

**USER'S GUIDE**  
for the  
**LMOP LOCATOR**

**Web Version 4.0**



**A Tool to Search for  
Potential End Users or Landfills**

prepared for

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# User's Guide for the LMOP LOCATOR

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## Introduction

This document describes how to utilize the LMOP Locator tool, a software application designed in Microsoft® Access that searches for either potential end users of landfill gas near a landfill(s) or landfills near a potential end user(s). The tool's user must provide basic location information for the landfill or potential end user for the tool to perform searches. This document describes how to use the tool to search for potential end users or landfills for one or more cases at a time, select those results that are of most interest, and export the results to a Microsoft® Excel file.

## Overview

For the pool of potential end users, the LMOP Locator's database contains select data from EPA's National Emissions Inventory (NEI 2005 version 2 released in 2009), EPA's Boiler/Process Heater NESHAP 2008 Survey database (accessed July 2011), EPA's Renewable Fuel Standards (RFS) List of Registered Fuel Providers (2008 data), and US DATA Corporation (2011 data). Most facilities in the NEI (emitters of hazardous and/or criteria air pollutants), excluding landfills, portable facilities, and facilities such as gas stations, were included in the tool. All facilities were included from the Boiler/Process Heater survey database. From the RFS List, ethanol and biodiesel generators were selected for inclusion in the tool. Businesses that may be good candidates for landfill gas beneficial use were selected from US DATA Corporation's database of United States businesses based on their SIC codes. See page 11 for additional discussion about the pool of potential end users.

The tool is designed to assist landfill owners/operators and other interested parties by allowing the user to search by latitude/longitude, zip code, and/or state/county for a single landfill or multiple landfills, using the combined data of the above data sources as the search pool. The tool allows users to select the resulting potential end users that are of most interest and export the results to Excel.

For landfills, the LMOP Locator contains data for all landfills in the current LMOP Landfill and LFG Energy Project database. The same search and exporting options are available to the user when searching for landfills near a potential end user as for searching for potential end users near a landfill.

## I Installing and Opening the Tool

### System Requirements

You will need Access XP software or a more recent version of Access to use this tool. It is recommended that you have a minimum of 128 megabytes of RAM and a minimum of a Pentium II processor. In addition, you will need a minimum of 180 megabytes of space on your hard drive to accommodate the tool, plus about 100 megabytes additional space in order for the tool to be able to perform its matching function (the amount of additional space may be more or less than 100 megabytes; it depends on if you are searching for end users for one landfill or several landfills at a time, and how broad the search criteria are).

### Step 1: Download and Unzip the Zip File

Download the LMOPLocatorV4.0-Web.zip file from the LMOP website to your hard drive and unzip it; the .zip file contains the LMOPLocatorV4.0-Web.mdb file, two Excel template (.xlt) files, and this User's Guide (.pdf) file.

### Step 2: Open the Tool

**[IMPORTANT: The user must have their macro security settings in Microsoft® Access set to "Enable All Macros" before opening the tool.]**

Open LMOPLocatorV4.0-Web.mdb. The tool can be opened using Access XP, Access 2007, or Access 2010. The first screen that will open is an About screen, shown in Image 1. After several seconds, the next screen will open, which is the Main Search Screen, shown in Image 2.



Image 1: About Screen



Image 2: Main Search Screen

On the left side of the Main Search Screen is a brief description of the tool's data sources. In the middle of the Main Search Screen are three main buttons: 1. the 'Single Search for Potential End Users or Landfills' button opens the Single Search Form; 2. the 'Batch Search for Potential End Users or Landfills' button opens the Batch Search Form; and 3. the 'View Previous Matches for Potential End Users or Landfills' button opens a small window in which the user chooses to see previous end user or landfill matches which then causes the appropriate Matches Form to open. At the bottom right on the Main Search Screen is the 'Exit Access' button, which doesn't just close the LMOP Locator, but rather completely closes the Access application.

## II Running a Single Search

### Step 3: Enter Search Criteria for Landfill or Potential End User

The Single Search Form is most useful when you need to find potential end users or landfills for only one or just a few cases. Click the 'Single Search for Potential End Users or Landfills' button on the Main Search Screen to open the Single Search Form, which is shown in Image 3. To begin your search, you will need to choose whether you want to search for potential end users or landfills by selecting the appropriate radio button in the first frame at the top of the form. You will then need to fill in the landfill's or potential end user's name or some other unique identifier in the 'Landfill Name' or 'End User Name' entry box. Some examples of landfill identifiers (when searching for potential end users) are: Caswell County Landfill, Caswell County Landfill, ID #45, or Caswell County LF - Run 1. Some examples of potential end user identifiers (when searching for landfills) are: Hanson Brick Facility, Smurfit-Stone Corporation Plant #20, or Interface Carpet - Georgia Plant.

