments are responsible for managing of developer-built infrastructure, they should require that all improvements be built to hazard-resilient standards. This may help reduce the public cost of post-disaster reconstruction.

Subdivision regulations can require that developments be built in a hazard-resilient manner. In order to reduce fire risk, for example, subdivision ordinances may require wide building spacing, fire breaks, on-site water storage, and multiple access points. They should require "deep" lots in shorefront areas. These lots allow homes to be moved inland on the same parcel in the case of shoreline erosion.

The site plan review stage is another time at which it is possible to require developers to site buildings away from hazard-prone portions of the area. Local governments may require mitigation actions, such as the protection or creation of wetlands, dunes or natural vegetation, as a condition of subdivision approval.

Some experts recommend establishing land use restrictions for each property before it is subdivided. After a property is subdivided, the various owners may demand compensation for the loss of use of their property. As a result, the County might have to acquire land that it could have otherwise regulated without a purchase.

Subdivision regulations are not as broad as zoning and only indirectly affect the quality and type of development that occurs on subdivided land. Since these regulations apply only when land is subdivided and sold, they do not address development of small or undivided parcels of land.

### Current Practice in San Diego County:

The San Diego County Subdivision Regulation establishes procedures and rules to provide for the timely provision of required streets, utilities and stormwater management facilities; and for the separation of buildings for fire safety and open space.

The San Diego County code requires the areas subject to inundation by a 1% annual chance (100-year) flood to be shown on the preliminary plat.

## **8.2 PROPOSED PREVENTION MEASURES IN SAN DIEGO COUNTY**

As indicated in Chapter 2 current programs and regulations do not address all of the issues that can cause property losses and business interruption. These additional measures address some of the remaining property loss issues.

### **8.2.1 Design/Regulatory Flood Elevation (Freeboard)**

The NFIP requires “all new construction and substantial improvements of residential structures within AE zones on the community’s FIRM, have the lowest floor (including the basement) elevated to or above the base (1% annual chance) flood level” (44 CFR 60.3I(2)). Within riverine special flood hazard areas, commercial structures may be floodproofed in lieu of elevation.

San Diego County requires new construction and substantial improvement of all structures to have the reference floor elevation at or above the 1% annual chance flood elevation. Elevating above to the regulatory flood elevation is known as “freeboard.” This freeboard is a buffer zone to provide added protection for the structure to help prevent the entrance of floodwaters during a flood event.

The amount of freeboard a community adopts depends on local considerations. Factors that may contribute to the selection of freeboard include the desired level of additional protection, the potential rise due to future development, how sensitive the flood level is to changes in flow, the amount of insurance rate reduction that is available through the NFIP’s CRS program, and economic impacts on development. Another major deciding factor may be development height limitations within a community.

Background of the Higher Standard – Some structures that are built to the minimum NFIP standards will be partially inundated during a 1% annual chance flood. With the reference floor elevated at the BFE, floodwater will be literally at door level under ideal conditions during a base flood. Any conditions that could increase flood levels such as debris accumulation at bridges and culverts, or channel sedimentation will cause further flood damage of the structure. Many communities discovered this in recent floods, especially in areas that have shown high development since their current FIRM was actually published. The impervious surface areas added by these new developments increased runoff, possibly causing structures to be flooded even though they were constructed in compliance with minimum NFIP standards.

### Recommendation

It is recommended that the County adopt a one-foot freeboard requirement. The increased freeboard will result in safer construction as well as result in reduced flood insurance costs. Also, if a community enforces freeboard, disaster recovery efforts and costs will be reduced, and

the community could receive recognition for this regulation as part of the 430 Series of the CRS, which in turn would further reduce flood insurance rates. Each foot of freeboard provides up to 100 credits for a maximum of 300 points. The Flood insurance premium rate reductions under CRS are made in 5% increments related to 500-point credits.

### **8.2.2 Cumulative Substantial Improvement and Substantial Damage Regulations**

The NFIP allows improvements valued at up to 50% of the building's pre-improvement value to be permitted without meeting the flood protection requirements. Over the years, a community may issue a succession of permits for different repairs or improvements to the same structures. This can greatly increase the overall flood damage potential within a community as well as the insurance liability to the Federal Insurance Administration.

This proposed requirement has the effect of requiring more structures to come into compliance after a disaster because damage repair is included in "improvements" under the NFIP rules. Since the County participates in the NFIP it already has a substantial improvement threshold; therefore, it is only necessary to change the number of years specified in its ordinance that are to be used to calculate substantial improvements.

