

Responses to AIR Data Requests – Nos. 12 through 42

Amended Application for Certification for HYDROGEN ENERGY CALIFORNIA (08-AFC-8A) Kern County, California

Prepared for:
Hydrogen Energy California LLC



Submitted to:



**California Energy
Commission**



**U.S Department
of Energy**

California Energy Commission

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**RESPONSES TO DATA REQUESTS 12 THROUGH 42
FROM THE ASSOCIATION OF IRRITATED RESIDENTS (AIR)**

TABLE OF CONTENTS

AIR DATA REQUESTS

12 THROUGH 42

TABLES

Table 37-1 Summary of Anticipated Routes of Project-Related Hazardous Chemicals

FIGURES

Figure 14-1 Summary of Total Dissolved Solids (2000 – 2010)
Figure 14-2 Estimated Zone of Benefit
Figure 20-1 Existing Land Use

LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

AAQS	ambient air quality standards
AFC	Application for Certification
BGRP	Brackish Groundwater Remediation Project
BVWSD	Buena Vista Water Storage District
CARB	California Air Resources Board
CCPI	Clean Coal Power Initiative Round 3
CCS	carbon capture and sequestration
CEC	California Energy Commission
CEQA	California Environmental Quality Act of 1970
CNEL	community noise equivalent level
CO ₂	carbon dioxide
CUP	Conditional Use Permit
dBA	A-weighted decibels
DESCP	Drainage, Erosion, and Sedimentation Control Plan
DOE	U.S. Department of Energy
DOGGR	Division of Oil, Gas, and Geothermal Resources
EOR	Enhanced Oil Recovery
FDOC	Final Determination of Compliance
GHG	greenhouse gas
HECA	Hydrogen Energy California
HRA	Health Risk Assessment
KOP	Key Observation Points
lbs/yr	pounds per year
L _{dn}	day-night average sound level
mg/L	milligrams per liter
MMBtu	million British thermal units
NO _x	oxides of nitrogen
OCA	offsite consequence analysis
OEHI	Occidental of Elk Hills, Inc.
PDOC	Preliminary Determination of Compliance
petcoke	petroleum coke
PG&E	Pacific Gas and Electric Company
PM	particulate matter
PM ₁₀	particulate matter 10 microns in diameter or less
PM _{2.5}	particulate matter 2.5 microns in diameter or less
PSD	Prevention of Significant Deterioration
SIP	State Implementation Plan
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO _x	oxides of sulfur
TDS	total dissolved solids
USACE	United States Army Corps of Engineers
USEIA	U.S. Energy Information Administration
U.S. EPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

DATA REQUEST

12. ***This response [referencing prior response to AIR Data Request 6] is an insult to the farming industry of Kern County and to the farmers of the area next to the farmland HECA chooses to destroy with their intrusive power plant. The land in this area is arguably some of the best farmland in Kern County and any loss of this land to industrial development is significant.***

The loss of prime farmland is cumulatively significant under CEQA. Mitigation is necessary and there is plenty of precedent such as housing developers putting funds into an existing San Joaquin Valley farmland trust program such as the one found in this link: <http://www.sequoiariverlands.org/agricultural-land-trust.html>

An appropriate mitigation is to pay for agricultural development easements on prime farmland that has development potential in the near future. Normally, this would be land located near to other commercial development. Preserving prime and endangered farm land at a 2:1 ratio of preserved land to removed land is also appropriate.

Given these facts, please discuss in greater detail why HECA feels mitigation of the loss of 450 acres of prime farmland is not necessary?

RESPONSE

Of the approximately 1,100 acres of land purchased for the Hydrogen Energy California (HECA) Project, approximately 60 percent will remain in active agriculture. The approximately 453 acres that will be removed from active agriculture represent approximately 0.07 percent of the Prime Farmland in Kern County, and therefore this removal is not a significant impact. Moreover, the conversion of farmland over the Project Site is not expected to result in the conversion of adjacent or nearby lands from agricultural use. Based on the analysis presented in Amended Application for Certification (AFC) Section 5.4, Land Use and Agriculture, the Applicant maintains that farmland mitigation is not required for the Project to comply with all laws, ordinance, regulations and standards.

DATA REQUEST

13. ***Is there enough produced water in the area where Occidental will operate with the CO2 injection project to supply HECA with their process water needs? This question is asked without regard to the quality of this water. What would be the best quality of produced water available to the HECA project in terms of TDS. HECA has said they wish to use water that is marginally brackish in the 1000 to 2000 TDS range. Is there sufficient produced water available from Occidental that would be in the 2000 to 20,000 TDS range? This question is asked because clearly there is technology available that would clean water, for example, from 10 or 20,000 TDS down to 2,000 TDS for a cost that may not be unreasonable given all the circumstances.***

RESPONSE

As described in *Requests for Additional Time to Respond to Data Requests from the Association of Irrigated Residents*, docketed on November 13, 2012, the Applicant is requesting additional time to address this Data Request.

DATA REQUEST

14. ***The so-called “brackish water” that will be pumped out of the ground for the plant water is said to be between 1000 and 2000 TDS. Water of this quality is usable irrigation water for several crops grown in the area, specifically pistachios and pomegranates. The total water to be pumped is stated to be approximately 7,500 acre-ft per year. This is obviously enough water of good enough quality to irrigate at least 2,500 acres of pistachios. The applicant states that pumping this water is a benefit to farmers in the Buena Vista Water District.***

AIR agrees that there is a potential for pumping this water to benefit a few farmers in the immediate vicinity of the pumps. It is possible that fresher, less brackish water may infiltrate the area of the pumps and benefit both HECA and local farmers with pumps nearby.

How near to the HECA pumps is there estimated to be a benefit of fresher water taking the place of brackish water such as described above?

If fresh water migrates into the pumping area, where does it come from ultimately? The choices are (1) ground water that has been there forever with no known source other than ancient percolation of rain water and Kern River flooding or (2) it is much more current water from the Kern River Drainage and is actually a draw on the Kern Water Bank which is a few miles east of the HECA project itself. This question is about how the ground water is replenished in this general area or part of the valley.

If the applicant admits that this water is ultimately from the Kern Water Bank then please discuss how HECA will replace this water to all the owners in the Kern Water Bank. Members of AIR use water on occasion that is stored in the Kern Water Bank. I personally used water from there this summer on my almond trees which was distributed through the Shafter-Wasco Irrigation District system. Please explain why you are proposing to take water from these other users so that ultimately, 2,500 acres will no longer be farmed in Kern County because of the loss of this water.

RESPONSE

Brackish groundwater (i.e., groundwater with total dissolved solids [TDS] concentrations greater than 2,000 milligrams per liter [mg/L]) is expected to be pumped from the proposed Buena Vista Water Storage District (BVWSD) well field located approximately 15 miles northwest of the HECA Project Site.

The BVWSD well field is one component (Area B) of the BVWSD Brackish Groundwater Remediation Project (BGRP) with the specific intent of improving local groundwater chemistry. The hydraulic effect of the proposed BVWSD well field would be to significantly improve the groundwater chemistry in a zone of maximum benefit (approximately 0.8 mile east of the well field), providing the opportunity for local farming interests to grow more economically viable crops or, in some cases, put fallowed ground back into production. This would not limit crop production to crops more tolerant of brackish irrigation water (such as pistachios and pomegranates as mentioned). Improving the quality of irrigation water would also limit potential soil degradation by minimizing salt loading impacts associated with the use of higher TDS groundwater for irrigation.

The BVWSD considers HECA's use of its brackish water to be a beneficial part of the BGRP. As such, BVWSD has encouraged the Project to use the brackish water. An October 29, 2012, letter from the BVWSD states that "providing HECA with this brackish groundwater, Buena Vista will be able to implement a significant portion of the BGRP and improve water quality of the underlying groundwater for the benefit of the farmers."

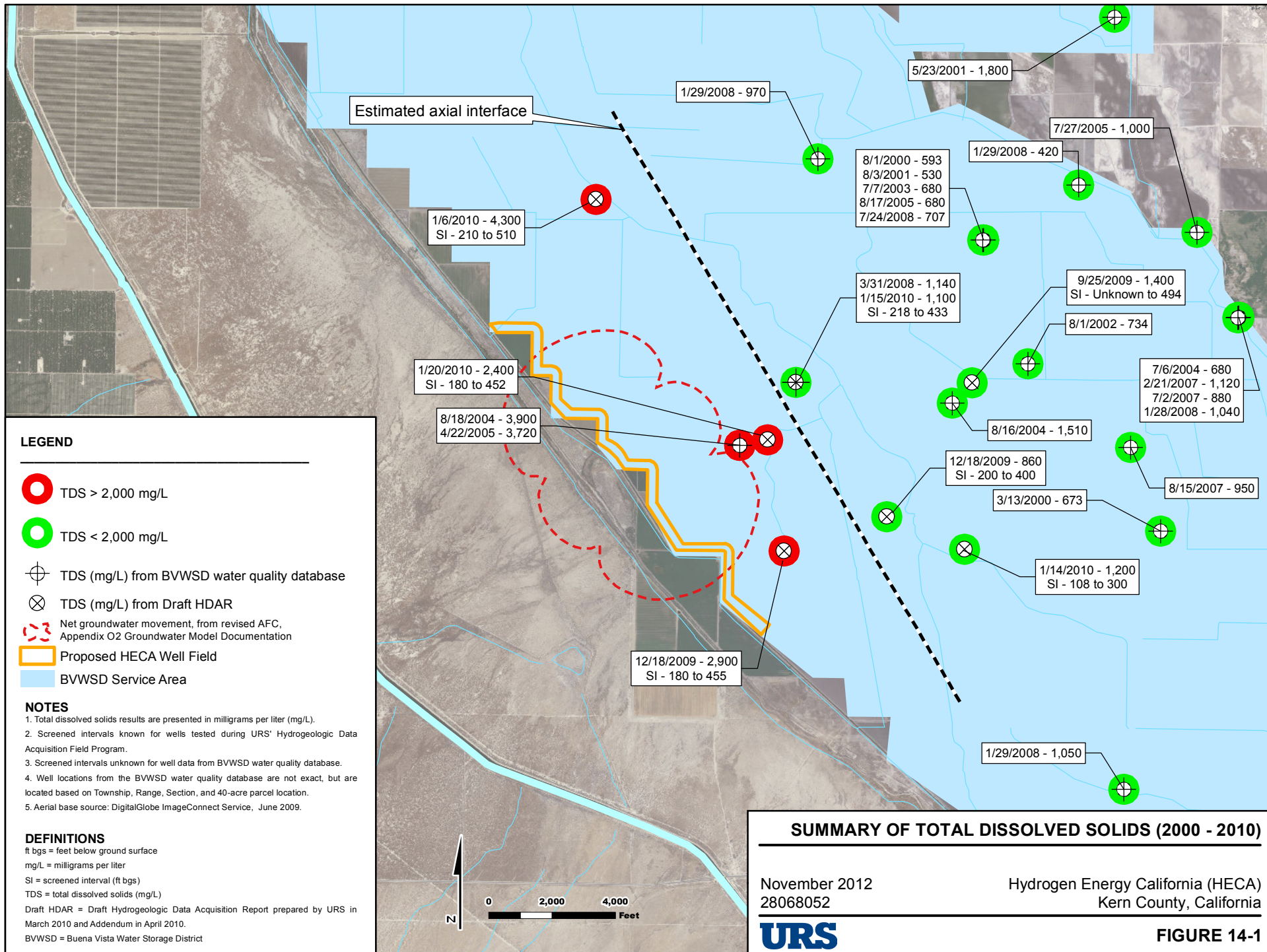
Groundwater modeling, using data provided by BVWSD, has also been conducted to evaluate groundwater movement induced by Project pumping. TDS data presented on Figure 14-1, taken from BVWSD's water chemistry data base (collected from January 2000 to October 2007) and URS' Hydrogeologic Data Acquisition Field Program (conducted between September 2009 and January 2010), indicates that there is an axial interface approximately 0.8 mile east of the proposed BVWSD well field between good-chemistry (i.e., low TDS) groundwater (<2,000 mg/L TDS) and poor-chemistry (i.e., high TDS) groundwater (>2,000 mg/L TDS).

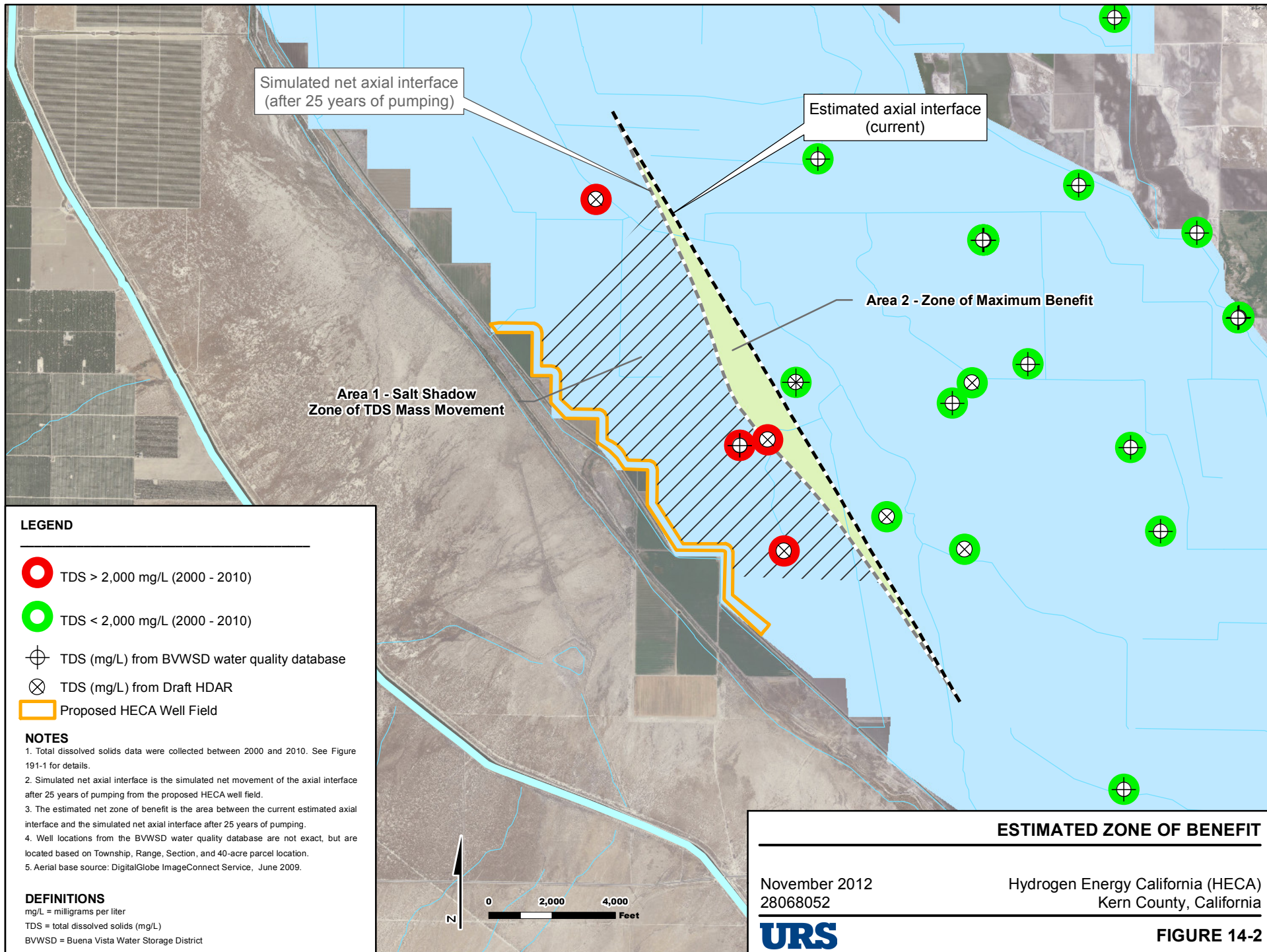
West of the axial interface, there are two areas that would benefit from BVWSD well field operation, as illustrated on Figure 14-2:

- Area 1 (salt shadow) is the zone of mass TDS movement induced by Project pumping. This area includes the net capture zone (i.e., 0.8 mile); and the area between the capture zone and the simulated net axial interface after 25 years of pumping. During Project operations, the zone of blending in Area 1 would be expected to increase to the east of the well field, as induced westward movement of lower TDS groundwater dilutes TDS within that zone of higher TDS groundwater.
- Area 2 (zone of maximum benefit) is the area between the current estimated axial interface and the simulated net axial interface, and represents the westward shift of the axial interface during 25 years of Project pumping.

Both Areas 1 and 2 lie entirely within BVWSD. The proposed well field is being specifically designed to benefit the local farmers by creating groundwater flow conditions that lower, not raise, TDS over time. The proposed BVWSD well field will not change the TDS of groundwater to the west of the wells, where there is no active farming, but instead will reduce the TDS of groundwater to the east of the well field, where active farming is taking place.

Replenishment of groundwater to the BVWSD well field area is localized and is a combination of natural and vertical infiltration (surface water and rainfall) and lateral groundwater inflow from the adjacent groundwater system. Water that migrates into the pumping area (roughly a 0.8-mile capture zone during the 25-year pumping period) is extremely local and is not remotely connected to Kern Water Bank (located approximately 16 miles southeast of the proposed BVWSD well field). As such, Kern Water Bank water would not be used for HECA Project production water.





DATA REQUEST

15. Please answer this concern from Mr. Harding:

Mr. Harding describes above how the July 12 meeting in Tupman was insufficient for the public to give their input and learn the answers to their questions. How do both HECA and the CEC answer this concern?

RESPONSE

Since the July 12, 2012, meeting in Tupman, the California Energy Commission (CEC) has held two additional public workshops: one workshop on September 27, 2012, in Sacramento, California; and one workshop on November 7, 2012, in Bakersfield, California. In addition, the CEC has tentatively scheduled a Preliminary Staff Assessment Workshop for February 2013. The CEC will consider all comments in its analysis of Project impacts and will address questions from local residents in the Preliminary Staff Assessment. HECA also welcomes comments and questions from the public and invites local residents to visit the HECA Information Center located at 189 E. Front Street, Buttonwillow, California.