Image 3: Single Search Form

The default distance (radius) for latitude/longitude searches is 10 miles. If you will be searching by latitude/longitude and would like to change the search radius, you can select from the drop-down list (2, 5, 10, 15, 20, 25, 50) or enter another distance in miles (integer or decimal, no greater than 50 miles). If you enter a distance that is not on the drop-down list, you will be prompted by the tool as to whether you would like this new distance added permanently to the list of options. (If you select “No” and run a search as normal, the distance will not be added to the list of choices, but if you select “No” and don’t actually run a search, the distance will get added to the list of choices, because of how the code in the tool is written.) Next, fill in either latitude and longitude, zip code, or state/county, or two or three of these in combination. Latitude and longitude must be in decimal format (if you have latitude/longitude in degrees, minutes, seconds format, you will need to convert to decimal format before entering the latitude/longitude into the tool\*). Zip code must be in five-digit format (i.e., no four-digit extension). State is not a search criterion on its own, but rather is shown so that the correct county can be selected. Therefore, if you select a state, a county must also be selected. Once a state is selected (highlighted), a list of the counties in that state will appear in the ‘County’ box for you to select from (you may only select one county at a time). When more than one of the three search options is selected, they must all be in the same state.

If you are searching solely by latitude/longitude for a location that is near a state border and the search distance you’ve selected around the location extends into another state(s), the tool will provide matches in the other state(s). However, if you run the search with that same latitude/longitude and also search by zip code and/or state/county, the tool will limit the results to the state the location is located in. For example, if a potential end user is located in Georgia near the South Carolina border, and you search on just the latitude/longitude with a certain search distance, you may get six landfill matches, three in Georgia and three in South Carolina. If you then do another search with the same latitude/longitude but this time also search on zip code and/or state/county, you will “lose” the three South Carolina landfill matches, but may gain more Georgia landfill matches from the zip code and state/county criteria. Therefore, if the potential end user/landfill you are searching on is located near a state border and you are interested in matches in a neighboring state(s), it is recommended that you only search by latitude/longitude. Then if you are interested in what other possible matches you could find in the same state as the potential end user/landfill by searching on zip code and/or state/county, re-do the search by adding these criteria to the latitude/longitude, understanding that your results will “lose” any out-of-state results from the first search.

\*Conversion for degrees, minutes, seconds to decimal format is provided on page 10.

#### **Step 4: Search for Matches**

After entering all the search criteria you would like, click on the ‘Find Matches’ button to start the matching process. If a previous search has been run and the search criteria are still saved in the tool, a window will pop up asking if you want to clear your previous search criteria. If you choose not to clear your previous search criteria, the landfill/potential end user name (or other identifier) you have just entered cannot be the same as that for the previous search(es). Each landfill/potential end user name (identifier) must be unique, unless you choose to clear out the previous search criteria. If you try to run the tool using an identical identifier without clearing out the previous search criteria, the tool will give an error message and will not run the search. When the search is completed, if any matches have been found, the appropriate Matches Form will open automatically; if no matches were found, a small window will pop up letting you know this.

The tool does not allow a user to search for potential end users for a landfill and for landfills for a potential end user at the same time. For example, if you run a search for potential end users for a landfill and then decide to run a search for landfills for a potential end user, and when you click on the ‘Find Matches’ button, you select to NOT clear out the previous search criteria, the search will be done on both the first and second set of search criteria you entered, but both searches will be done to look for landfills, because that is the current radio button that is selected at the top of the form. The tool will use the first set of search criteria as if they were for a potential end user, not a landfill.

#### **Step 5: Use Other Buttons on the Form**

In addition to the ‘Find Matches’ button, there are several other buttons on the Single Search Form. All buttons on the Single Search Form are described in Table 1.