The CRS provides credit to a community that ensures that the total value of all improvements or repairs permitted over the years does not exceed 50% of the value of the structure. When the total value does exceed 50%, the original building must be protected according to the ordinance requirements for new buildings.

Under some circumstances the NFIP flood insurance policy may pay part of the cost of bringing a substantially flood-damaged building into compliance with the community's floodplain management ordinance. This Increased Cost of Compliance coverage is described in Figure 8.1.

### Increased Cost of Compliance

On June 1, 1997, the NFIP began offering “Increased Cost of Compliance” (ICC) coverage for buildings covered under the Standard Flood Insurance Policy (SFIP). ICC coverage provides for the payment of a claim to help pay for the cost to comply with community floodplain management ordinances after a flood event in which a building has been declared substantially damaged or repetitively damaged.

When an insured building is damaged by a flood and the community declares the building to be substantially or repetitively damaged, ICC will help pay for the cost to elevate, floodproof, demolish, or relocate the building up to a maximum of \$30,000. This coverage is in addition to the building coverage for the repair of actual physical damage from flood under the SFIP. An ICC claim can be filed whether or not a community has received a Presidential disaster declaration.

**The following conditions must be met for a substantially damaged building to be eligible for an ICC claim:** A building is eligible for an ICC claim payment if it is in a Special Flood Hazard Area and if the community determines it has been damaged by a flood whereby the cost of restoring the building to its before-damaged condition would equal or exceed 50% of the market value of the building before the damage occurred, as determined by the community. All NFIP communities must have, at a minimum, a substantial damage provision in their floodplain management ordinance in accordance with the NFIP criteria.

*CRS NOTE: By statute, an ICC claim can only be paid upon a substantial damage determination based on the NFIP's 50% damage criteria. An ICC claim will not be paid if the damage is less than 50% of the market value, even if the local ordinance declares the building substantially damaged. Communities receiving credit for lower substantial improvement thresholds need to be aware that there may be times when their higher regulatory standard will not trigger an ICC claim payment for their residents.*

**The following conditions must be met for a repetitively damaged building to be eligible for an ICC claim payment:** A building is eligible for an ICC claim payment if it is in a Special Flood Hazard Area and is a repetitive loss structure and is subject to a community floodplain management ordinance. Two conditions must be met for an ICC claim to be paid under the SFIP for a repetitive loss structure:

1. The state or community must have adopted and be currently enforcing a repetitive loss provision or a cumulative substantial damage provision requiring action by the property owner to comply with the community's floodplain management ordinance, and
2. The building must have a history of NFIP claim payments that satisfies the statute's definition of “repetitive loss structure”. A repetitive loss structure means “a building covered by a contract for flood insurance that has incurred flood-related damage on 2 occasions during a 10-year period ending on the date of the event for which a second claim is made, in which the cost of repairing the flood damage, on the average, equaled or exceeded 25% of the market value of the building at the time of each such flood event.” *Note that this statutory ICC definition is not the same as the CRS definition of a repetitive loss property.*

The date on which the first loss occurred, even if the loss occurred before June 1, 1997, is immaterial to eligibility for an ICC claim payment, as long as the state or community enforced a repetitive loss or cumulative substantial damage requirement on the building and the insured building satisfies the definition of the “repetitive loss structure” defined above.

*CRS NOTE: Communities receiving CSI credit for a “cumulative substantial improvement” regulation must be aware that there may be instances in which the community's criteria may require compliance with its floodplain management ordinance, but the building may not qualify for an ICC claim payment (e.g., if a building is damaged three times, with each flood averaging 20% damage).*

Source: DHS – FEMA CRS Coordinator's Manual, 2002

### **8.2.3 Critical Facilities Regulations**

Current Minimum Standard – The NFIP regulations only require elevation of structures located in SFHAs to the BFE, regardless of the function they serve. Facilities belonging to agencies of the Federal Government are subject to Executive Order 11988, which requires rigorous alternative site evaluations before funding, leasing, or building any facility in the 1% annual chance (100-year) floodplain. The guidelines for implementing Executive Order 11988 set the 0.2 % annual chance (500-year) flood as the standard for protecting “critical actions.”

Background of the Higher Standard – Many public and commercial facilities serve vital functions for communities, which, if interrupted due to flooding, would severely impact citizens. Also, some facilities house large numbers of people who would experience difficulty if required to evacuate before or during a severe flood. Special consideration should be given to requiring a higher level of protection from flooding for such facilities.

Since flooding can prevent access to a critical facility even if the facility is elevated or floodproofed above the flood level, primary consideration should be given to locating critical facilities where the risk of flooding is minimal.

