Responses to Sierra Club Data Requests: Nos. 1 through 97 (60-Day Extension)

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

Prepared for:
Hydrogen Energy California LLC

hydrogen energy california

Submitted to:

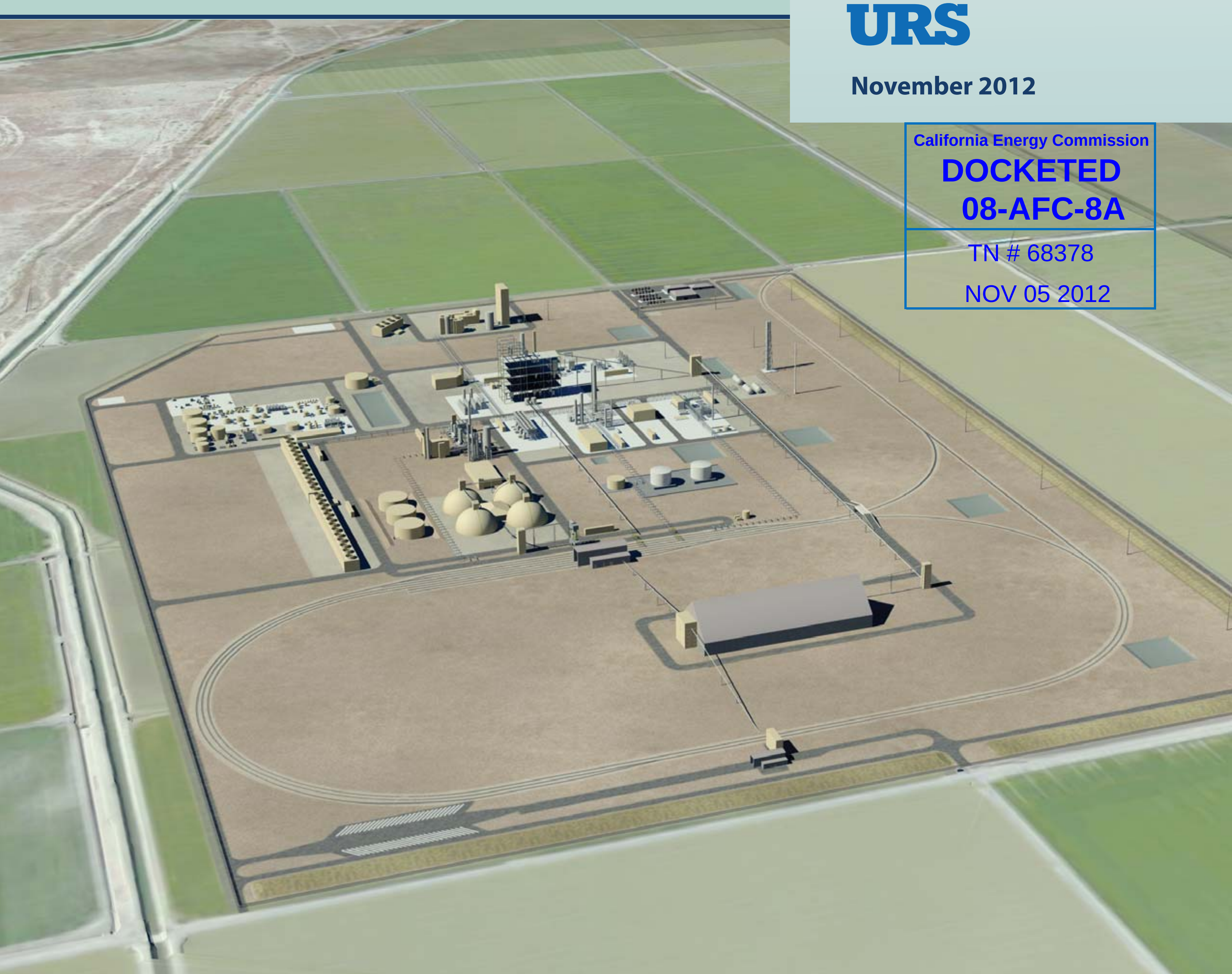
California Energy Commission

U.S Department of Energy

Prepared by:

URS

November 2012



California Energy Commission
DOCKETED
08-AFC-8A
TN # 68378
NOV 05 2012

RESPONSES TO DATA REQUESTS (60-Day Extension)
FROM SIERRA CLUB

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LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

AFC	Application for Certification
BNSF	Burlington Northern Santa Fe
BTU	British thermal unit
BVWSD	Buena Vista Water Storage District
CEC	California Energy Commission
CO_2	carbon dioxide
gr/scf	grains per standard cubic foot
H_2S	hydrogen sulfide
HECA	Hydrogen Energy California
HRSG	heat recovery steam generator
lb/gr	pounds per grain
lb/hr	pounds per hour
lb/MBtu	pound per million British thermal unit
lb/mg	pounds per milligram
LDAR	leak detection and repair
m^3/ft^3	cubic meters per cubic foot
m^3/hr	cubic meters per hour
mg/m^3	milligrams per cubic meter
MHI	Mitsubishi Heavy Industries
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
PG&E	Pacific Gas and Electric Company
PM	particulate matter
ppm	parts per million
ppmv	parts per million by volume
RH	relative humidity
scf	standard cubic foot
SJVAPCD	San Joaquin Valley Air Pollution Control District
SJVR	San Joaquin Valley Railroad
SO_2	sulfur dioxide
SRU	sulfur recovery unit
syngas	synthesis gas
tpd	tons per day
VOC	volatile organic compound

BACKGROUND: SUPPORT FOR OPERATIONAL EMISSION ESTIMATES

The AFC relies on a number of unsupported assumptions and emission factors for its estimates of Project operational emissions of criteria pollutants and TACs/HAPs. Without adequate documentation, e.g., the underlying vendor guarantees or other information such as stack tests, studies, etc., these assumptions and emission factors are unsupported and the public cannot meaningfully comment on their appropriateness.

DATA REQUEST

38. Please provide support for all assumptions for estimating Project operational emissions, including, but not limited to:

a) Support for molar flow rates for exhaust gases from the heat recovery steam generator ("HRSG"), coal dryer stack, CO_2 vent, and Rectisol flare. (AFC, Appx. E-3, pp. 3-4, 6, and 12-13.)

b) Support for emission factors, pollutant concentrations in exhaust gas, duration of various startup/shutdown phases, and other information "provided by MHI" used to estimate criteria pollutant emissions from the HRSG and coal dryer during normal operations and startup and shutdown. (AFC, Appx. E-3, pp. 3-6.)

c) Support for emission factors for "similar equipment from previous project" used to estimate PM10/PM2.5 and VOC emissions from the auxiliary boiler. (AFC, Appx. E-3, p. 7.)

d) Support for maximum short-term total sulfur content of 12.65 ppmv in pipeline natural gas used for estimating sulfur dioxide ("SO2") emissions from the auxiliary boiler. (AFC, Appx. E-3, p. 7.)

e) Support for emission factors used for estimating nitrogen oxides ("NO_X") and carbon monoxide ("CO") emissions from the tail gas thermal oxidizer "based on previous project." (AFC, Appx. E-3, p. 8.)

f) Support for emission factor used for estimating SO2 emissions from the tail gas thermal oxidizer "assuming an allowance of 2 lb/hr SO2 emission to account for sulfur in the various vent streams plus fuel." (AFC, Appx. E-3, p. 8.)

g) The "plant performance study" used to support short term emission rates of from CO_2 vent and support for hydrogen sulfide ("H2S"), carbonyl sulfide ("COS"), CO, and VOC concentrations in vent gas. (AFC, Appx. E-3, p. 10.)

h) Support for emission factors based on "supplier data" used to estimate NO_X, CO, and PM10/PM2.5 for flares. (AFC, Appx. E-3, p. 11.)

i) Support for 99% VOC destruction assumed for combustion of typical natural gas in flare. (AFC, Appx. E-3, p. 11.)

j) ***Support for emission factors for flares "Based on Startup/Shutdown Procedures provided by MHI for the PurGen One Project." (AFC, Appx. E-3, p. 12.)***

k) ***Support for 99.6% sulfur removal efficiency for caustic scrubber. (AFC, Appx. E-3, p. 12.)***

l) ***Support for SO2 concentration in vent gas of 50 ppmv used to determine SO2 emissions from the Rectisol flare. (AFC, Appx. E-3, p. 13.)***

m) ***Support for sulfur concentration in pipeline natural gas used to estimate SO2 emissions from the ammonia synthesis plant startup heater. (AFC, p. 20.)***

n) ***Support for emission factors for "similar equipment from previous project" used to estimate PM10/PM2.5 and VOC emissions from the ammonia synthesis plant startup heater. (AFC, p. 20.)***

o) ***The "[t]echnical proposal provided by Urea Casale for the SCS PurGen One project" used to derive NH3 emission factors for the urea HP and LP absorber. (AFC, Appx. E-3, p. 20.)***

p) ***Support for the "[r]eference plant information provided by Sandvik Fellbach for the SCS PurGen One project" used to derive ammonia ("NH3") and urea dust particulate matter emission factors from urea pastillation. (AFC, Appx. E-3, p. 20.)***

q) ***Support for NO_X concentration in vent gas of 15 ppmv "based on Uhde EnviNO$_X$ system" and 50% NO2/NO_X in stack-ratio used for modeling. (AFC, Appx. E-3, p. 20.)***

r) ***Vendor guarantee for PM emission rate used to calculate PM emissions from ammonium nitrate plant. (AFC, Appx. E-3, p. 20.)***

s) ***Support for emission factors and control efficiency for leak detection and repair ("LDAR") program used to estimate fugitive emissions of CO_2, methane ("CH4"), CO, H2S, NH3, COS, methanol ("CH3OH"), propene ("C3H6"), and hydrogen cyanide ("HCN") from various process areas. (AFC, Appx. E-3, p. 23.)***

