**3/17/2009 9:54:00 AM**

Urbemis 2007 Version 9 2 4

Summary Report for Summer Emissions (Pounds/Day)

File Name L \DRAFT\3706q\Global\meadowood urb924

Project Name Meadowood Construction

Project Location South Coast AQMD

On-Road Vehicle Emissions Based on Version Emfac2007 V2 3 Nov 1 2006

Off-Road Vehicle Emissions Based on OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | CO2 |
|---|---|
| 2012 TOTALS (lbs/day unmitigated) | 9,168 77 |
| 2012 TOTALS (lbs/day mitigated) | 9,168 77 |
| 2013 TOTALS (lbs/day unmitigated) | 9,168 78 |
| 2013 TOTALS (lbs/day mitigated) | 9,168 78 |
| 2014 TOTALS (lbs/day unmitigated) | 9,168 78 |
| 2014 TOTALS (lbs/day mitigated) | 9,168 78 |
| 2015 TOTALS (lbs/day unmitigated) | 9,168 79 |
| 2015 TOTALS (lbs/day mitigated) | 9,168 79 |
| 2016 TOTALS (lbs/day unmitigated) | 9,168 77 |
| 2016 TOTALS (lbs/day mitigated) | 9,168 77 |

| | |
|---|---|
| 2017 TOTALS (lbs/day unmitigated) | 25,889 50 |
| 2017 TOTALS (lbs/day mitigated) | 25,889 50 |
| 2018 TOTALS (lbs/day unmitigated) | 25,889 94 |
| 2018 TOTALS (lbs/day mitigated) | 25,889 94 |
| 2019 TOTALS (lbs/day unmitigated) | 25,890 60 |
| 2019 TOTALS (lbs/day mitigated) | 25,890 60 |
| 2020 TOTALS (lbs/day unmitigated) | 25,891 36 |
| 2020 TOTALS (lbs/day mitigated) | 25,891 36 |
| 2021 TOTALS (lbs/day unmitigated) | 25,895 68 |
| 2021 TOTALS (lbs/day mitigated) | 25,895 68 |
| 2022 TOTALS (lbs/day unmitigated) | 25,895 68 |
| 2022 TOTALS (lbs/day mitigated) | 25,895 68 |
| 2023 TOTALS (lbs/day unmitigated) | 25,895 68 |
| 2023 TOTALS (lbs/day mitigated) | 25,895 68 |
| 2024 TOTALS (lbs/day unmitigated) | 25,895 68 |
| 2024 TOTALS (lbs/day mitigated) | 25,895 68 |

| | |
|---|---|
| 2025 TOTALS (lbs/day unmitigated) | 245 16 |
| 2025 TOTALS (lbs/day mitigated) | 245 16 |

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Urbemis 2007 Version 9 2 4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name L \DRAFT\3706q\Global\meadowood urb924

Project Name Meadowood Construction

Project Location South Coast AQMD

On-Road Vehicle Emissions Based on Version Emfac2007 V2 3 Nov 1 2006

Off-Road Vehicle Emissions Based on OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

| | CO2 |
|---|---|
| Time Slice 1/3/2012-1/13/2012 Active Days: 9 | 4,295 41 |
| Demolition 01/03/2012-01/13/2012 | 4,295 41 |
| Fugitive Dust | 0 00 |
| Demo Off Road Diesel | 4,132 45 |
| Demo On Road Diesel | 0 00 |
| Demo Worker Trips | 162 95 |
| Time Slice 1/16/2012-12/31/2012 Active Days: 251 | 9,168.77 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 77 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 90 |

**3/17/2009 9:54:25 AM**

| | |
|---|---|
| Time Slice 1/1/2013-12/31/2013 Active Days: 261 | 9,168.78 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 78 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 91 |
| Time Slice 1/1/2014-12/12/2014 Active Days: 248 | 9,168.78 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 78 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 92 |
| Time Slice 12/15/2014-12/31/2014 Active Days: 13 | 9,168.78 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 78 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 92 |
| Time Slice 1/1/2015-12/31/2015 Active Days: 261 | 9,168.79 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 79 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 92 |

**3/17/2009 9:54:25 AM**

| | |
|---|---|
| Time Slice 1/1/2016-3/18/2016 Active Days 56 | 9,168.77 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 77 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 91 |
| Time Slice 3/21/2016-8/19/2016 Active Days 110 | 1,845 00 |
| Trenching 03/21/2016-08/19/2016 | 1,845 00 |
| Trenching Off Road Diesel | 1,714 64 |
| Trenching Worker Trips | 130 36 |
| Time Slice 8/22/2016-12/30/2016 Active Days: 95 | 2,302 66 |
| Asphalt 08/22/2016-01/20/2017 | 2,302 66 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 1,418 81 |
| Paving On Road Diesel | 720 89 |
| Paving Worker Trips | 162 95 |
| Time Slice 1/2/2017-1/20/2017 Active Days 15 | 2,302 65 |
| Asphalt 08/22/2016-01/20/2017 | 2,302 65 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 1,418 81 |
| Paving On Road Diesel | 720 89 |
| Paving Worker Trips | 162 95 |

| | |
|---|---|
| Time Slice 1/23/2017-12/29/2017 Active Days: 245 | 25,889.50 |
| Building 01/23/2017-05/17/2024 | 25,889 50 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,244 55 |
| Building Worker Trips | 18,385 67 |
| Time Slice 1/1/2018-12/31/2018 Active Days 261 | 25,889.94 |
| Building 01/23/2017-05/17/2024 | 25,889 94 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,244 88 |
| Building Worker Trips | 18,385 78 |
| Time Slice 1/1/2019-12/31/2019 Active Days: 261 | 25,890.60 |
| Building 01/23/2017-05/17/2024 | 25,890 60 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,245 21 |
| Building Worker Trips | 18,386 11 |
| Time Slice 1/1/2020-12/31/2020 Active Days: 262 | 25,891.36 |
| Building 01/23/2017-05/17/2024 | 25,891 36 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,245 55 |
| Building Worker Trips | 18,386 53 |
| Time Slice 1/1/2021-12/31/2021 Active Days 261 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |

**3/17/2009 9:54:25 AM**

| | |
|---|---|
| Time Slice 1/3/2022-12/30/2022 Active Days 260 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 1/2/2023-12/29/2023 Active Days: 260 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 1/1/2024-5/17/2024 Active Days: 100 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 5/20/2024-12/31/2024 Active Days: 162 | 245 16 |
| Coating 05/20/2024-05/23/2025 | 245 16 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 245 16 |
| Time Slice 1/1/2025-5/23/2025 Active Days 103 | 245.16 |
| Coating 05/20/2024-05/23/2025 | 245 16 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 245 16 |

## Phase Assumptions

Phase Demolition 1/3/2012 - 1/13/2012 - Default Demolition Description

Building Volume Total (cubic feet) 0

Building Volume Daily (cubic feet) 0
On Road Truck Travel (VMT) 0
Off-Road Equipment
3 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day

Phase Fine Grading 12/15/2014 - 3/18/2016 - Default Fine Site Grading/Excavation Description
Total Acres Disturbed 208 5
Maximum Daily Acreage Disturbed 52 12
Fugitive Dust Level of Detail Default
20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Mass Grading 1/16/2012 - 12/12/2014 - Default Mass Site Grading/Excavation Description
Total Acres Disturbed 208 5
Maximum Daily Acreage Disturbed 52 12
Fugitive Dust Level of Detail Default
20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Trenching 3/21/2016 - 8/19/2016 - Default Trenching Description

Off-Road Equipment

2 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day

1 Other General Industrial Equipment (238 hp) operating at a 0 51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 0 hours per day

Phase Paving 8/22/2016 - 1/20/2017 - Default Paving Description

Acres to be Paved 52 12

Off-Road Equipment

1 Pavers (100 hp) operating at a 0 62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0 53 load factor for 8 hours per day

2 Rollers (95 hp) operating at a 0 56 load factor for 6 hours per day

Phase Building Construction 1/23/2017 - 5/17/2024 - Default Building Construction Description

Off-Road Equipment

1 Cranes (399 hp) operating at a 0 43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0 3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0 74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 7 hours per day

1 Welders (45 hp) operating at a 0 45 load factor for 8 hours per day

Phase Architectural Coating 5/20/2024 - 5/23/2025 - Default Architectural Coating Description

Rule Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

**3/17/2009 9:54:52 AM**

Urbemis 2007 Version 9 2 4

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name L \DRAFT\3706q\Global\meadowood urb924

Project Name Meadowood Construction

Project Location South Coast AQMD

On-Road Vehicle Emissions Based on Version Emfac2007 V2 3 Nov 1 2006

Off-Road Vehicle Emissions Based on OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

| | CO2 |
|---|---|
| Time Slice 1/3/2012-1/13/2012 Active Days: 9 | 4,295 41 |
| Demolition 01/03/2012-01/13/2012 | 4,295 41 |
| Fugitive Dust | 0 00 |
| Demo Off Road Diesel | 4,132 45 |
| Demo On Road Diesel | 0 00 |
| Demo Worker Trips | 162 95 |
| Time Slice 1/16/2012-12/31/2012 Active Days 251 | 9,168.77 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 77 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 90 |

**3/17/2009 9:54:52 AM**

| | |
|---|---|
| Time Slice 1/1/2013-12/31/2013 Active Days 261 | 9,168.78 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 78 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 91 |
| Time Slice 1/1/2014-12/12/2014 Active Days: 248 | 9,168.78 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 78 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 92 |
| Time Slice 12/15/2014-12/31/2014 Active Days: 13 | 9,168.78 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 78 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 92 |
| Time Slice 1/1/2015-12/31/2015 Active Days 261 | 9,168.79 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 79 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 92 |

**3/17/2009 9:54:52 AM**

| | |
|---|---|
| Time Slice 1/1/2016-3/18/2016 Active Days: 56 | 9,168.77 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 77 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 91 |
| Time Slice 3/21/2016-8/19/2016 Active Days: 110 | 1,845 00 |
| Trenching 03/21/2016-08/19/2016 | 1,845 00 |
| Trenching Off Road Diesel | 1,714 64 |
| Trenching Worker Trips | 130 36 |
| Time Slice 8/22/2016-12/30/2016 Active Days 95 | 2,302 66 |
| Asphalt 08/22/2016-01/20/2017 | 2,302 66 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 1,418 81 |
| Paving On Road Diesel | 720 89 |
| Paving Worker Trips | 162 95 |
| Time Slice 1/2/2017-1/20/2017 Active Days: 15 | 2,302 65 |
| Asphalt 08/22/2016-01/20/2017 | 2,302 65 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 1,418 81 |
| Paving On Road Diesel | 720 89 |
| Paving Worker Trips | 162 95 |

| | |
|---|---|
| Time Slice 1/23/2017-12/29/2017<br>Active Days: 245 | 25,889.50 |
| Building 01/23/2017-05/17/2024 | 25,889 50 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,244 55 |
| Building Worker Trips | 18,385 67 |
| Time Slice 1/1/2018-12/31/2018<br>Active Days 261 | 25,889.94 |
| Building 01/23/2017-05/17/2024 | 25,889 94 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,244 88 |
| Building Worker Trips | 18,385 78 |
| Time Slice 1/1/2019-12/31/2019<br>Active Days: 261 | 25,890.60 |
| Building 01/23/2017-05/17/2024 | 25,890 60 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,245 21 |
| Building Worker Trips | 18,386 11 |
| Time Slice 1/1/2020-12/31/2020<br>Active Days: 262 | 25,891.36 |
| Building 01/23/2017-05/17/2024 | 25,891 36 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,245 55 |
| Building Worker Trips | 18,386 53 |
| Time Slice 1/1/2021-12/31/2021<br>Active Days 261 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |

| | |
|---|---|
| Time Slice 1/3/2022-12/30/2022 Active Days 260 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 1/2/2023-12/29/2023 Active Days 260 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 1/1/2024-5/17/2024 Active Days: 100 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 5/20/2024-12/31/2024 Active Days: 162 | 245 16 |
| Coating 05/20/2024-05/23/2025 | 245 16 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 245 16 |
| Time Slice 1/1/2025-5/23/2025 Active Days: 103 | 245.16 |
| Coating 05/20/2024-05/23/2025 | 245 16 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 245 16 |