**Table 1: Single Search Form Buttons**

Button	Description
Find Matches	Runs the matching function for the search criteria entered by the user.
View Previous Matches	Opens a Matches Form, showing matches from the previous search. Shows either previous potential end user matches or landfill matches depending on which radio button at the top of the form is selected.
View Previous Search Criteria	Opens a form for the user to view the previous search criteria.
Fill Previous Search Criteria into Form	Fills the previous search criteria into the Single Search Form.
Clear Previous Search Criteria	Clears the previous search criteria (single or batch) from the table they are stored in.
Clear Form	Clears all search criteria from the Single Search Form.
Clear State and County Selections	Clears just the state and county selections the user has made (if any).
State and County FIPS Code Lookup	Opens a form showing state and county FIPS (Federal Information Processing Standards Publications) codes used in the tool.
Return to Main	Closes the Single Search Form and returns to the Main Search Screen.

### III Running a Batch Search

#### Step 6: Select Already Prepared File

The Batch Search Form is most useful when you need to find potential end users for several landfills at one time or landfills for several potential end users at one time, and do not want to manually enter the individual search criteria for each landfill/end user in the Single Search Form. Click the 'Batch Search for Potential End Users or Landfills' button on the Main Search Screen to open the Batch Search Form, shown in Image 4.

**Image 4: Batch Search Form**

Click on the 'Help' button in the middle of the form to open the Help Form which shows the field specifications for batch files (also shown in Table 2 in this manual). Click on the 'Print' button within the Help Form to print the field specifications. Your batch file can have field headers or not; if it does have field headers, they must be the specified names shown in the Help Form/Table 2. Whether your file has field headers or not, the fields need to be in the correct order, which is from left to right in your file as they are shown from top to bottom in the Help Form/Table 2. Your batch file must follow the field specifications listed in the Help Form/Table 2, e.g., the State FIPs and County FIPs fields must be formatted as text (not numbers), State FIPs must have two digits (e.g., 08), and County FIPs must have three digits (e.g., 007).

To begin your search, you will need to choose whether you want to search for potential end users or landfills by selecting the appropriate radio button in the first frame at the top of the form. Then select whether your batch file is an Excel file or a comma-delimited text file by clicking the appropriate radio button, select whether your batch file has field headers or not by clicking the appropriate radio button, and then click the 'Browse' button to select your batch file from its location on your computer. Click the 'Upload!' button to import the data from the batch file into the tool. **The limit on the number of unique identifiers (records) you may have in your batch file that you upload is 10.**

If a previous search has been run (either a single or batch search) and the search criteria are still saved in the tool, a window will pop up asking if you want to clear the previous search criteria. If you choose not to clear the previous criteria, none of the landfill/end user names (identifiers) in your batch file can be the same as any for the previous search(es). Whether or not you clear any previous criteria, each landfill/end user name (identifier) within your batch file must be unique.

State and County FIPs codes can be determined by clicking on the State and County FIPS Code Lookup button on the Batch Search Form.

**If your batch file is an Excel file (as opposed to a text file), it will need to be an .xls file (Excel XP) as the tool will not be able to upload an .xlsx (Excel 2007) file.**

**Table 2: Batch File Field Specifications**

Field Name	Specifications	Data in Field
BatchYCoord	<b>Number</b> (can have decimals)	Latitude in decimal format
BatchXCoord	<b>Number</b> (can have decimals)	Longitude in decimal format
BatchZip	<b>Text</b> (5 numbers)	<b>5-digit</b> zip code (e.g., 35881)
BatchStateFIPS	<b>Text</b> (2 numbers)	<b>2-digit</b> state FIPS code (e.g., 08)
BatchCountyFIPS	<b>Text</b> (3 numbers)	<b>3-digit</b> county FIPS code (e.g., 025)
BatchRecordID	<b>Text</b> (up to 255 characters)	Unique Landfill name or Potential End User name
BatchDistance	<b>Number</b> (can have decimals)	Distance in miles for lat/long search (not greater than 50 miles)

### **Step 7: Search for Matches**

Click on the 'Find Matches' button to start the matching process. When the search is completed, if any matches have been found, the appropriate Matches Form will open automatically; if no matches were found, a small window will pop up letting you know this.

### **Step 8: Use Other Buttons on the Form**

Several buttons on the Batch Search Form have the same function as those on the Single Search Form. All buttons on the Batch Search Form are described in Table 3.



**Table 3: Batch Search Form Buttons**

<b>Button</b>	<b>Description</b>
Help	Opens the Help Form which shows the field specifications for batch files.
Browse	Opens a window for the user to select a batch file from its location on their computer.
Upload!	Uploads the search criteria from the selected batch file to the tool.
Find Matches	Runs the matching function for the search criteria in the batch file.
View Previous Matches	Opens a Matches Form, showing matches from the previous search. Shows either previous potential end user matches or landfill matches depending on which radio button at the top of the form is selected.
View Previous Search Criteria	Opens a form so the user can view the previous search criteria. (Shows the most recently uploaded batch file search criteria if any have been uploaded.)
Clear Uploaded Files	Clears the previous search criteria (single or batch) from the table they are stored in.
State and County FIPS Code Lookup	Opens a form showing state and county FIPS (Federal Information Processing Standards Publications) codes used in the tool.
Return to Main	Closes the Batch Search Form and returns to the Main Search Screen.