t) ***Support for emission factors used to estimate TAC/HAP emissions from the combustion turbine generator ("CTG")/HRSG and coal dryer stacks "taken from Wabash River test data and the National Energy Technology Laboratory, U.S. Dept. of Energy, Major Environmental Aspects of Gasification-based Power Generation Technologies, Final Report, December 2002. (AFC, Appx. M, p. 2.) Please provide Wabash River test data and identify the source for each emission factor used to calculate TAC/HAP emissions for the Project. Please discuss why Wabash River test data are deemed representative for the Project's CTG/HRSG and coal dryer stack.***

u) ***Support for the assumption that 85% of the HRSG exhaust gas would be exhausted through the HRSG exhaust and 15% through the coal dryer exhaust under normal operations. (AFC, Appx. M, p. 2.)***

v) ***Support for the assumption of 0.09 parts per million by weight ("ppmw") mercury in coal. (AFC, Appx. M, p. 2.)***

w) ***Support for the assumption that 5.5% of the mercury concentration in coal is volatilized. (AFC, Appx. M, p. 2.)***

x) ***Support for the coal dryer mercury control efficiency of 80% and the control efficiency of the mercury cleanup in syngas of 96%. (AFC, Appx. M, p. 2.)***

y) ***Support for emission factors used to estimate arsenic, fluoride, manganese, and selenium emissions from cooling towers based on "average of analytical test results" from "Fruit Growers Laboratory" and "DWR". (AFC, Appx. M, p. 3.) Please provide these analytical test results and discuss why these emissions are deemed representative for the Project.***

z) ***Support for the assumption that copper emissions from the cooling towers would be "one-half of stated detection limit." (AFC, Appx. M, p. 3.)***

aa) ***Support for emission factors used to estimate emissions of ammonia from manufacturing complex based on "reference plant information." (AFC, Appx. M, p. 13.)***

RESPONSE

a. The molar flow rates for the heat recovery steam generator (HRSG) and coal dryer exhaust gases are provided on page 6 of Appendix E-3, Operational Criteria Pollutant Emissions, of the Amended Application for Certification (AFC).

The carbon dioxide (CO_2) vent emission information is presented on page 10 of Amended AFC Appendix E-3. This venting will occur infrequently—if at all—and only if the product CO_2 cannot be delivered to the off-taker because of pipeline or oilfield unavailability. Hydrogen Energy California (HECA) has proposed an annual limit of no more than 504 hours per year of this venting. The flow rate shown is the maximum production rate of product CO_2, based on design rates.

The exhaust gas rate from the Rectisol flare was not estimated, because only the energy input to the flare (heat release) is needed to calculate emissions and for air dispersion modeling. The heat input to the flare is based on engineering judgment and operating experience, and is conservative.

b. The emissions information for normal operation, except for what is already presented in the Amended AFC, is considered proprietary and confidential by Mitsubishi Heavy Industries (MHI). In addition, MHI considers the startup/shutdown durations and emission information, other than what is already disclosed in the Amended AFC to describe the maximum plant emissions, as proprietary and confidential.

c. Please see Attachment 38-1. This document is a response to the San Joaquin Valley Air Pollution Control District (SJVAPCD), submitted for the previous HECA Project in July 2009. The emission factors for the auxiliary boiler have not changed since July 2009.

d. The sulfur dioxide (SO_2) emission factor of 12.65 parts per million by volume (ppmv) is a conservative estimate of the maximum short-term total sulfur present in pipeline quality natural gas. According to Pacific Gas and Electric Company (PG&E; the natural gas supplier) data, over the last 6 years, the maximum total sulfur present in any sample of their pipeline natural gas is 12.01 ppmv. The average total sulfur over multiple sampling sites is typically in the 2 to 4 ppmv range. Therefore, the Applicant's emission factor is an appropriately conservative estimate of the total sulfur in pipeline quality natural gas from PG&E. PG&E data are available at: http://www.pge.com/pipeline/operations/sulfur/sulfur_info_values.shtml.

e. The two requested emission factors were taken from a Callidus proposal for a Claus sulfur recovery unit tail gas thermal oxidizer on another project (see Attachment 38-2). The handwritten calculation on the excerpt from the proposal package shows the conversion of concentration to pound per million British thermal unit (lb/MBtu) heat input.

f. The change to dry gasification technology for the new Project has eliminated most sulfurous vent streams, but an allowance for disposal of miscellaneous vent streams was included in the Amended AFC, to conservatively accommodate any sulfurous vent streams. The SO_2 emission rate is based on engineering judgment, operating experience, and discussions with operating personnel at the Wabash River Integrated Gasification Combined Cycle Plant.

g. The plant performance study was conducted at the beginning of the Project using design data from the PurGen project. This information was replaced by the Rectisol process design being prepared by Linde, the technology licensor. Linde has provided guarantees to meet the emission limits associated with the Rectisol facilities.

h. These factors have not changed since the previous configuration of the HECA Project. Attachment 38-3, which was submitted to the SJVAPCD in February 2010, explains the source of these emission factors.

i. See Attachment 38-3.

j. The emission factors are based on supplier quotations and are shown in Attachment 38-3.

k. The Applicant proposes the use of a caustic scrubber to control sulfur recovery unit (SRU) Flare oxides of sulfur emissions (Amended AFC Table 5.1-39). The caustic scrubber operation is also discussed in Appendix E-11 (page 58) "The caustic scrubber removes [hydrogen sulfide] H_2S from the acid gas stream with an anticipated scrubbing efficiency of at least 99.6% sulfur removal". The reaction of H_2S and caustic (sodium hydroxide) is irreversible at the caustic scrubber operating conditions, and the removal efficiency is expected to be virtually 100 percent. A removal efficiency of 99.6 percent reflects the value that can be guaranteed by the engineering, procurement, and construction contractor.

l. The estimated sulfur content of this startup vent to the flare is based on engineering judgment and operating experience, and is conservative.

m. See response to Data Request 38.d.

n. These emission factors are based on the same information as the auxiliary boiler (see Attachment 38-1).

o. See Attachment 38-4.

p. The pastillation emissions are based on Sandvik data for the previous PurGen project presented in Attachment 38-5, and the following calculations to adjust for the smaller HECA capacity:

- Ammonia in exhaust air = 50 mg/m^3 (from Attachment), PurGen exhaust air = 21,000 m^3/hr
- PurGen capacity = 3,855 tpd, HECA capacity = 1,701 tpd
- Ammonia = 50 mg/m^3 × 21,000 m^3/hr ×1,701 tpd / 3,855 tpd × 1 lb/454,000 mg = 1.02 lb/hr
- PM (dust) based on baghouse with 0.001 gr/scf outlet dust loading
- PM = 0.001 gr/scf × 21,000 m^3/hr × 35.3 m^3/ft^3 × 1701 tpd / 3,855 tpd × 1 lb/7000 gr = 0.05 lb/hr

Notes:
gr/scf = grains per standard cubic foot
lb/gr = pounds per grain
lb/hr = pounds per hour
lb/mg = pounds per milligram
m^3/ft^3 = cubic meters per cubic foot
m^3/hr = cubic meters per hour
mg/m^3 = milligrams per cubic meter
PM = particulate matter
tpd = tons per day

q. The emission factor of 15 ppmv oxides of nitrogen (NO_X) was provided by the equipment vendor. Please also see Attachment 3 of the file “Correspondence with San Joaquin Valley Air Pollution Control District and Notice of Incomplete Application,” docketed with the California Energy Commission (CEC) on September 18, 2012, for emissions documentation from the vendor. The in-stack ratio of 50 percent nitrogen dioxide (NO_2)/NO_x was provided verbally by the equipment vendor and is also considered by EPA to be the default in-stack ratio for modeling (“Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard,” March 2011 memo from Tyler Fox, leader of EPA’s Air Quality Modeling Group).

r. The vendor guarantee is provided in Attachment 3 of the file “Correspondence with San Joaquin Valley Air Pollution Control District and Notice of Incomplete Application,” docketed with the CEC on September 18, 2012.

s. Updated estimates of fugitive emissions and support for the emission factors and leak detection and repair (LDAR) control efficiencies were presented in the response to CEC Data Request A16 (see page 17 of Attachment A16-1).

t. Wabash River test data are the most representative for the HECA Project because the two projects have similar processes and fuel sources.

All emission factors were based on the Wabash River test data, as presented in either the Mesaba Energy Project permit application (2006) or the Pacific Mountain Energy Center permit application (2006), with the exception of ammonia, mercury, and sulfur/sulfuric acid.

The ammonia emission factor of 5 parts per million (ppm) is based on equipment design, and will be incorporated in the San Joaquin Valley APCD Permit to Operate as an emission limit.

For information on the mercury emission factor, please see Applicant's response to CEC Data Request A135. Mercury emissions were calculated to meet mercury and air toxics standards, and have been updated since submission of the Amended AFC.

The sulfur/sulfuric acid emission factor is based on the following assumptions:

- 7 percent of SO_X in the HRSG exhaust converts to SO_3, which reacts with water to form sulfuric acid
- 2 ppm total sulfur in synthesis gas (syngas)
- 289 Btu/standard cubic foot higher heating value in syngas
- 0.76 coal energy conversion to syngas

u. The portion of the HRSG exhaust gas needed for coal drying depends primarily on the gasifier load; and to a lesser extent, on ambient conditions and other factors. The portion of HRSG exhaust gas required for coal drying ranges from about 14 percent to 19 percent (Amended AFC Appendix E-3, page 6). The higher percentages occur during off-peak operation, when the gas turbine is operating at reduced load. During normal operation, the gasifier is operating at its full capacity, and the actual mass flow required for coal drying is nearly constant at about 800,000 lb/hr. Thus, 15 percent is the nominal split between coal drying and the HRSG stack. The emissions from the coal dryer stack are based on a feedstock rate of about 5,800 short tons per day, as indicated in Amended AFC Table 2-10, and about 800,000 lb/hr of associated HRSG exhaust gas.

v. Please see Attachment 38-6.

w. The amount of mercury that is volatilized in the feedstock dryer was estimated by MHI, and provided in heat and material balances. The heat and material balances are considered proprietary and confidential by the equipment designer and manufacturer, MHI. See the response to CEC Data Request A135 for more information.

x. Please see the response to CEC Data Request A135.

y. Arsenic, fluoride, manganese, and selenium emission factors are based on results of water sampling and testing conducted by the Buena Vista Water Storage District (BVWSD). Because the samples were collected from groundwater wells within BVWSD's service area, these data are representative of the groundwater that BVWSD will provide to the Project. The analytical results are presented as Attachment 38-7.

z. All analytical results for copper were below the detection limit. Standard practice with environmental data is to set non-detect values at one-half of the detection limit. This practice assumes that all values from zero to the detection limit may be present; and on average, the value is one-half of the detection limit.

aa. See responses to Data Requests 38.o and 38.p, and Attachment 3 of the file "Correspondence with San Joaquin Valley Air Pollution Control District and Notice of Incomplete Application," docketed with the CEC on September 18, 2012, for emissions documentation from the vendor.

