OEHI Responses to CEC Set 3 Data Requests Nos. A178 - 180

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

February 2013

DATA REQUESTS A178-A180

Six KOPs were selected to evaluate the visual impacts of the proposed project. Each impact discussion for the above KOPs confirms that components of the proposed project may be visible. The visual impacts to all six of the aforementioned KOPs have been characterized as less than significant (see Section 4.1-17 to 19). However, Energy Commission staff has concluded that additional project information is necessary before a significance conclusion can be reached.

DATA REQUESTS

A178. Please provide revised photographic simulations for each of the six KOP viewpoints reflecting the new aboveground elements of the Processing Facility, including the satellites, pipelines, and any other related aboveground structures that may be visible from the six KOPs.

Photographic simulations for each of the six KOP viewpoints are provided.

A179. Please provide electronic and paper copies of 11-inch by 17-inch color photographic simulations at life size scale for each of the six KOP viewpoints.

Electronic and paper copies of the 11-inch by 17-inch color photographic simulations requested in Data Requests A178 and A179 are provided.

A180. Please provide information on the dimensions (i.e. height and width) of all the proposed above ground structures.

The design dimensions of equipment and structures used in the simulations are included.

Results of Photographic Simulations

KOP 1: Dustin Acres – Hwy 119 and Golf Course Rd

Figure A1-A & B represents the view from KOP 1. The view would be similar for a number of residences near this intersection and for motorists travelling to/from the Buena Vista Golf Course. The photographic simulation from KOP 1 shows that project features are not visible.

KOP 2: Dustin Acres - Hwy 119 and Tank Farm Rd

Figure A2-A & B represents the view from KOP 2. This would be a typical view from several residences located near Tank Farm Road or Sun Ridge Avenue. The photographic simulation from KOP 2 shows that project features are not visible.

KOP 3: Valley Acres looking north from Airport Rd

Figure A3-A & B represents the view from KOP 3. This demonstrates a view of the project area from the residences of Valley Acres and motorists traveling Valley West Road through Valley Acres. In general the view is very similar to KOP 2 in Dustin Acres, with the added distance of approximately one half mile from the proposed alterations.

The photographic simulation from KOP 3 shows that project features are not visible.

KOP 4: Elk Hills Rd Looking Northwest

Figure A4-A & B represents the view from KOP 4. This view shows the west side of the road where a pipeline crosses underneath Elk Hills Road. The photographic simulation of KOP 4 demonstrates future pipelines crossing underneath Elk Hills Road in the same area.

KOP 5: Tupman looking southwest from Grace Ave

Figure A5-A & B represents the view from KOP 5. This would be the view of the proposed project site from Elk Hills Elementary School in Tupman CA. The photographic simulation of KOP 5, Figure A5-B, shows the roofline of two buildings (#13 and #17) and tops of the CO2 Absorber (#3), NGL stabilizer (#8) and de-methanizer (#12) and flare stacks (#9) and (#11) associated with the proposed CO2 EOR Processing Facility. However, due to the up-slope view of the facility and surrounding topography, a limited view is visible from KOP 5. The photographic simulation also depicts some surface re-contouring from facility grading activities.

KOP 6: Tupman looking south-southwest near the post office

Figure A6-A & Bs represent the view from KOP 6. This view shows the proposed project site from the eastern entrance to Tupman, CA, near the post office. The photographic simulation from KOP 6 shows that project features are not visible.

OEHI CO2 EOR Project – Supplemental Environmental Information – 4.1 Aesthetics – Technical Memorandum

Key Observation Point Photo Simulation Methodology and Summary

January 15, 2013

Table of Contents

Executive Summary

In 2010, Stantec prepared a Supplemental Environmental Information document for the Occidental of Elk Hills, Inc. CO2 Enhanced Oil Recovery (OEHI CO2 EOR) Project. As part of the Aesthetics section of that document (Section 4.1), six (6) key observations points (KOP's) were identified. Aesthetics impacts from each of these KOP's were discussed in text format however photo simulations were not prepared.

