CITY OF CRETE, NEBRASKA
CITY COUNCIL REGULAR MEETING
April 16, 2019

Notice of the meeting was given by posting and publishing in The Crete News, the appointed method for giving notice as shown by the Proof of Publication attached to the minutes. Advance notice of the meeting was also given to the Mayor and City Council. Pursuant to Section 84-1412(8) of the Nebraska Open Meetings Act, the City has posted a current copy of the Open Meetings Act, Laws of the State of Nebraska in the back of the Council Chambers. Additional copies are available to read. The City may consider items listed on the agenda in random order. All proceedings shown were taken while the meeting was open to the attendance of the public.

Those in attendance pledged allegiance to the flag.

1. Open Meeting
2. Roll Call

Kyle Frans:	Absent
David Bauer:	Present
Brian Carnes:	Present

Present: 2, Absent: 1.

Kyle Frans:	Absent
David Bauer:	Present
Brian Carnes:	Present

Present: 2, Absent: 1.

3. Special Order of Business
3.A. Appointments to MEAN
3.B. Crete Water Rate Study Presentation by JEO
3.C. Amend City Code 3-225 Correct Clerical Error
3.D. Amend City Code 3-325 Correct Clerical Error
3.E. Amend City Code 9-201 Correct Clerical Error
3.F. Olsson Engineering Summary of CCI Amended Application and Siting Findings of Fact
3.G. Flood Plain Map Redraw
4. Officers' Reports
5. Adjournment

Mayor

(SEAL)

City Clerk-Treasurer

I, Jerry Wilcox, City Clerk for the City of Crete, hereby certify that the foregoing is a true and correct copy of the proceedings had and done by the Mayor and Council. I hereby certify that a copy of the Open Meetings Act was posted in the back of the Council Chambers. I certify that all of the subjects included in the foregoing proceedings were contained in the agenda for the meeting, kept continually current and available for public inspection at the office of the City Clerk. I certify that such subjects were contained in said agenda for at least twenty-four hours prior to said meeting and that at least one copy of all reproducible material discussed at the meeting was available at the meeting for examination and copying by members of the public. I certify that the minutes were in written form and available for public inspection within ten working days and prior to the next convened meeting of the City Council. I certify that all news media requesting notification concerning meetings of the City Council were provided with advance notification of the time and place of said meeting and the subjects to be discussed.

_____

City Clerk-Treasurer (S E A L)

Resolution No. 2019-11

Appointment to MEAN Board of Directors

Director to MEAN Board of Directors

This is to certify that the Mayor and City Council of the City of Crete, State of Nebraska duly appointed Tom Ourada to serve as director* to represent the City of Crete on the Board of Directors of the Municipal Energy Agency of Nebraska. The appointment will run for a term of three (3) years with the powers and duties incident to such office. This certificate is issued in compliance with the Municipal Cooperative Financing Act contained in the Nebraska Revised Statutes §18-2401 et seq. (1987).

**Upon the adoption of an ordinance or passage of a resolution as provided in this section, the mayor, in the case of a city, the chairperson of the board of trustees, in the case of a village, or the chairperson of the governing body, of each of the proposed participating municipalities, with the approval of the respective governing body, shall appoint a director who shall be an elector of the municipality for which he or she acts as director.*

Alternate Director to MEAN Board of Directors

This is to certify that the Mayor and City Council of the City of Crete, State of Nebraska duly appointed Brian Schmidt to serve as alternate director** to represent the City of Crete on the Board of Directors of the Municipal Energy Agency of Nebraska. The appointment will run for a term of three (3) years with the powers and duties incident to such office. This certificate is issued in compliance with the Municipal Cooperative Financing Act contained in the Nebraska Revised Statutes §18-2401 et seq. (1987).

***Upon the adoption of an ordinance or passage of a resolution as provided in this section, the mayor, in the case of a city, the chairperson of the board of trustees, in the case of a village, or the chairperson of the governing body, of each of the proposed participating municipalities, with the approval of the respective governing body, shall appoint a director who shall be an elector of the municipality for which he or she acts as director.*

Appointment to MEAN Management Committee

WHEREAS, the City of Crete, State of Nebraska is a party to the Electrical Resources Pooling Agreement and, pursuant to the terms of such Agreement, it is the responsibility of the City of Crete to designate a representative and alternate representative to the Municipal Energy Agency of Nebraska Management Committee provided for under the terms of said Agreement.

NOW THEREFORE, BE IT RESOLVED by the Mayor and City Council of the City of Crete, State of Nebraska, that:

1. The City Clerk is hereby directed to give written notice to the Municipal Energy Agency of Nebraska of the appointment of Tom Ourada as representative to said MEAN Management Committee.

2. The City Clerk is hereby directed to give written notice to the Municipal Energy Agency of Nebraska of the appointment of Brian Schmidt as alternate representative to said MEAN Management Committee.

Appointment to NMPP Members' Council

NOW, THEREFORE, BE IT RESOLVED by the Mayor and City Council of the City of Crete, State of Nebraska, that:

1. Such City be and hereby is a member of the Nebraska Municipal Power Pool.

2. The Mayor and City Council of the City of Crete, State of Nebraska, do hereby appoint Tom Ourada as the representative* of the City of Crete, State of Nebraska, to the Members' Council of the Nebraska Municipal Power Pool.

3. The Mayor and City Council of the City of Crete, State of Nebraska, do hereby appoint Brian Schmidt as the alternate representative* of the City of Crete, State of Nebraska to the Members' Council of the Nebraska Municipal Power Pool.

**Pursuant to Article V of the Amended and Restated Bylaws of the Nebraska Municipal Power Pool, "Any person appointed as Representative or Alternate Representative shall be a resident of the area receiving services from the appointing Member."*

This is to certify that the appointments set out above were approved by the Mayor and City Council of the City of Crete, State of Nebraska at their meeting on April 16, 2019.

_____

ATTEST: Mayor

_____

City Clerk
(SEAL)

2018 Water Rate Study

For the City of Crete

Council Summary

March 19, 2019

Water Department

The proposed water rates were designed to cover the costs associated with the Operation and Maintenance (O&M) of the water system, capital improvements, and future water bonds.

The existing rate structure is shown in the following table.

	Flat Fee	Commodity Charge per 1,000 Gallons		
User Meter Size	Per Month	first 50,000 Gallons	next 50,000 Gallons	over 100,000 Gallons
5/8”	$16.15	$0.91	$0.81	$0.81
3/4”	$26.41	$0.91	$0.81	$0.81
1”	$26.41	$0.91	$0.81	$0.81
1.5”	$53.49	$0.91	$0.81	$0.81
2”	$85.50	$0.91	$0.81	$0.81
3”	$159.60	$0.91	$0.81	$0.81
4”	$266.55	$0.91	$0.81	$0.81

The proposed rate structures are shown in the following table.

Proposed Water Rates - Schedule 1						
Category	User Type	2018	2019	2020	2021	2022
Monthly Base Charge	3/4"	$26.41	$26.41	$27.73	$29.05	$30.37
	1"	$26.41	$26.41	$27.73	$29.05	$30.37
	1.5"	$53.49	$53.49	$56.16	$58.84	$61.51
	2"	$85.50	$85.50	$89.78	$94.05	$98.33
	3"	$159.60	$159.60	$167.58	$175.56	$183.54
	4"	$266.55	$266.55	$279.88	$293.21	$306.53
Commodity Charge Per 1000 gal	First 50,000	$0.98	$0.98	$0.98	$1.03	$1.03
	Next 50,000	$0.81	$0.81	$0.81	$0.85	$0.85
	Over 100,000	$0.81	$0.81	$0.81	$0.85	$0.85

The following table shows the anticipated monthly bill and increase from the previous year for various types of users.

Proposed Rate Schedule 1						
Monthly Bill	**Usage/Month**	**2018**	**2019**	**2020**	**2021**	**2022**
Residential	5,000	$21.31	$21.31	$22.12	$23.05	$23.99
Commercial	27,000	$42.20	$42.20	$43.01	$44.47	$45.93
Amount Increase Per Month		**2018**	**2019**	**2020**	**2021**	**2022**
Residential		-	$0.00	$0.81	$0.94	$0.94
Commercial		-	$0.00	$0.81	$1.46	$1.46

Rate Design Amendment

Flow of Future Funds - Water

Rate Schedule 1

Monthly Water Use Rate Categories:

	Meter Size	2018	2019	2020	2021	2022
Monthly Base Fee	3/4"	$26.41	$26.41	$27.73	$29.05	$30.37
	1"	$26.41	$26.41	$27.73	$29.05	$30.37
	1.5"	$53.49	$53.49	$56.16	$58.84	$61.51
	2"	$85.50	$85.50	$89.78	$94.05	$98.33
	3"	$159.60	$159.60	$167.58	$175.56	$183.54
	4"	$266.55	$266.55	$279.88	$293.21	$306.53
Commodity Fee Per 1000 gallons	First 50,000	$0.98	$0.98	$0.98	$1.00	$1.03
	Next 50,000	$0.81	$0.81	$0.81	$0.83	$0.85
	Over 100,000	$0.81	$0.81	$0.81	$0.83	$0.85

Rate of Inflation: 4.0%

Yearly Revenue Increase: 1.03%

Capital Improvements and Reserve: 10.0%

Projected Years

	2018	**2019**	**2020**	**2021**	**2022**
Operating Revenue					
Water Sale Revenue	$825,384	$833,825	$872,787	$918,365	$964,786
Other Income	$40,200	$40,600	$41,000	$41,400	$41,800
Total Operating Revenue	$865,584	$874,425	$913,787	$959,765	$1,006,586
O & M Expenses	$839,164	$732,641	$715,600	$744,100	$773,400
Net Operating Revenue	$26,420	$141,784	$198,187	$215,665	$233,186
Debt Service					
Proposed bond Issuance	$0	$0	$1,500,000	$0	$0
Proposed Bond and Interest Payments	$0	$0	$0	$110,848	$110,848
Other Obligations					
Capital Improvements and Reserve	$82,538	$83,383	$1,587,279	$91,836	$96,479
Total Other Obligations	$82,538	$83,383	$1,587,279	$91,836	$96,479
Total Annual Revenue	$865,584	$874,425	$2,413,787	$959,765	$1,006,586
Total Annual Expenses	$921,703	$816,024	$2,302,879	$946,784	$980,727
Net Balance from Operations	($56,119)	$58,402	$110,909	$12,980	$25,860
Deficiency of Water Revenue	-6%	---	---	---	---
Beginning Cash Balance	$110,030	$53,911	$112,313	$223,222	$236,202
Ending Cash Balance	$53,911	$112,313	$223,222	$236,202	$262,061

§3-225 MUNICIPAL WATER DEPARTMENT; FEES AND CHARGES.

E. TAP FEES:

MINIMUM CHARGES:

3/4" Service	$ 588.00	+ $ 9.50 per foot over 60 feet
1" Service	$ 642.00	+ $11.00 per foot over 60 feet
1.5" Service	$ 883.00	+ $15.00 per foot over 60 feet
2" Service	$1,284.00	+ $21.50 per foot over 60 feet
Over 2” Service	As set by Public Works Director	

IN ADDITION TO THE ABOVE TAP FEES, costs of removal and replacement of paving, curb, gutter, sidewalks, and any other such items that must be removed and replaced in order to install the service will also be charged to the property owner.

Tap fees for larger service lines will be set by the Public Works Director on an individual basis.

All tap fees will be paid in full before any work is to commence. If costs exceed fee, the responsible party will be billed the balance.

If water tap is installed in a water improvement, or other improvement district, the charge for the tap will be as set and assessed according to the district. If less than the amount set forth herein, a refund shall be given to the customer, and if greater than the amount set forth herein, the responsible party will be charged the balance due.

CHAPTER 3
DEPARTMENTS
Article 2. Water Department

§3-225 MUNICIPAL WATER DEPARTMENT; FEES AND CHARGES.

E. TAP FEES:

MINIMUM CHARGES:

3/4" Service	$ 5885~~0~~.00	+ $ 9.50~~0~~ per foot over 60 feet
1" Service	$ 6420~~0~~.00	+ $110~~.00~~ per foot over 60 feet
1.5" Service	$ 8832~~5~~.00	+ $154.00 per foot over 60 feet
2" Service	$1,2840~~0~~.00	+ $210.50~~0~~ per foot over 60 feet
Over 2" Service	As set by Public Works Director	

IN ADDITION TO THE ABOVE TAP FEES, costs of removal and replacement of paving, curb, gutter, sidewalks, and any other such items that must be removed and replaced in order to install the service will also be charged to the property owner.~~ALL TAP FEES WILL INCLUDE, in addition to the above charges, costs of removal and replacement of paving, curbs, gutter, sidewalks, and any other such items that must be removed and replaced in order to install the service.~~

Tap fees for larger service lines will be set by the Public Works Director on an individual basis.

All tap fees will be paid in full before any work is to commence. If costs exceed fee, the responsible party will be billed the balance.

If water tap is installed in a water improvement, or other improvement district, the charge for the tap will be as set and assessed according to the district. If less than the amount set forth herein, a refund shall be given to the customer, and if greater than the amount set forth herein, the responsible party will be charged the balance due.

E. TAP FEES:

MINIMUM CHARGES:

4" Sewer Service $615.00

IN ADDITION TO THE ABOVE TAP FEES, costs of removal and replacement of paving, curb, gutter, sidewalks, and any other such items that must be removed and replaced in order to install the service will also be charged to the property owner.

Tap fees for larger service lines will be set by the Public Works Director on an individual basis.
(Amended by Ord. No. 1090, 8/1/89; 1337, 9/3/96)

E. TAP FEES:

MINIMUM CHARGES:

4" Sewer Service $615~~575~~.00

~~ALL TAP FEES WILL INCLUDE,~~ I~~i~~N ADDITION TO THE ABOVE TAP FEES~~CHARGES~~, costs of removal and replacement of paving, curb, gutter, sidewalks, and any other such items that must be removed and replaced in order to install the service will also be charged to the property owner.

Tap fees for larger service lines will be set by the Public Works Director on an individual basis.
(Amended by Ord. No. 1090, 8/1/89; 1337, 9/3/96)

CHAPTER 9
BUILDING REGULATIONS
Article 2. Building Permits

§9-201 BUILDING PERMITS. Any person desiring to commence or proceed to erect, construct, enlarge, alter, repair, improve, remove, convert or demolish any building or dwelling, or cause the same to be done, shall file with the Building Official an application for a building permit. The application shall be in writing on a form to be furnished by the Building Official for that purpose. Every such application shall set forth the legal description of the land upon which the construction, relocation or demolition is to take place, the nature of the use or occupancy, the principal dimensions, the estimated cost, the names of the owner, architect, and contractor, and such other information as may be requested thereon. Application shall be accompanied with three (3) sets of building plans. The building Official shall use his best efforts (within the limitations of the building permit program) in, the issuing of permits, collecting of permit fees and making the periodic inspections to determine that the owner is making the repairing, remodeling or new construction in compliance with zoning district regulations and all adopted City Building and Housing Codes.

A. Fees payable upon application for permit for the work listed and above set forth shall be based on the estimated costs as follows:

Residential, Commercial, Remodel, and Repair (+ plan review fee for commercial project)

$ 1.00 to $ 2000.00	$27.00
$ 2001.00 to $ 5000.00	$48.00
$ 5001.01 to $ 100,000.00	$48.00 for the first $5,000.00 + $4.28 per $1,000.00 fraction thereof.
$ 100,000.01 to $ 500,000.00	$455.00 for the first $100,000.00 + $2.14 per $1,000.00 fraction thereof.
$ 500,000.01 to $ 1,000,000.00	$1,311.00 for the first $500,000.00 + $1.60 per $1,000.00 fraction thereof.
$ 1,000,000.01 and over	$2,113.00 for the first $1,000,000.00 + $1.07 per $1,000.00 fraction thereof.

Residential Plumbing Permits

Residential Plumbing Package, new construction only.	$37.50 per dwelling unit.

Plumbing permit issuance fee	$18.25 +
Water service line	$18.25
Sewer service line	$18.25
Lawn irrigation system	$16.00
Water heater	$ 8.50
Water conditioner	$ 8.00
Water closet	$ 6.50
Lavatory	$ 6.50
Bathtub	$ 6.50
Sink	$ 6.50
Shower	$ 6.50
Garbage disposal	$ 6.50
Laundry tub	$ 6.50
Floor drain	$ 4.25
Clothes washer	$ 4.25
Dish washer	$ 3.25

Commercial Plumbing Permits

Based on the dollar amount of the plumbing contract.

Plumbing permit issuance fee	$ 18.25 +
$ 1.00 to $ 500.00	$ 21.50
$ 500.01 to $ 1500.00	$ 43.00
$ 1501.00 to $ 5000.00	$150.00
$ 5001.00 to $ 10,000.00	$321.00
$ 10,000.01 to $ 25,000.00	$428.00
$ 25,000.01 to $ 50,000.00	$535.00
$ 50,000.01 to $ 100,000.00	$642.00
$ 100,000.01 and over	$642.00 for the first $100,000.00 + $1.07 per $1,000 fraction thereof.

Residential Mechanical Permits

Mechanical permit issuance fee, new construction only	$37.50 per dwelling unit
Furnace replacement only	$21.50
Central air replacement only	$21.50

Commercial Mechanical Permits

Based on dollar amount of mechanical contract.