ATTACHMENT 38-1
2009 DATA RESPONSE TO SJVAPCD – AUXILIARY BOILER

DISTRICT QUESTIONS 8 AND 9

Auxiliary boiler:

8. Identify the manufacture and model, provide specifications, and provide documentation of emission factors.

9. Provide justification for longer start-up duration as required by Rule 4306 Section 5.3.3.

APPLICANT'S RESPONSE TO 8 AND 9

Response to 8:

Attachment 8 provides manufacturer specifications and emission rates for a typical example of this equipment based on Fluor experience for a recent project. This data sheet shows the emission factors used to estimate auxiliary boiler emissions of VOC and PM10 for the HECA Project. The SO2 emissions are based on the sulfur specification for natural gas. The NOx limit of 9 ppm (0.011 lb/mmBTU) is a regulatory requirement in Rule 4306. The Taylorville project discussed in detail in the ATC Application, BACT Appendix D2, contains a permit limit on the emissions of CO from the auxiliary boiler for that project. The limit is 50 ppmvd at 3% O2 (0.037 lb/mmBTU). This is using a low NOx burner, good combustion practices, and uses a 24-hr block average. However, the low NOx burner at Taylorville was required to meet a NOx limit of 30 ppm. Discussions with equipment suppliers will continue to determine if the requirement to meet 9 ppm NOx will necessitate a CO limit higher than 50 ppm.

Response to 9:

The startup up time for the auxiliary boiler is limited by Rule 4306 Section 5.3.1 to not exceed two hours. The auxiliary boiler will comply with this requirement; therefore, no justification of a longer time is necessary. The Supplemental Data Form for the auxiliary boiler in Appendix B should have indicated 2,190 hours/yr of steady state operation rather than start-up.

Auxiliary Boiler
Similar Equipment

BOILER EMISSIONS DATA SHEET

Boiler Summary Data

Boiler Model	NBC model NS-F-70-Econ
Burner	Todd Combustion Low Nox Burner
Fuel	Natural Gas
Max Input	115 MMBTUH
Steam Pressure /Temperature	430 PSIG / saturated
Project:	[redacted]
Contract #	
Document number	[redacted]
Date	14-Nov-01
RFM Job #:	01-6114

		FIRING RATE		
		10%	25%	100%
Steam Flow (pph)		9,500	17,750	95,000
BTUH - Input		11,900,000	28,900,000	115,100,000.0
Boiler Efficiency		80.6%	82.92%	83.38%
Stack Velocity	(FPM)	252	629	2,552
Stack Elevation	40' above grade			
Stack diameter	48:00:00			

Emission Performance

CO	ppm	400	100	100
	lb/MMBTUH	0.2960	0.0740	0.0740
	lb/hr	3.5224	2.1386	8.5174
NOx	ppm	30	30	30
	lb/MMBTU	0.0360	0.0360	0.0360
	lb/hr	0.4284	1.0404	4.1436
VOC	ppm	10	10	10
	lb/MMBTUH	0.0041	0.0041	0.0041
	lb/hr	0.0488	0.1185	0.4719
UBHC	ppm	10	10	10
	lb/MMBTU	0.0041	0.0041	0.0041
	lb/hr	0.0488	0.1185	0.4719
PM-10	ppm			
	lb/MMBTU	0.0050	0.0050	0.0050
	lb/hr	0.0595	0.1445	0.5755

DUKE/FLUOR DANIEL
A - PROCEED
Notification to proceed does not constitute acceptance nor relieve Contractor/Supplier of any liability. Acceptance is accomplished under the terms of the Contract/Purchase Order.

Notes:
Emissions stated are based on the fuel HHV
Emission levels are guaranteed to be at or below the stated levels
All ppm levels corrected to 3% O2
emissions levels guaranteed between entire 10-1 turndown ratio
except CO which is guaranteed between a 4 to 1turndown ratio
CO total mass flow rate at less than 25% firing will not exceed the mass flow rate at high fire

69-2

ATTACHMENT 38-2
NO_X AND CO FROM TAIL GAS THERMAL OXIDIZER

3. **Incinerator Flue Gas at 1200°F –Case 1 and 1500°F- Case 2**

	Case 1 Lbmole/hr	Case 2 Lbmole/hr
CO_2	55.56	81.78
H_2O	632.14	689.16
N_2	1292.10	1522.02
SO_2	11.66	11.66
O_2	27.69	36.19
Total	2019.15	2430.81
Mol wt	25.586	25.870

28.3%

4800 ppmv (6700 ppmvd)
(2%, dry)

Tail Gas feed = 12,700 ppmvd total sulfur

4. **Fuel gas required, MMBtu/hr**
- Case 1 10
- Case 2 19

The above numbers are with credit taken for the combustibles in the process gas.

5. **Emissions**

The thermal oxidizer system proposed here is guaranteed to meet the following emissions limit based on the waste conditions given in this proposal and when operated at the conditions specified in this proposal and the operating manual:

- NO_x ....42 ppm @ 7%O_2 1-hr avg.
- CO ....57 ppm @ 7%O_2 1-hr avg.[1]
- Opacity ....5% 3-min avg.

[1]Minimum 1500°F operating temperature is required

NOx $42 \text{ ppmvd @ } 7\% O_2 = 42 \overbrace{\frac{(.2095-.02)}{(.2095-.07)}}^{1.36} = 57 \text{ ppm @ } 2\% O_2$

Assume dry flue gas @ 2% O_2 = 2431 − 689
= 1742 lbmol/hr

$57 \text{ ppm } NO_x = 1742\left(\frac{57}{10^6}\right)(46) = 4.6 \text{ lb/hr}$

$Q = 19 \times 10^6 \text{ Btu/hr} \quad NO_x = 4.6/19 = \underline{0.24 \text{ lb}/10^6 \text{ Btu}}$

CO $57 \text{ ppmvd @ } 7\% O_2 = 57(1.36) = 78 \text{ ppmvd @ } 2\% O_2$

$= 1742\left(\frac{78}{10^6}\right)(28)/19 = \underline{0.20 \text{ lb}/10^6 \text{ Btu}}$

ATTACHMENT 38-3
2009 DATA RESPONSE TO SJVAPCD – FLARES

DATA REQUEST # 1 – DOCUMENTATION FOR FLARE EMISSION CALCULATIONS

The SJVAPCD Permit Engineer requested documentation for emission factors and assumptions used in the flare emission calculations presented in the ATC/AFC.

RESPONSE # 1

The flare emission calculations are based on equipment supplier information plus the Applicant's knowledge of the process and experience with similar projects. In general, the worst-case emission factors were chosen in order to maintain flexibility in supplier selection. Table 1 shows the emission factors for the flares during normal operations with only the pilot burning, for the gasifier flare when startup gas is flared, and the SRU flare when AGR startup acid gas is flared. The SO_2 emission factors are based on the sulfur content of the fuel (described in the table) that is flared. The emission factors for the natural gas pilots are lower than the AP-42 emissions factors for all pollutants except NOx. The AP-42 emission factors are based on flaring crude propylene, not natural gas, thus are not necessarily as representative as equipment-specific emission factors. When startup gas is flared in the gasifier flare, the CO emissions are higher than AP-42, but the emission factor presented in Table 1 is based on the composition of the startup gas (containing substantial CO) that will actually be flared, and thus is much more representative of what will occur. Information regarding the selection of these emission factors is provided in the following table and attachments (selected supplier emission factors have been highlighted in the attachments).

Table 1 – Basis for Flare Emission Factors

Emission	**HHV lb/10^6 Btu**	**Basis**
Normal Operation – pilots only, natural gas fuel		
SO_2	0.00204	Maximum 12.65 ppmv (0.75 grain/100 scf) total sulfur in natural gas, Southern California Gas Co. pipeline tariff – see calculation below.
NOx	0.12	Supplier data – see John Zink Co. information, Attachment 1
CO	0.08	Supplier data – see Callidus Technologies information, Attachment 2
PM_{10}	0.003	Supplier data – see John Zink Co. information, Attachment 1
VOC	0.0013	99% VOC destruction for typical natural gas, supplier data – see John Zink Co. information, Attachment 1 and calculation below
Gasifier Startup – Startup gas to Gasification Flare		
SO_2	negligible	No sulfur in startup feed – see Revised AFC, Section 2.5.2.
NOx	0.07	Supplier data – see John Zink Co. information, Attachment 1
CO (1)	2	98% CO destruction of CO in startup gas, supplier data – see John Zink Co. information, Attachment 1 and calculation below
CO (2)	0.37	Supplier data – see Callidus Technologies information, Attachment 3
PM_{10}	negligible	Supplier data – see John Zink Co. information, Attachment 1
VOC	negligible	No VOC in startup gas – see response to CEC Data Adequacy Recommendation No. 3
SRU Startup- AGR acid gas to SRU Flare		
SO_2	4600 lb/hr	Vent separated acid gas from Rectisol Unit to SRU Flare for one hour prior to introducing to SRU. Assumes one gasifier at 70% capacity (high sulfur coke feed) and 50% of separated sulfur goes to flare while the other 50% is retained in the Rectisol solvent.

