

Initial Study Biological Assessment Report

**Valle Naranjal – Farm Worker Housing
4268 Center Street
Piru, California**

**Case Number: LU08-0062
APN: 055-0-202-010**

Applicant: Cabrillo Economic Development Corporation

December 2, 2008

Prepared For

Ventura County Resource Management Agency Planning Division

Prepared By

Elihu Gevirtz

The Office of Elihu Gevirtz, AICP

236 Salida del Sol; Santa Barbara, California 93109

805-965-2861; www.elihugevirtz.com

Initial Study Biological Assessment

Original ISBA report date: December 2, 2008

Revision report date(s):

Case number: LU08-0062

Permit type: Planned Development

Applicant: Cabrillo Economic Development Corporation

Planning Division case planner:

Total parcel(s) size (acres): 7.99

Assessor Parcel Number(s): 055-0-202-010

Development proposal description: The proposed project is a planned development of 66 units of multi-family affordable farm worker rental housing with a community room and a soccer field. A former labor camp on the site will be demolished to build the proposed project. The development will consist of a mix of duplex, triplex, and fourplex structures, two and three stories in height, clustered along the north and southeastern portions of the site. The development will also include a courtyard building and 154 onsite parking spaces.

Prepared for Ventura County Planning Division by:

As an approved and contracted biologist with the Ventura County Planning Division, I hereby certify that this Initial Study Biological Assessment was prepared according to the Planning Division's requirements and that the statements furnished in the report and associated maps are true and correct to the best of my knowledge and belief; and I further certify that I was present throughout the site visit associated with this report.

Approved Biologist (signature):		Date:
Name (printed): Elihu Gevirtz, AICP	Title: Principal Biologist	Company: The Office of Elihu Gevirtz, AICP
Phone: 805-965-2861	email: elihu2@cox.net	
Other Biologist (signature):		Date:
Name (printed): N/A	Title:	Company:
Phone:	email:	
Role:		

Initial Study Checklist

This Biological Assessment DID provide adequate information to make CEQA findings regarding potentially significant impacts.

		Project Impact Degree of Effect				Cumulative Impact Degree of Effect			
		N	LS	PS-M*	PS	N	LS	PS-M*	PS
A	Endangered, threatened or rare species (includes nests)			X				x	
B	Wetland habitat			X				x	
C	Coastal habitat	x				x			
D	Wildlife movement routes			X				x	
E	Locally important species/communities			X				x	

N: No impact

LS: Less than significant impact

PS-M: Potentially significant unless mitigation incorporated.

PS: Potentially significant

Contents

Summary	6
Section 1: Construction Footprint Description.....	6
Section 2: Survey Area Description and Methodology	7
2.1 Survey Purpose	7
2.2 Survey Area Description	7
2.3 Methodology	9
Section 3: The Biological Inventory	12
3.1 Habitats: Plant Communities, Physical Features and Wetlands	12
3.2 Species	15
3.3 Wildlife Movement and Connectivity	21
Section 4: Impact Assessment	22
4.1 Sufficiency of Biological Data	22
4.2 Impacts and Mitigation	22
Section 5: Conditions of Approval	24
Section 6: Photos	25
Appendix 1: Summary of Biological Resource Regulations	28
Appendix 2: Observed Species	35

Maps

Site, Photo Locations, and Survey Areas	37
Plant Communities (Biological Resources)	38
Species (Biological Resources)	38
Waters and Wetlands (Biological Resources)	38
Wildlife Connectivity (Biological Resources)	38
Preliminary Grading and Drainage Plan	39
Grass Swale Filter	40

Attachments

- A. List of California Natural Diversity Database (CNDDB)-tracked species (point occurrences) within 1-, 5-, and 10-miles of the project boundaries.
- B. CNDDB California Native Species Field Survey Forms and California Natural Community Field Survey Forms sent to the California Department of Fish and Game to document observations of special status species or communities found on the project site.

Summary

The proposed project is a planned development of 66 units of multi-family affordable farm worker rental housing with a community room and a soccer field. A former labor camp consisting of ten abandoned buildings on the site will be demolished to build the proposed project. The development will consist of a mix of duplex, triplex, and fourplex structures, two and three stories in height, clustered along the north and southeastern portions of the site. The development will also include a courtyard building, 154 onsite parking spaces, a soccer field, and community gardens.

Section 1: Construction Footprint Description

Construction Footprint Definition (per the Ventura County Planning Division): The construction footprint includes the proposed maximum limits of temporary or permanent direct land or vegetation disturbance for a project including such things as the building pad(s), roads/road improvements, grading, septic systems, wells, drainage improvements, fire hazard brush clearance area(s), tennis courts, pools/spas, landscaping, storage/stockpile areas, construction staging areas, fire department turnarounds, utility trenching and other grading areas. The construction footprint on some types of projects, such as mining, oil and gas exploration or agricultural operations, may be quite different than the above.

Development Proposal Description:

The proposed project will construct 13 buildings consisting of a mix of duplex, triplex, and fourplex structures that will be two and three stories in height and range from 4,784 to 16,004 square feet in size. A total of 66 residential units will be constructed. These will be multi-family affordable farm worker rental housing. Other proposed elements for the site include a community room, basketball courts, a picnic area, a soccer field, and a community garden. The development will also include a tot lot and 154 onsite parking spaces. A former labor camp consisting of ten abandoned buildings, a parking lot and landscape trees will be demolished to build the proposed project. Drainage from the site will be collected at the center of the property and directed to an underground detention/percolation basin and then off the site and into Piru Creek. The Preliminary Grading and Drainage Plan also includes one or more grassy swales that are intended to serve as biofilters. The biofilter is intended to filter out petrochemicals, phosphates, and other nutrients prior to water runoff release into the creek. The underground basin is intended to capture runoff from the project site in order to not increase the volume of water flowing at non-peak periods into the creek compared to the existing conditions. The site will continue to receive and convey water runoff from offsite and direct it toward the creek on the east and west ends of the property.

Construction Footprint Size

The development will occupy most of the 7.99-acre site. Actual structures will occupy 1.651 acres, paved surfaces 2.53 acres, soccer field 0.8 acre, landscaping (including the community garden) 3.94 acres. No grading will occur outside of the property boundaries with the exception of that which is necessary to install a drainage pipe offsite at the edge of the creek. The standard 100-foot perimeter fire hazard brush clearance area would encompass roughly 0.25 acre of vegetation on the stream terrace off site to the south, and roughly 0.10 acre to the north on residential properties on the north side of Center Street.

Project Design for Impact Avoidance or Minimization

The applicant has chosen a site for the proposed development that is already developed with a former farm worker labor camp and devoid of native vegetation. Thus, impacts to biological resources are likely to be minimal in comparison to a hypothetical previously undeveloped site.

Coastal Zone/Overlay Zones

The site is not in the Coastal Zone. It is located in the mineral resource overlay zone.

Zoning

The existing zoning is Open Space.

Elevation

The elevation of the site is approximately 678 feet above sea level.

Other

The site is located at N 34.41261 W -118.78538, commonly known as 4268 Center Street, in Piru, California. Vehicular access to the site is provided by an existing paved driveway from Center Street.

Section 2: Survey Information

2.1 Survey Purpose

Discretionary actions undertaken by public agencies are required to demonstrate compliance with the California Environmental Quality Act (CEQA). The purpose of this Initial Study Biological Assessment (ISBA) is to gather enough information about the biological resources associated with the proposed project, and their potential to be impacted by the project, to make a CEQA Initial Study significance finding for biological resources. In general, ISBAs are intended to:

- Provide an inventory of the biological resources on a project site and the values of those resources.
- Determine if a proposed project has the potential to impact any significant biological resources.
- Recommend project redesign to avoid, minimize or reduce impacts to significant biological resources.
- Recommend additional studies necessary to adequately assess potential impacts and/or to develop adequate mitigation measures.
- Develop mitigation measures, when necessary, in cases where adequate information is available.

2.2 Survey Area Description

Survey Area Definition (per the Ventura County Planning Division): The physical area a biologist evaluates as part of a biological assessment. This includes all areas that could potentially be subject to direct or indirect impacts from the project, including, but not limited to: the construction footprint; areas that would be subject to noise, light, dust or runoff generated by the project; any required buffer areas (e.g., buffers surrounding wetland habitat). The construction footprint plus a 100-foot buffer—beyond the required fire hazard brush clearance boundary—(or 20-foot from the cut/fill boundary or road fire hazard brush clearance boundary – whichever is greater) is generally the minimum size of a survey area. Required off-site improvements—such as roads or fire hazard brush clearance—are included in the survey area. Survey areas can extend off the project's parcel(s) because indirect impacts may cross property lines. The extent of the survey area shall be determined by the biologist in consultation with the lead agency.

Survey Area 1 (SA1)

Location

Survey Area 1 is the entire property located at 4268 Center Street in Piru, California. The property is located in eastern Ventura County at the easterly end of the town of Piru between Center Street and Highway 126. It is bounded on the northeast by Center Street and on the southwest by Piru Creek.

Survey Area Boundaries

Survey Area 1 is bounded by the fenced boundaries of the property. The survey area was not flagged.

Survey Area Environmental Setting

The site is nearly level, gently sloping in a southerly direction. No wetlands were observed on the site. The site is developed with structures, as well as paved and compacted surfaces. Vegetation on the site is limited to

planted ornamental trees and weedy species described below. On October 29, 2008 (Survey Date "SD" 1), a movie set was being constructed by modifying the interior of several buildings. Security personnel remained on the site during the evening. At the time of SD 2, the construction had been completed and there were three people on the site.

Surrounding Area Environmental Setting

The town of Piru is located to the west. A row of houses occurs on the opposite (north) side of Center Street. Farm land occurs to the east. Piru Creek and associated riparian habitat is located to the south. Highway 126 is roughly 500 feet south, and traffic can be seen and heard from the site. Motorcycles being driven on a motorcycle course northeast of the site could be heard during the surveys.

Cover

A rough estimate of the cover of the survey area is as follows:

15% non-native vegetation

70% bare ground/cleared/graded

15% buildings, paved roads and other impervious cover

Location

Survey Area 2 consists of the riparian habitat adjacent to the southwesterly boundary of the site.

Survey Area Boundaries

SA 2 is bounded by the fence at the property's southwesterly boundary and the water's edge of Piru Creek. The easterly boundary of the survey is a gabion rock fence/wall evident in the aerial photograph, and the westerly boundary is the old bridge over Piru Creek several hundred feet upstream of the site. The survey area was not flagged.

Survey Area Environmental Setting

The initial 25 to 50 feet of Survey Area 2 that is adjacent to the site is a stream terrace that slopes gently to the south and southwest with scattered erosion features steeply breaking the plane of the ground surface in several places. The vegetation consists of a patchwork of native and non-native species. The bed of Piru Creek lies to the southwest, comprised of small to medium sized cobble and boulders. The bed of the creek was roughly 50% unvegetated at the time of SD1. On October 29, 2008, the creek was roughly 150 feet wide and flowing at an estimated rate of 10 to 20 cfs. This was probably the result of a release from the dam upstream. At the time of SD2 (November 11, 2008), the creek was roughly 50 feet wide and flowing at an estimated rate of 3 to 5 cfs. The estimated temperature of the water was between 55 and 60 degrees F. The creek bed outside of the flowing water is vegetated by Mulefat and willow scrub with scattered upland species.

