Responses to the April 12, 2010 CEC Data Response and Issues Resolution Workshop

Revised Application for Certification (08-AFC-8)

for

HYDROGEN ENERGY CALIFORNIA

Kern County, California

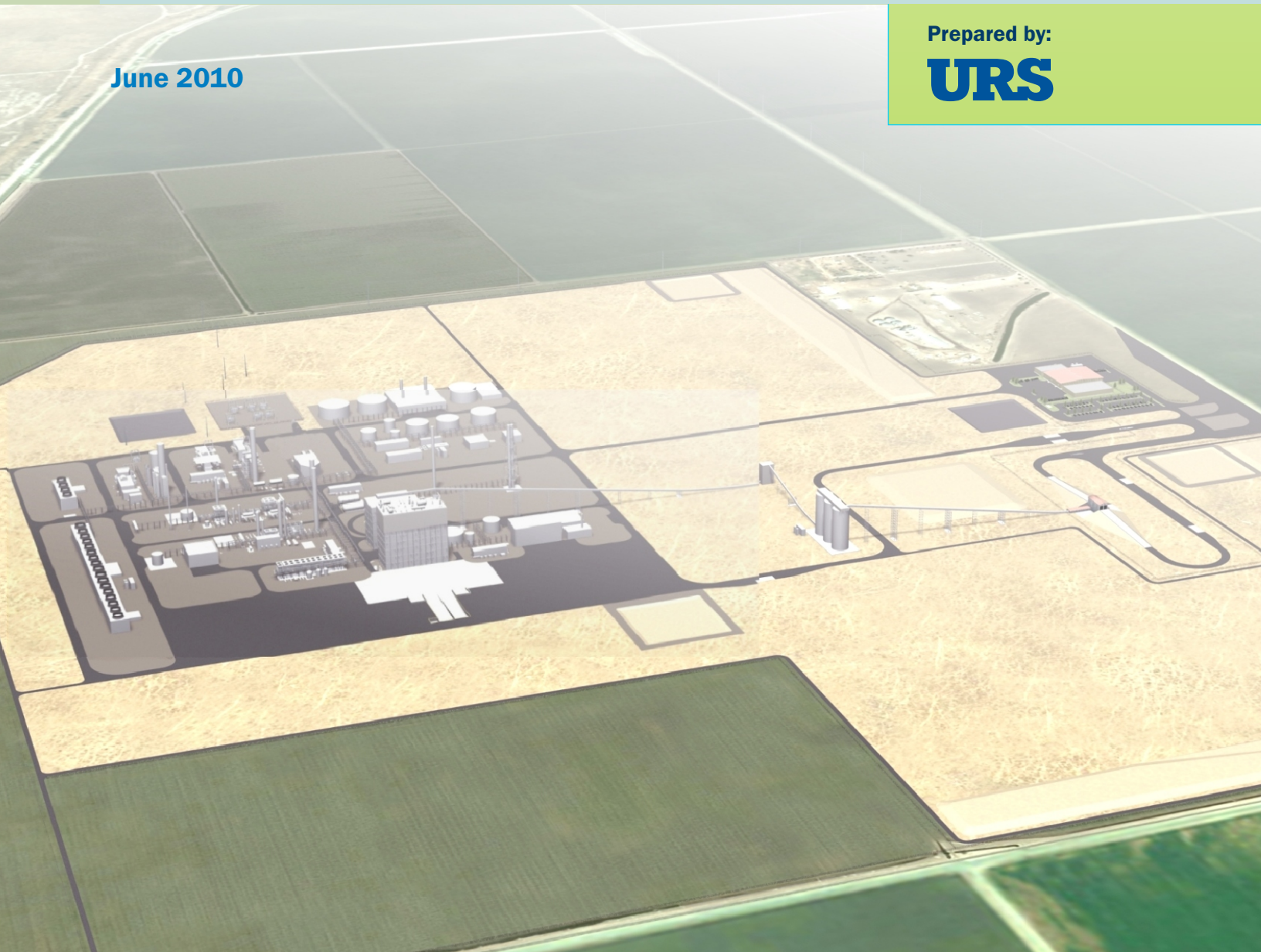
Prepared for:
Hydrogen Energy International LLC

hydrogen energy

Submitted to:
California Energy Commission

Prepared by:
URS

June 2010



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LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

AAQS	ambient air quality standards
AFC	Application for Certification
ARCO	Atlantic Richfield Company
BRMIMP	Biological Resource Mitigation Implementation and Monitoring Plan
C_3H_6	propylene
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CFR	Code of Federal Regulations
CH_3OH	methanol
CH_4	methane
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COS	carbonyl sulfide
DWR	Department of Water Resources
FLM	Federal Land Manager
GCR	General Conformity Rule
GIS	Geographic Information System
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HCN	hydrogen cyanide
HECA	Hydrogen Energy California
HECA LLC	Hydrogen Energy California LLC
ITP	Incidental Take Permit
KOP	key observation point
lbs/day	pounds per day
MDEA	methyldiethanol amine
N_2O	nitrous oxide
NG/PW	natural gas/potable water
NH_3	ammonia
NSR	New Source Review
PG&E	Pacific Gas and Electric Company
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
PSD	Prevention of Significant Deterioration
SCAQMD	South Coast Air Quality Management District
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SRU	sulfur recovery unit
TGTU	tail gas treating unit
U.S. EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

Technical Area: Biological Resources
CEC Technical Lead: Amy Golden

WORKSHOP REQUEST

1. Please provide the GIS shape files of the CO_2 linear and land owner information.

RESPONSE

The Geographic Information System (GIS) shape files of the carbon dioxide (CO_2) linear and land owner information were emailed to Rod Jones at the California Energy Commission (CEC) on April 22, 2010. The requested GIS shape files are being submitted under confidential cover.

WORKSHOP REQUEST

2. Please provide a description of the planned Horizontal Directional Drilling (HDD) use in the vicinity of biologically sensitive areas.

RESPONSE

A description of Horizontal Directional Drilling is provided in Attachment 2-1.

ATTACHMENT 2-1

ATTACHMENT 2-1

As described in Section 2 (Project Description) of the Revised AFC, the carbon dioxide (CO_2), natural gas, and potable water pipelines will be installed under the California Aqueduct, Kern River Flood Control Channel, and West Side/Outlet Canal using Horizontal Directional Drilling (HDD). HDD is a surface-launched, guided, steerable drilling system used for the trenchless installation of pipelines. HDD avoids direct impacts to the water courses and other sensitive areas by drilling under these features, as discussed further below.

HDD OVERVIEW

HDD crossings have been used since the 1970s. The Hydrogen Energy California (HECA) Project will use HDD to avoid waterways and adjacent sensitive biological habitat. However, because HDD avoids surface disturbance in specified areas, it is also commonly used to cross other features, including highways, railroads, airport runways, and pipeline corridors.

