Responses to CEC Data Requests Set Three: Nos. 179, 210, 212-215

Revised Application for Certification (08-AFC-8)

for

HYDROGEN ENERGY CALIFORNIA

Kern County, California

December 2010

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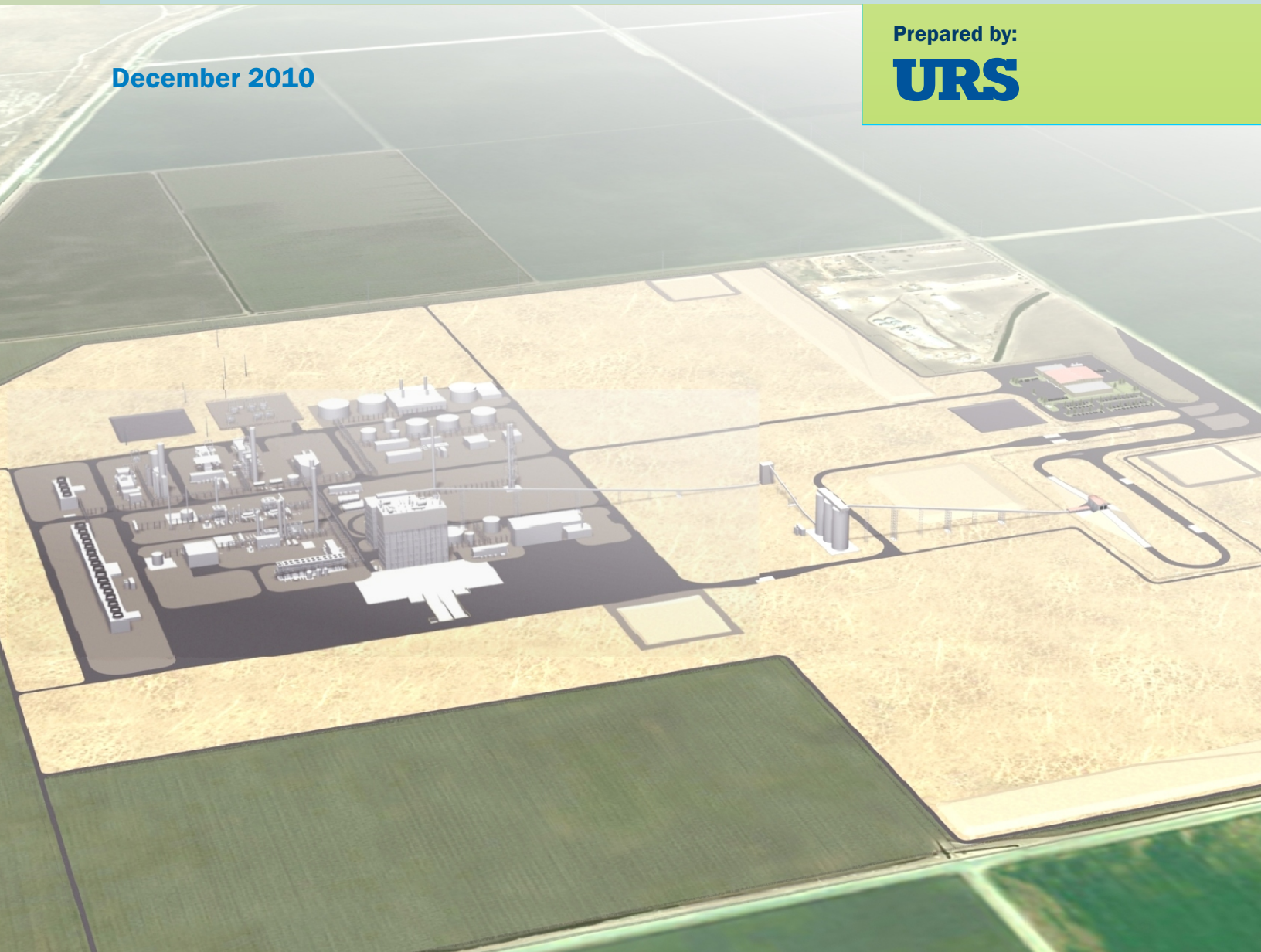
Prepared for:
Hydrogen Energy California LLC

hydrogen energy

Submitted to:
California Energy Commission

Prepared by:
URS



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LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