Mechanical permit issuance fee	$ 37.50 +
$1.00 to $ 500.00	$ 21.50

$ 500.01 to $ 1500.00	$ 43.00
$ 1500.01 to $ 5000.00	$150.00
$ 5000.01 to $ 10,000.00	$321.00
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$ 25,000.01 to $ 50,000.00	$535.00
$ 50,000.01 to $ 100,000.00	$642.00
$ 100,000.01 and over	$642.00 for the first $100,000.00 + $1.07 per $1,000 fraction thereof.

Miscellaneous permit fees

Additional Inspection	$ 40.00
Non-permitted work	$ 80.00
Sign permit	$ 27.00 minimum or $1.00 per sq. ft.
Awning Sign permit	$ 40.00 minimum or $4.00 per sq. ft.
Fence permit	$ 16.00/$21.50 easement encroachment
Moving permit	$ 70.00
Zoning change	$110.00
Subdivision review	$160.00
Variance request	$135.00
Mobile home placement	$ 27.00
Demolition Permit	$ 11.00
Curb cut permit	$ 8.50 per LF/$50 minimum
Water well permit	$ 50.00
Onsite waste water	$ 50.00
Plan review fee	$ 50.00

~~Water tap fee:~~

~~¾" service~~	~~$ 588.50 + $9.50 per foot over 60 feet~~
~~1" service~~	~~$ 642.00 + $11.00 per foot over 60 feet~~
~~1.5" service~~	~~$ 883.00 + $15.00 per foot over 60 feet~~
~~2" service~~	~~$1,284.00 + $21.50 per foot over 60 feet~~

~~Sewer tap fee:~~

~~4" service~~	~~$ 615.00 + additional charges for removal and replacement of paving, curbs, gutter, sidewalk, etc….~~

B. Value for determination of estimated costs of projects for purposes of building permits:

The following square footage valuations will be used in calculating permit fees for new residential construction, additions, remodels and residential accessory buildings:

Dwelling	$81.52
Finished Basement	$24.56
Unfinished Basement	$16.40

Garage	$19.14
Deck	$14.41
Driveway	$ 3.45

Amended by (Ord. No. 1608, 09/07/04; 1729, 04/07/09; 1861, 06/04/13; 2038, 02/06/18)

CHAPTER 9
BUILDING REGULATIONS
Article 2. Building Permits

§9-201 BUILDING PERMITS. Any person desiring to commence or proceed to erect, construct, enlarge, alter, repair, improve, remove, convert or demolish any building or dwelling, or cause the same to be done, shall file with the Building Official an application for a building permit. The application shall be in writing on a form to be furnished by the Building Official for that purpose. Every such application shall set forth the legal description of the land upon which the construction, relocation or demolition is to take place, the nature of the use or occupancy, the principal dimensions, the estimated cost, the names of the owner, architect, and contractor, and such other information as may be requested thereon. Application shall be accompanied with three (3) sets of building plans. The building Official shall use his best efforts (within the limitations of the building permit program) in, the issuing of permits, collecting of permit fees and making the periodic inspections to determine that the owner is making the repairing, remodeling or new construction in compliance with zoning district regulations and all adopted City Building and Housing Codes.

A. Fees payable upon application for permit for the work listed and above set forth shall be based on the estimated costs as follows:

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Commercial Plumbing Permits

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Moving permit	$ 70.00
Zoning change	$110.00
Subdivision review	$160.00
Variance request	$135.00
Mobile home placement	$ 27.00
Demolition Permit	$ 11.00
Curb cut permit	$ 8.50 per LF/$50 minimum
Water well permit	$ 50.00
Onsite waste water	$ 50.00
Plan review fee	$ 50.00

B. Value for determination of estimated costs of projects for purposes of building permits:

The following square footage valuations will be used in calculating permit fees for new residential construction, additions, remodels and residential accessory buildings:

Dwelling	$81.52
Finished Basement	$24.56
Unfinished Basement	$16.40
Garage	$19.14
Deck	$14.41
Driveway	$ 3.45

Amended by (Ord. No. 1608, 09/07/04; 1729, 04/07/09; 1861, 06/04/13; 2038, 02/06/18)

§9-202 BUILDING PERMIT; LIMITATION. If the work for which a permit has been issued shall not have begun within six (6) months of the date thereof, or if the construction shall be discontinued for a period of six (6) months, the permit shall be

void. Before work can be resumed, a new permit shall be obtained in the same manner and form as an original permit.

§9-203 BUILDING PERMIT FEES; APPLICATION TO ZONING JURISDICTION. The building permit fees provided by resolution shall apply and be controlling throughout the Municipality and throughout its zoning jurisdiction.

§9-204 BUILDING PERMITS; SIDEWALK CONSTRUCTION. On each Building Permit Application on the Plot Plan sidewalks will be drawn in before a permit is issued. Sidewalks will be required to be constructed in all zoned districts within the City Limits. The person signing the building permit application will be the individual responsible for the construction of the sidewalk, whether he be the property owner, contractor or the subdivider. All sidewalks will be constructed as outlined by Chapter 8, Article 2, of Crete Municipal Code.

§9-205 BUILDING PERMITS; DUPLICATE TO COUNTY ASSESSOR. Whenever a building permits issued for the erection, alteration or repair, of any building within the Municipality's jurisdiction, and the improvement is two thousand five hundred ($2,500.00) dollars or more, a duplicate of such permit shall be issued to the County Assessor. *(Ref. 18-1743 RS Neb.) (Ord. No. 1619, 09/21/04*

§9-206 MOBILE HOME, BUILDING PERMITS, INFORMATION AND FEES, NOTIFICATION REQUIREMENT: Building Permits and Flood Plain Development Permits shall be required for all Mobile/Manufactured homes placed either on individual lots or in Mobile Home Parks. The Mobile Home Building Permit shall contain such information as shall be required by the Building Inspector and there shall be a charge of $27.00 for Mobile/Manufactured homes placed in Mobile Home Parks. All Mobile/Manufactured homes placed outside of Mobile Home Parks shall pay such fees as are established for other Building Permits by this code. The owner or operator of each Mobile Home Park is required to notify the Building Inspector within 24 hours each time a Mobile/Manufactured home is moved into a Mobile Home Park. *(Ord. 1446, 05/04/99; Ord. No. 1861, 06/04/13)*

§9-207 BUILDING PERMITS; ELECTRICAL INSTALLATIONS; PERMITS; STATE OF NEBRASKA INSPECTIONS: During any period that when the City of Crete does not have an Electrical Inspector, all electrical permits shall be referred to the State of Nebraska permit application and inspection. In addition to any State of Nebraska Inspection requirements, the City shall also require

State Inspections for all residential electrical installations, modifications and replacements. *(Ord. 1524, 08/21/01)*

April 12, 2019

Mayor and City Council
c/o Mr. Tom Ourada, City Administrator
City of Crete, Nebraska
243 East 13th Street
Crete, NE 68333

RE: Crete Core Ingredients
Proposed Composting Facility
Olsson Project 015-0826

Dear Mr. Ourada:

Olsson has completed a review of data submitted for Crete Core Ingredients from HDR Engineering for the proposed compost facility. This data includes the original July 24, 2018 - Evaluation for Siting Approval data and the March 25, 2019 – Evaluation of Odor Compounds. Olsson responded with comments/questions on April 5, 2019 and HDR provided an updated Evaluation of Odor Compounds dated April 10, 2019

The reviews and comments have been based on the proposed 11-230 Special Exceptions, E.9 Composting zoning changes.

Based on review of the updated document, from an engineering perspective it has satisfied all the requirements for an application for a Special Exception for a composting facility. Please note, Olsson does have one comment regarding the odor modeling analysis. Olsson's review of the revised odor analysis identified instances where the odor annoyance free percentages were not calculated properly. The differences between the modeled and required odor annoyance free percentile values, however, are small and have minimal impact to the results. The results described in the odor analysis document developed by the applicant remain valid. The final version of the documents are attached.

There are some specific project items Olsson would like to point out to the City. Based on discussion with the City, Odor generation was a key concern. As part of the Special Exception requirements, there was a significant odor generation calculations and odor modeling developed and evaluated to determine the possible impacts. This work included "worst case" conditions when none of the odor control equipment was in operation (uncontrolled) and "normal operation" when the odor control equipment was operating correctly (controlled). From this data odor maps were developed that showed the impacts based on noticeable odor for different avoidance levels. Olsson would like to call your attention to these.

601 P Street / Suite 200 / Lincoln, NE 68508
O 402.474.6311 / olsson.com

For the “worst case” scenario it is shown on Figure B-2. For this scenario, the odor would be noticed 1% of the time for ammonia a maximum distance of 1.11 km (0.69 miles). For the “normal operation” scenario it is shown on Figure B-12. For this scenario, the odor would be noticed 1% of the time for ammonia at a maximum distance of 0.64 km (0.40 miles).

As noted in the original submittal, there will not be a significant change in the traffic from the facility from the current operation.

Additionally, due to the size of the facility the Nebraska Department of Environmental Quality (NDEQ) will require the project plans to be reviewed and approved by the agency, along with an on-going operating permit.

If the project moves forward, the zoning regulations require that a binding agreement be developed between the City and the Industry. This agreement would outline several items including; development of an Odor Management Plan (which would include an Odor Prevention plan), odor and weather monitoring requirements, how odor complaints would be addressed, odor compliance requirements and associated enforcement cost, and fees and fines.

Olsson hopes this letter provides the City with the information needed to make an informed decision regarding this Special Exception Request. Olsson plans to attend the April 16, 2019 meeting to answer any questions or concerns that may arise. If you have any questions or concerns, please feel free to contact us.

Sincerely,

Mike Milius
Olsson

Craig Reinsch
Olsson

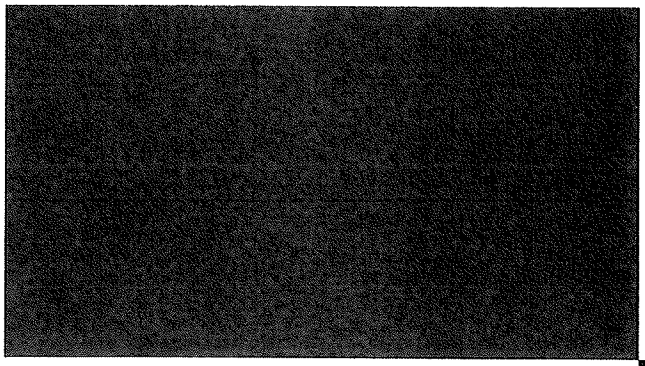
Cc: Judi Meyer, City Clerk, City of Crete
Tim Plander, Olsson

Evaluation for Siting Approval

Crete Core Compost Facility

Crete Core Ingredients (subsidiary of Omaha Industries, Inc.)

Crete, Nebraska
July 24, 2018



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Evaluation for Siting Approval

The Nebr. Rev. Stat. §13-1703 requires an applicant for siting approval to submit specific information to the jurisdictional entity (either County Board of Commissioners or City Council) to demonstrate compliance with this section of the statutes for a solid waste disposal area or solid waste processing facility. This report was prepared in furtherance of this statutory requirement.

Crete Core Ingredients, a subsidiary of Omaha Industries, Inc. and located south of the City of Crete, Nebraska at 2220 County Road I, is seeking Siting Approval for a solid waste compost facility on property generally described as:

> *Part of North Half of Southwest Quarter of Section 10, Township 7 North, Range 4 East of the 6th P.M., Saline County, Nebraska, containing 27.189 acres more or less (Site).*

A copy of the land survey record for the approximate 27 acres is attached.

The proposed compost facility will be on the property immediately north and adjacent to the existing Crete Core Ingredients facility. To allow Crete Core Ingredients to implement waste diversion activities at their industrial facility, Crete Core is seeking 'siting approval' of the property described above for use as a solid waste compost site which falls under the state's definition of 'solid waste processing facility'. The Nebraska Department of Environmental Quality (NDEQ) requires 'siting approval' before issuance of a permit for construction and operation of a 'solid waste processing facility' as defined by Nebr. Rev. Stat. §13-1701 and NDEQ Title 132.

Nebr. Rev. Stat. §13-1703 lists six areas of required evaluation; the requirements of this statute are repeated below, along with an evaluation of these requirements.

13-1703 (1) *The solid waste disposal area or solid waste processing facility is necessary to accommodate the solid waste management needs of the area which the solid waste disposal area or solid waste processing facility is intended to serve;*

The City of Crete contracts residential collection services and operation of the Transfer Station on North Boswell. The Transfer Station receives municipal solid waste and recyclables for consolidation and transfer. Yard waste is also received at the Transfer Station. Organic waste composting is not currently provided or projected to be provided by the City of Crete, Saline County, or other private entities in the area.

One of the strategies/goals by Crete Core, and parent company Omaha Industries, Inc., is to manage solid waste generated at their facilities in an integrated, efficient, environmentally safe, and conservation-oriented recycling and waste management program. Crete Core has not been able to find recycling markets for their cardboard and wood pallets due to soiling by the incoming animal products. Thus these materials historically have been landfilled. In addition, the animal waste byproducts and wastewater treatment plant sludge from the industrial facility are currently disposed in a landfill. With the proposed solid waste compost facility, Crete Core will be able to divert from disposal approximately 9,500 tons per year of on-site generated materials and an additional 10,000 tons per year of pallets/woody material that may normally have been disposed in a landfill. Crete Core is open to exploring potential opportunities with the City to divert other compostable materials. Discussions would need to consider whether the compost facility (or expanded facility) can physically and operationally handle the additional

materials and that the feedstock does not affect Crete Core's ability to produce certified organic compost.

Siting approval for a 'solid waste compost facility' is necessary for Crete Core to divert materials from disposal which will help extend the life of local landfills and produce compost material.

13-1703 (2) *The solid waste disposal area or solid waste processing facility is designed, located, and proposed to be operated so that the public health, safety, and welfare will be protected. The applicant shall provide an evaluation of the potential for adverse health effects that could result from exposure to pollution, in any form, due to the proper or improper construction, operation, or closure of the proposed solid waste disposal area or solid waste processing facility;*

The proposed Crete Core compost facility will be designed, constructed and operated to protect the public health, safety and welfare. The design and operations must be permitted by NDEQ, who will undertake site inspections and review various reports and records to ensure compliance. Preliminary locational criteria review show that the site can meet state and federal site location criteria and is a suitable location for a solid waste compost facility. The completion of investigations, evaluations and analysis will be included in the NDEQ permit application.

The environmental, public health and safety features anticipated with the design and operations of the solid waste compost facility include: aerated composting process, paved active composting surface, compacted soil pads, developed feedstock mix design and mixing equipment, storm water management and monitoring, and other environmental monitoring and protection features. Through the NDEQ permitting process, Crete Core will further demonstrate that they have addressed the potential pathways for releases from the Site that might result in health effects or exposure to pollutants.

A conceptual layout of the initial compost facility is attached.

13-1703 (3) *The solid waste disposal area or solid waste processing facility is located so as to minimize incompatibility with the character of the surrounding area and to minimize the effect on the value of the surrounding property. The city council, village board, or county board shall consider the advice of the appropriate planning commission regarding the application;*

The Site is compatible with the character of the surrounding land area. It will be strategically located adjacent to Nebraska Highway 103 and BNSF Railroad on the west side; existing Crete Core Ingredients facility immediately south and a meat packing facility (Farmland Foods Inc.) south of County Road I; a cold storage facility immediately southeast; farm land to the north, west and east; and the Big Blue River further to the east. Immediately north and south of the Site the land is zoned 'I-2, Heavy Industrial'; and west and east (on the other sides of the roadways) land is zoned 'A-1 Agricultural'. Currently the majority of the Site is being farmed.

Personnel from Crete Core, Omaha Industries and their consultant communicated and discussed with the City of Crete administration and public works about the planned solid waste compost site and requirements for siting approval. Current zoning of the Site is I-2 Heavy Industrial. Recent communications from the City indicated that the Site should stay zoned I-2, with zoning amended to allow an application for special exception permit to be submitted to the City Council for consideration and subsequent public hearing. Planning Commission and City Council advice will be considered regarding the proposed solid waste compost facility.

Crete Core Ingredients began operations in 2004 and has not been shown to have caused any adverse effects on the value of surrounding property. With its location in the City's planned industrial growth area, recent property sales for land near Crete Core have yielded per acre values comparable to or greater than similar land in the County. The compost facility will be designed, constructed, operated and monitored in compliance with applicable regulations such that it would have minimal effect on the value of the currently surrounding property.

13-1703 (4) *The plan of operations for the solid waste disposal area or solid waste processing facility is designed to minimize the danger to the surrounding area from fire, spills, or other operational accidents;*

Crete Core Ingredients currently has policies and procedures in place at their industrial facility for safety, fire prevention and emergency action plan for handling emergency situations in an orderly, pre-determined manner. Crete Core works with local police, fire and the City to ensure that if a problem were to arise that necessary responders are aware of site conditions and are prepared to quickly address such issues as fire, spills and other accidents.

As part of the NDEQ Title 132 permit application, Crete Core will develop a detailed Operations Plan that establishes acceptable operating standards and guides personnel in undertaking various activities so that the compost facility is operated so as to not constitute a hazard, or a threat to human health or the environment. The plan will address the following site control and contingency topics:

- Odor Control
- Litter Control
- Vector Control
- Dust Control
- Surface Water Control
- Surface Water Monitoring
- Methods of Compost Operation
- Fire Control
- Inclement Weather Operations
- Natural Disasters
- Snow Removal
- Spill Containment
- Provision for Disposal of Waste not part of Compost Material

Additionally, Crete Core anticipates continuing its relationship with local police, fire, the City and other responders to ensure that it remains a good neighbor and prepared to deal with all reasonably foreseeable operating conditions.