Surrounding Area Environmental Setting

The project site ("site") is located to the north/northwest. Highway 126 is located roughly 500 feet to the south. Cars and trucks traveling on the highway were visible and were audible during the entire survey period.

Cover

A rough estimate of the cover of the survey area is provided below.

35% native vegetation

5% non-native vegetation

60% rocky creek bed

2.3 Methodology

References

The following reference documents and sources of information were used to conduct the assessment.

- Banister, K., 1986. Gasterosteidae. p. 640-643. In P.J.P. Whitehead, M.-L. Bauchot, J.-C. Hureau, J. Nielsen and E. Tortonese (eds.) Fishes of the north-eastern Atlantic and the Mediterranean. volume 2. UNESCO, Paris.
- CalFlora. www.calflora.org
- California Department of Fish and Game, BIOS. (November 2007). BIOS is an internet-based biological data map server. This database was searched to identify other projects that have occurred in the vicinity of the subject property.
- California Department of Fish and Game 1995. Stanislaus River Basin and Calaveras River Water Use Program. *Threatened and Endangered Species Report*, Western Mastiff Bat *Eumops perotis californicus*. Life History. Category 2 candidate for listing by the U.S. Fish and Wildlife Service as Threatened or Endangered and a California Department of Fish and Game "Species of Special Concern". Bay Delta and Special Water Projects Division.
- California Department of Fish and Game, Vegetation Classification and Mapping Program, List of California Vegetation Alliances, October 22, 2007. www.dfg.ca.gov/biogeodata/vegcamp/pdfs/NaturalCommunitiesList_Oct07.pdf
- CNPS Inventory of Rare and Endangered Plants database, v7-08a 2-01-08, <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi/Html>
- Danko, C. 2008. Personal communications. Biologist. Ventura County Resource Management Agency Planning Division.
- Discoverlife. www.discoverlife.org
- Firmitas Architecture & Planning. No date. Valley Naranjal Architectural Site Plan.
- Firmitas Architecture & Planning. Valley Naranjal Proposed Site Development Statistics. Sheet A-3, March 18.
- Gevirtz, E., M. Carroll, K. Burton, P. Collins, M. Holmgren, L. Spanne, and A. Nelson 2007. Final Land Management Plan, Burton Mesa Ecological Reserve. Condor Environmental Planning Services, Inc. prepared for State of California Department of Fish and Game.
- Gleuckert, M. 2008. Personal communications. Planner. Ventura County Resource Management Agency Planning Division.
- Hickman, J. 1993. The Jepson Manual. Higher Plants of California. University of California.
- Jennings, M. and Hayes, M. 1994. Amphibian and Reptile Species of Special Concern in California. Final Report Submitted to The California Department of Fish and Game.
- Jordan, Gilbert & Bain 2008. Preliminary Landscape Plan, Valle Naranjal. May 15.
- Lehman, P. 1994. The Birds of Santa Barbara County California. UCSB Vertebrate Museum.
- McEwan, D. and T. Jackson 1996. Steelhead Restoration and Management Plan for California. California Department of Fish and Game.
- Mock, P. 2004. California Gnatcatcher (*Poliophtila californica*). In The Coastal Scrub and Chaparral Bird Conservation Plan: a strategy for protecting and managing coastal scrub and chaparral habitats and associated birds in California. California Partners in Flight. <http://www.prbo.org/calpif/html/docs/scrub.html>
- Norori, N. 2008. Personal communications. Project Manager. Cabrillo Economic Development Corporation.
- Padre and Associates 2008. Piru Creek Bank Protection Project Initial Study and Mitigated Negative Declaration. Lead Agency: Ventura County Watershed Protection District. June.

- Penrod, K., R. Hunter, and M. Merrifield 2001. Missing Linkages: Restoring Connectivity to the California Landscape, Conference Proceedings. Co-sponsored by California Wilderness Coalition, The Nature Conservancy, U.S. Geological Survey, Center for Reproduction of Endangered Species, and California State Parks.
- Ramseyer and Associates, Inc. 2008. Preliminary Grading and Drainage Plan. LU 08-0062, Valley Naranjal.
- Sandburg, N. 2004. Special Status Amphibian and Reptile Survey Report. Santa Felicia Project FERC Re-licensing Studies: #2153. Prepared for Entrix, Inc. and United Water Conservation District.
- Sibley, D. 2003. The Sibley Field Guide to Birds of Western North America. Alfred A. Knopf.
- Stebbins, R. 1985. Field Guide to Western Reptiles and Amphibians. Houghton Mifflin Company.
- Tesky, J. 1994. *Gymnogyps californianus*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2008, November 18].
- Toedter, R. 2008. Personal communications. Ramseyer and Associates, Inc. November.
- U.S. National Marine Fisheries Service. Southern California Steelhead ESU Current Stream Habitat Distribution Table. website accessed November 2008.
- Ventura County Planning Division, GIS Biology Map Packet (Printed on June 11, 2008). Consists of mapped resource information for the project site, including: wetlands and waterbodies; special status species per the California Department of Fish and Game, California Natural Diversity Database (CNDDB) species lists; wildlife corridors/connectivity areas; vegetation; and high resolution aerial imagery.
- U.S. Fish and Wildlife Service, 2000. Endangered and Threatened Wildlife and Plants; Threatened Status for the Santa Ana Sucker. Final Rule. April 12. (50 CFR Part 17).
- U.S. Fish and Wildlife Service, 1994. Designation of critical habitat for least Bell's vireo. February 2. (59 FR 4845).
- Zeiner, D. W. Laudenslayer, K. Mayer, and M. White 1988-1990. California's Wildlife. California Department of Fish and Game.

•

Survey Date & Details							
Survey Key (1)	Survey Date (2)	Survey Area Map Key(s) (3)	Survey Type (4)	Time Period (5)	Methods/Constraints (6)	GPS (7)	Surveyors
SD1	10/29/2008	SA1 & SA2	ISBA	3:15 pm – 7:00 pm	Walking throughout the site in a random manner with binoculars, a potato rake, and bags. The entire site was accessible except for several buildings and courtyard areas being used to construct a movie set. The interiors of several buildings were visited. The surveyor walked to the water's edge, but did not step into the water.	Garmin, model 76S	Elihu Gevirtz
SD2	11/11/2008	SA1 & SA2	ISBA	3:30 pm – 5:30 pm	Walking throughout the westerly portion of the site in a random manner with binoculars, a potato rake, and bags. The interiors of two buildings were examined that had not been previously visited. The outfall area and the creek were surveyed. The creek was crossed on foot.	Garmin, model 76S	Elihu Gevirtz
ISBAInitial Study Biological Assessment BotanicalBotanical Survey							

Section 3: The Biological Inventory

See Appendix One for an overview of the types of biological resources that are protected in Ventura County.

3.1 Habitats: Plant Communities, Physical Features and Wetlands

(Initial Study Checklist A, B, C & E)

Plant Communities

Locally important or rare plant communities were found within the survey area(s).

Major Plant Communities Summary

Plant Communities								
Map Key (1)	SVC Alliance	SVC Association	Misc. (2)	Status (3)	Condition (4)	Acres Total	Acres Impacted	Comments (5)
PC1	None	None	Urban/Disturbed or Built-Up.	None	Intact	7.99	7.99	Cleared. Most of the site is either paved or severely compacted. – Permits Assumed
PC2	Mulefat scrub (63.510.00)	Mixed willow scrub (similar to 61.201.04)	Several upland species occur in the creek bed, but outside of the main channel, including California buckwheat and yerba santa.	G3 S2.1	Intact	Undetermined. Continuous linear feature	0.01	Off site. Associated with Piru Creek. Channel was scoured (presumably by flooding) several years ago.
PC3	None	None	Undifferentiated Exotic Vegetation	None	Disturbed	0.10	0.02	Off site area dominated by weeds, with some native species. Drainage pipe will go through this area.
Totals						8.09	8.02	
LIC Locally Important Plant Community ESHA Environmentally Sensitive Habitat Areas (Coastal Zone) CDFG Rare: G1 or S1 Critically Imperiled Globally or Subnationally (state) G2 or S2 Imperiled Globally or Subnationally (state) G3 or S3 Vulnerable to extirpation or extinction Globally or Subnationally (state) Cal OWA Protected by the California Oak Woodlands Act								

Physical Features

Physical Features		
Map Key (1)	Physical Feature (2)	Comments (3)
n/a	n/a	None

Waters and Wetlands

See Appendix One for an overview of the local, state and federal regulations protecting waters, wetlands and riparian habitats. Wetlands are complex systems; delineating their specific boundaries, functions and values generally takes a level of effort beyond the scope of an Initial Study Biological Assessment (ISBA). The goal of the ISBA with regard to waters and wetlands is simply to identify whether they may exist or not and to determine the potential for impacts to them from the proposed project. This much information can be adequate for designing projects to avoid impacts to waters and wetlands. Additional studies are generally warranted to delineate specific wetland boundaries and to develop recommendations for impact minimization or impact mitigation measures.

Protected waters and/or wetlands were found within the survey area(s).

Waters and Wetlands Summary

Piru Creek is adjacent to the site. It is a tributary to the Santa Clara River. Non-natives dominate the stream terrace above the channel which lessens its ecological functions and values. The channel itself is vegetated mostly by native species. It is subject to frequent change including periodic flooding and scouring as a result of periods of heavy rainfall and other environmental conditions and events (such as wildfire) in the watershed. Water flows in the creek are partially dependent on controlled releases from upstream dams. The overall habitat quality is moderate, being negatively impacted by the upstream dams. Nevertheless, it has local and regional significance as it is a wetland feature and does provide partial connectivity between the Santa Clara River and the mountains. A wetland delineation was not conducted as a part of this study.

Waters and Wetlands						
Map Key (1)	Wetland Type (2)	Wetland Name (if any)	Wetland Status (3) (if known)	Wetland Size (4)	Hydrologic Status (5)	Primary Water Source (6)
W1	Stream/drainage	Piru Creek	USACE ?, CDFG, County	> 1,200 linear ft adjacent to the site	Flowing	Runoff, probable release from dam
USACE U.S. Army Corps of Engineers regulated CDFG California Department of Fish & Game regulated County County General Plan protected wetland WPD Co. Watershed Protection District (red-line stream)						

Waters and Wetlands (continued)			
Map Key	County Wetland Significance (7)	Wetland Distance from Project (8)	Comments (9)
W1	Significant	25 to 50 feet from site boundary.	Piru Creek is a tributary to the Santa Clara River. Contains healthy riparian habitat with few invasive species.

Water/Wetland Buffers

Water/Wetland Buffers		
Map Key (1)	Recommended Buffer (2)	Comments
W1B1	100'	The site has been a developed farm labor camp adjacent to this wetland for decades. The proposed redevelopment of the site is not expected to significantly alter the existing relationship of the site to the wetland, with the possible exceptions of night lighting and the offsite drainage pipe at the creek. In order to function properly, the drainage pipe needs to be located at the edge of the wetland. Thus, a buffer between this proposed feature and the creek is impossible.