DATA REQUEST

16. Questions for the applicant:

- (1) ***What is the estimated space currently available in the Elk Hills seawater?***
- (2) ***What data is the 3 M tons of CO₂ P.Y. based on? Such a round figure is too easy, is this based on startup quantities or lifetime estimates?***
- (3) ***Are there required offsets for coal transport?***
- (4) ***Are there required offsets for NO_x, SO₂, etc.?***
- (5) ***Is there a gasification process tech. that is not considered by the applicant, other than the G.E. & Mitsubishi refractories? Would this tech use less or more coal in the process?***

RESPONSE

1. As described in *Requests for Additional Time to Respond to Data Requests from the Association of Irrigated Residents*, docketed on November 13, 2012, the Applicant is requesting additional time to address this Data Request.
2. The amount of carbon dioxide (CO₂) to be sequestered is based on the annual hours of CO₂ production times the production rate of CO₂. The 3 million tons per year is an approximate number; the exact figure is 2,974,103 tons (or 2,698,064 metric tonnes) of CO₂ sequestered per year.
3. Yes, emissions from all Project-related transportation will be addressed through a conformity determination made by the U.S. Department of Energy (DOE) in consultation with the San Joaquin Valley Air Pollution Control District (SJVAPCD) pursuant to the General Conformity Rule.
4. Yes, emissions from operations subject to New Source Review will be offset by purchase of Emission Reduction Credits.
5. All commercially viable gasifier technologies were reviewed when the Mitsubishi Heavy Industries technology was selected. HECA selected an entrained flow gasifier type because this type meets the Project objectives and is able to accept a variety of solid feed-stocks. The proportion of coal and petroleum coke (petcoke) proposed by the Project is within the capabilities of the chosen technology.

DATA REQUEST

17. ***AIR requests answers to Ms. Douglas's direct and implied questions restated below.***
- (1) ***Why is SCS proposing to transport dirty Coal and Coke to the area when cleaner natural gas is available locally?***
 - (2) ***Why did New Jersey say no to a similar coal gasification plant proposed by SCS even though the environmental damage there would be less than in the San Joaquin Valley?***
 - (3) ***What does HECA have to say about charges that they will make the air in the #1 worst spot for air quality in the nation even worse?***
 - (4) ***What does HECA have to say about making our air quality worse and causing us to pay more fines like the \$29 million annual fine we are currently paying for failure to meet the one-hour ozone standard?***
 - (5) ***What does HECA have to say about shortening the life span of residents in the San Joaquin Valley and also making them sick because of the pollution they will put into the air?***
 - (6) ***How is farmland an appropriate place to put a facility that manufactures hazardous chemicals?***
 - (7) ***Will HECA soon go to Bakersfield with CEC staff and commissioners to answer all questions from local residents?***

RESPONSE

1. The HECA Project will be a state of- the-art facility that will produce electricity and other useful products for California, and that will have lower carbon footprint compared to power and products produced from more traditional fossil fuel facilities, including natural gas. HECA will achieve these important environmental objectives by capturing carbon from its processes and transporting the CO₂ for storage, also known as sequestration, in secure geologic formations within the earth. The motivation for using coal and petcoke as opposed to natural gas is summarized by the DOE as follows:

A need exists to further develop carbon management technologies that capture and store or beneficially reuse CO₂ that would otherwise be emitted into the atmosphere from coal-based electric power generating facilities. Carbon capture and sequestration (CCS) technologies offer great potential for reducing CO₂ emissions and mitigating global climate change, while minimizing the economic impacts of the solution.

As evidenced by receipt of the DOE Clean Coal Power Initiative (CCPI) award, HECA is recognized as an advanced coal-based project capable of demonstrating next-generation technologies to produce electricity, while capturing and sequestering a significant portion of CO₂ emissions. In fact, it is specifically through its use of coal that HECA is able to offer California, the nation, and the world progress toward controlling global climate change, while demonstrating the commercial viability of an advanced coal-based power facility.

Another advantage of using coal over natural gas as a feedstock for conversion to hydrogen gas is its low and stable price. Based on current U.S. Energy Information Administration data, western subbituminous coal is approximately \$1.44 per million British thermal units (MMBtu), while California natural gas prices for electrical power facilities are approximately \$5.75 per MMBtu, or four times more expensive than coal. Coal prices are also more stable historically than natural gas prices, and therefore more predictable for investors and lenders. Regarding availability, both coal and natural gas are domestically plentiful fossil fuels, but are rare in California, and would need to be imported. California currently imports approximately 90 percent of its natural gas needs each year. Moreover, the use of coal and petcoke promotes energy security by converting abundant and inexpensive solid fuels to clean hydrogen fuel to produce electricity and other useful products.

References:

NETL, 2011. Project Facts, Clean Coal Power Initiative. Hydrogen Energy California Project: Commercial Demonstration of Advanced IGCC with Full Carbon Capture. Available online at: <http://www.netl.doe.gov/publications/factsheets/project/FE0000663.pdf>.

USEIA (U.S. Energy Information Administration), 2011. Average sale price of New Mexico sub-bituminous coal for 2010 (most recent available) is \$30.67/short ton. Release date November, 2011. <http://www.eia.gov/coal/data.cfm#prices>.

USEIA (U.S. Energy Information Administration), 2012. California industrial natural gas price. August 2012 (most recent available). http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_SCA_m.htm.

2. The cessation of the PurGen project was not the decision of New Jersey or any entity other than SCS Energy LLC.
3. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project. Modeling has been performed using models and conservative assumptions approved by the U.S. Environmental Protection Agency (U.S. EPA). The Health Risk Assessment (HRA) analyzed the potential impacts from toxic air contaminants, and showed that predicted impacts are less than the significance thresholds, which are protective of public health. The criteria pollutant modeling results, including ambient background concentrations, show that the Project will not cause a violation of any state or federal ambient air quality standards (AAQS), and will not significantly contribute to the existing violations of the particulate matter (PM) standards. In addition, all of the Project's operational emissions will be offset to ensure a net air quality benefit. The primary AAQS are designed to protect public health, including sensitive groups like asthmatics, children and the elderly; the secondary AAQS are designed to protect the public welfare, which includes decreased visibility and damage to animals, crops, vegetation and buildings. In addition, as demonstrated in the Authority to Construct Permit Application, modeled impacts were below the U.S. EPA screening threshold levels at which scientific studies have shown a potential for negative impacts on soils and vegetation, and thus below the levels at which adverse effects to vegetation or soils occur. Therefore, because modeled impacts are predicted to: i) be less than the most stringent AAQS; ii) not significantly contribute to existing PM violations; iii) be below the HRA thresholds; or iv) be below the soils and vegetation thresholds, neither public health nor the public welfare will be adversely impacted by the Project. In addition, Project emissions will be offset with emission reduction credits.

In addition to the air quality modeling, HECA will ensure that air quality in the San Joaquin Valley will not worsen, by demonstrating that the Project will conform with the national AAQS. SJVAPCD has prepared air quality management plans to map out how the emissions in the valley of nonattainment pollutants, ozone, and particulate matter 2.5 microns in diameter or less (PM_{2.5}) will decrease with time, to comply with these national AAQS. SJVAPCD has developed an ozone and a PM_{2.5} State Implementation Plan (SIP), which allows for sustainable growth simultaneous with improving air quality. HECA emissions comply with these SIPs, ensuring that air quality will not worsen in the San Joaquin Valley.

4. See response to Data Request 17-3.
5. See response to Data Request 17-3.
6. Amended AFC Section 6.3.1, Proposed and Alternative Sites, states:

“The Project Site was selected based upon, among other considerations, the available land; proximity to a CO₂ storage reservoir; and the existing natural gas transportation, electric transmission, brackish groundwater supply, rail, and roadway infrastructure that could support the Project. The geology in the vicinity of the Project Site makes it one of the premier locations in the United States for CO₂ EOR and Sequestration.”

HECA's initial AFC (08-AFC-8) was submitted to the CEC on July 30, 2008, and proposed the Project on a different site. The Project was subsequently moved when it was discovered that previously undisclosed sensitive biological resources existed at the originally proposed site. As a result, HECA was required to conduct an extensive analysis to identify an alternative site for the Project, which concluded in the selection of the current Project Site. Once the Project Site had been selected and evaluated, HECA filed a Revised AFC in May 2009. In the process of selecting the Project Site, several alternative sites in the vicinity of the unincorporated communities of Buttonwillow and Tupman were considered. However, the alternative sites were rejected for various reasons, including: (1) topography, (2) distance from the Elk Hills Oil Field, (3) lengths of linear facilities, (4) sensitive environmental receptors, and/or (5) land availability. These sites and relevant information about them are presented in the Amended AFC in Table 6-1, Alternative Sites Reviewed and Status.

Based on this analysis, no alternative sites were identified that were environmentally superior to the Project Site, and would allow attainment of most of the Project objectives. Thus, the Project Site was selected.

In addition, HECA will work with Kern County to comply with all local land use and zoning regulations. More information can be found in the Amended AFC, in Section 6: Alternatives; and Section 5.4: Land Use and Agriculture.

7. The CEC held its most recent workshop on November 7, 2012, in Bakersfield to encourage public participation in the review process and to answer questions from local residents. The CEC will address comments in its analysis of Project impacts, and will address questions from local residents in the Preliminary Staff Assessment. In addition, the CEC has tentatively scheduled a Preliminary Staff Assessment Workshop for February 2013. HECA also welcomes comments and questions from the public and invites local residents to visit the HECA Information Center located at 189 E. Front Street, Buttonwillow, California.

DATA REQUEST

18. Please answer the following direct and implied questions from Ms. Goatcher of Tupman:

- (1) What would it cost to buy the town of Tupman for the HECA project? What cost savings would there be?**
- (2) What are the potential ways that accidents at HECA could kill either nearby workers or nearby residents or people who live in Tupman? Please use your imagination and present the worst possible accidents that are possible.**
- (3) Are the fumes from Anhydrous Ammonia deadly?**
- (4) Does prevailing wind in Tupman come from the direction of the HECA site?**

RESPONSE

1. The Applicant conducted a thorough alternatives analysis in the Amended AFC that specifically considered alternative sites and linear facilities (see Amended AFC, Section 6.3). Based on this analysis, no alternative sites were identified that were environmentally superior to the Project Site, and that would allow attainment of the Project objectives. Thus, the Project Site was selected. Furthermore, the Applicant has no knowledge of the cost of the town of Tupman.
2. Some of the chemicals that will be used and stored at HECA are hazardous under certain conditions. HECA has incorporated design features and mitigation measures into the Project, and will adhere to applicable laws and regulations, to ensure the safe handling and storage of such chemicals. Part of the CEC's oversight in the permitting process is to ensure that chemicals will be handled and stored safely. Although a release of hazardous chemicals from the Project is highly unlikely, HECA has examined potential release scenarios to determine whether or not there would be any adverse impacts to the environment and the surrounding community. These potential scenarios assume worst-case conditions and therefore likely overstate the impacts of a release. The scenarios that were analyzed are summarized below and are presented in Amended AFC Section 5.12 and Appendix K, as well as in the Applicant's responses to CEC Data Request A93.

Anhydrous Ammonia

As is the case for all chemicals stored and used by the Project, HECA has incorporated design features into the Project to minimize the potential for release of ammonia. As discussed in the Amended AFC and in the response to CEC Data Request A93, the ammonia tank storage design provides for double containment. A release of ammonia from the inner tank would be contained within the walls of the outer tank. The ammonia aboveground storage tanks have also been designed with automated controls and an alarm system with an emergency beacon and horn. The Project will provide employee training, enforce safe operation procedures, enforce the separate storage of incompatible chemicals, and provide scheduled inspection of equipment. Materials will be handled in accordance with all applicable laws and regulations.

Following the regulatory guidance for offsite consequence analysis (OCA), an OCA was conducted for an accidental release of anhydrous ammonia. The Applicant's response to CEC Data Request A93 includes a detailed discussion of the OCA, which concludes that there would be no significant adverse consequences in the unlikely event of an ammonia release. Based on this analysis, the potential impacts of the use and storage of ammonia at the Project Site are less than significant.

Hydrogen

Although the amount of hydrogen stored at the Project Site is less than federal and state regulatory thresholds, an OCA evaluation was performed in order to assess the potential consequences of a release, and the need for appropriate controls and mitigations.

The OCA modeling was based on U.S. EPA's Risk Management Plan criteria. The OCA analysis result shows that in the unlikely event of a release of hydrogen, the potential impacts will be restricted well within the Project Site boundary. Based on the above, the potential impacts of the use and storage of hydrogen at the Project Site are less than significant.

Hydrogen Sulfide

A gaseous mixture of hydrogen sulfide and CO₂ is removed from syngas prior to combustion in order to significantly reduce sulfur dioxide emissions. The release scenario for hydrogen sulfide used worst-case atmospheric and environmental conditions as provided by regulations. Results from the analysis indicate that in the unlikely event of a release of hydrogen sulfide, potential impacts will remain within the Controlled Area.

3. Ammonia is a naturally occurring substance essential to life and is present in the human body at all times¹. Its use is common, such as in food products² and household cleaners. At low levels, no health effects from inhalation exposure of ammonia would occur.³

HECA has incorporated design features and mitigation measures into the Project, and will adhere to applicable laws and regulations, to ensure the safe handling and storage of ammonia. As discussed above, HECA has also conducted an OCA to evaluate potential impacts in the unlikely event of a release (refer to the response to CEC Data Request A93). This analysis indicates that there would be no significant offsite consequences even in the unlikely event of an unplanned release.

4. Windroses for the Bakersfield Airport meteorological data are presented in Amended AFC Appendix E-1 of the Amended AFC. On an annual basis, the wind blows most frequently from the northwest.

¹ TFI.org, brochure on ammonia safety and health

² Code of Federal Regulations GRAS list (Generally Regarded as Safe)

³ ibid

DATA REQUEST

19. Please answer the direct and implied questions of Ms. Parsa restated below:

- (1) Will HECA add to the air pollution in the Bakersfield area? Does the Bakersfield area already have the worst air quality in the nation?**
- (2) Can the injection of CO₂ pose a higher risk of seismic activity? How close is the San Andreas Fault? How near is the closest known fault line or area of recorded seismic activity?**

RESPONSE

1. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project. The results of this modeling demonstrate that HECA Project emissions will be below levels at which adverse effects to public health and welfare occur. Please see the response to Data Request 17 (3) for further details on air modeling.

In addition to the air quality modeling, HECA will ensure that air quality in the San Joaquin Valley will not worsen, by demonstrating that the Project will conform with the national AAQS. SJVAPCD has prepared air quality management plans to map out how the nonattainment pollutants, ozone, and PM_{2.5} emissions in the valley will decrease with time, to comply with these national AAQS. SJVAPCD has developed an ozone and a PM_{2.5} SIP, which allows for sustainable growth simultaneous with improving air quality. HECA emissions comply with these SIPs, ensuring that air quality will not worsen in the San Joaquin Valley.

2. As described in *Requests for Additional Time to Respond to Data Requests from the Association of Irrigated Residents*, docketed on November 13, 2012, the Applicant is requesting additional time to address this Data Request.

DATA REQUEST

20. Please answer the direct and implied questions from Ms. Romanini which are restated below:

- (1) What is the exact role of each of the following in processing this permit application: the CEC, Kern County, the San Joaquin Valley Air District, the DOE, the Buena Vista Water District, DOGGR, the EPA, CARB, and any other government entities not mentioned above? What is the projected timeline for each of the above government agencies to complete their analysis and give their stamp of approval for the project to proceed?**
- (2) Where will the railroad spur be located? Please provide a map with details of the exact right of way needed so that each affected land owner will know exactly what is proposed on their respective properties.**
- (3) Will the CEC and HECA guarantee that they will not approve or proceed with the HECA project if eminent domain is used by Kern County or any other government agency to take land needed for the project or the rail spur?**
- (4) What is the exact route employees and trucks will take to the site? Please include all trucks of any nature. Will any special procedures for this traffic be formally followed when there is heavy Tule fog in the area? How will the quantities of dust from the shoulders of roads used by HECA affect the adjacent crops and what will be done to decrease this dust?**
- (5) Will people working on nearby farms be affected by particulate emissions and higher ozone levels because of HECA? This should be addressed assuming some of these people will already have asthma or heart and lung problems. Will HECA agree to put an air monitor on their perimeter so that local residents can understand what their air quality is every day throughout the year? Could this monitor be hooked into the San Joaquin Valley real time advisory network so that readings would be available within an hour or two of when they were taken?**
- (6) How safe is a nearby person living or working in a field if there is a release of CO₂ or ammonia in significant quantities from HECA? What other gases which are hazardous in concentrated conditions could be released and what harm might they do to someone enveloped in a cloud of these gases? What types of explosions are theoretically possible given the types of materials in gaseous, liquid, or solid form that will be present at the HECA site? How big of an explosion is theoretically possible and what kind of damage could be expected at various distances from such a worst case scenario?**
- (7) Will measurable mercury ever be released onto nearby cropland, soils, trees, or crops from normal operations? Is any type of accidental release of mercury possible from either the facility or from a truck or rail car hauling it away? What other contaminants or chemicals or substances not currently found in the area could possibly escape from HECA and end up in nearby soils or crops? Will HECA compensate local farmers for any decrease in their property values if this happens because HECA is built nearby? Will HECA compensate farmers for any loss of crop production or crop value because of HECA operations?**

- (8) What are the potential routes for groundwater contamination from the HECA project? What are the potential routes for groundwater contamination from the CO₂ injection just up the hill? What are the odds of groundwater contamination from each possible source?**
- (9) How is a chemical factory going to be justified in the middle of prime farmland? Is Kern County agreement with this land use enough or must the commissioners of the CEC also agree this is appropriate?**
- (10) What other risks are there to local farmers and residents, plus their crops, soil, and water, from this project that have not been mentioned in this data request?**

RESPONSE

1. Following is a brief description of the roles of the governmental entities identified in the data request.

CEC

The CEC has exclusive power to certify (permit) thermal power plants 50 megawatts and larger in size, which includes the HECA Project. In general, a certificate issued by the CEC is in lieu of any permits that would otherwise be required for a project in the absence of the CEC's exclusive jurisdiction. However, the CEC consults with other agencies and governmental entities to obtain their input on the Project, including proposed conditions and mitigation measures. The CEC also acts as the lead agency for purposes of conducting an environmental review of the Project pursuant to the California Environmental Quality Act of 1970 (CEQA).

Kern County

Although Kern County does not have permitting jurisdiction over the HECA Project, it plays an active role in the permitting process by providing information and recommendations to the CEC. Both the Applicant and the CEC are actively engaged with the County to ensure that its concerns are addressed.