The HDD method includes a drilling rig that will bore a diagonal and horizontal hole under the water crossings. HDD can extend up to 1 mile, but much shorter distances are anticipated for the HECA Project. At each of these crossings, a 100-foot by 200-foot laydown area (or entry/exit pit) has been identified on either side of the water course to accommodate the HDD installation.

HDD REDUCES ENVIRONMENTAL IMPACTS

HDD crossings reduce environmental impacts when compared to conventional trenching methods because water courses and sensitive areas are not disturbed, as most of the work is confined to either side of the water course or sensitive area. The technology also offers maximum depth of cover under the feature, thereby affording maximum protection to the pipeline, and minimizing maintenance activities and potential environmental impacts.

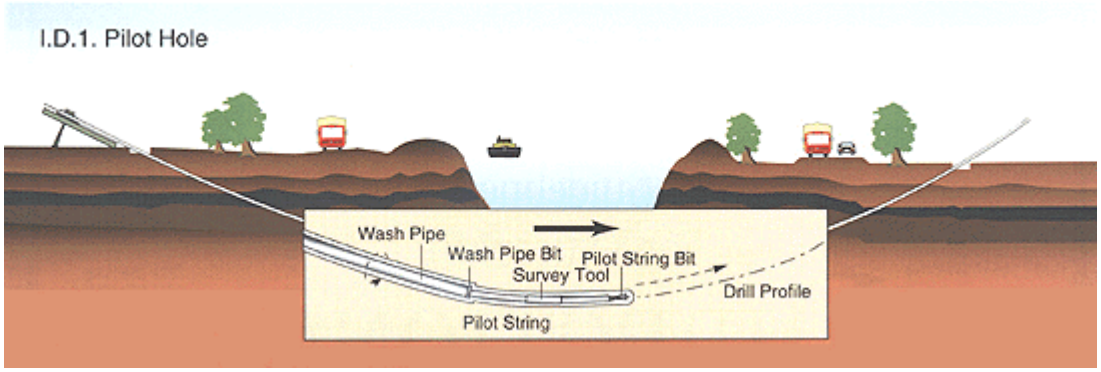
Best management practices for HDD will include silt fencing around the drill sites, capping pipes to avoid entrapping wildlife, energy dissipation devices for discharging water from hydrostatic testing of the pipeline, selecting drilling fluids for environmental compatibility, and removing spent fluids from the areas immediately adjacent to the water bodies for safe disposal and to prevent contamination. In addition, soil erosion control measures will be implemented to prevent runoff and impacts to water quality.

The HDD process consists of three main steps: (1) drilling a pilot hole, (2) reaming, and (3) pipe installation. The HDD process is described in further detail below.

HDD TECHNIQUE

A pilot hole is drilled beginning at a prescribed angle from horizontal and continues under and across the waterway along a design profile. A schematic of the technique is shown in Figure 1. Concurrent to drilling the pilot hole, the contractor may elect to run a larger diameter “wash pipe” that will encase the pilot drill string. The wash pipe acts as a conductor casing, providing rigidity to the smaller-diameter pilot drill string and also saving the drilled hole should it be necessary to retract the pilot string for bit changes.

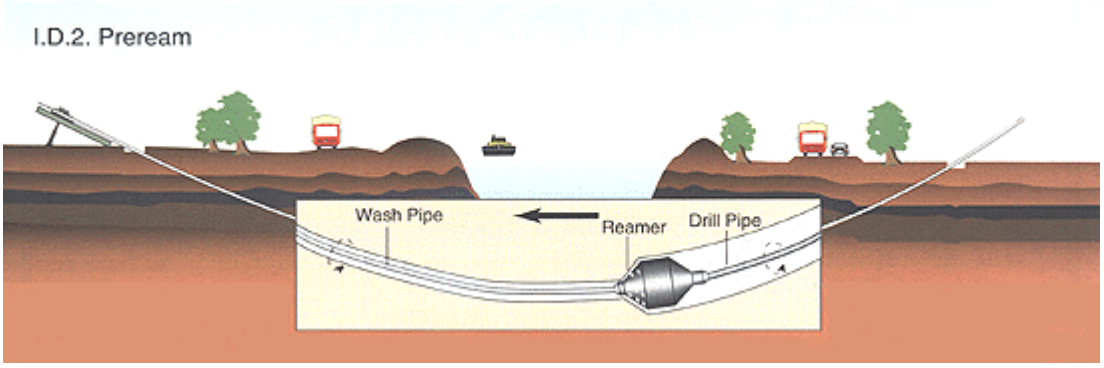
Figure 1: Pilot Hole



Once the pilot hole is complete, the hole must be enlarged to a suitable diameter for the pipeline. For instance, if the pipeline to be installed is 36 inches in diameter, the hole may be enlarged to 48 inches in diameter or larger. This is accomplished by "prereaming" the hole to successively larger diameters. A schematic of prereaming is shown in Figure 2. Generally, the reamer is attached to the drill string on the laydown area located on the opposite side of the waterway from the drilling rig, and then pulled back into the pilot hole. Joints of drill pipe are added as the reamer makes its way back to the drilling rig.

A slurry is then pumped in to maintain the integrity of the hole and to flush out cuttings. The slurries most commonly used are bentonite based, which is a naturally-occurring Wyoming clay known for its hydrophilic characteristics. Slurry pumped down the hole is circulated back to the surface and collected within a 100-foot by 200-foot laydown area. The slurry can either be reused, provided to a landowner for land application to improve water retention, or disposed off site in accordance with applicable regulations.

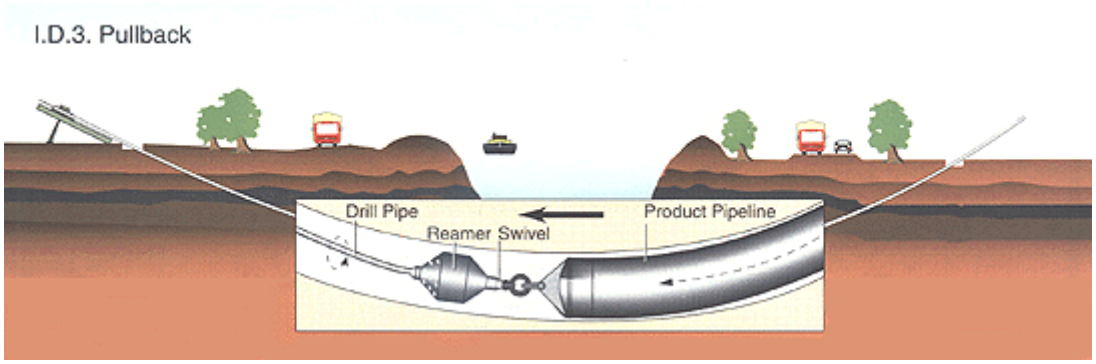
Figure 2: Prereaming



Once the drilled hole is enlarged, the pipeline can be pulled through. The pipeline is prefabricated on the laydown area located on the opposite side of the waterway from the drilling rig. A reamer is attached to the drill string, and then connected to the pipeline pullhead via a swivel. The swivel prevents any translation of the reamer's rotation into the pipeline string, allowing for a smooth pull into the drilled hole. The drilling rig then begins the pullback operation, rotating and pulling on the drill string and once again circulating high volumes of

drilling slurry. The pullback continues until the reamer and pipeline break ground at the drilling rig. A schematic of the pullback is shown in Figure 3.