Construction Related Mitigation Measures

The following mitigation measures apply to Phase Fine Grading 12/15/2014 - 3/18/2016 - Default Fine Site Grading/Excavation Description
For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by

PM10 84% PM25 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by

PM10 5% PM25 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by

PM10 44% PM25 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

The following mitigation measures apply to Phase Mass Grading 1/16/2012 - 12/12/2014 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by

PM10 84% PM25 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by

PM10 5% PM25 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by

PM10 44% PM25 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

## Phase Assumptions

Phase Demolition 1/3/2012 - 1/13/2012 - Default Demolition Description

Building Volume Total (cubic feet) 0

Building Volume Daily (cubic feet) 0

On Road Truck Travel (VMT) 0

Off-Road Equipment

3 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day

Phase Fine Grading 12/15/2014 - 3/18/2016 - Default Fine Site Grading/Excavation Description

Total Acres Disturbed 208 5

Maximum Daily Acreage Disturbed 52 12

Fugitive Dust Level of Detail Default

20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Mass Grading 1/16/2012 - 12/12/2014 - Default Mass Site Grading/Excavation Description
Total Acres Disturbed 208 5
Maximum Daily Acreage Disturbed 52 12
Fugitive Dust Level of Detail Default
20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Trenching 3/21/2016 - 8/19/2016 - Default Trenching Description
Off-Road Equipment
2 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Other General Industrial Equipment (238 hp) operating at a 0 51 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 0 hours per day

Phase Paving 8/22/2016 - 1/20/2017 - Default Paving Description
Acres to be Paved 52 12
Off-Road Equipment
1 Pavers (100 hp) operating at a 0 62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0 53 load factor for 8 hours per day

2 Rollers (95 hp) operating at a 0 56 load factor for 6 hours per day

Phase Building Construction 1/23/2017 - 5/17/2024 - Default Building Construction Description

Off-Road Equipment

1 Cranes (399 hp) operating at a 0 43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0 3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0 74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 7 hours per day

1 Welders (45 hp) operating at a 0 45 load factor for 8 hours per day

Phase Architectural Coating 5/20/2024 - 5/23/2025 - Default Architectural Coating Description

Rule Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

**3/17/2009 9:55:27 AM**

Urbemis 2007 Version 9 2 4

Summary Report for Winter Emissions (Pounds/Day)

File Name L \DRAFT\3706q\Global\meadowood urb924

Project Name Meadowood Construction

Project Location South Coast AQMD

On-Road Vehicle Emissions Based on Version Emfac2007 V2 3 Nov 1 2006

Off-Road Vehicle Emissions Based on OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | CO2 |
|---|---|
| 2012 TOTALS (lbs/day unmitigated) | 9,168 77 |
| 2012 TOTALS (lbs/day mitigated) | 9,168 77 |
| 2013 TOTALS (lbs/day unmitigated) | 9,168 78 |
| 2013 TOTALS (lbs/day mitigated) | 9,168 78 |
| 2014 TOTALS (lbs/day unmitigated) | 9,168 78 |
| 2014 TOTALS (lbs/day mitigated) | 9,168 78 |
| 2015 TOTALS (lbs/day unmitigated) | 9,168 79 |
| 2015 TOTALS (lbs/day mitigated) | 9,168 79 |
| 2016 TOTALS (lbs/day unmitigated) | 9,168 77 |
| 2016 TOTALS (lbs/day mitigated) | 9,168 77 |

**3/17/2009 9:55:27 AM**

| | |
|---|---|
| 2017 TOTALS (lbs/day unmitigated) | 25,889 50 |
| 2017 TOTALS (lbs/day mitigated) | 25,889 50 |
| 2018 TOTALS (lbs/day unmitigated) | 25,889 94 |
| 2018 TOTALS (lbs/day mitigated) | 25,889 94 |
| 2019 TOTALS (lbs/day unmitigated) | 25,890 60 |
| 2019 TOTALS (lbs/day mitigated) | 25,890 60 |
| 2020 TOTALS (lbs/day unmitigated) | 25,891 36 |
| 2020 TOTALS (lbs/day mitigated) | 25,891 36 |
| 2021 TOTALS (lbs/day unmitigated) | 25,895 68 |
| 2021 TOTALS (lbs/day mitigated) | 25,895 68 |
| 2022 TOTALS (lbs/day unmitigated) | 25,895 68 |
| 2022 TOTALS (lbs/day mitigated) | 25,895 68 |
| 2023 TOTALS (lbs/day unmitigated) | 25,895 68 |
| 2023 TOTALS (lbs/day mitigated) | 25,895 68 |
| 2024 TOTALS (lbs/day unmitigated) | 25,895 68 |
| 2024 TOTALS (lbs/day mitigated) | 25,895 68 |

| | |
|---|---|
| 2025 TOTALS (lbs/day unmitigated) | 245 16 |
| 2025 TOTALS (lbs/day mitigated) | 245 16 |

**3/17/2009 9:55:41 AM**

Urbemis 2007 Version 9 2 4

Detail Report for Winter Construction Unmitigated Emissions (Pounds/Day)

File Name L \DRAFT\3706q\Global\meadowood urb924

Project Name Meadowood Construction

Project Location South Coast AQMD

On-Road Vehicle Emissions Based on Version Emfac2007 V2 3 Nov 1 2006

Off-Road Vehicle Emissions Based on OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Winter Pounds Per Day, Unmitigated)

| | CO2 |
|---|---|
| Time Slice 1/3/2012-1/13/2012 Active Days: 9 | 4,295 41 |
| Demolition 01/03/2012-01/13/2012 | 4,295 41 |
| Fugitive Dust | 0 00 |
| Demo Off Road Diesel | 4,132 45 |
| Demo On Road Diesel | 0 00 |
| Demo Worker Trips | 162 95 |
| Time Slice 1/16/2012-12/31/2012 Active Days: 251 | 9,168 77 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 77 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 90 |

**3/17/2009 9:55:41 AM**

| | |
|---|---|
| Time Slice 1/1/2013-12/31/2013 Active Days 261 | 9,168.78 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 78 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 91 |
| Time Slice 1/1/2014-12/12/2014 Active Days: 248 | 9,168.78 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 78 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 92 |
| Time Slice 12/15/2014-12/31/2014 Active Days: 13 | 9,168.78 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 78 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 92 |
| Time Slice 1/1/2015-12/31/2015 Active Days: 261 | 9,168.79 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 79 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 92 |

**3/17/2009 9:55:41 AM**

| | |
|---|---|
| Time Slice 1/1/2016-3/18/2016 Active Days: 56 | 9,168.77 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 77 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 91 |
| Time Slice 3/21/2016-8/19/2016 Active Days: 110 | 1,845 00 |
| Trenching 03/21/2016-08/19/2016 | 1,845 00 |
| Trenching Off Road Diesel | 1,714 64 |
| Trenching Worker Trips | 130 36 |
| Time Slice 8/22/2016-12/30/2016 Active Days: 95 | 2,302 66 |
| Asphalt 08/22/2016-01/20/2017 | 2,302 66 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 1,418 81 |
| Paving On Road Diesel | 720 89 |
| Paving Worker Trips | 162 95 |
| Time Slice 1/2/2017-1/20/2017 Active Days: 15 | 2,302 65 |
| Asphalt 08/22/2016-01/20/2017 | 2,302 65 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 1,418 81 |
| Paving On Road Diesel | 720 89 |
| Paving Worker Trips | 162 95 |

| | |
|---|---|
| Time Slice 1/23/2017-12/29/2017<br>Active Days: 245 | 25,889.50 |
| Building 01/23/2017-05/17/2024 | 25,889 50 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,244 55 |
| Building Worker Trips | 18,385 67 |
| Time Slice 1/1/2018-12/31/2018<br>Active Days 261 | 25,889.94 |
| Building 01/23/2017-05/17/2024 | 25,889 94 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,244 88 |
| Building Worker Trips | 18,385 78 |
| Time Slice 1/1/2019-12/31/2019<br>Active Days: 261 | 25,890.60 |
| Building 01/23/2017-05/17/2024 | 25,890 60 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,245 21 |
| Building Worker Trips | 18,386 11 |
| Time Slice 1/1/2020-12/31/2020<br>Active Days: 262 | 25,891.36 |
| Building 01/23/2017-05/17/2024 | 25,891 36 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,245 55 |
| Building Worker Trips | 18,386 53 |
| Time Slice 1/1/2021-12/31/2021<br>Active Days: 261 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |

**3/17/2009 9:55:41 AM**

| | |
|---|---|
| Time Slice 1/3/2022-12/30/2022 Active Days: 260 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 1/2/2023-12/29/2023 Active Days: 260 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 1/1/2024-5/17/2024 Active Days: 100 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 5/20/2024-12/31/2024 Active Days: 162 | 245 16 |
| Coating 05/20/2024-05/23/2025 | 245 16 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 245 16 |
| Time Slice 1/1/2025-5/23/2025 Active Days: 103 | 245.16 |
| Coating 05/20/2024-05/23/2025 | 245 16 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 245 16 |

## Phase Assumptions

Phase Demolition 1/3/2012 - 1/13/2012 - Default Demolition Description

Building Volume Total (cubic feet) 0

Building Volume Daily (cubic feet) 0
On Road Truck Travel (VMT) 0
Off-Road Equipment
3 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day

Phase Fine Grading 12/15/2014 - 3/18/2016 - Default Fine Site Grading/Excavation Description
Total Acres Disturbed 208 5
Maximum Daily Acreage Disturbed 52 12
Fugitive Dust Level of Detail Default
20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Mass Grading 1/16/2012 - 12/12/2014 - Default Mass Site Grading/Excavation Description
Total Acres Disturbed 208 5
Maximum Daily Acreage Disturbed 52 12
Fugitive Dust Level of Detail Default
20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Trenching 3/21/2016 - 8/19/2016 - Default Trenching Description

Off-Road Equipment
2 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Other General Industrial Equipment (238 hp) operating at a 0 51 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 0 hours per day

Phase Paving 8/22/2016 - 1/20/2017 - Default Paving Description
Acres to be Paved 52 12
Off-Road Equipment
1 Pavers (100 hp) operating at a 0 62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0 53 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0 56 load factor for 6 hours per day

Phase Building Construction 1/23/2017 - 5/17/2024 - Default Building Construction Description
Off-Road Equipment
1 Cranes (399 hp) operating at a 0 43 load factor for 7 hours per day
3 Forklifts (145 hp) operating at a 0 3 load factor for 8 hours per day
1 Generator Sets (49 hp) operating at a 0 74 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 7 hours per day
1 Welders (45 hp) operating at a 0 45 load factor for 8 hours per day

Phase Architectural Coating 5/20/2024 - 5/23/2025 - Default Architectural Coating Description
Rule Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

**3/17/2009 9:56:01 AM**

Urbemis 2007 Version 9 2 4

Detail Report for Winter Construction Mitigated Emissions (Pounds/Day)

File Name L \DRAFT\3706q\Global\meadowood urb924

Project Name Meadowood Construction

Project Location South Coast AQMD

On-Road Vehicle Emissions Based on Version Emfac2007 V2 3 Nov 1 2006

Off-Road Vehicle Emissions Based on OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Winter Pounds Per Day, Mitigated)

| | CO2 |
|---|---|
| Time Slice 1/3/2012-1/13/2012 Active Days: 9 | 4,295 41 |
| Demolition 01/03/2012-01/13/2012 | 4,295 41 |
| Fugitive Dust | 0 00 |
| Demo Off Road Diesel | 4,132 45 |
| Demo On Road Diesel | 0 00 |
| Demo Worker Trips | 162 95 |
| Time Slice 1/16/2012-12/31/2012 Active Days: 251 | 9,168 77 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 77 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 90 |