Other Areas/Observations

Other Observations		
Map Key (1)	Describe Features (Violations, other observations, etc.)	Comments
O1	Some of the buildings on site were being modified at the time of the survey in order to create a movie set.	None.

3.2 Species

Observed Species

The site is planted with Samel Ash trees around the buildings and numerous large Peruvian pepper trees along the property boundaries and elsewhere. The remainder of the site is either paved or otherwise compacted and is vegetated by scattered non-native weeds. The adjacent stream terrace (outside of the project site) is dominated by non-native weedy species, comprising more than 60 percent of the plant cover in this area. The creek bed itself is relatively open, and sparsely vegetated by mulefat scrub, willow scrub and scattered upland species. In the creek bed itself, non-natives comprise less than ten percent of the total plant cover. One sensitive species, Cooper's hawk was observed flying through the site. See Appendix 2 for a list of observed species.

Endangered, Threatened, Rare, and Locally Important Species and Nests (Initial Study Checklist A & E)

See Appendix One for definitions of the types of special status species that have federal, state or local protection and for more information on the regulations that protect birds' nests.

Endangered, threatened, rare, or locally important species were observed or have a moderate to high potential to occur within the survey area(s).

Habitat suitable for nests of birds protected under the Migratory Bird Treaty Act does exist within the survey area(s).

Special Status Species Summary

A Cooper's hawk was observed flying through the site to the riparian area. Special status species that were not observed but could potentially occur offsite in Piru Creek or on the adjacent stream terrace include Santa Ana Sucker, California arroyo toad, California red-legged frog, two-striped garter snake, western pond turtle, California or Coast horned lizard, and slender-horned spineflower.

Observed and Potential Special Status Species Table

Definitions of Low, Moderate and High Potential to Occur

When reviewing proposed projects for impacts to special-status species, habitat suitability, species' preferred habitats, known range of the species, and quality of habitat on the project site are reviewed as well as past recorded occurrences of the species on or near the project site. If the species was not observed on the project site, the potential for the species to occur on the site is described. The potential can be low, moderate, or high. These degrees of potential for species occurrence are defined below.

High potential for occurrence: (1) The habitat on the project site is the species' preferred habitat and is in good condition (has not been degraded by human disturbance); and/or (2) there is record of the species occurring on or near the project site.

Moderate potential for occurrence: (1) The habitat on the project site is the species' preferred habitat, but it has been disturbed or disturbance encompasses the project site, reducing the quality of the habitat; or (2) the habitat on the project site is not the species' preferred habitat, but it contains a similar structure to the preferred habitat and the species has been observed in this habitat type; or (3) the habitat on the project site is not the species' preferred habitat, but there is record of the species occurring in the immediate vicinity of the project site.

Low potential for occurrence: The habitat on the project site is not the species' preferred habitat, the habitat is highly disturbed, and there are no records of the species occurring on or near the project site.

Attached to this report is a list of the California Natural Diversity Database (CNDDB)-tracked species (point occurrences) that have been documented within a 1-, 5- and 10-mile radius of the project boundaries.

Special Status Species						
Map Key (1)	Survey/ Source (2)	Scientific Name (3)	Common Name	Species Status (4)	Potential to Occur (5)	Habitat Requirements (6)
Plants						
SSP1	CNDDDB	Calochortus plummerae	Plummer's mariposa-lily	None	Low	Grassy openings of woodlands, forests, chaparral and coastal sage scrub (Calflora).
SSP2	CNDDDB	Chorizanthe parryi var. Fernandina	San Fernando Valley spineflower	FC/SE	Low	Openings in coastal sage scrub (Hickman 1993).
SSP3	CNDDDB	Dodecahema leptoceras	Slender-horned spineflower	FE/SE	Moderate	Alluvial sand in coastal scrub (Hickman 1993).
SSP4	CNDDDB	Helianthus nuttalli parishii	Los Angeles sunflower	None	Low (presumed extinct)	Freshwater-marsh, salt-marsh (Calflora).
SSP5	CNDDDB	Lepechinia rossii	Ross' pitcher sage	None	Low	Chaparral between 1,000 and 2,592 feet (Calflora).
SSP6	CNDDDB	Malacothamnus davidsonii	Davidson's bush-mallow	None	Low	Slopes and washes (Calflora).
SSP7	CNDDDB	Orcuttia californica	California Orcutt grass	FE/SE	Low	Vernal pools (Calflora, Hickman 1993).
SSP8	CNDDDB	Pentachaeta lyonii	Lyon's pentachaeta	FE/SE	Low	Openings in chaparral (Calflora).
SSP9	CNDDDB	Symphyotrichum greatae	Greata's aster	None	Low	Chaparral vegetated canyons (Calflora).
Amphibians						
SSP10	Sandburg 2004	Bufo californicus	Arroyo toad	FE	Moderate	Floodplains that provide open riparian habitat, elevated terraces, and sand/gravel flats. Slow current velocities are required for successful egg deposition in shallow pools that contain substrates of sand or small gravels. Burrow locations are usually located in dry or slightly damp fine sand, often in canopy edge of willow or cottonwood. (Sandburg 2004).
SSP11	Sandburg 2004	Rana aurora draytonii	California red-legged frog	FT	Moderate	Ephemeral ponds, intermittent streams, seasonal wetlands, springs, permanent ponds, riparian corridors, and others. Red-legged frogs can utilize terrestrial habitats and ephemeral streams. However, persistent water is required for breeding. Breeding and preferred habitat is water at least one meter deep, with riparian or aquatic vegetation that provide cover from terrestrial predators. (Sandburg 2004).
SSP12	Sandburg 2004	Rana muscosa	Sierra madre yellow-legged frog	FE	Low (No longer present in this drainage (Sweet pers. comm. in Sandburg 2004)	Ponds, lakes, and streams at moderate to high elevations. Appears to prefer open stream and lake margins that gently slope up to a depth of 5-8 cm (Jennings and Hayes 1994).
SSP13	CNDDDB	Spea hammondi	Western spadefoot	None	Low	Breeds in temporary rain pools having a duration greater than three weeks, lacking fish, bullfrogs, and crayfish (Jennings and Hayes 1994).

Special Status Species						
Reptiles						
SSP14	Sandburg 2004	<i>Actinemys marmorata pallida</i>	Western pond turtle	SSC	Moderate	Ponded or very slow moving water. Canopy required on water's edge. Terrestrial basking sites required. Nests typically dug in substrate with high clay or silt (Jennings and Hayes 1994).
SSP15	CNDDDB	<i>Aspidoscelis tigris stejnegeri</i>	Coastal western whiptail	None	Low	Arid and semi-arid habitats where vegetation is relatively sparse including secondary floodplains (Gevirtz et. al. 2005).
SSP16	CNDDDB	<i>Phrynosoma coronatum</i>	Coast Horned Lizard	SSC	Low	Areas with abundant, open vegetation such as chaparral or coastal sage scrub with loose, sandy loams, and sandy to gravelly soils that support scattered shrubs and an open canopy (Stebbins 1985, Zeiner et al., 1988, Jennings and Hayes 1994).
SSP17	Sandburg 2004	<i>Thamnophis hammondi</i>	Two-striped garter snake	SSC	Moderate	Perennial and intermittent streams having rocky beds bordered by willow thickets or other dense vegetation. Also large sandy riverbeds if a strip of riparian vegetation is present along the stream course. (Jennings and Hayes 1994).
Fish						
SSP18	CNDDDB	<i>Catostomus santaanae</i>	Santa Ana sucker	FT (see note) ¹	Moderate	Small and shallow streams with sluggish to swift currents. Prefers cool, clear, and unpolluted streams. (USFWS 2000).
SSP19	CNDDDB	<i>Gasterosteus aculeatus williamsoni</i>	Unarmored threespine stickleback	FE/SE	Moderate	Streams, estuaries and coastal seas (Banister 1986).
SSP20	CNDDDB	<i>Gila orcuti</i>	Arroyo chub	None	Moderate	Inhabits sandy and muddy bottoms in flowing pools and runs of creeks and small to medium rivers. Often found in intermittent streams. Water depth generally needs to be greater than 40 cm. (www.discoverlife.org).
SSP21	CNDDDB	<i>Onchorhynchus mykiss irideus</i>	Southern steelhead (southern Ca. ESU)	FE	Moderate ²	Freshwater streams, lagoons, and ocean. Spawning occurs in cool, clean, oxygen-rich streams and rivers with consistent flow and gravel substrate. Preferred conditions for spawning include water depth from 6 to 24 inches. (McEwan and Jackson 1996).
Birds						
SSP22	CNDDDB	<i>Coccyzus americanus</i>	Yellow-billed cuckoo	SE	Low	Nests in dense riparian woodland of cottonwoods and willows.
SSP23	CNDDDB	<i>Dendroica petechia</i>	Yellow warbler	None	Moderate	Breeds primarily in riparian woodland. Migrants occur in a variety of woodland habitats including tamarisk trees and other exotic planting, and in some shrub habitats such as blooming sweet fennel. Wintering individuals are found in willow riparian habitat and several species of ornamental plantings including blooming Eucalyptus, Myoporum laetum, and Plttosporum spp. (Lehman 1994).

¹ The Santa Ana Sucker is listed as Federal Threatened in the Los Angeles, San Gabriel and Santa Ana River systems. It is not listed in the Santa Clara River system because it is presumed that it was introduced there. (USFWS 2000).

² NMFS no date.

Special Status Species						
SSP24	CNDDDB	Icteria virens	Yellow-breasted chat	None	Low	Breeds in dense tangled riparian vegetation, particularly willows in open sunny areas (Lehman 1994, Sibley 2003).
SSP25	CNDDDB	Poliopitila californica californica	Coastal California gnatcatcher	FT	Low	Generally prefers open sage scrub with California sagebrush (<i>Artemisia californica</i>) as a dominant or co-dominant species. Nest placement typically in areas with less than 40 percent slope gradient. Gullies and drainages, when available within territory, used as nest sites. (Mock 2004)
SSP26	CNDDDB	Vireo bellii pusillus	Least Bell's vireo	FE/SE	Low	Breeds in dense riparian forest (typically dominated by willows). Foraging occurs up to 300 feet from riparian forest in scrub communities (USFWS 1994).
SSO1	SD1	Accipiter cooperii	Cooper's hawk	SSC (Third Priority)	Observed	Wooded and forested habitats including riparian areas. Foraging occurs in similar habitats and over cultivated fields and grasslands. (Gevirtz et al 2007).
SSP27	CNDDDB	Athene cunicularia	Burrowing owl	None	Low	Open grasslands and agricultural land (Sibley 2003).
SSP28	CNDDDB	Gymnogyps californicus	California condor	FE/SE	Low	Breeds in chaparral and coniferous forests. Foraging occurs over vast open grasslands. (Tesky 1994).
Mammals						
SSP29	CNDDDB	Antrozous pallidus	Pallid bat	None	Moderate	Grasslands, woodlands and forests. Roosts in caves, crevices, and occasionally hollow trees and buildings. Prefers rocky outcrops, cliffs, and crevices, with access to open areas for foraging. (Zeiner et. al 1988-1990).
SSP30	CNDDDB	Euderma maculatum	Spotted bat	None	Low	Arid deserts, grasslands, and coniferous forests. Prefers to roost in rock crevices. Cliffs provide optimal roost habitat. Occasionally found in caves and buildings. Not known to occur in Ventura County. (Zeiner et. al 1988-1990).
SSP31	CNDDDB	Eumops perotis californicus	Western mastiff bat	None	Moderate	Open and arid and semi-arid lowlands, including urban areas. Roosts primarily in crevices of steep cliffs. (Zeiner et. al 1988-1990, CA Department of Fish and Game 1995).
SSP32	CNDDDB	Lasiurus cinereus	Hoary bat	None	Moderate	May be found in any location in California. Generally roosts in dense foliage of medium to large trees. Prefers open habitats or habitat mosaics with trees for cover and open areas or habitat edges for foraging (Zeiner et. al 1998-1990).
SSP33	CNDDDB	Neotoma lepida intermedia	San Diego desert woodrat	None	Low	Coastal sage scrub and chaparral. Requires suitable nest sites provided by rock outcrops and/or patches of cactus (Zeiner et. al 1988-1990).
SSP34	CNDDDB	Taxidea taxus	American badger	None	Low	Grassland, and open coastal sage scrub (Gevirtz et. al. 2007)