In 2012, after reviewing the Supplemental Environmental Information document, the California Energy Commission requested that each of these KOP's be photo simulated. This technical memorandum provides an outline of Stantec's approach and methodology in order to fulfill that request. The original images and photo simulations are included as Appendix A of this document.

1.0 Methodology and Assumptions

This section describes the methodology used to prepare the photo simulations. Information detailing the site improvements (i.e. grading, vertical dimensions, colors, finishes, general shape/form) was provided by Occidental of Elk Hills, Inc. Where detailed information was not available, assumptions were made and are documented below.

1.1 PHOTOGRAPHY

The quality and metrics of the KOP images in the 2010 Supplemental Environmental Information document were not adequate for photo simulation. The photographs used in the KOP simulations were retaken on November 20th, 2012. The KOP images were retaken at the same locations as the original images. The camera used was a full-sized CCD (charge-coupled device) digital camera with a fixed 50mm lens (See section 2.2.2 for camera model). A full-sized CCD camera was used because it records the entire frame of view the same way the visualization software recreates the image. A 50mm lens most closely reproduces the way a human eye sees the world and provides the most "fair" visual representation of the site. The fixed 50mm lens is used to ensure that the focal length does not change from image to image. Camera location and direction of view for each KOP were recorded using a handheld GPS device. The camera was placed on a tripod and made level using a three-way bubble level built into the tripod. The camera was adjusted to the eye level of the photographer for all KOP photographs.

1.2 MODELING

A three-dimensional model of the existing surface terrain was generated using Autodesk Civil 3D based on a digital elevation model (DEM) sourced from the United States Geological Survey's (USGS) National Map Viewer. Detailed site topography was not provided. The level of accuracy of the topographic information used to prepare the photo simulations is considered 'planning level' information. Major topographic features were clearly recognizable, however minor features were more difficult to recognize.

The terrain model was then imported into AutoDesk 3D Studio Max. The linework provided which represents the site improvements (in plan view) was inserted and overlaid on the terrain model using the same projection data to ensure proper alignment. Detailed site grading plans were not provided. Therefore, grading at the EOR Processing Facility and Satellite facilities was assumed to be a fill using the approximate elevation at the highest point of the pad. Fill slopes were then projected down to match existing grade at an assumed ratio of 2:1. Detailed elevation drawings (side view) of the improvements were not provided, however some approximate vertical and horizontal dimensions of various site improvements were provided and are documented in the list below. Where this information was provided, it was used to inform the model. These components were modeled as general blocks/masses and aligned on the site

plan drawings (see Figures 1.2-1A and 1.2-1B) in the absence of detailed elevation information. Colors and finishes were not provided. It was assumed that the features would be colored/finished per the mitigation requirements of the Supplemental Environmental Information document (Mitigation Measure 4.1-1).

HEIGHT INFORMATION:

EOR Processing Facility:

1. Fenceline dimensions 1200’ x 2200’
2. V-3030 TEG Contactor – 74” x 26’ S/S vertical
3. V-4520 CO2 Absorber – 42” diameter x 40’ S/S vertical
4. V-2060/65 flumes – 26” diameter x 50’ vertical
5. T-2070/75 vortex tanks – 55’ diameter x 24’ vertical
6. T-2100/10 water tanks – 67’ diameter x 24’ vertical
7. T-2120/30 oil tanks – 25’ diameter x 24’ vertical
8. C-4900 NGL stabilizer – 36” diameter x 40’ S/S vertical
9. DS-6330 flare – 36” diameter x 78’ vertical
10. Water Make-Up Storage Tank – 80’ diameter x 14’ vertical
11. DS-2050 flare – 36” diameter x 78’ vertical
12. V-4420 de-methanizer – 120” x 60’ S/S vertical

Facility Buildings Size: L x W x H (Preliminary), Tag Number

13. Admin / Control Building 50’ x 28’ x 12’, B-9001
14. Maintenance / Warehouse Building 100’ x 60’ x 20’, B-9002
15. MCC Building 120’ x 40’ x 18’, B-9005

Equipment Shelter Size: L x W x H (Preliminary), Tag Number

16. Compressor Shelter (RCF) 100’ x 80’ x 18’, B-9003
17. Compressor Shelter (CRP) 300’ x 80’ x 18’, B-9004

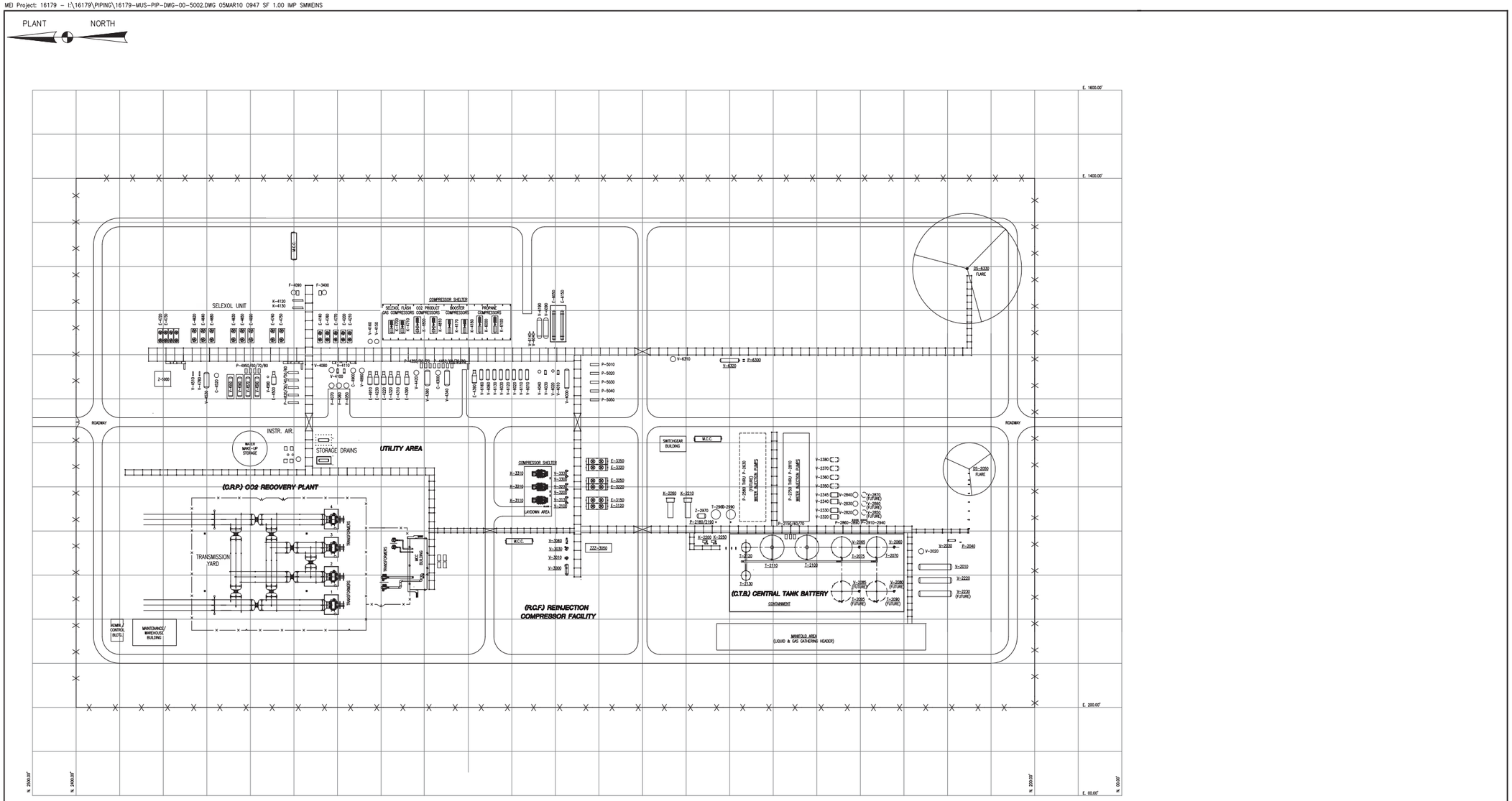
Satellites:

- V-1010 production separator – 102” diameter x 35’ S/S horizontal
- V-1020 test separator – 48” x 15’ S/S horizontal
- T-1030 vent tank / vent stack – 8’ x 12’ vertical

1.3 PHOTO SIMULATION

The KOP camera location data from the GPS device was then imported into the model. A 50mm camera was snapped to each camera location in Autodesk 3DS Max. Each camera target was snapped to the X and Y coordinates of the target location, and the Z elevation was set to match that of the camera itself (the camera was set to eye-level for each photo). The direction of view was then set to match the GPS field data. At this point the photograph was imported to verify that the camera was accurate to the existing conditions. Once the alignment was verified, the visible elements were exported from the model based on the atmospheric conditions, time of day, colors and finishes to ensure accurate lighting and shadow conditions. This information was overlaid onto the original photograph in Adobe Photoshop. Adjustments were made (as necessary) to allow the two images to blend together (ex. overlay foreground elements in the original photograph which were visually 'in front of' the improvements but not in the model, such as power poles and fencing).

MEI Project: 16179 – I:\16179\PIPING\16179-MUS-PIP-DWG-00-5002.DWG 05MAR10 0947 SF 1.00 IMP SMWEINS



MAR. 05, 2010

0 100' 200' 300' 400'
SCALE: 1"=100'-0"

NOTES:

REFERENCE DRAWINGS	
NO.	TITLE

REVISIONS						
NO.	DATE	DESCRIPTION	BY	CHK.	APP.	APP.
A	29JAN10	ISSUED FOR REVIEW	JGS	BHG	MS	
B	26FEB10	ISSUED FOR FEED	JGS	BHG	MS	
C	05MAR10	RE-ISSUED FOR FEED	JGS	BHG	MS	

ENGINEERING CONSULTANT:
MUSTANG ENGINEERING, L.P.
HOUSTON, TEXAS
PROJECT NO. 16179

	BY	DATE
DESIGNED	G. STRAWBRIDGE	12JAN10
DRAWN	G. STRAWBRIDGE	12JAN10
CHECKED	B.GOODWIN	29JAN10
APPROVED	M.SOMERS	29JAN10

Occidental

FACILITY NAME:
OCCIDENTAL OF ELK HILLS, INC.
UNIT OPERATOR

DRAWING TITLE:
PLOT PLAN
CO2 FACILITY

SCALE	OCCIDENTAL DOCUMENT NUMBER							
	PROJ. NO.	ORIG.	DISCP.	TYPE	AREA	DWG. NO.	SHT.	REV.
1"=100'	16179	MUS	PIP	DWG	00	5002		C