**3/17/2009 9:56:01 AM**

| | |
|---|---|
| Time Slice 1/1/2013-12/31/2013 Active Days 261 | 9,168.78 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 78 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 91 |
| Time Slice 1/1/2014-12/12/2014 Active Days: 248 | 9,168.78 |
| Mass Grading 01/16/2012-12/12/2014 | 9,168 78 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 8,842 87 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 325 92 |
| Time Slice 12/15/2014-12/31/2014 Active Days: 13 | 9,168.78 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 78 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 92 |
| Time Slice 1/1/2015-12/31/2015 Active Days 261 | 9,168.79 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 79 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 92 |

**3/17/2009 9:56:01 AM**

| | |
|---|---|
| Time Slice 1/1/2016-3/18/2016 Active Days: 56 | 9,168.77 |
| Fine Grading 12/15/2014-03/18/2016 | 9,168 77 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 8,842 87 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 325 91 |
| Time Slice 3/21/2016-8/19/2016 Active Days: 110 | 1,845 00 |
| Trenching 03/21/2016-08/19/2016 | 1,845 00 |
| Trenching Off Road Diesel | 1,714 64 |
| Trenching Worker Trips | 130 36 |
| Time Slice 8/22/2016-12/30/2016 Active Days: 95 | 2,302 66 |
| Asphalt 08/22/2016-01/20/2017 | 2,302 66 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 1,418 81 |
| Paving On Road Diesel | 720 89 |
| Paving Worker Trips | 162 95 |
| Time Slice 1/2/2017-1/20/2017 Active Days 15 | 2,302 65 |
| Asphalt 08/22/2016-01/20/2017 | 2,302 65 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 1,418 81 |
| Paving On Road Diesel | 720 89 |
| Paving Worker Trips | 162 95 |

**3/17/2009 9:56:01 AM**

| | |
|---|---|
| Time Slice 1/23/2017-12/29/2017<br>Active Days: 245 | 25,889.50 |
| Building 01/23/2017-05/17/2024 | 25,889 50 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,244 55 |
| Building Worker Trips | 18,385 67 |
| Time Slice 1/1/2018-12/31/2018<br>Active Days 261 | 25,889.94 |
| Building 01/23/2017-05/17/2024 | 25,889 94 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,244 88 |
| Building Worker Trips | 18,385 78 |
| Time Slice 1/1/2019-12/31/2019<br>Active Days: 261 | 25,890.60 |
| Building 01/23/2017-05/17/2024 | 25,890 60 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,245 21 |
| Building Worker Trips | 18,386 11 |
| Time Slice 1/1/2020-12/31/2020<br>Active Days: 262 | 25,891.36 |
| Building 01/23/2017-05/17/2024 | 25,891 36 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,245 55 |
| Building Worker Trips | 18,386 53 |
| Time Slice 1/1/2021-12/31/2021<br>Active Days 261 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |

**3/17/2009 9:56:01 AM**

| | |
|---|---|
| Time Slice 1/3/2022-12/30/2022 Active Days: 260 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 1/2/2023-12/29/2023 Active Days: 260 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 1/1/2024-5/17/2024 Active Days 100 | **25,895.68** |
| Building 01/23/2017-05/17/2024 | 25,895 68 |
| Building Off Road Diesel | 2,259 28 |
| Building Vendor Trips | 5,247 02 |
| Building Worker Trips | 18,389 38 |
| Time Slice 5/20/2024-12/31/2024 Active Days: 162 | 245 16 |
| Coating 05/20/2024-05/23/2025 | 245 16 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 245 16 |
| Time Slice 1/1/2025-5/23/2025 Active Days 103 | 245.16 |
| Coating 05/20/2024-05/23/2025 | 245 16 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 245 16 |

Construction Related Mitigation Measures

The following mitigation measures apply to Phase Fine Grading 12/15/2014 - 3/18/2016 - Default Fine Site Grading/Excavation Description
For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by

PM10 84% PM25 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by

PM10 5% PM25 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by

PM10 44% PM25 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

The following mitigation measures apply to Phase Mass Grading 1/16/2012 - 12/12/2014 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by

PM10 84% PM25 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by

PM10 5% PM25 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by

PM10 44% PM25 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

## Phase Assumptions

Phase Demolition 1/3/2012 - 1/13/2012 - Default Demolition Description

Building Volume Total (cubic feet) 0

Building Volume Daily (cubic feet) 0

On Road Truck Travel (VMT) 0

Off-Road Equipment

3 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day

Phase Fine Grading 12/15/2014 - 3/18/2016 - Default Fine Site Grading/Excavation Description

Total Acres Disturbed 208 5

Maximum Daily Acreage Disturbed 52 12

Fugitive Dust Level of Detail Default

20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Mass Grading 1/16/2012 - 12/12/2014 - Default Mass Site Grading/Excavation Description
Total Acres Disturbed 208 5
Maximum Daily Acreage Disturbed 52 12
Fugitive Dust Level of Detail Default
20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Trenching 3/21/2016 - 8/19/2016 - Default Trenching Description
Off-Road Equipment
2 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Other General Industrial Equipment (238 hp) operating at a 0 51 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 0 hours per day

Phase Paving 8/22/2016 - 1/20/2017 - Default Paving Description
Acres to be Paved 52 12
Off-Road Equipment
1 Pavers (100 hp) operating at a 0 62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0 53 load factor for 8 hours per day

2 Rollers (95 hp) operating at a 0 56 load factor for 6 hours per day

Phase Building Construction 1/23/2017 - 5/17/2024 - Default Building Construction Description

Off-Road Equipment

1 Cranes (399 hp) operating at a 0 43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0 3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0 74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 7 hours per day

1 Welders (45 hp) operating at a 0 45 load factor for 8 hours per day

Phase Architectural Coating 5/20/2024 - 5/23/2025 - Default Architectural Coating Description

Rule Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

**3/17/2009 9:56:21 AM**

Urbemis 2007 Version 9 2 4

Summary Report for Annual Emissions (Tons/Year)

File Name L \DRAFT\3706q\Global\meadowood urb924

Project Name Meadowood Construction

Project Location South Coast AQMD

On-Road Vehicle Emissions Based on Version Emfac2007 V2 3 Nov 1 2006

Off-Road Vehicle Emissions Based on OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

| | CO2 |
|---|---|
| 2012 TOTALS (tons/year unmitigated) | 1,170 01 |
| 2012 TOTALS (tons/year mitigated) | 1,170 01 |
| Percent Reduction | 0 00 |
| 2013 TOTALS (tons/year unmitigated) | 1,196 53 |
| 2013 TOTALS (tons/year mitigated) | 1,196 53 |
| Percent Reduction | 0 00 |
| 2014 TOTALS (tons/year unmitigated) | 1,196 53 |
| 2014 TOTALS (tons/year mitigated) | 1,196 53 |
| Percent Reduction | 0 00 |
| 2015 TOTALS (tons/year unmitigated) | 1,196 53 |
| 2015 TOTALS (tons/year mitigated) | 1,196 53 |

| | |
|---|---|
| Percent Reduction | 0 00 |
| | |
| 2016 TOTALS (tons/year unmitigated) | 467 58 |
| 2016 TOTALS (tons/year mitigated) | 467 58 |
| Percent Reduction | 0 00 |
| | |
| 2017 TOTALS (tons/year unmitigated) | 3,188 73 |
| 2017 TOTALS (tons/year mitigated) | 3,188 73 |
| Percent Reduction | 0 00 |
| | |
| 2018 TOTALS (tons/year unmitigated) | 3,378 64 |
| 2018 TOTALS (tons/year mitigated) | 3,378 64 |
| Percent Reduction | 0 00 |
| | |
| 2019 TOTALS (tons/year unmitigated) | 3,378 72 |
| 2019 TOTALS (tons/year mitigated) | 3,378 72 |
| Percent Reduction | 0 00 |
| | |
| 2020 TOTALS (tons/year unmitigated) | 3,391 77 |
| 2020 TOTALS (tons/year mitigated) | 3,391 77 |
| Percent Reduction | 0 00 |
| | |
| 2021 TOTALS (tons/year unmitigated) | 3,379 39 |
| 2021 TOTALS (tons/year mitigated) | 3,379 39 |

| | |
|---|---|
| Percent Reduction | 0 00 |
| | |
| 2022 TOTALS (tons/year unmitigated) | 3,366 44 |
| 2022 TOTALS (tons/year mitigated) | 3,366 44 |
| Percent Reduction | 0 00 |
| | |
| 2023 TOTALS (tons/year unmitigated) | 3,366 44 |
| 2023 TOTALS (tons/year mitigated) | 3,366 44 |
| Percent Reduction | 0 00 |
| | |
| 2024 TOTALS (tons/year unmitigated) | 1,314 64 |
| 2024 TOTALS (tons/year mitigated) | 1,314 64 |
| Percent Reduction | 0 00 |
| | |
| 2025 TOTALS (tons/year unmitigated) | 12 63 |
| 2025 TOTALS (tons/year mitigated) | 12 63 |
| Percent Reduction | 0 00 |

**3/17/2009 9:56:32 AM**

Urbemis 2007 Version 9 2 4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name L \DRAFT\3706q\Global\meadowood urb924

Project Name Meadowood Construction

Project Location South Coast AQMD

On-Road Vehicle Emissions Based on Version Emfac2007 V2 3 Nov 1 2006

Off-Road Vehicle Emissions Based on OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

| | CO2 |
|---|---|
| 2012 | 1,170 01 |
| Demolition 01/03/2012-01/13/2012 | 19 33 |
| Fugitive Dust | 0 00 |
| Demo Off Road Diesel | 18 60 |
| Demo On Road Diesel | 0 00 |
| Demo Worker Trips | 0 73 |
| Mass Grading 01/16/2012-12/12/2014 | 1,150 68 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 1,109 78 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 40 90 |
| 2013 | 1,196 53 |
| Mass Grading 01/16/2012-12/12/2014 | 1,196 53 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 1,153 99 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 42 53 |

**3/17/2009 9:56:32 AM**

| | |
|---|---|
| 2014 | 1,196 53 |
| Mass Grading 01/16/2012-12/12/2014 | 1,136 93 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 1,096 52 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 40 41 |
| Fine Grading 12/15/2014-03/18/2016 | 59 60 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 57 48 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 2 12 |
| 2015 | 1,196 53 |
| Fine Grading 12/15/2014-03/18/2016 | 1,196 53 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 1,153 99 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 42 53 |

| | |
|---|---|
| 2016 | 467 58 |
| Fine Grading 12/15/2014-03/18/2016 | 256 73 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 247 60 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 9 13 |
| Trenching 03/21/2016-08/19/2016 | 101 48 |
| Trenching Off Road Diesel | 94 31 |
| Trenching Worker Trips | 7 17 |
| Asphalt 08/22/2016-01/20/2017 | 109 38 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 67 39 |
| Paving On Road Diesel | 34 24 |
| Paving Worker Trips | 7 74 |
| 2017 | 3,188 73 |
| Asphalt 08/22/2016-01/20/2017 | 17 27 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 10 64 |
| Paving On Road Diesel | 5 41 |
| Paving Worker Trips | 1 22 |
| Building 01/23/2017-05/17/2024 | 3,171 46 |
| Building Off Road Diesel | 276 76 |
| Building Vendor Trips | 642 46 |
| Building Worker Trips | 2,252 24 |

| | |
|---|---|
| 2018 | 3,378 64 |
| Building 01/23/2017-05/17/2024 | 3,378 64 |
| Building Off Road Diesel | 294 84 |
| Building Vendor Trips | 684 46 |
| Building Worker Trips | 2,399 34 |
| 2019 | 3,378 72 |
| Building 01/23/2017-05/17/2024 | 3,378 72 |
| Building Off Road Diesel | 294 84 |
| Building Vendor Trips | 684 50 |
| Building Worker Trips | 2,399 39 |
| 2020 | 3,391 77 |
| Building 01/23/2017-05/17/2024 | 3,391 77 |
| Building Off Road Diesel | 295 97 |
| Building Vendor Trips | 687 17 |
| Building Worker Trips | 2,408 64 |
| 2021 | 3,379 39 |
| Building 01/23/2017-05/17/2024 | 3,379 39 |
| Building Off Road Diesel | 294 84 |
| Building Vendor Trips | 684 74 |
| Building Worker Trips | 2,399 81 |
| 2022 | 3,366 44 |
| Building 01/23/2017-05/17/2024 | 3,366 44 |
| Building Off Road Diesel | 293 71 |
| Building Vendor Trips | 682 11 |
| Building Worker Trips | 2,390 62 |

| | |
|---|---|
| 2023 | 3,366 44 |
| Building 01/23/2017-05/17/2024 | 3,366 44 |
| Building Off Road Diesel | 293 71 |
| Building Vendor Trips | 682 11 |
| Building Worker Trips | 2,390 62 |
| 2024 | 1,314 64 |
| Building 01/23/2017-05/17/2024 | 1,294 78 |
| Building Off Road Diesel | 112 96 |
| Building Vendor Trips | 262 35 |
| Building Worker Trips | 919 47 |
| Coating 05/20/2024-05/23/2025 | 19 86 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 19 86 |
| 2025 | 12 63 |
| Coating 05/20/2024-05/23/2025 | 12 63 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 12 63 |

