

## **APPENDIX E.5**

# **SAMPLE CALCULATIONS**



Client: Veolia ES Zion Landfill, Inc.

Project: Site 2 East Expansion

Proj. #: 122150

Calculated By: CMS

Date: 1/2010

Checked By: PPK

Date: 1/2010

**TITLE: SAMPLE CALCULATIONS**

Sample calculations supporting many of the calculations within Section 1 of this application are provided below.

**Remaining life at Veolia ES Zion Landfill**

Remaining capacity (as of 01/01/2009)	=	3,344,910 tons
Waste disposed (in 2008)	=	656,952 tons
Remaining life	=	$\frac{3,192,869 \text{ tons}}{656,952 \text{ tons}}$
	=	5.1 years (as of 01/01/2009)

**Remaining life at local landfills utilized by Lake County**

Remaining capacity (as of 01/01/2009)	=	9,571,703 tons
Waste disposed (in 2008)	=	1,985,019 tons
Remaining life	=	$\frac{9,571,703 \text{ tons}}{1,985,019 \text{ tons}}$
	=	4.8 years (as of 01/01/2009)

Remaining capacity (including Pheasant Run RDF expansion approved in 12/2009)	=	$\frac{15,281,703 \text{ tons}}{1,985,019 \text{ tons}}$
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Remaining life	=	7.7 years (as of 01/01/2009)
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**Remaining life at landfills within the service area**

Remaining capacity (as of 01/01/2009)	=	10,888,174 tons
Waste disposed (in 2008)	=	2,369,275 tons
Remaining life	=	$\frac{10,888,174 \text{ tons}}{2,369,275 \text{ tons}}$
	=	4.6 years (as of 01/01/2009)

Remaining capacity (including Pheasant Run RDF expansion approved in 12/2009)	=	$\frac{16,598,174 \text{ tons}}{2,369,275 \text{ tons}}$
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Remaining life	=	7.0 years (as of 01/01/2009)
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**TITLE: SAMPLE CALCULATIONS****Remaining life at non-restricted regional landfills**

Remaining capacity (as of 01/01/2009) = 239,319,819 tons

Waste disposed (annual average, 2004-2008) = 19,686,095 tons

Remaining life =  $\frac{239,319,819 \text{ tons}}{19,686,095 \text{ tons}}$

= 12.2 years (as of 01/01/2009)

Remaining capacity (including Pheasant Run  
RDF expansion approved in 12/2009  
and Newton County LF expansion  
approved in 10/2009)

=  $\frac{263,370,819 \text{ tons}}{19,686,095 \text{ tons}}$

Remaining life = 13.4 years (as of 01/01/2009)



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**TITLE: SAMPLE CALCULATIONS****Distances to Permitted Facilities**

The distance to existing landfills included in the regional analysis was calculated using a standard mapping program (TravRoute's Door-to-Door software). The distance to each facility was weighted by the capacity of the facility to assess the average distance to facilities from either the Lake County centroid or the service area centroid. Refer to Tables E.5-1 and E.5-2 for facility-specific data.

<b>TABLE E.5-1. DISTANCES FROM LAKE COUNTY CENTROID TO PERMITTED FACILITIES INCLUDED IN REGIONAL ANALYSIS</b>		
Facility	Distance (miles)	Capacity (tons)
Countryside	5	5,063,321
Veolia ES Zion LF	16	3,344,910
Pheasant Run RDF	22	6,873,472
Kestrel Hawk Park	34	1,224,407
Congress - Hillside	38	0
Metro RDF	44	606,533
Veolia ES Emerald Park	46	2,448,375
<b>Subtotal, 0-50 miles</b>		<b>19,561,018</b>
<b>Weighted Average Distance</b>		<b>21</b>
Mallard Ridge RDF	52	3,924,334
CID #4 RDF	59	3,664
River Bend Prairie	64	1,312,807
Orchard Ridge RDF	67	4,053,737
City of Janesville	71	2,201,693
Laraway RDF	73	91,879
<b>Subtotal, 51-75 miles</b>		<b>11,588,114</b>
<b>Weighted Average Distance</b>		<b>62</b>