Figure 3: Pullback



HDD LAYOUT AND DESIGN

The rig spread would be located in the 100-foot by 200-foot laydown area. The entry point is typically approximately 10 feet inside the laydown area, and the laydown area would then extend away from the crossing.

Once the crossing profile has been established and a geotechnical investigation completed, the depth of cover under the crossing is determined. Factors considered may include flow characteristics of the water body, the depth of scour from periodic flooding, future channel widening/deepening, and the existence of pipeline or cable crossings at the location. It is normally recommended that the minimum depth of cover be 20 feet under the lowest section of the crossing. While 20 feet is a minimum recommended depth of cover on a typical water crossing, crossings of other sensitive areas may have differing requirements. For the HECA Project, the depth of HDD under the water bodies will comply with all applicable federal and state regulations; the depth of the CO_2 pipeline will be up to 100 feet below the California Aqueduct.

WORKSHOP REQUEST

3. The California Department of Fish and Game (CDFG) agreed to evaluate the possibility of obtaining a subsurface easement within the Lokern Ecological Reserve parcel. CDFG will consult with their legal counsel and provide further information and guidance to the Applicant.

RESPONSE

A response has not yet been issued by the California Department of Fish and Game (CDFG). Since the April 12, 2010 Workshop, the Applicant contacted Julie Vance at CDFG on May 3, 2010; the Applicant is awaiting a response.

WORKSHOP REQUEST

4. CDFG agreed to determine if the HECA Project may use existing Coles Levee Ecological Preserve easements for the Natural Gas/Potable Water Line.

RESPONSE

A response has not yet been issued by CDFG. Since the April 12, 2010 Workshop, the Applicant contacted Julie Vance at CDFG on May 3, 2010; the Applicant is awaiting a response.

The Applicant has conducted its own independent assessment of the availability of easements across Coles Levee Ecosystem Preserve ("Coles Levee") for use by the Hydrogen Energy California (HECA) Project, and whether and to what extent there are restrictions or other impediments to use of those easements. This assessment was based on review of the following documents:

- Management Permit, executed October 2, 1992, by Atlantic Richfield Company (ARCO) and CDFG (hereinafter "Management Permit").
- Conservation Easement Agreement, effective October 2, 1992, by and between ARCO and CDFG (hereinafter "Conservation Easement").
- Implementing Agreement, by and between ARCO, U.S. Fish and Wildlife Service (USFWS), and CDFG, entered into March 1, 1996 (hereinafter "Implementing Agreement").

The Conservation Agreement, executed on October 2, 1992, established Coles Levee and included a Management Permit and Conservation Easement. The Conservation Easement included a reservation of rights permitting ARCO to continue to conduct oil and gas operations on the property for the life of the field, provided such activities were conducted pursuant to the terms of the easement. The reservation of rights further states:

> "ARCO shall not use the Property for any purposes other than wildlife and habitat management, oil and gas exploration and production activities, and activities reasonably related to such exploration, and production activities which shall include, but shall not be limited to, the operation, maintenance, and abandonment of wellbores and pipelines, gas plants, storage yards, roads, **enhanced oil recovery activities**, cogeneration plants, habitat enhancement and restoration, land reclamation, office facilities related to production activities, tank farms, and related storage sheds and facilities."

Conservation Agreement at 2, Paragraph 3 (emphasis added).

The Easement was also granted

> ". . . expressly subject to any and all existing rights of way, easements, surface leases, oil, gas, and mineral leases, contracts, and other instruments affecting all or any part of the Property, including all rights of ingress and egress necessary for the owners of such pre-existing rights to maintain, repair, service, and remove personal property located on the property. **ARCO and CDFG acknowledge and agree the terms, conditions and conservation measures contained in this Easement, the Management Agreement, and the Management Permit shall not in any way whatsoever affect or be binding upon any owner of an**

> **existing right-of-way, easement, surface lease, oil, gas and mineral lease, contract or any other instrument or right, which is dated prior to this Easement whether enumerated herein or not.**"

Conservation Agreement at 12, Paragraph 9 (emphasis added). Based on this language, HECA could use any existing right-of-way for its proposed natural gas pipeline, provided the owner of the right-of-way has granted permission for such use.

WORKSHOP REQUEST

5. Please explore a new alignment for the Natural Gas / Potable Water pipeline(s) through Kern Water Bank Authority property, as an alternative to going through Coles Levee.

RESPONSE

The Applicant is currently reviewing potential routes through Kern Water Bank Authority property. The Applicant is also working with the Kern Water Bank Authority to determine which portions of the property have conservation easements.

WORKSHOP REQUEST

6. CDFG agreed to provide Graphic Information System (GIS) shape files of the Coles Levee Ecological Preserve to the California Energy Commission.

RESPONSE

Julie Vance of the CDFG has issued the GIS shape files to Amy Golden of CEC.

WORKSHOP REQUEST

7. Please perform CDFG approved surveys for Swainson's hawk. Prior to the Record of Decision (ROD), provide a final timeline for construction of the project.

RESPONSE

From April 19 to 21, 2010, URS biologists David Kisner and Kate Eldredge conducted a driving survey of the CDFG/CEC-approved survey area for potential Swainson's hawk nesting trees and documented all living trees of approximately 20 feet and taller. The number and species of trees were recorded for each area, along with the presence of homesteads, agricultural areas, and developed areas. Figure 7-1 shows the location and approximate number of all trees observed.

Four pairs of Swainson's hawk were observed during the survey, as discussed further below and shown on the Figure 7-2.

One of the four Swainson's hawk pairs (identified as "Confirmed Nest Structure" on Figure 7-2) was seen returning to a nest structure in a willow tree not far from a farmstead. The nest tree is near an agricultural canal and is to the east of the California Aqueduct. Two pairs of Swainson's hawks (identified as "Potential Nest Structures" on Figure 7-2) were seen near trees with suitable nest structures, but were never seen returning to or sitting on the nest structures. One of these pairs is at the Tule Elk Reserve and the other is near the intersection of Highway 58 and Lokern Road. A fourth pair of Swainson's hawks was seen in an agricultural field (identified as "Unknown Nest Structure" on Figure 7-2); this pair may have been attempting to nest in the region or may have just been migrating through the area. No nest structure was seen near the location of this pair, but there are trees in the area that would be suitable.

Additional surveys are planned for later in the season in an attempt to determine if nesting was successful at these four areas. The additional surveys are planned for mid-June to confirm nesting success through visual identification of young birds.

Based on the Swainson's hawk observations in the project vicinity, additional avoidance and minimization measures are proposed, and described below.