Phase Assumptions

Phase Demolition 1/3/2012 - 1/13/2012 - Default Demolition Description

Building Volume Total (cubic feet) 0

Building Volume Daily (cubic feet) 0

On Road Truck Travel (VMT) 0

Off-Road Equipment

3 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day

Phase Fine Grading 12/15/2014 - 3/18/2016 - Default Fine Site Grading/Excavation Description

Total Acres Disturbed 208 5

Maximum Daily Acreage Disturbed 52 12

Fugitive Dust Level of Detail Default
20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Mass Grading 1/16/2012 - 12/12/2014 - Default Mass Site Grading/Excavation Description
Total Acres Disturbed 208 5
Maximum Daily Acreage Disturbed 52 12
Fugitive Dust Level of Detail Default
20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Trenching 3/21/2016 - 8/19/2016 - Default Trenching Description
Off-Road Equipment
2 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Other General Industrial Equipment (238 hp) operating at a 0 51 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 0 hours per day

Phase Paving 8/22/2016 - 1/20/2017 - Default Paving Description
Acres to be Paved 52 12
Off-Road Equipment
1 Pavers (100 hp) operating at a 0 62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0 53 load factor for 8 hours per day

2 Rollers (95 hp) operating at a 0 56 load factor for 6 hours per day

Phase Building Construction 1/23/2017 - 5/17/2024 - Default Building Construction Description

Off-Road Equipment

1 Cranes (399 hp) operating at a 0 43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0 3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0 74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 7 hours per day

1 Welders (45 hp) operating at a 0 45 load factor for 8 hours per day

Phase Architectural Coating 5/20/2024 - 5/23/2025 - Default Architectural Coating Description

Rule Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

Rule Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

**3/17/2009 9:56:52 AM**

Urbemis 2007 Version 9 2 4

Detail Report for Annual Construction Mitigated Emissions (Tons/Year)

File Name L \DRAFT\3706q\Global\meadowood urb924

Project Name Meadowood Construction

Project Location South Coast AQMD

On-Road Vehicle Emissions Based on Version Emfac2007 V2 3 Nov 1 2006

Off-Road Vehicle Emissions Based on OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)

| | CO2 |
|---|---|
| 2012 | 1,170 01 |
| Demolition 01/03/2012-01/13/2012 | 19 33 |
| Fugitive Dust | 0 00 |
| Demo Off Road Diesel | 18 60 |
| Demo On Road Diesel | 0 00 |
| Demo Worker Trips | 0 73 |
| Mass Grading 01/16/2012-12/12/2014 | 1,150 68 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 1,109 78 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 40 90 |
| 2013 | 1,196 53 |
| Mass Grading 01/16/2012-12/12/2014 | 1,196 53 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 1,153 99 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 42 53 |

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| | |
|---|---|
| 2014 | 1,196 53 |
| Mass Grading 01/16/2012-12/12/2014 | 1,136 93 |
| Mass Grading Dust | 0 00 |
| Mass Grading Off Road Diesel | 1,096 52 |
| Mass Grading On Road Diesel | 0 00 |
| Mass Grading Worker Trips | 40 41 |
| Fine Grading 12/15/2014-03/18/2016 | 59 60 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 57 48 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 2 12 |
| 2015 | 1,196 53 |
| Fine Grading 12/15/2014-03/18/2016 | 1,196 53 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 1,153 99 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 42 53 |

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| | |
|---|---|
| 2016 | 467 58 |
| Fine Grading 12/15/2014-03/18/2016 | 256 73 |
| Fine Grading Dust | 0 00 |
| Fine Grading Off Road Diesel | 247 60 |
| Fine Grading On Road Diesel | 0 00 |
| Fine Grading Worker Trips | 9 13 |
| Trenching 03/21/2016-08/19/2016 | 101 48 |
| Trenching Off Road Diesel | 94 31 |
| Trenching Worker Trips | 7 17 |
| Asphalt 08/22/2016-01/20/2017 | 109 38 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 67 39 |
| Paving On Road Diesel | 34 24 |
| Paving Worker Trips | 7 74 |
| 2017 | 3,188 73 |
| Asphalt 08/22/2016-01/20/2017 | 17 27 |
| Paving Off-Gas | 0 00 |
| Paving Off Road Diesel | 10 64 |
| Paving On Road Diesel | 5 41 |
| Paving Worker Trips | 1 22 |
| Building 01/23/2017-05/17/2024 | 3,171 46 |
| Building Off Road Diesel | 276 76 |
| Building Vendor Trips | 642 46 |
| Building Worker Trips | 2,252 24 |

| | |
|---|---|
| 2018 | 3,378 64 |
| Building 01/23/2017-05/17/2024 | 3,378 64 |
| Building Off Road Diesel | 294 84 |
| Building Vendor Trips | 684 46 |
| Building Worker Trips | 2,399 34 |
| 2019 | 3,378 72 |
| Building 01/23/2017-05/17/2024 | 3,378 72 |
| Building Off Road Diesel | 294 84 |
| Building Vendor Trips | 684 50 |
| Building Worker Trips | 2,399 39 |
| 2020 | 3,391 77 |
| Building 01/23/2017-05/17/2024 | 3,391 77 |
| Building Off Road Diesel | 295 97 |
| Building Vendor Trips | 687 17 |
| Building Worker Trips | 2,408 64 |
| 2021 | 3,379 39 |
| Building 01/23/2017-05/17/2024 | 3,379 39 |
| Building Off Road Diesel | 294 84 |
| Building Vendor Trips | 684 74 |
| Building Worker Trips | 2,399 81 |
| 2022 | 3,366 44 |
| Building 01/23/2017-05/17/2024 | 3,366 44 |
| Building Off Road Diesel | 293 71 |
| Building Vendor Trips | 682 11 |
| Building Worker Trips | 2,390 62 |

| | |
|---|---|
| 2023 | 3,366 44 |
| Building 01/23/2017-05/17/2024 | 3,366 44 |
| Building Off Road Diesel | 293 71 |
| Building Vendor Trips | 682 11 |
| Building Worker Trips | 2,390 62 |
| 2024 | 1,314 64 |
| Building 01/23/2017-05/17/2024 | 1,294 78 |
| Building Off Road Diesel | 112 96 |
| Building Vendor Trips | 262 35 |
| Building Worker Trips | 919 47 |
| Coating 05/20/2024-05/23/2025 | 19 86 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 19 86 |
| 2025 | 12 63 |
| Coating 05/20/2024-05/23/2025 | 12 63 |
| Architectural Coating | 0 00 |
| Coating Worker Trips | 12 63 |

Construction Related Mitigation Measures

The following mitigation measures apply to Phase Fine Grading 12/15/2014 - 3/18/2016 - Default Fine Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by

PM10 84% PM25 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by

PM10 5% PM25 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by

PM10 44% PM25 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

The following mitigation measures apply to Phase Mass Grading 1/16/2012 - 12/12/2014 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by

PM10 84% PM25 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by

PM10 5% PM25 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by

PM10 44% PM25 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by

PM10 61% PM25 61%

## Phase Assumptions

Phase Demolition 1/3/2012 - 1/13/2012 - Default Demolition Description

Building Volume Total (cubic feet) 0

Building Volume Daily (cubic feet) 0

On Road Truck Travel (VMT) 0

Off-Road Equipment

3 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day

Phase Fine Grading 12/15/2014 - 3/18/2016 - Default Fine Site Grading/Excavation Description

Total Acres Disturbed 208 5

Maximum Daily Acreage Disturbed 52 12

Fugitive Dust Level of Detail Default

20 lbs per acre-day

On Road Truck Travel (VMT) 0

Off-Road Equipment

1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day

3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Mass Grading 1/16/2012 - 12/12/2014 - Default Mass Site Grading/Excavation Description
Total Acres Disturbed 208 5
Maximum Daily Acreage Disturbed 52 12
Fugitive Dust Level of Detail Default
20 lbs per acre-day
On Road Truck Travel (VMT) 0
Off-Road Equipment
1 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0 61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0 59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0 72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0 5 load factor for 8 hours per day

Phase Trenching 3/21/2016 - 8/19/2016 - Default Trenching Description
Off-Road Equipment
2 Excavators (168 hp) operating at a 0 57 load factor for 8 hours per day
1 Other General Industrial Equipment (238 hp) operating at a 0 51 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 0 hours per day

Phase Paving 8/22/2016 - 1/20/2017 - Default Paving Description
Acres to be Paved 52 12
Off-Road Equipment
1 Pavers (100 hp) operating at a 0 62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0 53 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0 56 load factor for 6 hours per day

Phase Building Construction 1/23/2017 - 5/17/2024 - Default Building Construction Description
Off-Road Equipment
1 Cranes (399 hp) operating at a 0 43 load factor for 7 hours per day
3 Forklifts (145 hp) operating at a 0 3 load factor for 8 hours per day
1 Generator Sets (49 hp) operating at a 0 74 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0 55 load factor for 7 hours per day
1 Welders (45 hp) operating at a 0 45 load factor for 8 hours per day

Phase Architectural Coating 5/20/2024 - 5/23/2025 - Default Architectural Coating Description
Rule Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

| Emission Source | CO2 | N20 | CH4 | Total CO2 Eq Emissions (metric tons/year) |
|---|---|---|---|---|
| Electricity Usage Emissions | 3,674 07 | 0 05 | 0 03 | 3,691 03 |
| Natural Gas Usage Emissions | 3,146 13 | 0 06 | 0 06 | 3,165 28 |
| Water Usage Emissions | 1,244 59 | 0 02 | 0 01 | 1,250 33 |
| Vehicular Emissions | 16,331 83 | 0 17 | 0 46 | 16,393 23 |
| Solid Waste Emissions | | | | 342 00 |
| Total | 24,396 63 | 0 30 | 0 56 | |
| Global Warming Potential | 1 00 | 310.00 | 21.00 | |
| **Total CO2 Eq Emissions** | | | | **24,841.87** |

VEHICLE EMISSIONS CALCULATIONS

**Parameters**

| | | |
|---|---|---|
| Average Fuel Economy | 17 40 | miles per gallon (mpg) |
| Average Daily Traffic (ADT) | 8,740 00 | trips |
| VMT per Day | 87,734 00 | miles |
| VMT per Year | 32,022,910 00 | miles |
| Total Gallons of Fuel | 1,840,397 13 | gallons |