Special Status Species (continued)				
Map Key	Adequate Habitat Onsite	Adequate Habitat Size (7)	Acreage Impacted	Comments (8)
SSO1	No	No	0	Cooper's hawk may forage over Piru Creek.
SSP1	No	No	0	
SSP2	No	No	0	
SSP3	Yes	Yes	0.1	
SSP4	No	No	0	
SSP5	No	No	0	
SSP6	No	No	0	
SSP7	No	No	0	
SSP8	No	No	0	
SSP9	No	No	0	
SSP10	No	Yes	0.1	Arroyo toad observed in Piru Creek in 2004 (Sandburg 2004).
SSP11	No	Yes	0.1	California red-legged frog observed in Piru Creek in 2004 (Sandburg 2004).
SSP12	No	Yes	0	
SSP13	No	No	0	
SSP14	Yes	Yes	0.1	Western pond turtle observed in Piru Creek in 2004 (Sandburg 2004).
SSP15	Yes	Yes	0.1	
SSP16	No	No	0	
SSP17	Yes	Yes	0.1	Two-striped garter snake observed in Piru Creek roughly 0.5 mile upstream of site in 2005 (Padre Associates 2008) and by Sandburg in 2004.
SSP18	Yes	Yes	n/d	
SSP19	Yes	Yes	n/d	
SSP20	Yes	Yes	n/d	Arroyo chub was observed in Piru Creek roughly 0.5 mile upstream of site in 2005 (Padre Associates 2008).
SSP21	Yes	Yes	n/d	A trout assumed to be steelhead was observed in Piru Creek less than one half mile upstream of the site in 2005 (Padre Associates 2008).
SSP22	No	No	0	
SSP23	Yes	Yes	0	
SSP24	No	No	0	
SSP25	No	No	0	
SSP26	No	No	0	
SO1	Yes	Yes	0	
SSP27	No	No	0	
SSP28	No	No	0	
SSP29	Yes	Yes	0	
SSP30	No	No	0	
SSP31	Yes	Yes	0	
SSP32	No	No	0	
SSP33	No	No	0	
SSP34	No	No	0	

Special Status Species (continued)

FE	Federal Endangered
FT	Federal Threatened
FC.....	Federal Candidate Species
FSC	Federal Species of Concern
SFP.....	California Fully Protected Species
SE.....	California Endangered
ST	California Threatened
SR.....	California Rare
SSC	California Species of Special Concern
CDFG/NatureServe Rank	
	G1 or S1 - Critically Imperiled Globally or Subnationally (state)
	G2 or S2 - Imperiled Globally or Subnationally (state)
	G3 or S3 - Vulnerable to extirpation or extinction Globally or Subnationally (state)
CNPS 1A	California Native Plant Society listed as presumed to be extinct
CNPS 1B	California Native Plant Society listed as rare or endangered in California and elsewhere
CNPS 2.....	California Native Plant Society listed as rare or endangered in California but more common elsewhere
CNPS 3.....	A review list only. California Native Plant Society listed as in need of more information.
CNPS 4.....	A watch list only. California Native Plant Society listed as of limited distribution or infrequent throughout a broader area in California; vulnerability to threat appears relatively low.
LIS	Locally Important Species

Nesting Bird Summary

Nesting would not be expected in late fall/early winter. As expected, nesting was not observed during the surveys conducted in October and November. No nests were observed onsite or offsite.

3.3 Wildlife Movement and Connectivity (Initial Study Checklist D)

Wildlife movement or connectivity features, or evidence thereof, were found within the survey area(s).

Mapped Corridors or Linkages

Piru Creek, which is adjacent to the project site, provides limited opportunities for wildlife movement and connectivity within and extending beyond its 318,000 acre watershed. It is mapped by Ventura County as a Landscape Linkage.

Connectivity Feature 1 (C1)

Connectivity Feature

Piru Creek.

Description

Piru Creek provides a landscape linkage between the Santa Clara River to the south and the mountainous areas to the north in the Angeles and Los Padres National Forests. It also provides a linkage southward toward the Santa Monica Mountains.

Species Observed

The observations of great blue heron (*Ardea Herodias*), belted kingfisher (*Ceryle alcon*), Cooper's hawk (*Accipiter cooperii*), and bobcat (*Lynx rufus*) suggest that the creek functions as a landscape linkage. A determination of the upper and lower limits of this landscape linkage is beyond the scope of this study.

Evidence

Live animals flying over creek from downstream to upstream. Bobcat tracks next to the water's edge.

Functional Group/Species Expected

Medium-size mammals, small mammals, birds and bats, aquatic/riparian reptiles and amphibians and fish are expected to use Piru Creek.

Habitats Connected

Piru Creek connects the riparian forests of the Santa Clara River to the two fresh water lakes, and the chaparral and other habitats of the mountainous upper watershed.

Discussion

Highway 126, approximately 500 feet south of the site, functions as a chokepoint for some species. According to Penrod (2001), this intersection lacks the number and size of culverts under the highway necessary to support movement of species to and from the Santa Clara River. Further upstream, chokepoints include Pyramid Dam which forms Pyramid Lake and the Santa Felicia Dam which forms Lake Piru. Although these have significantly altered ecosystem functions for amphibians and reptiles (Sandburg 2004), as well as for steelhead (NMFS n.d.), it is likely that Piru Creek continues to provide important connectivity for a multitude of avian species. It may also provide connectivity for other taxonomic groups as well.

Crossing Structures Table

No crossing structures exist on the site and none are proposed. Neither the Highway 126 crossing nor the dams upstream were investigated as a part of this study. The proposed drainage pipe will have an outlet at the creek, but is not expected to limit wildlife movement.

Section 4: Impact Assessment & Mitigation

4.1 Sufficiency of Biological Data

Additional biology-related surveys or permits needed prior to issuance of land use permit:

The proposed drainage outlet is likely to require permits from the Department of Fish and Game (1600), Regional Water Quality Control Board (401), and possibly the U.S. Army Corps of Engineers (404). These permits are likely to also require consultation with the U.S. Fish and Wildlife Service and possibly the National Marine Fisheries Service. These agencies may require surveys prior to granting permits for construction and installation of the drainage outlet. If additional drainage structures are required to manage runoff off the site, they too are likely to require agency permits and surveys.

4.2 Impacts and Mitigation

A. Endangered, Threatened, or Rare Animal or Plant Species, or Their Habitats

Project: PS-M; Cumulative: PS-M

Impact 1. Construction and installation of the drainage pipe outlet that would drain runoff water from the site to Piru Creek could significantly impact nesting birds in the riparian corridor, and sensitive species such as red-legged frog, southwestern pond turtle, two-striped garter snake, and others that could be present at the time of construction. *PS-M: Potentially significant but Mitigable.*

MM1A. Impact: Potential impacts to sensitive species due to construction of drainage outlet. Goal: Avoid impacts to sensitive species. Mitigation Action: Sensitive plant and animal species surveys shall be conducted at the proposed location of the drainage outlet and the area offsite that is within 200 feet of the anticipated construction zone. These surveys shall be conducted by a qualified biologist at the times most likely to observe sensitive species. A minimum of three surveys, separated by 5 to 7 days shall be conducted prior to construction. Monitoring and Timing: The biologist shall prepare a report of the findings. Prior to initiation of construction, the report shall be submitted to Ventura County Planning Division, the Department of Fish and Game, the U.S. Fish and Wildlife Service, and possibly the National Marine Fisheries Service. The agencies' concurrence shall be obtained prior to construction. If any sensitive species are observed, the plant or animal shall be moved by a biologist with handling permits (if required) to appropriate habitat up or downstream in Piru Creek. The construction area shall be temporarily fenced off to exclude re-entry by sensitive species during construction. Standard of Success: Impacts avoided or minimized.

MM1B. Impact: Harm to sensitive species during construction of drainage outlet. Goal: Avoid impacts to sensitive species. Mitigation Action: A professional biologist shall be retained to monitor construction and installation of the drainage pipe. The biologist shall have the authority to stop and/or redirect work if necessary to protect sensitive species and habitat until the situation has been remedied. Monitoring and Timing: The biologist shall prepare a report and submit it to Ventura County Planning Division, the Department of Fish and Game and other permitting agencies within 2 weeks of the completion of construction monitoring activities. Standard of Success: Impacts avoided or minimized.

Impact 2. The mature ash and pepper trees on the site may support birds that are protected by the Migratory Bird Treaty Act (MBTA) and are nesting at the time of tree removal. If birds are nesting in one or more of these trees at the time that the trees are removed from the site, a significant impact could occur as a result of harm to the reproductive success of species protected by the MBTA. *PS-M: Potentially significant but Mitigable.*

MM2. Impact: Destruction of active nests. Goal: Protect reproductive success of birds protected by MBTA. Mitigation Action: Nesting bird surveys shall be done twice per week during the three weeks

prior to the scheduled felling of the trees on the site. If active nests are found, the tree(s) shall not be cut down and the nest(s) within them shall be protected until the young of the year have left the nest. The surveys shall be conducted by a professional biologist approved by RMA Planning Division. If a raptor nest is found, a buffer of 300 to 500 feet in which no disturbance may occur may be necessary to protect the nest. The Migratory Bird Treaty Act applies to the site. Monitoring and Timing: A report shall be prepared by the biologist and submitted to RMA Planning Division and the Department of Fish and Game, and approved by these agencies prior to the felling of the trees. Standard of Success: No active nests disturbed.