BIO-22 Swainson's Hawk Avoidance and Minimization

The following avoidance and minimization measures have been developed using the information contained in the "Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley" by the Swainson's Hawk Technical Advisory Committee dated May 31, 2000.

Where possible, major ground disturbance would be scheduled to occur between August 1 and December 31 at the Project Site when the hawks are not in the area. The Project Site and a 0.5-mile buffer would be surveyed weekly between late February and April 20 to determine whether any hawks are nesting in the area. If any nests are found, they would be monitored through the breeding season to determine if the ongoing work is affecting the pair. If there appears to be any adverse affects, the CEC and CDFG will be contacted to address the potential impact. No new ground disturbance will occur within 0.5 mile of an active Swainson's hawk nest without concurrence from the CEC and CDFG.

To the greatest extent feasible, work along all linears will occur when Swainson's hawks are absent; in the time period between August 1 and December 31. Work between January 1 and March 1 would continue with periodic biological monitoring until Swainson's hawks have returned

to the region and are showing territorial behavior within 0.5 mile of the work zone. If work on linears is required during the time period of March 1 to July 30, surveys will be conducted out to 1 mile from the work zone prior to initiation of work. If no sign of Swainson's hawk breeding is observed within 0.5 mile of the work zone (including laydown and staging areas) after four surveys, work would be permitted. Additional surveys would be conducted for as long as the work continues, following the frequencies described in Table 7-1; if nesting is detected, work would be halted while CEC and CDFG are consulted.

Table 7-1
BIO-22 Survey Periods and Frequencies

Survey Period	Survey Time	Survey Frequency	Proposed Action
January 1 to March 1	All day	Weekly	Identify old nests and potential competitors.
March 1 to Mar. 20	All day	Twice weekly	Assess hawk activity and territoriality.
March 20 to April 5	Sunrise to 10:00 16:00 to sunset	Twice weekly	Determine potential nesting territories and nest structures.
April 5 to April 20	Sunrise to 12:00 16:30 to sunset	Thrice weekly	Confirm pairs and nest structures.
April 20 to June 10	All day	Weekly	Tracking known nest sites only.
June 10 to July 30	Sunrise to 12:00 16:00 to sunset	Twice weekly	Confirm fledging and nesting success.
July 31 to December 31	n/a	None	Preferred construction window.

As requested, the Applicant will provide a finalized construction timeline prior to the Record of Decision.

Spring 2010 Rare Plant Surveys

In addition to the Swainson's hawk surveys, the Applicant completed the 2010 rare plant surveys. The spring surveys were conducted by URS biologists David Kisner, Kate Eldredge, Alyssa Berry, and Kelly Kephart in April 2010. Follow-up late season surveys were conducted by URS biologists David Kisner and Kelly Kephart in May 2010. Spring surveys were conducted along the natural gas/potable water linears from April 5 to 9, 2010; surveys of the CO_2 linear were conducted from April 26 to 28, 2010. The late-season surveys were conducted of the natural gas/ potable water linears and the CO_2 linear from May 17 to 20, 2010. The Center for Natural Lands Management properties in the Lokern and Semitropic areas were used as reference sites to determine what rare plants were in bloom; these areas were visited on April 7, 2010. The transmission linears and the process water linear are located within active agricultural land and within a dirt road, respectively; therefore, no rare plant surveys were conducted.

A combined list of all plant species seen during the spring and late-season surveys is provided as Table 7-2. Sensitive species identified during the 2010 surveys include: Cottony buckwheat (*Eriogonum gossypinum*), Gypsum-loving larkspur (*Delphinium gypsophilum* ssp. *Gypsophilum*), Hoover's eriastrum (*Eriastrum hooveri*), Lost Hills crownscale (*Atriplex vallicola*), and Oil nest straw (*Stylocline citroleum*). All of these species with the exception of the Lost Hills crownscale are within the potential disturbance area of the various proposed linears (Table 7-3).

Table 7-2
Plant Species Observed in 2010 Surveys

Scientific Name	Common Name	Native/ Exotic	CNPS Status
Acroptilon repens	Russian knapweed	E	
Allenrolfea occidentalis	iodine bush	N	
Ambrosia dumosa	burrobush	N	
Amsinckia menziesii var. *intermedia*	fiddleneck	N	
Aster sp.			
Astragalus lentiginosus	freckled milkvetch	N	
Atriplex lentiformis	quailbush	N	
Atriplex polycarpa	desert saltbush	N	
Atriplex triangularis	spear leaved saltbrush	N	
Atriplex vallicola	Lost Hills saltbush	N	1B.2
Avena fatua	Common wild oats	E	
Baccharis salicifolia	mule fat	N	
Bassia hyssopifolia	five hook bassia	E	
Brassica nigra	black mustard	E	
Bromus hordeaceus	soft chess	E	
Bromus madritensis ssp. *Rubens*	red brome	E	
Calycadenia spicata	spiked western rosinweed	N	
Camissonia boothii ssp. *Decorticans*	shredding evening primrose	N	
Camissonia campestris	Mojave suncup	N	
Capsella bursa-pastoris	shepherd's purse	E	
Castilleja exserta	purple owl's clover	N	
Centaurea melitensis	tocalote	E	
Centaurea solstitialis	yellow star thistle	E	
Centromadia pungens ssp. *pungens*	common tarweed	N	
Chaenactis sp.			
Chenopodium berlandieri	Berlandier's goosefoot	N	
Chenopodium sp.			
Chloracantha sp.			
Convolvulus arvensis	bindweed	E	
Crassula connata	sand pygmy weed	N	
Cynodon dactylon	Bermuda grass	E	
Datura stramonium	jimson weed	E	
Deinandra pallida	Kern tarweed	N	
Delphinium gypsophilum	gypsum loving larkspur	N	4.2
Dichelostemma capitatum	blue dicks	N	
Distichlis spicata	salt grass	N	
Eastwoodia elegans	yellow mock aster	N	

Table 7-2
Plant Species Observed in 2010 Surveys (Continued)

