

Appendix J – GHG Calculations

Background Information:

29.2%			diesel wells/generators		
70.8%			electric wells		
1.02 kWh	per	1 AF by 1 foot	(UC Tulare County)		http://cetulare.ucanr.edu/files/82040.pdf
3412.14 BTU	per	kWh			
139,000 BTU	per	gallon of diesel	(Corr et. Al. 2011)		https://www.ksre.ksu.edu/irrigate/OOW/
23% percent		efficiency for diesel	(Corr et. Al. 2011)		https://www.ksre.ksu.edu/irrigate/OOW/
70% percent		efficiency for electric	(UC Tulare County)		http://cetulare.ucanr.edu/files/82040.pdf
22.38 lbs CO2	per	gallon of diesel	(US EIA)		http://www.eia.gov/tools/faqs
610.82 lbs CO2	per	MWh in California	(US EPA)		http://www.epa.gov/cleanenergy/docum
1,000 kWh	per	MWh			
2205 lbs	per	metric ton			

No Action Alt 1a:

18,000 AFY	total	pumping	
30 feet		average depth	
5,262 AFY		Water pumped with diesel	
161,003 kWh		Power needed at 100% efficiency	
700,013 kWh		Power needed at 23% efficiency	
2,388,543,647 BTU		Power needed at 23% efficiency	
17,184 gallons		Diesel Fuel needed	
384,573 lbs		CO2 from diesel	
174 metric tons		CO2 from diesel	
12,738 AFY		Water pumped with electric	
389,797 kWh		Power needed at 100% efficiency	
556,853 kWh		Power needed at 70% efficiency	
557 MWh		Power needed at 70% efficiency	
340,137 lbs		CO2 from electricity	
154 metric tons		CO2 from electricity	
329 metric tons		CO2 Total	

No Aciton Alt 1b:

25,000 AFY	total	pumping in Westlands
400 feet		average depth
10,200,000 kWh		Power needed at 100% efficiency
14,571,429 kWh		Power needed at 70% efficiency
14,571 MWh		Power needed at 70% efficiency
8,900,520 lbs		CO2 from electricity
4,037 metric tons		CO2 from electricity

3,708 metric tons CO2 Total

3,684

Proposed Action:

26,316 AFY 30 feet	total	pumping in Westlands average depth
7,692 AFY		Water pumped with diesel
235,386 kWh		Power needed at 100% efficiency
1,023,420 kWh		Power needed at 23% efficiency
3,492,050,812 BTU		Power needed at 23% efficiency
25,123 gallons		Diesel Fuel needed
562,245 lbs		CO2 from diesel
255 metric tons		CO2 from diesel
18,624 AFY		Water pumped with electric
569,883 kWh		Power needed at 100% efficiency
814,119 kWh		Power needed at 70% efficiency
814 MWh		Power needed at 70% efficiency
497,280 lbs		CO2 from electricity
226 metric tons		CO2 from electricity
481 metric tons		CO2 Total

edu/files/82040.pdf

.edu/irrigate/OOW/P11/Kranz11a.pdf

.edu/irrigate/OOW/P11/Kranz11a.pdf

edu/files/82040.pdf

ools/faqs/

cleanenergy/documents/egridzips/eGRID_9th_edition_V1-0_year_2010_GHG_Rates.pdf