Notes:
(1) Unshifted syngas
(2) Shifted syngas

Calculations

Sulfur in Natural Gas

SO_2 = 0.75 grain/100 scf x 1 lb/7000 grain x 64 lb SO_2/32 lb S x 1 scf/1046 Btu x 10^6 = 0.00204 lb/10^6 Btu

VOC from Pilot Gas

(Assume about 0.3 vol % VOC in natural gas)

VOC = 0.3 scf/100 scf x 16 lb/379 scf x 1 scf/1046 Btu x 10^6 x (1 – 0.99) = 0.0013 lb/10^6 Btu

CO Startup Gas

(Startup gas is about 13.2 vol % CO and 19 vol % H2, HHV is about 104 Btu/scf)

CO = 0.132 scf/scf x 1 scf/104 Btu x 28 lb/379 scf x 10^6 x (1 – 0.98) = 2 lb/10^6 Btu

ATTACHMENT 1
JOHN ZINK CO. INFORMATION

"Rhodes, Tom" <tom.rhodes@johnzink.com>
12/17/2007 01:18 PM

To John.Ruud@Fluor.com
cc Gordon.Sims@fluor.com
bcc
Subject RE: Fw: Decarbonized Fuel Project :Ground Flare and Acid gas Elevated Flare

History: This message has been forwarded.

John, I have attached the updated spread sheet with the emission factors requested. NOTE: Some of your cells change my numbers. To see the correct number look at the to top in the formula box.
Tom

-----Original Message-----
From: John.Ruud@Fluor.com [mailto:John.Ruud@Fluor.com]
Sent: Monday, December 03, 2007 6:02 PM
To: Rhodes, Tom
Cc: Gordon.Sims@fluor.com; Kirit.Mehta@fluor.com
Subject: Re: Fw: Decarbonized Fuel Project :Ground Flare and Acid gas Elevated Flare

Tom,

We have discovered a couple of errors in the flare gas data for the startup/shutdown case previously transmitted. A corrected file is attached.

The only significant error was in the higher and lower heating values for the startup gases to the ground flare. We hope you caught this discrepancy yourself and that this change won't cause any extra work on your part.

We still desire to get at least the requested startup information sometime this week. Is that possible? Please call if any questions.

Thanks for your help.

(See attached file: DFCA flare and emission data_RevC.xls)

John Ruud

Fluor
Southern California Offices

949 349 5502
949 349 5907 (fax)

John Ruud

11/27/2007 02:50 PM

To
Tom Rhodes

cc
Gordon
Sims/AV/FD/FluorCorp@FluorCorp, William

Design Case Data

(Full flow, blocked discharge)			
		SRU Flare Data	Gasifier Flare Data
Number of Flares		1 x 100%	1 x 100%
Natural Gas as "Assist Gas" Flow to Flares, scfh		NOT REQ'D BUT SHOULD BE D'SCUSD	NOT REQ'D
Emission Factors for Total Gas Flow (Process Gas Flow, Pilot Flow, and Assist Gas Flow to Flare)			
NOx	lb/mmbtu	0.065	0.065
CO	lb/mmbtu	ZERO	98%
VOC	% Destruction	98	98
PM	lb/mmbtu	ZERO	ZERO
Flare model no.			
Budget Quote			

Normal Operation Case Data

(Pilot flow and Nitrogen Sweep to Flare)			
		SRU Flare Data	Gasifier Flare Data
Number of Flares		1 x 100%	1 x 100%
Emission Factors for Natural Gas Pilot and Sweep Flows			
NOx	lb/mmbtu	0.1200	0.1200
CO	lb/mmbtu	0.0060	0.0060
VOC	% Destruction	99+	99+
PM	lb/mmbtu	0.003	0.003

ATTACHMENT 2
CALLIDUS TECHNOLOGIES INFORMATION

Brian Duck
<bduck@callidus.com>
12/19/2007 03:13 PM

To John.Ruud@Fluor.com
cc Gordon.Sims@fluor.com, William.Becktel@Fluor.com, Kirit.Mehta@fluor.com, wkane@wfkaneco.com
bcc
Subject Fw: Decarbonized Fuel Project :Ground Flare and Acid gas Elevated Flare

History: This message has been replied to and forwarded.

John,

Attached is the completed information you requested. Please let me know if you have any questions.

Best regards,

Brian Duck
Callidus Technologies, L.L.C.
Phone: 918-523-2161
Fax: 918-496-7587
email: bduck@callidus.com

----- Forwarded by Neal Pilkington/CAL on 11/28/2007 07:04 AM -----

John.Ruud@Fluor.com

11/27/2007 04:51 PM

To NPilkington@callidus.com
cc Gordon.Sims@fluor.com, William.Becktel@Fluor.com, Kirit.Mehta@fluor.com
Subject Fw: Decarbonized Fuel Project :Ground Flare and Acid gas Elevated Flare

Neal,

What is the status of the attached flare information request from Kirit Mehta for the BP Hydrogen Energy Decarbonized Fuel Project? This currently confidential, but soon to be announced, project is also known as the HE-CA Power Project and will be located somewhere in California outside the South Coast and Bay Area AQMDs.

We are now at the stage of pre-permit application engineering work where the requested information would be very useful. We would particularly appreciate the startup/shutdown operational data requested on the third tab of Kirit's Xcel file attached below. The next priority would the information on the on the other two spreadsheet tabs. The budgetary cost can come last. Please advise your approximate timeframe to supply these three pieces.

We appreciate your help on this innovative IGCC project.. Please contact me if you need more information before Kirit returns.

Best regards,

John Ruud

Design Case Data

(Full flow, blocked discharge)			
		SRU Flare Data	Gasifier Flare Data
Number of Flares		1 x 100%	1 x 100%
Natural Gas as "Assist Gas" Flow to Flares, scfh		**None**	**None**
Emission Factors for Total Gas Flow (Process Gas Flow, Pilot Flow, and Assist Gas Flow to Flare)			
NOx	lb/mmbtu	**0.068**	**0.07**
CO	lb/mmbtu	**0.08**	**0.08 + 0.5% of CO in the gas**
VOC	% Destruction	**98**	**99**
PM	lb/mmbtu	**Neg.**	**Neg.**
Flare model no.		Callidus Model BTZ-PF-24	Callidus Model TEGF-80/50
Budget Quote		[redacted]	

Normal Operation Case Data

(Pilot flow and Nitrogen Sweep to Flare)			
		SRU Flare Data	Gasifier Flare Data
Number of Flares		1 x 100%	1 x 100%
Emission Factors for Natural Gas Pilot and Sweep Flows			
NOx	lb/mmbtu	**0.068**	**0.070**
CO	lb/mmbtu	**0.370**	**0.08**
VOC	% Destruction	**99**	**99**
PM	lb/mmbtu	**Neg.**	**Neg.**

ATTACHMENT 3
CALLIDUS TECHNOLOGIES INFORMATION

Brian Duck
<bduck@callidus .com>
11/21/2008 09:06 AM

To Kirit.Mehta@fluor.com
cc john.ruud@fluor.com, wkane@wfkaneco.com
bcc
Subject Re: Budgetory cost for an elevated flare

History: This message has been replied to.

John,

Following is the budgetary information you requested for both the Warm Flare and the Cold Flare:

<u>Warm Flare</u>
We recommend a Callidus Technologies model BTZ-PF-118 flare tip with four (4) pilots, a model VS-60 velocity seal, a guyed flare stack to provide an overall height of 250 feet, aircraft warning lights, a 12' diameter liquid seal drum located in the base of the stack with a 60" flanged inlet, ladders and platforms, utility piping, and an automatic flame front generator. Note that no assist gas is required.

Total Budget Price [redacted]
Adder for self supported flare is [redacted]

<u>Cold Flare</u>
We recommend a Callidus Technologies model BTZ-PF-16 flare tip with two (2) pilots, a model VS-16 velocity seal, a self supported flare stack to provide an overall height of 50 feet,, ladders and platforms, utility piping, and an automatic flame front generator. Note that no assist gas is required.

Total Budget Price -[redacted]
Adder if Cold Flare is mounted to Warm Flare -[redacted]

Emission data is the as follows and is the same for both flares:
NOx, lb/mmbtu = 0.068
CO, lb/mmbtu = 0.37
VOC, % Destruction = 98
PM = 0
COS, % Destruction = NA
H2S, % Destruction = 98

Please let us know if you have any questions.

Best regards,

Brian Duck
Callidus Technologies, L.L.C.
Phone: 918-523-2161
Fax: 918-496-7587
email: bduck@callidus.com

Kirit.Mehta@fluor.com

11/03/2008 06:46 PM

To npilkington@callidus.com, BDuck@callidus.com
cc Kirit.Mehta@fluor.com

ATTACHMENT 38-4
UREA PLANT VENDOR QUOTE

FLUOR

Fw: CASALE-FLUOR-060: HECA Emissions Confirmation for Permit

Jeff Scherffius to: John Ruud 07/20/2012 12:45 PM

----- Forwarded by Jeff Scherffius/AV/FD/FluorCorp on 07/20/2012 12:48 PM -----

From:	Benigni Giorgio <g.benigni@casale.ch>
To:	"Jeff.Scherffius@Fluor.com" <Jeff.Scherffius@Fluor.com>
Date:	07/20/2012 09:55 AM
Subject:	CASALE-FLUOR-060: HECA Emissions Confirmation for Permit

Dear Jeff,

following our today phone call we can confirm that the Urea Plant as designed by Casale is expected to have, during plant normal and stable operation, a total emissions of 13.1 lb/hr of ammonia from the combined HP and LP absorber vents.