Scientific Name	Common Name	Native/ Exotic	CNPS Status
Encelia actoni	Acton encelia	N	
Eremalche parryi	Parry's mallow	N	
Eriastrum hooveri	Hoover's eriastrum	N	4.2
Eriastrum pluriflorum	Tehachapi woolystar	N	
Eriogonum angulosum	anglestem buckwheat	N	
Eriogonum gossypinum	cottony buckwheat	N	4.2
Eriogonum gracillimum	slender stemmed buckwheat	N	
Erodium botrys		E	
Erodium cicutarium	redstem stork's bill	E	
Euphorbia chamaesyce	prostrate spurge		
Filago californica	California filago	N	
Frankenia salina	alkali heath	N	
Guillenia lasiophylla	California mustard	N	
Guillenia sp.		N	
Helianthus annuus	common sunflower	N	
Heliotropium curassavicum	heliotrope	N	
Hordeum brachyantherum	meadow barley		
Hordeum marinum	seaside barley	E	
Hymenoclea salsola	cheesebrush	N	
Isocoma acradenia var. *bracteosa*	alkali goldenbush	N	
Isomeris arborea	bladderpod	N	
Juncus/Carex sp.			
Lactuca serriola	prickly lettuce	E	
Lastarriaea coriacea	leather spineflower	N	
Lasthenia californica	goldfields	N	
Lasthenia chrysantha	alkali goldfields	N	
Layia glandulosa	white tidytips	N	
Layia pentachaeta ssp. *albida*	Sierra tidytips	N	
Lepidium nitidum	peppergrass	N	
Lessingia glandulifera	valley lessingia	N	
Lupinus bicolor	bi-color lupine	N	
Lycium cooperi	Cooper's box thorn	N	
Malacothrix californica	desert dandelion	N	
Malacothrix coulteri	snake's head	N	
Malva parviflora	cheeseweed	E	
Malvella leprosa	alkali mallow	N	
Marrubium vulgare	horehound	E	

Table 7-2
Plant Species Observed in 2010 Surveys (Continued)

Scientific Name	Common Name	Native/ Exotic	CNPS Status
Matricaria discoidea	pineapple weed	E	
Melilotus indicus	annual yellow sweetclover	E	
Mentzelia affinis	yellow blazing stars	N	
Mesembryanthemum crystallinum	crystalline ice plant	E	
Mesembryanthemum nodiflorum	slender-leaf iceplant	E	
Monolopia stricta	Crum's monolopia	N	
Mucronea perfoliata	perfoliate spineflower	N	
Nicotiana glauca	tree tabacco	E	
Oligomeris linifolia	oligomeris	N	
Pectocarya heterocarpa	hairy-leaved comb bur	N	
Phacelia tanacetifolia	lacy phacelia	N	
Phalaris aquatica	Harding grass	E	
Plagiobothrys canescens	valley popcorn flower	N	
Plantago ovata	wooly plantain	N	
Polygonum argyrocoleon	silversheath knotweed	E	
Portulaca oleracea	purslane	E	
Prosopis glandulosa	honey mesquite	N	
Psilocarphus tenellus	woolyheads	N	
Psilocarphus oregonus	Oregon woolyheads	N	
Rumex crispus	curly dock	E	
Rumex sp.			
Salix nigra	black willow	N	
Salsola tragus	Russian thistle	E	
Salvia carduacea	thistle sage	N	
Salvia columbariae	chia	N	
Schismus barbatus	Mediterranean grass	E	
Senecio vulgaris	common groundsel	E	
Sisymbrium altissimum	tumble mustard	E	
Solanum lanceolatum	lance-leaf nightshade	E	
Sonchus asper	spiny sow thistle	E	
Sonchus oleraceus	sow thistle	E	
Spergularia marina	salt sandspurry	N	
Spergularia sp.			
Stephanomeria exigua	small wirelettuce	N	
Stylocline citroleum	oil nest straw	N	1B.1
Stylomecon heterophylla	wind poppy	N	
Suaeda moquinii	seablite	N	

Table 7-2
Plant Species Observed in 2010 Surveys (Continued)

Scientific Name	Common Name	Native/ Exotic	CNPS Status
Tamarisk sp.	salt cedar	E	
Trichostema ovatum	San Joaquin bluecurls	N	4.2
Typha sp.	cattail	N	
Urtica urens	dwarf nettle	E	
Vulpia myuros	foxtail fescue	E	
Vulpia sp.	fescue	E	
Xanthium strumarium	cocklebur	N	

Notes:
CNPS = California Native Plant Society

Table 7-3
Sensitive Plant Species within Linear Alignments and Buffers

Species	CO_2 Alignment	CO_2 Buffer	NG/PW Alignment	NG/PW Buffer	Number of Individuals
Cottony buckwheat	Potential	Yes	No	No	~500
Gypsum-loving larkspur	Potential	Yes	No	Yes	~100
Hoover's eriastrum	Yes	Yes	Yes	Yes	~100,000
Lost Hills crownscale	No	No	No	Yes	~80
Oil nest straw	Yes	Yes	Yes	Yes	~15,000

Notes:
~ = approximately
CO_2 = carbon dioxide
NG/PW = natural gas/potable water

WORKSHOP REQUEST

8. Please provide a map of the giant kangaroo rat precincts at Elk Hills.

RESPONSE

In April 2010, the Applicant conducted a walking survey of the CO_2 linear, which would be located in the Elk Hills area, to determine the number and location of any giant kangaroo rat (*Dipodomys ingens*) precincts within 1,000 feet of the alignment. No precincts were found within the survey area (Township 30, Range 24, Sections South 16, 21, and 28). In addition, no sign of giant kangaroo rat was detected along the natural gas/potable water linears during the 2010 rare plant survey. Based on information from Occidental Petroleum, there were numerous giant kangaroo rats documented within the Elk Hills area prior to 2004, but only two precincts were documented in the same area during 2009 Occidental surveys. The two Occidental 2009 surveys are approximately 1 mile to the east and 1 mile to the west of the proposed CO_2 linear alignment.

Based on the Occidental 2009 giant kangaroo rat survey data, the giant kangaroo rat population has increased 18 percent from 2008 to 2009. The majority of the documented giant kangaroo rat populations are to the southwest and northwest of the Elk Hills region.

Though no precincts or sign of giant kangaroo rat were found during the 2010 survey, giant kangaroo rat may be found within the proposed CO_2 linear and portions of the proposed natural gas/potable water linears due to the nomadic and irruptive nature of the species.

WORKSHOP REQUEST

9. Please provide a breakdown of the vegetation community and impact calculations for the HECA Project.

RESPONSE

Table 9-1 presents acreages of temporary and permanent disturbance to the vegetation community for the HECA Project. Table 9-2 presents the acreages of vegetation within the buffer area for the HECA Project.

Table 9-1
Acreages of Temporary and Permanent Disturbance by Facility Type within the Biological Resources Study Area

Habitat Types	Project Site		Transmission Linear		Process Water Linear		Natural Gas/ Potable Water Linear		Natural Gas Linear		CO_2 Linear		Total Disturbed Acreage	
	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm
Allscale Scrub			1.8				35.2		7.5		24.0	1.50	68.5	1.5
Alfalfa	205	73	18.4	0.2	5.0	0.3				0.3	0.7	0.06	229.1	73.9
Cotton	132	80	5.6	0.1			6.4						144.0	80.1
Onion Dry	133	94	0.2										133.2	94.0
Pistachio			4.9	0.1									4.9	0.1
Wheat			3.8	0.1									3.8	0.1
Unidentified Agriculture			9.3	0.1									9.3	0.1
Disturbed	3	3	11.0	0.1	88.0		1.0		0.3				103.3	3.1
Total	**473**	**250**	**55.0**	**0.7**	**93.0**	**0.3**	**42.6**	**0**	**7.8**	**0.3**	**24.7**	**1.56**	**696.1**	**252.9**