Statistically, a facility located in a SFHA stands a 26% chance of experiencing the 1% annual chance (100-year) flood in a 30-year period. On the other hand, a facility located outside a 0.2% annual chance (500-year) floodplain (i.e., in a C Zone or “unshaded X Zone” as shown on the FIRM) stands less than a 6% chance of being flooded over a 30-year period.

The critical facilities identified for the unincorporated areas of San Diego County include 3 hospitals and other health care facilities; 117 emergency operations facilities, fire stations, and police stations; 194 schools, 3,732 hazardous material sites, 37 airport facilities, 344 bridges, 2 bus facilities, 166 rail facilities, and 827 highways; utility systems that include 3 electric power facilities, natural gas facilities, crude and refined oil facilities, 1 potable and waste water facility, and 312 communications facilities and utilities; 3 dams, 8 government office/civic centers, jails, prisons, military facilities, religious facilities, and post offices<sup>23</sup>.

#### Recommendation

The County could prohibit siting of critical facilities in areas subject to flooding by the 1% annual chance flood (SFHAs) and should discourage siting of critical facilities in areas subject to flooding by the 0.2% annual chance (500-year recurrence interval) flood.

If no feasible alternative site is available for a newly constructed facility, or if an existing critical facility located in a SFHA or 0.2% annual chance (500-year) floodplain is substantially damaged or improved, it should be elevated to at least the 200-year flood elevation and be accessible by road during the 200-year flood event.

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<sup>23</sup> Numbers as obtained from HAZUS

If a proposed critical facility site is in or near a SFHA for which water surface elevations have not been determined, a flood study should be performed to determine this information before the facility is sited.

If locating critical facilities outside of 0.2% annual chance (500-year) or even 1% annual chance (100-year) floodplains is not an option, elevation to the level of the 200-year provides an additional level of protection. For some facilities, floodproofing to the same elevation will provide a similar level of protection. However, since all-weather access is generally necessary either to maintain operations or to evacuate the occupants, it will be necessary to provide an elevated access road to facilities located inside the 1% annual chance (100-year) floodplain. When evaluating where to locate a critical facility, the additional cost to elevate or floodproof and to provide all-weather access if the facility is located in a floodplain should be fully considered.

The County should consider requiring that the following categories of facilities be subject to these requirements:

- Emergency response facilities, including rescue/emergency medical services, police departments, fire departments, hospitals, health clinics, emergency shelters, emergency management operations, and communication facilities.
- Facilities housing vulnerable occupants, such as nursing homes, prisons, jails, centers and group homes for the mentally and physically handicapped, and day-care centers.
- Public utilities, including power generating plants and transfer stations, public water supply plants, solid waste incinerators and waste transfer stations, and wastewater treatment plants.
- Facilities housing irreplaceable public documents, such as libraries, museums, courthouses, colleges, and schools.
- Hazardous material facilities, such as liquid and gas fuel tanks, petrochemical facilities, chemical manufacturing and storage facilities, research laboratories testing infectious biological agents, explosive manufacturing and warehousing, toxic waste facilities, and landfills.

Benefits – Adoption of this higher standard may prevent loss of life and property during flood events by ensuring that services provided by critical facilities are not interrupted during and after major flood events. In addition, adoption of the standard will provide CRS credit points as a 430 Series activity. Communities that prohibit siting critical facilities in the 0.2% annual chance (500-year) floodplain receive 100 CRS credit points; communities that only require protection from damage (i.e., elevation or floodproofing) and loss of access as a result of the 0.2% annual chance (500-year) flood or the flood of record, whichever is higher, receive 50 CRS credit points.

Cost Impacts – Restricting critical facility sites to locations outside of SFHAs and 0.2% annual chance (500-year) floodplains may increase costs if land prices are higher in non-floodprone areas. Requiring elevation or floodproofing and all-weather access for new and substantially improved structures built in SFHAs and 0.2% annual chance (500-year) floodplains may significantly increase facility costs.

**ATTACHMENT E**

**Excerpts from County of San Diego General Plan: Borrego Springs Community  
Plan**

grading, hardscape, walls and fences and landscape on current and future viewsheds and view corridors.