SJVAPCD

As part of the CEC review process, the SJVAPCD provides to the CEC a Preliminary Determination of Compliance (PDOC) and a Final Determination of Compliance (FDOC). The PDOC and FDOC contain the SJVAPCD's assessment of whether or not the HECA Project will comply with applicable air quality requirements. The SJVAPCD will also issue a federal Prevention of Significant Deterioration (PSD) permit for the Project pursuant to rules recently approved by the U.S. EPA.

DOE

The DOE is providing funding to the HECA Project pursuant to its CCPI. The DOE provides oversight to ensure compliance with the terms of the federal funding. The funding also triggers certain regulatory obligations for DOE, including ensuring compliance with the National Environmental Policy Act, the federal Endangered Species Act, the federal General Conformity regulations.

Buena Vista Water District

The Buena Vista Water District will supply brackish water to the HECA Project for use in its processes.

DOGGR

The Division of Oil, Gas, and Geothermal Resources (DOGGR) will be responsible for issuing permits to Occidental of Elk Hills (OEHL) pursuant to the federal Underground Injection Control program for OEHL's enhanced oil recovery (EOR) project.

U.S. EPA

The U.S. EPA provides oversight and input on the implementation of certain federal programs, including the SJVAPCD's issuance of the PSD permit.

CARB

The California Air Resources Board (CARB) provides oversight of the CEC and SJVAPCD permitting process from an air quality perspective and may provide comments on documents produced by the staffs of the CEC and SJVAPCD. CARB is also monitoring the Project because of its interest in the CCS elements of the Project.

2. Figures showing the location of the railroad spur were previously provided to the CEC under confidential cover in May 2012. For reference and since the route is no longer confidential, the figures showing the location of the railroad spur and the land uses along the route are attached to this document as Figures 20-1 Sheets 1 through 8.
3. As indicated in the response to AIR Data Requests 1 and 2, as a private entity, HECA does not have the power of eminent domain. Thus, there are no plans to acquire any property or rights of way needed for the Project by eminent domain.
4. The exact route staff will travel to the Site will depend upon their point of origin but in general staff will travel from Stockdale Highway to Dairy Road and into the plant via the entrance off of Dairy Road. Alternatively, staff will travel via the truck route described in the response to Data Request 24 (3).

Resuspended dust from traffic on nearby roads has been included in the air quality modeling. As mentioned below in the response to Data Request 20 (5), the Project will not have an adverse impact on air quality or public health, including crops and vegetation.

5. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project. Modeling has been performed using models and conservative assumptions approved by the U.S. EPA. The HRA analyzed the potential impacts from toxic air contaminants, and showed that predicted impacts are less than the significance thresholds, which are protective of public health. The criteria pollutant modeling results, including ambient background concentrations, show that the Project will not cause a violation of any state or federal AAQS, and will not significantly contribute to the existing violations of the PM standards. In addition all of the Project's operational emissions will be offset to ensure a net air quality benefit. The primary AAQS are designed to protect public health, including sensitive groups like asthmatics, children and the elderly; the secondary AAQS are designed to protect the public welfare,

which includes decreased visibility and damage to animals, crops, vegetation and buildings. In addition, in the Authority to Construct Permit Application, modeled impacts were below the U.S. EPA screening threshold levels at which scientific studies have shown a potential for negative impacts on soils and vegetation, and thus below the levels at which adverse effects to vegetation or soils are expected to occur. Therefore, because modeled impacts are less than the most stringent AAQS, below the soils and vegetation thresholds, below the HRA thresholds, and will not significantly contribute to existing PM violations, neither public health nor the public welfare will be adversely impacted by the Project.

An additional air quality monitor is not necessary based on the existing network of regional monitors. Ambient air quality monitors measure the total pollutants in the air, which come from many sources (natural sources, agriculture, vehicles, other point sources, etc.) and cannot be simply attributed to one source. The regional monitors already in place are more appropriate for the purpose of local residents being informed about their daily air quality. HECA will install an onsite weather station with internet capability that will be accessible to the public.

6. The risk of an accidental release of hazardous materials will be minimized through design features incorporated into the HECA Project, adherence to applicable codes, and the implementation of applicable mitigation measures. HECA has evaluated many scenarios for the potential accidental release of hazardous materials at the Project Site which assumed very conservative conditions (see the response to Data Request 18 (2), Amended AFC Section 5.12 and Appendix K, and response to CEC Data Request A93 for descriptions of release scenarios). HECA also evaluated potential impacts to workers from the CO₂ vent exhaust steam (see Amended AFC Section 5.7). Based on the release scenarios, impacts to the nearest sensitive receptor and the town of Tupman associated with the potential accidental release of hazardous materials would be less than significant and will not impact nearby residents or workers.
7. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project. The HRA analyzed the potential impacts from mercury and other toxic air contaminants, and showed that predicted impacts are less than the significance thresholds. These HRA thresholds are protective of public health. Spent mercury adsorbent will be characterized prior to reclaiming or disposal and containerized as necessary to prevent mercury loss during shipping.

In the Authority to Construct Permit Application, modeled impacts were below the U.S. EPA screening threshold levels at which scientific studies have shown a potential for negative impacts on soils and vegetation, and thus below the levels at which adverse effects to vegetation or soils are expected to occur. Therefore, pollutant emissions from the HECA Project are not expected to have adverse impacts to soils and vegetation.

The Applicant does not expect any decrease in property or crop values as a result of this Project.

8. The potential routes for groundwater contamination from the HECA Project have been evaluated in Amended AFC Section 5.14.2.3, "Water Quality Effects, Groundwater." The HECA Project Site is in an area of relatively deep groundwater conditions. A BVWSD 2008 Depth to Groundwater Map indicates that first groundwater is located between 120 and 130 feet below grade (Amended AFC Figure 5.14-6). The groundwater surface was not encountered within 60 to 100 feet of the ground surface based on geotechnical

borings and CPT probes at the Project Site (Amended AFC Section 5.14.1.4). The results of geotechnical investigations performed at the Project Site indicate that the upper 10 feet of soils are generally fine-grained materials (e.g., sandy clays or silty sands) underlain by interbedded layers of sands, silty sands, and sandy silts with varying degrees of consistencies from medium dense to very dense. Below 30 feet the sandy soils become dense, grading denser to the maximum depth explored in the borings (100 feet below grade) (Amended AFC Section 5.14.1.4). Accordingly, any contaminants, if released on the Project Site would have considerable travel time before first groundwater were to be encountered while being subject to specific retention and adsorption within the approximately 100-foot-thick unsaturated zone. Due to these onsite hydrogeologic conditions, the likelihood of groundwater contamination due to the Project is very low.

As described in the Amended AFC and subsequent submittals such as the *Draft Drainage, Erosion, and Sedimentation Control Plan* (DESCP) (refer to the responses to CEC Data Requests A115 and 116) all hazardous materials will be properly stored, and spill prevention measures will be implemented to prevent discharge of contaminants to storm water or groundwater. The Draft DESCP prepared in the response to CEC Data Request 116 included a summary of hazardous materials that would be used and stored at the Project Site for plant operations. Extensive provisions are incorporated in the facility design to segregate and contain potentially contaminated materials and to contain potential spills of stored materials. Therefore, groundwater contamination is considered unlikely from Project operations with adherence to best management and pollution prevention features and practices as outlined in the Amended AFC.

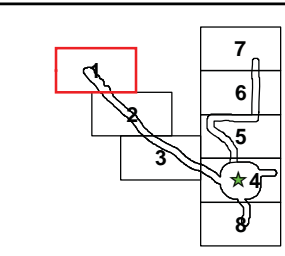
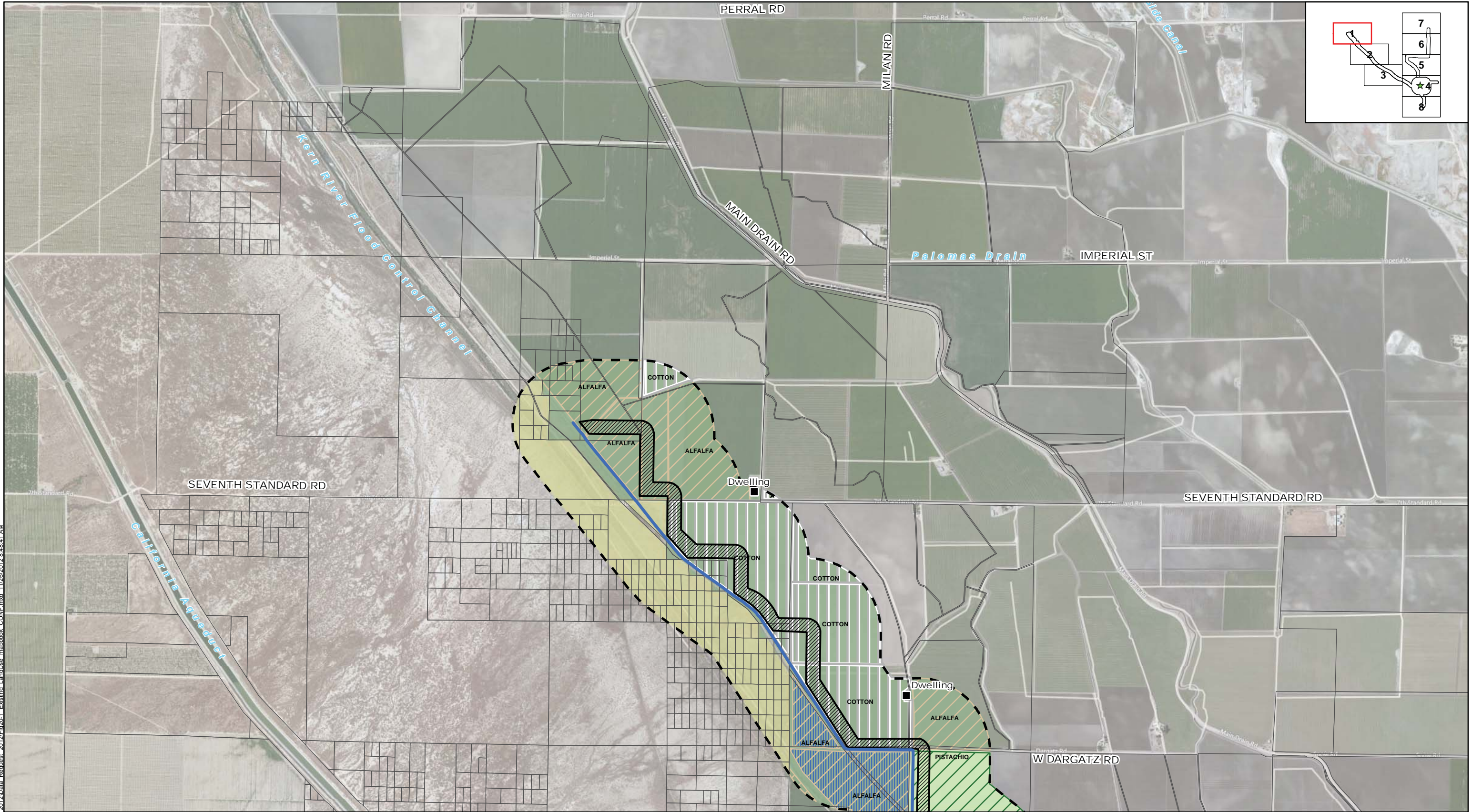
With respect to potential routes of contamination from the CO₂ injection at Elk Hills Oil Field, as described in *Requests for Additional Time to Respond to Data Requests from the Association of Irrigated Residents*, docketed on November 13, 2012, the Applicant is requesting additional time to address this portion of the Data Request.

9. Of the approximately 1,100 acres of land purchased for the HECA Project, approximately 60 percent will remain in active agriculture. The approximately 453 acres that will be removed from active agriculture represent approximately 0.07 percent of the Prime Farmland in Kern County and therefore is not a significant impact. Moreover, the conversion of farmland over the Project Site is not expected to result in the conversion of adjacent or nearby lands from agricultural use. Based on the analysis presented in Amended AFC Section 5.4 Land Use and Agriculture, the Applicant maintains that farmland mitigation is not required for the Project to comply with all laws, ordinance, regulations and standards. HECA will comply with all County land use and zoning regulations.

The CEC will conduct its own analysis of land use impacts, including impacts to prime farmland, and will present its analysis in the Preliminary Staff Assessment.

Please refer to the response to Data Request 17 (6) for additional information about site selection.

10. This data request is quite comprehensive. To the extent that there are any other risks to local farmers and residents, including their crops, soil, and water, they have been fully analyzed in the Amended AFC and the Applicant's responses to data requests from the various parties.



Project Site

Construction Staging Area

Controlled Area

BVWSD Well Field

Project Study Area¹

Parcel Boundary

Rail Laydown Yard

Carbon Dioxide

Natural Gas

Potable Water

Process Water

Railroad

Transmission

Land Uses

Commercial

Farming

Industrial

Orchards

Parks/Open Space/Recreation

Public/Quasi-Public

Residential

Resource Extraction

Undeveloped

Commodity

Alfalfa

Almond

Carrot

Corn

Cotton

Onion

Other Crops

Pistachio

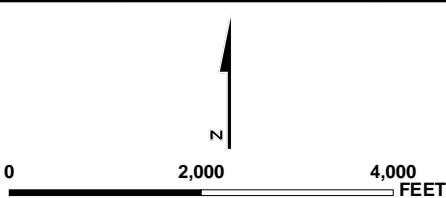
Uncultivated Ag

Wheat²

Notes:

1. 1 mile from project site and 1/4 mile radius from linear facilities

2. Includes wheat for/ not for food

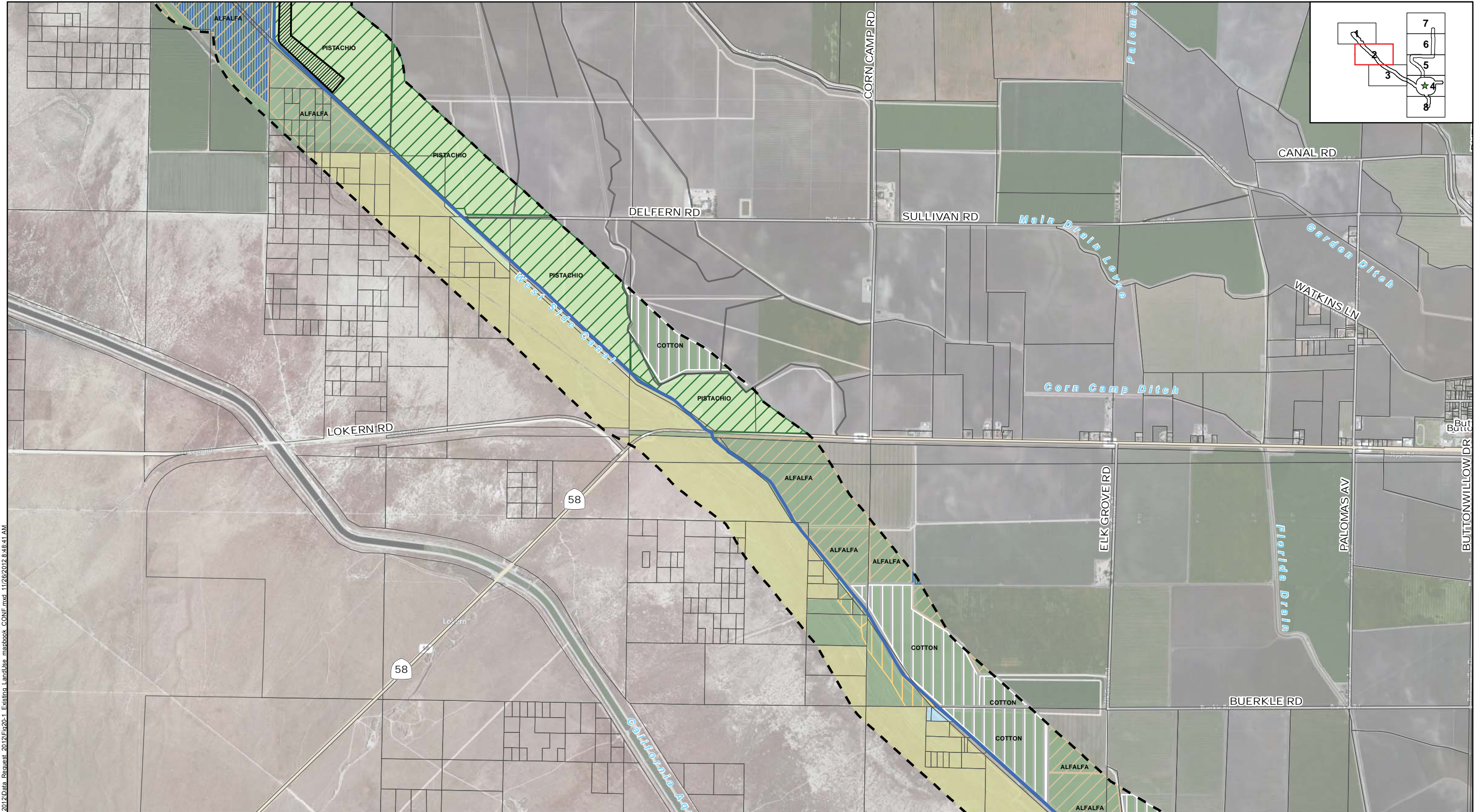


EXISTING LAND USE

November 2012
28068052

Hydrogen Energy California (HECA)
Kern County, California

FIGURE 20-1 (1)



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Source: Aerial Imagery, Bing Maps, 2009; Existing Land Use: Kern County, 2011

Project Site

Construction Staging Area

Controlled Area

BVWSD Well Field

Project Study Area¹

Parcel Boundary

Rail Laydown Yard

Carbon Dioxide

Natural Gas

Potable Water

Process Water

Railroad

Transmission

Land Uses

Commercial

Farming

Industrial

Orchards

Parks/Open Space/Recreation

Public/Quasi-Public

Residential

Resource Extraction

Undeveloped

Commodity

Alfalfa

Almond

Carrot

Corn

Cotton

Onion

Other Crops

Pistachio

Uncultivated Ag

Wheat²

Notes:

1. 1 mile from project site and 1/4 mile radius from linear facilities

2. Includes wheat for/ not for food

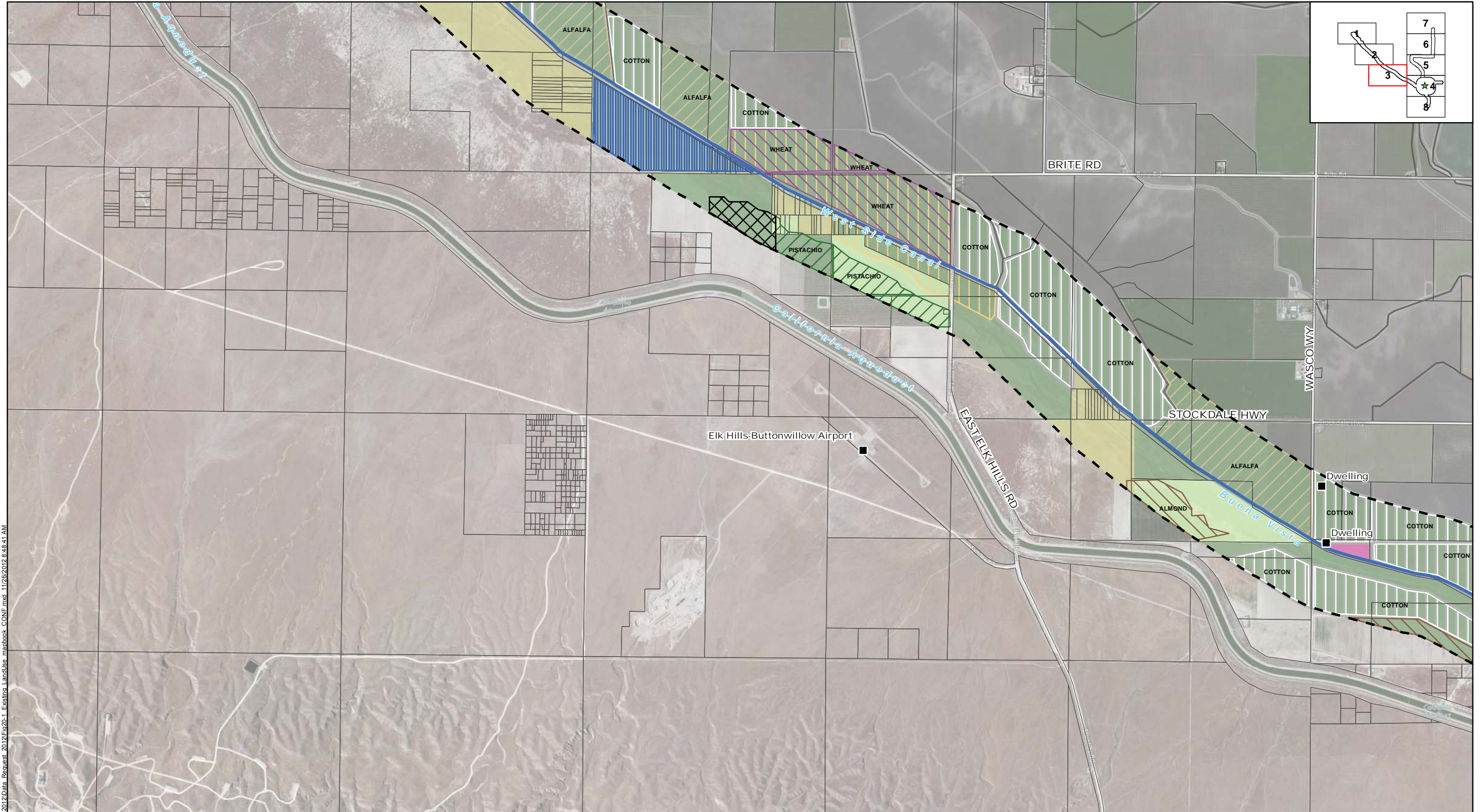
EXISTING LAND USE

November 2012
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Hydrogen Energy California (HECA)
Kern County, California

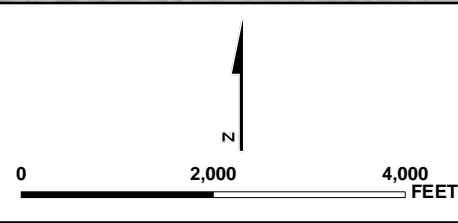
FIGURE 20-1 (2)



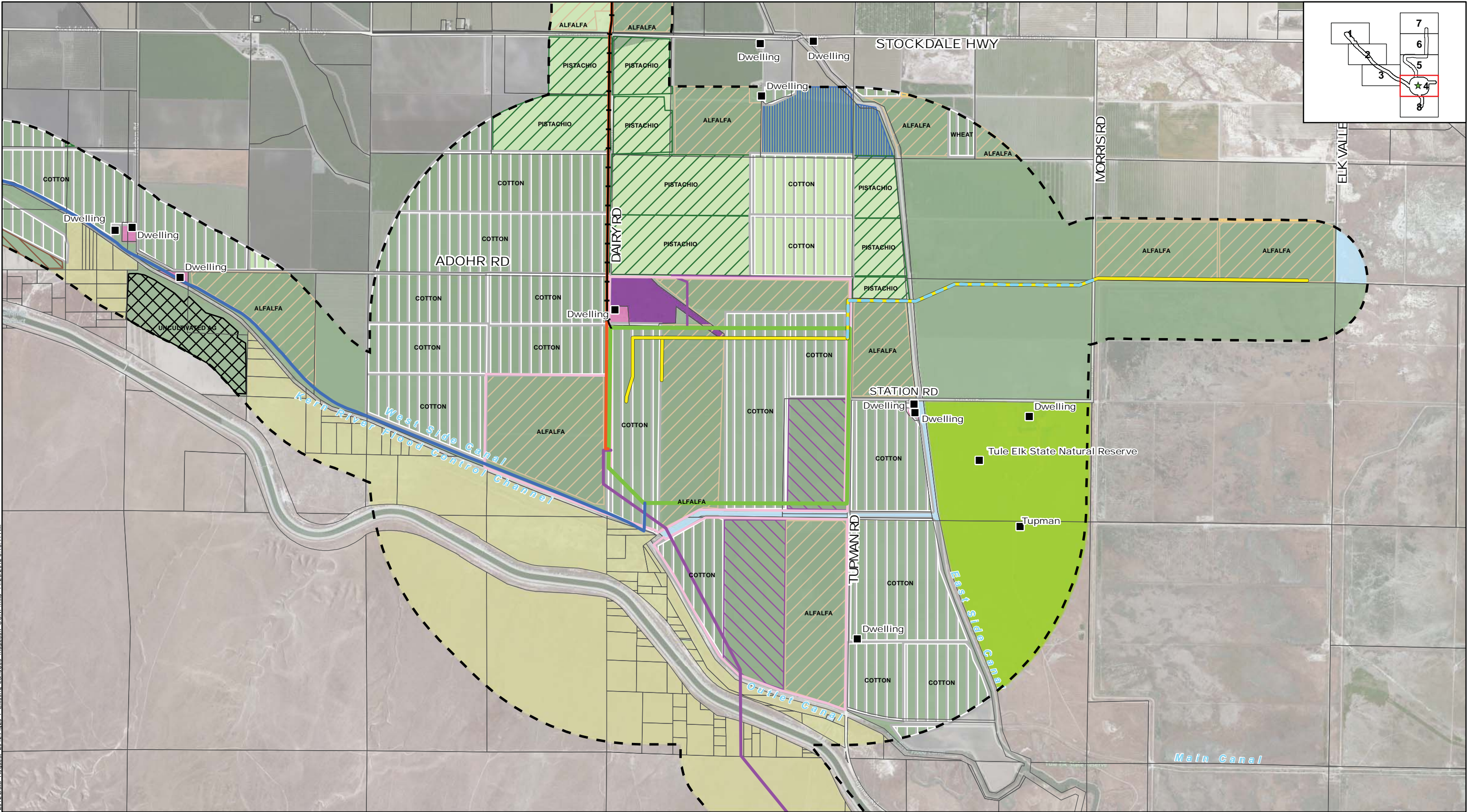
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Project Site	Carbon Dioxide	Land Uses	Parks/Open Space/Recreation
Construction Staging Area	Natural Gas	Commercial	Public/Quasi-Public
Controlled Area	Potable Water	Farming	Residential
BVWSD Well Field	Process Water	Industrial	Resource Extraction
Project Study Area ¹	Railroad	Orchards	Undeveloped
Parcel Boundary	Transmission	Commodity	
Rail Laydown Yard		Alfalfa	Corn
		Almond	Cotton
		Carrot	Onion
		Other Crops	Pistachio

Notes:
1. 1 mile from project site and 1/4 mile radius from linear facilities
2. Includes wheat for/ not for food



EXISTING LAND USE	
November 2012 28068052	Hydrogen Energy California (HECA) Kern County, California
	FIGURE 20-1 (3)

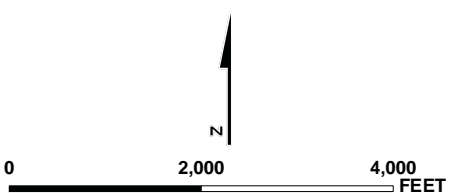


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Source: Aerial Imagery, Bing Maps, 2009; Existing Land Use: Kern County, 2011

Project Site	Carbon Dioxide	Land Uses	Parks/Open Space/Recreation	Commodity	Corn	Pistachio
Construction Staging Area	Natural Gas	Commercial	Public/Quasi-Public	Alfalfa	Cotton	Uncultivated Ag
Controlled Area	Potable Water	Farming	Residential	Almond	Onion	Wheat ²
BVWSD Well Field	Process Water	Industrial	Resource Extraction	Carrot	Other Crops	
Project Study Area ¹	Railroad	Orchards	Undeveloped			
Parcel Boundary	Transmission					
Rail Laydown Yard						

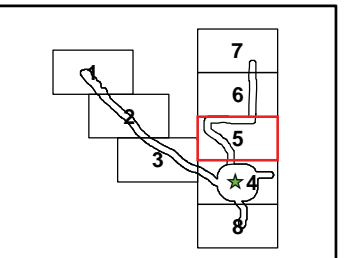
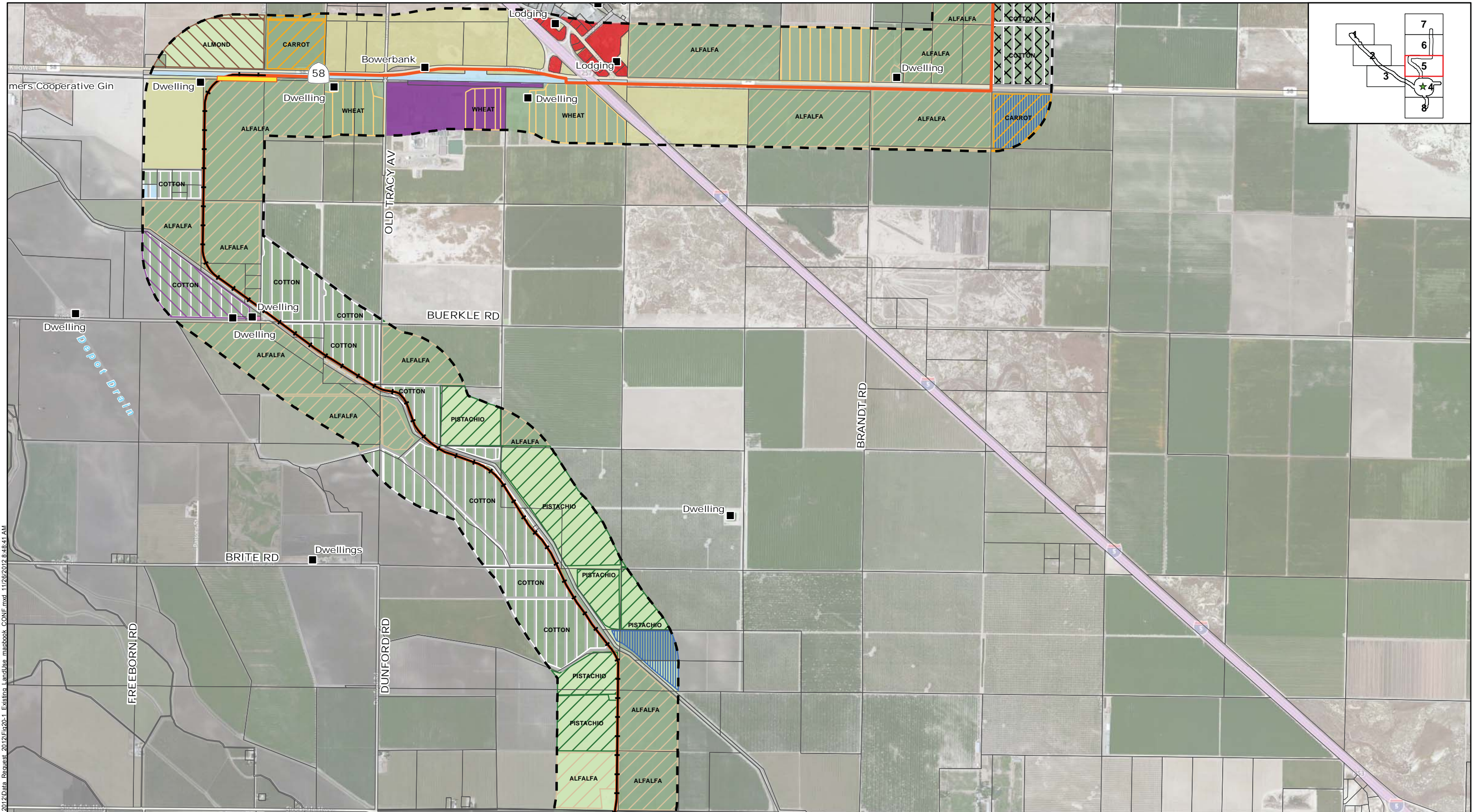
Notes:
1. 1 mile from project site and 1/4 mile radius from linear facilities
2. Includes wheat for/ not for food



EXISTING LAND USE
November 2012
28068052

Hydrogen Energy California (HECA)
Kern County, California

FIGURE 20-1 (4)



Project Site

Construction Staging Area

Controlled Area

BVWSD Well Field

Project Study Area¹

Parcel Boundary

Rail Laydown Yard

Carbon Dioxide

Natural Gas

Potable Water

Process Water

Railroad

Transmission

Land Uses

Commercial

Farming

Industrial

Orchards

Undeveloped

Land Uses

Parks/Open Space/Recreation

Public/Quasi-Public

Residential

Resource Extraction

Undeveloped

Commodity

Alfalfa

Almond

Carrot

Corn

Cotton

Onion

Other Crops

Pistachio

Uncultivated Ag

Wheat²

Notes:

1. 1 mile from project site and 1/4 mile radius from linear facilities

2. Includes wheat for/ not for food

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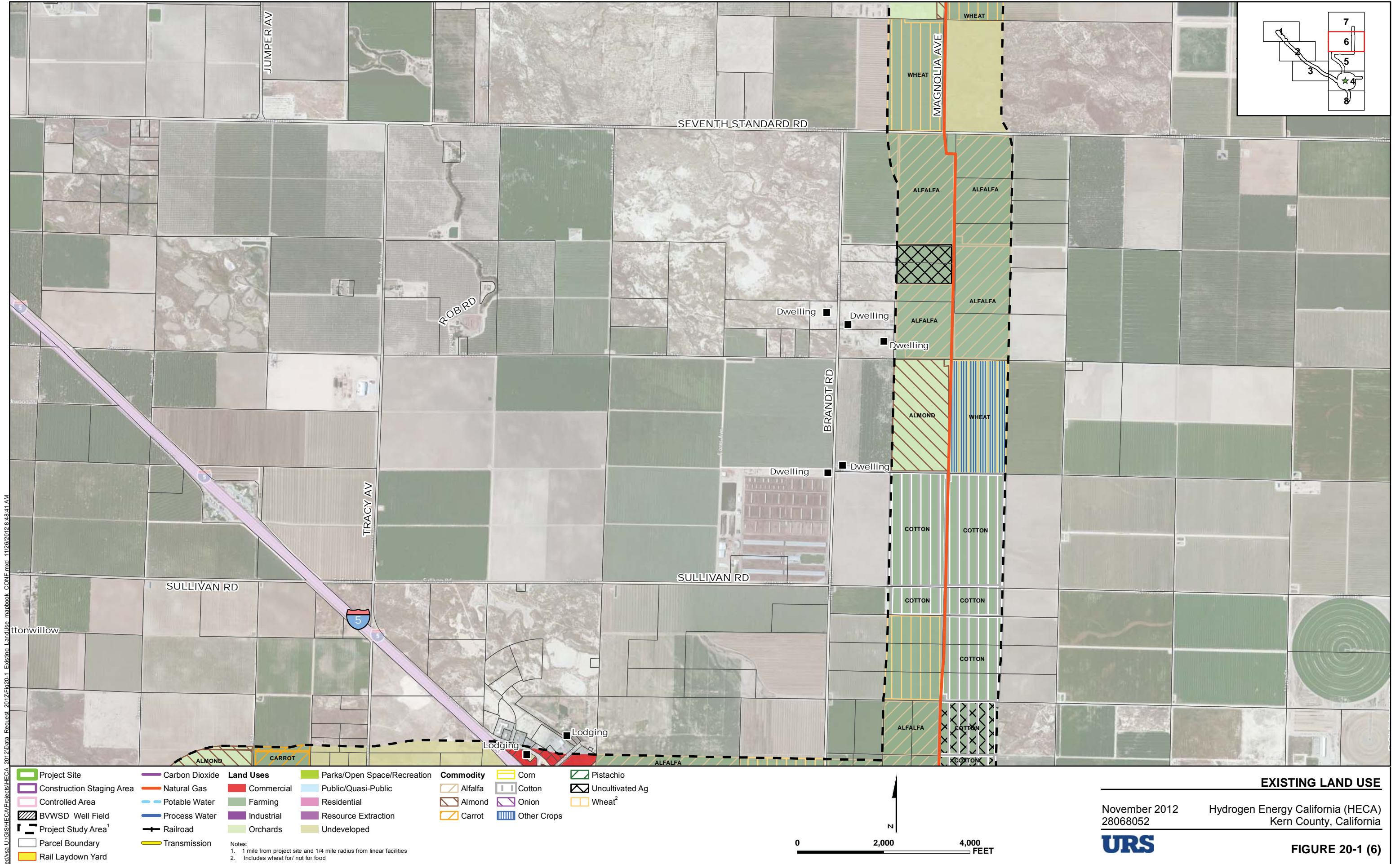
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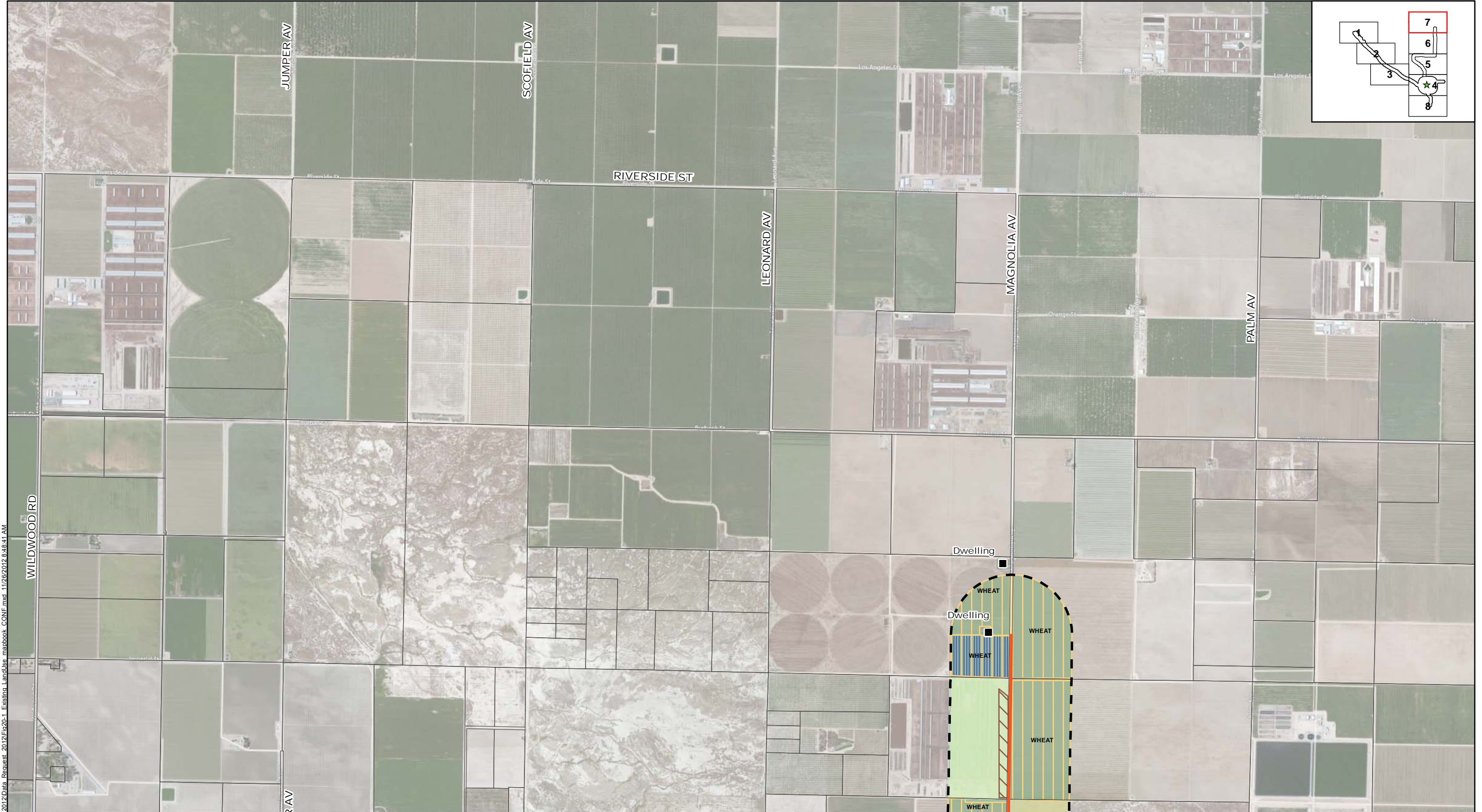
Hydrogen Energy California (HECA)
Kern County, California