Best regards
Giorgio

ATTACHMENT 38-5
UREA PASTILLATION EMISSIONS BASIS

Michael J. Martin | FLUOR | Director, Health Safety & Environmental

100 Fluor Daniel Dr. Greenville, SC 29607

IODC 20-1744

O 864-517-1744 | F 864-517-1310

Michael.J.Martin@Fluor.com

scott.m.springer   Hi Chet, My engineering group in Fellb...   08/05/2010 05:39:26 PM

From: scott.m.springer@sandvik.com
To: Chet.Leeds@fluor.com
Cc: Michael.J.Martin@fluor.com, greg.burnham@sandvik.com, kumar.swamy@sandvik.com
Date: 08/05/2010 05:39 PM
Subject: SCS PurGen Urea Project: Emission confirmations

Hi Chet,

My engineering group in Fellbach, Germany has had extensive internal discussions along with basic evaluations on existing Urea installations. The following are European Emission Limit Values (ELV's), the Rotoform HS Urea system easily comes in under these values based upon pharmaceutical grade Urea:

4.8 Statutory Emission Limit Values (ELVs)
The statutory emission limit values (ELVs) into air normally refer to specific emissions (e.g. NH_3, urea dust) from specific emission point sources (e.g. prill tower, vent, etc.). ELVs into water usually refer to the combined emissions from a site prior to discharge to the receiving water (sea, estuary or surface). No national statutory ELVs into air or water exist, for urea production units. Frequently, ELVs are negotiated between the plant/site operator and the local licensing authority. The ELVs for existing plants may reflect staged values over a defined period to enable the operator to achieve compliance. In Europe, ELVs for urea dust range from 75 to 150mg.Nm-3 and for ammonia, from 100 to 200mg.Nm-3.

The SCS PurGen project obviously has more stringent emission regulations than the values above. At this time it is extremely tough to provide concrete emission test data on the Urea sublimate & dust exhaust flow. There are several reasons for this: 1) The Urea Rotoform system is a fairly new application & has yet to require an emission standard like PurGen 2) The degree of difficulty is high in extracting application data from our clients as most are reluctant to report on their application. As a result, Sandvik is exploring options for emission testing in the near future whether it be in our Fellbach test facility or on-site at an existing installation.

Conclusion - After an intense internal evaluation, the following emission numbers are CONFIRMED & backed by Sandvik Fellbach (dated 8/5/10) :

1) Dust exhaust flow < .005 gr per dry standard cubic foot (PurGen requirement)

2) Ammonia $\leq$ 50 mg/m³ (Based on 300ppm ammonia content in Urea feed)

3) No dedicated scrubber required

ATTACHMENT 38-6
LEE RANCH COAL TYPICAL ANALYSIS

LEE RANCH COAL COMPANY

" 2009 through 2013 "
TYPICAL ANALYSIS

Raw Basis **Report Data 05/11/09**
State of New Mexico

Proximate Analysis	As Received		Dry
Moisture	14.8		
Ash	18.1		21.3
Volatile Matter	33.4		39.2
Fixed Carbon	33.7		39.5
BTU	9253		10860
Sulfur	0.93		1.09
MAFBTU		13799	
Lb. SO2/MMBTU		2.01	
Lb. S/MMBTU		1.00	

Ultimate Analysis	
Carbon	60.4
Hydrogen	4.5
Nitrogen	1.0
Chlorine	0.01
Sulfur	1.09
Ash	21.3
Oxygen	11.70
Sulfur Forms	
Pyritic	0.40
Sulfate	0.01
Organic	0.68
Water Soluble Alkalies	
Sodium Oxide	0.065
Potassium Oxide	0.005
Equilibrium Moisture	14.4
Free Swelling Index	0.0
Hardgrove Grindability Index @ 14.0% Moisture	55
Mercury Hg ppm (Dry Whole Coal Basis)	0.09
lbs.Hg / trillion Btu's	8.29

Ash Fusion	
Reducing Atmosphere	
Initial Deformation (I.D.)	2375
Softening (H=W)	2475
Hemispherical (H=1/2W)	2555
Fluid	2615
Oxidizing Atmosphere	
Initial Deformation (I.D.)	2480
Softening (H=W)	2575
Hemispherical (H=1/2W)	2640
Fluid	+2700

Mineral Analysis Of Ash (Ignited Basis)	
Silica (SiO2)	59.3
Alumina (Al2O3)	22.9
Titania (TiO2)	1.0
Ferric Oxide (Fe2O3)	5.7
Lime (CaO)	4.8
Magnesia (MgO)	1.0
Potassium Oxide (K2O)	1.1
Sodium Oxide (Na2O)	0.4
Phosphorous Pentoxide (P2O5)	0.1
Sulfur Trioxide (SO3)	3.4
Strontium Oxide (SrO)	0.1
Barium Oxide (BaO)	0.2
Manganese Dioxide (MnO2)	<0.1
Alkalies As Na2O	0.24
Base/Acid Ratio	0.16
Silica Value	83.76
Slag Viscosity @ T250	>2900
Lb. Ash/MMBTU	19.6
Lb. Na2O/MMBTU	0.08

All analyses are subject to revision due to additional coring, conditions specified in the coal supply agreement, actual operating conditions at time of mining, type of preparation at time of mining, or federal and state regulations. Analysis intended for informational purposes only.

Source Of Information	*Analysis based on production data base samples and mine model.*

Prepared by W.B. Emke

ATTACHMENT 38-7
BUENA VISTA WATER STORAGE DISTRICT GROUNDWATER ANALYTICAL RESULTS

FRUIT GROWERS LABORATORY, INC.

ANALYTICAL CHEMISTS

May 19, 2005

Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Description : 29-22-01
Project :

Lab ID : VI 540654-01
Customer ID: 4-17752

Sampled On : April 22, 2005
Sampled By : Mario & Neo
Received On: April 22, 2005
Matrix : Ground Water

General Irrigation Suitability Analysis

Test Description	Result			Graphical Results Presentation				
Cations	mg/L	%	Lbs/AF	Good	Possible Problem	Moderate Problem	Increasing Problem	Severe Problem
Calcium	336	30	910	**				
Magnesium	11	2	30	**				
Potassium	2	0	5	**				
Sodium	900	70	2400					
Anions								
Carbonate	< 20	0	0.0					
Bicarbonate	220	6	600	**				
Sulfate	780	26	2100	**				
Chloride	1550	68	4200					
Nitrate	< 2	0	0.0					
Fluoride	< 0.5	0	0.0					
Minor Elements								
Boron	4.0		11					
Copper	< 0.01		0.00					
Iron	0.31		0.84					
Manganese	0.93		2.5					
Zinc	< 0.02		0.00					
Other								
pH	7.3	units						
E. C.	5870	umhos/cm						
SAR	13.2	mg/L						
Crop Suitability								
No Amendments	Poor							
With Amendments	Poor							
Amendments								
Gypsum Requirement	2.9	Tons/AF		Apply 2.6 Tons/AF if Sulfuric Acid amendment applied. Or 30 oz/1000Gal of Urea Sulfuric Acid (15/49).				
Sulfuric Acid (98%)	13	oz/1000Gal						
Leaching Requirement	72	%						

Good ... Problem ... Indicates physical conditions and/or phenological and amendment requirements.

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

** Used in various calculations; mg/L = Milligrams Per Liter (ppm) meq/L = Milliequivalents Per Liter

Interpretations and amendment application notes are presented on the last page. The above interpretation is based upon the tolerance of salt sensitive plants.

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Stockton, CA 95215
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FAX: 209/942-0423

Field Office
Visalia, CA
TEL: 559/734-9473
FAX: 559/734-8435
Mobile: 559/737-2399

May 19, 2005

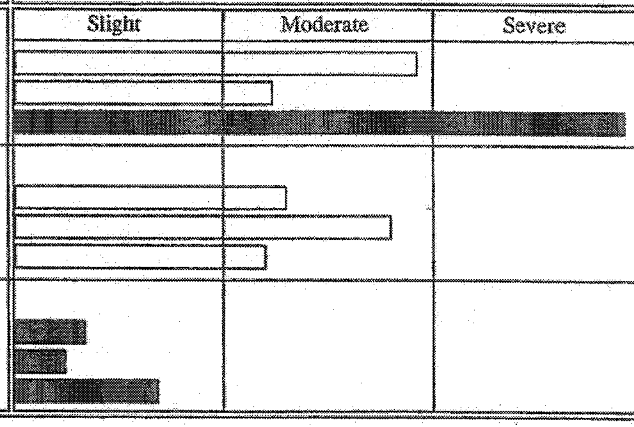
Buena Vista Water Storage District

Lab ID : VI 540654-01
Customer ID: 4-17752
Description : 29-22-01

Micro Irrigation System Plugging Hazard

Test Description	Result	
Chemical		
Manganese	0.93	mg/L
Iron	0.31	mg/L
TDS by Summation	3800	mg/L
No Amendments		
pH	7.3	units
Alkalinity	180	mg/L
Total Hardness	880	mg/L
With Amendments		
Alkalinity	40	
Total Hardness	880	mg/L
pH	5.4 - 6.7	units

Graphical Results Presentation



Good Problem Indicates physical conditions and/or phenological and amendment requirements.

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Water Amendments Application Notes:

The amendments recommended on the previous pages include:

Gypsum:

This should be applied at least once a year to the irrigated soil surface area. Gypsum can also be applied in smaller quantities in the irrigation water. Apply the smaller (bracketed) amount of gypsum when also applying the recommended amount of Sulfuric Acid and the larger amount when applying only Gypsum.

Sulfuric Acid:

These products should be applied as needed to prevent emitter plugging in micro irrigation systems and/or as a soil amendment to adjust soil pH to facilitate leaching of salts. Please exercise caution when using this material as excesses may be harmful to the system and/or the plants being irrigated. The reported Acid requirement is intended to remove approximately 80 % of the alkalinity. **The final pH should range from 5.4 to 6.7. We recommend a field pH determination to confirm that the pH you designate is being achieved.** This application is based upon the use of a 98% Sulfuric Acid product. The application of Urea Sulfuric Acid is based upon the use of a product that contains 15% Urea (1.89 lbs Nitrogen), 49% Sulfuric Acid and has a specific gravity of 1.52 at 68 $^{\circ}$F.

Guidelines for the above interpretations are sourced from USDA & U.C. Cooperative Extension Service publications. Please contact us if you have any questions.

FRUIT GROWERS LABORATORY, INC.