B. Wetland Habitats

Project: PS-M; Cumulative: PS-M

Impact 3. Runoff from the project containing petrochemicals from automobiles, phosphates from detergents, and nutrients from landscape fertilizers could be discharged into Piru Creek and might significantly impact the biota of the creek and the Santa Clara River including sensitive species that may be present. *PS-M: Potentially significant but Mitigable.*

MM3. Impact: Water quality adverse impact on sensitive species. Goal: Ensure only clean water generated from site enters creek. Mitigation Action: Runoff from the project that will be discharged into Piru Creek shall be treated with biofilters on the site. The biofilters shall be designed, implemented, and maintained so that the water running off the site into the creek is as clean as rainwater running off of naturally vegetated areas. (This has already been proposed by the applicant.) Monitoring and Timing: Water quality monitoring shall occur four times per year for five years: twice during rainfall events, and twice when there has been no rain for the preceding two weeks. The water shall be tested immediately after being collected. The cause of any significant differences shall be identified and remedied as soon as is practical. A report shall be prepared documenting the results and submitted to RMA Planning Division within 30 days of water collection. Standard of Success: Clean water releases into creek that are at least as clean as runoff coming from nearby lands vegetated by native habitats.

C. Coastal Habitats

Project: NI; Cumulative: NI

The project site is not located within or adjacent to the coastal zone, nor is there significant habitat connectivity between the survey area and the coastal zone.

D. Wildlife Movement and Connectivity (migration corridors)

Project: PS-M; Cumulative: PS-M

Impact 4. Lighting at night that is directed toward the creek could disturb the behavior of nocturnal animals. This could be a significant impact. *PS-M: Potentially significant but Mitigable.*

MM4. Impact: Night lighting causing adverse impacts to nocturnal behavior of wildlife. Goal: Avoid impact. Mitigation Action: No lighting shall be directed toward Piru Creek with the exception of those needed for safety emergencies. All lighting within 50 feet of the creek's top-of-bank shall be shielded so that light is directed downward toward the ground and avoids being directed toward the creek. Monitoring and Timing: Ventura County permit compliance staff to check before occupancy clearance permit. Standard of Success: Darkness at night in the riparian zone.

E. Locally Important Species/Communities

Project: PS-M; Cumulative: PS-M

Impact 5. Invasive plants planted as part of the site's landscape could escape and naturalize in the riparian habitat of Piru Creek and the Santa Clara River downstream. *PS-M. Potentially significant but Mitigable.*

MM5. Impact: Invasion of non-native plants. Goal: Avoid invasion. Mitigation Actions: In order to avoid spreading Russian thistle to other sites by heavy machinery moving it from this site to the next construction site, prior to heavy machinery being brought on to the site, all Russian thistle shall be cleared from the site in the early spring prior to flowering and removed to decrease the number of seeds of this species remaining on the site. No invasive plants shall be planted as part of the site's

landscape. Tamarisk and Arundo are two taxa that shall not be planted anywhere on or offsite. Any plants that are listed in the California Invasive Plant Council's list shall not be planted. Monitoring and Timing: A County-approved biologist shall check the site before heavy machinery is permitted entry onto the site. A County approved biologist shall review and approve the landscape plan and work with the applicant's landscape architect to identify plant species ecologically appropriate to the site prior to the plan's approval by the County. The biologist shall also monitor installation of the plants to ensure compliance with this condition and submit a report to the County RMA Planning Division within 30 days of installation. Standard of Success: No Tamarisk or Arundo or other invasive species on the site.

Impact 6. Annual fuel modification could result in recurring impacts to locally important wildlife species that use the stream terrace as habitat.

MM6. Impact: Annual fuel modification would result in recurring impacts to locally important wildlife species that use the stream terrace as habitat. Goal: Reduce the impacts that fuel modification typically makes on wildlife habitat. Mitigation Action: Fuel modification off of the property in the riparian area shall be limited to removal of non-natives and maintenance of these areas free of such species. Initial and annual fuel modification shall minimize disturbance to the ground surface and shall maintain at least 50 percent cover with native vegetation. Monitoring and timing: A County-approved biologist shall monitor the initial fuel modification effort and submit a report to RMA Planning Division on the results of the effort within 30 days of completion of fuel modification. Standard of Success: Non-native plants absent from fuel modification zone and native plants remaining in fuel modification zone at approximately 50 percent cover.

Impact 7. Fuel modification would modify approximately 0.25 acre of vegetation dominated by non-native species; and construction of the drainage pipe would modify approximately 0.05 acre of vegetation dominated by non-native species. Because of the proximity of this vegetation to the waterbody, the vegetation may provide habitat for wildlife species associated with the waterbody.



MM7. Impact: Recurring modification of habitat potentially used by wildlife. Goal: Mitigate for the short-term disturbance and long-term habitat modification by restoring native riparian habitat. A habitat restoration plan shall be prepared by a qualified biologist, approved by the County, and implemented by the applicant to restore native riparian vegetation to the stream terrace adjacent to the site. The actual acreage that is disturbed shall be quantified and mitigated at a 1.5:1 ratio (the ratio of area restored to area impacted). The restoration plan shall include provisions for the removal of any Tamarisk and Arundo that is adjacent to the site. The total mitigation area would total 0.45 acre if 0.30 acre of habitat is impacted. Monitoring and Timing: The restoration effort shall be monitored by a qualified biologist four times per year and the biologist shall submit reports including any recommendations for remediation if necessary to RMA Planning Division and other agencies if required. Standard of Success: To be determined by the restoration plan.



Section 5: Conditions of Approval



Other Recommendations

OR1. The County should consider working with the applicant to develop a creek docent program for residents of the project that would generate an educated understanding and positive relationship with the creek, and the plants and animals that live in the riparian habitat. The program should be friendly rather than punitive, and should be maintained for the duration of the project.

Section 6: Photos

Photos	
Location	
Map Key	
P1	
View Direction	
Northeast	
Description	
Existing homes that are part of the former farm labor camp on site shaded by ash trees.	
Location	
Map Key	
P2	
View Direction	
Northwest	
Description	
Barren compacted soil dominates the site. Pepper trees and agricultural packing crates in the background.	

Photos	
Location	
Map Key	
P3	
View Direction	
North	
Description	
Standing on stream terrace facing the site. Fence marks property boundary. October 29, 2008.	
Location	
Map Key	
P4	
View Direction	
North	
Description	
View of approximate location of proposed drainage pipe November 11, 2008.	

Photos	
Location	
Map Key	
P5	
View Direction	
Northwest	
Description	
View of creek active channel October 29, 2008.	
Location	
Map Key	
P6	
View Direction	
Southeast	
Description	
View of creek bed outside of active channel October 29, 2008.	

Summary of Biological Resource Regulations

The Ventura County Planning Division, as “lead agency” under CEQA for issuing discretionary land use permits, uses the relationship of a potential environmental effect from a proposed project to an established regulatory standard to determine the significance of the potential environmental effect. This Appendix summarizes important biological resource regulations which are used by the Division’s biologists (consultants and staff) in making CEQA findings of significance:

- Sensitive Status Species Regulations
- Nesting Bird Regulations
- Plant Community Regulations
- Waters and Wetlands Regulations
- Coastal Habitat Regulations
- Wildlife Migration Regulations
- Locally Important Species/Communities Regulations

Sensitive Status Species Regulations

Federally Protected Species

Ventura County is home to 29 federally listed endangered and threatened plant and wildlife species. The U.S. Fish and Wildlife Service (USFWS) regulates the protection of federally listed endangered and threatened plant and wildlife species.

FE (Federally Endangered): A species that is in danger of extinction throughout all or a significant portion of its range.

FT (Federally Threatened): A species that is likely to become endangered in the foreseeable future.

FC (Federal Candidate): A species for which USFWS has sufficient information on its biological status and threats to propose it as endangered or threatened under the Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

FSC (Federal Species of Concern): A species under consideration for listing, for which there is insufficient information to support listing at this time. These species may or may not be listed in the future, and many of these species were formerly recognized as “Category-2 Candidate” species.

The USFWS requires permits for the ‘taking’ of any federally listed endangered or threatened species. Take is defined by the USFWS as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct; may include significant habitat modification or degradation if it kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering.”

The Endangered Species Act (ESA) does not provide statutory protection for candidate species or species of concern, but USFWS encourages conservation efforts to protect these species. USFWS can set up voluntary Candidate Conservation Agreements and Assurances, which provide non-Federal landowners (public and private) with the assurance that if they implement various conservation activities to protect a given candidate species, they will not be subject to additional restrictions if the species becomes listed under the ESA.

State Protected Species

The California Department of Fish and Game (CDFG) regulates the protection of endangered, threatened, and fully protected species listed under the California Endangered Species Act. Some species may be jointly listed under the State and Federal Endangered Species Acts.

SE (California Endangered): A native species or subspecies which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.

ST (California Threatened): A native species or subspecies that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and

management efforts required by this chapter. Any animal determined by the commission as "rare" on or before January 1, 1985, is a "threatened species."

SFP (California Fully Protected Species): This designation originated from the State's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians, reptiles, and birds. Most fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations.

SR (California Rare): A species, subspecies, or variety of plant is rare under the Native Plant Protection Act when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. Animals are no longer listed as rare; all animals listed as rare before 1985 have been listed as threatened.

SSC (California Species of Special Concern): Animals that are not listed under the California Endangered Species Act, but which nonetheless 1) are declining at a rate that could result in listing, or 2) historically occurred in low numbers and known threats to their persistence currently exist.

The CDFG requires permits for the taking of any State-listed endangered, threatened, or fully protected species. Section 2080 of the Fish and Game Code prohibits "take" of any species that the California Fish and Game Commission determines to be endangered or threatened. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

The California Native Plant Protection Act protects endangered and rare plants of California. Section 1908, which regulates plants listed under this act, states: "no person shall import into this state, or take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, that the commission determines to be an endangered native plant or rare native plant, except as otherwise provided in this chapter."

The California Endangered Species Act does not provide statutory protection for California species of special concern, but they should be considered during the environmental review process.

California Native Plant Society Listed Species

Plants with CNPS listings 1A, 1B and 2 should always be addressed in CEQA documents. Plants with CNPS listings 3 and 4 do not explicitly qualify for legal protection, but can be addressed in CEQA documents depending on the circumstances and opinion of the biologist conducting the assessment.

CNPS 1A: Plants presumed to be extinct because they have not been seen or collected in the wild in California for many years. This list includes plants that are both presumed extinct in California, as well as those plants which are presumed extirpated in California. A plant is extinct in California if it no longer occurs in or outside of California. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range.

CNPS 1B: Plants that are rare throughout their range with the majority of them endemic to California. Most of the plants of List 1B have declined significantly over the last century.

CNPS 2: Plants that are rare throughout their range in California, but are common beyond the boundaries of California. List 2 recognizes the importance of protecting the geographic range of widespread species.

Plants identified on CNPS Lists 1A, 1B, and 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. They should be fully considered during preparation of environmental documents relating to CEQA.

CNPS 3: A review list for plants for which there is inadequate information to assign them to one of the other lists or to reject them.

CNPS 4: A watch list for plants that are of limited distribution or infrequent throughout a broader area in California and their vulnerability or susceptibility to threat appears relatively low at this time.

Global and Subnational Rankings

Though not associated directly with legal protections, species have been given a conservation status rank by NatureServe, an international non-profit conservation organization that is the leading source for information about rare and endangered species and threatened ecosystems. The Ventura County Planning Division considers the following ranks as sensitive for the purposes of CEQA impact assessment (G = Global, S = Subnational or State):

- G1 or S1 - Critically Imperiled
- G2 or S2 – Imperiled
- G3 or S3 - Vulnerable to extirpation or extinction

Locally Important Species

Locally important species' protections are addressed in a separate Appendix document, "Locally Important Species/Communities Regulations."