Note:
CO_2 = carbon dioxide

Table 9-2
Acreages of Habitat Types by Facility Type within the Biological Buffer Area†

Habitat Types	Project Site	Transmission Line	Process Water	Natural Gas/ Potable Water	Natural Gas	CO_2	Total
Alfalfa	1,997	508	827				3,331
Allscale riparian scrub	258	20	1,124	130	36		1,568
Allscale scrub	730	67	0	974	284	638	2,693
Almond			8				8
Carrot		2					2
Cotton	416	128	524				1,068
Developed	68	162	10	44	0		285
Disturbed	42	*	*	*	*	*	382
Onion dry etc	216		5				221
Orchards		8	0				8
Pistachio	128	245	308				681
Pomegranate		1					1
Safflower	15						15
Sudangrass			23				23
Tomato process	22						22
Uncultivated agricultural	15		38				52
Wheat	340	160	112	0			612
Total	4,247	1,302*	2,979*	1,148*	320*	638	10,973

Source: Agricultural field boundaries were taken from the Kern County Department of Agriculture and Standard Measurements, December 2009 GIS layer.

Notes:

† The Biological Buffer Area is within and smaller than the Biological Resource Study Area

* Disturbed habitat (e.g., dirt roads, roads and road shoulders, aqueduct, and canals) were not calculated per linear; collectively, there were 340 acres of "disturbed habitat" for the linears.

CO_2 = carbon dioxide

WORKSHOP REQUEST

10. Please provide the source of the allscale classification information that appears on Figure 133-1 (from the Responses to the CEC Data Requests Set Two).

RESPONSE

The source of the allscale classification information that appears on Figure 133-1 is "A Manual of California Vegetation," by John Sawyer, Todd Keeler-Wolf, and Julie Evens, Second Edition, 2009. The allscale scrub is described on page 416 and is also called the "*Atriplex polycarpa* Shrubland Alliance."

WORKSHOP REQUEST

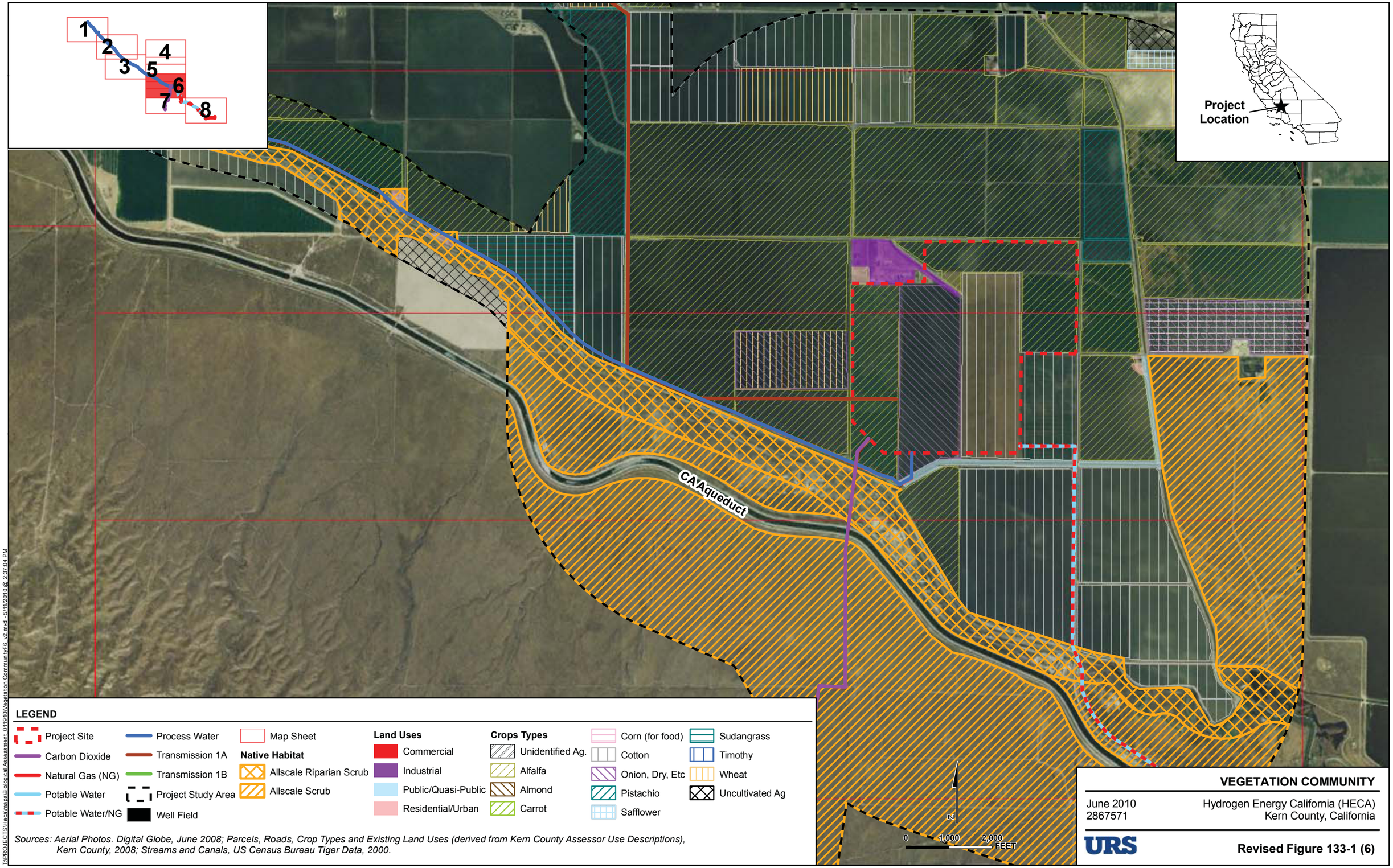
11. Please correct Table 134-1 and Figure 133-1 (from the Responses to CEC Data Requests Set Two). The habitat labeled as "riparian scrub" should be labeled as "scrub."

RESPONSE

The mapping error on Figure 133-1, Sheets 6 and 7 has been corrected, and Table 134-1 has been updated accordingly. See Revised Table 134-1 and Revised Figure 133-1, Sheets 6 and 7.