AFC	Application for Certification
CEC	California Energy Commission
CIMIS	California Irrigation Management Information System
DWR	California Department of Water Resources
FEMA	Federal Emergency Management Agency
HECA	Hydrogen Energy California
ROWD	Report of Waste Discharge
ZLD	zero liquid discharge

Technical Area: Greenhouse Gases
Authors: William Walters

BACKGROUND

Sequestration Agreement

Staff needs confirmation of any agreement between Hydrogen Energy International LLC and Occidental Petroleum regarding the enhanced oil recovery (EOR) and CO_2 sequestration in order to complete our findings regarding GHG impacts. Without such an agreement the project's proposed EOR and CO_2 sequestration does not have adequate certainty for staff to include the CO_2 sequestration in the GHG emissions estimate for the project.

DATA REQUEST

179. Please provide a copy of the agreement between Hydrogen Energy International LLC and Occidental Petroleum that provides assurance that the Occidental Petroleum Enhanced Oil Recovery (EOR) project-related action would be completed, that Occidental Petroleum would be contractually required to accept responsibility for and inject/sequester the HECA project's separated CO_2 emissions stream; and that outlines the roles of each party regarding CO_2 sequestration and ownership/liability for this project.

RESPONSE

The existing Letter of Intent between Hydrogen Energy California LLC (HECA) and Occidental of Elk Hills, Inc., has been submitted separately under a request for confidential designation.

Technical Area: Soil and Water Resources (b)
Authors: Marylou Taylor

BACKGROUND

Feedstock Storage Area

The applicant proposes to store petroleum coke and coal at inactive feedstock storage areas on the site. No chemical analytical characterization of this material or potential runoff that could be generated from this material has been provided in the AFC. Staff is concerned that potentially contaminated discharges may originate from the inactive feedstock storage areas. Staff notes that applicant has proposed clay-lined and impermeable containment areas for feedstock storage areas but it is not clear why these are proposed or if they are sufficient to prevent migration of toxic and non-conventional pollutants.

DATA REQUEST

210. Please provide a complete characterization of wastes that could be generated during the above-described activities. Please provide all the information necessary for compliance with RWQCB requirements for onsite material storage and disposal systems (i.e., coal, petroleum coke and ash containments). The information provided should include copies of any ROWDs or Engineering Reports required by the RWQCB.

RESPONSE

Petroleum Coke and Coal

Petroleum coke (petcoke) and coal are feedstock materials that will be stored on site in two modes, defined below. These materials do not fit the definitions presented in California Water Code Section 13050: "'waste' includes sewage and any and all other waste substances, liquid, solid, ... from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal."

The active supply of feedstock will be stored in three 5,000-ton, completely enclosed, cone-bottom silos. To minimize the potential for disruption of HECA Project operations due to interruptions in feedstock delivery, HECA will have an inactive feedstock pile that will provide an approximately 30-day supply of petcoke or coal/petcoke blend. The location of this inactive pile is presented on Figure 2-42 in Chapter 2 (Project Description) of the Revised Application for Certification (AFC).

With regard to the request for chemical analytical characterization of the petcoke and coal, the Applicant provided typical composition information in Tables 2-4 and 2-5 in Chapter 2 (Project Description) of the Revised AFC. The precise chemical composition of the HECA feedstock will vary with the specific blend of coal and petcoke that will be used during a given operational phase or period.

Gasification Solids

The Applicant assumes that the California Energy Commission's (CEC's) references to "disposal systems" and "ash containments" in the Data Request are intended to refer to HECA's temporary onsite storage of the gasification solids. The gasification solids are currently anticipated to be a product that will be sold for reuse, not classified as a waste. If the gasification solids are not sold or reused, they are anticipated to be characterized as

nonhazardous waste. Regarding the chemical analytical characterization of the gasification solids, the Applicant provided the anticipated compositional range of constituents in Table 2-10 in Chapter 2 (Project Description) of the Revised AFC. More precise chemical composition data will not become available until the gasification solids are generated during operation.

As the Applicant described in the response to CEC Data Request 116, the gasification solids are dewatered, carbon is recovered for onsite recycling, and the remaining solids are accumulated for offsite disposal. Upon exiting the gasifier, the liquids and carbon are recovered and returned to the slurry preparation area for reuse. The remaining dried gasification solids will be retained in onsite storage bins or containers until sufficient quantities are accumulated to facilitate their economical transportation to the designated offsite location.