## **IV      Reviewing the Results**

### **Step 9: Review and Select Results**

Once you have run the matching function from either the Single Search Form or Batch Search Form, if there are any matches based on the entered criteria, the End User Matches Form or Landfill Matches Form will automatically open to display the matches, depending on which type of search you performed. As shown in Images 5 and 6, the Matches Forms have three different main sections: the top section (in green) shows the search criteria, including the landfill/end user name (identifier); the middle section shows facility/landfill level information for each match, indicates which search criteria the match was made on, and has some command buttons; and the bottom section shows combustion unit/project-level data for each facility/landfill (although not all facilities/landfills in the tool's data set have combustion unit/project-level data).

The records within the Matches Forms are sorted in a particular order: first, alphabetically by the landfill/end user name or identifier (this sorting is relevant only when you have searched on more than one landfill/end user at a time via a batch search); secondly, all the facilities/landfills that matched on latitude/longitude (if you searched on this) are listed by increasing distance from the landfill/end user; next, facilities/landfills that matched on zip code (if you searched on this) are listed alphabetically by facility/landfill name; and lastly, facilities/landfills that matched on county (if you searched on this) are listed alphabetically by facility/landfill name. For each matching facility that has combustion unit data, the unit-level data are listed in ascending numerical order by Unit ID. For each matching landfill that has project data, the project-level data are listed in ascending chronological order by project start date.

**End User Matches Form**

**Facility Matches**

Search Criteria: Example Landfill Latitude: 35.8930 Zip Code: Longitude: -78.8800 County, State:

Site ID: NEI43956 Facility Name: BOC Gases

Include in Export? Select All Un-Select All

**Matched On:**

Latitude/Longitude: Y Zip Code: N County: N Distance: 0.467

Latitude: 35.893333 Longitude: -78.88834 State: NC County: Durham County

**Physical Address:**

Street Address: 11 Triangle Drive Street Address2: City: Research Triangle Park State: NC Zip Code: 27709

**Mailing Address:**

Street Address: Street Address2: City: State: Zip Code: SIC: 325998 NAICS:

Export Main Single Batch SICs NAICS

Unit ID: G-14

Unit Description: natural-gas fired boiler (2.925 mmBtu/hr heat input)

Design Capacity:

Record: 1 of 2 No Filter Search

Image 5: Example of End User Matches Form

**Landfill Matches Form**

**Landfill Matches**

Search Criteria: Example End User Latitude: 35.7900 Zip Code: Longitude: -78.6535 County, State:

Landfill ID #: 1066 Landfill Name: Wilder's Grove Landfill

Include in Export? Select All Un-Select All

**Matched On:**

Latitude/Longitude: Y Zip Code: N County: N Distance: 4.8541

Latitude: 35.789 Longitude: -78.5669 State: NC County: Wake County

**Physical Address:**

Street Address: 4120 New Bern Avenue City: Raleigh State: NC Zip Code: 27610

**Waste-in-Place:** 5,600,000 tons

**Annual Acceptance Rate:** 0 tons/yr

**LFG Collection System in Place?:** Yes

**LFG Generated:** mmscfd

**LFG Collected:** 2.4 mmscfd

**Flares in Place?:** Yes

**LFG Flared:** 0.6 mmscfd

**Year Opened:** 1972

**Year Closed:** 1997

**Landfill Status:** Closed

**Landfill Owner:** City of Raleigh Solid Waste Service

**Contact Name:** Gerald Latta

**Contact Phone:** 919-831-6890

Project ID: 1139

Expansion ID: 0

LFG Project Type: Boiler

Project Status: Operational

Project Start Date: 12/1/1989

LFG Flow to Project: 0.8 mmscfd

MW Capacity: MW

Record: 1 of 2 No Filter Search

Image 6: Example of Landfill Matches Form

If you searched on more than one search option and a facility/landfill matched on more than one of them, the facility/landfill is listed only once in the Matches Form. The 'Matched On' box on the left side of the Matches Forms indicates with "Y" or "N" the search option(s) each facility/landfill matched on. If a facility/landfill matched on latitude/longitude and zip code, the facility/landfill is listed with the other facilities/landfills that matched on latitude/longitude, sorted in the regular manner by increasing distance from the landfill/end user, and also has a "Y" in the Zip Code field of the 'Matched On' box to show that it matched on zip code too.