13-1703 (5) *The traffic patterns to or from the solid waste disposal area or solid waste processing facility are designed to minimize the impact on existing traffic flows;*

About half of the feedstock materials to the solid waste compost facility will be obtained from the adjacent Crete Core Ingredients facility (cardboard and wood pallets, animal waste byproducts, and industrial wastewater treatment plant sludge). These materials will be transferred between the facilities and not travel on the public roads. With on-site materials diverted from landfilling, disposal truck traffic will decrease by four to six vehicles per day.

Additional materials are expected to come from other sources located off-site. Existing trucks currently haul finished products to customers and return with empty trailers. With the start-up of the solid waste compost facility, these trucks are anticipated to back haul wood pallets from the customers. This would result in no increase to current traffic patterns or quantity. Even if wood pallets from other facilities are hauled without the back-haul option, which could be three to five vehicles per day, the net change in truck traffic would be a reduction due to the decrease in off-site waste haul.

Finished compost sales (in trailer loads of retail bags and/or bulk) are estimated to result in approximately one to two vehicles per day.

Traffic to the existing Crete Core facility primarily uses Nebraska Highway 103 to reach the facility. Traffic turning east onto County Road I is controlled by left and right turning lanes. Vehicles will normally access the compost facility through the existing Crete Core main entrance from County Road I. Alternate access may be provided to the compost facility along the east from County Road 2250.

Exiting traffic, entering back onto County Road I from the facility has adequate sight distance for on-coming traffic from both the east and west. Traffic entering onto Highway 103 is controlled by a stop sign. Adequate sight distance exists in both the north and south direction for safe entry onto Highway 103. Based on these configurations it is concluded that current and future traffic patterns (to and from the Site) have minimum impact on existing traffic flows.

Highway 103, west of the Site, is currently a 2-lane paved highway and is classified as a Major Arterial. County Road I (east of Highway 103) is currently a two-lane rural paved road.

Based on the above information, it was concluded that the solid waste compost facility will result in no change or a net reduction of traffic on public roadways and is expected to have minimum impact on future traffic flows on Highway 103 and County Road I.

13-1703 (6) *Information regarding the previous operating experience of a private agency applicant and its subsidiaries or parent corporation in the area of solid waste management or related activities are made available to the city council, village board, or county board.*

Crete Core Ingredients operates a multi-facility operations 24 hours a day, 7 days a week. The current operations include a 15 million pound freezer, processing facility, rendering facility, plate freezing operation, and waste water treatment plant. Crete Core has experience handling a variety of materials and equipment operations that is relevant to the proposed compost facility, including:

- Operating a large industrial shredder to shred cardboard and pallets with capability of shredding trees;
- Handling, loading and hauling of waste water treatment sludge;
- Handling, loading and hauling of animal wastes by-products;
- Managing fleet of forklifts, bobcat, telehandler and semi-trucks/trailers utilized daily to transfer raw materials, products and solid wastes to final destinations;
- Moving soil, rock, concrete and other heavy materials with industrial machinery;
- Waste water / liquids management and treatment; and
- Storm water management, retention and monitoring.

These activities will translate well to operating an organic compost facility. The compost facility will provide an alternative to landfilling the organic materials generated by Crete Core and provide a circular economy model in using wastes to create a new product (i.e. compost). The compost product is intended to be sold commercially for use as a soil amendment. Crete Core plans to have the compost certified organic as part of their overall business sustainability.

Crete Core strives to be good neighbors and continue implementing practicable, sustainable and environmental operations.

13-1703 (6) [second half] *If a corporation, a parent company or subsidiary thereof, or any officer or board member of the corporation or the parent company or subsidiary applying for approval has been convicted of a felony within ten years of the date the application is filed, site approval shall not be granted.*

Omaha Industries, Inc. and Crete Core Ingredients have not been convicted of a felony within the past ten years. A company communication is attached.

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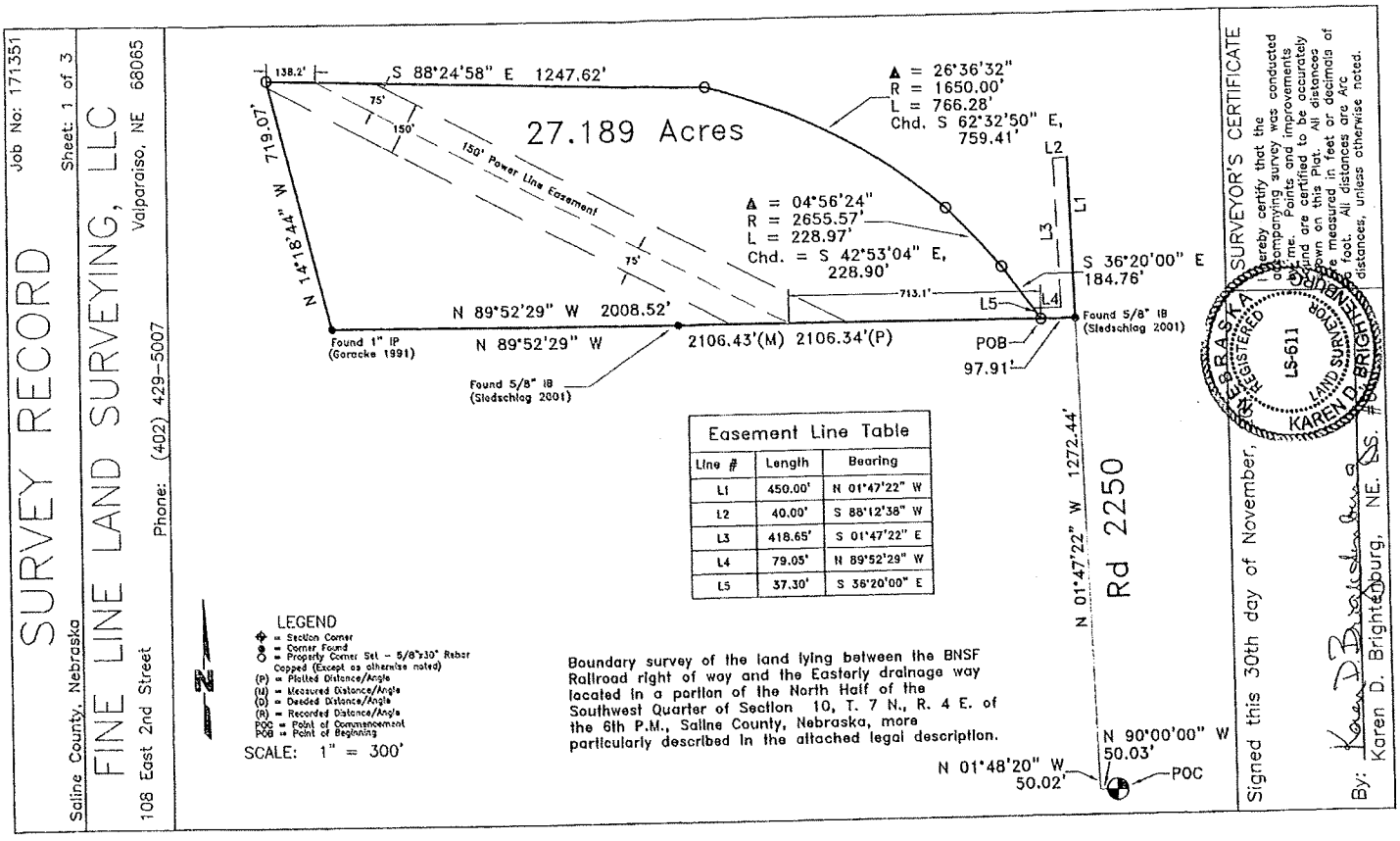
Attachment 1 – Land Survey Record


SURVEY RECORD
Job No: 171351
Sheet: 1 of 3
Saline County, Nebraska
FINE LINE LAND SURVEYING, LLC
Valparaiso, NE 68065
108 East 2nd Street
Phone: (402) 429-5007
138.2'
S 88°24'58" E 1247.62'
719.07'
N 14°18'44" W
75'
150'
150' Power Line Easement
75'
27.189 Acres
Δ = 26°36'32"
R = 1650.00'
L = 766.28'
Chd. S 62°32'50" E,
759.41'
Δ = 04°56'24"
R = 2655.57'
L = 228.97'
Chd. = S 42°53'04" E,
228.90'
L1
L2
L3
L4
L5
713.1'
S 36°20'00" E
184.76'
N 89°52'29" W 2008.52'
Found 1" IP
(Goracke 1991)
N 89°52'29" W
2106.43'(M) 2106.34'(P)
Found 5/8" IB
(Sledschlag 2001)
POB
97.91'
Found 5/8" IB
(Sledschlag 2001)
N 01°47'22" W 1272.44'
Rd 2250
N 90°00'00" W
50.03'
N 01°48'20" W
50.02'
POC
Easement Line Table
Line # | Length | Bearing
L1 | 450.00' | N 01°47'22" W
L2 | 40.00' | S 88°12'38" W
L3 | 418.65' | S 01°47'22" E
L4 | 79.05' | N 89°52'29" W
L5 | 37.30' | S 36°20'00" E
LEGEND
= Section Corner
= Corner Found
= Property Corner Set - 5/8"x30" Rebar Capped (Except as otherwise noted)
(P) = Platted Distance/Angle
(M) = Measured Distance/Angle
(D) = Deeded Distance/Angle
(R) = Recorded Distance/Angle
POC = Point of Commencement
POB = Point of Beginning
SCALE: 1" = 300'
Boundary survey of the land lying between the BNSF Railroad right of way and the Easterly drainage way located in a portion of the North Half of the Southwest Quarter of Section 10, T. 7 N., R. 4 E. of the 6th P.M., Saline County, Nebraska, more particularly described in the attached legal description.
SURVEYOR'S CERTIFICATE
I hereby certify that the accompanying survey was conducted by me. Points and improvements found are certified to be accurately shown on this Plat. All distances are measured in feet or decimals of a foot. All distances are Arc distances, unless otherwise noted.
Signed this 30th day of November, 2021
By: Karen D. Brightsburg, NE. LS. #611
REGISTERED LAND SURVEYOR
KAREN D. BRIGHT
LS-611
NEBRASKA

SURVEY RECORD

Job No: 171351

Saline County, Nebraska

Sheet: 2 of 3

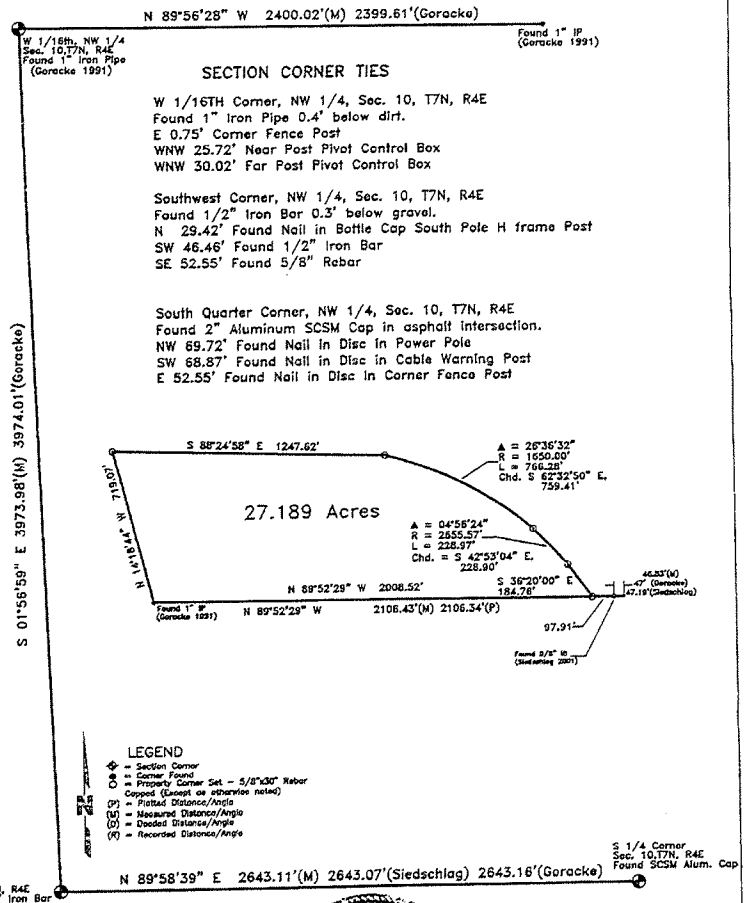
FINE LINE LAND SURVEYING, LLC

108 East 2nd Street
Valparaiso, NE 68065
Phone: (402) 429-5007

Boundary survey of the land lying between the BNSF Railroad right of way and the Easterly drainage way located in a portion of the North Half of the Southwest Quarter of Section 10, T. 7 N., R. 4 E. of the 6th P.M., Saline County, Nebraska, more particularly described in the attached legal description.

LEGEND
- ✥ = Section Corner
- ● = Corner Found
- ○ = Property Corner Set – 5/8"x30" Rebar Capped (Except as otherwise noted)
- (P) = Platted Distance/Angle
- (M) = Measured Distance/Angle
- (D) = Deeded Distance/Angle
- (R) = Recorded Distance/Angle
- -x-x-x- = Fence
- N.T.S. = NOT TO SCALE

SCALE: 1" = 500'



SECTION CORNER TIES

W 1/16TH Corner, NW 1/4, Sec. 10, T7N, R4E
Found 1" Iron Pipe 0.4' below dirt.
E 0.75' Corner Fence Post
WNW 25.72' Near Post Pivot Control Box
WNW 30.02' Far Post Pivot Control Box

Southwest Corner, NW 1/4, Sec. 10, T7N, R4E
Found 1/2" Iron Bar 0.3' below gravel.
N 29.42' Found Nail in Bottle Cap South Pole H frame Post
SW 46.46' Found 1/2" Iron Bar
SE 52.55' Found 5/8" Rebar

South Quarter Corner, NW 1/4, Sec. 10, T7N, R4E
Found 2" Aluminum SCSM Cap in asphalt intersection.
NW 69.72' Found Nail in Disc in Power Pole
SW 68.87' Found Nail in Disc in Cable Warning Post
E 52.55' Found Nail in Disc in Corner Fence Post

LEGEND
- ✥ = Section Corner
- ● = Corner Found
- ○ = Property Corner Set – 5/8"x30" Rebar Capped (Except as otherwise noted)
- (P) = Platted Distance/Angle
- (M) = Measured Distance/Angle
- (D) = Deeded Distance/Angle
- (R) = Recorded Distance/Angle

Signed this 30th day of November

By: Karen D Brightenburg
Karen D. Brightenburg, NE. L.S.

NEBRASKA REGISTERED LS-621 LAND SURVEYOR KAREN D. BRIGHTENBURG

SURVEYOR'S CERTIFICATE

I hereby certify that the accompanying survey was conducted by me. Points and improvements found are certified to be accurately shown on this Plat. All distances are measured in feet or decimals of a foot. All distances are Arc distances, unless otherwise noted.

Parcel Legal Description

A parcel of land lying between the BNSF Railroad right of way and the Easterly drainage way located in a portion of the North Half of the Southwest Quarter of Section 10, T. 7 N., R. 4 E. of the 6th P.M., Saline County, Nebraska, more particularly described as follows:

Commencing at the Southeast corner of said Southwest Quarter; Thence: N 90°00'00" W, on an assumed bearing, along and with the South line of said Southwest Quarter, a distance of 50.03 feet; Thence: N 01°48'20" W, a distance of 50.02 feet, to the Point of Intersection of the West right of way of County Road 2250 and the North right of way of County Road "I"; Thence: N 01°47'22" W, a distance of 1272.44 feet to a 5/8" Iron Bar found on the South line of the North Half of said Southwest Quarter; Thence: N 89°52'29" W, along and with the South line of said North Half, a distance of 97.91 feet to the Point of Beginning, being the Southeast Corner of the Tract herein described; Thence: N 89°52'29" W, continuing along and with the South line of said North Half, a distance of 2008.52 feet to a 1" Iron Pipe found for the Southwest corner of the Tract herein described; Thence: N 14°18'44" W, along and with the Easterly right of way of the BNSF Railroad, a distance of 719.07 feet to a point for the Northwest corner of the tract herein described; Thence: S 88°24'58" E, a distance of 1247.62 feet to a point for a corner being a Point of Curvature of a Horizontal curve to the right having a Central Angle of 26°36'32", a Radius of 1650.00 feet and a Chord bearing S 62°32'50" E for 759.41 feet; Thence: Southeasterly, along and with the Arc of said curve, a distance of 766.28 feet to the Point of Curvature of a Horizontal curve to the right having a Central Angle of 04°56'24", a Radius of 2655.57 feet and a Chord bearing S 42°53'04" E for 228.90 feet; Thence: Southeasterly, along and with the Arc of said curve, a distance of 228.97 feet to the Point of Tangency thereof; Thence: S 36°20'00" E, a distance of 184.76 feet to the Point of Beginning and containing 27.189 Acres of land, more or less.