**Vehicle Emission Factors (pounds/gallon)**

| | |
|---|---|
| CO2 | 19 56400 |
| CH4 | 0 00055 |
| N2O | 0 00020 |

**Vehicle Emissions**

| | Pounds | Pounds per Metric Ton | Metric Tons | GWP | CO2 Eq |
|---|---|---|---|---|---|
| CO2 | 36,005,529 38 | 2,204 62 | 16,331 83 | 1 00 | 16,331 83 |
| CH4 | 1,012 22 | 2,204 62 | 0 46 | 21 00 | 9 64 |
| N2O | 368.08 | 2,204 62 | 0.17 | 310.00 | 51.76 |
| TOTAL metrics tons of CO2 Eq per Year. | | | | | 16,393 23 |

ELECTRICITY EMISSIONS CALCULATIONS

**Residential Parameters**

| | |
|---|---|
| Average Monthly Consumption | 590 00 kWh |
| Annual Consumption | 7,080 00 kWh |
| Number of Units | 844 00 Units |
| Total Consumption (kWh) | 5,975,520 00 kWh |
| Total Consumption (MWh) | 5,975 52 MWh |

**School Parameters**

| | |
|---|---|
| Average Monthly Consumption | 5,768 00 kWh |
| Annual Consumption | 69,216 00 kWh |
| Total kWh | 69,216 00 kWh |
| Total MWh | 69 22 MWh |

**Electricity Generation Emission Factors (pounds/MWh)**

| | |
|---|---|
| CO2 | 1,340 0000 |
| CH4 | 0 0111 |
| N2O | 0 0192 |

**Residential Electricity Emissions**

| | Pounds | Pounds per Metric Ton | Metric Tons | GWP | CO2 Eq |
|---|---|---|---|---|---|
| CO2 | 8,007,196 80 | 2,204 62 | 3,632 00 | 1 00 | 3,632 00 |
| CH4 | 66 33 | 2,204 62 | 0 03 | 21 00 | 0 63 |
| N2O | 114.73 | 2,204.62 | 0.05 | 310.00 | 16.13 |
| TOTAL metrics tons of CO2 Eq per Year. | | | | | 3,648.77 |

**School Electricity Emissions**

| Emissions | Pounds | Pounds per Metric Ton | Metric Tons | GWP | CO2 Eq |
|---|---|---|---|---|---|
| CO2 | 92,749 44 | 2,204 62 | 42 07 | 1 00 | 42 07 |
| CH4 | 0 77 | 2,204 62 | 0 00 | 21 00 | 0 01 |
| N2O | 1.33 | 2,204.62 | 0.00 | 310.00 | 0.19 |
| TOTAL metrics tons of CO2 Eq per Year. | | | | | 42.26 |

**Total Combined Electricity Emissions**

| Total Emissions | Pounds | Pounds per Metric Ton | Metric Tons | GWP | CO2 Eq |
|---|---|---|---|---|---|
| CO2 | 8,099,946 24 | 2,204 62 | 3,674 07 | 1 00 | 3,674 07 |
| CH4 | 67 10 | 2,204 62 | 0 03 | 21 00 | 0 64 |
| N2O | 116.06 | 2,204.62 | 0.05 | 310.00 | 16.32 |
| TOTAL metrics tons of CO2 Eq per Year. | | | | | 3,691.03 |

NATURAL GAS EMISSIONS CALCULATIONS

**Residential Parameters**

| | | |
|---|---|---|
| Consumption per Consumer per Year | 67,847 00 | cubic feet |
| Number of Units | 844 00 | untis |
| Total Consumption (cubic feet) | 57,262,868 00 | cubic feet |
| Total Consumption (million cubic feet) | 57 26 | million cubic feet |

**School Parameters**

| | | |
|---|---|---|
| Total Consumption (cubic feet) | 537,416 00 | cubic feet |
| Total Consumption (million cubic feet) | 0 54 | million cubic feet |

**Natural Gas Combustion Emission Factors (pounds/million cubic feet)**

| | |
|---|---|
| CO2 | 120,000 0 |
| CH4 | 2 3 |
| N2O | 2 2 |

**Residential Natural Gas Emissions**

| | Pounds | Pounds per Metric Ton | Metric Tons | GWP | CO2 Eq |
|---|---|---|---|---|---|
| CO2 | 6,871,544 16 | 2,204 62 | 3,116 88 | 1 00 | 3,116 88 |
| CH4 | 131 70 | 2,204 62 | 0 06 | 21 00 | 1 25 |
| N2O | 125 98 | 2,204.62 | 0 06 | 310.00 | 17 71 |
| TOTAL metrics tons of CO2 Eq per Year | | | | | 3,135 85 |

**School Natural Gas Emissions**

| Emissions | Pounds | Pounds per Metric Ton | Metric Tons | GWP | CO2 Eq |
|---|---|---|---|---|---|
| CO2 | 64,489 92 | 2,204 62 | 29 25 | 1 00 | 29 25 |
| CH4 | 1 24 | 2,204 62 | 0 00 | 21 00 | 0 01 |
| N2O | 1.18 | 2,204 62 | 0 00 | 310 00 | 0 17 |
| TOTAL metrics tons of CO2 Eq per Year | | | | | 29.43 |

**Total Combined Natural Gas Emissions**

| Total Emissions | Pounds | Pounds per Metric Ton | Metric Tons | GWP | CO2 Eq |
|---|---|---|---|---|---|
| CO2 | 6,936,034 08 | 2,204 62 | 3,146 13 | 1 00 | 3,146 13 |
| CH4 | 132 94 | 2,204 62 | 0 06 | 21 00 | 1 27 |
| N2O | 127 16 | 2,204.62 | 0.06 | 310 00 | 17 88 |
| TOTAL metrics tons of CO2 Eq per Year. | | | | | 3,165 28 |

WATER EMISSIONS CALCULATIONS

**Parameters**

| | | |
|---|---|---|
| Daily Water Use | 660,000 00 | gallons |
| Annual Water Use | 240,900,000 00 | gallons |
| Embodied Energy | 0 0085 | kWh per gallon |
| Total Water Energy Use (kWh) | 2,047,650 00 | kWh |
| Total Water Energy Use (MWh) | 2,047 65 | MWh |

**Electricity Generation Emission Factors (pounds/MWh)**

| | |
|---|---|
| CO2 | 1,340 0000 |
| CH4 | 0 0111 |
| N2O | 0 0192 |

**Water Emissions**

| | Pounds | Pounds per Metric Ton | Metric Tons | GWP | CO2 Eq |
|---|---|---|---|---|---|
| CO2 | 2,743,851 00 | 2,204 62 | 1,244 59 | 1 00 | 1,244 59 |
| CH4 | 22 73 | 2,204 62 | 0 01 | 21 00 | 0 22 |
| N2O | 39 31 | 2,204.62 | 0 02 | 310 00 | 5 53 |
| TOTAL metrics tons of CO2 Eq per Year | | | | | 1,250.33 |

| | % Generated | % Recovered | % Discarded |
|---|---|---|---|
| Major Appliances | 1 4 | 67 1 | 0 7 |
| Small Appliances | 0 5 | 1 4 | 0 8 |
| Furniture and Furnishings | 3 7 | 0 | 5 5 |
| Carpets and Rugs | 1 2 | 8 9 | 1 7 |
| Rubber Tires | 1 9 | 34 8 | 1 9 |
| Batteries, Lead-Acid | 1 | 99 2 | 0 |
| Consumer Electronics | 1 2 | 13 6 | 1 5 |
| Other Miscellaneous Durables | 6 9 | 3 5 | 10 |
| Newspapers | 4 3 | 77 8 | 1 4 |
| Books | 0 5 | 26 1 | 0 6 |
| Magazines | 1 | 39 6 | 0 9 |
| Office-Type Papers | 2 4 | 71 8 | 1 |
| Directories | 0 3 | 20 | 0 3 |
| Standard Mail | 2 3 | 40 3 | 2 1 |
| Other Commercial Printing | 2 5 | 57 3 | 1 6 |
| Tissue Paper and Towels | 1 4 | 0 | 2 1 |
| Paper Plates and Cups | 0 5 | 0 | 0 8 |
| Plastic Plates and Cups | 0 3 | 0 | 0 5 |
| Trash Bags | 0 4 | 0 | 0 6 |
| Disposable Diapers | 1 5 | 0 | 2 2 |
| Other Nonpackaging Paper | 1 8 | 0 | 2 6 |
| Clothing and Footwear | 3 3 | 15 | 4 2 |
| Towels, Sheets, and Pillowcases | 0 4 | 17 3 | 0 5 |
| Other Miscellaneous Nondurables | 1 6 | 0 | 2 5 |
| Glass | 4 5 | 28 1 | 4 9 |
| Steel | 1 1 | 64 6 | 0 6 |
| Aluminum | 0 7 | 39 | 0 7 |
| Paper and Paperboard Packaging | 15 7 | 62 4 | 8 9 |
| Plastic | 5 4 | 11 7 | 7 1 |
| Wood Packaging | 3 4 | 15 5 | 4 3 |
| Other Miscellaneous Packaging | 0 1 | 0 | 0 2 |
| Food Scraps | 12 5 | 2 6 | 18 2 |
| Yard Trimmings | 12 8 | 64 1 | 6 9 |
| Miscellaneous Inorganic Wastes | 1 5 | 0 | 2 2 |
| | 100 | | |

| | Tons | Recycled | Landfill |
|---|---|---|---|
| Aluminum Cans | 3 9732 | 1 549548 | 2 423652 |
| Carpet | 6 8112 | 0 6061968 | 6 2050032 |
| Dimensional Lumber | 19 2984 | 2 991252 | 16 307148 |
| Food Scraps | 70 95 | 1 8447 | 69 1053 |
| Glass | 25 542 | 7 177302 | 18 364698 |

| Tons | Recycled | Landfill | WARM Category |
|---|---|---|---|
| 7 9464 | 5 332034 | 2 614366 | Mixed Metals |
| 2 838 | 0 039732 | 2 798268 | Mixed Metals |
| 21 0012 | 0 | 21 0012 | Mixed MSW |
| 6 8112 | 0 606197 | 6 205003 | Carpet |
| 10 7844 | 3 752971 | 7 031429 | Tires |
| 5 676 | 5 630592 | 0 045408 | Mixed MSW |
| 6 8112 | 0 926323 | 5 884877 | Personal Computers |
| 39 1644 | 1 370754 | 37 79365 | Mixed MSW |
| 24 4068 | 18 98849 | 5 41831 | Newspaper |
| 2 838 | 0 740718 | 2 097282 | Textbooks |
| 5 676 | 2 247696 | 3 428304 | Magazines/Third-Class Mail |
| 13 6224 | 9 780883 | 3 841517 | Office Paper |
| 1 7028 | 0 34056 | 1 36224 | Phonebooks |
| 13 0548 | 5 261084 | 7 793716 | Magazines/Third-Class Mail |
| 14 19 | 8 13087 | 6 05913 | Mixed Paper (General) |
| 7 9464 | 0 | 7 9464 | Mixed Paper (Primarily Residential) |
| 2 838 | 0 | 2 838 | Mixed Paper (Primarily Residential) |
| 1 7028 | 0 | 1 7028 | Mixed Plastics |
| 2 2704 | 0 | 2 2704 | Mixed Plastics |
| 8 514 | 0 | 8 514 | Mixed MSW |
| 10 2168 | 0 | 10 2168 | Mixed Paper (General) |
| 18 7308 | 2 80962 | 15 92118 | Mixed MSW |
| 2 2704 | 0 392779 | 1 877621 | Mixed MSW |
| 9 0816 | 0 | 9 0816 | Mixed MSW |
| 25 542 | 7 177302 | 18 3647 | Glass |
| 6 2436 | 4 033366 | 2 210234 | Steel Cans |
| 3 9732 | 1 549548 | 2 423652 | Aluminum Cans |
| 89 1132 | 55 60664 | 33 50656 | Mixed Paper (General) |
| 30 6504 | 3 586097 | 27 0643 | Mixed Plastics |
| 19 2984 | 2 991252 | 16 30715 | Dimensional Lumber |
| 0 5676 | 0 | 0 5676 | Mixed MSW |
| 70 95 | 1 8447 | 69 1053 | Food Scraps |
| 72 6528 | 46 57044 | 26 08236 | Yard Trimmings |
| 8 514 | 0 | 8 514 | Mixed MSW |
| 567 6 | 189 7107 | 377 8893 | |

| | | | |
|---|---|---|---|
| Magazines/Third-Class Mail | 18 7308 | 7 5087804 | 11 2220196 |
| Mixed Metals | 10 7844 | 5 3717664 | 5 4126336 |
| Mixed MSW | 113 52 | 10 2037452 | 103 3162548 |
| Mixed Paper (General) | 113 52 | 63 7375068 | 49 7824932 |
| Mixed Paper (Primarily Residential) | 10 7844 | 0 | 10 7844 |
| Mixed Plastics | 34 6236 | 3 5860968 | 31 0375032 |
| Newspaper | 24 4068 | 18 9884904 | 5 4183096 |
| Office Paper | 13 6224 | 9 7808832 | 3 8415168 |
| Personal Computers | 6 8112 | 0 9263232 | 5 8848768 |
| Phonebooks | 1 7028 | 0 34056 | 1 36224 |
| Steel Cans | 6 2436 | 4 0333656 | 2 2102344 |
| Textbooks | 2 838 | 0 740718 | 2 097282 |
| Tires | 10 7844 | 3 7529712 | 7 0314288 |
| Yard Trimmings | 72 6528 | 46 5704448 | 26 0823552 |
| | 567 6 | 189 7106508 | 377 8893492 |