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TABLE E.5-1. DISTANCES FROM LAKE COUNTY CENTROID TO PERMITTED FACILITIES INCLUDED IN REGIONAL ANALYSIS		
Facility	Distance (miles)	Capacity (tons)
Winnebago Landfill	81	16,805,231
Orchard Hills	83	28,154,062
EnvironTech LF	87	440,573
Lake County C&D	93	1,100,456
Deer Track Park	98	3,572,023
Rochelle Municipal #2	100	412,727
<b>Subtotal, 76-100 miles</b>		<b>50,485,072</b>
<b>Weighted Average Distance</b>		<b>84</b>
Glacier Ridge	106	5,131,161
Dane County #2	107	436,508
LandComp LF	112	5,525,536
Livingston LF	120	31,233,861
Forest Lawn	122	1,197,796
Newton County LF	122	57,069,018
Madison Prairie RDF	123	1,031,122
<b>Subtotal, 101-125 miles</b>		<b>101,625,002</b>
<b>Weighted Average Distance</b>		<b>120</b>
Streator Area LF	126	89,056
Lee County LF	132	18,486,159
Southeast Berrien County	145	1,142,239
Prairie Hill RDF	147	13,045,934



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TABLE E.5-1. DISTANCES FROM LAKE COUNTY CENTROID TO PERMITTED FACILITIES INCLUDED IN REGIONAL ANALYSIS		
Facility	Distance (miles)	Capacity (tons)
<b>Subtotal, 126-150 miles</b>		<b>32,763,388</b>
<b>Weighted Average Distance</b>		<b>138</b>
Orchard Hill	157	11,913,909
County Line	158	18,138,063
Liberty Landfill	158	2,983,943
Prairie View RDF (IN)	161	7,282,008
Atkinson	171	7,030,303
<b>Subtotal, 151-175 miles</b>		<b>47,348,226</b>
<b>Weighted Average Distance</b>		<b>160</b>
<b>Total</b>		<b>263,370,820</b>
<b>Weighted Average Distance</b>		<b>113</b>



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TABLE E.5-2. DISTANCES FROM SERVICE AREA CENTROID TO PERMITTED FACILITIES INCLUDED IN REGIONAL ANALYSIS		
Facility	Distance (miles)	Tons
Congress - Hillside	10	0
CID #4 RDF	28	3,664
River Bend Prairie	31	1,312,807
Countryside	37	5,063,321
Veolia ES Zion LF	46	3,344,910
Laraway RDF	50	91,879
<b>Subtotal, 0-50 miles</b>		<b>9,816,581</b>
<b>Weighted Average Distance</b>		<b>40</b>
Pheasant Run RDF	52	6,873,472
Lake County C&D	58	1,100,456
EnvironTech LF	64	440,573
Kestrel Hawk Park	64	1,224,407
Metro RDF	74	606,533
<b>Subtotal, 51-75 miles</b>		<b>10,245,441</b>
<b>Weighted Average Distance</b>		<b>56</b>
Rochelle Municipal #2	77	412,727
Veolia ES Emerald Park	77	2,448,375
Winnebago Landfill	78	16,805,231
Orchard Hills	80	28,154,062
Forest Lawn	84	1,197,796
Mallard Ridge RDF	84	3,924,334



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TABLE E.5-2. DISTANCES FROM SERVICE AREA CENTROID TO PERMITTED FACILITIES INCLUDED IN REGIONAL ANALYSIS		
Facility	Distance (miles)	Tons
LandComp LF	89	5,525,536
Livingston LF	97	31,233,861
Orchard Ridge RDF	98	4,053,737
Newton County LF	99	57,069,018
City of Janesville	100	2,201,693
<b>Subtotal, 76-100 miles</b>		<b>153,026,370</b>
<b>Weighted Average Distance</b>		<b>91</b>
Streator Area LF	103	89,056
Southeast Berrien County	105	1,142,239
Lee County LF	109	18,486,159
Orchard Hill	118	11,913,909
County Line	119	18,138,063
Prairie View RDF (IN)	121	7,282,008
Liberty Landfill	122	2,983,943
Prairie Hill RDF	124	13,045,934
<b>Subtotal, 101-125 miles</b>		<b>73,081,311</b>
<b>Weighted Average Distance</b>		<b>117</b>
Deer Track Park	128	3,572,023
Glacier Ridge	137	5,131,161
Dane County #2	137	436,508
Madison Prairie RDF	140	1,031,122





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TABLE E.5-2. DISTANCES FROM SERVICE AREA CENTROID TO PERMITTED FACILITIES INCLUDED IN REGIONAL ANALYSIS		
Facility	Distance (miles)	Tons
Atkinson	148	7,030,303
<b>Subtotal, 126-150 miles</b>		<b>17,201,117</b>
<b>Weighted Average Distance</b>		<b>140</b>
<b>Total</b>		<b>263,370,820</b>
<b>Weighted Average Distance</b>		<b>98</b>