Board of Supervisors Hearing
July 23, 2019

MINOR MODIFICATION TO RENAISSANCE PETROLEUM PROJECT
CONDITIONAL USE PERMIT NO. 4384
CASE NO. PL14-0103

Exhibit 29

Additional Information for Attachment 8 of Exhibit 22b (MND addendum attachments)

GHG emissions estimate for drilling of one oil well

Baca, Brian

From: Tyler Harris <tyler@vcapcd.org>
Sent: Tuesday, May 21, 2019 12:07 PM
To: Baca, Brian
Cc: Nicole Collazo; aghasemi; Tyler Harris; Villegas, Michael
Subject: [External] Oil Well Drilling GHG Emissions
Attachments: GHG emissions from drilling one generic oil well.pdf

Brian,

Per your request, please see below a summary of greenhouse gas (GHG) emissions from the drilling of a single generic oil well. The calculations are based on the assumption outlined in a memo to you from Chuck Thomas dated September 6, 2017, i.e. drilling will require combustion of 1,000 gallons of diesel fuel per day. Per our conversation, it will take 60 days to drill a single well. Emission factors and global warming potential (GWP) values obtained from EPA Emission Factors for Greenhouse Gas Inventories modified 9 March 2018.

For a single well, I estimate 615 metric tonnes (MT) of GHG expressed as carbon dioxide equivalents (CO2e). For a project with four wells, the total GHG emissions are estimated at 2,460 MT CO2e from the drilling operations. I have attached a PDF showing the calculations used to reach these estimates.

Commuter trip emissions are expected to be insignificant compared to the emissions from drilling equipment.

Please let me know if you have any questions.

Best regards,
Tyler

Tyler S. Harris
Air Quality Engineer
Ventura County Air Pollution Control District
669 County Square Drive 2nd Floor
Ventura, CA 93003
Phone: (805) 645-1407
Fax: (805) 645-1444
tyler@vcapcd.org

Please note my work schedule is Monday through Thursday 7:00 AM – 5:30 PM (4/10 schedule, off on Fridays). I telecommute on Wednesdays and monitor my email and voice mail regularly.

Emissions to drill one generic oil well

Fuel burned	1,000	gal diesel per day	(per Sept. 6, 2017 Memo from Chuck Thomas)
Average time to drill one well	60	days	
Total fuel burned	60,000	gallons diesel fuel	
CO2 emission factor	10.21	kg CO2/gallon burned	
CH4 emission factor	0.00041	kg CH4/gallon burned	
N2O emission factor	0.00008	kg N2O/gallon burned	
CO2 emissions	612.6	MT CO2/well	1MT = 1000 kg
CH4 emissions	0.0246	MT CH4/well	
N2O emissions	0.0048	MT N2O/well	
CH4 GWP	25	MTCO2e/MT CH4	
N2O GWP	298	MT CO2e/MT N2O	
Single well GHG emissions	**615**	MT CO2e per well drilled	

Emission factors and GWP from EPA Emission Factors for Greenhouse Gas Inventories modified 9 March 2018
https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf