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September 30, 2013

Comments to the Department of Energy re the Draft Evironmental Impact Statement for Hydrogen Energy California via email: fred.pozzuto@netl.doe.gov and also to the California Energy Commission re the Preliminary Staff Assessment, Docket No. 08-AFC-8A submitted electronically

General Comments:

The DEIS/PSA is lacking too much information, by its own admission, to be considered a complete and adequate discussion of the significant environmental impacts of the HECA project. We recommend these deficiencies be fixed and the document recirculated for public comment. This must be done before a final EIS or FSA can be released and before any final decision is made on the project.

There are deficiencies in at least the following areas: Waste Management, Water Supply, Traffic and Transportation, Carbon Sequestration, total GHG emissions, Environmental Justice, Biological Resources and Air Quality.

Also, the description of the project by the DOE and the rationalization of need and purpose is not adequate or accurate. The project is not described accurately as an industrial plant manufacturing CO2 and fertilizer. There is no proper or adequate or reasonable analysis of why this project is needed, why it requires so much federal subsidy, and how it will lesson the effects of climate change on the world.

Reasonable alternatives to the project and within the project are not provided adequately in this document. We feel there are cheaper, easier, and less environmentally harmful ways to achieve the same goals which have not been considered as alternatives.

Some discussion of these and other issues continues below.

Air Quality:

The air pollution analysis for HECA is not accurate and the mitigation is not sufficient. Seven points on these two issues follows below:

One: Choice of background monitor readings was not conservative as is required in the case of background NO2 data. Below are the maximum hourly NO2 data from three monitoring stations in Kern County

	Arvin	Shafter	Bakersfield California Ave
2008	0.033	0.057	.083 (10/28)
2009	0.051	0.052	.069 (11/04)
2010	0.032	0.074	.079 (09/28)

The readings at the California monitor appear average more than 20% higher than at the Shafter monitor for the three years under consideration. This choice seems to be a way of purposely underestimating background data in order to meet State, if not, Federal standards. Please justify why the Shafter monitor was used instead of the California Ave monitor. The HECA site is not similar to the Shafter site except for some relatively flat farmland to the north of the two locations. The Shafter monitor is actually in the center of town near Hwy 43. HECA is downwind of I-5 and up against the Elk Hills. HECA is downwind of the oil fields along Hwy 33. Shafter is downwind of farmland and little else. Given these differences, the best approach would be to use the most conservative monitor in Kern County which seems to be the California Ave monitor. The California monitor was used for other background readings, why not the NO2 levels?

Two: The mitigation does not cover any pollution from the injection of the CO2. This means the OEHI pollution will be permitted separately by the Valley air district instead of added cumulatively to the project and the mitigation will be less than if it were combined with the HECA project. Pollution below certain thresholds will not be mitigated and the CEC will not be approving this mitigation. This permitting will happen after project approval with no opportunity for public discussion before the CEC or DOE. Please make a condition that all criteria air pollutants from the enhanced oil recovery operations be added directly to pollution totals already considered by the air district in their Determination of Compliance so that every pound of pollution from this part of the HECA project is mitigated fully.

Three: The offset ratio for trading SOx emission reduction credits for PM10 (or PM2.5) is not the ratio that has already been approved by the Valley air district in early 2013. The amount of SOx credits needed for each ton of PM10 needs to be significantly higher and at a minimum the air district approved ratio of 4.1:1 must be used.

Four: The $9 million dollar voluntary payments to the air district for eliminating emissions in the Valley through incentive funding is insufficient. We believe in 2013 it takes at least $110,000 on average to eliminate a ton of NOx with incentive funding in the Central Valley and the amount keeps climbing year after year. The air district used a smaller average figure for reducing a ton of NOx. They seemed to use $67,000 which needs to be justified. It seems the Air District is using the cost of buying a ton of emission reduction credits and not the cost of incentive funding for reducing a ton of NOx emissions. The figure representing per ton cost has to be based on what they are

spending currently to reduce a ton of NOx through incentive funding and any other programs where they are spending this type of money. At least 5% has to be removed from this funding for overhead as well. There is every reason to believe the $9 million will most likely pay for the elimination of less than 80 tons of actual NOx emissions.

- Point A: This estimated 80 Tons of annual NOx (or less) mentioned above will be eliminated throughout the San Joaquin Valley from Stockton to Kern County. The Air District goal is to spend their incentive funds as equally as possible throughout the air basin. Stockton may have only 2 ozone violations per year while Bakersfield is having more than 60 (2012 data) but Kern County does not necessarily get anymore of the NOx reductions than Stockton. Eliminating NOx in Stockton will not help Kern County as much as eliminating NOx in Kern County given that is where the project is located and where the project will be emitting over 200 tons of new NOx emissions annually. Kern County produces far more NOx from stationary sources than Stockton and not all NOx produced in Stockton drifts down to Kern County. That is one major problem with the $9 million. It is not all being spent in Kern County, especially near the HECA site, or downwind of HECA towards Arvin, where a lot of the effects of HECA's new air pollution will take place.