FIGURE 20-1 (5)

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Source: Aerial Imagery, Bing Maps, 2009; Existing Land Use: Kern County, 2011





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Project Site

Construction Staging Area

Controlled Area

BVWSD Well Field

Project Study Area¹

Parcel Boundary

Rail Laydown Yard

Carbon Dioxide

Natural Gas

Potable Water

Process Water

Railroad

Transmission

Land Uses

Commercial

Farming

Industrial

Orchards

Undeveloped

Public/Quasi-Public

Residential

Resource Extraction

Commodity

Alfalfa

Almond

Carrot

Corn

Cotton

Onion

Other Crops

Pistachio

Uncultivated Ag

Wheat²

Notes:

1. 1 mile from project site and 1/4 mile radius from linear facilities

2. Includes wheat for/ not for food

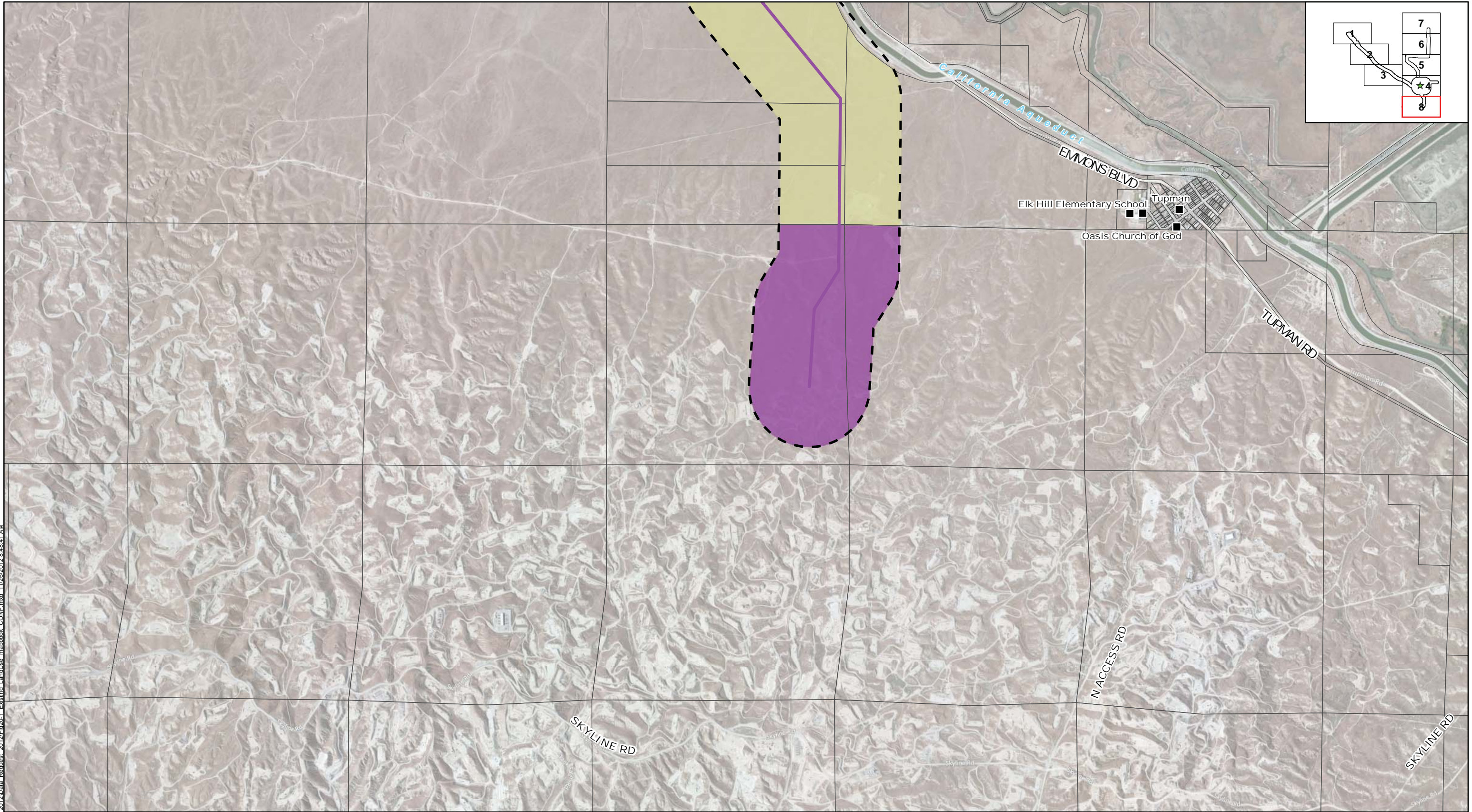
EXISTING LAND USE

November 2012
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Hydrogen Energy California (HECA)
Kern County, California

FIGURE 20-1 (7)



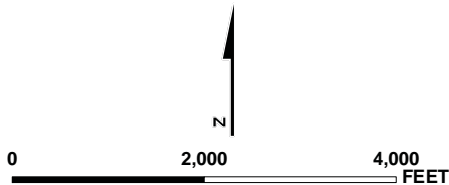
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- | | |
|--|---------------------------------|
| | Project Site |
| | Construction Staging Area |
| | Controlled Area |
| | BVWSD Well Field |
| | Project Study Area ¹ |
| | Parcel Boundary |
| | Rail Laydown Yard |
| | Carbon Dioxide |
| | Natural Gas |
| | Potable Water |
| | Process Water |
| | Railroad |
| | Transmission |

- | | |
|------------------|-----------------------------|
| Land Uses | Parks/Open Space/Recreation |
| Commercial | Public/Quasi-Public |
| Farming | Residential |
| Industrial | Resource Extraction |
| Orchards | Undeveloped |

- | | | |
|------------------|-------------|--------------------|
| Commodity | Corn | Pistachio |
| Alfalfa | Cotton | Uncultivated Ag |
| Almond | Onion | Wheat ² |
| Carrot | Other Crops | |

Notes:
1. 1 mile from project site and 1/4 mile radius from linear facilities
2. Includes wheat for/ not for food



EXISTING LAND USE	
November 2012 28068052	Hydrogen Energy California (HECA) Kern County, California
	FIGURE 20-1 (8)

DATA REQUEST

21. Please answer Mr. Clasons questions restated below:

- (1) Have high pressure injection wells in Kern County developed leaks which ended up polluting local aquifers? If this has happened elsewhere what is different about HECA? Is this a valid concern?**
- (2) Is there an outlet at the Southern end of the San Joaquin valley for the pollutants emitted by facilities such as HECA?**

RESPONSE

1. As described in *Requests for Additional Time to Respond to Data Requests from the Association of Irrigated Residents*, docketed on November 13, 2012, the Applicant is requesting additional time to address this Data Request.
2. As noted in the SJVAPCD 2007 Ozone Plan, air pollution in the San Joaquin Valley can be transported into other air basins. During the daytime, heated air rises into the mountains and moves up the Sierra Nevada, Tehachapi, and Coastal Mountains. The Valley's air can spread to the broader Sacramento area, the Great Basin valleys, the mountain counties, the Mojave Desert, and the north central and south central coasts, depending on meteorological conditions.

DATA REQUEST

22. Please answer these implied or stated questions from Ms. Bell:

- (1) Is there any reason other than financial gain for HECA to bring massive quantities of coal into Kern County and make what is the worst air quality in the nation even worse?**
- (2) Will pollutants from the trucks and trains coming to and leaving the HECA facility add direct contaminants to nearby crops and soils along the routes of movement?**
- (3) Why is this plant called “clean energy” when it is adding so many hundreds of tons of criteria air pollutants to the already unhealthy air in this part of the valley?**
- (4) Does HECA believe the “brackish” water they are proposing to take is not usable to others in the valley? Please explain your answer. When the brackish water becomes fresh (below 1000 TDS) what is the plan for water? How long will it take the brackish water to become fresh?**
- (5) How much non-fossil fuel based energy (wind, solar, wave) could be funded, at current rates of subsidy and stimulus, for the \$400 million the federal government may possibly give to HECA?**
- (6) Which members of Congress have said, on the record, that the DOE subsidy for the HECA project is wrong (for various reasons) and should not happen? John McCain is at least one we know of already.**

RESPONSE

1. We at HECA believe that fighting climate change—with the climate consequences and rising sea levels caused by it—is the right thing to do. That fight includes using fossil fuels more responsibly—that is, capturing and permanently storing the carbon—in conjunction with renewable sources of power and conservation.

The motivation for using coal and petcoke is summarized by the DOE as follows:

A need exists to further develop carbon management technologies that capture and store or beneficially reuse CO₂ that would otherwise be emitted into the atmosphere from coal-based electric power generating facilities. CCS technologies offer great potential for reducing CO₂ emissions and mitigating global climate change, while minimizing the economic impacts of the solution.

The HECA Project will be a state of- the-art facility that will produce electricity and other useful products for California, and that will have lower carbon footprint compared to power and products produced from more traditional fossil fuel facilities including natural gas. HECA will achieve these important environmental objectives by capturing carbon from its processes and transporting the CO₂ for storage, also known as sequestration, in secure geologic formations within the earth.

As evidenced by receipt of the DOE CCPI award, HECA is recognized as an advanced coal-based project capable of demonstrating next-generation technologies to produce electricity, while capturing and sequestering a significant portion of its CO₂ emissions. In fact, it is specifically through its use of coal that HECA is able to offer California, the nation, and the world progress toward controlling global climate change, while demonstrating the commercial viability of an advanced coal-based power facility.

2. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project, which includes transportation related emissions. The results of this modeling demonstrate that HECA Project emissions will be below levels at which adverse effects to soils and vegetation occur. Please see the response to Data Request 17 (3) above for further details on air modeling.
3. As stated in the Amended AFC, the HECA Project uses solid feedstock—coal and petcoke—to produce clean hydrogen-rich fuel. Hydrogen-rich fuel is referred to as a “clean fuel” since its criteria pollutant emissions are lower when compared to coal or oil combustion and very similar to those from natural gas combustion. Power and fertilizers produced from hydrogen fuel will have lower carbon footprints compared to those produced from more traditional fossil fuel facilities including natural gas.

In addition, unlike a natural gas combined cycle power plant, the HECA Project will capture and beneficially reuse approximately 3 million tons per year of CO₂.

HECA will ensure that air quality in the San Joaquin Valley will not worsen, by demonstrating that the Project will conform with the national AAQS. SJVAPCD has prepared air quality management plans to map out how the nonattainment pollutants, ozone, and PM_{2.5} emissions in the valley will decrease with time, to comply with these national AAQS. SJVAPCD has developed an ozone and a PM_{2.5} SIP, which allows for sustainable growth simultaneous with improving air quality. HECA emissions comply with these SIPs, ensuring that air quality will not worsen in the San Joaquin Valley.

4. The hydraulic effect of the BVWSD well field would be to significantly improve the groundwater chemistry in a zone of maximum benefit providing the opportunity for local farming interests to grow more economically viable crops or, in some cases, put fallowed ground back into production. This would ultimately diversify rather than limit local crop production to more brackish irrigation water tolerant crops. Improving the quality of available irrigation water would also limit potential soil degradation by minimizing salt loading factors associated with use of higher TDS irrigation water.

The BVWSD well field will not use groundwater that has TDS below 1,000 mg/L. The effect of HECA Project-specific pumping will be localized with a zone of maximum benefit to groundwater quality in an area 0.8 mile east of the well field. Lowering of TDS concentrations is expected to occur gradually with maximum improvement toward the end of the 25-year pumping period with mixing of TDS waters of good chemistry (i.e., low TSD groundwater less than 2,000 mg/L) with TDS waters of poor chemistry (i.e., high TDS groundwater greater than 2,000 mg/L) along the axial interface. Also see the response to AIR Data Request 14.

5. The HECA Project's qualification for CCPI funding is a determination that was made by the DOE. The Applicant is not privy to nor has any influence over the DOE funding decision process. However, a 2009 study by the Environmental Law Institute reports that federal energy subsidies over the 2002–2008 period totaled \$12.2 billion for

traditional renewable energy sources (not including ethanol) while CCS projects received \$2.3 billion.

Reference:

Environmental Law Institute, 2009. Estimating U.S. Government Subsidies to Energy Sources: 2002-2008. September. Available online at: http://www.elistore.org/Data/products/d19_07.pdf.

6. The Applicant is not aware of any members of Congress who have spoken out against the CCPI grant or HECA's receipt of the grant.

DATA REQUEST

23. Please answer the following direct and implied questions from Mr. Unger:

- (1) Will premature death rates increase, even slightly, in places like Tupman, Lamont, and Arvin, because of the added air pollution from the HECA proposal? This analysis should include all aspects of the proposal.**
- (2) What is the exact range of TDS in the water needed for this project? How much water is recycled by the project and how much per day is actually used and not recycled or recovered?**
- (3) Is the farmland to be occupied by the HECA site currently capable of growing good quality food for direct human consumption?**
- (4) Please compare the quantity of solar based energy the \$408 million from the DOE could provide, using the method proposed by Mr. Unger, with the energy this power plant will provide with maximum proposed electric production.**
- (5) How much GHG will the oil recovered by the CO₂ injection produce when it is consumed? This is important because the applicant states this oil would not be recoverable without this CO₂ enhanced oil recovery process.**
- (6) Will the chemical factory produce any ammonium nitrate and in what quantities?**
- (7) What is the environmental damage, including GHG, criteria air pollutants, and toxic emissions from the mining of the coal which will fuel HECA?**

RESPONSE

1. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project. Modeling has been performed using models and conservative assumptions approved by the U.S. EPA. The HRA analyzed the potential impacts from toxic air contaminants, and showed that predicted impacts are less than the significance thresholds, which are protective of public health. The criteria pollutant modeling results, including ambient background concentrations, show that the Project will not cause a violation of any state or federal AAQS, and will not significantly contribute to the existing violations of the PM standards. In addition all of the Project's operational emissions will be offset to ensure a net air quality benefit. The primary AAQS are designed to protect public health, including sensitive groups like asthmatics, children and the elderly; the secondary AAQS are designed to protect the public welfare, which includes decreased visibility and damage to animals, crops, vegetation and buildings. In addition, in the Authority to Construct Permit Application, modeled impacts were below the U.S. EPA screening threshold levels at which scientific studies have shown a potential for negative impacts on soils and vegetation, and thus below the levels at which adverse effects to vegetation or soils are expected to occur.

Therefore, because modeled impacts are predicted to: i) be less than the most stringent AAQS; ii) not significantly contribute to existing PM violations; iii) be below the HRA thresholds; or iv) be below the soils and vegetation thresholds; neither public health nor

the public welfare will be adversely impacted by the Project. In addition, Project emissions will be offset with emission reduction credits.

2. The Project water treatment facilities are designed to handle raw water with TDS up to 4,000 parts per million which is the projected maximum as described in Amended AFC Table 5.14-6. Water with a TDS concentration less than the maximum design value can be processed to meet the plant water requirements.

For the average ambient temperature case shown in Amended AFC Figure 5.14-13, approximately 4,600 gallons per minute of raw water is used as follows: 83 percent is evaporated in the cooling towers to cool the recirculating cooling water; 11 percent is chemically converted to hydrogen which is used as fuel for power generation; 5 percent is chemically converted to hydrogen which is used as feed stock for the manufacturing complex. There is no process waste water which is not recycled and recovered.