For lists of some of the species in Ventura County that are protected by the above regulations, go to www.ventura.org/rma/planning/bio_resources/index.htm.

Nesting Bird Regulations

The Federal Migratory Bird Treaty Act (MBTA) and the California Department of Fish and Game (CDFG) Code (3503, 3503.5, 3511, 3513 and 3800) protect most native birds. In addition, the federal and state endangered species acts protect some bird species listed as threatened or endangered. Project-related impacts to birds protected by these regulations would occur during the breeding season, because unlike adult birds, eggs and chicks are unable to escape impacts.

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and Russia for the protection of migratory birds, which occur in two of these countries over the course of one year. The Act maintains that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Bird species protected under the provisions of the MBTA are identified by the List of Migratory Birds (Title 50 of the Code of Federal Regulations, Section 10.13 as updated by the 1983 American Ornithologists' Union (AOU) Checklist and published supplements through 1995 by the USFWS).

CDFG Code 3513 upholds the MBTA by prohibiting any take or possession of birds that are designated by the MBTA as migratory nongame birds except as allowed by federal rules and regulations promulgated pursuant to the MBTA. In addition, there are CDFG Codes (3503, 3503.5, 3511, and 3800) which further protect nesting birds and their parts, including passerine birds, raptors, and state "fully protected" birds.

NOTE: These regulations protect almost all *native nesting birds*, not just sensitive status birds.

Plant Community Regulations

Plant communities are provided legal protection when they provide habitat for protected species, when the community is in the coastal zone and qualifies as environmentally sensitive habitat area (ESHA), or when the community qualifies as locally important.

Global and Subnational Rankings

Though not associated directly with legal protections, plant communities have been given a conservation status rank by NatureServe, an international non-profit conservation organization that is the leading source for information about rare and endangered species and threatened ecosystems. The Ventura County Planning Division considers the following ranks as sensitive for the purposes of CEQA impact assessment (G = Global, S = Subnational or State):

- G1 or S1 - Critically Imperiled
- G2 or S2 - Imperiled
- G3 or S3 - Vulnerable to extirpation or extinction

CDFG Rare

Rare natural communities are those communities that are of highly limited distribution. These communities may or may not contain rare, threatened, or endangered species. Though the Native Plant Protection Act and the California Endangered Species Act provide no legal protection to plant communities, CDFG considers plant communities that are ranked G1-G3 or S1-S3 (as defined above) to be rare or sensitive, and therefore these plant communities should be addressed during CEQA review.

Environmentally Sensitive Habitat Areas

The Coastal Act specifically calls for protection of “environmentally sensitive habitat areas” or ESHA, which it defines as: “Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments” (Section 30107.5).

ESHA has been specifically defined in the Santa Monica Mountains. For projects in this location, the Coastal Commission, the agency charged with administering the Coastal Act, has developed a specific three-part test for determining whether habitat there should be considered coastal sage scrub/chaparral ESHA. A memo from a Coastal Commission biologist outlining this test can be found at:

www.ventura.org/rma/planning/pdf/bio_resources/ESHA_Santa_Monica_Mountains.pdf.

Locally Important Communities

The Ventura County Initial Study Assessment Guidelines defines a locally important community as one that is considered by qualified biologists to be a quality example characteristic of or unique to the County or region, with this determination being made on a case-by-case basis. The County has not developed a list of locally important communities, but has deemed oak woodlands to be a locally important community.

Waters and Wetlands Regulations

Numerous agencies control what can and cannot be done in or around streams and wetlands. If a project affects an area where water flows, ponds or is present even part of the year, it is likely to be regulated by one or more agencies. Many wetland or stream projects will require three main permits or approvals (in addition to CEQA compliance). These are:

- 404 Permit (U.S. Army Corps of Engineers)
- 401 Certification (Regional Water Quality Control Board)
- Streambed Alteration Agreement (California Department of Fish and Game)

In addition, the Ventura County General Plan calls for protection of wetlands and there are several other federal, state and local permits that could be required when a project involves disturbance to wetlands or waters. For a more thorough explanation of wetland permitting, see the Ventura County’s “Wetland Project Permitting Guide” at www.ventura.org/rma/planning/pdf/prog_serve/bio_resources/FinalPDF.pdf.

404 Permit (U.S. Army Corps of Engineers)

Most projects that involve streams or wetlands will require a 404 Permit from the U.S. Army Corps of Engineers (USACE). Section 404 of the federal Clean Water Act is the primary federal program regulating activities in wetlands. The Act regulates areas defined as “waters of the United States.” This includes streams, wetlands in or next to streams, areas influenced by tides, navigable waters, lakes, reservoirs and other impoundments. For nontidal waters, USACE jurisdiction extends up to what is referred to as the “ordinary high water mark” as well as to the landward limits of adjacent Corps-defined wetlands, if present. The ordinary high water mark is an identifiable natural line visible on the bank of a stream or water body that shows the upper limit of typical stream flow or water level. The mark is made from the action of water on the streambank over the course of years.

Permit Triggers: A USACE 404 Permit is triggered by moving (discharging) or placing materials—such as dirt, rock, geotextiles, concrete or culverts—into or within USACE jurisdictional areas. This type of activity is also referred to as a “discharge of dredged or fill material.”

401 Certification (Regional Water Quality Control Board)

If your project requires a USACE 404 Permit, then you will also need a Regional Water Quality Control Board (RWQCB) 401 Certification. The federal Clean Water Act, in Section 401, specifies that states must certify that any activity subject to a permit issued by a federal agency, such as the USACE, meets all state water quality standards. In California, the state and regional water boards are responsible for certification of activities subject to USACE Section 404 Permits.

Permit Trigger: A RWQCB 401 Certification is triggered whenever a USACE 404 Permit is required, or whenever an activity could cause a discharge of dredged or fill material into waters of the U.S. or wetlands.

Streambed Alteration Agreement (California Department of Fish and Game)

If your project includes alteration of the bed, banks or channel of a stream, or the adjacent riparian vegetation, then you may need a Streambed Alteration Agreement from the California Department of Fish and Game (CDFG). The California Fish and Game Code, Sections 1600-1616, regulates activities that would alter the flow, bed, banks, channel or associated riparian areas of a river, stream or lake—all considered “waters of the state.” The law requires any person, state or local governmental agency or public utility to notify CDFG before beginning an activity that will substantially modify a river, stream or lake.

Permit Triggers: A Streambed Alteration Agreement (SAA) is triggered when a project involves altering a stream or disturbing riparian vegetation, including any of the following activities:

- Substantially obstructing or diverting the natural flow of a river, stream or lake
- Using any material from these areas
- Disposing of waste where it can move into these areas

Some projects that involve routine maintenance may qualify for long-term maintenance agreements from CDFG. Discuss this option with CDFG staff.

Ventura County General Plan

The Ventura County General Plan contains policies which also strongly protect wetland habitats.

Biological Resources Policy 1.5.2-3 states:

Discretionary development that is proposed to be located within 300 feet of a marsh, small wash, intermittent lake, intermittent stream, spring, or perennial stream (as identified on the latest USGS 7½ minute quad map), shall be evaluated by a County approved biologist for potential impacts on wetland habitats. Discretionary development that would have a significant impact on significant wetland habitats shall be prohibited, unless mitigation measures are adopted that would reduce the impact to a less than significant level; or for lands designated "Urban" or "Existing Community", a statement of overriding considerations is adopted by the decision-making body.

Biological Resources Policy 1.5.2-4 states:

Discretionary development shall be sited a minimum of 100 feet from significant wetland habitats to mitigate the potential impacts on said habitats. Buffer areas may be increased or decreased upon evaluation and recommendation by a qualified biologist and approval by the decision-making body. Factors to be used in determining adjustment of the 100 foot buffer include soil type, slope stability, drainage patterns, presence or absence of endangered, threatened or rare plants or animals, and compatibility of the proposed development with the wildlife use of the wetland habitat area. The requirement of a buffer (setback) shall not preclude the use of replacement as a mitigation when there is no other feasible alternative to allowing a permitted use, and if the replacement results in no net loss of wetland habitat. Such replacement shall be "in kind" (i.e. same type and acreage), and provide wetland habitat of comparable biological value. On-site replacement shall be preferred wherever possible. The replacement plan shall be developed in consultation with California Department of Fish and Game.

Coastal Habitat Regulations

Ventura County's Coastal Area Plan and the Coastal Zoning Ordinance, which constitute the "Local Coastal Program" (LCP) for the unincorporated portions of Ventura County's coastal zone, ensure that the County's land use plans, zoning ordinances, zoning maps, and implemented actions meet the requirements of, and implement the provisions and policies of California's 1976 Coastal Act at the local level.

Environmentally Sensitive Habitats

The Coastal Act specifically calls for protection of “environmentally sensitive habitat areas” or ESHA, which it defines as: “Any area in which plant or animal life or their habitats are either rare or especially valuable because of

their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments” (Section 30107.5).

Section 30240 of the Coastal Act states:

- (a) **"Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas."**
- (b) **"Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas."**

There are three important elements to the definition of ESHA. First, a geographic area can be designated ESHA either because of the presence of individual species of plants or animals or because of the presence of a particular habitat. Second, in order for an area to be designated as ESHA, the species or habitat must be either rare or it must be especially valuable. Finally, the area must be easily disturbed or degraded by human activities.

Protection of ESHA is of particular concern in the southeastern part of Ventura County, where the coastal zone extends inland (~5 miles) to include an extensive area of the Santa Monica Mountains. The Coastal Commission, the agency charged with administering the Coastal Act, developed a specific three-part test for determining whether habitat in the Malibu area of the Santa Monica Mountains should be considered coastal sage scrub/chaparral ESHA. Given that Malibu is immediately adjacent to the Ventura County part of the Santa Monica Mountains, this three-part test can be used for assessing whether coastal sage scrub and chaparral habitat in the Ventura County coastal zone meets the definition of ESHA. A memo from a Coastal Commission biologist outlines this test and can be found at: www.ventura.org/rma/planning/pdf/bio_resources/ESHA_Santa_Monica_Mountains.pdf.

The County's Local Coastal Program outlines other specific protections to environmentally sensitive habitats in the Coastal Zone, such as to wetlands, riparian habitats and dunes. Protections in some cases are different for different segments of the coastal zone.

Copies of the Coastal Area Plan and the Coastal Zoning Ordinance can be found at: www.ventura.org/rma/planning/programs_services/local_coast/local_coast.htm.

Wildlife Migration Regulations

The Ventura County General Plan specifically includes wildlife migration corridors as an element of the region's significant biological resources. In addition, protecting habitat connectivity is critical to the success of special status species and other biological resource protections. Potential project impacts to wildlife migration are analyzed by biologists on a case-by-case basis. The issue involves both a macro-scale analysis—where routes used by large carnivores connecting very large core habitat areas may be impacted—as well as a micro-scale analysis—where a road or stream crossing may impact localized movement by many different animals.