**d. Surface, groundwater, and watersheds**

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The Borrego Valley Aquifer is a finite source of natural water, much of which has been present as groundwater for thousands of years. The amount of groundwater pumping in the Valley since the inception of agriculture has overwhelmed the amount that is naturally restored to the aquifer each year. Estimates for total groundwater consumption on an annual basis range from 15,000 acre feet per year to well over 20,000 acre feet per year. Estimates of the natural replenishment of the aquifer usually range around 4,000 acre per year, although this figure needs to be further analyzed. The estimate of 4,000 acre feet per year recharge could be greatly reduced during drought episodes and so may not be a reliable estimate to work from in the long-term. It has been estimated in recent years that residential and local business use of groundwater approximates that which is restored by annual rainfall. This means that all water use by golf courses and large-scale agriculture is in excess of what the natural resources of the Valley can restore. This imbalance needs to be addressed and rectified.

The watersheds providing water runoff to the CPA are important resources, protected mostly by the surrounding Anza-Borrego Desert State Park. Coyote Canyon watershed provides the highest volume of natural water runoff into the Valley, followed by Borrego Palm Canyon, Henderson Canyon and Tubb Canyon. The State Park has enhanced water volume in Coyote Canyon and Palm Canyon by eradicating massive quantities of the non-native tamarisk trees. Water quality is also enhanced by the preservation of large areas of the watersheds feeding Borrego Valley. Threats to water quality occasionally present themselves and residents of the Valley need to remain vigilant. The most recent large-scale threat came in the form of a proposal to build a solid waste disposal site on the Los Coyotes Indian Reservation in the upper reaches of Borrego Palm Canyon, above the State Park. This proposal was defeated, but presented a real threat to groundwater quality in Borrego Springs.

Surface flow of streams entering the Valley, such as Coyote Creek, Palm Canyon Creek and Tubb Canyon can be impacted by the overdraft of the Borrego Valley Aquifer. Streams cannot meander far out into the valley if the aquifer has been depleted beneath them. The streams will quickly seep into the subsurface if the ground beneath them is not saturated at the canyon mouths. This impacts the amount of riparian vegetation near the canyon mouths and can negatively impact the growth of native fan palms, willows, mesquites and cottonwoods that normally inhabit desert canyons.

**Issue-COS 1.4** Continued overdrawing of our sole-source aquifer threatens the viability of the CPA and desert ecosystem.

**Goal-COS 1.4** A sustainable supply of water, ending the current overdrawing of the Borrego Springs sole-source aquifer.

**Policy-COS 1.4.1** Encourage and develop methods for CPA groundwater system human withdrawals to be less than or equal to replenishment amounts on an average ongoing basis.

**Policy-COS 1.4.2** Prohibit the construction of any new golf courses in the CPA, unless an alternate water source, such as recycled water is made available.

**Policy-COS 1.4.3** Encourage xeriscape landscaping in residential and business developments.

**e. Mineral resources**

The need for sand and gravel during periods of rampant construction in the Southern California region has led to the development of mining for these resources in the local area. Recovery of the landscape and native plants takes centuries. A measured, permitted system of mineral extraction needs to be well thought out, and the County needs to increase its enforcement to stop permanent damage to the Borrego Springs landscape.

**Issue-COS 1.5** Insufficiently regulated mineral extraction coupled with minimal and ineffective enforcement in the CPA.

**Goal-COS 1.5** Protect mineral resources in the CPA effectively from illegal or improper extraction.

**Policy-COS 1.5.1** Require that all mineral extractions in the Borrego Valley undergo full environmental review and public noticing.

**Policy-COS 1.5.2** Encourage strict enforcement of illegal mineral extraction activities in the Desert Subregion. (New to support Implementation).

**Implementation-COS 1.5.1**

1. Work closely with the County DPLU to assure that all County Codes relative to mineral extraction and grading are strictly enforced.
2. Focused enforcement on mineral extraction needs to be prioritized to alleviate such long-term impacts as presented by illegal sand and gravel extraction.

**f. Air quality**

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Since viewsheds and unending vistas are such a vital part of the high quality of experiences for residents and visitors; the purity and visual quality of our air is critical. Borrego Valley is a relatively closed basin which can trap air masses against the adjacent 6,000 foot mountains.

On a score of days per year, low quality smoggy air spills over the rim of the mountains through Coyote Canyon from Riverside and Los Angeles. More dramatic are the recent low quality air events caused by the high number of off-highway vehicles during busy holiday periods such as Thanksgiving, Christmas, President's weekend and the two to three weeks of Spring Break. On several recent weekends the entire Borrego Valley was heavily impacted by the airborne dust raised by thousands of off-highway vehicles to the east and southeast in the Ocotillo Wells State Vehicular Recreation Area and the Imperial Valley. These events were made more severe by east winds, causing air

## 4. Safety (S)

The Borrego Springs CPA is potentially subject to a number of natural disasters including earthquakes, flooding, fires and other major safety concerns. The agency responsible for coordinating the response to these types of events is the San Diego County Office of Emergency Services.