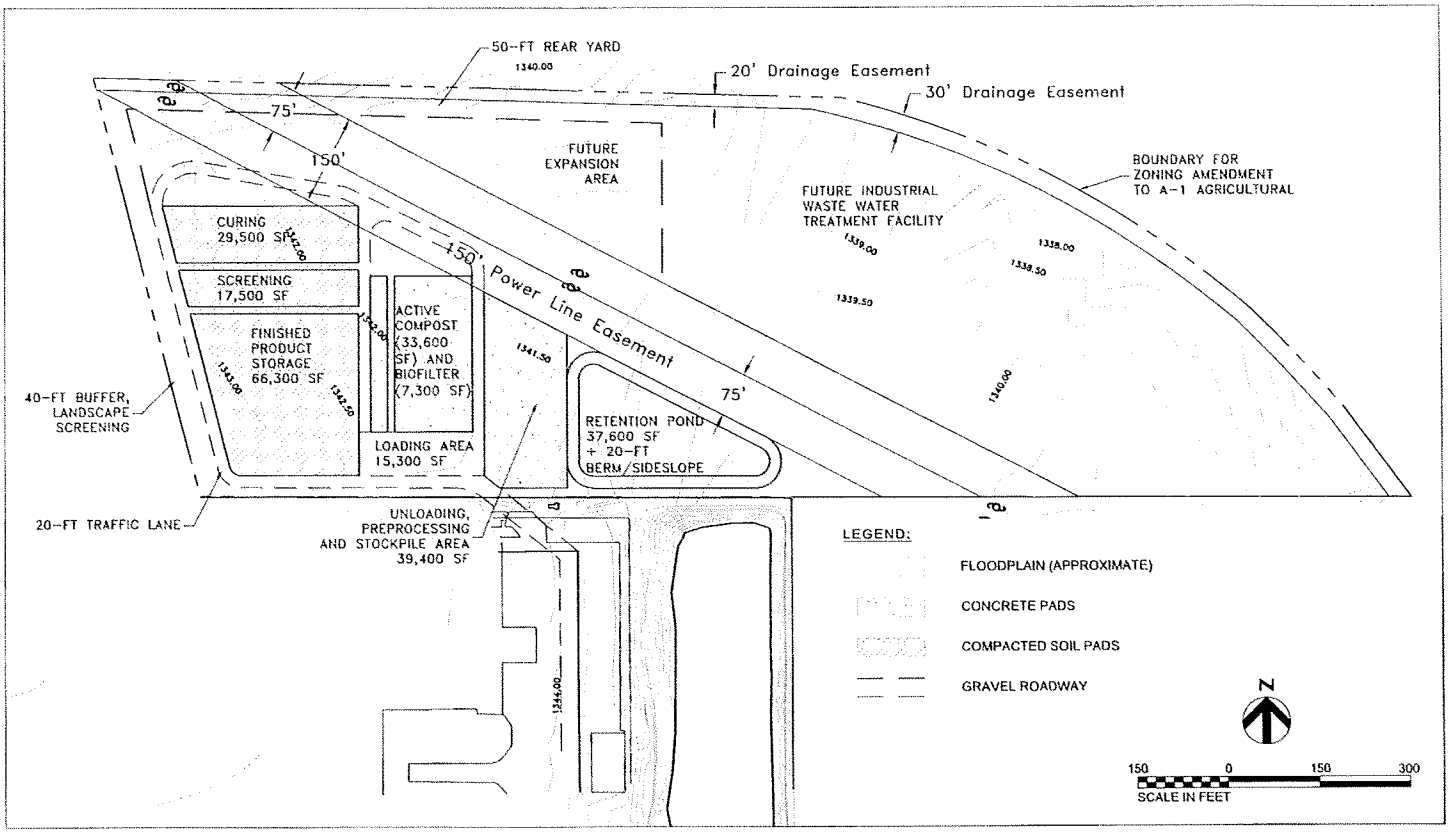
Access Easement Description:

An easement for the purpose of Ingress and Egress, to the property described in the attached Plat:

A tract of land lying over and across a portion of the North Half of the Southwest Quarter of Section 10, T. 7 N., R. 4 E. of the 6th P.M., Saline County, Nebraska, more particularly described as follows:

Commencing at the Southeast corner of said Southwest Quarter; Thence: N 90°00'00" W, on an assumed bearing, along and with the South line of said Southwest Quarter, a distance of 50.03 feet; Thence: N 01°48'20" W, a distance of 50.02 feet, to the Point of Intersection of the West right of way of County Road 2250 and the North right of way of County Road "I"; Thence: N 01°47'22" W, a distance of 1272.44 feet to the Point of Beginning; Thence: N 01°47'22" W, a distance of 450.00 feet; Thence: S 88°12'48" W, a distance of 40.00 feet; Thence: S 01°47'22" E, a distance of 418.65 feet; Thence: N 89°52'29" W, a distance of 79.05 feet; Thence: S 36°20'00" E, a distance of 37.30 feet; Thence: S 89°52'29" E, along and with the South line of said North Half, a distance of 97.91 feet to the Point of Beginning and containing 0.460 Acres of land, more or less.

Attachment 2 – Conceptual Site Layout



CRETE CORE COMPOSTING FACILITY CONCEPTUAL LAYOUT

DATE: JULY 2018

FIGURE: 1

Attachment 3 – Owner Communication

OMAHA INDUSTRIES

7071 N 87th Street
Omaha, NE 68122
P: 402-734-7321
F: 402-734-2062

June 29, 2018

Lori Caleb
HDR
8404 Indian Hills Drive
Omaha, NE 68114

Re: Crete Core Ingredients Compost Facility Data/Site Information

Lori,

Omaha Industries and/or its subsidiaries has not been convicted of a felony within the last 10 years of the enclosed date.

Sincerely,

Patrick Burke
President

NOTICE OF REQUEST TO ADJACENT PROPERTY OWNERS
Siting Approval for Solid Waste Compost Facility

Notification is being made pursuant to Nebr. Rev. Stat. 13-1704.

Notice is hereby given that the Crete City Council will receive a request for Siting Approval for a Solid Waste Compost Facility on **Tuesday, August 7, 2018** at the regular scheduled meeting in the City Council Chambers, City Hall, 243 East 13th Street, Crete, Nebraska. In this meeting, the City Council will determine and set a public hearing date pursuant to Nebr. Rev. Stat. 13-1706. The Siting Approval request is on the following:

APPLICANT NAME & ADDRESS:	Crete Core Ingredients, 2220 County Road I, Crete, Nebraska 68333
LOCATION OF PROPOSED SITE:	2220 County Road I, Crete, NE
NATURE & SIZE OF THE AREA/FACILITY:	Siting Approval is requested for 27.189-acres of Crete Core property of which a portion will be used for a solid waste compost facility.

DATE WHEN REQUEST FOR SITING APPROVAL WILL BE SUBMITTED: August 7, 2018

RIGHTS OF PERSONS TO COMMENT:	Comments will be taken in writing any time up to 30 calendar days after the last public hearing pursuant to Nebr. Rev. Stat. 13-1705.

Questions regarding the Siting Approval request should be directed to Crete Core Ingredients, Jessica Placek at (402) 826-2700, Ext. 203.

The property owned by Crete Core is located east of Nebraska Highway 103 and north of County Road I and is described generally as part of north half of southwest quarter of Section 10, Township 7 North, Range 4 East of the 6th P.M., Saline County, Nebraska, containing 27.189 acres of land, more or less. The compost facility will be located within this property.

Documents related to the Siting Approval are anticipated to be accessed through the City Council meeting and public hearing agendas once it is posted publicly on the Crete City Council Public View webpage.

Certification of Compliance with Local Siting Requirements

Name of Facility:_____

Mailing Address:_____

City/State/Zip: _____Tele #:_____

Legal Description: (NE/SE/NW/SW) Quarter, (NE/SE/NW/SW) Quarter,

Section_____Township _____ (N) (S), Range _____ (E)(W). County: _____

Mark one of the following:

☐ I certify that the above-referenced solid waste management facility **HAS RECEIVED** local siting approval in accordance with Neb. Rev. Stat. Sections 13-1701 to 13-1714, or with Section 13-2035, as applicable.

☐ I certify that the above-referenced-solid waste management facility **DOES NOT REQUIRE** local siting approval in accordance with Neb. Rev. Stat. Sections 13-1701 to 13-1714, or with Section 13-2035, as applicable.

_____ _____

Name of Authorized Local Government Official (Please print) Title

_____ _____

Signature of Authorized Local Government Official Date

Representing_____

(Name of County or Municipality)

Evaluation of Odor Compounds

Crete Core Compost Facility

Crete Core Ingredients (subsidiary of Omaha Industries, Inc.)

Crete, Nebraska

April 10, 2019

1.0 Project Overview

1.1 Introduction

Crete Core Ingredients (Crete Core) has proposed the construction and operation of an aerated static pile (ASP) compost system at its existing site in Crete, Nebraska. As part of the local siting approval for the project, Crete Core has applied for a Special Exception Use to the City of Crete's (City) local zoning approval.

During review of Crete Core's application, the City requested Crete Core to submit an estimate of odor emissions from the ASP compost system and an accompanying air dispersion modeling analysis of the estimated odors to determine the location and extent of 95-99% "odor annoyance free levels", as prescribed in the City's proposed Zoning Regulation 11-230 E.9 Composting (11-230 E.9). This report provides the estimated odor emissions and results of the requested air dispersion modeling analysis.

1.2 Odor Emissions

This section presents the methodology for the development of estimated odor generation rates for individual odor compounds associated with compost operations and the corresponding odor detection thresholds for each compound. The numerical values and supporting documentation for the odor generation rates and odor detection thresholds are presented in Tables A-1 through A-7 located in Appendix A. The list of sources and relevant data incorporated into the numerical values is provided in Tables A-8 through A-11 located in Appendix A.

1.2.1 Crete Core Aerated Static Pile Design

Facility-specific information was used to estimate odor generation rates from the proposed compost facility and is shown on Table A-1. The quantity and type of feedstock anticipated to be composted in a typical year at the proposed facility was accounted for within the emissions estimate calculations. The feedstock quantities are based on receiving feedstock seven days per week, fifty-two weeks per year.

Aerated static pile (ASP) parameters, including required airflow rates and biofilter dimensions, were based on a preliminary design provided by the vendor of the ASP system. The ASP system is designed to operate under positive aeration under normal operating conditions, defined by predetermined values for certain operating parameters, including temperature and moisture. The ASP design includes a primary biofilter consisting of a layer of finished compost on top of the ASP. When the system's monitoring devices detect abnormal operating conditions, the ASP system is designed to reverse its operation to a negative aeration and direct all airflow from the ASP through a secondary biofilter. Therefore, odor generation rates were calculated for four scenarios in accordance with 11-230 E.9:

- ASP under Positive Aeration without Primary Biofilter control
- ASP under Positive Aeration with Primary Biofilter control
- ASP under Negative Aeration without Secondary Biofilter control
- ASP under Negative Aeration with Secondary Biofilter control

In addition to the ASP (compost) and Secondary Biofilter, the proposed compost operation will utilize up to four stockpiles for the temporary placement of feedstock materials prior to being placed in the ASP. Two of these stockpiles will contain materials (animal byproducts and WWTP sludge) that may contribute to air emissions. It is assumed that emissions from the stockpiles will be consistent for each of the four operating scenarios.

1.2.2 Selection of Representative Odor Generation Factors

In order to estimate potential odor generation rates from the compost facility under all four scenarios, a survey of publicly-available information was conducted to obtain emission factors for the potential odor compounds identified in 11-230 E.9. The survey included searches of state and federal regulatory guidance documents and of peer-reviewed journals via library databases and academic search engines. Of the available information, emission factors were selected based on the representativeness of the emission factor as applied to Crete Core's design parameters. Representativeness was determined based on both the similarity of feedstock and of the compost technology presented in the source as compared to that of Crete Core. Emission factors are presented in Tables A-2 through A-6.

1.2.3 Odor Compound Estimate Calculation

Once emission factors were selected, they were applied to the design parameters of the proposed compost pile, including throughput rates and airflow rates. The VOC emission factor presented in SJAVPCD, 2010 did not provide results for individual VOC compounds. Therefore, in order to estimate emissions of individual VOC compounds, it was assumed that the VOC emission profile of the compost facilities studied in Kumar et al., 2011 was representative of the VOC emission profile of the proposed compost facility at Crete Core, both in the identification of specific compounds and the quantity of each compound present relative to the total VOC emission stream.

To estimate potential odor generation rates from the feedstock material stockpiles before it is transferred to the ASP, the stockpile emission factor presented in CARB, 2015 (CARB) was used as a basis. The feedstock in the stockpile that was the basis for the CARB emission factor included greenwaste and food waste. Because this material is not representative of Crete Core's proposed feedstock, the stockpile emission factor used for Crete Core was derived by applying the ratio of stockpile emission factor to composting emission factor found in CARB to the composting emission factor used to calculate VOC emissions from Crete Core's ASP.

The CARB document states that ammonia emissions are not expected from stockpiles, so the same assumption was made for the Crete Core stockpiles.

The estimated emissions of odor compounds are presented in Tables A-2 through A-6.

1.2.4 Sources of Odor Threshold Values

Finally, a survey of publicly-available information was conducted to obtain odor threshold values in order to compare the modeling results of each pollutant for which an odor generation rate was estimated to an established odor threshold value. The survey was conducted by searching for both classes of compounds (sulfides, VOCs, ammonia) and by searching for each individual

compound for which an emission estimate was calculated. The search was conducted within documents published by state and federal agencies, as well as within peer-reviewed journals. Odor threshold values were obtained for ammonia and sulfide compounds as well as some of the VOC compounds but were not available for every individual VOC compound. However, odor thresholds were found for individual VOC compounds that together comprise an estimated 82% of the total estimated VOC emission stream. In cases where more than one odor threshold value was obtained for a single compound, the odor threshold value published in state or federal agency documents was selected over values published in research articles.

The odor compounds for which odor threshold values could be identified are the compounds carried forward into the odor modeling analysis as presented in Table A-7. The list of modeled odor compounds for this analysis is as follows:

- Ammonia
- Dimethyl Disulfide
- Carbon Disulfide
- Carbonyl Sulfide
- Isopropyl Alcohol
- Ethyl Alcohol
- Methyl Alcohol
- Acetic Acid
- Limonene
- a-Pinene
- Camphor
- Propionic Acid
- Naphthalene
- Acetone
- Acetaldehyde

1.3 Odor Modeling

This odor impact analysis was conducted for the referenced operation of an ASP composting operation at the site located in Crete. The speciated odor causing compounds identified in Section 1.2 for which an odor threshold was identified are addressed in this analysis. The analysis then determines the aerial extent of predictive odor levels in comparison to 95-99% odor annoyance free levels.

1.3.1 Model Selection

Based on the need to evaluate multiple sources associated with the ASP compost system, the current version of the EPA-preferred AERMOD dispersion model available at the commencement of the project was used for this analysis (Version 18081). The AERMOD model was incorporated into software produced by Providence Engineering and Environmental, LLC entitled BEEST for Windows (Version 11.12) which was used to edit input files and run the model. AERMAP was used to calculate ground elevations and hill heights for receptors. The

AERMAP component (version 18081) is a terrain preprocessor that incorporates complex terrain using USGS Digital Elevation Data and National Elevation Dataset.

1.3.2 Meteorological Data

The meteorological data used for this analysis consisted of six years (2013-2018) of surface meteorological data recorded by the National Weather Service (NWS) at Lincoln (Station Number 14939), Nebraska, and upper-air (mixing height) meteorological data recorded by the NWS at Omaha (Station Number 94980), Nebraska. This data was preprocessed by the NDEQ through the AERMET system (version 18081) with AERSURFACE (version 13016) data for surface characteristic values and provided in ACSII-format files, ready for input to the AERMOD model. These files were provided by NDEQ modeling personnel on March 6, 2019.

1.3.3 Structural Downwash Input Data

No building downwash effects were included in the model as all sources are modeled as volume sources and structural downwash is only accounted for on point sources in AERMOD. In addition, a contributing factor is that there are no nearby buildings that would affect emissions dispersion.

1.4 Odor Compound Modeling Analysis

The odor compounds addressed in this analysis are the odor causing compounds identified in Section 1.2 as possibly occurring from the composting process and for which an odor threshold has been identified. The modeling analysis addresses the 1-hour averaging period results for each of the odor causing compounds. The modeled odor causing compounds and odor thresholds are summarized in **Table 1-1**.