*Source: Mustang Engineering, L.P.; File: 16179-MUS-PIP-DWG-00-5002

Modeling and Simulation By: E. White/D. LaVoie | Environmental Services

Figure 1.2-1A

EOR Processing Facility - Basis of Model

OEHI CO2 EOR Project - Supplemental Environmental Information

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1201 J Street Studio 100, Sacramento, CA 95814
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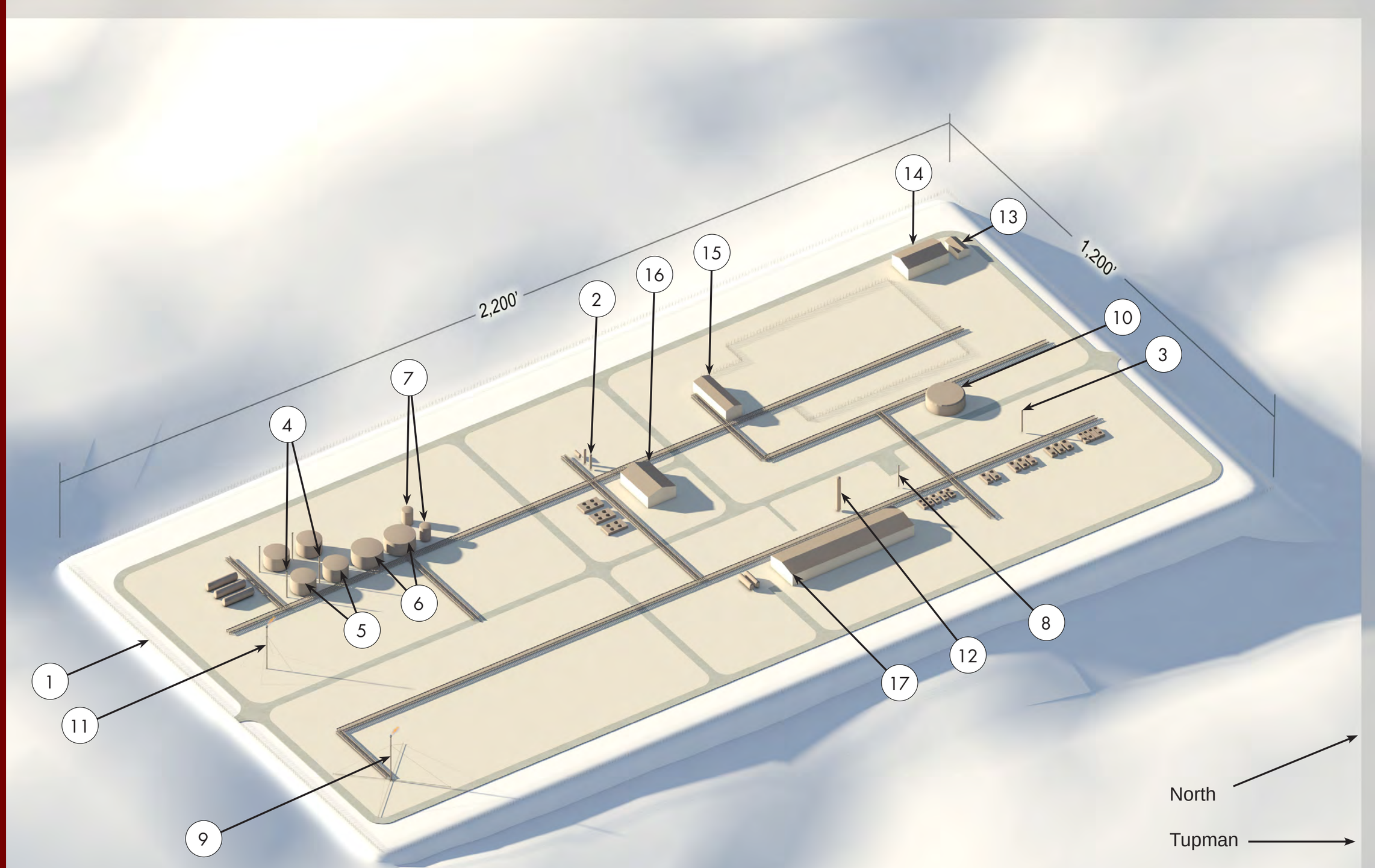
Project #185802314