Revised Table 134-1
Habitat Acreages within the Biological Resources Study Area

Habitat Type	Pre-Construction Acres	Temporary Impacts	Permanent Impacts	Post-Construction Acres
Allscale Scrub	3,855.8	68.5	1.5	3,854.3
Allscale Riparian Scrub	1,671.1	0	0	1,671.1


1
2
3
4
5
6
7
8
Project Location
CA Aqueduct
N
0
1,000
2,000
FEET
LEGEND
Project Site
Carbon Dioxide
Natural Gas (NG)
Potable Water
Potable Water/NG
Process Water
Transmission 1A
Transmission 1B
Project Study Area
Well Field
Map Sheet
Native Habitat
Allscale Riparian Scrub
Allscale Scrub
Land Uses
Commercial
Industrial
Public/Quasi-Public
Residential/Urban
Crops Types
Unidentified Ag.
Alfalfa
Almond
Carrot
Corn (for food)
Cotton
Onion, Dry, Etc
Pistachio
Safflower
Sudangrass
Timothy
Wheat
Uncultivated Ag
Sources: Aerial Photos. Digital Globe, June 2008; Parcels, Roads, Crop Types and Existing Land Uses (derived from Kern County Assessor Use Descriptions), Kern County, 2008; Streams and Canals, US Census Bureau Tiger Data, 2000.
VEGETATION COMMUNITY
June 2010
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Hydrogen Energy California (HECA)
Kern County, California
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Revised Figure 133-1 (6)
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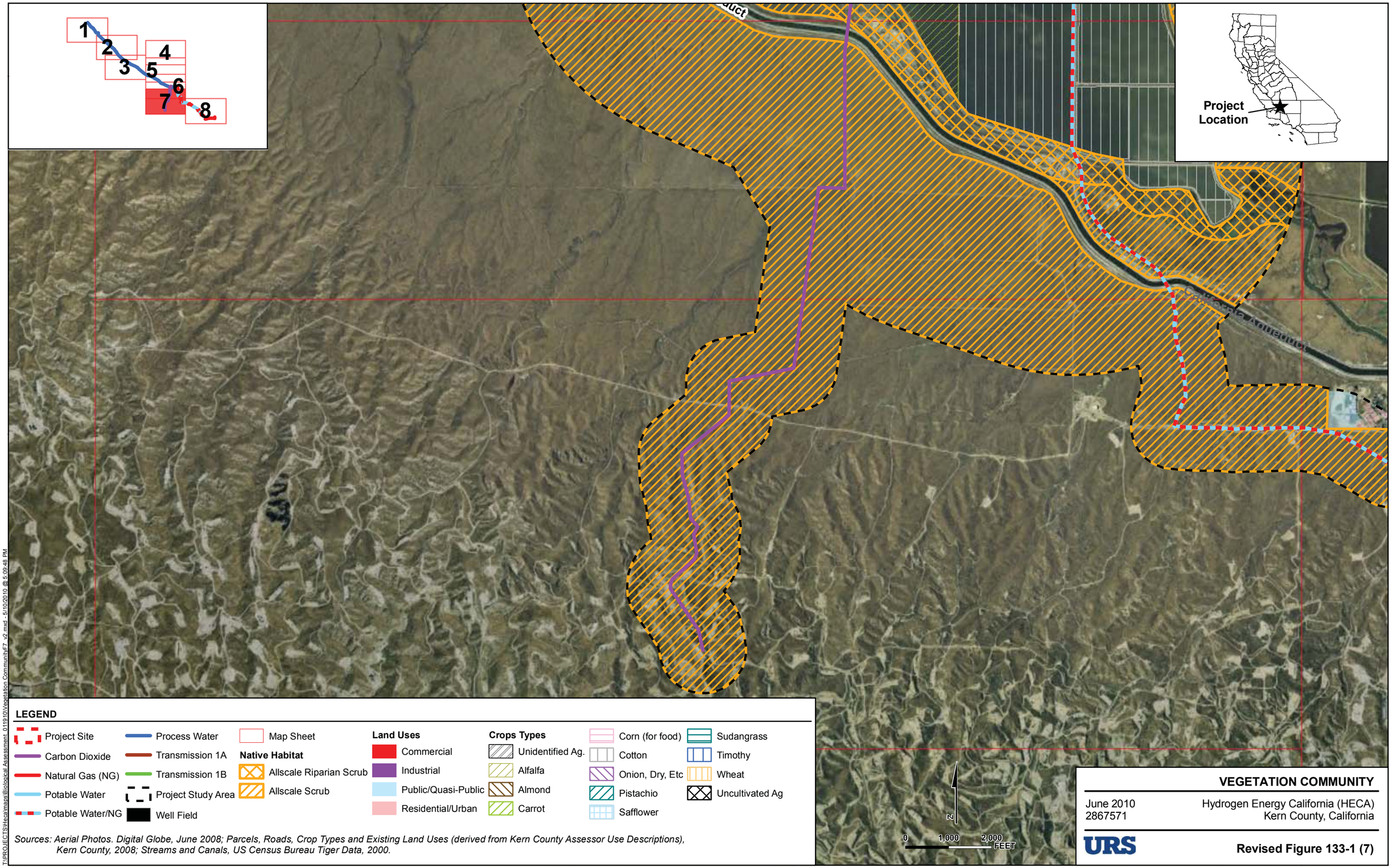

LEGEND

- Project Site
- Carbon Dioxide
- Natural Gas (NG)
- Potable Water
- Potable Water/NG
- Process Water
- Transmission 1A
- Transmission 1B
- Project Study Area
- Well Field
- Map Sheet

Native Habitat

- Allscale Riparian Scrub
- Allscale Scrub

Land Uses

- Commercial
- Industrial
- Public/Quasi-Public
- Residential/Urban

Crops Types

- Unidentified Ag.
- Alfalfa
- Almond
- Carrot
- Corn (for food)
- Cotton
- Onion, Dry, Etc
- Pistachio
- Safflower
- Sudangrass
- Timothy
- Wheat
- Uncultivated Ag

Sources: Aerial Photos. Digital Globe, June 2008; Parcels, Roads, Crop Types and Existing Land Uses (derived from Kern County Assessor Use Descriptions), Kern County, 2008; Streams and Canals, US Census Bureau Tiger Data, 2000.

VEGETATION COMMUNITY

June 2010
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Hydrogen Energy California (HECA)
Kern County, California

URS

Revised Figure 133-1 (7)

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WORKSHOP REQUEST

12. The U.S. Fish and Wildlife Service (USFWS) agreed to consult their legal department to determine if they could provide a copy of the draft Department of Water Resources (DWR) Draft Habitat Conservation Plan (HCP) to the Applicant.

RESPONSE

Since the April 12, 2010 Workshop, the Applicant contacted Tim Kuhn at the USFWS on May 3, 2010; the Applicant is awaiting a response. To date, the USFWS has not provided the draft Habitat Conservation Plan.

WORKSHOP REQUEST

13. The CEC expressed interest in the potential traffic impacts to San Joaquin Kit Fox.

RESPONSE

A subsequent conversation between Amy Golden of the CEC and David Kisner of URS on May 5, 2010 indicated that Ms. Golden has obtained the requested information from the Revised Application for Certification (AFC).

Avoidance and minimization efforts that are included in the Revised AFC are intended to protect the San Joaquin kit fox and are reiterated below. When properly implemented, these measures would reduce the impacts to the San Joaquin kit fox and reduce the potential for mortality to a very low level. As indicated in the Revised AFC, it is proposed that impacts to the San Joaquin kit fox be mitigated through habitat acquisition and protection. The majority of habitat-related impacts to the San Joaquin kit fox are temporary; the majority of permanent impacts are associated with active agriculture.

