# APPENDIX E

## Comments and Responses to Comments

## COMMENTS AND RESPONSES TO COMMENTS

On July 2, 2012, UC Davis campus circulated for public review an Initial Study/Proposed Negative Declaration (IS/Proposed ND) for the Renewable Energy Anaerobic Digester (READ) Project (the "project"). As required by Section 15073 of the California Environmental Quality Act (CEQA) Guidelines, the IS/Proposed ND was circulated for 30 days, until August 1, 2012. UC Davis received three comment letters on the IS/Proposed ND. Section 15074(b) of the CEQA Guidelines requires the decision-making body to consider the IS/Proposed ND and comments received on it prior to considering the project for approval. Responses to comments are not required by CEQA, although responses may be provided at the discretion of the lead agency. UC Davis campus has prepared responses to comments received on the IS/Proposed ND.

Comments were received during the public review period from the following agencies:

- Letter A: California Department of Resources Recycling and Recovery (CalRecycle)
- Letter B: California Department of Transportation (Caltrans)
- Letter C: Yolo-Solano Air Quality Management District

No comments were received from organizations or members of the public. These comment letters and the responses to the comments are provided on the following pages. All page numbers refer to the revised Initial Study.

Natural Resources Agency

Edmund G. Brown, Jr., Governor

CalRecycle

DEPARTMENT OF RESOURCES RECYCLING AND RECOVERY

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P.O. BOX 4025, SACRAMENTO, CALIFORNIA 95812

July 25, 2012

7/31/12 Clear



Sid England
University of California, Davis
1 Shields Avenue
Environmental Stewardship and Sustainability, UC Davis
Davis, CA 95616

Subject: Tiered Negative Declaration (ND), State Clearinghouse No. 2012072005 for the Installation and Operation of a Renewable Energy Anaerobic Digester, SCH # 2012072005, Yolo County

Dear Mr. England,

CalRecycle staff has reviewed the ND cited above and offer comments under the regulatory purview of CalRecycle and comments on the project, as proposed in the ND. Our comments are intended to assist the lead agency with information that may be necessary for evaluation of the project as well as for regulatory oversight as a responsible agency under CEQA by the Local Enforcement Agency (LEA) and CalRecycle.

This environmental analysis is tiered from the Environmental Impact Report (EIR) for the UC Davis 2003 Long Range Development Plan (2003 LRDP) (State Clearinghouse No. 2002102092). CALRECYCLE STAFF COMMENTS

Transfer/Processing Facility

A1 As the proposed project will be handling and processing waste, CalRecycle may regulate this facility as a Transfer/Processing facility. Please refer to the Transfer/Processing Regulations (CCR § 17400, et. seq.) located at the following internet link: http://www.calrecycle.ca.gov/Laws/Regulations/Title14/ch3a6.htm#top for project aspects that may require a Transfer/Processing permit from the LEA and CalRecycle. Processing and handling procedures in regulation are for the control/prevention of odors and to mitigate the potential for leachate to migrate from the processing area.

Project Specification

A2 It is noted that the project description does not list vehicle trips per day and hours of operation.

Composting of the Digestate On-Site

On page 20 of the ND, The project proposal states that "[t]he effluent would go through a screw press to separate digestate (solids) from liquids. The solids would be handled in one of the following manners:

1. Hauled to an existing off-site composting facility;
2. **Composted on site using an "Ag Bag" system** or an in-vessel composting drum, then packed for wholesale and hauled off site for sale and distribution; or
3. Hauled to an existing off-site facility for pelletizing and distribution as a fertilizer product."

A3

Composting on site in windrows using the digestate from the anaerobic digester (AD) is a separately permitted activity through the LEA and CalRecycle regulations. The only analysis for the "Ag-Bag' composting is in the area of emissions from the composting process that will be filtered through a biofilter. The project does not describe the amounts of materials to be composted. The area in acreage and location for Ag-Bag windrows is not proposed nor analyzed for impacts, such as development in an area that may impact the environment, drainage of leachate from the Ag-Bag windrow area, grading activities, development of a compost pad, odor control , or maximum allowable emissions through the biofilter, etc. It is unclear to CalRecycle staff at this time whether this will be a proposed permitted activity using the ND. Further CEQA compliance would be required in order to permit a windrow composting facility.

Stockpiling and Storage On Site

A4

Page 6 of the ND states that "[n]o on-site storage of wastes is proposed." Storage includes materials that are stockpiled on site (e.g. digestate, curing compost, etc.). There is no discussion in the ND regarding stockpiling of materials. Since you state on page 20 that you may be composting, digestate will have to be stored in order to further process or ship off-site the digestate.

A brief project description from the ND is included below for CalRecycle staff's future reference.

PROJECT DESCRIPTION FOR CALRECYCLE STAFF FUTURE USE

UC Davis proposes to install and operate a renewable energy anaerobic digester (READ) at a site on County Road 98 in the west campus area of UC Davis. The proposed waste-to-renewable energy facility will accept agricultural waste, animal manure and bedding, food waste from the campus dining commons, and the organic component of municipal solid waste (MSW) generated on the campus. The organic component of MSW may contain contaminants such as plastics and metals. Two trough conveyors in the receiving area designed to handle liquid and solid waste will allow two trucks to deposit feedstock simultaneously. Each conveyor will be sized to receive one truckload at a time. The feedstock will be immediately unloaded from the waste truck to the conveyors for processing and will not be stored on site for any length of time. The conveyors will deposit the organic material into an 8 by 12 foot bin within a secondary containment pit (constructed of concrete). The organic material will then pass through a Bio Separator, which will remove rocks, plastic, and metals as well as grind up the organic materials. Water will be

added to the ground-up organic material to produce a slurry. The slurry material will be pumped into the biodigester tanks for anaerobic digestion as described below.

The READ facility will be built in two phases. The Phase 1 facility will be designed and constructed to process up to 25 tons per day of organic wastes. Phase 2 will expand the facility to handle up to 50 tons of organic wastes per day. On page 30 of the ND it is noted that the facility would have less than 25 vehicle trips per day, which would include 20 employee vehicles and four to five trucks.

Biogas produced in the biodigester and campus landfill gas will be used to generate electricity in a microturbine.

Adjacent to the feedstock receiving and preparation area will be aboveground, anaerobic digestion tanks and skid-mounted control systems. Phase 1 will include a system of four tanks: two 75,000-gallon tanks 28 feet in diameter and 16 feet tall; a 150,000-gallon tank 40 feet in diameter and 16 feet tall; and a 30,000-gallon tank 20 feet in diameter and 16 feet tall. Phase 2 will add one additional 150,000-gallon tank in order to handle more feedstock, for an eventual total of five tanks on site.

The anaerobic digestion process occurs in two stages so that the acid-forming and methane-forming bacteria are provided the optimal environments to thrive. The first stage (Hydrolysis stage) will convert complex organic matter by hydrolysis into simpler organic acids. Some biogas will be produced in the first stage. However, the biogas will primarily be carbon dioxide. During the second stage (Methanogenic stage), organic acids will be converted into biogas, which includes methane and carbon dioxide, as well as water and other end products.

The Hydrolysis phase would use a 75,000-gallon tank and a 150,000-gallon tank in both phases. The Phase 1 system will use a single 75,000-gallon Methanogenic tank, and the Phase 2 system Methanogenic tanks will include this tank and the additional 150,000-gallon tank. The smaller tank will be used, if necessary, as a buffer tank between the two stages. The biogas produced in the digestion tanks will be piped to the biogas refinement system described below. The effluent from the digestion tanks will be managed on or off site, as described further, below.

Anaerobic digestion, described above, produces a variety of different gases, including methane, carbon dioxide, hydrogen sulfide, hydrogen, nitrogen, and oxygen, intermixed with water. The raw biogas may contain 55 to 65 percent methane, 35 to 45 percent carbon dioxide, and 0 to 2 percent hydrogen by volume and approximately 1,000 ppm of hydrogen sulfide (TSS 2012). The biogas refinement system will extract hydrogen sulfide, water vapor, and particulate matter from the biogas produced by the digestion process (Biogas Products 2012). The hydrogen sulfide will be absorbed into a carbon material in one of the gas processing tanks. The carbon will be changed out twice a year and hauled off site for disposal. The collected water vapor will be cycled back into the tanks. The purified biogas will be piped to the microturbines or flared as described below.

The filtered biogas and the landfill gas will be used to produce electricity. Phase 1 will use three 200-kW microturbines to generate electricity, and Phase 2 will require an additional 200-kW microturbine. For use in the microturbines, methane will be compressed, mixed with air, and combusted. The resultant gas will be at high pressure and velocity and will be sent through the microturbine, where the energy will be generated as electricity. The electricity produced by the READ facility will be used on at UC Davis via the campus electrical distribution system. The microturbines will also generate heat that will be captured and used to warm the anaerobic digestion process. Any excess gas from the digesters or landfill gas from the landfill gas collection systems that could not be used in the turbines such as during times of

maintenance will be burned in the atmosphere in a new flare designed to efficiently burn the gases. When the microturbine(s) are operating, there will be no need for flaring either biogas or landfill gas as there will be no excess gas. The existing landfill gas flare will be kept as a backup to handle the landfill gas in the rare event that the other flare was unavailable.

On average, approximately 5,000 gallons per day (gpd) of effluent will be produced by the biodigester tanks. The peak demand placed on the sanitary sewer will be approximately 15,000 gpd. The effluent will go through a screw press to separate digestate (solids) from liquids. The solids will be handled in one of the following manners:

1. Hauled to an existing off-site composting facility;
2. Composted on site using an "Ag Bag" system or an in-vessel composting drum, then packed for wholesale and hauled off site for sale and distribution; or
3. Hauled to an existing off-site facility for pelletizing and distribution as a fertilizer product.

The liquid fraction will be sent through a sand filter containing zeolite media to recover ammonia and suspended solids. The treated liquid fraction will be handled in one of the following manners:

1. Concentrated and/or treated to form organic liquid fertilizer; or
2. Pumped to the campus wastewater treatment plant.

The zeolite media will be stored in an enclosed vessel on site before removal to an off-site processing facility for distribution as a fertilizer product.

The proposed READ project site is located on the west campus on the site of the receiving and weighing area of the former UC Davis campus Class 3 municipal solid waste landfill, which is west of County Road 98 and south of the UC Davis California National Primate Research Center. The approximately 0.5-acre proposed project site has been heavily disturbed due to prior landfill activity. A small modular office building and a truck scale are currently located on site. These facilities will be retained for use as part of the proposed project. The site also has a landfill gas collection system and flare that were installed to manage gases generated by the landfill. Landfill gas is piped to the boilers at the CNPRC, and any excess gas is sent to the landfill flare.

The landfill ceased receiving waste in August 2011 and is beginning the final closure process to be completed in the summer of 2013. The surrounding land is currently used for campus support and teaching and research fields.

## CONCLUSION

The Permitting and Assistance Branch staff thanks the Lead Agency for the opportunity to review and comment on the ND and hopes that this comment letter will be useful to the Lead Agency in carrying out their responsibilities in the CEQA process.

A5 CalRecycle staff requests copies of and consultation on any subsequent or revised environmental documents on the proposed project. CalRecycle staff requests that the Department be noticed of the date, time and location of any meetings or public hearings regarding the project proposal at least ten days in advance.

If you have any questions regarding these comments, please contact me at (916) 341-6328, facsimile at (916) 319-7284, or email me at lynn.smith@calrecycleca.gov.

Sincerely,

Lynn Smith, Integrated Waste Management Specialist
Permitting and Assistance Branch
Waste Permitting, Compliance, and Mitigation Division
CalRecycle

Cc: State Clearinghouse
Office of Planning and Research
PO Box 3044
Sacramento, CA 95812-3044

Kevin Taylor, Manager
Permitting and Assistance Branch
CalRecycle

## *Response to Comment Letter A*

**Response to Comment A1**

The comment pertains to a potential permit that may be required for the project and does not relate to the CEQA process or the project's environmental effects. All required permits or permit modifications will be obtained from state and local agencies as required to construct and operate the project as required for the digestate handling method chosen. Note that the potential for odors is addressed in the Initial Study (Section 7.3). With respect to leachate from the composting of digestate, see Response to Comment A3 below.

**Response to Comment A2**

The Initial Study describes the projected number of daily truck trips and related potential impacts in the following sections: Air Quality, Greenhouse Gas Emissions, Noise, and Transportation/Traffic. The number of daily truck trips to deliver feedstock to the proposed facility has been added to the project description for clarification. The maximum number of truck trips delivering feedstock per day would be four to five. In the event that on-site composting is selected, one additional truck trip every three days would bring in green waste to be used as a bulking agent. Incoming and outgoing truck trips would take place during regular business hours, Monday through Friday, 8 am to 5 pm.

Because of the low number of vehicle trips associated with the hauling of feedstock (4 to 5 on-campus trips) and less than two peak hour trips associated with the project employees, as shown by the analysis in Section 7.16 Traffic and Transportation, the additional truck trip every three days associated with the transport of the bulking agent would not change the conclusions of the Initial Study with respect to traffic impacts.

With respect to the air quality analysis, that analysis has been revised to address the change in power generation technology that is now included in the project and to account for the use of and hauling of the bulking agent for composting. The microturbines are no longer a part of the project. An internal combustion engine (ICE) would be used to convert the biogas to electricity, as described on page 14. The composting and ICE would operate continuously 24 hours a day except during times of maintenance. The air quality analysis has been revised to include the additional truck trip and to reflect that either the flare or the ICE would be in operation at any given time therefore, they would not be operating simultaneously. The impact conclusions reached in the Initial Study for air quality are not changed by these revisions.

**Response to Comment A3**

In the event that the digestate is composted on site, composting on site would be carried out using an "Ag Bag" system laid out in windrows within the existing disturbed area of the former landfill site, as described on page 14 of the Initial Study. The site is within the area that formerly served as the receiving and sorting area for the UC Davis landfill when it was in operation. The Ag Bag system would not change the project footprint and the potential physical impacts of project development within this footprint are analyzed in the document. If used, the Ag Bags would be placed to the west of the Bio Separator as shown in revised Figure 4. Minimal grading would be needed to prepare the area for windrows; this grading has already been considered in the Initial Study as part of general site preparation and was determined to have a less than significant effect on air quality as noted on page 32 of the Initial Study. To compost the planned volume of solids, 12 Ag Bags each approximately 20 feet long by 10 feet wide would be needed. The total space used for the Ag Bags would be approximately 60 feet by 60 feet (0.08 acre). The windrows would be placed on a pad graded to a 1- to 3- degree slope to facilitate leachate collection within the Ag Bags. The leachate that collects in the Ag Bags would drain to a collection drain which would feed into a sump pump. The pump would be triggered by a float switch that senses the presence of liquid and the leachate would be pumped into the first hydrolysis tank. Leachate would not leave the site, as a raised concrete barrier would be put in place to direct the flow to the collection drain and the sump.

The largest amount of digestate material that would be produced on site for composting in an Ag Bag system at any one time would be 17.9 tons per day, with up to 8.75 tons per day of bulking agent (consisting of green waste such as grass clippings and leaves) added, for a total of 26.85 tons. The Ag Bags would compost up to approximately 9,800 tons annually. The maximum amount of time that compost can remain on site is 90 days. On a 90-day turnaround time, the maximum digestate being processed on the site at any one time would be 2,425 tons.

Odors from the Ag Bag system would be minimized by ensuring that the compostable material handling areas are designed based on the nature and quantity of materials to be received and stored, climatological factors, adjacent land use, grading, and drainage controls. Site personnel would be trained to manage all compostable material handling in a manner that minimizes the development of conditions that could lead to objectionable odors. In addition, as discussed in the Initial Study, the project site is located about 0.5 mile from the nearest occupied campus facilities and 0.8 mile from the nearest residences and, based on distance and the absence of odor complaints during the project site's previous use as the campus landfill, the project would not be expected to have significant odor impacts, as discussed on page 36.

Information regarding the biofilter to be used during composting is detailed on page 33 of the revised IS. It is assumed that a biofilter with 80 percent efficiency would be used to control composting emissions. Additional information regarding the composting digestate and biofilters can be found in Appendix B of

the Initial Study, which has also been revised to provide additional information in response to comments. In addition, in response to this comment, information has been added to pages 14 and 15 of the revised Initial Study regarding the Ag Bag system.

All of the above information regarding the option of composting digestate on-site using the Ag Bag system has been added to the revised Initial Study. The description of the composting process has been added to the project description and the environmental effects of this option are described in detail in Section 7.3 Air Quality, Section 7.7 Greenhouse Gas Emissions, Section 7.9 Hydrology and Water Quality, and Section 7.16 Traffic and Transportation in the revised Initial Study. As shown by the analyses in these sections, if the Ag Bag system is selected for the disposal of digestate, the proposed project would not result in any new impacts or a significant increase in the severity of previously reported impacts associated with grading, stormwater runoff, odors, or emissions of criteria pollutants and greenhouse gases.

In the event that the proposed project or any component of it qualifies as a waste storage facility, the campus will comply with Transfer/Processing Regulations.

**Response to Comment A4**

The continuous operation of the composting and ICE would ensure that feedstock is not stored on site. All waste feedstock brought in would be processed immediately and fed into the anaerobic digestion system. The digestate would be processed in the Ag Bag windrows, as described above, until the material is ready to be shipped off-site. Additional language has been added to page 9 of the revised Initial Study to clarify handling and storage procedures and timeframes for the digestate. All required permits or permit modifications will be obtained from state and local agencies as required to construct and operate the project as required for the digestate handling method chosen.

**Response to Comment A5**

A copy of this Final Initial Study will be sent to CalRecycle. Project notices for the UC Davis READ project will continue to be sent to CalRecycle. No future public meetings or hearing for this project are anticipated. It is expected that the University of California will consider approval of the project in October 2012. Also see responses to comments A-1 and A-4. All required permits or permit modifications will be obtained from state and local agencies as required to construct and operate the project as required for the digestate handling method chosen.

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN Jr., Governor

**DEPARTMENT OF TRANSPORTATION**
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July 30, 2012

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03-YOL-80 PM 68.76
SCH 2012072005

Sid England
University of California, Davis
Environmental Stewardship and Sustainability
1 Shields Ave
Davis, CA 95616

**UC Davis Renewable Energy Anaerobic Digestor Project – Negative Declaration**

Dear Mr. England,

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the project referenced above. The project will construct and operate a renewable energy anaerobic digestor at a site on County Road (CR) 98. CR 98 parallels State Route (SR) 113 two miles to the west. The project site can be accessed via the Hutchinson Road (west)/SR 113 off ramp. When completed, the project will receive and process various types of waste and transform them to renewable energy. The following comments are based on our review of the project's Negative Declaration.

B1 ***Construction Traffic Management***
During construction of the project, we recommend that construction vehicles remain off of State routes during peak travel periods.

Please provide our office with copies of any further actions regarding this development.

If you have any questions regarding this letter, please contact Arthur Murray of my staff by telephone at (916) 274-0616, or by email: arthur_murray@dot.ca.gov

Sincerely,

ERIC FREDERICKS, Chief
Office of Transportation Planning – South

c: Scott Morgan, State Clearinghouse

## *Response to Comment Letter B*

**Response to Comment B1**

The comment is noted and the recommended traffic avoidance measure will be considered during project construction. As described in Section 7.16, Transportation/Traffic, page 102, the project would add no more than 5 peak hour trips to the freeways and the potential impact on intersection and freeway operations off-campus would be less than significant.

Letter C

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July 30, 2012

A. Sidney England
Assistant Vice Chancellor – Environmental Stewardship and Sustainability
University of California
One Shields Avenue
376 Mrak Hall
Davis, CA 95616

**Re: Renewable Energy Anaerobic Digester Project**

Dear Mr. England:

The Yolo-Solano Air Quality Management District (District) appreciates the opportunity to review the negative declaration for the above referenced project. The project involves the construction of an anaerobic digester that would accept waste generated on the UCD campus to produce biogas that would power microturbines and produce energy. The digester would be located at the former campus landfill.

As a commenting agency under the California Environmental Quality Act, the District has reviewed the negative declaration and has the following comments:

1. The air quality analysis included in the document lists the different sources of emissions that would be present as part of the project. These sources include the emissions that would be generated by the operation of the microturbines, the flares, and the emissions that would result from the composting of digestate, which is a byproduct of the anaerobic digester.

   The project as described in the negative declaration will be subject to the District's permitting process. As part of this process, the best available control technology will be required for both the microturbines and flares. Consequently, the District believes that the emissions from these two sources, as described in the document, are reasonable estimates.

   The District would appreciate clarification on the emissions estimates for the digestate composting. Tables 4 and 5 in the document show emissions factors for uncontrolled compost of food waste and uncontrolled compost of biosolids, respectively. These emissions factors represent information collected by the San Joaquin Valley Air Pollution Control District (SJVAPCD). The District agrees that the emission factors attributed to biosolids composting would be the most appropriate factors to use for estimating emissions from digestate

C1

composting. However, the document states that Table 5 "shows the relevant data collected by SJVAPCD for composting biosolids with green waste bulking agents (wood waste)." While the document relies on the emission factors in Table 5 to determine digestate composting emission factors, the document also states that "CWP does not intend to use a bulking agent".

As stated above, the District believes that factors attributed to biosolids composting would provide a reasonable estimate of emissions from digestate composting. However, it should be clarified whether not using a bulking agent during digestate composting would have the effect of increasing emissions above what is estimated in Table 5.

C1

It appears that if a bulking agent was used for disgestate composting, the bulking agent would need to be transported to the facility from an offsite location (most likely by truck). The District would point out that if using a bulking agent could potentially decrease emissions from digestate composting, truck emissions associated with the transport of the bulking agent could have the effect of offsetting a portion of this emissions decrease.

The difference in emissions between digestate composting with and without a bulking agent might normally matter very little to an air quality analysis. However, it is more important for this negative declaration because the air quality analysis shows that overall emissions of VOC from the project during Phase II (9.52 tons per year) would be close to exceeding the District's CEQA threshold of significance of 10 tons per year. Consequently, a 0.5 ton per year increase in VOC from project-related composting, compared to the estimates in the negative declaration, would effectively bring total VOC emissions above the significance threshold.

The District has no other comments at this time.

In conclusion, the District appreciates receiving the negative declaration and the opportunity to provide recommendations. If you have any questions, please contact me at (530) 757-3668.

Sincerely,

Matthew R Jones

Matthew R. Jones
Supervising Air Quality Planner

## *Response to Comment Letter C*

**Response to Comment C1**

The comment refers to information and tables found in the UC Davis Anaerobic Digester Emissions white paper (Appendix B in the published Initial Study) . A revised Appendix B has been prepared which addresses all of the issues raised by the Air District. The revised Appendix B indicates that a bulking agent may be used depending on the digestate composition. The revised emissions analysis uses a conservative approach and assumes that 8.75 tons of bulking agent would be used per day. As stated in Response to Comment A3 above, the largest amount of digestate material that would be produced on site for composting in an Ag Bag system at any one time would be 17.9 tons per day, with up to 8.75 tons per day of bulking agent (consisting of green waste such as grass clippings and leaves) added, for a total of 26.85 tons. The Ag Bags would compost up to approximately 9,800 tons annually. The maximum amount of time that compost would remain on site is 90 days.

Based on the analysis in revised Appendix B, the air emissions from digestate composting have been revised in Table 1 of the Initial Study. The emissions from the truck traffic associated with the transport of the bulking agent have also been added to the emissions reported in Table 1.

The previous analysis in the white paper had assumed that both the flare and the microturbines would be running continuously throughout the year and would be in use simultaneously. With that assumption, the VOC emissions for the project were 9.5 tons/year which approached the YSAQMD threshold of 10 tons/years. The technology used to generate electricity has changed since the Draft Initial Study/Negative Declaration was circulated. The microturbines are no longer a part of the project. An internal combustion engine (ICE) would be used to convert the biogas to electricity, as described on page 14. Furthermore, the actual design parameters dictate that the flare would operate only when the ICE is not in operation. Therefore, the ICE and flare would not operate simultaneously. The air emissions have been updated on page 35 (Table 1), and the GHG emissions on page 61 (Table 4), and page 62 (Table 5) in the revised Initial Study to reflect this new assumption, with a resultant reduction in projected emissions. The estimated VOC emissions for the project are now 7.7 tons/year which is well below the YSAQMD threshold, even with the additional truck trips per year to accommodate the bulking agent. The revised Air Quality and Greenhouse Gas estimates are available in Appendix B.

Revised Table 1 from the Air Quality section of the Initial Study and Tables 4 and 5 from the Greenhouse Gas Emissions section of the Initial Study are presented below. As the tables show, the revised emissions of criteria pollutants and GHGs that would result from the proposed project would be well below the applicable thresholds.

**Table 1**
**Estimated Emissions – Operation**

| | ROG (tons/year) | NOx (tons/year) | PM10 (lbs/day) | PM2.5 (lbs/day) | SOx (tons/year) | CO (tons/year) | $NH_3$ (tons/year) |
|---|---|---|---|---|---|---|---|
| Flare | 2.7 | 2.9 | 3.2 | 3.2 | 0.6 | 16.0 | - |
| Engine (1,200 kW) | 4.1 | 1.5 | 0.01 | 0.01 | 0.01 | 10.4 | - |
| Digestate (composting) | 3.6 | - | - | - | - | - | 4.5 |
| Truck Trips (bulking agent) | 0.008 | 0.1 | 0.03 | 0.02 | 0.00015 | 0.03 | - |
| **Total *** | **7.7** | **1.6** | **0.04** | **0.03** | **0.01** | **10.4** | **4.5** |
| YSAQMD Threshold | 10 | 10 | 80 | - | - | - | - |
| Exceeds Threshold? | **No** | **No** | **No** | | | | |

** The flare is not included in the total*

*Source: TSS Consultants 2012 and Handbook for Assessing and Mitigating Air Quality Impacts, YSAQMD.*

**Table 4**
**Estimated Operational GHG Emissions**

| Greenhouse Gas Emissions | $CO_2e$ (metric tons/year) |
|---|---|
| Flare | 2,315 |
| ICE | 4,493 |
| Composting Digestate | 1,605 |
| **Total *** | **6,098** |
| Threshold | 10,000 |

** The flare is not included in the total*

*Source: Impact Sciences 2012*

**Table 5**
**Estimated GHG Emissions Reductions**

| **GHG Emissions** | $MTCO_2E$/year |
|---|---|
| ICE | 4,493 |
| Displaced Power Generation | 3,150 |
| Net green waste composting | 1,384 |

*Source: Impact Sciences 2012*