Table 1-1. Modeled Compounds and Odor Thresholds

Odor Causing Compounds	Averaging Period	Odor Threshold [1]	
		ppm	µg/m^3
Ammonia	1-hour	0.0382	26.6
Dimethyl Disulfide	1-hour	0.007	27
Carbon Disulfide	1-hour	0.0077	24
Carbonyl Sulfide	1-hour	0.0172	45
Isopropyl Alcohol	1-hour	22	54,069
Ethyl Alcohol	1-hour	84	158,278
Methyl Alcohol	1-hour	100-1,500	131,044-1,965,654
Acetic Acid	1-hour	24.3	59,682
Limonene	1-hour	0.0011	6
a-Pinene	1-hour	0.0115	64
Camphor	1-hour	0.079	492
Propionic Acid	1-hour	0.026-0.17	79-515
Naphthalene	1-hour	0.038	199
Acetone	1-hour	0.0172	40.9
Acetaldehyde	1-hour	0.067	121

[1] Odor thresholds are those values presented in Appendix A

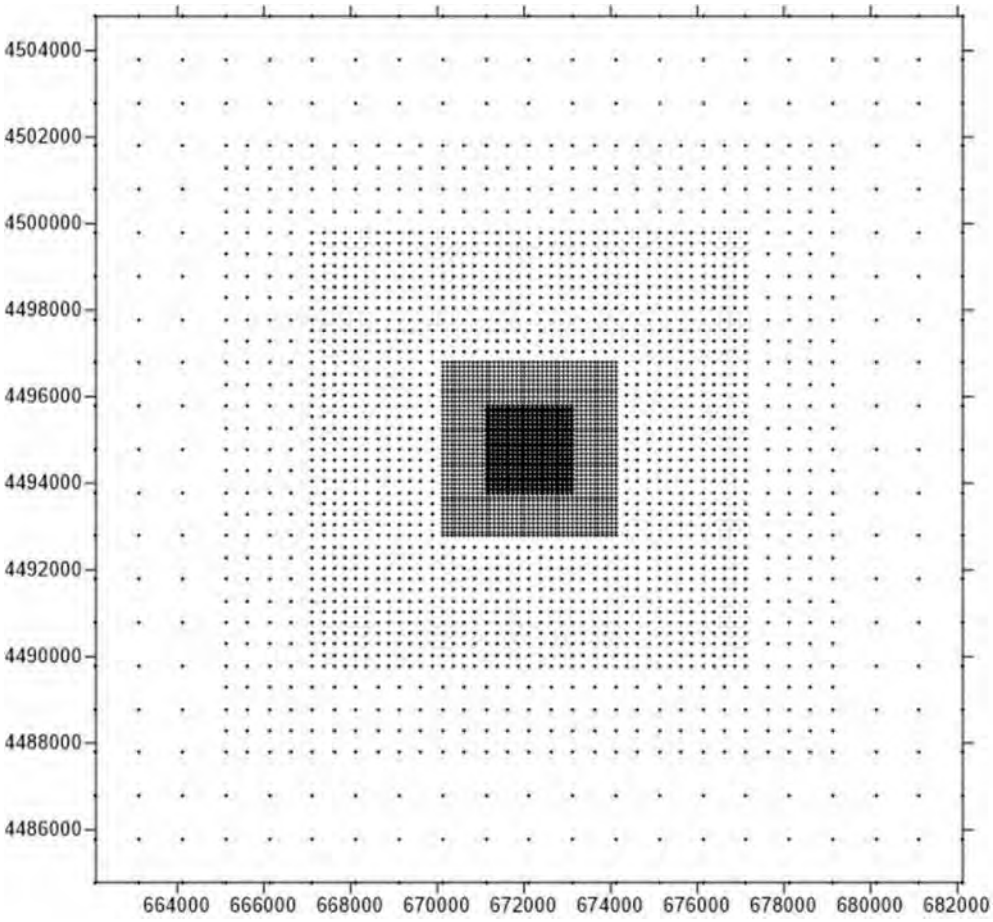
1.4.1 Receptor Grid

The receptor grid used in the modeling analysis is shown in **Figure 1-1**. The grid was set using the corners method at the following spacing based upon typical NDEQ modeling guidance:

- 50 meter spacing from SW corner 671121.6, 4493785.2 to NE corner 673121.6, 4495785.2
- 100 meter spacing from SW corner 670121.6, 4492785.2 to NE corner 674121.6, 4496785.2
- 250 meter spacing from SW corner 667121.6, 4489785.2 to NE corner 677121.6, 4499785.2
- 500 meter spacing from SW corner 665121.6, 4487785.2 to NE corner 679121.6, 4501785.2
- 1000 meter spacing from SW corner 662121.6, 4484785.2 to NE corner 682121.6, 4504785.2

Receptor elevation information was generated using the current AERMAP processor and 1/3 Arc-Second National Emission Dataset (NED) data from the U.S. Geological Survey Seamless Server.

The coordinates used for the compost sources and receptors in this analysis are based on the NAD83 Universal Transverse Mercator (UTM) Zone 14 coordinate system. The fenceline, compost sources, and building locations were based upon the current site conceptual design. The receptor grid is shown below.



1.4.2 Background Concentrations

Background concentrations are not included in the modeling analysis.

1.4.3 Odor Impact Analysis

The dispersion modeling analysis of odor causing compounds for the 1-hour averaging period considered the emissions from the three sources in the proposed project. The proposed emission sources [ASP with primary biofilter (ASP), secondary biofilter, and two stockpiles] were each modeled as a volume source with an associated release height. The ASP is designed with dimensions of 100 feet x 300 feet. AERMOD requires that volume sources be square in shape, therefore the compost pile was divided into three separate 100 feet x 100 feet adjacent volume sources. The secondary biofilter and two stockpiles were assumed to be square sources also.

There are a total of four possible operating scenarios in which the identified odor causing compounds can be released to the atmosphere, as presented in Section 1.2.1. An arbitrary VOC unit emission rate of 1 lb/hr was applied to each of the four modeled operating scenarios to determine a modeled emission rate for the individual sources within each scenario by proportioning the unit emission rate according to the estimated emissions from each source. For example, the stockpile emissions represent approximately 4% of the total emissions from the scenario that accounts for the ASP without secondary biofilter control. In this instance, the unit emission rate was set to 0.04 lb/hr from the stockpiles (split evenly between the two stockpiles) and 0.96 lb/hr for the ASP without secondary biofilter control to account for the full 1 lb/hr unit rate.

The modeled emission rates and volume source input parameters for the ASP compost sources are listed in **Table 1-2** below.

Table 1-2. Model Inputs for Compost Sources

Source ID and Description	Unit Emission Rate (g/sec)	UTM Coordinates (m) X	UTM Coordinates (m) Y	Base Elevation (m)	Release Height (m)	Initial Horizontal Dimension (m)	Initial Vertical Dimension (m)
SP1 – Stockpile 1	2.541E-03	672121.60	4494745.40	409.042	2.134	0.496	0.496
SP2 – Stockpile 2	2.541E-03	672121.60	4494785.26	409.042	2.134	0.496	0.496
COMP1 – Compost Pile 1	4.031E-02	672072.45	4494821.20	409.042	2.438	7.088	0.567
COMP2 – Compost Pile 2	4.031E-02	672073.98	4494790.72	409.042	2.438	7.088	0.567
COMP3 – Compost Pile 3	4.031E-02	672075.29	4494764.47	409.042	2.438	7.088	0.567
BIOFILTER - Biofilter	1.209E-01	672043.68	4494750.48	409.042	0.914	6.140	0.210

1.4.4 Model Results

The modeled impacts of the odor causing compounds for the individual modeled sources, based on the unit emission rate, were multiplied by a scale factor for each odor causing compound to determine the modeled impact for each compound and scenario. The 95% to 99% odor occurrence levels were then determined by selecting the 1-hr impact value for the hour at each receptor that corresponds to the odor annoyance free level. For example, the 99% odor annoyance free level is represented by the High 88th High modeled impact at each receptor for each modeled calendar year of 2013 to 2018[1] to represent the maximum odor impact to be expected for 99% of the total hours each year.

A composite modeled impact grid was compiled by determining the maximum modeled impact for each odor occurrence level over all six years that were modeled. This composite grid was then used for all model results shown below. The modeled results are scaled and compared to the thresholds and are summarized below in **Table 1-3** for uncontrolled scenarios and **Table 1-4** for controlled scenarios. Figures depicting the aerial extent of each odor annoyance free level (95-99%) are referenced in the tables and are included in Appendix B.

[1] 99% odor annoyance free level means that the modeled impact is below the odor threshold for 99% of annual hours. Conversely, the modeled impact is above the odor threshold for 1% of the annual hours, or 87.6 hours per year, rounded to 88 hours (a year includes 8,760 hours). Hence, the modeled impact is below the odor threshold for the remaining hours in the year. The total hours in the year were adjusted based on completeness of the meteorological data set for each year.

Table 1-3. Maximum Odor Impacts Compared to Annoyance Free Levels for Uncontrolled Scenarios

Odor Causing Compound	Modeled Scenario	Distance to Annoyance Free Level		Reference Figure[1]
		Level	km	(μg/m³)
Ammonia	Compost pile (positive ASP airflow with no odor control) and Stockpile	99%	1.05	B-1
		98%	0.74	
		97%	0.57	
		96%	0.47	
		95%	0.39	
Ammonia	Biofilter (negative ASP airflow with no odor control) and Stockpile	99%	1.11	B-2
		98%	0.74	
		97%	0.56	
		96%	0.46	
		95%	0.39	
TRS – Dimethyl Disulfide	Biofilter (negative ASP airflow with no odor control) and Stockpile	99%	0.61	B-3
		98%	0.43	
		97%	0.32	
		96%	0.25	
		95%	0.21	
TRS – Carbon Disulfide	Biofilter (negative ASP airflow with no odor control) and Stockpile	99%	0.21	B-4
		98%	0.16	
		97%	0.12	
		96%	0.10	
		95%	0.09	
TRS – Carbonyl Sulfide	Biofilter (negative ASP airflow with no odor control) and Stockpile	99%	0.11	B-5
		98%	0.08	
		97%	0.05	
		96%	--[2]	
		95%	NA[3]	
Isopropyl Alcohol	Compost pile (positive ASP airflow with no odor control) and Stockpile	NA[3]		
Isopropyl Alcohol	Biofilter (negative ASP airflow with no odor control) and Stockpile	NA[3]		
Ethyl Alcohol	Compost pile (positive ASP airflow with no odor control) and Stockpile	NA[3]		
Ethyl Alcohol	Biofilter (negative ASP airflow with no odor control) and Stockpile	NA[3]		
Methyl Alcohol	Compost pile (positive ASP airflow with no odor control) and Stockpile	NA[3]		
Methyl Alcohol	Biofilter (negative ASP airflow with no odor control) and Stockpile	NA[3]		

Odor Causing Compound	Modeled Scenario	Distance to Annoyance Free Level		Reference Figure[1]
		Level	km	(µg/m³)
Acetic Acid	Compost pile (positive ASP airflow with no odor control) and Stockpile	NA[3]		
Acetic Acid	Biofilter (negative ASP airflow with no odor control) and Stockpile	NA[3]		
Limonene	Compost pile (positive ASP airflow with no odor control) and Stockpile	99%	0.60	B-6
		98%	0.44	
		97%	0.34	
		96%	0.29	
		95%	0.24	
Limonene	Biofilter (negative ASP airflow with no odor control) and Stockpile	99%	0.63	B-7
		98%	0.43	
		97%	0.34	
		96%	0.26	
		95%	0.22	
a-Pinene	Compost pile (positive ASP airflow with no odor control) and Stockpile	99%	0.08	B-8
		98%	NA[3]	
		97%	NA[3]	
		96%	NA[3]	
		95%	NA[3]	
a-Pinene	Biofilter (negative ASP airflow with no odor control) and Stockpile	99%	0.10	B-9
		98%	0.06	
		97%	--[2]	
		96%	--[2]	
		95%	--[2]	
Camphor	Compost pile (positive ASP airflow with no odor control) and Stockpile	NA[3]		
Camphor	Biofilter (negative ASP airflow with no odor control) and Stockpile	NA[3]		
Propionic Acid	Compost pile (positive ASP airflow with no odor control) and Stockpile	NA[3]		
Propionic Acid	Biofilter (negative ASP airflow with no odor control) and Stockpile	NA[3]		
Naphthalene	Compost pile (positive ASP airflow with no odor control) and Stockpile	NA[3]		
Naphthalene	Biofilter (negative ASP airflow with no odor control) and Stockpile	NA[3]		
Acetone	Compost pile (positive ASP airflow with no odor control) and Stockpile	NA[3]		
Acetone	Biofilter (negative ASP airflow with no odor control) and Stockpile	99%	0.05	B-10
		98%	NA[3]	

Odor Causing Compound	Modeled Scenario	Distance to Annoyance Free Level		Reference Figure[1]
		Level	km	(µg/m³)
		97%	NA[3]	
		96%	NA[3]	
		95%	NA[3]	
Acetaldehyde	Compost pile (positive ASP airflow with no odor control) and Stockpile	NA[3]		
Acetaldehyde	Biofilter (negative ASP airflow with no odor control) and Stockpile	NA[3]		

[1] Figures are located in Appendix B
[2] -- Indicates results for some receptors are greater than the odor threshold but too few to draw contours.
[3] Maximum modeled impact is below odor threshold; therefore an odor threshold map is not presented.

Table 1-4. Maximum Odor Impacts Compared to Annoyance Free Levels for Controlled Scenarios

Odor Causing Compound	Modeled Scenario	Distance to Annoyance Free Level		Reference Figure[1]
		Level	km	(µg/m³)
Ammonia	Compost pile (positive ASP airflow with odor control) and Stockpile	99%	0.64	B-11
		98%	0.47	
		97%	0.37	
		96%	0.30	
		95%	0.27	
Ammonia	Biofilter (negative ASP airflow with odor control) and Stockpile	99%	0.06	B-12
		98%	NA[3]	
		97%	NA[3]	
		96%	NA[3]	
		95%	NA[3]	
TRS – Dimethyl Disulfide	Biofilter (negative ASP airflow with odor control) and Stockpile	99%	0.13	B-13
		98%	0.09	
		97%	0.06	
		96%	--[2]	
		95%	--[2]	
TRS – Carbon Disulfide	Biofilter (negative ASP airflow with odor control) and Stockpile	99%	0.17	B-14
		98%	0.11	
		97%	0.09	
		96%	0.08	
		95%	0.06	
TRS – Carbonyl Sulfide	Biofilter (negative ASP airflow with odor control) and Stockpile	NA[3]		

Odor Causing Compound	Modeled Scenario	Distance to Annoyance Free Level		Reference Figure[1]
		Level	km	(µg/m³)
Isopropyl Alcohol	Compost pile (positive ASP airflow with odor control) and Stockpile	NA[3]		
Isopropyl Alcohol	Biofilter (negative ASP airflow with odor control) and Stockpile	NA[3]		
Ethyl Alcohol	Compost pile (positive ASP airflow with odor control) and Stockpile	NA[3]		
Ethyl Alcohol	Biofilter (negative ASP airflow with odor control) and Stockpile	NA[3]		
Methyl Alcohol	Compost pile (positive ASP airflow with odor control) and Stockpile	NA[3]		
Methyl Alcohol	Biofilter (negative ASP airflow with odor control) and Stockpile	NA[3]		
Acetic Acid	Compost pile (positive ASP airflow with odor control) and Stockpile	NA[3]		
Acetic Acid	Biofilter (negative ASP airflow with odor control) and Stockpile	NA[3]		
Limonene	Compost pile (positive ASP airflow with odor control) and Stockpile	99%	0.22	B-15
		98%	0.16	
		97%	0.13	
		96%	0.10	
		95%	--[2]	
Limonene	Biofilter (negative ASP airflow with odor control) and Stockpile	99%	0.52	B-16
		98%	0.37	
		97%	0.27	
		96%	0.21	
		95%	0.19	
a-Pinene	Compost pile (positive ASP airflow with odor control) and Stockpile	NA[3]		
a-Pinene	Biofilter (negative ASP airflow with odor control) and Stockpile	99%	0.07	B-17
		98%	--[2]	
		97%	NA[3]	
		96%	NA[3]	
		95%	NA[3]	
Camphor	Compost pile (positive ASP airflow with odor control) and Stockpile	NA[3]		
Camphor	Biofilter (negative ASP airflow with odor control) and Stockpile	NA[3]		
Propionic Acid	Compost pile (positive ASP airflow with odor control) and Stockpile	NA[3]		
Propionic Acid	Biofilter (negative ASP airflow with odor control) and Stockpile	NA[3]		

Odor Causing Compound	Modeled Scenario	Distance to Annoyance Free Level		Reference Figure[1]
		Level	km	(µg/m³)
Naphthalene	Compost pile (positive ASP airflow with odor control) and Stockpile	NA[3]		
Naphthalene	Biofilter (negative ASP airflow with odor control) and Stockpile	NA[3]		
Acetone	Compost pile (positive ASP airflow with odor control) and Stockpile	NA[3]		
Acetone	Biofilter (negative ASP airflow with odor control) and Stockpile	99%	0.06	B-18
		98%	NA[3]	
		97%	NA[3]	
		96%	NA[3]	
		95%	NA[3]	
Acetaldehyde	Compost pile (positive ASP airflow with odor control) and Stockpile	NA[3]		
Acetaldehyde	Biofilter (negative ASP airflow with odor control) and Stockpile	NA[3]		

[1] Figures are located in Appendix B
[2] -- Indicates results for some receptors are greater than the odor threshold but too few to draw contours.
[3] Maximum modeled impact is below odor threshold; therefore an odor threshold map is not presented.

1.5 Air Quality Impact Summary

The dispersion modeling results presented above depict the modeled impacts of odor compounds associated with the proposed ASP compost operation with respect to the odor annoyance free levels requested by Crete. Electronic files of the modeling analysis are available upon request.

A

Odor Emission Estimates

Table A-1 - Design Information

Feedstock Materials	Phase 1 tons/year	Phase 1 % by weight	Phase 2 tons/year	Phase 2 % by weight
Poultry/Fish/Misc Animal Byproducts	3,548	20.4%	3,548	18.4%
WWTP - Waste Activated Sludge [1]	3,045	17.5%	2,239	11.6%
WWTP - Pre-treatment Sludge [1]			1,453	7.5%
Wood Pallets (shredded)	1,513	8.7%	1,513	7.9%
Cardboard (shredded)	497	2.9%	497	2.6%
Off-Site Bulking Material (woody waste)	8,800	50.6%	10,000	51.9%
Total	**17,403**		**19,250**	

[1] Feedstock from the WWTP is based on receiving feedstock 7 days per week

Compost Control Technology	Description
Biofilter 1	Biofilter 1 is a layer of finished compost that provides cover for the Aerated Static Pile
Biofilter 2	Biofilter 2 is a box filled with a 3' to 6' thick layer of biofilter media typically composed of shredded wood

Aerated Static Pile Design Parameters		
Average Flow Rate [1]	3.5	cfm/cy
Design Volume [2]	5,465	cy
	4,178.54	m^3
Design Airflow	19,127.50	cfm
	32,497.80	m^3/hr

[1] The average flow rate is a preliminary design parameter from the vendor

[2] Design volume is a preliminary design calculation based on feedstock characteristics and ASP design parameters.