William L. Pidduck
Vice President

WLP:mmm

May 19, 2005

Lab ID : VI 540654-01
Customer ID : 4-17752

Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Sampled On : April 22, 2005-07:00
Sampled By : Mario & Neo
Received On : April 22, 2005-14:45
Matrix : Ground Water

Description : 29-22-01
Project :

Sample Results - Inorganic

Constituent	Results	PQL	Units	MCL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Metals, Total P:1,5								
Arsenic	26	2	ug/L	50	200.8	04/26/05:B204	200.8	04/26/2005:A04
Wet Chemistry P:1								
Solids, Total Dissolved (TDS)	3720	82♦	mg/L	1000[2]	2540C	04/29/05:A235	2540 C,E	05/01/2005:A00

ND=Non-Detect. PQL=Practical Quantitation Limit. ♦ PQL adjusted for dilutions, concentrations, dry weight reporting, or limited sample.
MCL = Maximium Contaminat Level. [2] - Secondary Standard.
Containers: (P) Plastic Preservatives: (1) Cool 4°C, (5) HNO3 pH < 2

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FAX: (209) 942-0423
CA ELAP Certification No. 1563

Field Office
Visalia, California
TEL: (559) 734-9473
FAX: (559) 734-8435
Mobile: (559) 737-2399

May 19, 2005

Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Lab ID : VI 540654-01
Customer ID : 4-17752

Sampled On : April 22, 2005-07:00
Sampled By : Mario & Neo
Received On : April 22, 2005-14:45
Matrix : Ground Water

Description : 29-22-01
Project :

Sample Results - Radio

Constituents	Result ± Error	Units	MCL	Preparation Method	Preparation Date/ID	Analysis Method	Analysis Date/ID
Radio Chemistry P:1							
Gross Alpha	2.11 ± 2.60	pCi/L	15*	7110C	05/10/05:A205	7110C	05/16/2005:A01

MCL = Maximium Contaminat Level. Containers: (P) Plastic Preservatives: (1) Cool 4°C
* Including Radium but excluding Uranium. (Ref. Title 22 sec. 64441.)

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Mobile: (559) 737-2399

FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

September 21, 2004

Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Description : 29-22-01
Project : 29-22-01

Lab ID : VI 441764-01
Customer ID: 4-17752

Sampled On : August 18, 2004-09:30
Sampled By : Tony
Received On: August 27, 2004-11:30
Matrix : Drinking Water

Sample Results - Inorganic

Constituent	Results	PQL	Units	MCL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Irrigation Suit P:1								
Total Hardness	942	2.5	mg/L		Calculation		Calculation	
Calcium	353	1	mg/L		200.7	08/30/04:A203	200.7	08/30/2004:A01
Magnesium	15	1	mg/L		200.7	08/30/04:A203	200.7	08/30/2004:A01
Potassium	2	1	mg/L		200.7	08/30/04:A203	200.7	08/30/2004:A01
Sodium	959	5*	mg/L		200.7	09/02/04:A203	200.7	09/02/2004:A02
Total Cations	60.6	--*	meq/L		Calculation		Calculation	
Boron	4.2	0.1	mg/L		200.7	08/30/04:A203	200.7	08/30/2004:A01
Copper	ND	10	ug/L		200.7	08/30/04:A203	200.7	08/30/2004:A01
Iron	210	50	ug/L		200.7	08/30/04:A203	200.7	08/30/2004:A01
Manganese	1180	10	ug/L		200.7	08/30/04:A203	200.7	08/30/2004:A01
Zinc	ND	100*	ug/L		200.7	09/02/04:A203	200.7	09/02/2004:A02
Gypsum Requirement	3.2	--*	mg/L		Calculation		Calculation	
SAR	13.6	0.1*	mg/L		Calculation		Calculation	
Total Alkalinity	220	20*	mg/L		2320B	08/30/04:B202	2320B	08/31/2004:A01
Hydroxide	ND	20*	mg/L		2320B	08/30/04:B202	2320B	08/31/2004:A01
Carbonate	ND	20*	mg/L		2320B	08/30/04:B202	2320B	08/31/2004:A01
Bicarbonate	270	20*	mg/L		2320B	08/30/04:B202	2320B	08/31/2004:A01
Sulfate	826	5*	mg/L		300.0	08/27/04:B215	300.0	08/28/2004:A07
Chloride	1530	20*	mg/L		300.0	08/27/04:B215	300.0	08/28/2004:A07
Nitrate	ND	0.4	mg/L		4500NO3F	08/31/04:A220 13:56	4500NO3F	08/31/2004:B01 15:28
Fluoride	0.7	0.5*	mg/L		300.0	08/27/04:B215	300.0	08/28/2004:A07
Total Anions	64.8	--*	meq/L		Calculation		Calculation	
pH	7.4	--	units		4500-H B	08/27/04:A246	4500-H B	08/27/2004:A01 17:14
E. C.	6160	1	umhos/cm	1600[2]	2510B	08/30/04:A212	2510B	08/30/2004:A01
TDS by Summation	3960	--*	mg/L		Calculation		Calculation	
Metals, Total P:1,5								
Arsenic	26	2	ug/L	50	200.8	09/08/04:C204	200.8	09/08/2004:A06

Table continued next page...

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Field Office
Visalia, California
TEL: (559) 734-9473
FAX: (559) 734-8435
Mobile: (559) 737-2399

September 21, 2004

Buena Vista Water Storage District

Lab ID : VI 441764-01
Customer ID: 4-17752
Description : 29-22-01

Sample Results - Inorganic

Constituent	Results	PQL	Units	MCL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry P:1								
Solids, Total Dissolved (TDS)	3900	82*	mg/L	1000[2]	2540C	08/30/04:A235	2540 C,E	08/31/2004:AU0

ND=Non-Detect. PQL=Practical Quantitation Limit. * PQL adjusted for dilutions, concentrations, dry weight reporting, or limited sample.
MCL = Maximum Contaminat Level. [2] - Secondary Standard.
Containers: (P) Plastic Preservatives: (1) Cool 4°C, (5) HNO_3 pH < 2

ANALYTICAL CHEMISTS

September 9, 2004

Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Description : 29-23-06
Project : Water Quality Monitoring

Lab ID : VI 441655-05
Customer ID: 4-17752

Sampled On : August 16, 2004-10:00
Sampled By : Tony Miranda
Received On: August 17, 2004-10:30
Matrix : Ground Water

Sample Results - Inorganic

Constituent	Results	PQL	Units	MCL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Irrigation Suit P:1								
Total Hardness	629	2.5	mg/L		Calculation		Calculation	
Calcium	216	1	mg/L		200.7	08/18/04:A203	200.7	08/18/2004:A02
Magnesium	22	1	mg/L		200.7	08/18/04:A203	200.7	08/18/2004:A02
Potassium	2	1	mg/L		200.7	08/18/04:A203	200.7	08/18/2004:A02
Sodium	239	1	mg/L		200.7	08/18/04:A203	200.7	08/18/2004:A02
Total Cations	23.0	--	meq/L		Calculation		Calculation	
Boron	0.8	0.1	mg/L		200.7	08/18/04:A203	200.7	08/18/2004:A02
Copper	ND	10	ug/L		200.7	08/18/04:A203	200.7	08/18/2004:A02
Iron	960	50	ug/L		200.7	08/18/04:A203	200.7	08/18/2004:A02
Manganese	1790	10	ug/L		200.7	08/18/04:A203	200.7	08/18/2004:A02
Zinc	ND	20	ug/L		200.7	08/18/04:A203	200.7	08/18/2004:A02
Gypsum Requirement	0.5	--	mg/L		Calculation		Calculation	
SAR	4.1	0.1	mg/L		Calculation		Calculation	
Total Alkalinity	310	10	mg/L		2320B	08/23/04:A202	2320B	08/23/2004:A01
Hydroxide	ND	10	mg/L		2320B	08/23/04:A202	2320B	08/23/2004:A01
Carbonate	ND	10	mg/L		2320B	08/23/04:A202	2320B	08/23/2004:A01
Bicarbonate	370	10	mg/L		2320B	08/23/04:A202	2320B	08/23/2004:A01
Sulfate	689	5*	mg/L		300.0	08/17/04:B215	300.0	08/18/2004:A07
Chloride	108	5*	mg/L		300.0	08/17/04:B215	300.0	08/18/2004:A07
Nitrate	ND	0.4	mg/L		300.0	08/17/04:B215 15:00	300.0	08/18/2004:A07 01:23
Fluoride	0.2	0.1	mg/L		300.0	08/17/04:B215	300.0	08/18/2004:A07
Total Anions	23.5	--	meq/L		Calculation		Calculation	
pH	7.3	--	units		4500-H B	08/17/04:A246	4500-H B	08/17/2004:A01 17:37
E. C.	2030	1	umhos/cm	1600[2]	2510B	08/18/04:A212	2510B	08/18/2004:A01
TDS by Summation	1650	--	mg/L		Calculation		Calculation	
Metals, Total P:1,5								
Arsenic	0.025	0.002	mg/L		200.8	08/19/04:A204	200.8	08/19/2004:B03

Table continued next page...