3. As shown on Amended AFC Table 5.4-3, alfalfa, cotton, and onions are currently grown on the Project Site.
4. Please see the response to AIR Data Request 22 (5).
5. It is not possible to precisely quantify the greenhouse gas (GHG) emissions that might be associated with consumption of the oil that will be produced by OEHI since it cannot be determined how that oil may be used. It is important to note, however, that use of CO₂ from HECA for EOR will not in and of itself result in the consumption of more oil. The demand for oil is a function of many factors, and will not be affected by the HECA Project or by OEHI's EOR Project. To the extent that part of that demand is met by oil produced by OEHI as a result of its EOR Project, that oil will simply displace oil from some other source that would otherwise be used to meet the demand. Furthermore, increased production of domestic oil, such as that from the Elk Hills Oil Field, reduces the need to import oil from outside the United States to meet demand. This eliminates the GHG emissions associated with transporting imported oil over long distances, and results in lower GHG emissions overall assuming a constant demand.
6. The fertilizer plant does not produce solid ammonium nitrate. A liquid solution of water and 79 percent ammonium nitrate is produced and then used in its entirety to produce the UAN fertilizer solution. About 26 tons per hour of ammonium nitrate solution (100 percent basis) is produced and converted to UAN fertilizer solution.
7. It would be speculative to attempt to identify any environmental impacts associated with the mining of the coal that will be used to fuel the HECA Project, and such an analysis is beyond the appropriate scope of review of the HECA Project. By way of analogy, of the many natural gas fired project certified by the CEC, the Applicant is not aware of any in which the CEC analyzed the impacts associated with drilling for and producing the natural gas.

DATA REQUEST

24. Please answer the following direct and implied questions from Mr. Bittleston:

- (1) Stockdale Horse Ranch is breeding special horses and entertaining guests near the proposed HECA project. How will HECA operations affect this operation? Would it be wise for a visitor with asthma to stay at this ranch for more than an hour during a time when atmospheric conditions lead to the buildup of pollutants in the area?**
- (2) Are horses any less or any more sensitive to the air pollutants that HECA will be adding to the area?**
- (3) Would a horse ranch with many visitors benefit or be harmed by a sudden increase in hundreds of coal, coke, fertilizer and waste trucks traveling on the two-lane roads leading up to and past the ranch? Will a train blocking the roads in the area on an almost daily basis help or hinder such a business?**

RESPONSE

1. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project. Modeling has been performed using models and conservative assumptions approved by the U.S. EPA. The HRA analyzed the potential impacts from toxic air contaminants, and showed that predicted impacts are less than the significance thresholds, which are protective of public health. The criteria pollutant modeling results, including ambient background concentrations, show that the Project will not cause a violation of any state or federal AAQS, and will not significantly contribute to the existing violations of the PM standards. In addition all of the Project's operational emissions will be offset to ensure a net air quality benefit. The primary AAQS are designed to protect public health, including sensitive groups like asthmatics, children and the elderly; the secondary AAQS are designed to protect the public welfare, which includes decreased visibility and damage to animals, crops, vegetation and buildings. In addition, as demonstrated in the Authority to Construct Permit Application, modeled impacts were below the U.S. EPA screening threshold levels at which scientific studies have shown a potential for negative impacts on soils and vegetation, and thus below the levels at which adverse effects to vegetation or soils occur.

Therefore, because modeled impacts are predicted to: i) be less than the most stringent AAQS; ii) not significantly contribute to existing PM violations; iii) be below the HRA thresholds; or iv) be below the soils and vegetation thresholds; neither public health nor the public welfare will be adversely impacted by the Project. In addition, Project emissions will be offset with emission reduction credits.

2. Please see the response to Data Request 24 (1).
3. The truck route has been designed to minimize impacts to residences and businesses in the area. The truck route travels from Stockdale Highway, to Morris Road, to the terminus of Station Road where it crosses over Tupman Road and enters the Project Site. This route was specifically modified from previously proposed routes to minimize impacts to residences including the horse farm located west of the Stockdale Highway-Morris Road intersection.

The Applicant does not anticipate that any roads or intersections will be significantly impacted due to the two coal and two fertilizer unit trains that will service the Project Site on a weekly basis. In addition, the onsite rail loop has been designed to accommodate two entire unit trains within the Project Site in the unforeseen instance that train arrivals overlap.

DATA REQUEST

25. NOT INCLUDED

RESPONSE

No response required.

DATA REQUEST

26. Please answer the following direct and implied questions from Ms. Douglas:

(1) In the San Joaquin Valley, Farmers cannot burn agricultural waste and homeowners cannot burn their fireplaces when the air is bad. Will HECA agree to not produce criteria air pollutants such as NO_x and particulate emissions when the air is bad and these other restrictions are in place for many valley residents?

(2) In what ways will this coal project pollute the air in ways similar to other coal power plants in the USA? Even if the levels are less than other coal plants please note the similarities in type of pollution released including toxic emissions.

Please include transportation related pollution in the answer. How would the pollution emissions from HECA change if the fuel used was natural gas instead of coal?

RESPONSE

1. HECA anticipates entering into one or more agreements for the sale of its electricity. Such agreements typically require the power producer to provide electricity to the grid whenever called upon to do so by relevant utility and California Independent System Operator, which operates the state's electrical grid. Therefore, it is not possible for the Applicant to make a commitment such as that suggested in this Data Request. The Project will comply with all SJVAPCD and CEC permit conditions and requirements.
2. The HECA Project will be a state of- the-art facility that will produce electricity and other useful products for California, and that will have a lower carbon footprint compared to power and products produced from more traditional fossil fuel facilities including natural gas. HECA will achieve these important environmental objectives by capturing carbon from its processes and transporting the CO₂ for storage, also known as sequestration, in secure geologic formations within the earth.

The HECA Project is not a coal-fired power plant. The coal and petcoke will be gasified, and the resulting hydrogen-rich gas will be burned in the turbine.

Transportation related emissions have been included in the modeling and emissions calculations, as presented in the Amended AFC. As presented in the Applicant's responses to AIR's first set of data requests, Data Request 8, a comparison of emissions per unit of electricity produced from the natural-gas-fired Avenal power plant to the HECA Project was provided. Ozone precursors, such as oxides of nitrogen (NO_x) and volatile organic compounds (VOC), as well as PM, were shown to be lower on a per megawatt-hour basis from the HECA Project turbine than from the natural-gas-fired Avenal power plant turbines.

DATA REQUEST

27. Please answer the following direct and implied questions from Mr. Antongiovanni:

- (1) Is CO₂ considered an air pollutant by HECA? Why does HECA call their project “clean energy”?**
- (2) Does the type of air pollution (NO_x, particulates, etc.) that HECA will emit lead to lowered crop production in the San Joaquin Valley?**
- (3) Please detail where all of HECA’s emission reduction credits are from and what year they were produced.**
- (4) What security will HECA provide for the storage and shipping of ammonium nitrate?**
- (5) Please compare the brackishness of the water HECA will pump to the brackishness of water suitable for growing pistachios. It would be appropriate to use information on this from local studies done by the UC extension agents in the valley who have studied this exact topic.**
- (6) What happens if Occidental is unable, for any reason, to purchase or use all of the CO₂ that HECA “captures”?**
- (7) How does this project provide Kern County with needed electricity?**
- (8) Will foreign investors likely put money into this HECA project that will have to be paid by consumers in the USA? How does that aspect of the project lead to increased national security?**
- (9) Is the HECA project site in a flood zone? What will happen if the area floods while the project is in operation? What considerations have been made for a potential failure of the Lake Isabella dam or a 100 year storm where Isabella Dam must overflow and all water percolation ponds are full?**
- (10) Considering the farmland that is being removed by the HECA site and the farmland that will no longer have water due to the pumping of groundwater by HECA, what is the loss in farm production and related economic activity by replacing this farming with HECA over the life of the project?**
- (11) Are the current owners of the HECA project intending to sell the project as soon as the CEC approves the project? Alternatively, are the current owners going to build the project and then sell it? Or, will the current owners build and operate the project?**

RESPONSE

1. The U.S. EPA considers CO₂ a pollutant, and so has taken steps to regulate CO₂ emissions. In 2009, the U.S. EPA determined that GHGs, including CO₂, “are the primary driver of climate change, which can lead to hotter, longer heat waves that threaten the health of the sick, poor or elderly; increases in ground-level ozone pollution linked to asthma and other respiratory illnesses; as well as other threats to the health and welfare of Americans.” The HECA Project has been specifically designed to

address climate change concerns and offers California, the nation, and the world progress toward controlling global climate change, while demonstrating the commercial viability of an advanced coal-based power facility.

As stated in the Amended AFC, the HECA Project uses solid feedstock—coal and petcoke—to produce clean hydrogen-rich fuel. Hydrogen-rich fuel is referred to as a “clean fuel” since its criteria pollutant emissions are lower than from coal or oil combustion and very similar to those from natural gas combustion. Power and fertilizers produced from hydrogen fuel will have lower carbon footprints compared to those produced from more traditional fossil fuel facilities including natural gas.

Reference:

U.S. EPA (U.S. Environmental Protection Agency), 2009. EPA: Greenhouse Gases Threaten Public Health and the Environment. December 7. Available online at: <http://yosemite.epa.gov/opa/admpress.nsf/7ebdf4d0b217978b852573590040443a/08d11a451131bca585257685005bf252!OpenDocument>.

2. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project. The results of this modeling demonstrate that HECA Project emissions will be below levels at which adverse effects to soils and vegetation, including crops, occur. Please see the response to Data Request 17 (3) for further details on air modeling.
3. An explanation and list of HECA’s emission reduction credits can be found in the Amended AFC Appendix E-10.

The following list is a summary of the emissions reductions and their sources.

- 482,000 pounds per year (lbs/yr) NO_x from the shutdown of catalytic cracker, fluid cocker, and carbon monoxide boiler at 6500 Refinery Avenue, Bakersfield, California
 - 168,000 lbs/yr of oxides of sulfur (SO_x) from the shutdown of tail gas incinerator, 2007027A, at 6451 Rosedale Highway, Area I, Bakersfield, California
 - 31,748 lbs/yr and 45,750 lbs/yr VOC from the shutdown of Entire Stationary Source at 20807 Stockdale Highway, Bakersfield, California
 - 40,400 lbs/yr NO_x and 98,000 SO_x from the installation of selective catalytic reduction, SCR, and scrubber and convert from fuel oil to natural gas at 11535 E. Mountain View Avenue, Kingsburg, California
4. Solid ammonium nitrate is not produced, stored onsite, or shipped offsite at HECA. Only aqueous solutions of ammonium nitrate are produced and consumed as an intermediate used in the production of fertilizer and only exists temporarily in a closed chemical process. The general plant security includes the following features:
 - There is a security fence around the entire perimeter of the plant
 - Access for employees is controlled via security badge readers
 - Vehicle access is controlled with an automated security gate

- There is a manned security station at the main entrance
 - Video surveillance cameras are placed per the security plan and are monitored from the control room
 - Area lighting is provided
5. The BVWSD considers HECA's use of its brackish water as a beneficial part of BVWSD's BGRP. As such, BVWSD has encouraged the Project to use the brackish water. An October 29, 2012, letter from the BVWSD states that "providing HECA with this brackish groundwater, Buena Vista will be able to implement a significant portion of the BGRP and improve water quality of the underlying groundwater for the benefit of the farmers." Furthermore, BVWSD states that the "vast region of brackish groundwater that impacts the western portions of the District is extensive and well beyond the capacity of the BGRP and therefore beyond the HECA requirements." Thus, HECA's use of a relatively small portion of the brackish water does not inhibit other uses of BVWSD's vast supplies of brackish water.
6. HECA will use a small portion of the captured CO₂ in the urea manufacturing process. For the remainder of the CO₂, HECA will enter into a contract with OEHI under which OEHI will be required to purchase all of the captured CO₂ from the HECA Project and use all of the CO₂ for EOR.
7. HECA will be a state-of-the-art facility that will produce electricity and other useful products for California, and that will have dramatically lower carbon emissions compared to traditional facilities. The Project intends to connect to the Pacific Gas and Electric Company (PG&E) Midway Substation via the 230-kilovolt Midway–Wheeler Ridge transmission line and a new PG&E switching station. The Combined Cycle Power Block will provide a nominal 300 megawatts of low-carbon baseload electricity to the grid during operations, feeding major load sources. Providing dependable, low-carbon electricity will support a reliable power grid that is an essential component to meeting California's 2020 GHG-reduction targets. In addition, the flexible nature of HECA's power supply makes it a good complement to renewable sources such as wind and solar.
8. The Applicant will finance the construction and start-up operations of the Project using debt and equity obtained from a variety of sources. Because the HECA Project is designed to demonstrate progress in addressing global climate change, it is reasonable to assume that investment may come from a globally diverse group of investors.
9. The Project Site is not located in a designated floodplain. The Project Site will be graded, as shown on Amended AFC Figure 2-50, Preliminary Grading Plan, to promote drainage to prevent onsite flooding. Stormwater runoff from onsite areas will be retained and reused; therefore, the volume of runoff leaving the site will be less than for existing conditions. No significant impacts related to flooding are expected as a result of the Project.

In 2005, the United States Army Corps of Engineers (USACE) determined through a screening-level risk assessment process that the Isabella Dams posed unacceptable risk. Since then USACE has been evaluating alternatives to reduce the likelihood and consequences of dam failure, and to restore the authorized benefits of Isabella Lake. The USACE prepared a map which shows the areas around metropolitan Bakersfield which would likely be flooded in the unlikely case that the dams should fail at Lake

Isabella. Based on this map, the maximum depth of flooding in the vicinity of the HECA Project site could be as much as 2 feet if a failure of the dam occurred. The map is available at: <http://esps.kerndsa.com/floodplain-management/lake-isabella-flood-area>.

Portions of the Project Site will be graded and sensitive equipment will be placed on pads constructed a few feet above existing grade. As such, the Project's plant and equipment will be situated at an elevation above the USACE's hypothetical predictions of inundation due to a failure of Isabella Dam. Therefore, impacts due to a hypothetical dam failure flood will be less than significant.

For additional information about plans for Isabella Dam, please refer to the USACE's Draft Environmental Impact Statement for the USACE's Isabella Lake Dam Safety Modification Project issued in March 2012 and the Final Environmental Impact Statement issued in November 2012. These documents are available at: <http://www.spk.usace.army.mil/Media/NewsReleases/tabid/1034/Article/6041/public-information-meetings-for-isabella-lake-dam-safety-modification-project.aspx>.

10. Please see responses to AIR Data Request 12 for information relating to farmland conversion at the Project Site and AIR Data Request 27 (5) for information relating to brackish water usage.
11. Although the Applicant has no current plans to sell the Project, sale of the Project at some point is an option. Regardless of what entity owns the operational facility, as a component of the CEC licensing process, staff will implement a compliance monitoring program to ensure that the Project is constructed and operated according to the conditions of certification. The conditions of certification will be tied to HECA, regardless of the HECA Project's ownership.

Reference:

CEC (California Energy Commission), 2012. Energy Facilities Licensing Process - Guide to Public Participation. Available online at: http://www.energy.ca.gov/siting/guide_license_process.html.

DATA REQUEST

28. Please answer the following questions implied by these statements from Ms. Kempner:

- (1) Are animals like dogs and cows affected by poor air quality?**
- (2) Will milk production go down if our air is made even worse by projects like HECA?**

RESPONSE

- 1. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project. The results of this modeling demonstrate that HECA Project emissions will be below levels at which adverse effects to public health and welfare occur. The protection of public welfare, includes ensuring the following effects do not occur, decreased visibility, damage to animals, crops, vegetation and buildings. Please see the response to Data Request 17 (3) above for further details on air modeling.
- 2. See the response to Data Request 28 (1).

DATA REQUEST

29. Please answer the following questions put forth by the thirteen people who have signed this letter:

- (1) What is the HECA definition of brackish water as they use the term?**
- (2) What mitigation does HECA propose for the taking of groundwater that is already being used by local agriculture?**
- (3) Have old and abandoned wells been looked for on the HECA site? Have any old wells been found?**
- (4) Which chemicals, elements, or substances that will be found at the HECA project site are considered potential ground water contaminants in the worst possible case of these things getting into the local ground water?**
- (5) Where has a project of this scale been done before where there is a situation of critical agricultural ground water above the injected CO₂ such as exists in Kern County and near the Elk Hills? How experimental is this project in the sense of technology and operations that have never been tried before at this large of a scale?**
- (6) What will offset the loss of prime farmland forced by this project? How can cancellation of the Williamson Act be justified by either a power plant or a chemical plant?**
- (7) What fire department will respond to an explosion or fire at the HECA facility? What kind of training will local fire fighters receive before HECA begins operations?**
- (8) Would HECA be profitable without government help? Is the cost of the fertilizer to be produced by HECA less than the current cost of imported fertilizer such as UAN32 or anhydrous ammonia?**
- (9) Why is using natural gas as the only fuel not considered as an alternative?**
- (10) Why is using land south of the aqueduct not considered as an alternative?**
- (11) Does the CEC understand local farming issues well enough to judge this project objectively? Why should Kern County not be permitting the fertilizer/chemical plant?**

RESPONSE

1. As outlined in Amended AFC Section 5.14.1.4 (pp. 5.14-13), HECA's definition of brackish water is consistent with California State Water Resources Control Board Resolution No. 75-58 Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (CWRCB Res. No. 75-58) definition of brackish water which includes all waters with a salinity (i.e., TDS) range of 1,000 to 30,000 mg/L and a chloride concentration of 250 to 12,000 mg/L.
2. HECA is not taking groundwater but rather purchasing groundwater from BVWSD's BGRP. The area in which the groundwater is being pumped for HECA suffers from poor

- water chemistry. The BGRP will not reduce the access to groundwater by local groundwater users, but rather improves it by removing saline supplies and replacing them with better quality supplies.
3. Information regarding old and abandoned wells on the HECA Project site was reviewed and summarized in the Amended AFC (see Amended AFC Section 5.14.1.4 Groundwater Wells – Project Site (pp. 5.14-11 & 12)). Two water wells were identified on the Project Site; however neither was visible during the Phase I Environmental Site Assessment conducted in February 2012 (see Appendix L of the Amended AFC). In addition to the water wells, one state oil and gas well was identified on the Project Site. A March 2012 Environmental Data Resources report indicated that the oil and gas well was plugged and abandoned in November 1950 (DOGGR). URS visited this well location during the Phase I Environmental Site Assessment and saw no evidence of the well.
 4. A summary of hazardous material to be used and stored on the HECA site for plant operations is provided in the Applicant's Draft DESCP dated October 2012 and submitted in the response to CEC Data Request A116. All hazardous materials will be properly stored, and spill prevention measures will be implemented to prevent storm water contact with these materials or discharge to groundwater. Storm water runoff that could potentially become contaminated will be collected in lined retention basins or facilities with secondary containment. With implementation of these best management practices, there will be no discharge of wastes or potentially contaminated storm water from the Project's operations to groundwater.
 5. As described in *Requests for Additional Time to Respond to Data Requests from the Association of Irrigated Residents*, docketed on November 13, 2012, the Applicant is requesting additional time to address this Data Request.
 6. Of the approximately 1,100 acres of land purchased for the HECA Project, approximately 60 percent will remain in active agriculture. The approximately 453 acres that will be removed from active agriculture represent approximately 0.07 percent of the Prime Farmland in Kern County and therefore is not a significant impact. Moreover, the conversion of farmland over the Project Site is not expected to result in the conversion of adjacent or nearby lands from agricultural use. Based on the analysis presented in Amended AFC Section 5.4, Land Use and Agriculture, the Applicant maintains that farmland mitigation is not required for the Project to comply with all laws, ordinance, regulations and standards.
 7. The Kern County Fire Department will support the Project with fire prevention and protection and emergency medical services. The fire station closest to the Project Site is Fire Station Number 25, located at 100 Mirasol Avenue in Buttonwillow, approximately 6 miles northwest of the Project Site. Support can also come from Station 21 (Taft) and Station 53 (Old River). Additional resources for more serious incidents would include hazardous materials and decontamination units at Station 66 (Bakersfield) and other fire department and allied agency responders as appropriate. Kern County is currently discussing the nature and extent of training needed and this will include initial and persistent training that is both technical and manipulative. Fire department and facility personnel will conduct drills on a regular basis.
 8. The DOE CCPI program is intended to move "technologies more quickly into the market place that may not ordinarily be developed by the private sector due to the risk involved,

allowing substantial benefits to be realized.” DOE has selected the HECA Project through a competitive process under the Round 3 CCPI program and this funding is an integral component of the HECA Project financing.