Table A-2 - Estimated Emissions from the ASP under positive aeration without biofilter (cover)

Total Throughput 19,250 tons/year

Aerated Static Pile Airflow 32,497.80 m^3/hr

Pollutant [1]	Emission Factor [2]	Emission Factor Unit	Emission Estimate (lb/hr)	Emission Estimate (ton/year)
Total NH_3			2.03	8.90
NH_3 - Waste activated sludge	0.08	lb/ton	0.02	0.09
NH_3 - Pre-treatment sludge	0.46	lb/ton	0.08	0.33
NH_3 - Animal By-products	4.78	lb/ton	1.94	8.48
TRS Compounds [3]	0	lb/ton	0.00	0.00
Total VOC	3.7	lb/ton	8.13	35.61
Isopropyl alcohol			3.44	15.07
Ethyl alcohol			1.48	6.47
Methyl alcohol			1.04	4.55
Acetic acid			0.48	2.12
Limonene			0.18	0.81
a-Pinene			0.11	0.48
Butanoic acid			0.11	0.48
Camphor			0.10	0.42
Methylthymyl ether			0.06	0.26
Bornyl acetate			0.05	0.22
Pinene Isomers			0.05	0.21
Eucalyptol			0.05	0.21
Propionic acid			0.04	0.19
Naphthalene *			0.04	0.18
Acetone			0.04	0.17
3 Hydroxy 2-butanone (acetoin)			0.03	0.15
2 Methyl 1-Propene			0.03	0.15
2 Butanol	*See footnote [1] below.*		0.03	0.14
Hexanoic acid			0.03	0.14
Terpineol			0.03	0.12
Heptyl hexanoate			0.03	0.11
3 Methyl butanoic acid			0.02	0.10
Methyl propionic acid			0.02	0.09
Methyl cycloheptene			0.02	0.09
Camphene			0.02	0.09
1 Methyl, 3-1-methyl ethyl benzene			0.02	0.08
Pentanoic acid			0.02	0.08
Propene			0.02	0.08
Thujen-2one (Umbellulone)			0.02	0.08
Undecane			0.02	0.07
2 Butene			0.01	0.06
Isovaleraldhyde			0.01	0.05
Acetaldehyde *			0.01	0.05
Methyl butylacetate			0.01	0.05
Others >80			0.46	1.99

[1] A total VOC emission estimate is calculated and then speciated according to the results presented in Kumar et al., 2011. Full citation on sheet 'Sources'. VOCs that are classified as Hazardous Air Pollutants according to Title 129, Appendix II are marked in **bold** and with an asterisk (*).

[2] The emission factor sources for VOC, NH_3 and individual VOC/HAP compounds are as follows:

Total VOC: Table 7.1 of SJAVPCD, 2010

NH_3: Pagans et al., 2006. It was assumed bulking material will not emit ammonia because of its high C:N ratio (Pagans et al., 2006)

Individual VOC/HAP Compounds: Kumar et al., 2011

[3] A review of peer-reviewed literature and state and federal regulatory agency guidance was conducted to determine potential sulfide emissions from the proposed project. Results indicated that aerobic environments oxidize sulfur into sulfate, sulfur dioxide and elemental sulfur. This is supported by NDEQ website, which states, "TRS compounds are formed during the anaerobic decomposition (i.e., decay in the absence of oxygen) of organic materials, and from certain industrial and commercial processes. Typical sources include packing plants, tanneries, waste treatment plants, oil and natural gas wells, and refineries. TRS is typically composed of hydrogen sulfide, methyl mercaptan, dimethyl sulfide, dimethyl disulfide and other volatile compounds containing reduced sulfur." Furthermore, another page on the NDEQ website states that a recommended control of TRS emissions is to use aerobic instead of anaerobic waste treatment processes. Therefore, because the aerated static pile is an aerobic environment, it was assumed here that no total reduced sulfur emissions will be emitted from the aerated static pile, with or without a cover acting as a biofilter. NDEQ reference is presented on sheet 'Sources'.

Table A-3 - Estimated Emissions from the ASP under positive aeration with Biofilter #1 (cover)

Total Throughput 19,250 tons/year

Aerated Static Pile Airflow 32,497.80 m^3/hr

Pollutant [1]	Emission Factor	Emission Factor Unit	Control Efficiency [2]	Emission Estimate (lb/hr)	Emission Estimate (ton/year)
Total NH_3			53%	0.96	4.18
NH_3 - Waste activated sludge	0.08	lb/ton	53%	0.01	0.04
NH_3 - Pre-treatment sludge	0.46	lb/ton	53%	0.04	0.16
NH_3 - Animal By-products	4.78	lb/ton	53%	0.91	3.99
TRS Compounds [3]	0	lb/ton	NA	0.00	0.00
Total VOC	3.7	lb/ton	80%	1.63	7.12
Isopropyl alcohol				0.69	3.01
Ethyl alcohol				0.30	1.29
Methyl alcohol				0.21	0.91
Acetic acid				0.10	0.42
Limonene				0.04	0.16
a-Pinene				0.02	0.10
Butanoic acid				0.02	0.10
Camphor				0.02	0.08
Methylthymyl ether				0.01	0.05
Bornyl acetate				0.01	0.04
Pinene Isomers				0.01	0.04
Eucalyptol				0.01	0.04
Propionic acid				0.01	0.04
Naphthalene *				0.01	0.04
Acetone				0.01	0.03
3 Hydroxy 2-butanone (acetoin)				0.01	0.03
2 Methyl 1-Propene				0.01	0.03
2 Butanol		*See footnote [1] below.*		0.01	0.03
Hexanoic acid				0.01	0.03
Terpineol				0.01	0.02
Heptyl hexanoate				0.01	0.02
3 Methyl butanoic acid				0.00	0.02
Methyl propionic acid				0.00	0.02
Methyl cycloheptene				0.00	0.02
Camphene				0.00	0.02
1 Methyl, 3-1-methyl ethyl benzene				0.00	0.02
Pentanoic acid				0.00	0.02
Propene				0.00	0.02
Thujen-2one (Umbellulone)				0.00	0.02
Undecane				0.00	0.01
2 Butene				0.00	0.01
Isovaleraldhyde				0.00	0.01
Acetaldehyde *				0.00	0.01
Methyl butylacetate				0.00	0.01
Others >80				0.09	0.40

[1] A total VOC emission estimate is calculated and then speciated according to the results presented in Kumar et al., 2011. Full citation on sheet 'Sources'. VOCs that are classified as Hazardous Air Pollutants according to Title 129, Appendix II are marked in **bold** and with an asterisk (*).

[2] Emission factors are carried over from sheet 'Positive - Uncovered'. Control efficiencies are from Table III-3 in source CARB, 2015. Full citation presented on 'Sources' sheet.

[3] A review of peer-reviewed literature and state and federal regulatory agency guidance was conducted to determine potential sulfide emissions from the proposed project. Results indicated that aerobic environments oxidize sulfur into sulfate, sulfur dioxide and elemental sulfur. This is supported by NDEQ website, which states, "TRS compounds are formed during the anaerobic decomposition (i.e., decay in the absence of oxygen) of organic materials, and from certain industrial and commercial processes. Typical sources include packing plants, tanneries, waste treatment plants, oil and natural gas wells, and refineries. TRS is typically composed of hydrogen sulfide, methyl mercaptan, dimethyl sulfide, dimethyl disulfide and other volatile compounds containing reduced sulfur." Furthermore, another page on the NDEQ website states that a recommended control of TRS emissions is to use aerobic instead of anaerobic waste treatment processes. Therefore, because the aerated static pile is an aerobic environment, it was assumed here that no total reduced sulfur emissions will be emitted from the aerated static pile, with or without a cover acting as a biofilter. NDEQ reference is presented on sheet 'Sources'.

Table A-4 - Estimated Emissions from ASP under negative aeration without control of Biofilter #2

Total Throughput	19,250	tons/year
Aerated Static Pile Airflow	32,497.80	m^3/hr

Pollutant [1]	Uncontrolled Emission Factor [2]	Emission Factor Unit	Emission Estimate (lb/hr)	Emission Estimate (ton/year)
Total NH_3			2.03	8.90
NH_3 - Waste activated sludge	0.08	lb/ton	0.02	0.09
NH_3 - Pre-treatment sludge	0.46	lb/ton	0.08	0.33
NH_3 - Animal By-products	4.78	lb/ton	1.94	8.48
TRS Compounds	14,473	ug/m^3	1.04	4.54
Dimethyl Disulfide	11,081	ug/m^3	0.79	3.48
Carbon Disulfide	1,951	ug/m^3	0.14	0.61
Carbonyl Sulfide or Sulfur Dioxide [3]	1,441	ug/m^3	0.10	0.45
Total VOC	3.7	lb/ton	8.13	35.61
Isopropyl alcohol			3.44	15.07
Ethyl alcohol			1.48	6.47
Methyl alcohol			1.04	4.55
Acetic acid			0.48	2.12
Limonene			0.18	0.81
a-Pinene			0.11	0.48
Butanoic acid			0.11	0.48
Camphor			0.10	0.42
Methylthymyl ether			0.06	0.26
Bornyl acetate			0.05	0.22
Pinene Isomers			0.05	0.21
Eucalyptol			0.05	0.21
Propionic acid			0.04	0.19
Naphthalene *			0.04	0.18
Acetone			0.04	0.17
3 Hydroxy 2-butanone (acetoin)			0.03	0.15
2 Methyl 1-Propene			0.03	0.15
2 Butanol	*See footnote [1] below.*		0.03	0.14
Hexanoic acid			0.03	0.14
Terpineol			0.03	0.12
Heptyl hexanoate			0.03	0.11
3 Methyl butanoic acid			0.02	0.10
Methyl propionic acid			0.02	0.09
Methyl cycloheptene			0.02	0.09
Camphene			0.02	0.09
1 Methyl, 3-1-methyl ethyl benzene			0.02	0.08
Pentanoic acid			0.02	0.08
Propene			0.02	0.08
Thujen-2one (Umbellulone)			0.02	0.08
Undecane			0.02	0.07
2 Butene			0.01	0.06
Isovaleraldhyde			0.01	0.05
Acetaldehyde *			0.01	0.05
Methyl butylacetate			0.01	0.05
Others >80			0.46	1.99

[1] A total VOC emission estimate is calculated and then speciated according to the results presented in Kumar et al., 2011. Full citation on sheet 'Sources'. VOCs that are classified as Hazardous Air Pollutants according to Title 129, Appendix II are marked in **bold** and with an asterisk (*).

[2] Emission factor sources are as follows. Citations presented on sheet 'Sources'.

NH_3: Pagans et al., 2006. It was assumed bulking material will not emit ammonia because of its high C:N ratio (Pagans et al., 2006)

TRS Compounds: Rosenfeld et al., 2004

Total VOCs: Table 7.1 of SJAVPCD, 2010

[3] The peaks on the gas chromatographs for carbonyl sulfide and sulfur dioxide are indistinguishable, therefore the authors presented the results as shown above. Pollutant included in this calculation sheet under TRS as a conservative assumption.

Table A-5 - Estimated Emissions from the ASP under negative aeration with control of Biofilter #2

Total Throughput 19,250 tons/year

Aerated Static Pile Airflow 32,497.80 m^3/hr

Pollutant [1]	Uncontrolled Emission Factor	Emission Factor Unit	Control Efficiency [2]	Emission Estimate (lb/hr)	Emission Estimate (ton/year)
Total NH_3			99%	0.02	0.09
NH_3 - Waste activated sludge	0.08	lb/ton	99%	0.00	0.00
NH_3 - Pre-treatment sludge	0.46	lb/ton	99%	0.00	0.00
NH_3 - Animal By-products	4.78	lb/ton	99%	0.02	0.08
TRS Compounds	14,473	ug/m^3	varied	0.17	0.73
Dimethyl Disulfide	11,081	ug/m^3	91%	0.07	0.31
Carbon Disulfide	1,951	ug/m^3	32%	0.10	0.42
Carbonyl Sulfide or Sulfur Dioxide [3]	1,441	ug/m^3	100%	0.00	0.00
Total VOC	3.7	lb/ton	26%	6.02	26.35
Isopropyl alcohol			26%	2.55	11.15
Ethyl alcohol			26%	1.09	4.79
Methyl alcohol			26%	0.77	3.37
Acetic acid			26%	0.36	1.57
Limonene			26%	0.14	0.60
a-Pinene			26%	0.08	0.36
Butanoic acid			26%	0.08	0.36
Camphor			26%	0.07	0.31
Methylthymyl ether			26%	0.04	0.19
Bornyl acetate			26%	0.04	0.17
Pinene Isomers			26%	0.04	0.16
Eucalyptol			26%	0.03	0.15
Propionic acid			26%	0.03	0.14
Naphthalene *			26%	0.03	0.13
Acetone			26%	0.03	0.12
3 Hydroxy 2-butanone (acetoin)			26%	0.03	0.11
2 Methyl 1-Propene			26%	0.02	0.11
2 Butanol	*See footnote [1] below.*		26%	0.02	0.10
Hexanoic acid			26%	0.02	0.10
Terpineol			26%	0.02	0.09
Heptyl hexanoate			26%	0.02	0.08
3 Methyl butanoic acid			26%	0.02	0.07
Methyl propionic acid			26%	0.02	0.07
Methyl cycloheptene			26%	0.01	0.06
Camphene			26%	0.01	0.06
1 Methyl, 3-1-methyl ethyl benzene			26%	0.01	0.06
Pentanoic acid			26%	0.01	0.06
Propene			26%	0.01	0.06
Thujen-2one (Umbellulone)			26%	0.01	0.06
Undecane			26%	0.01	0.05
2 Butene			26%	0.01	0.04
Isovaleraldhyde			26%	0.01	0.04
Acetaldehyde *			26%	0.01	0.04
Methyl butylacetate			26%	0.01	0.04
Others >80			26%	0.34	1.48

[1] A total VOC emission estimate is calculated and then speciated according to the results presented in Kumar et al., 2011. Full citation on sheet 'Sources'. VOCs that are classified as Hazardous Air Pollutants according to Title 129, Appendix II are marked in **bold** and with an asterisk (*).

[2] Emission factors are carried over from sheet 'Negative - Uncontrolled'. Control efficiencies are from the following sources. Full citations presented on 'Sources' sheet.

NH_3: Pagans et al., 2006. It was assumed bulking material will not emit ammonia because of its high C:N ratio (Pagans et al., 2006)

TRS Compounds: Rosenfeld et al., 2004

Total VOC: Table III-3 of CARB, 2015

[3] The peaks on the gas chromatographs for carbonyl sulfide and sulfur dioxide are indistinguishable, therefore the authors presented the results as shown above. Pollutant included in this calculation sheet under TRS as a conservative assumption.

Table A-6 - Estimated Emissions from Temporary Stockpiles of Animal Byproducts and Biosolids

Emission Factor for Greenwaste and Foodwaste [1]

Pollutant	Stockpile lbs/wet ton - day	Composting Process lbs/wet ton
VOC	0.2	3.58
NH_3	N/A	0.78

[1] Emission factors from CARB, 2015. An emission factor for stockpiling biosolids and animal byproducts was not available after a review of available literature and regulatory guidance so the emission factor for stockpiling greenwaste and foodwaste is presented here. The guidance stated ammonia emissions from stockpiling are presumed to be nonexistent. It is assumed ammonia emissions from Crete Core are also nonexistent during stockpiling.

Ratio of Stockpile VOC Emissions to Composting Process VOC Emissions for Greenwaste and Foodwaste [2]:

Stockpile	Composting
0.0559	1

[2] Because an emission factor for stockpiling greenwaste and foodwaste is not representative of the feedstock of Crete Core, the ratio between emissions from stockpiling and emissions from composting was calculated in order to apply it to the emission factor for co-composting to obtain an emission factor for stockpiling material more similar to Crete Core's feedstock.