## WARM User's Guide

***Calculating Greenhouse Gas Emissions with the Excel© Version of the WAste Reduction Model***

**WHAT IS THE WASTE REDUCTION MODEL?**

The WAste Reduction Model (WARM) was created by the U.S. Environmental Protection Agency (EPA) to help solid waste planners and organizations estimate greenhouse gas (GHG) emission reductions from several different waste management practices. WARM is available in a Web-based calculator format and as a Microsoft Excel© spreadsheet. Both versions of WARM are available on EPA's Web site at http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html.

WARM calculates GHG emissions for baseline and alternative waste management practices, including source reduction, recycling, combustion, composting, and landfilling. The model calculates emissions in metric tons of carbon equivalent (MTCE) and metric tons of carbon dioxide equivalent ($MTCO_2E$) across a wide range of material types commonly found in municipal solid waste (MSW).

The user can construct various scenarios by simply entering data on the amount of waste handled by material type and by management practice. WARM then automatically applies material-specific emission factors for each management practice to calculate the GHG emissions and energy savings of each scenario. Several key inputs, such as landfill gas recovery practices and transportation distances to MSW facilities, can be modified by the user.

The GHG emission factors were developed following a life-cycle assessment methodology using estimation techniques developed for national inventories of GHG emissions. EPA's report *Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks* (EPA 530-R-06-004) describes this methodology in detail. For a free copy of this report, visit http://epa.gov/climatechange/wycd/waste/SWMGHGreport.html or call EPA's RCRA hotline at (800) 424-9346. A new version of this report was released in Fall 2006.

The methodologies used to develop these emission factors are described in detail in the background reports available for download at http://epa.gov/climatechange/wycd/waste/SWMGHGreport.html. This version also reflects revised data on the average recycled content values for materials available in the marketplace, and the EPA's latest MSW characterization report *Municipal Solid Waste in the United States: 2006 Facts and Figures*.

**WHO SHOULD USE WARM?**

WARM was developed for solid waste managers (from state and local governments and other organizations) who want to calculate the GHG emissions associated with different waste management options. Emissions estimates provided by WARM are intended to support voluntary GHG measurement and reporting initiatives. These initiatives include waste management components of state and local climate change action plans, and other waste management projects for which an understanding of GHG emissions is desired.

**USING THE EXCEL© VERSION OF WARM**

Before using WARM, you first need to gather data on your baseline waste management practices and an alternative scenario. In order to effectively use the tool, users should know how many tons of waste you manage (or would manage) for a given time period under each scenario by material type and by management practice. Both models allow you to customize your results based on project-specific landfill gas recovery practices and transportation distances. Note that you may use default values if you are unsure of landfill gas recovery practices and/or transportation distances.

***Instructions:***

-- Click on the "Analysis Inputs" tab at the bottom center of the screen to open the input sheet. Follow the instructions for Steps 1 and 2. This involves filling in the tables describing your baseline and proposed alternative waste management scenarios. The "mixed" material types are defined as the following:

Mixed Metals: Steel 71% , Aluminum 29%.
Mixed Plastics: HDPE 46%, LDPE 15%, PET 40%.
Mixed Recyclables: Aluminum Cans 1.4%, Steel 3.4%, Glass 5.2%, HDPE 1.0%, LDPE 0.3%, PET 0.9%, Corrugated Cardboard 46.8%, Magazines/Third-class Mail 5.5%, Newspaper 23%, Office Paper 8.8%, Phonebooks 0.2%, Textbooks 0.4%, Dimensional Lumber 2.8%
Mixed Organics: Food Scraps 48%, Yard Trimmings 52%.
Mixed MSW- represents the entire municipal solid waste stream as disposed.

-- Fill in the data requested in Steps 3–5. WARM will use the answers to these questions to customize GHG estimates to reflect your waste management situation. For example, you are asked for data on transportation distances and on your landfill gas recovery systems, if applicable. If the requested data is not available, WARM will use the national average defaults.

-- Step 6 allows you to customize your report, with your name, organization, and project period.

-- In Step 7, choose whether to have your results displayed in either MTCE or $MTCO_2E$.

-- To view the energy consumption impacts of your waste management scenarios, check the box in Step 8.

-- Once you have completed Steps 1–8 on the "Analysis Inputs" sheet, WARM will calculate the GHG emissions attributable to the baseline and alternative waste management scenarios you have specified. Emissions calculations are presented on separate output sheets, as described below. From the "Analysis Inputs" sheet, click on a tab at the bottom of the screen for the results sheet you want to view first.

-- The "Summary Report" sheet provides a concise report of GHG emissions from the baseline and alternative waste management scenarios, as well as an estimate of net emissions in the units selected.

-- The "Analysis Results" sheet shows GHG emissions for each scenario in the units selected. You can compare the total impact of the baseline and alternative scenarios, or, if you want more detail, you can scroll down to view GHG emissions or energy results by material type and management practice.

-- If you checked the "Energy Consumption" box on the input sheet, the model provides the equivalent sheets in units of energy consumption.

**USING THE ONLINE VERSION OF WARM**

The online WARM is a simpler version of this Excel© version, with fewer options for customization (e.g., it does not include an option to view emissions phased and/or by gas). You can access the online WARM at the following website: http://www.epa.gov/globalwarming/actions/waste/w-online.htm. The website also includes a User's Guide that gives detailed instructions for using both the online and Excel© version of WARM.

**ASSISTANCE**

If you need additional assistance with using WARM, please email Jennifer Brady at brady.jennifer@epa.gov.

## GHG Emissions Analysis -- Summary Report

Version 9 (7/08)

**GHG Emissions Waste Management Analysis for**
**Prepared by:**
**Project Period for this Analysis: 01/00/00 to 01/00/00**

**GHG Emissions from Baseline Waste Management ($MTCO_2E$):** **(342)**

| Commodity | Tons Recycled | Tons Landfilled | Tons Combusted | Tons Composted | Total $MTCO_2E$ |
|---|---|---|---|---|---|
| Aluminum Cans | 2 | 2 | | NA | (21) |
| Steel Cans | 4 | 2 | | NA | (7) |
| Glass | 7 | 18 | | NA | (1) |
| Magazines/third-class mail | 8 | 11 | | NA | (27) |
| Newspaper | 19 | 5 | | NA | (58) |
| Office Paper | 10 | 4 | | NA | (21) |
| Phonebooks | 0 | 1 | | NA | (2) |
| Textbooks | 1 | 2 | | NA | 1 |
| Dimensional Lumber | 3 | 16 | | NA | (16) |
| Food Scraps | NA | 71 | | | 48 |
| Yard Trimmings | NA | 73 | | | (25) |
| Mixed Paper, Broad | 64 | 50 | | NA | (212) |
| Mixed Paper, Resid. | | 11 | | NA | 2 |
| Mixed Metals | 5 | 5 | | NA | (28) |
| Mixed Plastics | 4 | 31 | | NA | (4) |
| Mixed MSW | | 114 | | NA | 42 |
| Carpet | 1 | 6 | | NA | (4) |
| Personal Computers | 1 | 6 | | NA | (2) |
| Tires | 4 | 7 | | NA | (7) |

**GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$):** **(342)**

| Commodity | Tons Source Reduced | Tons Recycled | Tons Landfilled | Tons Combusted | Tons Composted | Total $MTCO_2E$ |
|---|---|---|---|---|---|---|
| Aluminum Cans | | 2 | 2 | | NA | (21) |
| Steel Cans | | 4 | 2 | | NA | (7) |
| Glass | | 7 | 18 | | NA | (1) |
| Magazines/third-class mail | | 8 | 11 | | NA | (27) |
| Newspaper | | 19 | 5 | | NA | (58) |
| Office Paper | | 10 | 4 | | NA | (21) |
| Phonebooks | | 0 | 1 | | NA | (2) |
| Textbooks | | 1 | 2 | | NA | 1 |
| Dimensional Lumber | | 3 | 16 | | NA | (16) |
| Food Scraps | NA | NA | 71 | | | 48 |
| Yard Trimmings | NA | NA | 73 | | | (25) |
| Mixed Paper, Broad | NA | 64 | 50 | | NA | (212) |
| Mixed Paper, Resid. | NA | | 11 | | NA | 2 |
| Mixed Metals | NA | 5 | 5 | | NA | (28) |
| Mixed Plastics | NA | 4 | 31 | | NA | (4) |
| Mixed MSW | NA | NA | 114 | | NA | 42 |
| Carpet | | 1 | 6 | | NA | (4) |
| Personal Computers | | 1 | 6 | | NA | (2) |
| Tires | | 4 | 7 | | NA | (7) |

**Total Change in GHG Emissions:** **0 $MTCO_2E$**

| This is equivalent to... | | |
|---|---|---|
| Removing | - | Passenger Cars from the Roadway Each Year |

*Note: a negative value (i.e., a value in parentheses) indicates an emission reduction; a positive value indicates an emission increase.*

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-06-004)
-- available on the Internet at http://epa.gov/climatechange/wycd/waste/downloads/fullreport.pdf (5.6 Mb PDF file).

Version 9 (7/08)

# WAste Reduction Model (WARM) -- Inputs

**Use this worksheet to describe the baseline and alternative MSW management scenarios that you want to compare. The shaded areas indicate where you need to enter information.**

**1. Describe the baseline generation and management for the MSW materials listed below. If the material is not generated in your community or you do not want to analyze it, leave it blank or enter 0. Make sure that the total quantity generated equals the total quantity managed.**

| Material | Tons Generated | Tons Recycled | Tons Landfilled | Tons Combusted | Tons Composted |
|---|---|---|---|---|---|
| Aluminum Cans | 4 | 2 | 2 | | NA |
| Steel Cans | 6 | 4 | 2 | | NA |
| Copper Wire | | | | | NA |
| Glass | 26 | 7 | 18 | | NA |
| HDPE | | | | | NA |
| LDPE | | | | | NA |
| PET | | | | | NA |
| Corrugated Cardboard | | | | | NA |
| Magazines/Third-class Mail | 19 | 8 | 11 | | NA |
| Newspaper | 24 | 19 | 5 | | NA |
| Office Paper | 14 | 10 | 4 | | NA |
| Phonebooks | 2 | 0 | 1 | | NA |
| Textbooks | 3 | 1 | 2 | | NA |
| Dimensional Lumber | 19 | 3 | 16 | | NA |
| Medium-density Fiberboard | | | | | NA |
| Food Scraps | 71 | - | 71 | | |
| Yard Trimmings | 73 | - | 73 | | |
| Grass | | NA | | | |
| Leaves | | NA | | | |
| Branches | | NA | | | |
| Mixed Paper (general) | 114 | 64 | 50 | | NA |
| Mixed Paper (primarily residential) | 11 | - | 11 | | NA |
| Mixed Paper (primarily from offices) | | | | | NA |
| Mixed Metals | 11 | 5 | 5 | | NA |
| Mixed Plastics | 35 | 4 | 31 | | NA |
| Mixed Recyclables | | | | | NA |
| Mixed Organics | | NA | | | |
| Mixed MSW | 114 | | 114 | | NA |
| Carpet | 7 | 1 | 6 | | NA |
| Personal Computers | 7 | 1 | 6 | | NA |
| Clay Bricks | | NA | | NA | NA |
| Concrete[1] | | | | NA | NA |
| Fly Ash[2] | | | | NA | NA |
| Tires[3] | 11 | 4 | 7 | | NA |

Please enter data in short tons (1 short ton = 2,000 lbs.)