The operational HECA Project will increase fertilizer supply which is expected to place downward pressure on regional prices. Currently, the vast majority of all California nitrogen-based fertilizer feedstocks are imported into the state. Due to these transportation costs, California nitrogen-based fertilizers are priced 20 to 30 percent higher than in other regions of the country. Therefore, the presence of a nitrogen-based fertilizer producer is likely to benefit off-takers through increased competition and the lowering of transportation costs. The Applicant anticipates that fertilizer product will be sold directly to distributors and therefore will likely not be in a position to dictate end prices to consumers.

Reference:

NETL, n.d. Clean Coal Power Initiative. Available online at: [http://www.netl.doe.gov/technologies/coalpower/cctc/ccpi/pubs/ccpi%20\(status%20report%20and%20program%20review\).pdf](http://www.netl.doe.gov/technologies/coalpower/cctc/ccpi/pubs/ccpi%20(status%20report%20and%20program%20review).pdf).

9. The HECA Project is an Integrated Gasification Combined-Cycle facility that generates electricity and fertilizers while capturing and sequestering more than 90 percent of CO₂ emissions by converting a blend of coal and petcoke into clean burning hydrogen gas. Since its inception, HECA has contemplated the use of solid feedstocks for the production of hydrogen gas and capture of CO₂. As evidenced by receipt of the DOE CCPI-3 award, HECA is recognized as an advanced coal-based project capable of demonstrating next-generation technologies to produce electricity, while capturing and sequestering a significant portion of CO₂ emissions. In fact, it is specifically through its use of coal that HECA is able to offer California, the nation, and the world progress toward controlling global climate change, while demonstrating the commercial viability of an advanced coal-based power facility.

Coal is preferred over natural gas as a feedstock for conversion to hydrogen gas due to its low and stable price. Based on current U.S. Energy Information Administration data, western subbituminous coal is approximately \$1.44 per MMBtu, while California natural gas prices for electrical power facilities are approximately \$5.75 per MMBtu or four times more expensive than coal. Coal prices are also more stable historically than natural gas prices, and therefore more predictable for investors and lenders. Regarding availability, both coal and natural gas are domestically plentiful fossil fuels, but are rare in California, and would need to be imported. California currently imports approximately 90 percent of its natural gas needs each year. Moreover, the use of coal and petcoke promotes energy security by converting abundant and inexpensive solid fuels to clean hydrogen fuel to produce electricity and other useful products.

References:

USEIA (U.S. Energy Information Administration). Average sale price of New Mexico sub-bituminous coal for 2010 (most recent available) is \$30.67/short ton. Release date November, 2011. <http://www.eia.gov/coal/data.cfm#prices>.

USEIA (U.S. Energy Information Administration). California industrial natural gas price. August 2012 (most recent available). http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_SCA_m.htm.

10. An AFC (08-AFC-8) was previously submitted to the CEC on July 31, 2008, which proposed the Project on a site located south of the California Aqueduct. The Project was subsequently moved when it was discovered that previously undisclosed sensitive biological resources existed at the originally proposed site.

As a result, HECA conducted an extensive siting analysis to identify an alternative site. As discussed in Section 6.0 (Alternatives) of the Amended AFC, several alternative sites were considered. However, the alternative sites were rejected for various reasons, including: (1) topography, (2) distance from the proposed CO₂ custody transfer point, (3) lengths of linear facilities, (4) sensitive environmental receptors, and/or (5) land availability. These sites and their relevant information are presented in Table 6-1, Alternative Sites Reviewed and Status, of the Amended AFC.

Based on this analysis, the Project Site was selected. No alternative sites were identified that were environmentally superior to the Project Site, and would allow attainment of the Project objectives.

11. The CEC has extensive experience permitting projects on former agricultural lands. All of the components of the HECA Project are fully integrated and the chemical processes and Manufacturing Complex cannot be practically separated from the power generating component of the Project. The California Public Resources Code grants the CEC exclusive authority to certify (permit) thermal power plants and related facilities. In addition, CEQA requires that all of the components of the Project be analyzed together and not on a piecemeal basis. Finally, both the Applicant and the CEC staff are actively engaged with the County to obtain their input on the Project, including proposed conditions of approval, and to ensure that the County's concerns are addressed.

DATA REQUEST

30. Please answer the following questions stated and implied by Mr. and Ms. Wolfe:

- (1) Will the 300 trucks run 24 hours per day on the local country roads around the site?**
- (2) How will the noise from 300 trucks per day affect local residents and their quality of life?**
- (3) Will the water table lower in any area within 15 miles of the HECA project because of the groundwater pumping? Will HECA compensate local well owners if their groundwater is affected in any way by the project?**
- (4) The trucks will damage local roads in their present condition and structure? Will the roads be rebuilt at HECA expense to a higher quality to withstand all of this additional traffic?**

RESPONSE

1. The approximately 300 feedstock material delivery truck trips under Alternative 2 (Truck Transportation) are the maximum amount expected per day and are anticipated to occur over a 24-hour period. Note that average feedstock material delivery trucks trips are expected to be approximately 46 trucks per day under Alternative 1 (Rail Transportation) and 229 trucks per day under Alternative 2 (Truck Transportation) (see Amended AFC Table 2-21 and Appendix E-5).
2. Traffic noise related to both construction and operations was evaluated in Amended AFC Section 5.5.2.8. Conclusions are as follows:
 - Construction traffic will be intermittent and temporary; therefore, noise impacts are considered to be less than significant as long as construction traffic is limited to construction noise exempt hours (i.e., 6:00 am to 9:00 pm on weekdays and 8:00 am to 9:00 pm on weekends).
 - For operations associated with Alternative 1 (Rail Transportation), the analysis indicated that while there will be noticeable increases in traffic noise (10 or more A-weighted decibels [dBA]) at the intersections of Dairy Road/Adohr Road, Dairy Road/Stockdale Highway, Tupman Road/Station Road and Stockdale Highway/Morris Road, none of the 48 intersection legs have both (1) an increase of 3 dBA or more in day-night average sound level (L_{dn})/community noise equivalent level (CNEL) due to the introduction of Project-related traffic and (2) a resulting noise level of 65 dBA L_{dn} /CNEL or greater due to the introduction of Project-related traffic. Therefore, potential noise impacts due to traffic associated with Alternative 1 are considered to be less than significant.
 - For operations associated with Alternative 2 (Truck Transportation), traffic noise impacts at certain locations are potentially significant without mitigation. The Applicant's proposed mitigation measure NOISE-2, stated that during design, the Project will evaluate the following measures to reduce noise levels during operations: reduced speeds of trucks, soundwalls at the impacted noise-sensitive receptors, or roadway improvements along impacted intersection legs.

Therefore, with implementation of mitigation measure NOISE-2, potential noise impacts due to traffic associated with Alternative 2 are considered to be less than significant.

3. Lowering of the water table (i.e., drawdown) is only expected to extend 1.4 miles to the north, south, and east, and approximately 2.5 miles to the west of the BVWSD well field. Beyond those distances, drawdown is negligible. The drawdown effects of BVWSD well field pumping are more fully explained in Amended AFC Section 5.12.2.2 Water Level Drawdown Effects – Process Water Supply (pp. 5.14-29 and 30).

During Project operations, the effects of pumping from the proposed BVWSD well field will be monitored by BVWSD as part of their groundwater monitoring plan, as presented in Appendix B of the Final Environmental Impact Report for the BVWSD Buena Vista Water Management Program dated December 2009.

As stated in the Amended AFC Section 5.14.4.1 Mitigation – Groundwater, the Project will have no significant impact on the depth to water in the aquifer, or on water resources as a result of the drawdown caused by pumping of the aquifer system. Furthermore, the Project will not have any negative effect on the quality of groundwater in the area. In fact, the Project will have a net positive effect on groundwater quality and agricultural activity. The process water supply to the Project will consist of brackish groundwater. The BVWSD is a local water district with shallow brackish groundwater sources that are generally not suitable for agricultural or drinking use without treatment. The brackish groundwater is found in the local aquifer and causes negative impacts on agriculture. Project consumption of the brackish groundwater will beneficially affect local groundwater quality and agriculture consistent with the BVWSD Groundwater Management Plan.

No mitigation is required for groundwater resources other than monitoring and operating plans that BVWSD will require to ensure that groundwater of low quality would be used for the HECA process water supply.

4. The HECA Project will use existing roads for Project construction and operational traffic. Amended AFC Section 5.10, Traffic and Transportation, presents an evaluation of potential impacts to roadways and intersections due to Project-related construction and operational traffic. Mitigation measure TRA-1 Roadway Improvements, as described in Amended AFC Section 5.10.4.1, indicates that the Applicant will coordinate with Kern County to ensure that potential roadway impacts associated with project construction are less than significant. As indicated in the response to CEC Data Request A157, the Applicant met with Kern County Roads Department staff on September 6, 2012, to solicit input and comments regarding potential project impacts to the roadway circulation system. The County will complete Traffic Index calculations to determine roadway design specifications to handle project construction and operational traffic. The Applicant will contribute funding towards the cost of improvements attributable to Project construction and operational traffic.

DATA REQUEST

31. Please answer the questions posed directly and indirectly by this letter signed by 15 residents of Kern County:

- (1) What gifts or donations has HECA made so far to the residents or other entities of Kern County?**
- (2) Is there any possible danger, however small, to the water in the California Aqueduct or to the aqueduct itself from the HECA project?**
- (3) What restrictions, if any, will be placed on Occidental's use of the CO₂ delivered by HECA?**
- (4) What is the impact of removing the projected volume of pumped water from agricultural water tables for the next 30 years if the area receives less than normal rainfall and snow melt runoff for most of that time?**
- (5) Will HECA pay for building of new roads in the area to the highest standards possible?**
- (6) Does Kern County or even the State of California need the electricity from this project? Does the project come close to meeting the GHG emission goals from power production in 2050?**
- (7) Is it a criminal act to knowingly endanger the health and quality of life for an area like Buttonwillow or Kern County?**
- (8) Where in Kern County is there currently zoning for a chemical plant of the type proposed for HECA?**

RESPONSE

1. HECA and its owner SCS Energy take seriously their obligations to be good corporate citizens and to support the communities that they are a part of. Since acquiring HECA, SCS has provided contributions to the following non-profit organizations:

- Bakersfield Homeless Center
- Bakersfield Rescue Mission
- Buttonwillow Healthy Start Collaborative
- Buttonwillow School Parents Club
- Community Action Partnership of Kern County
- Elk Hills School for Tupman Park Fund
- Golden Empire Gleaners
- Kern Adult Literacy Council
- West Side Community Resource in Taft

In addition, SCS, on behalf of HECA, has sponsored the following events and programs:

- Buttonwillow Fall Farm Festival
- Kern Green Awards
- KEDC Business Summit

- KEDC Energy Summit

In addition, SCS, on behalf of HECA, is a member of the following organizations:

- Bakersfield Chamber of Commerce
- Buttonwillow Chamber of Commerce
- KernTax
- Kern Economic Development Corporation
- California CCS Coalition

All contributions have been announced publically, and/or reported in the HECA status report to CEC, or otherwise acknowledged by the recipient organization.

2. The HECA Project will not affect the water in the California Aqueduct or the aqueduct itself.

The HECA Project site is approximately 1,900 feet north of the California Aqueduct. The Project will implement best management practices, including proper storage of hazardous materials and spill control measures, to prevent the offsite discharge of potential contaminants. There will be no discharge of storm water runoff from the Project Site into the aqueduct.

Horizontal directional drilling will be used to install the CO₂ pipeline under the California Aqueduct. Measures will be implemented to minimize risks associated with Horizontal directional drilling activities. This includes providing a minimum setback from the canal for drilling equipment and removing spent fluids from the drill areas for safe disposal and to prevent potential discharge of pollutants into the waterway. In addition, soil erosion control measures to prevent runoff and impacts to water quality would be implemented. The construction under the aqueduct will comply with all applicable state and federal regulations (including California Department of Fish and Game and California Department of Water Resources).

3. HECA will have a contract with OEHI which will require that all delivered CO₂ be used for EOR in accordance with OEHI's MRV plan and permits.
4. There is no significant impact expected in association with BVWSD well field operation and removal of water from the local aquifer system even under conditions of less than normal surface water recharge. As summarized in Amended AFC Section 5.14.2.1 Effect on Subbasin Water Balance – Process Water Supply (pp. 5.14-28&29):

The BVWSD has historically been able to achieve a positive groundwater balance. Water levels in the BVWSD Buttonwillow Service Area aquifer (which includes the proposed water supply well field) have and are expected to continue to rise in response to BVWSD recharge and replenishment operations due to the partially-isolated nature of the Buttonwillow Subbasin in which BVWSD is located.

Aquifer storage is approximately 7,000,000 and annual pumping for the Project is expected to average 7,430 AFY with a maximum at 7,500 AFY per the HECA/BVWSD agreement. This amounts to 0.1 percent of total aquifer storage on an annual basis. The Project's pumping volume would be offset by recharge from BVWSD's normal recharge and replenishment operations that maintain or increase overall aquifer storage. BVWSD has

historically maintained a positive water balance and expects to maintain a positive balance of approximately 25,000 AFY in the future.

5. The HECA Project will use existing roads for Project construction and operational traffic. Therefore, no new roads will need to be constructed for the Project (see also response to Data Request 30 [4]).
6. The Project will provide dependable, low-carbon electricity to help meet future power needs and to help “back-up” intermittent renewable power sources, such as wind and solar, to support a reliable power grid. Furthermore, the Project will be among the cleanest of any commercial solid fuel power plant built or under construction and will significantly exceed the emission reduction targets for 2050 established under California Executive Order 2-21-09.
7. Some laws regarding the protection of public health and the environment do provide for criminal sanctions in the event of non-compliance. The extensive review process that is currently being conducted by the CEC, with input from all relevant stakeholders, and the Conditions of Certification that will be imposed on the HECA Project based on this review process, will ensure that the HECA Project does not endanger the public health or quality of life in the communities surrounding the Project.
8. The Applicant disagrees with the commenter’s characterization of the HECA Project as a “chemical plant.” The HECA Project is a power generating facility with a fully integrated fertilizer manufacturing operation. While the production of power and fertilizer involves certain chemical processes, this does not make the Project a “chemical plant.”

The Kern County Zoning Ordinance sets out permitted land uses for the Exclusive Agriculture (A) and other zoning districts in unincorporated areas of Kern County. It is included in Title 19 of the Kern County Code and is available online at <http://www.co.kern.ca.us/planning/pdfs/KCZOJul12.pdf>.

The components of the HECA Project are fully integrated; chemical processes and the Manufacturing Complex cannot be practically separated from the power generating component of the Project. The Project is consistent with the purpose of the Exclusive Agriculture (A) zoning district because the Project Site is included in Kern County’s Exclusive Agriculture (A) zoning district. Electrical Power Generating Plants and Fertilizer Manufacture and Storage for Agricultural Use Only are permitted uses with a Conditional Use Permit (CUP) in the Exclusive Agriculture (A) zoning district under Kern County Zoning Ordinance § 19.12.030.G with a CUP. The CUP for the Project will be subsumed within the CEC’s permitting process. As indicated in the Applicant’s response to CEC Data Request A103, including the attached July 31, 2012, letter to the County, HECA will restrict manufacturing to “fertilizer manufacture and storage for agricultural use only.” Therefore, the Applicant believes that the HECA Project as currently proposed complies with the current zoning applicable to the Project Site, and is in the process seeking concurrence from the County.

There are numerous other properties throughout the County with the same zoning. In the last 10 years, a number of energy facilities were found to be consistent with the purpose of Kern County’s Exclusive Agriculture (A) zoning district and were permitted by the CEC, including the La Paloma Generating Project, Pastoria Energy Facility, Sunrise Cogeneration and Power Project, and Western Midway Sunset Power Project. The Project’s consistency with applicable zoning is evaluated further in Section 5.4 (Land Use and Agriculture) of the Amended AFC.