The Office of Emergency Services (OES) coordinates the overall County response to disasters. OES is responsible for alerting and notifying appropriate agencies when disaster strikes, coordinating all agencies that respond, ensuring resources are available and mobilized in times of disaster, developing plans and procedures for response to and recovery from disasters and developing and providing preparedness materials for the public.

OES staffs the Operational Area Emergency Operations Center (a central facility which provides regional coordinated emergency response) and also acts as staff to the Unified Disaster Council (UDC), a joint powers agreement between all incorporated cities and the County of San Diego. The UDC provides for coordination of plans and programs countywide to ensure protection of life and property.

Locally, the governmental institutions playing the largest role in safety response are the Borrego Springs Fire Department (BSFD), the San Diego County Sheriff's Department, California Highway Patrol and the law enforcement arm of the Anza Borrego Desert State Park.

### 4.1 Hazards/Risk Avoidance and Mitigation

#### a. Seismic and geologic risks

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The Coyote Creek fault is an extension of the San Jacinto Fault extending from the northwest trending to the southeast extending into the Sea of Cortez. The Coyote Creek fault is a strike-slip fault with two locations in the Borrego CPA. The fault is located along the base of Coyote Mountain in Coyote Creek and in the Clarks Lake basin. It last faulted in 1968 in the general location west of the Badlands. The San Jacinto Fault is active with a magnitude potential of 6.5 to 7.5.

#### b. Flooding

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With few exceptions, the entire Borrego Valley is subject to flooding from stormwater flowing from the mountain regions in the west down alluvial fans and across the community draining easterly to the Borrego Sink. Runoff from storms in this area has the potential to convey large amounts of debris from the upper watershed to the lower areas of the alluvial fans in and near the Borrego area. Debris flows of this nature present one of the most hazardous and unpredictable types of flooding. The basis for flood control is the standard 100-year event as mapped on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), which is regulated in the community via the County Flood Damage Prevention Ordinance and the National Flood Insurance Program (NFIP) Regulations. The County Ordinance and the NFIP Regulations have specific requirements and restrictions that apply to development within mapped areas of alluvial fans. Due to the potential hazards, and other

restrictions for development, proposed development in this area requires safety related drainage measures above and beyond what would normally be anticipated within other areas of the County.

Currently-acceptable safety-related drainage measures required for development in the Borrego Springs area impose substantial cost and site planning burdens on individual property owners and also create substantial planning, policy, and design considerations for structures in concentration, such as in the Village Core business area, with resulting negative impacts on area commercial revitalization. The County recognizes this impact to the community and is active in national dialogues to explore alternative approaches that are protective of human life and property but less-burdensome. However, due to the risk associated with alluvial fan flooding, including debris flows, as well as their unpredictability, relaxation of standards is not anticipated and alternatives such as master drainage improvements are currently deemed to be cost prohibitive for communities like Borrego Springs. The County is also engaged in efforts to provide guidance that makes the process for building under these regulations clearer and easier to follow.

**c. Wildland fire/Urban fire**

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The Borrego Springs CPA is not located in the Wildland Fire Zone as defined by California Fire (CFD) whereas neighboring communities such as Julian are so defined. The impact on the desert communities therefore is minimal since the plant communities do not contribute to wildfires with the occasional exception of grass fires in the agricultural areas. Borrego is impacted to the extent that firefighting personnel and equipment can be called to adjacent communities to assist in wildfire suppression.

**d. Toxic and hazardous materials**

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Hazardous materials do not create a serious problem for the Borrego Springs CPA with the exception of residual pesticides remaining in the older agricultural areas that are fallowed. This may create a clean-up requirement for the adaptive re-use of those areas previous exposed to chemicals. The issue is not believed to be a critical hazard. Farmers continue to utilize pesticides as controlled by the County of San Diego Department of Agriculture.

## **4.2 Emergency Preparedness and Response**

Because of the remote nature of the Borrego Springs CPA, it is likely that initial response will depend primarily on the capabilities of local responders with one of their most important tasks being to assess the damage and continuing danger posed by the event, and coordination with County authorities to direct appropriate resources to the area to protect and preserve the public's safety and welfare.

**Issue-S-2.1** Although documents are in place detailing a response from safety infrastructure at the "30,000 foot" level, at issue is the actual preparedness of our community at "ground zero" and our ability to respond to the immediate needs of our citizens in the event of a major natural disaster.

**Goal-S-2.1** A prepared community at the "citizen level" to respond during the first few hours and days of a major natural disaster.