No wastes would be generated during the temporary storage of the gasification solids.

HECA Design and Regulatory Analysis

The Regional Water Quality Control Board's requirements (i.e., Reports of Waste Discharge [ROWDs] or Engineering Reports) are specifically for discharges of waste that could affect the quality of the waters of the state, other than into a community sewer system (see California Water Code Section 13260). The HECA Project has been designed as a project that will have zero liquid discharge (ZLD) off site. No wastes of any type will be disposed to waters of the state. As such, a ROWD would not be required for the onsite material storage or "disposal systems" of the HECA Project.

As described in various sections of the Revised AFC and in the subsequent responses to CEC Data Requests, the inactive feedstock storage area and the area where the gasification solids may be temporarily stored will be designed to prevent contact with and discharge to surface water and groundwater. The following paragraphs describe key Project Site characteristics and design features.

The inactive feedstock storage pile will be covered with soil and vegetation. While the primary purpose of this cover material is to minimize oxidation of the feedstock, it will also provide protection from the wind and the rain, thereby minimizing leachate formation from rainfall.

As discussed in Section 5.14 (Water Resources) of the Revised AFC, precipitation in the area of the Project Site is characterized by long, dry summers and intermittent wet periods during the winter. Based on the 69-year record of precipitation, the average annual precipitation is 6.23 inches (Western Regional Climatic Center; Bakersfield WSO Airport, Station Number 040442, Period of Record October 1, 1937 to December 31, 2006). Furthermore, total annual evapotranspiration is 57.9 inches (CIMIS, 2010).

Although the possibility of the formation of leachate caused by rainfall infiltration has been minimized through the use of a soil and vegetation cover, the inactive feedstock pile will also be equipped with a clay liner and a tile drain system that will minimize the migration of any leachate that might be formed from rainfall infiltration or from irrigation of the vegetative cover. As described in the revised Draft Drainage, Erosion, and Sedimentation Control Plan, which was provided as Attachment 202-1 in the recently submitted response to CEC Data Request 202:

> "Based on the preliminary geotechnical investigation report in Appendix M of the HECA AFC submittal, the inactive feedstock storage area is located on a low-permeability sandy silt/clayey silt (CPT-3) layer of 6 feet. The top 12 inches will be excavated, treated for moisture content, and recompacted to 90 percent relative density, creating an impermeable surface that will prevent seepage from the inactive feedstock pile. The feedstock pile will be covered. Surface runoff in contact with the feedstock pile and

> adjacent service road will be intercepted by a network of concrete swales surrounding the inactive feedstock storage area and conveyed to a sump... A tile drain system will intercept and convey any seepage of water through the pile to a high-density polyethylene-lined sump. This will ensure that no stagnant water will seep through the bottom of the inactive feedstock storage area to the subsurface."

As shown on Revised AFC Figure 2-42, the inactive feedstock storage area will have a clay layer that will act as a barrier to prevent migration of any potential leachate to the underlying deep groundwater. The actual thickness of the clay layer and need for additional geotextile layers, if any, will be determined during detailed design. However, the minimum thickness of the clay layer would be one foot.

The Project's proposed storm drainage system is a ZLD system that will collect and treat all stormwater that may come into contact with potential pollutants onsite. Stormwater from the inactive feedstock storage area and the area where the gasification solids may be temporarily stored will be treated at the water treatment plant and will be reused as makeup water for the cooling water system or process water for maintenance and operation.

The Project Site is not located in a floodplain, and the depth to groundwater underlying the site is very deep. As discussed in Section 5.14 (Water Resources) of the Revised AFC, the Federal Emergency Management Agency Flood Insurance Rate Maps indicate the Project Site is not located within an area identified as having flood hazards or shallow groundwater (FEMA, 2008). During the geotechnical investigation performed for the Revised AFC (see Appendix P of the Revised AFC), borings and cone penetrometer tests were conducted at various locations on the Project Site. The three cone penetrometer sites that were nearest to the future location of the inactive feedstock storage pile extended to depths of 60 to 65 feet below ground surface and did not encounter groundwater. The lack of shallow groundwater is further confirmed by regional data from the Department of Water Resources, which report water table elevations ranging from approximately elevation 180 to 250 above mean sea level (msl), which corresponds to approximately 40 to 110 feet below grade (DWR, 2000-2006).