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September 9, 2004

Buena Vista Water Storage District

Lab ID : VI 441655-05
Customer ID: 4-17752
Description : 29-23-06

Sample Results - Inorganic

Constituent	Results	PQL	Units	MCL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry P:1								
Solids, Total Dissolved (TDS)	1510	40	mg/L	1000²	2540C	08/19/04:A235	2540 C,E	08/20/2004:A00

ND=Non-Detect. PQL=Practical Quantitation Limit. ♦ PQL adjusted for dilutions, concentrations, dry weight reporting, or limited sample.
MCL = Maximium Contaminat Level. ² - Secondary Standard.
Containers: (P) Plastic Preservatives: (1) Cool 4°C, (5) HNO3 pH < 2

FGL FRUIT GROWERS LABORATORY, INC. COPY

ANALYTICAL CHEMISTS

August 25, 2004

Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Description : 29-23-21
Project :

Lab ID : VI 441606-01
Customer ID: 4-17752

Sampled On : August 10, 2004
Sampled By : Mario & Tony
Received On: August 11, 2004
Matrix : Ground Water

General Irrigation Suitability Analysis

Test Description	Result			Graphical Results Presentation				
Cations	mg/L	%	Lbs/AF	Good	Possible Problem	Moderate Problem	Increasing Problem	Severe Problem
Calcium	194	52	530	**				
Magnesium	20	9	54	**				
Potassium	2	1	5	**				
Sodium	168	40	460					
Anions								
Carbonate	< 10	0	0.0					
Bicarbonate	180	15	490	**				
Sulfate	459	48	1200	**				
Chloride	268	37	730					
Nitrate	< 0.4	0	0.0					
Fluoride	0.2	0	0.5					
Minor Elements								
Boron	0.6		1.6					
Copper	< 0.01		0.00					
Iron	3.6		9.8					
Manganese	1.8		4.9					
Zinc	< 0.02		0.00					
Other								
pH	6.6	units						
E. C.	1820	umhos/cm						
SAR	3.1	mg/L						
Crop Suitability								
No Amendments	Poor							
With Amendments	Poor							
Amendments								
Gypsum Requirement	0.00	Tons/AF		Do not apply if Sulfuric Acid amendment is applied.				
Sulfuric Acid (98%)	10	oz/1000Gal		Or 25 oz/1000Gal of Urea Sulfuric Acid (15/49).				
Leaching Requirement	15	%						

Good — Problem; ▒ Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.
** Used in various calculations; mg/L = Milligrams Per Liter (ppm) meq/L = Milliequivalents Per Liter

Interpretations and amendment application notes are presented on the last page. The above interpretation is based upon the tolerance of salt sensitive plants.

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ANALYTICAL CHEMISTS

September 9, 2004

Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Lab ID : VI 441655-06
Customer ID: 4-17752

Sampled On : August 16, 2004-10:00
Sampled By : Tony Miranda
Received On: August 17, 2004-10:30
Matrix : Ground Water

Description : 29-23-06
Project : Water Quality Monitoring

Sample Results - Radio

Constituents	Result ± Error	Units	MCL	Preparation Method	Preparation Date/ID	Analysis Method	Analysis Date/ID
Radio Chemistry P:1							
Gross Alpha	4.64 ± 1.22	pCi/L	15*	7110C	08/24/04:A205	7110C	08/27/2004:A01

MCL = Maximum Contaminat Level. Containers: (P) Plastic Preservatives: (1) Cool 4°C
* Including Radium but excluding Uranium. (Ref. Title 22 sec. 64441.)

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ANALYTICAL CHEMISTS

August 25, 2004

Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Lab ID : VI 441606-01
Customer ID: 4-17752

Sampled On : August 10, 2004
Sampled By : Mario & Tony
Received On: August 11, 2004-11:00
Matrix : Ground Water

Description : 29-23-21
Project :

Sample Results - Inorganic

Constituent	Results	PQL	Units	MCL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Wet Chemistry P:1								
Solids, Total Dissolved (TDS)	1240	40	mg/L	1000²	2540C	08/13/04:B235	2540 C,E	08/16/2004:B00

ND=Non-Detect. PQL=Practical Quantitation Limit. ♦ PQL adjusted for dilutions, concentrations, dry weight reporting, or limited sample.
MCL = Maximium Contaminat Level. ² - Secondary Standard.
Containers: (P) Plastic Preservatives: (1) Cool 4°C

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August 25, 2004

Buena Vista Water Storage District

Lab ID : VI 441606-01
Customer ID: 4-17752
Description : 29-23-21

Micro Irrigation System Plugging Hazard

Test Description	Result		Graphical Results Presentation		
			Slight	Moderate	Severe
Chemical					
Manganese	1.8	mg/L			
Iron	3.6	mg/L			
TDS by Summation	1300	mg/L			
No Amendments					
pH	6.6	units			
Alkalinity	150	mg/L			
Total Hardness	570	mg/L			
With Amendments					
Alkalinity	30				
Total Hardness	570	mg/L			
pH	5.4 - 6.7	units			

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Water Amendments Application Notes:

The amendments recommended on the previous pages include:

Sulfuric Acid:

These products should be applied as needed to prevent emitter plugging in micro irrigation systems and/or as a soil amendment to adjust soil pH to facilitate leaching of salts. Please exercise caution when using this material as excesses may be harmful to the system and/or the plants being irrigated. The reported Acid requirement is intended to remove approximately 80 % of the alkalinity. **The final pH should range from 5.4 to 6.7. We recommend a field pH determination to confirm that the pH you designate is being achieved.** This application is based upon the use of a 98% Sulfuric Acid product. The application of Urea Sulfuric Acid is based upon the use of a product that contains 15% Urea (1.89 lbs Nitrogen), 49% Sulfuric Acid and has a specific gravity of 1.52 at 68 °F.

Guidelines for the above interpretations are sourced from USDA & U.C. Cooperative Extension Service publications. Please contact us if you have any questions.

FRUIT GROWERS LABORATORY, INC.

WLP:cea

William L. Pidduck
Vice President

ANALYTICAL CHEMISTS

August 25, 2004

Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Description : 29-23-21
Project :

Lab ID : VI 441606-01
Customer ID: 4-17752

Sampled On : August 10, 2004
Sampled By : Mario & Tony
Received On: August 11, 2004-11:00
Matrix : Ground Water

Sample Results - Radio

Constituents	Result ± Error	Units	MCL	Preparation Method	Preparation Date/ID	Analysis Method	Analysis Date/ID
Radio Chemistry P:1							
Gross Alpha	7.75 ± 5.49	pCi/L	15*	900.0	08/13/04:A207	900.0	08/19/2004:A01

MCL = Maximium Contaminat Level. Containers: (P) Plastic Preservatives: (1) Cool 4°C
* Including Radium but excluding Uranium. (Ref. Title 22 sec. 64441.)

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ANALYTICAL CHEMISTS

September 4, 2001

Buena Vista Water Storage District
P. O. Box 756
Buttonwillow, CA 93206

Description : 98 29 22
Project : Buena Vista Water Storage District

Lab ID : VI 141660-15
Customer ID: 4-17752

Sampled On : July 31, 2001-14:30
Sampled By : D. Barte/T. Miranda
Received On: August 3, 2001-09:30
Matrix : Ground Water

Sample Results - Inorganic

Constituent	Results	PQL	Units	MCL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Irrigation Suit P:1,4,5								
Total Hardness	816	2.5	mg/L					
Calcium	309	1	mg/L		200.7	08/06/01:B203	200.7	08/07/2001:A05
Magnesium	11	1	mg/L		200.7	08/06/01:B203	200.7	08/07/2001:A05
Potassium	2	1	mg/L		200.7	08/06/01:B203	200.7	08/07/2001:A05
Sodium	944	5♦	mg/L		200.7	08/06/01:B203	200.7	08/09/2001:A03
Total Cations	57.4	--♦	meq/L					
Boron	3.84	0.05	mg/L		200.7	08/06/01:B203	200.7	08/07/2001:A05
Copper	ND	10	ug/L		200.7	08/06/01:B203	200.7	08/07/2001:A05
Iron	240	50	ug/L		200.7	08/06/01:B203	200.7	08/07/2001:A05
Manganese	840	10	ug/L		200.7	08/06/01:B203	200.7	08/07/2001:A05
Zinc	ND	20	ug/L		200.7	08/06/01:B203	200.7	08/07/2001:A05
Gypsum Requirement	3.3	--♦	mg/L					
SAR	14.4	0.1♦	mg/L					
Total Alkalinity	180	10	mg/L		2320B	08/07/01:B202	2320B	08/07/2001:A02
Hydroxide	ND	10	mg/L		2320B	08/07/01:B202	2320B	08/07/2001:A02
Carbonate	ND	10	mg/L		2320B	08/07/01:B202	2320B	08/07/2001:A02
Bicarbonate	220	10	mg/L		2320B	08/07/01:B202	2320B	08/07/2001:A02
Sulfate	770	10♦	mg/L		300.0	08/03/01:B215	300.0	08/04/2001:A06
Chloride	1470	20♦	mg/L		300.0	08/03/01:B215	300.0	08/04/2001:A06
Nitrate	ND	0.4	mg/L		4500NO3F	08/23/01:A220 15:00	4500NO3F	08/23/2001:C02 18:29
Fluoride	ND	0.1	mg/L		300.0	08/03/01:B215	300.0	08/04/2001:A06
Total Anions	61.1	--	meq/L					
pH	7.4	--	units		4500-H B	08/03/01:C246	4500-H B	08/03/2001:C01 14:05
E. C.	6130	1	umhos/cm	1600[2]	2510B	08/03/01:C212	2510B	08/03/2001:B01
TDS by Summation	3730	--	mg/L					

ND=Non-Detect. PQL=Practical Quantitation Limit. ♦ PQL adjusted for dilutions, concentrations, dry weight reporting, or limited sample.
MCL = Maximum Contaminat Level. [2] - Secondary Standard.
Containers: (P) Plastic Preservatives: (1) Cool 4°C, (4) H2SO4 pH < 2, (5) HNO3 pH < 2

Report continued next page...

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Table B.1 - Water Quality Analysis - Feed

DWR Bryte Laboratory Analysis Results for Buena Vista Project

Note: all results are in mg/L unless otherwise stated

Feed Stream		4/1/2002	4/8/2002	4/15/2002	4/23/2002	4/29/2002	5/6/2002	5/13/2002	5/21/2002	5/29/2002	6/3/2002	6/10/2002	6/17/2002	6/24/2002
Dissolved Bicarbonate	as ion					264								
Dissolved Carbonate	as ion					1								
Dissolved Chloride						1,530								
EC	uS/cm @ 25 C					6,550								
Dissolved Barium														
Dissolved Boron						3.6								
Dissolved Calcium						395								
Dissolved Fluoride														
Dissolved Iron														
Dissolved Magnesium						64								
Dissolved Nitrate	as N													
Dissolved Nitrite	as N													
DOC	as C					5.1								
Dissolved Phosphate	as P													
Dissolved Potassium														
Dissolved Selenium														
Dissolved Silica						27								
Dissolved Sodium						900								
Dissolved Strontium														
Dissolved Sulfate						908								
Hardness	as CaCO3					1,250								
Hydroxide	as CaCO3					<1								
pH	pH units					7.5								
Total Alkalinity	as CaCO3					263								
TDS						4,204								
UV254	absorb./cm					0.166								
Total Barium						<.05								
Total Calcium														
Total Iron												4.84	1.16	2.57
Total Magnesium														
TOC as C	as C				6.2	5.5	6	8.5	6.9	7.6	7.6	10.7	10.4	5.8
Total Potassium														
Total Selenium						0.019								
Total Silica														
Total Sodium														
Total Strontium						3.6								
TSS		<1	3	2	7	4	4	5	9	5	10	2	2	9
Turbidity	NTU	<1	16	13	7	17	13.8	11.2	11	6	30	8	21	22

Table 8.1 - Water Quality Analysis - Feed (cont.)