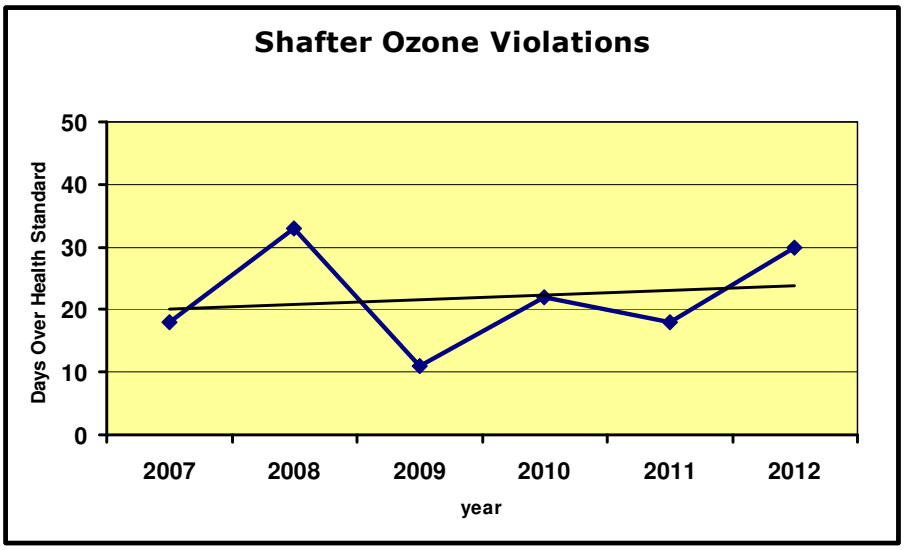
- Point B: The NOx forms both ozone and PM2.5 but reductions in NOx cannot be used for both because there are violations of ozone standards and PM2.5 standards on the same day in Kern County and elsewhere in the Valley during parts of the year. Kern is also in violation of annual standards for PM 2.5 and many days when there is an ozone violation, the PM2.5 levels are above the annual average federal standard for PM 2.5. Thes dual violations happen most often during the months of April, May, and October. Kern could obviously benefit from NOx reductions which are forming ozone and additional NOx reductions which are forming PM2.5 on the same day. Therefore, any NOx mitigation from this $9 million should not be considered to offset both ozone and PM2.5 precursors simultaneously such as where PM2.5 is formed as a combination of NOx and ammonia. One recent example: On October 15, 2012, the Bakersfield Municipal monitor registered 77 ppb for 8-hour ozone and 40 micrograms/m3 for 24 hour PM2.5. Reductions in NOx cannot be considered to mitigate for both types of pollution at the same time on days like this. In other words, there should be no statements from anyone that a specific quantity of NOx reductions will reduce both ozone and PM2.5.

- Point C: The numbers for tons mitigated don't add up to what is being emitted. HECA, including transportation, will emit 195 tons of NOx that must be mitigated (plus 21 from OEHI). The emission reduction credits mitigate approximately 148 tons of NOx. The $9 mitigates, at most, 80 tons of NOx. That leaves a surplus or excess of maybe 12 tons of NOx. What the air district claims is being mitigated with the money such as construction emissions and inefficiency emissions is not there in this total. Also, less than 28 tons of actual VOC emissions are being mitigated with erc's yet the total VOC emissions are more than 41 tons. Only 156

tons of SOx, PM10 and PM2.5 are mitigated with erc's. HECA emits 210 tons of these types of emissions. Conclusion: After looking at the erc's and the money for incentive funding, there are at least 55 tons of emissions from HECA which are not being mitigated at all. To claim otherwise is misleading the public. To make the claim, as Seyed Sadredin of the Valley air district did before the Kern County Board of Supervisors on February 26, 2013, that HECA mitigations will result in a net air quality benefit for the region, is an outright lie and needs to be refuted by HECA, the DOE, and the CEC. Go to this link to hear this outrageous statement from Sadredin approximately at minute 29 of the recording: http://kern.granicus.com/MediaPlayer.php?view_id=33&clip_id=2283

- Point D: If the $9 million is assumed to apply only to project wide NOx emissions and it is barely sufficient to offset the tons left over after the erc's are counted, then almost none of the $9 million can offset other emissions as claimed by the air district. For example, the inefficiency factor of 16 tons of NOx is not being offset as claimed by the Air District by the 12 tons of NOx reductions that may be left over. No construction emissions are being offset either. There is still a question about NOx emissions from the rail yard engine in Wasco which will be unloading coal cars for close to 18 hours per day and 365 days out of the year.

Five: The Emission Reduction Credits (ERC's) HECA is using for mitigation are valid only if the air district can show it is making reasonable progress towards meeting health standards. This is not the case in recent years in Kern County. Using the Shafter monitor, as HECA chose for the background NO2 readings, we can look at the past six years of average ozone readings and see that Shafter's air is not improving at a rate that will get the area into compliance (basically zero violations) with federal air quality standards. The graph below illustrates the point that the number of 2008 8-hour ozone standard violations in Shafter is not improving at a satisfactory rate for the years 2007-2012 and, in fact, may be seen as increasing. The source for these numbers is CARB's AQMIS web page
http://www.arb.ca.gov/aqmis2/display.php?param=OZONE&units=007&year=2013&report=SITEMYR&site=2981&ptype=aqd



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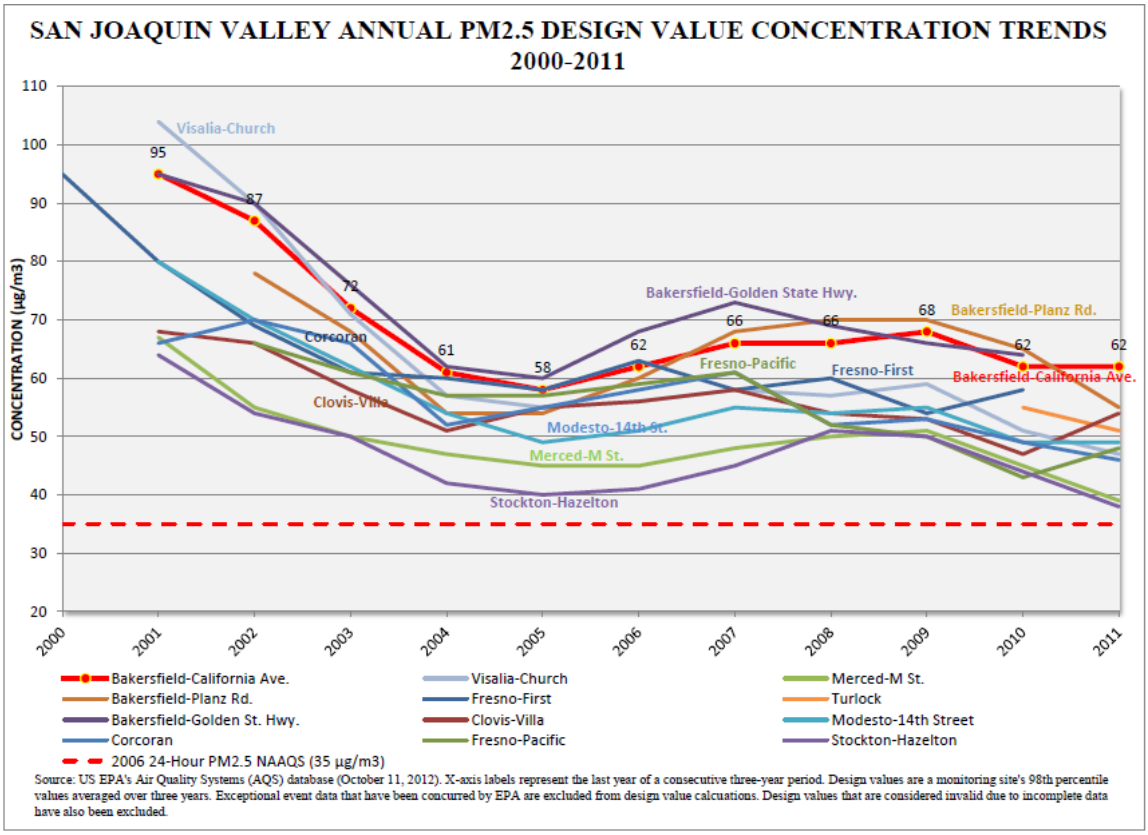
The chart below of PM2.5 Design Values also shows little to no improvement for the Bakersfield-California Ave. monitor since 2005.