Note: Key Note numbers correspond with numbered list on page 1.2

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Figure 1.2-1B

EOR Processing Facility - Height Assumptions

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2.0 Technical Data

2.1 PROJECTION

2.1.1 Projected Coordinate System

NAD 1983 State Plane California V FIPS 0405 Feet

- Projection: Lambert Conformal Conic
- False Easting: 6561666.66666667
- False Northing: 1640416.66666667
- Central Meridian: -118.00000000
- Standard Parallel 1: 34.03333333
- Standard Parallel 2: 35.46666667
- Latitude Of Origin: 33.50000000
- Linear Unit: Foot US

2.1.2 Geographic Coordinate System

GCS North American 1983

- Datum: D North American 1983
- Prime Meridian: Greenwich
- Angular Unit: Degree

2.2 PHOTOGRAPHY

2.2.1 Photographer

Dalton M. LaVoie, Stantec

2.2.2 Camera Model

Canon EOS 5D

2.2.3 Camera Lens

Ultrasonic 50mm Fixed

2.2.4 Date of Photography

November 20th, 2012

2.2.5 Atmospheric Conditions

- Sun: Full
- Sky: Clear
- Visibility: 3+ miles

2.2.6 Time of Day

- KOP 1: 12:16PM
- KOP 2: 2:04PM
- KOP 3: 12:56PM
- KOP 4: 1:29PM
- KOP 5: 11:04PM
- KOP 6: 11:43PM

2.2.7 Height at Eye-Level

65” (sixty-five inches)

2.3 SOFTWARE

2.3.1 Modeling

- ESRI ArcGIS
- Autodesk AutoCAD 2011
- Autodesk Civil 3D 2011
- Autodesk 3D Studio Max 2011

2.3.2 Simulation

- Autodesk 3D Studio Max 2011
- Adobe Photoshop CS6

Appendix A Original Images and Photo Simulations

Modeling and Simulation By: E. White/D. LaVoie | Environmental Services

Appendix A - Figure A1-A

Key Observation Point #1 - Original Image

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Appendix A - Figure A1-B

Key Observation Point #1 - Photo Simulation

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Appendix A - Figure A2-A

Key Observation Point #2 - Original Image

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Appendix A - Figure A2-B

Key Observation Point #2 - Photo Simulation

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Modeling and Simulation By: E. White/D. LaVoie | Environmental Services

Appendix A - Figure A3-A

Key Observation Point #3 - Original Image

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Appendix A - Figure A3-B

Key Observation Point #3 - Photo Simulation

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Appendix A - Figure A4-A

Key Observation Point #4 - Original Image

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Appendix A - Figure A4-B

Key Observation Point #4 - Photo Simulation

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Appendix A - Figure A5-A

Key Observation Point #5 - Original Image

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Appendix A - Figure A5-B

Key Observation Point #5 - Photo Simulation

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Appendix A - Figure A6-A

Key Observation Point #6 - Original Image

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Appendix A - Figure A6-B

Key Observation Point #6 - Photo Simulation

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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

AMENDED APPLICATION FOR CERTIFICATION FOR THE HYDROGEN ENERGY CALIFORNIA PROJECT

Docket No. 08-AFC-08A
PROOF OF SERVICE
(Revised 12/24/12)

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*Indicates Change

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After docketing, the Docket Unit will provide a copy to the persons listed below. Do not send copies of documents to these persons unless specifically directed to do so.

KAREN DOUGLAS
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ANDREW McALLISTER
Commissioner and Associate Member

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Hearing Adviser

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John Heiser
Associate Project Manager

Lisa DeCarlo
Staff Counsel

DECLARATION OF SERVICE

I, Dale Shileikis, declare that on February 5, 2013, I served and filed copies of the attached OEHI Responses to CEC Set 3 Data Requests Nos. A178 - 180, dated February, 2013. This document is accompanied by the most recent Proof of Service list, which I copied from 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, as appropriate, in the following manner:

(*Check one*)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

_X_ I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the US mail with first class postage to those parties noted above as "hard copy required"; OR

____ Instead of e-mailing the document, I personally delivered it or deposited it in the US mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: 2/5/13