DWR Bryte Laboratory Analysis Results for Buena Vista Project

Note: all results are in mg/L unless otherwise stated

Feed Stream		7/1/2002	7/8/2002	7/16/2002	7/22/2002	7/30/2002	8/5/2002	8/12/2002	8/19/2002	8/27/2002	9/3/2002	9/16/2002	9/30/2002	10/15/2002	10/21/2002	10/28/2002	11/4/2002	11/11/2002	11/20/2002	11/25/2002	12/4/2002
Dissolved Bicarbonate	as ion	292									223						284				280
Dissolved Carbonate	as ion	<1									<1						<1				<1
Dissolved Chloride		1,534									1,190						1,490				1,530
EC	uS/cm @ 25 C	6,240									6,150						6,120				6,330
Dissolved Barium																					
Dissolved Boron		3.6									3						3.7				4
Dissolved Calcium		372									268						331				358
Dissolved Fluoride																					
Dissolved Iron																					
Dissolved Magnesium		70									49						61				69
Dissolved Nitrate	as N																				
Dissolved Nitrite	as N																				
DOC	as C	8									3.9						5.4				8
Dissolved Phosphate	as P																				
Dissolved Potassium																					
Dissolved Selenium																					
Dissolved Silica		28									28						28				30
Dissolved Sodium		896									761						883				890
Dissolved Strontium																					
Dissolved Sulfate		930									760						860				908
Hardness	as CaCO3	1,217									868						1,076				1,170
Hydroxide	as CaCO3	<1									<1						<1				<1
pH	pH units	7.2									7						7				7.2
Total Alkalinity	as CaCO3	290									223						264				280
TDS																					3,880
UV254	absorb./cm	0.144									0.191						0.137				0.113
Total Barium		<.5									<.5						<0.5				<.25
Total Calcium																					
Total Iron		1.22	1.32			1.88					4.65										1.3
Total Magnesium																					
TOC as C	as C	8.7	6.5	6.1	8.1	6.9	6	6.1	8.5	8.5	4.3	5.9	6.8	5.5	6.9	7.5	3.8	3	3.2	7.7	803
Total Potassium																					
Total Selenium		0.028									0.017						0.02				0.023
Total Silica																					
Total Sodium																					
Total Strontium		3.21									2.29						2.72				2.90
TSS		3	<1	4	4	4	1	4	3	2	11	6	9	4	3	2	3	4	4	9	4
Turbidity	NTU	14	13	10	10	10	10	20	11	7	26	36	34	11	12	15	13	17	18	36	16

BACKGROUND: VOC AND PM10/PM2.5 EMISSIONS FROM TAIL GAS THERMAL OXIDIZER

The Project would operate a tail gas thermal oxidizer to safely dispose of a) tail gas from the sulfur recovery unit ("SRU") in the event of an emergency or upset, b) waste gas during SRU startups, and c) miscellaneous vent streams from the gasification area. The AFC estimates VOC and PM10/PM2.5 emissions from the tail gas thermal oxidizer while combusting these gas streams based on emission factors from EPA's AP-42, Chapter 1.4 for natural gas combustion. These calculations may underestimate VOC and PM10/PM2.5 emissions from the tail gas thermal oxidizer. The AFC provides no support for this assumption.

DATA REQUEST

53. Please discuss why the emission factors for VOC and PM10/PM2.5 provided in AP-42, Chapter 1.4, for natural gas combustion are deemed representative for combustion in the tail gas thermal oxidizer of a) SRU tail gas in the of an emergency or upset, b) waste gas during SRU startups, and c) miscellaneous vent streams from the gasification area.

RESPONSE

The prior Project proposal that was used as the basis for NO_x and carbon monoxide emission factors for this equipment (see Attachment 38-2) did not contain information on PM or volatile organic compound (VOC) emissions. In addition, AP-42 does not contain emission factors for gaseous oxidizers such as the Tail Gas Thermal Oxidizer. Because no other sources were readily available, the emission factors for general natural gas combustion were selected. These factors are appropriate for two reasons:

1. In the new Project configuration, the SRU tail gas will be completely recycled to the syngas treating system; therefore, there will be no tail gas treating unit vent gas to dispose in the thermal oxidizer. As a consequence of this design, the thermal oxidizer will normally combust the natural gas assist fuel with only minor amounts of miscellaneous process vent streams from various units in the plant.

2. The natural gas emission factors for PM and VOC likely overestimate these emissions from the thermal oxidizer, because it will be designed for a higher combustion efficiency (i.e., destruction efficiency) by employing higher temperature and residence time than more typical natural gas combustion equipment.

DATA REQUEST

54. If necessary, please provide revised emission factors and emission estimates for VOC and PM10/PM2.5 emissions from the tail gas thermal oxidizer.

RESPONSE

See response to Data Request 53.

DATA REQUEST

85. The transportation of ammonia, and any other hazardous material, poses a risk of exposure to the surrounding population due to an accidental release caused by a traffic accident involving the delivery vehicle. The possibility of accidental release during delivery depends upon the skill of the drivers, the type of vehicle used for transport, and the traffic conditions or road type. Because of the potential impact on the public, there are extensive regulatory programs in place in the United States and California to ensure safety during the transportation of hazardous materials, including the Federal Hazardous Materials Transportation Law (49 U.S.C. §5101 et seq.), the U.S. Department of Transportation Regulations (49 CFR Subpart H, §172-700), and California DMV Regulations on Hazardous Cargo (CCR, Vehicle Code, §34000). These regulations also address the driver's abilities and experience. Because of these regulations, CEC staff typically focuses on the potential for an incidence after the delivery vehicle has left the main highway due to the greater potential for accidents to occur on non-highway roads. The AFC does not provide a risk analysis for transportation of anhydrous ammonia resulting from a tanker accident on non-highway delivery routes.

- ***a) Please identify the non-highway delivery routes for transportation of anhydrous ammonia to customers and identify all sensitive receptors (e.g., residences, schools, places of worship, etc.) along these routes.***

- ***c) Please provide a risk analysis for transportation of anhydrous ammonia resulting from a delivery vehicle accident. Please consider the agricultural nature of the surrounding area and the likely presence of slow-moving and oversized agricultural vehicles.***

RESPONSE

HECA has revised the Project to eliminate the off-site transport and sale of anhydrous ammonia. Because of this change, only urea and urea ammonium nitrate for agricultural use will be transported off-site for sale. Therefore, non-highway delivery routes and a risk analysis for the transportation of anhydrous ammonia is not applicable to the Project. For the same reason, the Applicant's previously submitted responses to Sierra Club Data Request 85.b and CEC Data Request A97 are no longer applicable.

BACKGROUND: IMPACTS ON EXISTING RAIL TRAFFIC ASSOCIATED WITH RAIL TRANSPORT OF RAW MATERIALS AND PRODUCTS

The Project would require up to 20,051 train cars annually for transportation of coal and products (liquid sulfur, gasification solids, ammonia, urea, and urea ammonia nitrate. (AFC, Appx. E-5, p. 3.) The AFC does not discuss the potential impacts on the existing use of rail corridors.

DATA REQUEST

95. Please discuss the practical and theoretical capacity of the existing rail corridors that would be used for transportation of the Project's raw materials and products.

RESPONSE

The Project would generate two trains (both directions) per week on average. The San Joaquin Valley Railroad (SJVR) route from Bakersfield to Buttonwillow has train traffic of one or two trains (both directions) per day on average, which is a fraction of its capacity. Therefore, Project train traffic would have a negligible effect on the route. Similarly, because of the small volume, the Project train traffic would have a negligible effect on the regional rail network.

DATA REQUEST

96. Please discuss whether the additional train cars would result in constraints to the passenger rail system or adversely affect the transport of freight in California and/or New Mexico.

RESPONSE

One Amtrak passenger train per day (both directions) operates on the Burlington Northern Santa Fe (BNSF) route from Los Angeles to Chicago. Project train traffic would operate on a portion of the same route west of central New Mexico. In most regions, this route is double-tracked, and train dispatching is done with centralized traffic control. Because of the small volume, Project train traffic would have a negligible effect on passenger traffic over this route. Similarly, Project train traffic generated would have a negligible effect on freight traffic over the same route.

Other routes that operate passenger trains are the BNSF San Joaquin Valley route from Stockton to Bakersfield, where six passenger trains (both directions) per day currently operate; and Union Pacific Railroad's route from Sacramento north to Oregon, where one passenger train (both directions) per day to Oregon and Washington currently operates. No impact on this service is anticipated.

DATA REQUEST

97. Please indicate whether the rail system would require improvements to the existing rail corridors.

RESPONSE

The only improvements anticipated to accommodate project train traffic would be the upgrading of approximately 7 miles of the SJVR track from Bakersfield to the railroad spur. No other improvements are anticipated.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
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AMENDED APPLICATION FOR CERTIFICATION FOR THE HYDROGEN ENERGY CALIFORNIA PROJECT

Docket No. 08-AFC-08A
(Revised 10/9/12)

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DECLARATION OF SERVICE

I, Dale Shileikis, declare that on November 5, 2012, I served and filed a copy of the attached Responses to Sierra Club Data Requests: Nos. 1 through 97 (60-Day Extension), 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:

__X__ 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:

__X__ 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 Counsel 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
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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.

Dale Shileikis