Please refer to the User's Guide if you need assistance completing this table.

[1] Recycled concrete used as aggregate in the production of new concrete

[2] Recycled fly ash is utilized to displace Portland cement in concrete production.

[3] Recycling tires is defined in this analysis as retreading and does not include other recycling activities (i.e. crumb rubber applications).

**2. Describe the alternative management scenario for the MSW materials generated in the baseline. Any decrease in generation should be entered in the Source Reduction column. Any increase in generation should be entered in the Source Reduction column as a negative value. (Make sure that the total quantity generated equals the total quantity managed.)**

| Material | Baseline Generation | Tons Source Reduced | Tons Recycled | Tons Landfilled | Tons Combusted | Tons Composted |
|---|---|---|---|---|---|---|
| Aluminum Cans | 4 | - | 2 | 2 | | NA |
| Steel Cans | 6 | - | 4 | 2 | | NA |
| Copper Wire | - | | | | | NA |
| Glass | 26 | - | 7 | 18 | | NA |
| HDPE | - | | | | | NA |
| LDPE | - | | | | | NA |
| PET | - | | | | | NA |
| Corrugated Cardboard | - | | | | | NA |
| Magazines/Third-class Mail | 19 | - | 8 | 11 | | NA |
| Newspaper | 24 | | 19 | 5 | | NA |
| Office Paper | 14 | | 10 | 4 | | NA |

| | | | | | | |
|---|---|---|---|---|---|---|
| Phonebooks | 2 | | 0 | 1 | | NA |
| Textbooks | 3 | | 1 | 2 | | NA |
| Dimensional Lumber | 19 | | 3 | 16 | | NA |
| Medium-density Fiberboard | - | | | | | NA |
| Food Scraps | 71 | NA | NA | 71 | | |
| Yard Trimmings | 73 | NA | NA | 73 | | |
| Grass | - | NA | NA | | | |
| Leaves | - | NA | NA | | | |
| Branches | - | NA | NA | | | |
| Mixed Paper, Broad | 114 | NA | 64 | 50 | | NA |
| Mixed Paper, Resid. | 11 | NA | - | 11 | | NA |
| Mixed Paper, Office | - | NA | | | | NA |
| Mixed Metals | 11 | NA | 5 | 5 | | NA |
| Mixed Plastics | 35 | NA | 4 | 31 | | NA |
| Mixed Recyclables | - | NA | | | | NA |
| Mixed Organics | - | NA | NA | | | |
| Mixed MSW | 114 | NA | NA | 114 | | NA |
| Carpet | 7 | | 1 | 6 | | NA |
| Personal Computers | 7 | | 1 | 6 | | NA |
| Clay Bricks | - | | NA | | NA | NA |
| Concrete[1] | - | NA | | | NA | NA |
| Fly Ash[2] | - | NA | | | NA | NA |
| Tires[3] | 11 | | 4 | 7 | | NA |

Please enter data in short tons (1 short ton = 2,000 lbs.)

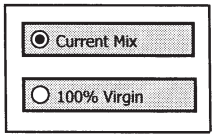
Please refer to the User's Guide if you need assistance completing this table.

[1] Recycled concrete used as aggregate in the production of new concrete

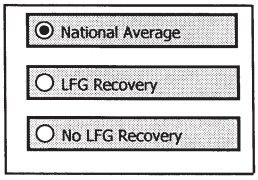
[2] Recycled fly ash is utilized to displace Portland cement in concrete production.

[3] Recycling tires is defined in this analysis as retreading and does not include other recycling activities (i.e. crumb rubber applications).

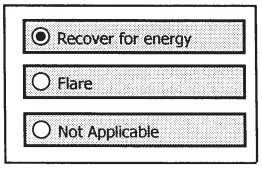
**3. To estimate the benefits from source reduction, EPA usually assumes that the material that is source reduced would have been manufactured from the current mix of virgin and recycled inputs. However, you may choose to estimate the emission reductions from source reduction under the assumption that the material would have been manufactured from 100% virgin inputs in order to obtain an upper bound estimate of the benefits from source reduction. Select which assumption you want to use in the analysis.**




**4a. The emissions from landfilling depends on whether the landfill where your waste is disposed has a landfill gas (LFG) control system. If you do not know whether your landfill has LFG control, select "National Average" to calculate emissions based on the estimated proportions of landfills with LFG control in 2004. If your landfill does not have a LFG system, select "No LFG Recovery" and go to question 5. If a LFG system is in place at your landfill, select "LFG Recovery" and click one of the indented buttons in 4b to indicate whether LFG is recovered for energy or flared.**




**4b. If your landfill has gas recovery, does it recover the methane for energy or flare it?**




**4c. If your landfill has gas recovery, what is the efficiency of the system?**
**The national analysis assumes a gas collection system efficiency of 75%. If you do not know what the efficiency of your system is, you may want to use 75% as a default.**

| Landfill Gas Collection System Efficiency: | 75% |
|---|---|

**5a. Emissions that occur during transport of materials to the management facility are included in this model. You may use default transport distances, indicated in the table below, or provide information on the transport distances for the various MSW management options.**

(●) Use Default Distances
( ) Provide Information

**5b. If you have chosen to provide information, please fill in the table below.**
**Distances should be from the curb to the landfill, combustor, or material recovery facility (MRF).**
***Please note that if you chose to provide information, you must provide distances for both the baseline and the alternative scenarios.**

| Management Option | Default Distance (Miles) | Distance (Miles) |
|---|---|---|
| Landfill | 20 | |
| Combustion | 20 | |
| Recycling | 20 | |
| Composting | 20 | |

**6. If you wish to personalize your results report, input your name & organization, and also specify the project period corresponding to the data you entered above.**

| | |
|---|---|
| Name | |
| Organization | |

| Project Period | From | | to | |
|---|---|---|---|---|

**7 Please select between displaying units in metric tons of carbon equivalent (MTCE) and metric tons of carbon dioxide equivalent ($MTCO_2E$).**

( ) MTCE
(●) MTCO2E

**8. Check the button below to see results in units of energy consumption (million BTU) and equivalencies (e.g., cars off the road).**

☐ Energy Consumption (million BTU)

**Congratulations! You have finished all the inputs.**
**A summary of your results awaits you on the sheet(s) titled "Summary Report."**
**For more detailed analyses of GHG emissions, see the sheet(s) titled "Analysis Results."**

## GHG Emissions Analysis -- Summary Report

Version 9 (7/08)

**GHG Emissions Waste Management Analysis for**
**Prepared by:**
**Project Period for this Analysis: 01/00/00 to 01/00/00**

**GHG Emissions from Baseline Waste Management ($MTCO_2E$):** **(342)**

| Commodity | Tons Recycled | Tons Landfilled | Tons Combusted | Tons Composted | Total $MTCO_2E$ |
|---|---|---|---|---|---|
| Aluminum Cans | 2 | 2 | | NA | (21) |
| Steel Cans | 4 | 2 | | NA | (7) |
| Glass | 7 | 18 | | NA | (1) |
| Magazines/third-class mail | 8 | 11 | | NA | (27) |
| Newspaper | 19 | 5 | | NA | (58) |
| Office Paper | 10 | 4 | | NA | (21) |
| Phonebooks | 0 | 1 | | NA | (2) |
| Textbooks | 1 | 2 | | NA | 1 |
| Dimensional Lumber | 3 | 16 | | NA | (16) |
| Food Scraps | NA | 71 | | | 48 |
| Yard Trimmings | NA | 73 | | | (25) |
| Mixed Paper, Broad | 64 | 50 | | NA | (212) |
| Mixed Paper, Resid. | | 11 | | NA | 2 |
| Mixed Metals | 5 | 5 | | NA | (28) |
| Mixed Plastics | 4 | 31 | | NA | (4) |
| Mixed MSW | | 114 | | NA | 42 |
| Carpet | 1 | 6 | | NA | (4) |
| Personal Computers | 1 | 6 | | NA | (2) |
| Tires | 4 | 7 | | NA | (7) |

**GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$):** **(342)**

| Commodity | Tons Source Reduced | Tons Recycled | Tons Landfilled | Tons Combusted | Tons Composted | Total $MTCO_2E$ |
|---|---|---|---|---|---|---|
| Aluminum Cans | | 2 | 2 | | NA | (21) |
| Steel Cans | | 4 | 2 | | NA | (7) |
| Glass | | 7 | 18 | | NA | (1) |
| Magazines/third-class mail | | 8 | 11 | | NA | (27) |
| Newspaper | | 19 | 5 | | NA | (58) |
| Office Paper | | 10 | 4 | | NA | (21) |
| Phonebooks | | 0 | 1 | | NA | (2) |
| Textbooks | | 1 | 2 | | NA | 1 |
| Dimensional Lumber | | 3 | 16 | | NA | (16) |
| Food Scraps | NA | NA | 71 | | | 48 |
| Yard Trimmings | NA | NA | 73 | | | (25) |
| Mixed Paper, Broad | NA | 64 | 50 | | NA | (212) |
| Mixed Paper, Resid. | NA | | 11 | | NA | 2 |
| Mixed Metals | NA | 5 | 5 | | NA | (28) |
| Mixed Plastics | NA | 4 | 31 | | NA | (4) |
| Mixed MSW | NA | NA | 114 | | NA | 42 |
| Carpet | | 1 | 6 | | NA | (4) |
| Personal Computers | | 1 | 6 | | NA | (2) |
| Tires | | 4 | 7 | | NA | (7) |

**Total Change in GHG Emissions:** **0 $MTCO_2E$**

| This is equivalent to... | | |
|---|---|---|
| Removing | - | Passenger Cars from the Roadway Each Year |

*Note: a negative value (i.e., a value in parentheses) indicates an emission reduction; a positive value indicates an emission increase.*

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-06-004)
-- available on the Internet at http://epa.gov/climatechange/wycd/waste/downloads/fullreport.pdf (5.6 Mb PDF file).