Locally Important Species/Communities Regulations

Locally important species/communities are considered to be significant biological resources in the Ventura County General Plan, thus one of the County's threshold criteria for the evaluation of impacts to biological resources is whether the project impacts locally important species/communities.

Locally Important Species

The following criteria were developed with the assistance of local biologists:

Locally Important Animal Species Criteria

1. Taxa for whom habitat in Ventura County is crucial for their existence either globally or in Ventura County. This includes taxa for whom:
 - Populations in Ventura County represents 10% or more of the known extant global distribution; or
 - In Ventura County, there are less than 6 element occurrences, or less than 1,000 individuals, or less than 2,000 acres.

2. Native taxa that are generally declining throughout their range and/or are in danger of extirpation in Ventura County.

Locally Important Plant Species Criteria

A locally important plant is a taxon that is declining throughout the extent of its range AND has a maximum of five (5) element occurrences in Ventura County.

Locally Important Animal and Plant Species Criteria

In some cases, to be determined on an individual basis, there are taxa whose population(s) do not qualify as locally important species; however, certain locations where a taxon occurs will be defined as locally important. This includes:

- If known, the published type locality for a holotype specimen.
- The edge of a taxon's range. This criteria does not apply to non-native taxa or those taxa whose range and population(s) size is expanding.

The County maintains a list of locally important species, which can be found on the Planning Division website at: www.ventura.org/rma/planning/programs_services/bio_resources/bio_resources.htm. *This list should not be considered comprehensive.* Any species that meets the criteria qualifies as locally important, whether or not it is included on this list.

Locally Important Communities

The Ventura County Initial Study Assessment Guidelines defines a locally important community as one that is considered by qualified biologists to be a quality example characteristic of or unique to the County or region, with this determination being made on a case-by-case basis. The County has not developed a list of locally important communities. Oak woodlands have however been deemed by the Ventura County Board of Supervisors to be a locally important community.

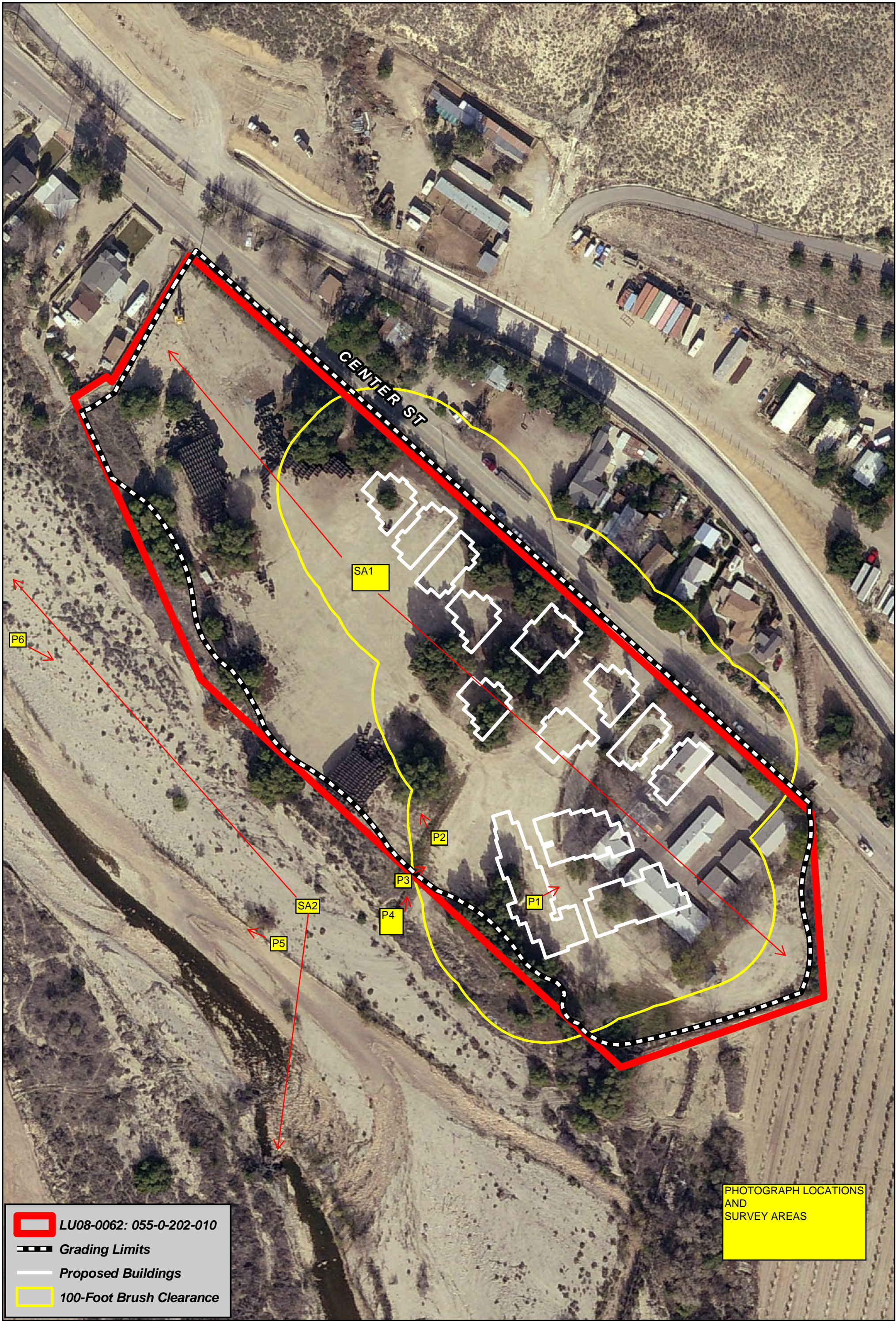
The state passed legislation in 2001, the Oak Woodland Conservation Act, to emphasize that oak woodlands are a vital and threatened statewide resource. In response, the County of Ventura prepared and adopted an Oak Woodland Management Plan that recommended, among other things, amending the County's Initial Study Assessment Guidelines to include an explicit reference to oak woodlands as part of its definition of locally important communities. The Board of Supervisors approved this management plan and its recommendations.


Appendix Two


Observed Species Tables


Species Observed (Partial List)			
Scientific Name (Species or Genus)	Common Name	Native (1)	Notes (2)
PLANTS			
Artemisia californica	California sagebrush	x	
Atriplex lentiformis	Big saltbush	x	
Baccharis salicifolia	Mulefat	x	
Brassica nigra	Black mustard		
Brickellia californica	California brickellbush	x	
Eriodictyon crassifolium var. denudatum	Yerba santa	x	
Eriogonum fasciculatum var. foliosum	California buckwheat	x	
Eriogonum gracile ?	Slender wooly buckwheat ?	x	
Fraxinus uhdei	Shamel ash		Tall trees planted on site next to buildings
Heteromeles arbutifolia	Toyon	x	
Hirschfeldia incana	Summer mustard		
Lepidospartum squamatum	Scalebroom	x	
Marrubium vulgare	Horehound		
Nicotiana glauca	Tree tobacco		
Opuntia littoralis	Prickly pear		
Populus fremontii	Fremont cottonwood	x	
Ricinus communis	Castor bean		
Salix exigua	Narrow leaf willow	x	
Salix laevigata	Red willow	x	
Salix lasiolepis	Arroyo willow	x	
Salsola paulsenii	Paulsen's Russian thistle		Invasive
Salvia mellifera	Black sage	x	
Schinus molle	Peruvian pepper tree		Tall trees planted on site along north and south boundaries and in center of site.
Tamarix sp.	Tamarisk		Invasive
ANIMALS			
Undetermined	Crayfish, Crawdad		Non-native predator
Gerrhonotus multicarinatus	Alligator lizard	x	
Accipiter cooperii	Cooper's hawk	x	
Ardea Herodias	Great blue heron	x	
Buteo jamaicensis	Red-tailed hawk	x	


Charadrius vociferus	Killdeer	x	
Coccothraustes vespertinus?	Evening grosbeak?	x	
Corvus brachyrhynchos	American crow	x	
Corvus corax	Common raven	x	
Dendroica townsendi	Townsend's warbler	x	
Gallus gallus	Domestic chicken		
Megaceryle alcyon	Belted kingfisher	x	
Mimus polyglottos	Northern mockingbird	x	
Sayornis nigricans	Black phoebe	x	
Sayornis saya	Say's phoebe	x	
Tyto alba	Barn owl	x	heard
Lynx rufus	Bobcat	x	tracks
Sylvilagus bachmani	Brush rabbit	x	



**LU08-0062: 055-0-202-010**

**Grading Limits**

**Proposed Buildings**

**100-Foot Brush Clearance**

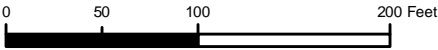
PHOTOGRAPH LOCATIONS
AND
SURVEY AREAS



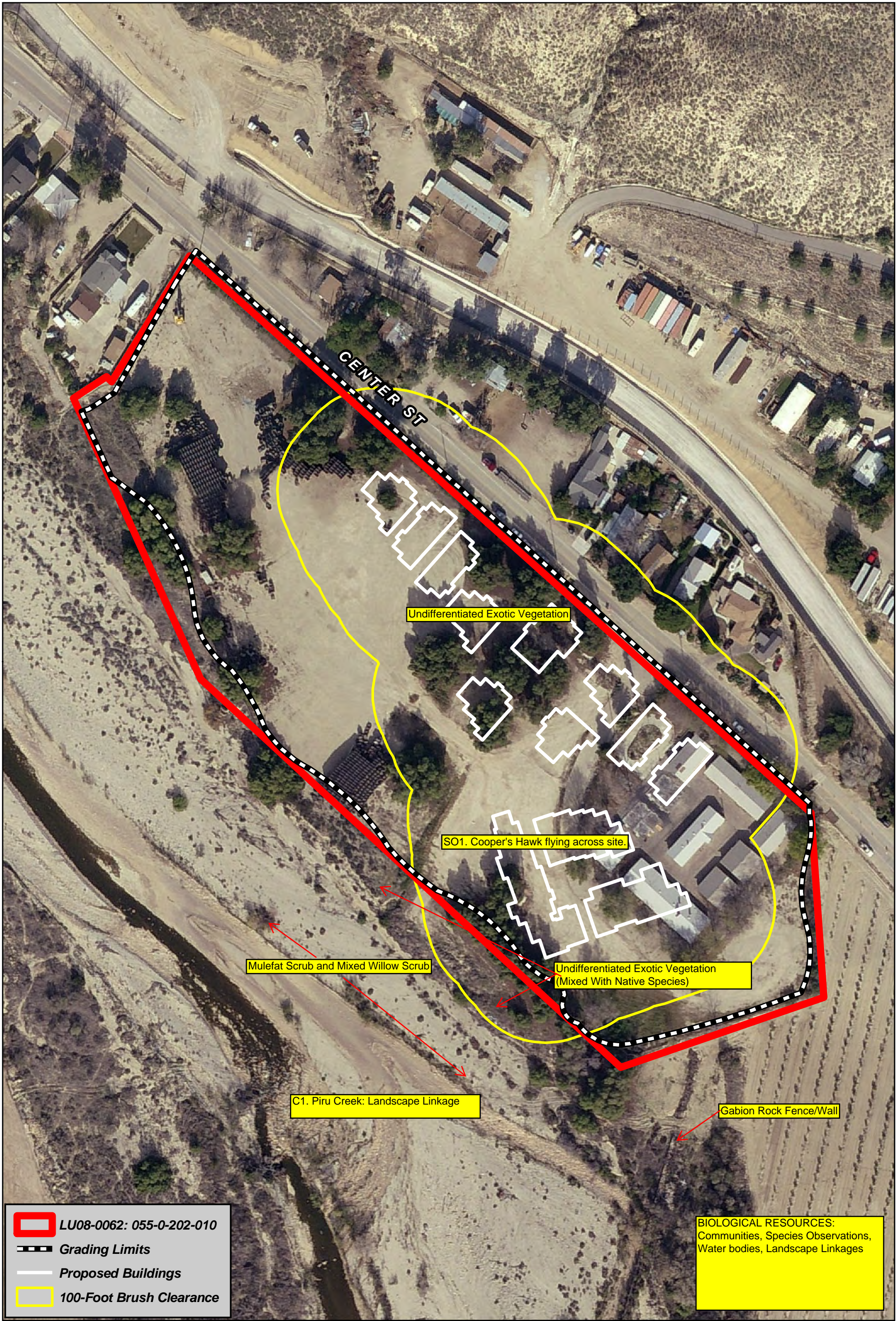
Ventura County
Resource Management Agency
GIS Development & Mapping Services
Map created on 09/15/2008
This aerial imagery is under the
copyrights of Pictometry
Source: Pictometry, January 2008