Uncontrolled VOC Emission Factor for Co-Composting [3]:
3.7 lb/ton

[3] Source: Table 7.1 of SJAVPCD, 2010

Calculated VOC Emission Factor for Stockpile of Co-Composting Material:
0.2067 lb/wet ton- day

Pollutant	Emission Factor	Emission Factor Unit	Throughput (wet ton/year)	Maximum Duration Material Stockpiled (days)	Emission Estimate (lb/hr)	Emission Estimate (ton/year)
VOC	0.2067	lb/wet ton - day	7,240	2	0.34	1.50

Table A-7 - Odor Thresholds

Pollutant (* denotes HAP)	Odor Threshold	Unit	Source	MW	PPB (24.45 x conc ($\mu g/m^3$) / MW)	$\mu g/m^3$ (0.0409 x conc (ppb) x MW)
NH_3	26.6	ug/m^3	Rosenfeld et al., 2004	17.03	38.2	26.6
TRS Compounds						
Dimethyl Disulfide	7	ppb	FDACS	94.2	7.00	27.0
Carbon Disulfide	24	ug/m^3	Rosenfeld et al., 2004	76.13	7.7	24
Carbonyl Sulfide or Sulfur Dioxide [3]	45	ug/m^3	Rosenfeld et al., 2004	60.07-64.07	17.2	45
Total VOC						
Isopropyl alcohol	22	ppm	NJDOH	60.09	22000	54069
Ethyl alcohol	84	ppm	NJDOH	46.07	84000	158278
Methyl alcohol	100-1500	ppm	NJDOH	32.04	100000	131044
Acetic acid	24.3	ppm	Baker, 1963	60.05	24300	59682
Limonene	6	ug/m^3	Van Durme et al., 1992	136.23	1.1	6
a-Pinene	64	ug/m^3	Van Durme et al., 1992	136.23	11.5	64
Butanoic acid	*Not Found* [1]					
Camphor	0.079	ppm	NJDOH	152.23	79	492
Methylthymyl ether	*Not Found* [1]					
Bornyl acetate						
Pinene Isomers						
Eucalyptol						
Propionic acid	0.026 - 0.17	ppm	NJDOH	74.08	26	79
Naphthalene *	0.038	ppm	U.S. EPA, 1992	128.16	38	199
Acetone	40.9	ug/m^3	Baker, 1963	58.08	17.2	40.9
3 Hydroxy 2-butanone (acetoin)	*Not Found* [1]					
2 Methyl 1-Propene						
2 Butanol						
Hexanoic acid						
Terpineol						
Heptyl hexanoate						
3 Methyl butanoic acid						
Methyl propionic acid						
Methyl cycloheptene						
Camphene						
1 Methyl, 3-1-methyl ethyl benzene						
Pentanoic acid						
Propene						
Thujen-2one (Umbellulone)						
Undecane						
2 Butene						
Isovaleraldhyde						
Acetaldehyde *	0.067	ppm	U.S. EPA, 1992	44.05	67	121
Methyl butylacetate	*Not Found* [1]					

[1] Odor threshold values were not found for these compounds.

Table A-8 - List of Sources

Citation	Source
Baker, 1963	Baker, R. A. (1963). Threshold Odors of Organic Chemicals. *Journal - American Water Works Association,55* (7), 913-916. doi:10.1002/j.1551-8833.1963.tb01102.x
CARB, 2015	*Emissions Inventory for Composting Facility* . California Air Resources Board, 2015, www.arb.ca.gov/ei/areasrc/Composting%20Emissions%20Inventory%20Methodology%20Final%20Combined.pdf.
FDACS	Florida Department of Agriculture and Consumer Services & Florida Department of Health, https://www.freshfromflorida.com/content/download/3302/20733/DMDS_QnA_3-20-2013.pdf
Kumar et al., 2011	Kumar, Anuj. *Volatile Organic Compound Emissions from Green Waste Composting: Characterization and Ozone Formation* . Atmospheric Environment, 14 Jan. 2011,
NDEQ	"Air Pollutant Information." *Nebraska DEQ* , deq.ne.gov/publica.nsf/PubsForm.xsp?documentId=A5D1F72DA7BB964F06256AEA0060CC40&action=openDocument.
	"Total Reduced Sulfur (TRS)." *Nebraska DEQ* , deq.ne.gov/NDEQProg.nsf/TRSWebList.xsp.
NJDOH	https://web.doh.state.nj.us/rtkhsfs/factsheets.aspx?lan=english&alph=A&carcinogen=False&new=False
Pagans et al., 2005	Pagans, Estela, et al. "Ammonia Emissions from the Composting of Different Organic Wastes. Dependency on Process Temperature." *Chemosphere* , vol. 62, no. 9, 2006, pp. 1534–1542., doi:10.1016/j.chemosphere.2005.06.044.
Rosenfeld et al., 2004	Rosenfeld, Paul, and Mark Grey. "Measurement of Biosolids Compost Odor Emissions from a Windrow, Static Pile, and Biofilter." *Water Environment Research* , vol. 76, no. 4, 2004, pp. 310–315., doi:10.2175/106143004x141898.
SJVAPCD, 2008	Organic Material Composting and Drying Focusing on Greenwaste Compost. Air Emissions Data Review. San Joaquin Valley Air Pollution Control District, June 2008, www.arb.ca.gov/cc/compost/documents/rule4566_emissions_factor_report.pdf.
SJVAPCD, 2010	Compost VOC Emission Factors - Valley Air. San Joaquin Valley Air Pollution Control District, valleyair.org/Workshops/postings/2010/9-22-10-rule4566/SJVAPCD Compost VOC EF Report 9-15-10.pdf.
U.S. EPA, 1992	U.S. EPA. Reference Guide to Odor Thresholds for Hazardous Air Pollutants Listed in the Clean Air Act Amendments of 1990. U.S. Environmental Protection Agency, Washington, D.C., EPA/600/R-92/047.
Van Durme et al., 1992	Van Durme, G. P., Mcnamara, B. F., & Mcginley, C. M. (1992). Bench-scale removal of odor and volatile organic compounds at a composting facility. *Water Environment Research,64* (1), 19-27. doi:10.2175/wer.64.1.4

Table A-9 - Emission Information from Kumar et. al., 2011

VOC	% of Total VOC
Isopropyl alcohol	42.31
Ethyl alcohol	18.16
Methyl alcohol	12.79
Acetic acid	5.94
Limonene	2.27
a-Pinene	1.36
Butanoic acid	1.35
Camphor	1.18
Methylthymyl ether	0.73
Bornyl acetate	0.63
Pinene Isomers	0.60
Eucalyptol	0.58
Propionic acid	0.53
Naphthalene *	0.50
Acetone	0.47
3 Hydroxy 2-butanone (acetoin)	0.43
2 Methyl 1-Propene	0.41
2 Butanol	0.39
Hexanoic acid	0.39
Terpineol	0.35
Heptyl hexanoate	0.31
3 Methyl butanoic acid	0.28
Methyl propionic acid	0.26
Methyl cycloheptene	0.24
Camphene	0.24
1 Methyl, 3-1-methyl ethyl benzene	0.23
Pentanoic acid	0.23
Propene	0.22
Thujen-2one (Umbellulone)	0.22
Undecane	0.20
2 Butene	0.17
Isovaleraldhyde	0.15
Acetaldehyde *	0.14
Methyl butylacetate	0.14
Others >80	5.60

[1] VOCs that are classified as Hazardous Air Pollutants according to Title 129, Appendix II are marked in bold and with an asterisk (*).

Table A-10 - Emission Information from Rosenfeld et. al., 2004

Material	Aerated Static Pile (ASP) (m^3)	ASP (wet tons)	MC (%)
biosolids	261	283	80
green waste	197	51	30
stable bedding	261	77	38
recycled compost	196	109	
total	**915**	**522**	**50**

Airflow Data	ASP	Primary Biofilter	Secondary Biofilter
Mean Airflow (m^3/min)	82	82	60
Volume (m^3)	915	337	241
Contact Time (min)	11.1	4.1	4

Pollutant	Sample Location	Concentration (ug/m3)	Biofilter Reduction (%)
Ammonia	Above Aerated Pile	66492	99
	Before Biofilter	98442	
	After Biofilter	1658	
Dimethyl Disulfide	Above Aerated Pile	<192	91
	Before Biofilter	11081	
	After Biofilter	961	
Carbon Disulfide	Above Aerated Pile	<155	32
	Before Biofilter	1951	
	After Biofilter	1305	
Formic Acid	Above Aerated Pile	1583	100
	Before Biofilter	1675	
	After Biofilter	<60	
Acetic Acid	Above Aerated Pile	10767	34
	Before Biofilter	9950	
	After Biofilter	6600	
Carbonyl Sulfide	Above Aerated Pile	<131	100
	Before Biofilter	1441	
	After Biofilter	<131	

Table A-11 - Emission Information from Pagans et al., 2005

Cumulative ammonia emissions for the different waste mixtures composted (referred to initial weights of waste, dry matter, organic matter and nitrogen)

Organic waste	OFMSW[1]	RS	ADS	AP	HH
Ammonia emitted (g NH_3 kg^{-1} waste)	0.17	0.04	0.23	2.39	10.3
Ammonia emitted (g NH_3 kg^{-1} dry matter)	0.32	0.10	0.60	5.30	20.7
Ammonia emitted (g NH_3 kg^{-1} organic matter)	0.47	0.17	1.16	7.67	34.4
Ammonia emitted (g NH_3 kg^{-1} N)	1.4	0.40	2.3	14.1	33.8

[1] OFMSW: Organic fraction of municipal solid waste; RS: Raw sludge; ADS: Anaerobically digested sludge; AP: Animal by-products; HH: Hydrolysed hair.

Cumulative ammonia emissions for the different waste mixtures composted (referred to initial weights of waste, dry matter, organic matter and nitrogen)

Organic waste	OFMSW[1]	RS	ADS	AP	HH
Ammonia emitted (lb NH_3 ton^{-1} waste)	0.34	0.08	0.46	4.78	20.60
Ammonia emitted (lb NH_3 ton^{-1} dry matter)	0.64	0.20	1.20	10.60	41.40
Ammonia emitted (lb NH_3 $_{ton}^{-1}$ organic matter)	0.94	0.34	2.32	15.34	68.80
Ammonia emitted (lb NH_3 $_{ton}^{-1}$ N)	2.80	0.80	4.60	28.20	67.60

[1] OFMSW: Organic fraction of municipal solid waste; RS: Raw sludge; ADS: Anaerobically digested sludge; AP: Animal by-products; HH: Hydrolysed hair.

B

Figures of Modeled Impacts for Odor Annoyance Free Levels

ANNOYANCE FREE LEVELS

UNCONTROLLED AMMONIA FROM COMPOST (POSITIVE AIRFLOW)

FIGURE B-1

DATE: 4/9/2019

ANNOYANCE FREE LEVELS

UNCONTROLLED AMMONIA FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-2

DATE: 4/9/2019

CRETE CORE INGREDIENTS

ANNOYANCE FREE LEVELS

UNCONTROLLED DIMETHYL DISULFIDE FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-3

DATE: 4/9/2019

ANNOYANCE FREE LEVELS

UNCONTROLLED CARBON DISULFIDE FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-4

DATE: 4/9/2019

CRETE CORE INGREDIENTS

* Modeled impacts are not sufficient to generate 96% and 95% annoyance free levels. Therefore, only 99%, 98%, and 97% annoyance free levels are shown.

ANNOYANCE FREE LEVELS

UNCONTROLLED CARBONYL SULFIDE FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-5

DATE: 4/9/2019

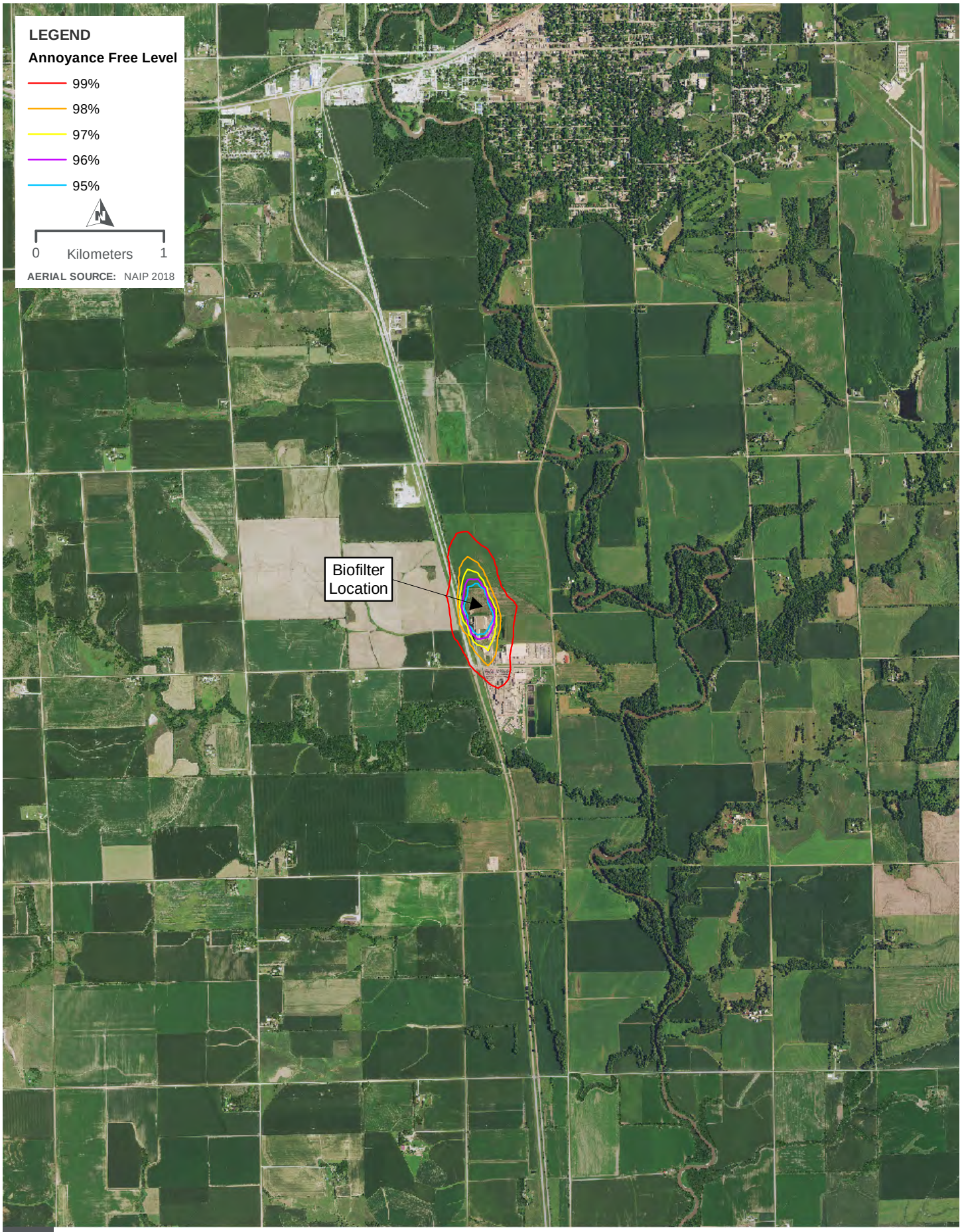
CRETE CORE INGREDIENTS

ANNOYANCE FREE LEVELS

UNCONTROLLED LIMONENE (VOC) FROM COMPOST (POSITIVE AIRFLOW)

FIGURE B-6

DATE: 4/9/2019



ANNOYANCE FREE LEVELS

UNCONTROLLED LIMONENE (VOC) FROM BIOFILTER (NEGATIVE OPERATION)

FIGURE B-7

DATE: 4/10/2019

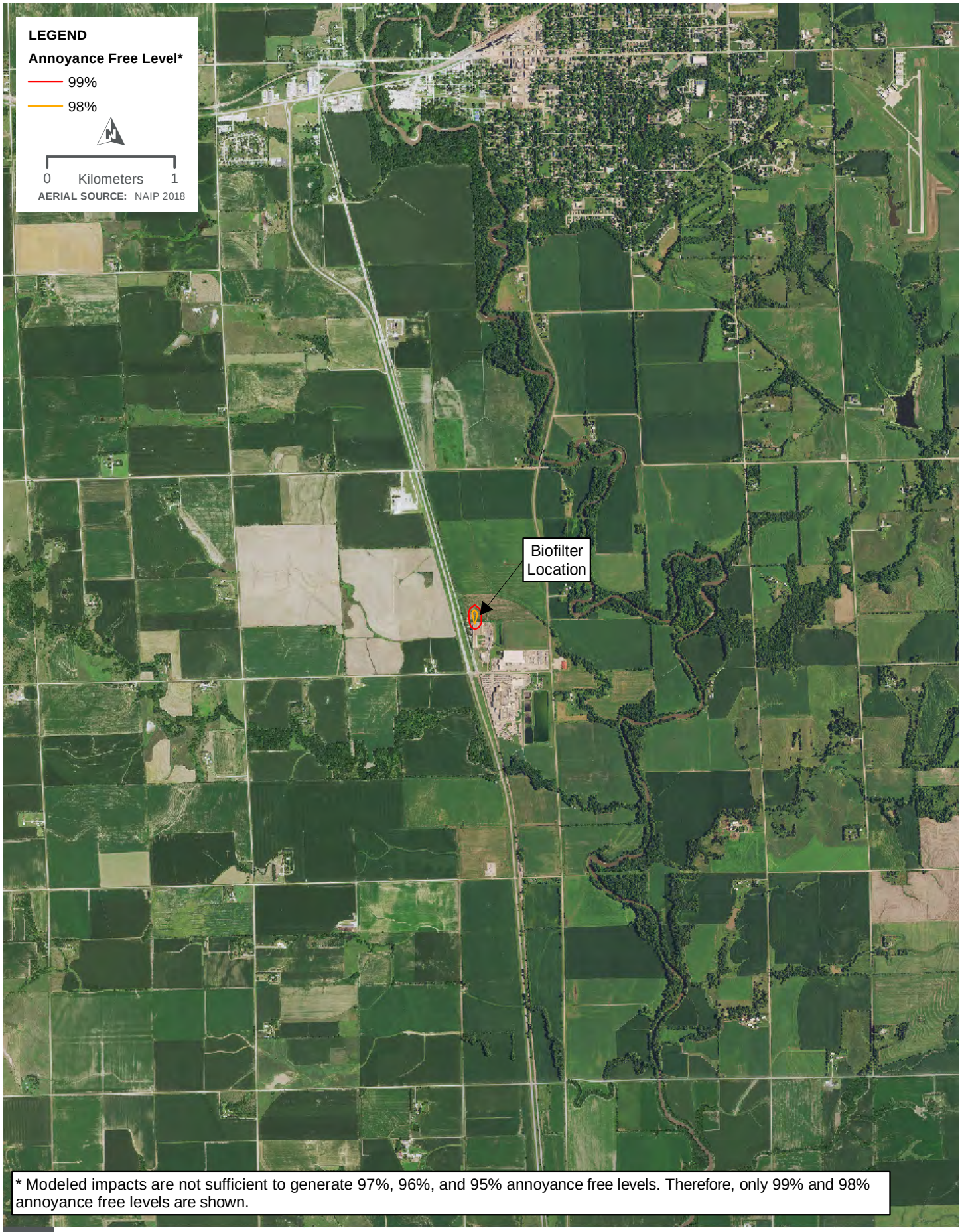
* Modeled impacts are not sufficient to generate 98%, 97%, 96%, and 95% annoyance free levels. Therefore, only the 99% annoyance free level is shown.