DATA REQUEST

- 32. Please answer the implied questions below in this letter from 8 people who work in the area of this HECA proposal:**
- (1) Will HECA produce any chemicals or toxic substances that could be considered dangerous if nearby workers were exposed to them?**
 - (2) Will HECA potentially make the air in the area surrounding the site worse than it is currently?**
 - (3) Should people be afraid to work day after day for years in fields across the street from the HECA site once it is operating?**

RESPONSE

1. The risk of an accidental release of hazardous materials would be minimized through design features incorporated into the HECA Project, adherence to applicable codes, and the implementation of applicable mitigation measures. As described in Amended AFC Section 5.12, impacts to local workers, the nearest sensitive receptor, or the town of Tupman associated with the accidental release of hazardous materials would be less than significant. HECA has evaluated scenarios for potential chemical releases at the Project Site and has assumed very conservative conditions (see the response to Data Request 18 (2) and Amended AFC Section 5.12 and Appendix K for descriptions of the release scenarios).
2. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project. Modeling has been performed using models and conservative assumptions approved by the U.S. EPA. The HRA analyzed the potential impacts from toxic air contaminants, and showed that predicted impacts are less than the significance thresholds, which are protective of public health. The criteria pollutant modeling results, including ambient background concentrations, show that the Project will not cause a violation of any state or federal AAQS, and will not significantly contribute to the existing violations of the PM standards. In addition all of the Project's operational emissions will be offset to ensure a net air quality benefit. The primary AAQS are designed to protect public health, including sensitive groups like asthmatics, children and the elderly; the secondary AAQS are designed to protect the public welfare, which includes decreased visibility and damage to animals, crops, vegetation and buildings. In addition, as demonstrated in the Authority to Construct Permit Application, modeled impacts were below the U.S. EPA screening threshold levels at which scientific studies have shown a potential for negative impacts on soils and vegetation, and thus below the levels at which adverse effects to vegetation or soils occur. Therefore, because modeled impacts are predicted to: i) be less than the most stringent AAQS; ii) not significantly contribute to existing PM violations; iii) be below the HRA thresholds; or iv) be below the soils and vegetation thresholds; neither public health nor the public welfare will be adversely impacted by the Project. In addition, Project emissions will be offset with emission reduction credits.
3. See the response to AIR Data Request 32 (2).

DATA REQUEST

33. Please answer the following questions implied by this letter from an unknown resident of Kern County:

- (1) Is the promise of jobs and tax money blinding officials in Kern County like supporters of the project, such as Supervisor Ray Watson and Mayor Harvey Hall and Michael Turnipseed, to the negative effects of this project? Which negative effects from HECA are they saying are worth the added economic activity?**
- (2) Will any mercury in any amount and at any time drift over nearby farmland or towards local schools while this project is operating?**
- (3) In what ways have HECA officials and staff misinformed and under-informed the public?**

RESPONSE

1. The HECA Project will be a state of- the-art facility that will produce electricity and other useful products for California, and that will have lower carbon footprint compared to power and products produced from more traditional fossil fuel facilities including natural gas. HECA will bring numerous benefits to Kern County and has the opportunity to make Kern County a global leader in carbon mitigation and global warming solutions for years to come. The many benefits of the HECA Project are further detailed in the Amended AFC Section 2.1.4.
2. The Applicant has performed extensive air quality and public health modeling of emissions from the HECA Project. The HRA analyzed the potential impacts from mercury and other toxic air contaminants, and showed that predicted impacts are less than the significance thresholds. These HRA thresholds are protective of public health.
3. HECA is committed to public outreach and education regarding the Project. As an example, HECA has an Information Center located in Buttonwillow that is open daily to the public for informational purposes. Additionally, HECA publishes a periodic newsletter with project details and information that is delivered to every resident of Buttonwillow and Tupman. In response to public questions, the CEC has scheduled a series of staff workshops with input from the public and interveners, in addition to a recent workshop conducted in Bakersfield with a designated “public comment” section during the evening hours to accommodate local citizens.

Furthermore, the CEC is conducting their own independent analysis of potential impacts from the Project. The HECA record before the CEC is publicly available for review and is available at the following website: http://www.energy.ca.gov/sitingcases/hydrogen_energy/documents/index.html.

DATA REQUEST

34. Please address these questions from Ms. Shepherd:

- (1) How is farmland in a remote area far from major roads suitable for a project like HECA?**
- (2) Can HECA use more water than it is currently proposing? What steps would it have to go through to start using more water?**
- (3) Does the CEC really have to listen to the concerns of local residents who are neither intervenors nor public officials? What evidence is there that the CEC listens to these concerns?**

RESPONSE

1. As discussed in Amended AFC Section 6.3, the Applicant conducted an extensive alternatives analysis that specifically considered several alternative sites. However, the alternative sites were rejected for various reasons, including: (1) topography, (2) distance from the proposed CO₂ custody transfer point, (3) lengths of linear facilities, (4) sensitive environmental receptors, and/or (5) land availability. These sites and their relevant information are presented in Table 6-1, Alternative Sites Reviewed and Status, of the Amended AFC. Based on this analysis, the Project Site was selected. No alternative sites were identified that were environmentally superior to the Project Site, and that would allow attainment of most of the Project objectives.
2. HECA water usage is limited by the water contract with BVWSD and the design capacity of the plant, as well as the amount that is permitted through the CEC process. The water contract with BVWSD is for 7,500 acre-feet of water per year. The average yearly water consumption of the plant matches the water supply contract. The steps required for using more water would include obtaining a contract for additional water and modifying the plant equipment to increase the design capacity of the plant. Increasing the plant water usage above the contracted rate would require a contract modification by BVWSD consistent with the water supply and obtaining an amendment approval from the CEC.
3. Regulations governing the conduct of CEC proceedings include numerous provisions to ensure the ability of local residents to participate in the proceedings and have their concerns heard by the CEC. Title 20, Section 1711 of the California Code of Regulations sets forth the rights of the public to be heard, and provides as follows: “Any person interested in a notice or application proceeding shall be given an opportunity to make oral or written comments on any relevant matter at any hearing or information meeting held on a notice or an application. The presiding member may specify such conditions on the right to comment as are reasonably necessary for the orderly conduct of the proceeding, and may request that written comments be submitted in advance of any hearing.” The requirement that all proceedings occur in a public forum and with advance public notice also ensures that the public has an opportunity to participate. As evidence that the CEC staff has listened to concerns raised by the public, it frequently includes responses to public comments in its written analysis of the project, and the staff has indicated that it intended to do so in connection with the HECA Project.

DATA REQUEST

35. Please answer these implied questions from local resident Mr. Hech:

- (1) How will the tall smoke stacks impact the view and ambience of this farming area?**
- (2) If someone is afraid that a project is impacting their air and water and they know the traffic will impact their daily lives, what can you tell them to ease their concerns?**

RESPONSE

1. Impacts to visual resources from the HECA Project, including the stacks, are evaluated in Section 5.11 (Visual Resources) of the Amended AFC. Views of the Project were simulated from Key Observation Points (KOP) 1 through KOP 6, as shown on Figures 5.11-15 through 5.11-26 of the Amended AFC. The simulations served to provide a representative sample of how the Project might look from specific key viewing locations. As stated in the Amended AFC, potential impacts to visual resources at the KOPs will be reduced to less than significant levels with implementation of Project design features and mitigation measures. The Project has included project design features developed to minimize visual impacts, which include: (1) painting structures, stacks, buildings, and storage tanks to blend in with the existing visual conditions; (2) providing colors that provide subtle variations and contrast to blend more naturally with the natural setting; and (3) using nonreflective elements where practical. As stated in the Amended AFC, while the Project is expected to change the existing character of the site, significant impacts to the scenic attractiveness of the Visual Sphere of Influence as a whole visual resources are not anticipated due to existing industrial and agricultural activities.
2. The CEC siting process is designed to analyze all potential impacts to local residents and the environment from the Project. The Amended AFC evaluates and explains all of the potential Project impacts and focuses on sixteen separate areas of impact including, Air Quality, Biological Resources, Cultural Resources, Public Health, Noise, Traffic and Transportation, among others. The CEC is currently reviewing the Amended AFC and conducting its own independent analysis of Project impacts.

Should the CEC approve the HECA Project, the CEC staff will implement a compliance monitoring program to ensure that HECA is constructed and operated according to the Conditions of Certification issued by the CEC. HECA will be responsible for providing mitigation for any impacts that are deemed significant and such mitigation will be approved and imposed by the CEC.

DATA REQUEST

36. Please answer these implied questions from Ms. Wilson, a local resident:

- (1) If there was a slight chance that either gases like CO₂, or chemicals like mercury, ammonia, and other toxics, were in an area and might someday escape that area, is a person living nearby justified in being afraid or is there really no danger at all from these things?**
- (2) If there is an accident where some of these things mentioned above do escape, is there the potential they might kill someone like a small child?**

RESPONSE

1. The risk of an accidental release of hazardous materials would be minimized through design features incorporated into the HECA Project, adherence to applicable codes, and the implementation of applicable mitigation measures. As described in Amended AFC Section 5.12 and Appendix K, impacts to the nearest sensitive receptor and the town of Tupman associated with the accidental release of hazardous materials would be less than significant. HECA has evaluated release scenarios for potential chemical releases at the Project Site and has assumed very conservative conditions (see the response to Data Request 18 (2), Amended AFC Section 5.12 and Appendix K for descriptions of release scenarios). The potential for impacts associated with CO₂ venting was also evaluated (see Amended AFC Section 5.7). The results of these evaluations demonstrate no significant impact to the surrounding area.

In regard to mercury, because HECA is an integrated gasification combined cycle plant, mercury is removed via activated carbon beds upstream of the gas turbine. The spent activated carbon beds are shipped off site and disposed of in accordance with all applicable regulations as detailed in Amended AFC Section 5.13.

2. The OCA for release scenarios presented in Amended AFC Section 5.12 and Appendix K demonstrates that in the highly unlikely event of a release, unsafe concentrations of gases would not extend beyond the HECA Project Site (see also the response to Data Request 18 [2] and 20 [6]).

DATA REQUEST

37. Please answer this question for Ms. Mincher:

- (1) How do you assure her that despite the presence of many dangerous and deadly chemicals and substances at the HECA project and in the trucks traveling to and from the project, that her relatives in Tupman are totally safe and have nothing to worry about?**

RESPONSE

1. The risk of an accidental release of hazardous materials would be minimized through design features incorporated into the HECA Project, adherence to applicable codes, and the implementation of applicable mitigation measures. As described in Amended AFC Section 5.12 and Appendix K, there would be no impacts to the nearest sensitive receptor and the town of Tupman associated with the accidental release of hazardous materials. HECA has evaluated release scenarios for potential chemical releases at the Project Site and has assumed very conservative conditions (see the response to Data Request 18 (2), Amended AFC Section 5.12 and Appendix K for descriptions of release scenarios). The results of these evaluations demonstrate no significant impact.

Hazardous materials will be transported in Department of Transportation approved containers driven by trained drivers according to the regulations specified in the Department of Transportation Pipeline and Hazardous Materials Safety Administration Hazardous Materials Regulations. The major suppliers of project-related hazardous materials are located in the City of Bakersfield, east of the Project Site. As a pro-active measure, HECA does not plan to use State Route 119 as the primary hazardous materials route during construction and operations activities, thereby minimizing potential impacts on the community of Tupman (see Amended AFC Section 5.12.3).

DATA REQUEST

38. Please answer this message from Mr. O'Reilly:

- (1) The CEC was very rude to the public at the July 12 meeting in Tupman and did not allow the public to fully express their concerns and ask all of their questions. Does HECA agree with this assessment? What does HECA propose as a remedy for this incident?**

RESPONSE

1. The main purpose of the Informational Hearing and Site Visit, which was held on July 12, was to provide the public with information about the Project, the CEC review process, and the ways in which the public can participate in the process. As a result, this particular type of public meeting tends to be heavy on presentations from the Applicant and the CEC, which can sometimes limit the time available for public comment.

Other types of public meetings held by the CEC are directed more at providing the public with an opportunity to ask questions and express concerns. Since the meeting on July 12, the CEC has held numerous public meetings and workshops at which the public and interveners have been provided an opportunity to speak, including a recent workshop conducted in Bakersfield with a designated “public comment” section during the evening hours to accommodate local citizens.

HECA is committed to public outreach and education regarding HECA. As an example, HECA has an Information Center located in Buttonwillow that is open daily to the public for informational purposes. Additionally, HECA publishes a periodic newsletter with project details and information that is delivered to every resident of Buttonwillow and Tupman.

DATA REQUEST

39. Please answer the following questions for Mr. Romanini:

- (1) If air quality standards are tightened further as proposed by the EPA and many health scientists, how could HECA be justified in such a polluted place as the southern end of the San Joaquin Valley?**
- (2) Is it fair to do a GHG reduction project at the expense of making the air quality worse in what is already the most polluted place in the nation?**
- (3) Is the loss of farmland and usable irrigation water a responsible action given the lack of food and usable water in the world?**
- (4) Please answer the four questions asked by Mr. Romanini at the end of his letter.**
 - Q1: How many trucks will be arriving and departing from this facility daily at full operation?**
 - Q2: Please show the total tons of emissions the plant will generate at full operation.**
 - Q3: Please show from the point of origination, total truck and rail emissions during full operation. All of these seem to be ambiguous and moving numbers.**
 - Q4: Finally, who is the neutral oversight party in regards to emissions and what enforcement powers will they possess?**

RESPONSE

1. HECA will ensure that air quality in the San Joaquin Valley will not worsen, by demonstrating that the Project will conform with the national AAQS. SJVAPCD has prepared air quality management plans to map out how the nonattainment pollutants, ozone, and PM_{2.5} emissions in the valley will decrease with time, to comply with these national AAQS. SJVAPCD has developed an ozone and a PM_{2.5} SIP, which allows for sustainable growth simultaneous with improving air quality. HECA emissions will comply with these SIPs, ensuring that air quality will not worsen in the San Joaquin Valley.
2. The Project is designed with state-of-the-art emission control technology to achieve minimal air emissions through the use of Best Available Control Technology. Moreover, as detailed in the Authority to Construct permit application (pg. 4-22), the modeled impacts due to the Project emissions, in combination with conservative background concentrations, will not cause a violation of any California Ambient Air Quality Standards or National Ambient Air Quality Standards, and will not significantly contribute to the existing violations of the federal and state standards for particulate matter 10 microns in diameter or less (PM₁₀) and PM_{2.5}. In addition, all of the Project's operational emissions of PM₁₀, NO_x, VOCs, and SO_x will be fully offset to ensure a net air quality benefit.
3. Please see the responses to AIR Data Request 12 for information relating to farmland conversion at the Project Site and Data Request 27 (5) for information relating to brackish water usage.

4. Q1: Under Alternative 1 (Rail Transportation) an average of 115 trucks per day will access the Project Site. Under Alternative 2 (Truck Transportation) an average of 381 trucks per day will access the Project Site (see Amended AFC Appendix E-5).

Q2: Total criteria pollutant emissions from HECA at full operation are presented in Table 5.1-14 of the Amended AFC.

Q3: Total transportation emissions are presented in the Applicant's General Conformity Evaluation, docketed with the CEC on September 18, 2012. Please see Table 5 for emissions from Alternative 1, and Table 6 for emissions from Alternative 2.

Q4: The CEC and the SJVAPCD will enforce compliance with all air quality regulations and permit conditions.

DATA REQUEST

- 40. AIR has a follow-up question [referencing previous response to AIR Data Request 7]: So HECA could give the captured CO₂ to me and I could release it into the air and it would not affect the calculation for the Emission Performance Standard?**

RESPONSE

HECA will enter into a contract with OEHI under which OEHI will be required to purchase all of the captured CO₂ from the project and use all of the CO₂ for EOR and permanently sequestered. Under this contract, this CO₂ will not be released to the atmosphere; therefore, the captured CO₂ emissions are not included in the California SB1368 emission performance standard.

DATA REQUEST

- 41. [Referencing the response to AIR Data Request 10] This is a different excuse than what was provided earlier when the applicant said the produced water was too brackish. Why will this produced water not be used first (as available) and well water used as a backup?**

RESPONSE

The Applicant requests additional time to respond to this request.

DATA REQUEST

- 42. Here is AIR's follow-up question and comments [referencing previous response to AIR Data Request 8]:**

The total NOx emissions and PM emissions for HECA in the table do not include all such emissions from the project. The intent of the question is to look at all emissions from HECA compared to all emissions from Avenal and prorate these emissions per MW-hr produced. Please do the comparison again with these comments in mind.

RESPONSE

It would not be reasonable to compare HECA's manufacturing plus power production emissions against only Avenal's power production emissions. For this reason, the comparison of emissions from HECA's turbine to Avenal's turbines remains appropriate.



**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
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***AMENDED APPLICATION FOR CERTIFICATION FOR THE
HYDROGEN ENERGY CALIFORNIA PROJECT***

**Docket No. 08-AFC-08A
(Revised 11/20/12)**

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DECLARATION OF SERVICE

I, Dale Shileikis, declare that on November 30, 2012, I served and filed a copy of the attached Responses to AIR Data Requests – Nos. 12 through 42, dated November, 2012. This document is accompanied by the most recent Proof of Service list, located on the web page for this project at:

http://www.energy.ca.gov/sitingcases/hydrogen_energy/index.html

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit or Chief Counsel, as appropriate, in the following manner:

(Check all that Apply)

For service to all other parties:

- ☒ Served electronically to all e-mail addresses on the Proof of Service list;
- ☐ Served by delivering on this date, either personally, or for mailing with the U.S. Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses marked "hard copy required" or where no e-mail address is provided.

AND

For filing with the Docket Unit at the Energy Commission:

- ☒ by sending one electronic copy to the e-mail address below (preferred method); OR
- ☐ by depositing an original and 12 paper copies in the mail with the U.S. Postal Service with first class postage thereon fully prepaid, as follows:

CALIFORNIA ENERGY COMMISSION – DOCKET UNIT

Attn: Docket No. 08-AFC-08A

1516 Ninth Street, MS-4

Sacramento, CA 95814-5512

docket@energy.ca.gov

OR, if filing a Petition for Reconsideration of Decision or Order pursuant to Title 20, § 1720:

- ☐ Served by delivering on this date one electronic copy by e-mail, and an original paper copy to the Chief Counsel¹ at the following address, either personally, or for mailing with the U.S. Postal Service with first class postage thereon fully prepaid:

California Energy Commission

Michael J. Levy, Chief Counsel

1516 Ninth Street MS-14

Sacramento, CA 95814

michael.levy@energy.ca.gov

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.



¹ This Proof of Service form is not appropriate for the use when filing a document with the Chief Counsel under Title 20, sections 1231 (Complaint and Request for Investigation) or 2506 (Petition for Inspection or Copying of Confidential Records). The Public Advisor can answer any questions related to filing under these sections.