LU08-0062
055-0-202-010
Aerial Base Map



Disclaimer: this map was created by the Ventura County Resource Management Agency, Mapping Services - GIS, which is designed and operated solely for the convenience of the County and related public agencies. The County does not warrant the accuracy of this map and no decision involving a risk of economic loss or physical injury should be made in reliance therein



Ventura County
Resource Management Agency
GIS Development & Mapping Services
Map created on 09/15/2008
This aerial imagery is under the
copyrights of Pictometry
Source: Pictometry, January 2008

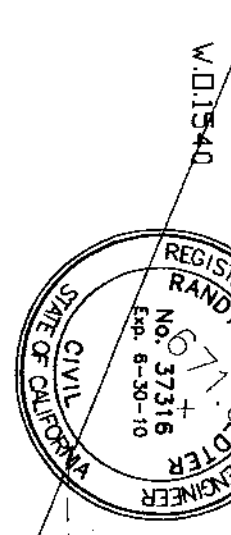


LU08-0062
055-0-202-010
Aerial Base Map

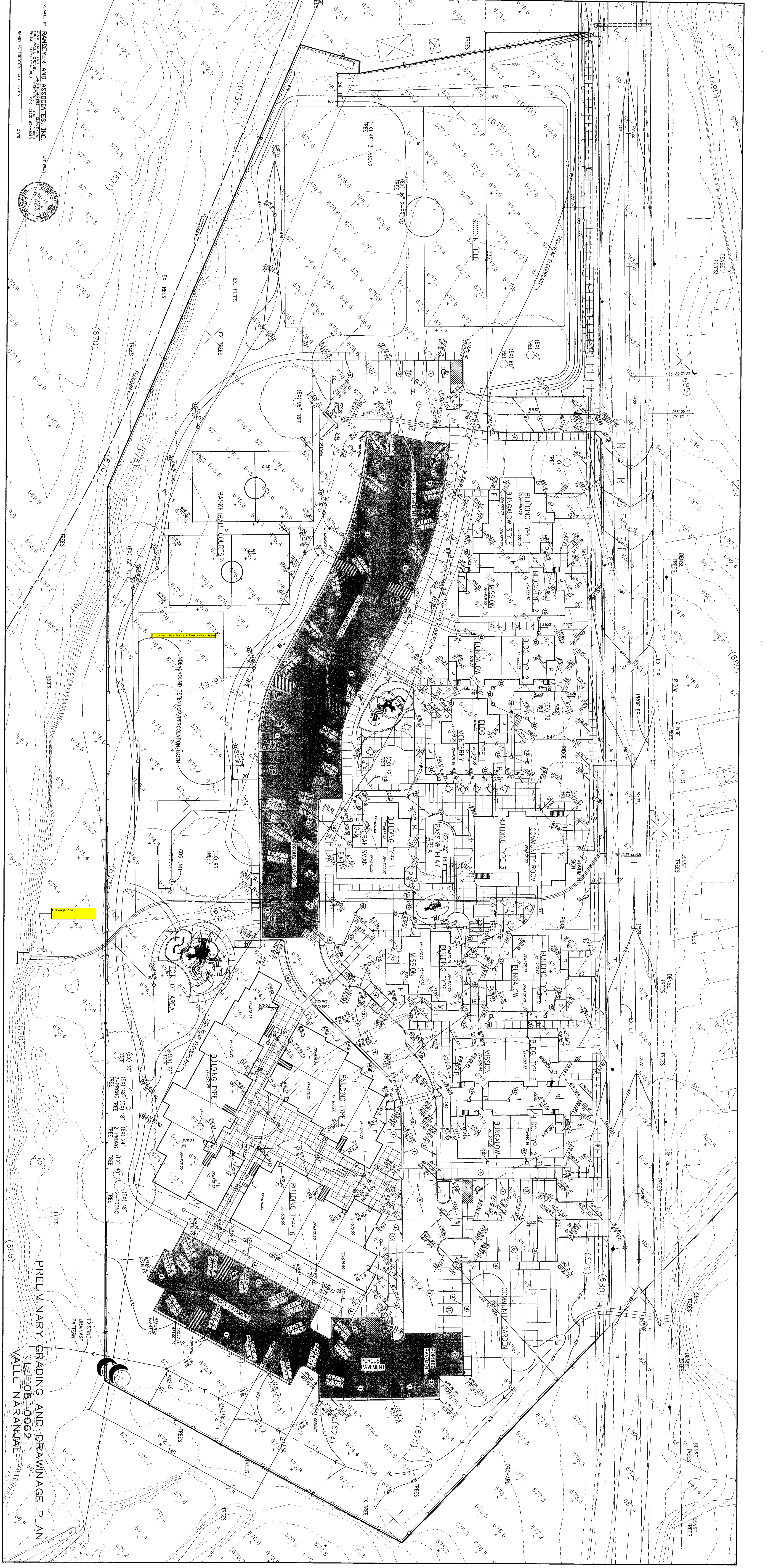
0 50 100 200 Feet

Disclaimer: this map was created by the Ventura County Resource Management Agency, Mapping Services - GIS, which is designed and operated solely for the convenience of the County and related public agencies. The County does not warrant the accuracy of this map and no decision involving a risk of economic loss or physical injury should be made in reliance therein

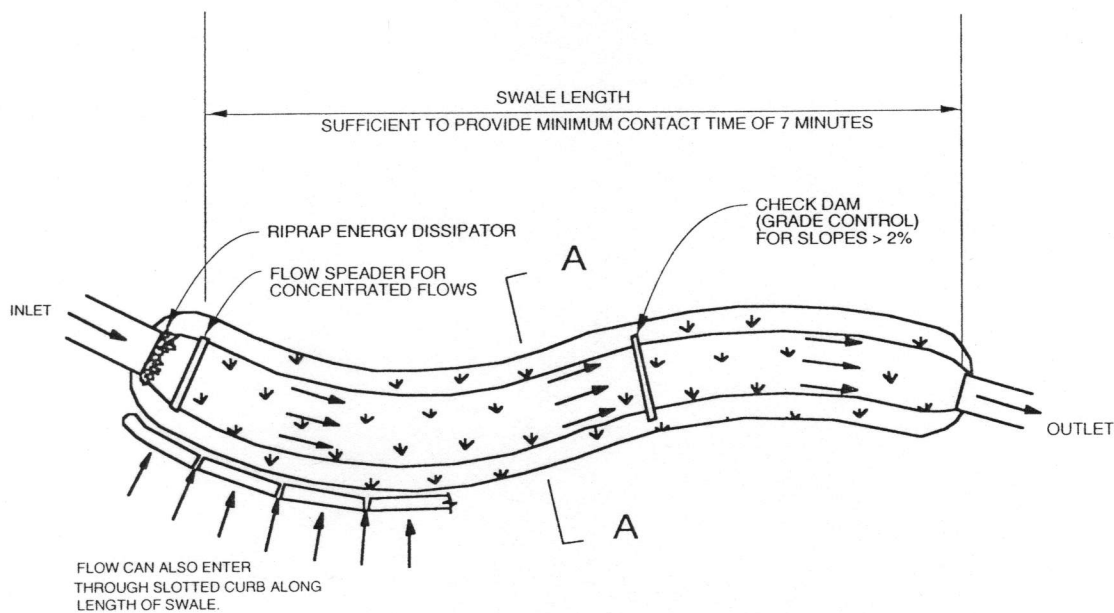
PREPARED BY
RAMSEYER AND ASSOCIATES, INC.
CIVIL ENGINEERS
1000 S. 10TH AVENUE, SUITE 200
DENVER, CO 80202
PHONE: 303.733.1000
FAX: 303.733.1001
WWW.RAMSEYERANDASSOCIATES.COM



DATE
RANDY V. TIEDER, P.E. 37316

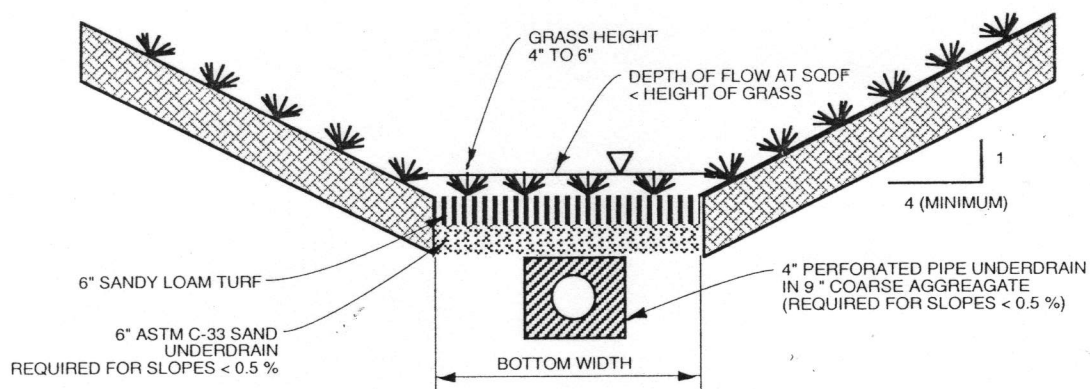


Section 5 - Treatment Control Measures



TRAPEZOIDAL GRASS SWALE PLAN

NOT TO SCALE



TRAPEZOIDAL GRASS SWALE SECTION

NOT TO SCALE

ADAPTED FROM URBAN STORM DRAIN CRITERIA MANUAL
VOL. 3 - BEST MANAGEMENT PRACTICES,
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT, 11/99

Figure 5-3 GRASS SWALE FILTER