ERC use is therefore not justified for the obvious reason that progress in meeting air quality standards has stagnated in recent years and HECA will introduce significant new emissions into the Kern County air basin. The CEC and the DOE can over-rule the SJVAPCD in deciding whether there is reasonable progress in these areas. Please use some logic and actual data as well as looking at the letter of the law in deciding these issues.

Six: Besides monitoring for toxic or hazardous emissions from accidents and provision of a reverse 911 system, HECA needs to provide an official air monitor measuring ozone and particulate levels somewhere in the general area of the project. It is clear that there is no monitor in Kern County located in conditions similar to the HECA location which is downwind from a nearby major freeway and downwind from nearby oil production pollutants yet in the middle of farmland and up against a wall of hills on the West side of the Central Valley. Near the school in Tupman would be the best possible location for such a monitor. HECA will contribute significantly to air pollution in the immediate area. Pollution levels are localized according to what is immediately upwind of any given site. That is why a place like Shafter has fewer ozone violations than a location like Bakersfield or Arvin. Shafter is not immediately downwind of any concentrated pollution source. HECA will be one of the top ten largest sources of criteria air contaminants in both Kern County and the Central Valley. In terms of electrical production, it is most likely the dirtiest power plant proposal given a FDOC from the Air District in the past dozen years, said Dave Warner, District Head of Permitting, at a public meeting in Buttonwillow. See http://youtu.be/VzUsntJNMGI for a recording of Dave Warner making this statement. There are good reasons to believe that ozone levels and fine particulate levels could be worse in the Tupman area than any other area in Kern County and HECA will contribute significantly to those levels.

Seven: The unloading of the coal trains in Wasco must be considered for criteria air pollutants and these should be mitigated fully. HECA must ensure the Savage train engine is Tier 4, not Tier 2, as proposed, or Tier 0 as in the current situation. Other emissions involved with the unloading and loading of coal must be considered. The coal spilling out of rail cars on the siding before and after being unloaded should be also be mitigated. We have inserted below, in our section on waste handling, a lab analysis ordered by the Regional Water Board of coal picked up along the railroad tracks about a mile south of Wasco during May of 2013. In that analysis there are measurable quantities of several heavy metals and VOC's including Mercury, Chromium and Chromium Hexavalent. HECA proposes to bring 117 trains with 1.5 million tons of coal to Kern County every year for twenty years. Since there are large amounts of coal along the railroad track sidings in Wasco currently and since coal may be picked up along the railroad tracks anywhere else in Kern County where the current Wasco bound coal trains have been passing, there is a need to quantify the amount of these contaminants that may enter the environment over the next twenty years from rail car spillage and dust blowing off. For example: the analysis shows on one line that .015 mg of Mercury is contained in a kg of the coal. If it is assumed very minimally that each train will lose 100 lb of coal along the railroad tracks in Kern County over the next 20 years (this is about a pound per rail car per roundtrip) then this project will put around 4 lbs of Mercury into the local environment over this time period. That is just in Kern County. Individual Coal cars are estimated to lose between 500 and 2000 lbs of coal or up to 3% of the load on a trip of 1000 miles according to the BNSF railroad.
http://www.opb.org/news/blog/ecotrope/10753/ The amount of Mercury and other heavy metals lost to the environment along the entire trip from New Mexico to California over the 20 years of the project could be very significant and should be estimated and given to the public for comment.

Eight: The fact that HECA itself, according to the PSA, will release 8 lbs of Mercury per year into the surrounding air and soil needs to be mitigated. How is 160 lbs of Mercury over the lifetime of the project acceptable in Kern County where it will most likely concentrated in nearby fields growing food for people to eat?

Greenhouse Gases:

The calculations of GHG from the proposed HECA project is very complicated. We believe that the GHG emissions from this project will not satisfy the SB1368 emission standard if the calculations are done in a reasonable and logical way. There is not enough electricity produced for the grid, nor is there enough energy value in the fertilizer to justify the large amounts of GHG emitted from this proposed project.

Not everyone agrees that GHG emissions from the mining of the coal, the burning of the oil produced through the enhanced oil recovery, and the use of the manufactured fertilizer should be necessarily counted against the electricity produced by HECA but arguments can be made that they should. We do request that the public be informed about the approximate quantity of GHG emitted from these three categories which are all related to this project and would all likely be reduced to some extent if the project did not happen. If this project creates a demand for more coal mining or if this project puts more oil on the open market or if this project puts more Nitrogen based fertilizer on the open market then there is good reason to believe there will be a significant increase in related GHG emissions on a world wide basis. If the goal of this project, in any way, is to demonstrate low-carbon energy production in order to justify the use of taxpayer money, then the public is entitled to see the whole picture of this project in terms of all related GHG emissions. In the world wide campaign to reduce GHG emissions, there is an important place for life cycle analysis of different human activities. HECA should be no exception.

There must be a reasonable calculation of the GHG emissions from the manufacturing of fertilizer on a per ton basis. How does the projected CO2e emission rate of manufacturing urea or UAN by HECA compare to modern methods of manufacturing the same products using natural gas? We have seen figures that indicate modern efficient methods of manufacturing Urea with natural gas are as low as .18 ton of CO2e per ton of product. HECA could easily be two or three times that number if all necessary inputs are counted for the entire plant in relation to their GHG emissions.

The method of calculating the CO2e rate for fertilizer at HECA must be comprehensive with all direct and indirect emissions related to the project.

The bottom line is the HECA claim of low-carbon fertilizer must be proven.