The project-related concerns regarding San Joaquin kit fox mortality stem from construction of the linears in undeveloped areas (i.e., Elk Hills), collapsing burrows with adults and/or young inside, and vehicle strikes. Pre-construction surveys, clearing of potential dens, and biological monitoring would significantly reduce mortality from active construction. The implementation of worker training and enforcement of speed limits would reduce fatal vehicle strikes. The reporting associated with all of the surveys and monitoring will ensure that the CEC, USFWS, and CDFG are informed and concerns can be addressed early to minimize significant impacts to San Joaquin kit fox.

The mitigation measures provided in the Revised AFC that relate to the San Joaquin kit fox are as follows:

BIO-4 Terrestrial Wildlife Pre-Construction Survey

The Project will conduct protocol-level presence/absence surveys of the affected areas and adjacent areas within 200 feet of the affected areas, or to the property boundary if the boundary is closer than 200 feet and permission from the adjacent landowner cannot be obtained. Efforts will include looking for blunt-nosed leopard lizard; giant garter snake; San Joaquin kit fox; Giant, Short-nosed, and Tipton's kangaroo rats; Nelson's antelope squirrel; burrowing owl; loggerhead shrike; Le Conte's thrasher; horned lark; and any other sensitive animals. All sightings and/or sign of sensitive wildlife will be mapped and the data will be input to a global positioning system. The results of all pre-construction surveys will be documented and submitted to the CEC, USFWS, and CDFG (see Mitigation Measure BIO-19).

BIO-8 Vehicle Traffic Protection Measures

During construction, the edges of the road should be fenced with silt fence and the maximum speed limit should be set at 25 miles per hour. An approved biologist should periodically check the road for sign of wildlife and open the fencing if a blunt-nosed leopard lizard is found on the road.

All road kill found will be documented and submitted to the CEC, USFWS, and CDFG (see Mitigation Measure BIO-19). If numerous animals are being killed by vehicle traffic, additional measures to preclude wildlife from accessing the roadway will be discussed. If wildlife cannot

be kept off of the road, the maximum vehicle speeds may need to be reduced further and/or an approved biologist may need to clear the road on a regular basis.

BIO-9 Worker Education Program

A worker education program will be implemented for all construction personnel, regular drivers, and operation personnel. All personnel will be required to read an educational brochure and attend an education class given by the approved biologist(s). The brochure and class will describe the sensitive species that could be encountered at the Project, the regulatory protection of the species, and appropriate measures to take upon discovery of a sensitive species or active bird nest.

Site personnel will be instructed to set equipment off the ground when possible to minimize access to small mammals. All work areas will be kept clear of trash and food items to minimize attracting wildlife. Construction techniques to minimize potential adverse impacts will also be presented, such as filling or covering excavations. If excavations are to be left open over night, ramps will be installed to allow wildlife to escape.

The names and affiliations of all people trained will be documented and submitted to the CEC, USFWS, and CDFG (see Mitigation Measure BIO-19).

BIO-10 Operations and Maintenance Activities

Operations and maintenance activities along the Project linears (i.e., access road, potable water line, gas transmission corridor, transmission lines) will be conducted by personnel instructed to be alert to and aware of the presence of sensitive wildlife. If any sensitive wildlife is spotted, activities in the vicinity of the sighting will be halted and the animal will be allowed to move away from the activity area.

BIO-16 San Joaquin Kit Fox Mitigation

Den excavation and removal will be timed to occur outside of the breeding season (February through May) (USFWS, 1998) to avoid disturbing natal dens. Dens will be examined with both a burrow scope and five nights of tracking stations to determine whether the dens are active. Inactive dens will be excavated with hand tools and then collapsed.

If a den is determined to be active or if an inactive den is determined to be active after hand excavation has been started, all activity around the den will stop and all people will vacate the area. The den will be monitored (eye-shine and/or track stations) over the next few nights to determine whether the fox(es) have left the area. If the fox(es) have left the den, excavation will continue and the den will be collapsed after it is certain that no foxes are in the burrow.

The results of all den assessments, burrow scoping, and excavation activities will be documented and submitted to the CEC, USFWS, and CDFG (see Mitigation Measure BIO-19).

BIO-19 Reporting to Agencies

A monthly Biological Resource Mitigation Implementation and Monitoring Plan (BRMIMP) report will be submitted to the CEC, CDFG, and USFWS. The report will be submitted by the 20th of the following month (i.e., the report for May will be submitted by June 20). If the 20th falls on a weekend or holiday, the report will be due the first business day following the 20th. To reduce the use of paper, the BRMIMP may be submitted on CD and/or electronically, as directed by each agency.

Biologists associated with monitoring and surveying for sensitive species will receive written and/or verbal approval from the CEC, CDFG, and USFWS prior to conducting survey work. Biologists will be approved for specific tasks and/or species.

During construction, an approved biologist will examine active work areas every day prior to the onset of activities to ensure that there are no sensitive species in the area and that all wildlife barriers are still in place. Biologists will inform the construction crews when areas are clear, and report significant observations of wildlife to the agencies within 24 hours.

Project-specific roadways will be examined for mortality and/or individual wildlife that is encroaching on the roadways.

Each installment of the BRMIMP will include:

- A list of all approved biologists, their affiliation, and tasks and/or species.
- A list of all people and their affiliations who have gone through onsite orientation since the last reporting.
- Detailed results of pre-disturbance surveys for plants and wildlife.
- Results of daily pre-construction surveys and road “sweeps.”
- A list of wildlife relocated out of construction areas and/or off of roadways.
- A list of all wildlife found dead on site, including disposition and presumed cause of mortality.
- All active nests, including species, location, stage, buffer area, and fate.
- All nests removed, including species (if known), location, and stage.
- Monitoring results of restoration areas.
- All other important and relevant biological information.

References

USFWS (U.S. Army Corp of Engineers), 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, OR, 319 pp.

WORKSHOP REQUEST

14. a. Please prepare a 2081 Incidental Take Permit (ITP) application.

b. Please prepare a 1600 Lake and Streambed Alteration Agreement.

RESPONSE

a. As documented in the response to CEC Set One Data Request No. 62, the Applicant is in the process of preparing the Incidental Take Permit (ITP). When the ITP is submitted to CDFG, a copy will be docketed with the CEC.

b. As documented in the response to CEC Set One Data Request No. 59, the Applicant is in the process of preparing the 1600 Lake and Streambed Alteration Agreement. When the agreement is submitted to CDFG, a copy will be docketed with the CEC.

WORKSHOP REQUEST

15. Please provide the reports on the Blunt-Nosed Leopard Lizard surveys conducted for the Project.

RESPONSE

The Supplement to the Revised AFC (In Response to CEC Data Adequacy Review), Appendix B2, contains the 2008 survey reports for the blunt-nosed leopard lizard. The 2009 survey reports for the blunt-nosed leopard lizard were docketed with the CEC on September 21, 2009.