For all of these reasons, there will be no discharge of wastes or potentially contaminated water from the Project's inactive feedstock storage area and the area where the gasification solids may be temporarily stored to waters of the state that would require a ROWD.

References

CIMIS (California Irrigation Management Information System), 2010. Reference Evapotranspiration Zones, Zone 15 [available at http://wwwcimis.water.ca.gov/cimis/pdf/CimisRef EvapZones.pdf].

DWR (California Department of Water Resources), 2000-2006. Kern Groundwater Basin Spring 2000-2006, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer [available at http://www.sjd.water.ca.gov/groundwater/basin_maps/index.cfm].

FEMA (Federal Emergency Management Agency), 2008. Flood Insurance Rate Map, Kern County, California and Incorporated Areas, Community Panel Numbers 06029C2225E and 06029C2250E. Effective Date September 26, 2008. http://msc.fema.gov. Website accessed on February 24, 2009.

Technical Area: Waste Management
Author: Ellie Townsend-Hough

BACKGROUND

Phase II Environmental Site Assessment

The Phase I Environmental Site Assessment (ESA) identified recognized environmental conditions (RECs) at the site. The RECs included staining on the ground surface, underground fuel oil storage tanks, and contaminated soil. In addition, there is an unidentified liquid discharge, and an uncontained tailings pile associated with the operation of the former Port Organics Products, LTD (POP) natural fertilizer manufacturing plant located on a portion of the proposed site. The presence of these conditions and derivation establishes the need for the applicant to complete and submit a Phase II ESA to staff.

The historical use of the proposed project site was agricultural, which suggests that pesticides and herbicides were likely used on the site. Common agricultural practices can result in residual concentrations of fertilizers, pesticides or herbicides in near-surface soil. The Phase I ESA did not identify this land use as a REC. To ensure that the concentrations of agricultural chemicals do not pose a potential health risk or hazard, the applicant should provide soil sampling and characterization of the parcel/project site. The California Department of Toxic Substances Control (DTSC) has prepared the "Interim Guidance for Sampling Agricultural Fields for School Sites (Second Revision August 26, 2002)." Staff believes this guidance or equivalent may be appropriate for further site analysis (See below).

DATA REQUEST

212. Please provide results of field sampling and analysis which adequately characterize the presence of harmful chemicals or conditions and identify whether there will be any risk to construction or plant personnel due to the presence of these chemicals. Samples should be assessed for persistent agricultural chemicals, such as organochlorine pesticides that were applied to the project property.

RESPONSE

A response to this data request is addressed in the Phase II Environmental Site Assessment and submitted under confidential cover.

DATA REQUEST

213. Please confirm that there is no site contamination related to underground storage tanks located on the proposed project site.

RESPONSE

A response to this data request is addressed in the Phase II Environmental Site Assessment and submitted under confidential cover.

DATA REQUEST

214. Please provide an estimated date for the demolition of the fuel oil tanks on the proposed project site, along with a schedule and work plan for investigation and possible remediation of soils in the vicinity of the tanks.

RESPONSE

A response to this data request is addressed in the Phase II Environmental Site Assessment and submitted under confidential cover.

DATA REQUEST

215. Please identify what constituents are in the PO fertilizer plant's contaminated soil and tailing piles located on the proposed project site. Please provide a schedule and work plan for investigation and possible remediation of soils and tailing piles that may pose a health and safety risk.

RESPONSE

A response to this data request is addressed in the Phase II Environmental Site Assessment and submitted under confidential cover.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE *HYDROGEN ENERGY CALIFORNIA PROJECT*

Docket No. 08-AFC-8

PROOF OF SERVICE LIST (Rev. 10/21/10)

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DECLARATION OF SERVICE

I, Dale Shileikis , declare that on December 6, 2010, I served and filed copies of the attached Responses to CEC Data Requests Set Three: Nos. 179, 210, 212-215, dated December , 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[www.energy.ca.gov/sitingcases/hydrogen_energy]**.

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

X sent electronically to all email addresses on the Proof of Service list;

_____ by personal delivery;

X By delivering on this date, for mailing with the United States 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 **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

X sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-8
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury 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.