# WAste Reduction Model (WARM) -- Results

| | |
|---|---|
| **Total GHG Emissions from Baseline MSW Generation and Management ($MTCO_2E$):** | (342) |
| **Total GHG Emissions from Alternative MSW Generation and Management ($MTCO_2E$):** | (342) |
| **Incremental GHG Emissions ($MTCO_2E$):** | 0 |

**$MTCO_2E$ = metric tons of carbon dioxide equivalent**

## Per Ton Estimates of GHG Emissions for Alternative Management Scenarios

| Material | GHG Emissions per Ton of Material Source Reduced ($MTCO_2E$) | GHG Emissions per Ton of Material Recycled ($MTCO_2E$) | GHG Emissions per Ton of Material Landfilled ($MTCO_2E$) | GHG Emissions per Ton of Material Combusted ($MTCO_2E$) | GHG Emissions per Ton of Material Composted ($MTCO_2E$) |
|---|---|---|---|---|---|
| Aluminum Cans | (8.29) | (13.67) | 0.04 | 0.06 | NA |
| Steel Cans | (3.19) | (1.80) | 0.04 | (1.54) | NA |
| Copper Wire | (7.41) | (4.97) | 0.04 | 0.06 | NA |
| Glass | (0.58) | (0.28) | 0.04 | 0.05 | NA |
| HDPE | (1.80) | (1.40) | 0.04 | 0.91 | NA |
| LDPE | (2.29) | (1.71) | 0.04 | 0.91 | NA |
| PET | (2.11) | (1.55) | 0.04 | 1.07 | NA |
| Corrugated Cardboard | (5.59) | (3.11) | 0.33 | (0.66) | NA |
| Magazines/third-class mail | (8.66) | (3.07) | (0.33) | (0.48) | NA |
| Newspaper | (4.89) | (2.80) | (0.89) | (0.75) | NA |
| Office Paper | (8.01) | (2.85) | 1.76 | (0.63) | NA |
| Phonebooks | (6.34) | (2.66) | (0.89) | (0.75) | NA |
| Textbooks | (9.18) | (3.11) | 1.76 | (0.63) | NA |
| Dimensional Lumber | (2.02) | (2.46) | (0.52) | (0.79) | NA |
| Medium Density Fiberboard | (2.22) | (2.47) | (0.52) | (0.79) | NA |
| Food Scraps | NA | NA | 0.68 | (0.18) | (0.20) |
| Yard Trimmings | NA | NA | (0.34) | (0.22) | (0.20) |
| Grass | NA | NA | 0.15 | (0.22) | (0.20) |
| Leaves | NA | NA | (0.58) | (0.22) | (0.20) |
| Branches | NA | NA | (0.52) | (0.22) | (0.20) |
| Mixed Paper, Broad | NA | (3.54) | 0.27 | (0.66) | NA |
| Mixed Paper, Resid. | NA | (3.54) | 0.19 | (0.66) | NA |
| Mixed Paper, Office | NA | (3.42) | 0.38 | (0.60) | NA |
| Mixed Metals | NA | (5.26) | 0.04 | (1.07) | NA |
| Mixed Plastics | NA | (1.52) | 0.04 | 0.97 | NA |
| Mixed Recyclables | NA | (2.88) | 0.08 | (0.60) | NA |
| Mixed Organics | NA | NA | 0.15 | (0.20) | (0.20) |
| Mixed MSW | NA | NA | 0.37 | (0.13) | NA |
| Carpet | (4.03) | (7.23) | 0.04 | 0.37 | NA |
| Personal Computers | (55.97) | (2.27) | 0.04 | (0.20) | NA |
| Clay Bricks | (0.29) | NA | 0.04 | NA | NA |
| Concrete | NA | (0.01) | 0.04 | NA | NA |
| Fly Ash | NA | (0.87) | 0.04 | NA | NA |
| Tires | (4.01) | (1.84) | 0.04 | 0.08 | NA |

## GHG Emissions from Baseline Management of Municipal Solid Wastes

| Material | Baseline Generation of Material (Tons) | Estimated Recycling (Tons) | Annual GHG Emissions from Recycling ($MTCO_2E$) | Estimated Landfilling (Tons) | Annual GHG Emissions from Landfilling ($MTCO_2E$) | Estimated Combustion (Tons) | Annual GHG Emissions from Combustion ($MTCO_2E$) | Estimated Composting (Tons) | Annual GHG Emissions from Composting ($MTCO_2E$) | Total Annual GHG Emissions ($MTCO_2E$) |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum Cans | 4 | 2 | (21) | 2 | 0 | 0 | 0 | NA | NA | (21) |
| Steel Cans | 6 | 4 | (7) | 2 | 0 | 0 | 0 | NA | NA | (7) |
| Copper Wire | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Glass | 26 | 7 | (2) | 18 | 1 | 0 | 0 | NA | NA | (1) |
| HDPE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| LDPE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| PET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Corrugated Cardboard | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Magazines/third-class mail | 19 | 8 | (23) | 11 | (4) | 0 | 0 | NA | NA | (27) |
| Newspaper | 24 | 19 | (53) | 5 | (5) | 0 | 0 | NA | NA | (58) |
| Office Paper | 14 | 10 | (28) | 4 | 7 | 0 | 0 | NA | NA | (21) |
| Phonebooks | 2 | 0 | (1) | 1 | (1) | 0 | 0 | NA | NA | (2) |
| Textbooks | 3 | 1 | (2) | 2 | 4 | 0 | 0 | NA | NA | 1 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dimensional Lumber | 19 | 3 | (7) | 16 | (9) | 0 | 0 | NA | NA | (16) |
| Medium Density Fiberboard | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Food Scraps | 71 | NA | NA | 71 | 48 | 0 | 0 | 0 | 0 | 48 |
| Yard Trimmings | 73 | NA | NA | 73 | (25) | 0 | 0 | 0 | 0 | (25) |
| Grass | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Leaves | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Branches | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mixed Paper, Broad | 114 | 64 | (225) | 50 | 14 | 0 | 0 | NA | NA | (212) |
| Mixed Paper, Resid. | 11 | 0 | 0 | 11 | 2 | 0 | 0 | NA | NA | 2 |
| Mixed Paper, Office | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Mixed Metals | 11 | 5 | (28) | 5 | 0 | 0 | 0 | NA | NA | (28) |
| Mixed Plastics | 35 | 4 | (5) | 31 | 1 | 0 | 0 | NA | NA | (4) |
| Mixed Recyclables | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Mixed Organics | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mixed MSW | 114 | 0 | NA | 114 | 42 | 0 | 0 | NA | NA | 42 |
| Carpet | 7 | 1 | (4) | 6 | 0 | 0 | 0 | NA | NA | (4) |
| Personal Computers | 7 | 1 | (2) | 6 | 0 | 0 | 0 | NA | NA | (2) |
| Clay Bricks | 0 | NA | NA | 0 | 0 | NA | NA | NA | NA | 0 |
| Concrete | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA | 0 |
| Fly Ash | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA | 0 |
| Tires | 11 | 4 | (7) | 7 | 0 | 0 | 0 | NA | NA | (7) |
| **Total** | 568 | 131 | (418) | 436 | 76 | 0 | 0 | 0 | 0 | (342) |

## GHG Emissions from Projected Alternative Management of Municipal Solid Wastes

| Material | Baseline Generation of Material (Tons) | Projected Source Reduction (Tons) | Annual GHG Emissions from Source Reduction ($MTCO_2E$) | Projected Recycling (Tons) | Annual GHG Emissions from Recycling ($MTCO_2E$) | Projected Landfilling (Tons) | Annual GHG Emissions from Landfilling ($MTCO_2E$) | Projected Combustion (Tons) | Annual GHG Emissions from Combustion ($MTCO_2E$) | Projected Composting (Tons) | Annual GHG Emissions from Composting ($MTCO_2E$) | Total Annual GHG Emissions ($MTCO_2E$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum Cans | 4 | 0 | 0 | 2 | (21) | 2 | 0 | 0 | 0 | NA | NA | (21) |
| Steel Cans | 6 | 0 | 0 | 4 | (7) | 2 | 0 | 0 | 0 | NA | NA | (7) |
| Copper Wire | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Glass | 26 | 0 | 0 | 7 | (2) | 18 | 1 | 0 | 0 | NA | NA | (1) |
| HDPE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| LDPE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| PET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Corrugated Cardboard | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Magazines/third-class mail | 19 | 0 | 0 | 8 | (23) | 11 | (4) | 0 | 0 | NA | NA | (27) |
| Newspaper | 24 | 0 | 0 | 19 | (53) | 5 | (5) | 0 | 0 | NA | NA | (58) |
| Office Paper | 14 | 0 | 0 | 10 | (28) | 4 | 7 | 0 | 0 | NA | NA | (21) |
| Phonebooks | 2 | 0 | 0 | 0 | (1) | 1 | (1) | 0 | 0 | NA | NA | (2) |
| Textbooks | 3 | 0 | 0 | 1 | (2) | 2 | 4 | 0 | 0 | NA | NA | 1 |
| Dimensional Lumber | 19 | 0 | 0 | 3 | (7) | 16 | (9) | 0 | 0 | NA | NA | (16) |
| Medium Density Fiberboard | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Food Scraps | 71 | NA | NA | NA | NA | 71 | 48 | 0 | 0 | 0 | 0 | 48 |
| Yard Trimmings | 73 | NA | NA | NA | NA | 73 | (25) | 0 | 0 | 0 | 0 | (25) |
| Grass | 0 | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Leaves | 0 | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Branches | 0 | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mixed Paper, Broad | 114 | NA | NA | 64 | (225) | 50 | 14 | 0 | 0 | NA | NA | (212) |
| Mixed Paper, Resid. | 11 | NA | NA | 0 | 0 | 11 | 2 | 0 | 0 | NA | NA | 2 |
| Mixed Paper, Office | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Mixed Metals | 11 | NA | NA | 5 | (28) | 5 | 0 | 0 | 0 | NA | NA | (28) |
| Mixed Plastics | 35 | NA | NA | 4 | (5) | 31 | 1 | 0 | 0 | NA | NA | (4) |
| Mixed Recyclables | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Mixed Organics | 0 | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mixed MSW | 114 | NA | NA | NA | NA | 114 | 42 | 0 | 0 | NA | NA | 42 |
| Carpet | 7 | 0 | 0 | 1 | (4) | 6 | 0 | 0 | 0 | NA | NA | (4) |
| Personal Computers | 7 | 0 | 0 | 1 | (2) | 6 | 0 | 0 | 0 | NA | NA | (2) |
| Clay Bricks | 0 | 0 | 0 | NA | NA | 0 | 0 | NA | NA | NA | NA | 0 |
| Concrete | 0 | NA | NA | 0 | 0 | 0 | 0 | NA | NA | NA | NA | 0 |
| Fly Ash | 0 | NA | NA | 0 | 0 | 0 | 0 | NA | NA | NA | NA | 0 |
| Tires | 11 | 0 | 0 | 4 | (7) | 7 | 0 | 0 | 0 | NA | NA | (7) |
| **Total** | 568 | 0 | 0 | 131 | (418) | 436 | 76 | 0 | 0 | 0 | 0 | (342) |

## Incremental GHG Emissions from Projected Alternative Management of Municipal Solid Wastes

Analysis Results (MTCO2E)

| Material | Source Reduction (Tons) | Incremental GHG Emissions from Source Reduction ($MTCO_2E$) | Incremental Recycling (Tons) | Incremental GHG Emissions from Recycling ($MTCO_2E$) | Incremental Landfilling (Tons) | Incremental GHG Emissions from Landfilling ($MTCO_2E$) | Incremental Combustion (Tons) | Incremental GHG Emissions from Combustion ($MTCO_2E$) | Incremental Composting (Tons) | Incremental GHG Emissions from Composting ($MTCO_2E$) | Total Incremental GHG Emissions ($MTCO_2E$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum Cans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Steel Cans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Copper Wire | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Glass | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| HDPE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| LDPE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| PET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Corrugated Cardboard | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Magazines/third-class mail | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Newspaper | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Office Paper | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Phonebooks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Textbooks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Dimensional Lumber | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Medium Density Fiberboard | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Food Scraps | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Yard Trimmings | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grass | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Leaves | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Branches | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mixed Paper, Broad | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Mixed Paper, Resid. | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Mixed Paper, Office | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Mixed Metals | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Mixed Plastics | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Mixed Recyclables | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Mixed Organics | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mixed MSW | NA | NA | NA | NA | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Carpet | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Personal Computers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| Clay Bricks | 0 | 0 | NA | NA | 0 | 0 | NA | NA | NA | NA | 0 |
| Concrete | NA | NA | 0 | 0 | 0 | 0 | NA | NA | NA | NA | 0 |
| Fly Ash | NA | NA | 0 | 0 | 0 | 0 | NA | NA | NA | NA | 0 |
| Tires | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 0 |
| **Total** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-06-004)
-- available on the Internet at http://epa.gov/climatechange/wycd/waste/downloads/fullreport.pdf (5.6 Mb PDF file).

b) Emissions estimates provided by this model are intended to support voluntary GHG measurement and reporting initiatives.