Here is a table from the International Fertilizer Association showing the carbon intensity of some fertilizer products using the most modern technology available today.

Annex 1. Energy consumption in selected fertilizer processes and products[7]

Product	Energy input (GJ/tonne product)				CO_2-eq (tonne/tonne)			
	BAT 40 years ago	World today	BPT today for all plants	BAT today for new plants	BAT 40 years ago	World today	BPT today for all plants	BAT today for new plants
Process								
Ammonia - natural gas-based	41.0	36.7	32.0	27.0	2.3	2.1	1.8	1.5
Ammonia - coal, oil, naphtha based	50.0	45.0	45.0	42.0	4.5	4.1	4.1	3.8
Captured CO_2 for non fertilizer					-0.05	-0.05	-0.05	-0.05
Urea	4.6	4.1	3.7	3.2	0.26	0.23	0.21	0.18
Captured CO_2 in urea					-0.733	-0.733	-0.733	-0.733
Nitric acid (100%)	-0.44	-1.56	-2.30	-3.11	-0.02	-0.09	-0.13	-0.17
Nitric acid (100%)- N_2O	7.0 kg N_2O/t	6.0 kg N_2O/t	1.85 kg N_2O/t	0.5 kg N_2O/t	2.07	1.78	0.55	0.15

We think this project could ultimately be responsible for at least a million and a half more tons of GHG emissions just out of Kern County when everything related to the project is looked at and quantified. Despite two million tons of CO2 being captured and possibly sequestered permanently in the oil fields, there is definitely a need for some kind of mitigation for these other GHG emissions which are being released. A project such as installation of sufficient quantities of solar panels on school rooftops and parking lots in the county is one possible mitigation. Also, denying the project any more taxpayer funding from the DOE because it does not meet the goals of the project in terms of reducing GHG would be the proper decision in our opinion.

We have looked at the basic assumptions laid out in the PSA document about GHG emissions. It is stated that .44 million metric tons of CO2 will be vented and .53 million metric tons will go directly into the fertilizer products. It states 84% of the 92% of captured CO2 will be sequestered which is 77% or less of the total CO2 produced in the gasification unit. The EOR/OEHI part of the project is responsible for another .34 million metric tons of CO2e. The pumping of the water also needs to be included in terms of the electrical demand. The total seems to be significantly over 1.3 million metric tons of GHG emissions attributable directly to this project. The CO2 in the fertilizer must be counted in the project total because the use of that fertilizer will emit even more CO2e in the form of N2O emissions which outweigh any extra plant growth induced by the use of the fertilizer. Giving plants fertilizer to stimulate growth should in no way be equated, in terms of GHG reduction, to putting CO2 deep into the ground permanently.

The DOE claim that the additional oil produced through the EOR will not have an effect on consumption rates of oil is false. An increase of .4% in domestic production is very significant and will lead to more consumption of oil than the situation without this extra production. Therefore, at least some of the CO2 from the EOR petroleum products' use could be reasonably counted in the total emission picture. Without a better economic

analysis of the effects of this extra production on world wide consumption there is no way to make a valid decision on this matter currently.

Environmental Justice:

Wasco with the coal depot, Shafter with the coal truck traffic, unincorporated communities such as The Mexican Colony and Cherokee Strip on Hwy 43 south of Shafter with traffic impacts, and Buttonwillow itself with the potential railroad spur are all environmental justice communities that need to be considered more extensively in relation to this project. We also don't think the residents of the Labor Camp in Wasco, which is located next door to the Savage Coal facility, have been informed of this project as EPA suggested. The residents of The Mexican Colony and Cherokee Strip also need to be informed of the potential coal truck traffic that will be passing through their communities every day of the year and nearly every hour of the day.

Effect of dust from trucks on crops

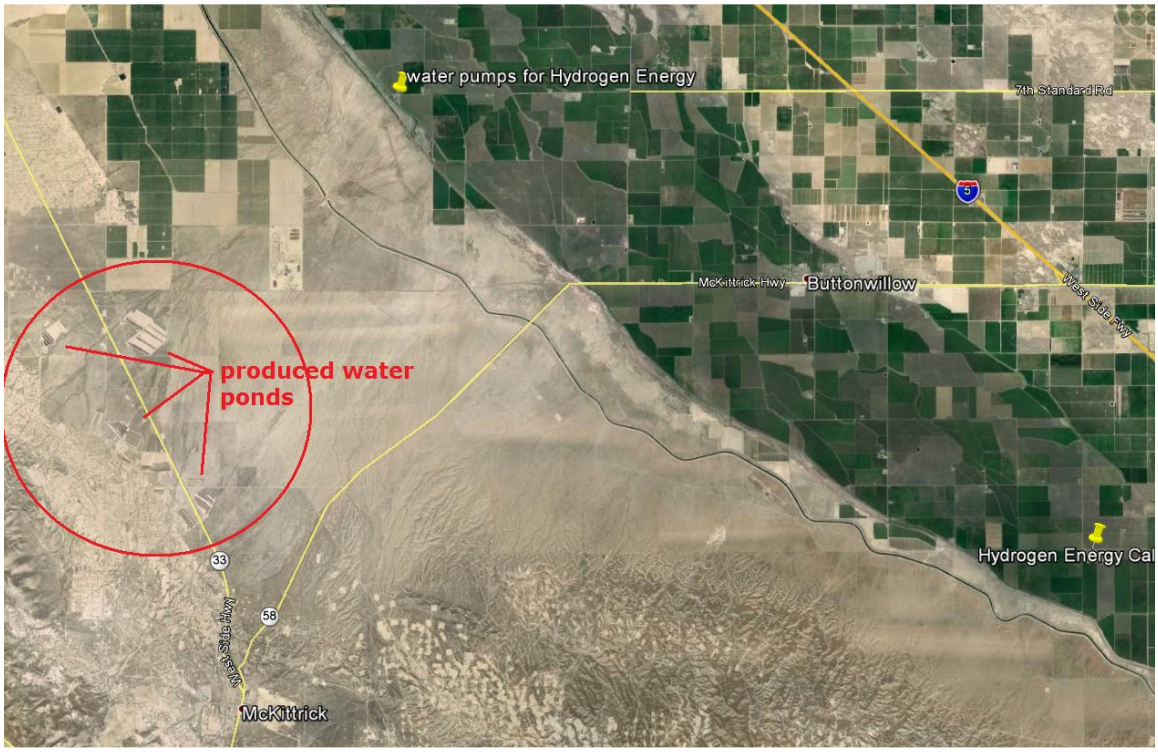
Anyone living in rural areas in Kern County, such as the area around the HECA proposed project, knows that big trucks put up large clouds of dust every time they pass by on country roads. This happens between the months of June and November and gets progressively worse during this season. Every road that the trucks going into and out of HECA will need 6 foot shoulders to prevent unreasonable clouds of dust from blowing onto nearby crops and putting PM10 into the air of this part of the valley. This dust directly does crop damage, makes everything in the Valley dirty, and, of course, the PM10 damages the health of those who must breathe it.

Alternative Water Source

Here is a link to a recent study from the UC Agricultural Cooperative Extension by local irrigation scientist Blake Sanden showing that the proposed water source for HECA is totally useful as irrigation water on crops.
http://fruitsandnuts.ucdavis.edu/files/74170.pdf Basically, the 7,500 acre feet of water proposed to be taken out of the ground could also be used to irrigate two or three thousand acres of cropland. This loss of usable water to the Central Valley basin in Kern County must be fully mitigated because of the overdraft situation existing now for many years in the area. There are plenty of produced water sources in the oil fields within a reasonable distance from the HECA site that could be used. The fact some of this produced water would have to be cleaned before use by HECA is irrelevant and a necessary expense if HECA chooses to use the quantity of water they are proposing. The thousands of acres that could be irrigated with this water could produce crops with a gross value of at least $5,000 to $10,000 per acre amounting to a loss in potential crop production of up to $30 million annually with a multiplier effect on the economy of at least double that amount. How is this potential economic loss to be mitigated if HECA cannot replace this water they are proposing to use?

The google earth photo below shows clearly an alternative water source in the evaporation/percolation ponds about 15 miles directly west of the HECA site.

A pipeline could follow Lokern Road and cross the aqueduct above ground and then follow the proposed route for water from the proposed Seventh Standard road and Kern River bed site.



Produced water that is currently being injected by nearby oil companies is another source of water that would not remove water currently being used by agriculture.

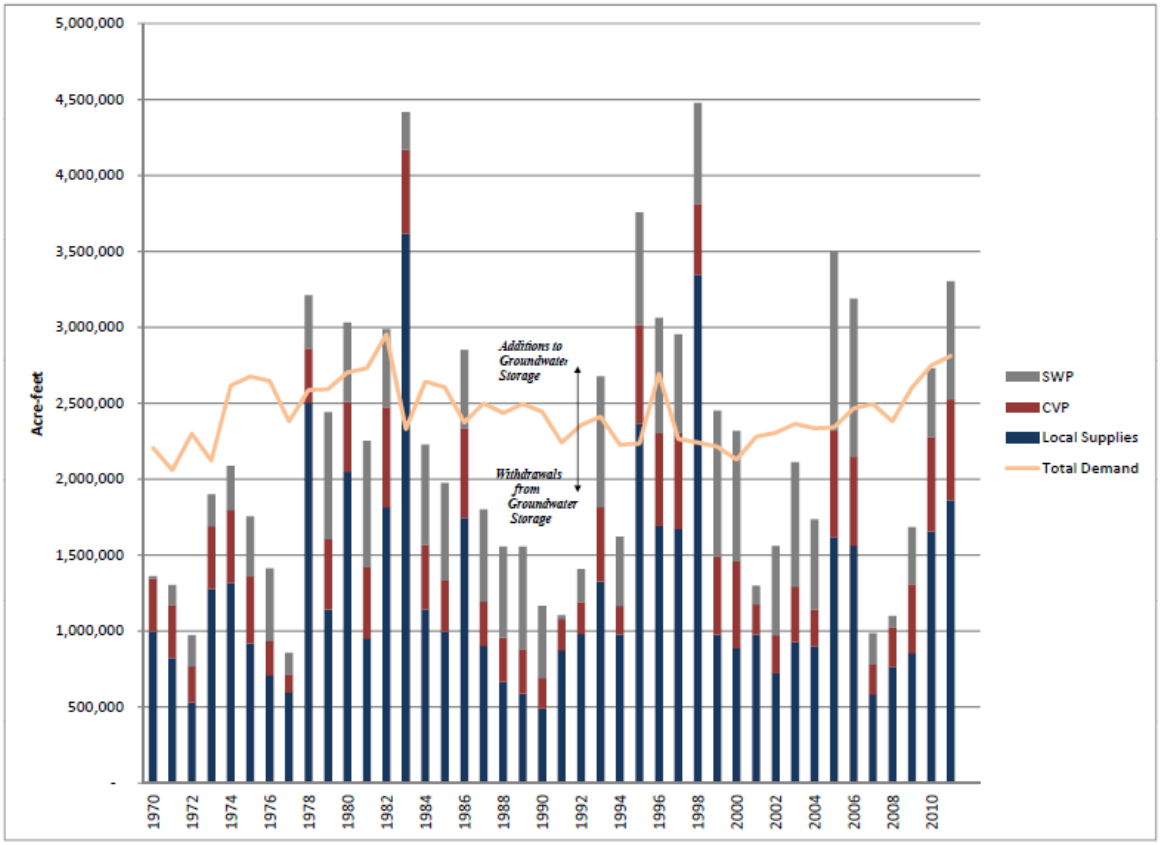
HECA should at least guarantee, and use weekly testing for verification, that they will never consume ground water in any quantity, which is less than 4,000 TDS. Even with that guarantee, there is the question of what type of water will fill the void left underground by the pumping. If it is fresher groundwater, there is still the question of where it is coming from and whether it is currently being used elsewhere and the effect this movement of water has on the overdraft of the basin in general.

Here is a photo taken in August 2013 of water pumped from underground very near the proposed HECA pumping area (about 200 yards directly east of the intersection of Seventh Standard Rd and the Kern Slough. This photo clearly shows a low salt tolerant crop (alfalfa) being successfully grown in the area currently with local ground water. All the land in the area proposed for the pumping is under successful cultivation currently

with a variety of crops. The use of any amount of water by HECA from this area is not justifiable. Almost certainly the water seen in the photo is from a well less than half a mile away. There were no surface water deliveries in the area at the time this photo was taken according to farmers in the area.

Below is a table of water supply in the Kern groundwater sub-basin from 1970 through 2011 made by the Kern County Water Agency. The analysis of this information shows an annual average groundwater overdraft of approximately 80,000 acre-feet per year over this time period. The cumulative overdraft during this time is 3.4 million acre feet. 2012 and 2013 are significant overdraft years as well.

Kern County Water Agency



2011 Water Supply Report
Figure 18, Page 62

Tule Elk Preserve:

We are relieved to see staff at the Tule Elk Preserve recently submitting some of their concerns. We agree with their concerns in totality and further analysis must be done to address these concerns. Mitigation for impacts at the Tule Elk Preserve, immediately east of the HECA site, are in order.

Farmland Loss Mitigation:

The incidental taking of 470 to 540 acres of prime farmland must be mitigated. Kern County simply says it must be mitigated on a 1:1 basis by putting an equal amount of farmland into a farmland trust with an easement against any development beyond pure agricultural use. The DOE and CEC can and must do better than this. First, it does no good for HECA to use their buffer zone farmland as part of this mitigation. That land will be controlled by HECA, leased to a farmer, and not farmed the same way as privately owned land. The planting of permanent crops would almost certainly be ruled out. The planting of crops for direct human consumption may also be ruled out. Another factor is this buffer zone land is not in any danger of development. The mitigation of loss of farmland must be done with land that could reasonably be developed over the life of the project. That would be land closer to already developed areas such as land between the towns of Wasco and Shafter that has been recently placed into such a trust. Third, the 1:1 ratio required by Kern County is not a proper mitigation. Loss of prime farmland must be taken more seriously by the State of California and the Federal Government. A ratio of at least 2:1 is a much more proper mitigation. Alternatively, HECA could be asked to mitigate at a 1:1 ratio but include all of the buffer zone land since it will not truly be prime farmland as long as the HECA project exists.

Delivery of Coal from Wasco:

How many minutes per day will the coal cars block the car and pedestrian crossing at Poso Street in Wasco. This is a critical crossing point for the people who live on the east side of the railroad tracks in the farm labor camp. They can either cross at Poso to the south or a half mile to the north at 6th Street. Many kids walk to school from this housing area and people walk to go shopping and do other business in the town proper. There are no stores on the east side of the railroad tracks where the labor camp exists except a gas station half a mile to the north. A solution to this issue and the fact that many people choose to cross the tracks illegally where the Amtrak Station sits, is for a pedestrian overpass to be built just south of the Amtrak Station. With all the coal cars being shuttled back and forth, it would be a tragedy waiting to happen if some kids are careless in crossing the tracks illegally. This video shows how kids often cross these tracks where a lot of coal cars related to HECA will be shuttled back and forth.
http://youtu.be/h8O56gZXuD0

Mr Bush, from Savage Coal, stated that the Savage shuttle engine in Wasco was a Tier 0 locomotive but would be replaced with a Tier 2 locomotive. This is not good enough.

Given how bad our air quality continues to be and given that this train engine will work more than 12 hours per day for the entire year, we think it makes more sense for the Tier 0 engine to be replaced with either an electric engine or a Tier 4 engine.

We would also like to see the train locomotives pulling and pushing the coal trains have the cleanest possible engines dedicated to the constant trips back and forth between the coal mine and Kern County. HECA should pay whatever incentives are necessary to the BNSF and Union Pacific to ensure that this happens.

An analysis needs to be made of the rail route over the Tehachapi mountains and the bottle neck that happens in that area. A limited number of trains can pass through that area per day and into or out of the Central Valley. We need to know if this increase in coal trains will have any economic effect on other goods movement by rail into and out of the Central Valley. If more coal trains must pass through this area it may mean that other goods must be carried more inefficiently by trucks. This could increase pollution in the Central Valley and increase economic costs for some businesses as well. This needs to be analyzed and negative effects mitigated.

The transportation route for the coal trucks was originally proposed by BP and Rio Tinto to travel from Wasco to the HECA site via Hwy 46 and Interstate-5. This route avoids the many problems of traveling on smaller roads through Wasco and Shafter plus Stockdale Hwy. This route must be analyzed to see if it is better in terms of traffic impacts, schools, bus stops, etc.

Catastrophic Release of Deadly Material

HECA has concluded from their studies and analysis that a "catastrophic release" of any type or substance from their project will not result in any deaths (did they mean outside their boundaries?). That is not a very reassuring or even believable statement. How does a suffocating cloud of ammonia or CO2 from HECA lose its ability to kill human life just when it is well known that these types of releases have killed people elsewhere? What injuries are possible, just short of death, if HECA is to draw the line at death?

What about a catastrophic explosion? We have not heard if anyone could die from that type of incident. We have not heard what types of explosions are even theoretically possible. Is the type of substances they will be handling impossible to explode or can they explode given the right combination of events however unlikely they seem?

Waste Handling

HECA will produce thousands of tons of waste. HECA claims without much evidence that the waste will be 100% reused in beneficial ways. There must be a public accountability system in place to show where every ounce of waste will go and how it is to be used. We need good estimates before project approval of what will happen to the waste and who will reuse this waste. This must be confirmed by the companies that will likely reuse this waste. We need to know if these companies will be purchasing these

waste products or will HECA have to subsidize their reuse. In other words, will HECA be in a situation of having to pay someone to take their waste even though it will "used" somewhere? Will an unsuspecting community somewhere end up with a waste product from HECA containing toxic heavy metals which is used as road base or infill under their homes or in a nearby park? Will a cement factory somewhere in California release toxins or heavy metals into the air while it grinds up waste products from HECA into their cement mixtures?

Here is a chemical analysis of the coal which was found in very large quantities on the railroad tracks less than a mile south of the Savage Coal Depot in Wasco. This coal was most likely from trains delivering coal to Wasco during the past year. The toxins and heavy metals found in this coal will likely be in the coal used by HECA but could change as well depending on the source. They will either end up in our air, land, or water or they will end up in the waste product and taken somewhere else to possibly contaminate air, land, or water. The analysis was done at the request of the Central Valley Regional Water Control Board and the samples were collected by them as well. A comparison of this test to predicted levels of the same substances in the coal proposed for HECA should be done.

The analyzed sample below, if typical of the HECA coal supply, would bring the following amounts of toxins to Kern County each year (assuming 1.5 million tons of coal annually).

- Chromium @ .69 mg/kg = 2,065 lbs
- Mercury @ .015 mg/kg = 45 lbs

There is also the very disturbing number for Hexavalent Chromium @ 1.4 mg/kg This may be an anomaly but should be checked out. Hexavalent Chromium is commonly found in coal ash and may or may not be found in HECA's waste products. Maybe the coal on the railroad tracks was oxidized in the heat and air sufficiently to form this compound.

In regards to the mercury, HECA claims that around 8 lbs will be released to the air annually. If there are 40-50 lbs of mercury total in the annual coal supply, where does the rest of the mercury end up?

MOORE TWINING ASSOCIATES, INC.

California ELAP Certificate # 1371

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

May 24, 2013

Work Order #: 3D30039

Anthony Medrano
RWQCB - Fresno
1685 E Street
Fresno, CA 93706-2007

RE: 10-023-150-0

Enclosed are the analytical results for samples received by our laboratory on 04/30/13 . For your reference, these analyses have been assigned laboratory work order number 3D30039.

All analyses have been performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, Moore Twining Associates, Inc. (MTA) is not responsible for use of less than complete reports. Results apply only to samples analyzed.

If you have any questions, please feel free to contact us at the number listed above.

Sincerely,

Moore Twining Associates, Inc.

Julio Morales
Client Services Supervisor

MOORE TWINING ASSOCIATES, INC.

ANALYTICAL CHEMISTRY DIVISION
CALIFORNIA ELAP CERTIFICATION # 1371

CHAIN OF CUSTODY/ANALYSIS REQUEST

2527 FRESNO STREET • FRESNO, CA 93721 • PHONE (559) 268-7021 • FAX: (559) 268-0740

WORKORDER #: 3080039
PAGE 1 **OF** 3

REPORT TO:	☐ INVOICE TO:	☑ REPORT COPY TO:	REPORTING :
ATTENTION: Anthony Toto	ATTENTION: Anthony Medrano		☐ STANDARD FORMAT
NAME: 1685 E St.	NAME: 1685 E St		☐ EDT (STATE FORM)
ADDRESS: Fresno, CA 93706	ADDRESS: Fresno, CA 93706		☐ GEOTRACKER/COELT (LUFT)
			☐ PDF ☐ EXCEL
PHONE: 559-445-5116	PHONE: (559) 488-4395		☐ County DHS :
FAX: 445-5910	FAX:		☐ Environmental Health Agency :
			☐ OTHER :

SAMPLE INFORMATION

SAMPLED BY (PRINT): Anthony Medrano
SIGNATURE:

☐ PUBLIC SYSTEM ☑ ROUTINE
☐ PRIVATE WELL ☐ REPEAT
☐ OTHER ☐ REPLACEMENT

TURN AROUND TIME: ☐ RUSH, DUE ON:
☑ STANDARD

SAMPLE TYPES:

SOLID:
BS – BIOSOLID
CR – CERAMIC
SL – SOIL/SOLID
LIQUID:
DW - DRINKING WATER
GW - GROUND WATER
OL - OIL
SF - SURFACE WATER
ST - STORM WATER
WW – WASTE WATER

PROJECT INFORMATION

CONTRACT/P.O. NO.:
PROJECT :
PROJECT NUMBER:
PROJECT MANAGER:

LAB USE — NOTES ON RECEIVED CONDITION:
☐ CUSTODY SEAL(S) BROKEN ☐ SAMPLE(S) DAMAGED
☐ ON ICE ☑ AMBIENT TEMP. ☐ INCORRECT PRESERVATION

ANALYSIS REQUESTED

	CLIENT SAMPLE ID	DATE	TIME	TYPE	Grit + Waste Extr. Tests + D.I.	8260	8270	Title 22 Metals	System Number / Station Code
1	AM130430-1	4-30-13	1:39	SL	✓	✓	✓	✓	

COMMENTS/ADDITIONAL INSTRUCTIONS:

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY
	RWQCB	4/30/13	3:49p		

MOORE TWINING ASSOCIATES, INC.

2527 Fresno Street
Fresno, CA 93721
(559) 268-7021 Phone
(559) 268-0740 Fax

California ELAP Certificate # 1371

RWQCB - Fresno
1685 E Street
Fresno CA, 93706-2007

Project: 10-023-150-0
Project Number: 10-023-150-0
Project Manager: Anthony Medrano

Reported:
5/24/13

AM130430-1
3D30039-01 (solid)

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Inorganics										
Hexavalent Chromium	**1.4**	1.0	0.020	mg/kg	1	T3E0613	05/06/13	05/06/13	EPA 7196A	
Metals - Totals										
Antimony	ND	2.0	0.10	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	
Arsenic	ND	2.0	0.22	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	
Barium	**40**	2.0	0.13	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	
Beryllium	ND	0.40	0.032	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	
Cadmium	ND	0.40	0.023	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	
Chromium	**0.69**	2.0	0.078	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	J
Cobalt	**0.094**	0.80	0.022	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	J
Copper	**1.2**	2.0	0.069	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	J
Lead	**0.26**	2.0	0.16	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	J
Mercury	**0.015**	0.013	0.0034	mg/kg	1	T3E2202	05/22/13	05/22/13	EPA 7471A	
Molybdenum	ND	2.0	0.13	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	
Nickel	**0.59**	2.0	0.091	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	J
Selenium	ND	5.0	0.36	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	
Silver	**0.35**	2.0	0.10	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	J
Thallium	ND	5.0	0.46	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	
Vanadium	**0.81**	2.5	0.38	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	J
Zinc	**0.62**	2.0	0.060	mg/kg	1	T3E2113	05/21/13	05/23/13	EPA 6010B	J
Semi-Volatile Organics										**D1**
N-Nitrosodimethylamine	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
N-Nitrosomethylethylamine	ND	13	3.2	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
Methyl Methanesulfonate	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
N-Nitrosodiethylamine	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
Ethyl Methanesulfonate	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
Phenol	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
Bis(2-chloroethyl)ether	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
2-Chlorophenol	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
1,4-Dichlorobenzene	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
Benzyl alcohol	ND	13	2.8	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
2-Methylphenol	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
Acetophenone	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
N-Nitrosopyrrolidine	ND	13	3.4	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
o-Toluidine	ND	13	2.0	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	
4-Methylphenol	ND	13	3.5	mg/kg	40	T3E0301	05/03/13	05/13/13	EPA 8270C	

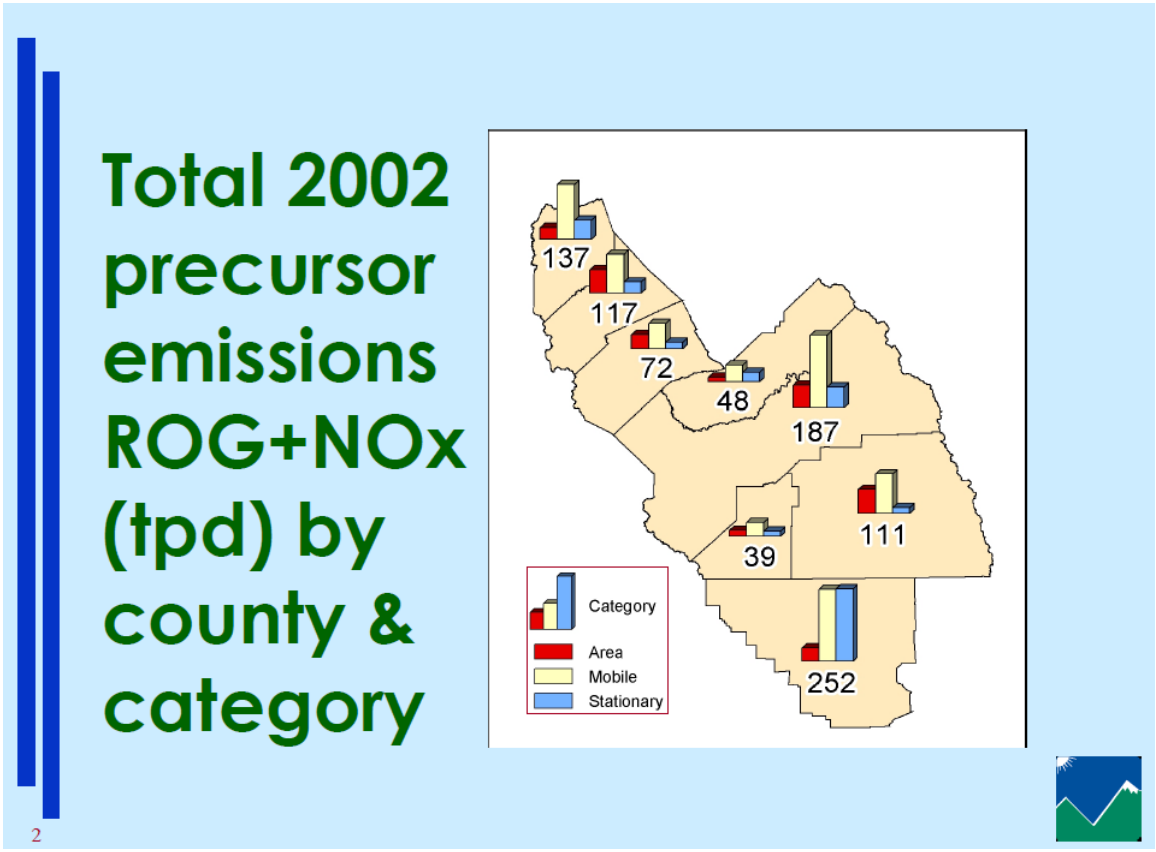
Moore Twining Associates, Inc.
Juliane Adams, Director of Analytical Chemistry

More comments on Air Quality:

The mitigations required by the San Joaquin Valley Air Pollution Control District may or may not follow the letter of the law. In either case, this project represents new emissions of criteria air pollutants above and beyond what exists currently in Kern County. HECA will potentially be in the top five of stationary sources of air pollution in Kern County as

well. Kern County has a total inventory of air pollution which indicates that stationary sources are actually greater than mobile sources. This situation is unique for regions that are not meeting Federal Air Quality Standards and is also unique in the eight counties of the Central Valley. Kern County also has far more total air pollution in its inventory than any other county in the Central Valley. This slide from 2002 shows these conditions clearly. If anything, this unique situation has moved even farther in this direction over the past ten years. Stationary sources of criteria air pollutants in Kern County have gone up over the past ten years while mobile sources have decreased their emissions.

http://www.valleyair.org/Air_Quality_Plans/docs/CurrentWorkshopMaterials/EmissionsInvent.pdf



A study by Jane Hall at UC Fullerton showed that the cost of not meeting Federal Air Quality Standards is $6 billion per year in the San Joaquin Valley or more than $1600 per person.

http://calstate.fullerton.edu/news/2008/091-air-pollution-study.html

Kern County produces over 25% of all the pollution in the Central Valley and has around 20% of the total population in the Valley. The share of the $6 billion is therefore more than $1 billion per year for Kern County. It is at least $1.2 billion and probably more given how much worse the air is in Kern County compared to the rest of the valley.

HECA will emit over 500 tons of criteria air pollutants annually to this situation which is 1.3 tons per day and approximately 1% of the total pollution emitted per day in Kern County. It is therefore reasonable to assign a 1% piece of the $1.2 billion health cost to the economy in Kern County to HECA. This proportion of these health related costs amounts to $12 million per year. This is a cost not being considered or mitigated by HECA but it should be. A payment of at least $250 million for health problems related to pollution would be an appropriate mitigation by HECA for this impact on the local economy over the twenty years of its proposed operation.

Aesthetics

Many people in Kern County watch the sun set over the Temblor Range on a nightly basis. The particulates in our air make the sunset quite often very colorful. Many birds can be seen flying against the evening glow on their way to roosting sites and night birds such as owls can be seen starting their nightly hunt. It often bothers people to see flames and occasional smoke from flares located at the top of the Elk Hills. This is a regular occurrence. Occidental replied that oil production in the Elk Hills is on the decline even with any increase from the HECA project enhanced oil recovery. The implication was that, despite HECA coming on line, the flaring in the Elk Hills would decrease. But, this is incorrect reasoning. There will actually be a prolonging of the flaring with the HECA project and the resulting enhanced oil recovery operations. The rate of reduction in visible flaring will decrease because of HECA. This is an impact on aesthetics which could significantly change the status quo. This impact needs to be analyzed further and mitigated.

This concludes the comments by the Association of Irritated Residents at this time.

Tom Frantz
President, Association of Irritated Residents