ANNOYANCE FREE LEVELS

UNCONTROLLED A-PINENE (VOC) FROM COMPOST (POSITIVE AIRFLOW)

FIGURE B-8

DATE: 4/9/2019



* Modeled impacts are not sufficient to generate 97%, 96%, and 95% annoyance free levels. Therefore, only 99% and 98% annoyance free levels are shown.

ANNOYANCE FREE LEVELS

UNCONTROLLED A-PINENE (VOC) FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-9

DATE: 4/10/2019

* Modeled impacts are not sufficient to generate 98%, 97%, 96%, and 95% annoyance free levels. Therefore, only the 99% annoyance free level is shown.

ANNOYANCE FREE LEVELS

UNCONTROLLED ACETONE (VOC) FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-10

DATE: 4/9/2019

ANNOYANCE FREE LEVELS

CONTROLLED AMMONIA FROM COMPOST (POSITIVE AIRFLOW)

FIGURE B-11

DATE: 4/8/2019

CRETE CORE INGREDIENTS

* Modeled impacts are not sufficient to generate 98%, 97%, 96%, and 95% annoyance free levels. Therefore, only the 99% annoyance free level is shown.

ANNOYANCE FREE LEVELS

CONTROLLED AMMONIA FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-12

DATE: 4/9/2019

* Modeled impacts are not sufficient to generate 96% and 95% annoyance free levels. Therefore, only 99%, 98%, and 97% annoyance free levels are shown.

ANNOYANCE FREE LEVELS

CONTROLLED DIMETHYL DISULFIDE FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-13

DATE: 4/8/2019

ANNOYANCE FREE LEVELS

CONTROLLED CARBON DISULFIDE FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-14

DATE: 4/8/2019

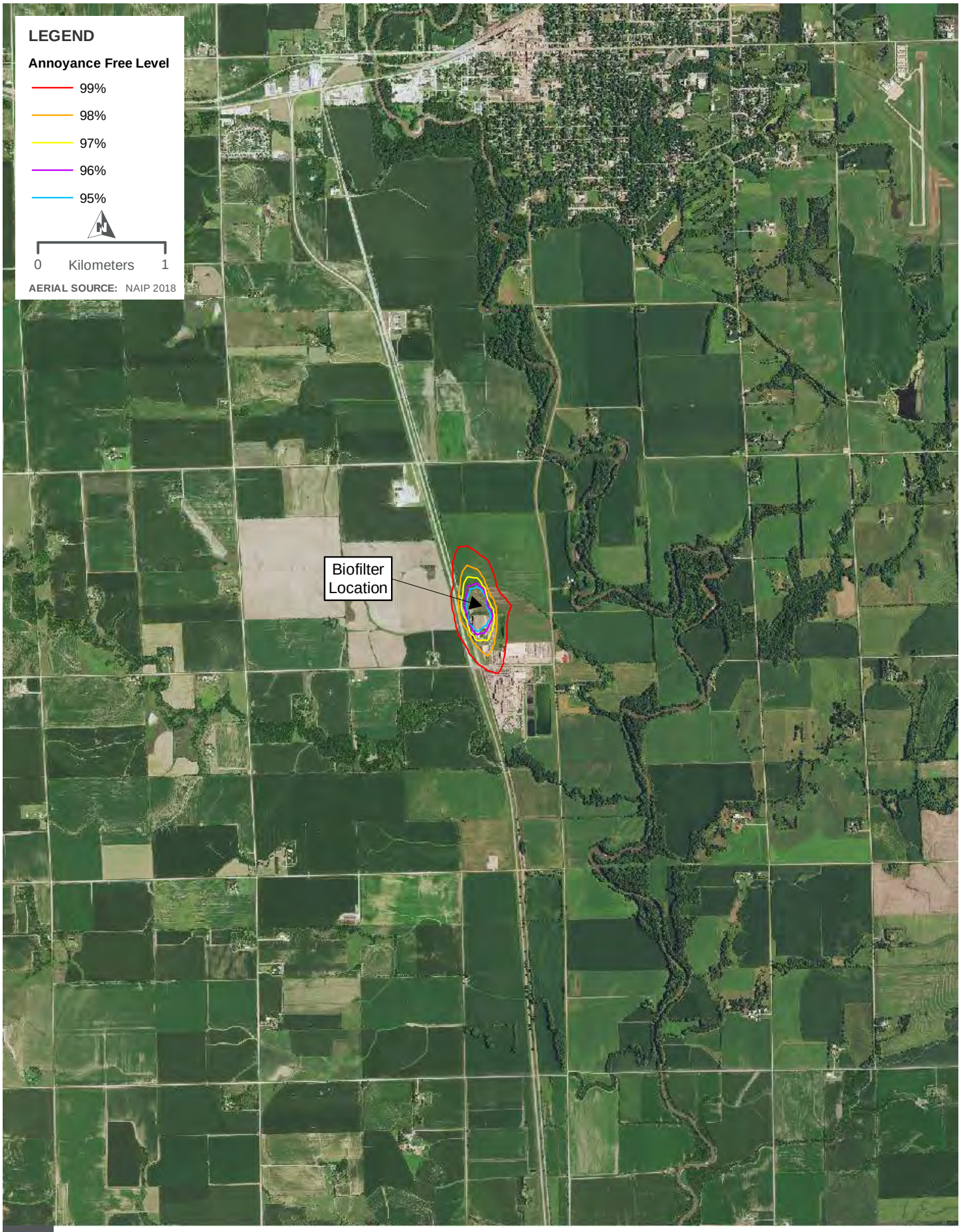
* Modeled impacts are not sufficient to generate a 95% annoyance free level. Therefore, only 99%, 98%, 97%, and 96% annoyance free levels are shown.

ANNOYANCE FREE LEVELS

CONTROLLED LIMONENE (VOC) FROM COMPOST (POSITIVE AIRFLOW)

FIGURE B-15

DATE: 4/9/2019

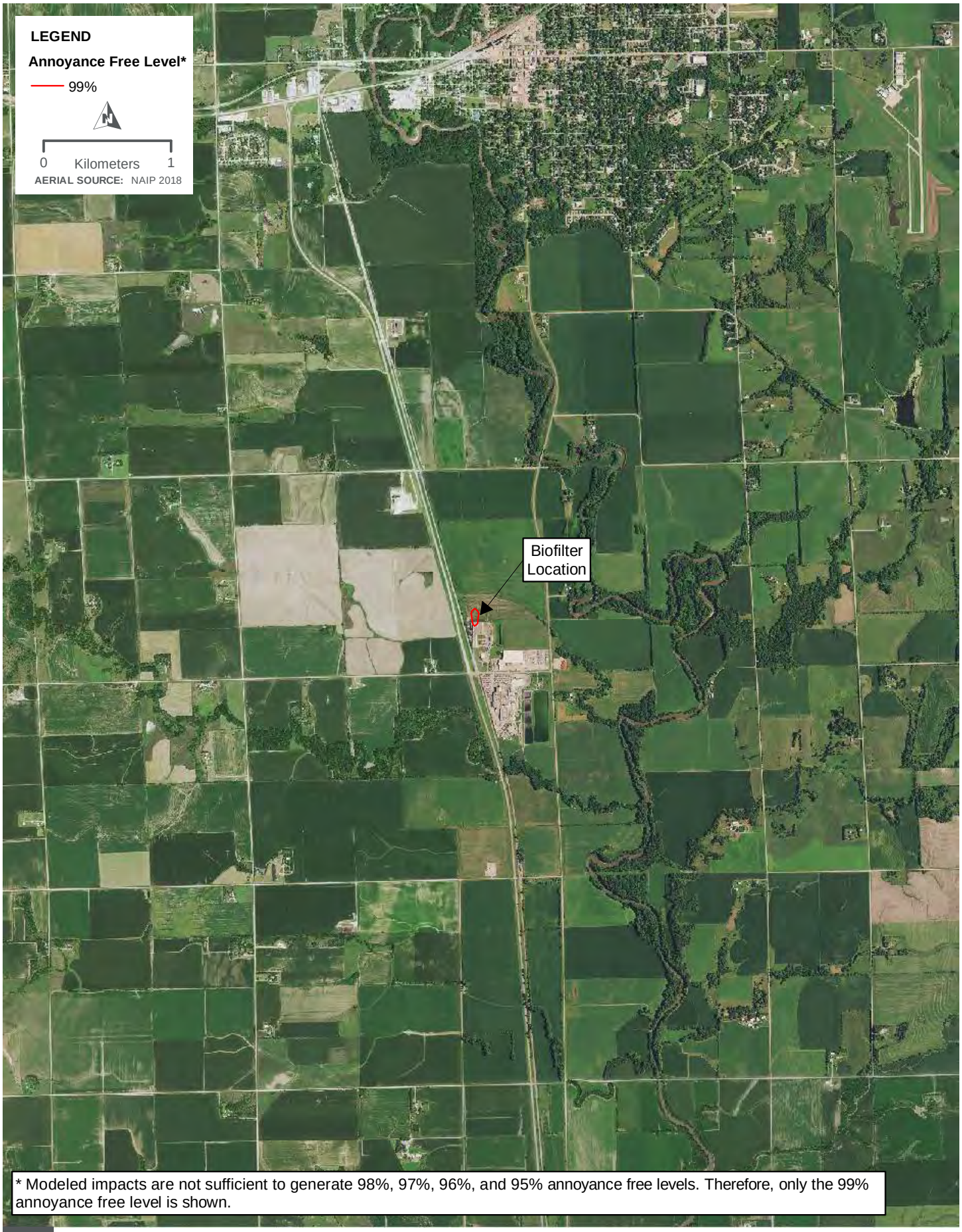


ANNOYANCE FREE LEVELS

CONTROLLED LIMONENE (VOC) FROM BIOFILTER (NEGATIVE OPERATION)

FIGURE B-16

DATE: 4/8/2019



* Modeled impacts are not sufficient to generate 98%, 97%, 96%, and 95% annoyance free levels. Therefore, only the 99% annoyance free level is shown.

ANNOYANCE FREE LEVELS

CONTROLLED A-PINENE (VOC) FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-17

DATE: 4/9/2019

CRETE CORE INGREDIENTS

* Modeled impacts are not sufficient to generate 98%, 97%, 96%, and 95% annoyance free levels. Therefore, only the 99% annoyance free level is shown.

ANNOYANCE FREE LEVELS

CONTROLLED ACETONE (VOC) FROM BIOFILTER (NEGATIVE AIRFLOW)

FIGURE B-18

DATE: 4/9/2019

BEFORE THE CITY COUNCIL, CITY OF CRETE, NEBRASKA

IN THE MATTER OF	)	
REQUEST FOR SITING APPROVAL	)	FINDINGS OF FACT
	)	
CRETE CORE INGREDIENTS	)	
	)	
APPLICANT	)	

THIS MATTER came before the City Council on the request of the Applicant for Siting Approval. Public Hearing was held on the ____ day of _____, 2019. Notice of said item was publicized according to law.

THE PLANNING COMMISSION recommended to:

_____ approve the Siting Request

_____ deny the Siting Request

UPON REVIEW of all the necessary facts and public comment, the City Council makes the following findings on the application for Siting Request and Approval:

1. _____ The solid waste disposal area or solid waste processing facility is necessary to accommodate the solid waste management needs of the area which the solid waste disposal area or solid waste processing facility is intended to serve; _____

_____

2. _____ The solid waste disposal area or solid waste processing facility is designed, located, and proposed to be operated so that the public health, safety, and welfare will be protected. _____

_____

3. _____ As part of number 2, the applicant has provided an evaluation of the potential for adverse health effects that could result from exposure to pollution, in any form, due to the proper or improper construction, operation, or closure of the proposed solid waste disposal area or solid waste processing facility; _____

_____

4. _____ The solid waste disposal area or solid waste processing facility is located so as to minimize incompatibility with the character of the surrounding area and to minimize the effect on the value of the surrounding property. *The City Council has considered the advice of the planning commission regarding the application*;

_____

5. _____ The plan of operations for the solid waste disposal area or solid waste processing facility is designed to minimize the danger to the surrounding area from fire, spills, or other operational accidents; _____

_____

6. _____ The traffic patterns to or from the solid waste disposal area or solid waste processing facility are designed to minimize the impact on existing traffic flows;

_____

_____

7. _____ The previous operating experience of a private agency applicant and its subsidiaries or parent corporation in the area of solid waste management or related activities were made available to the City Council; _____

_____

8. _____ To the best of the Council's knowledge, the corporation, a parent company or subsidiary thereof, or any officer or board member of the corporation or the parent company or subsidiary applying for approval has not been convicted of a felony within ten years of the date the application is filed. _____

_____

Additional Specific Findings of Fact: _____

_____

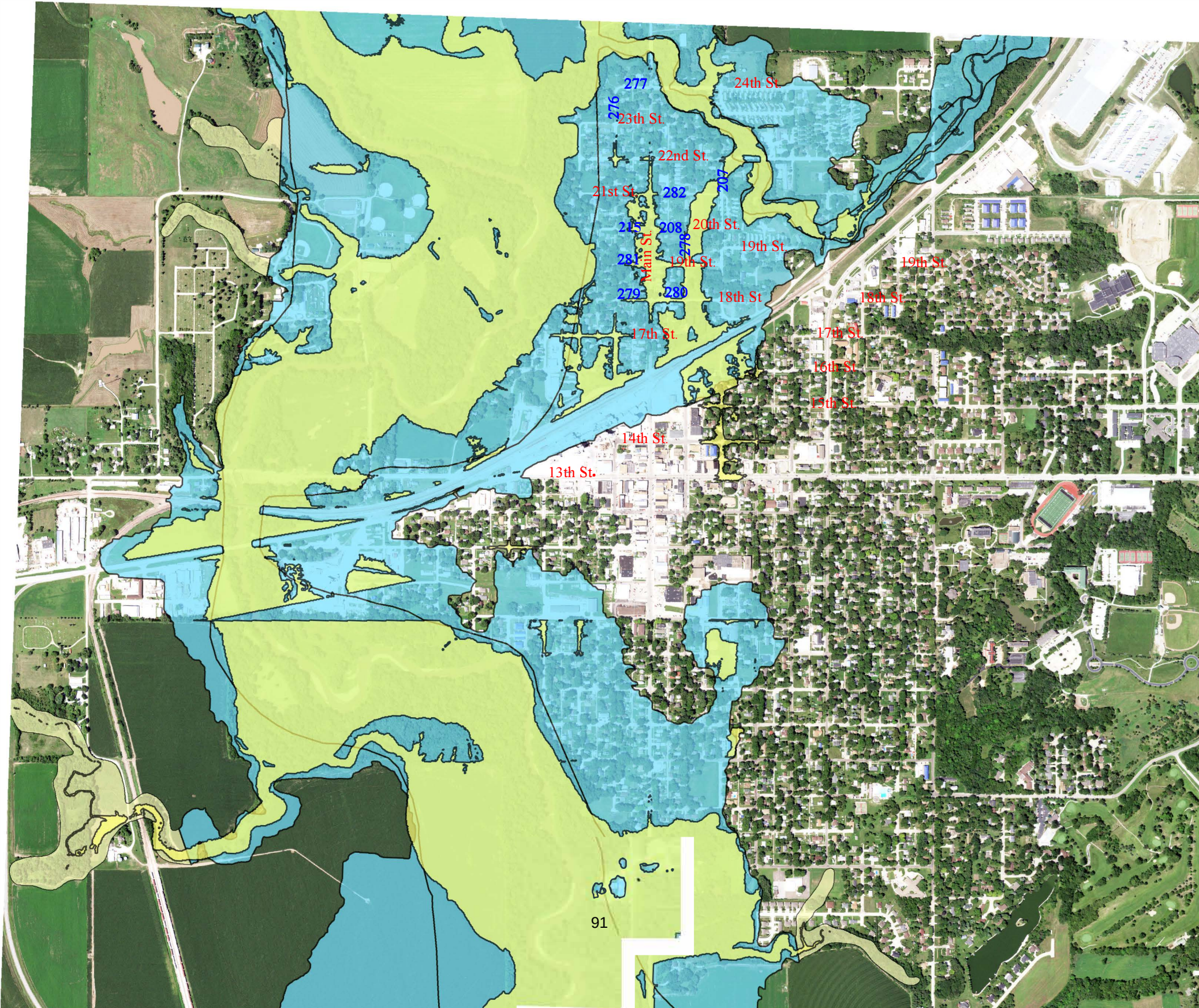
_____

WHEREFORE, the Siting Request is:

_____ Approved

_____ Denied.

DATED THIS 16TH DAY OF APRIL, 2019.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