There are two record scroll bars in the Matches Forms: 1) Facility/landfill records can be scrolled through by using the arrow buttons in the record bar at the very bottom of the form; and 2) For each facility/landfill with combustion unit/project-level data, the unit/project records can be scrolled through using the arrow buttons in the record scroll bar within the unit/project frame (box).

Due to the multiple data sources used in developing the tool, there are some potential end user facilities that are listed more than once within the tool's database (possibly with slightly different facility names or other facility data), so it is recommended that the results be reviewed carefully to determine any duplicates prior to sharing the results with persons outside of LMOP.

To select a facility/landfill to include in the results to be exported to Excel, click the 'Include in Export?' check box at the upper right corner of the Matches Form. To select all records, click the 'Select All' button and to unselect all records, click the 'Un-Select All' button.

#### **Step 10: Export Selected Results to Formatted Excel File**

Once you have selected the facilities you are most interested in as potential end users for the landfill(s) or the landfills you are most interested in as possible gas suppliers for the potential end user(s), you can export the results to a pre-formatted Excel file. There are different template files to use, depending on the results to be exported. For exporting results of a search for potential end users near a landfill, use EUSearchResultsTemplate.xlt; to export landfill search results, use LFSearchResultsTemplate.xlt.

First, open the appropriate template file, select **Save As** from the **File** menu, type a name in the "File name" box that relates to the search you performed (for example, WakeCoNCLF-092011 or InterfaceGA-092011), select '**Microsoft Excel 97-2003 Workbook (.xls)**' in the "Save as type" box, and click on "Save". (You will not be able to export to the .xlt template files nor to .xlsx (Excel 2007) files.) Then click the "Export" button, which will cause a window to pop up for you to select the Excel file you wish to export the data to (the copy you just made).

The template files are formatted for up to 250 records. If you export fewer than 250 records, you may want to delete the extra rows at the bottom of the file or they will be included in the print area; if you export more than 250 records, you may want to copy/paste the formatting from some of the first 250 rows for the additional records. You may need to adjust some row and/or column widths once the data have been exported to the Excel file, so you can view all the data. It is not recommended that you export data to the same Excel file more than once, because the second export will overwrite the data from the first export (which you may or may not want to happen), but also, the formatting could be adversely affected.

Facilities/landfills and any combustion unit/project data that they may have are listed in the same order in the data exported to the Excel file as in the Matches forms and the Reports.

## Step 11: Use Other Buttons on the Form

All buttons on the End User and Landfill Matches Forms are described in Table 4.

**Table 4: Matches Forms Buttons**

<b>Button</b>	<b>Description</b>
Include in Export? (checkbox)	Selects a record to be included in the export to an Excel file.
Select All	Selects all records in the Matches Form to be included in the export to an Excel file.
Un-Select All	Unselects all records in the Matches Form so they will not be included in the export to an Excel file.
Export	Opens a window for user to select Excel file to export all records selected in the Matches form.
Main	Closes the Matches Form and returns to the Main Search Screen.
Single	Closes the Matches Form and returns to the Single Search Form.
Batch	Closes the Matches Form and returns to the Batch Search Form.
SICs (only on the End User Matches Form)	Displays standard industrial classification (SIC) codes used in the tool and their corresponding descriptions.
NAICS (only on the End User Matches Form)	Displays North American industry classification system (NAICS) codes used in the tool and their corresponding descriptions.

## V Compacting the Tool

As users run searches for potential end users/landfills, the LMOP Locator file increases in size. The file should be compacted often so as to decrease its size and therefore improve the functionality (in addition, if you do not have sufficient space on your hard drive, the LMOP Locator tool will not be able to continue to function). Therefore, the database will automatically be compacted each time you exit the application.

### **Conversion for degrees, minutes, seconds (DD MM SS) to decimal format - from Step 3**

Divide SS by 60. Add result to MM. Divide new MM value by 60. Add result to degrees. New value is the coordinate in decimal format.

Example:

Latitude coordinate in DD MM SS format: 35° 44' 56"

To convert to decimal format:  $35 + ((44 + (56/60))/60) = 35.7489$

Longitude coordinate in DD MM SS format: -87° 35' 02"

To convert to decimal format:  $-87 + -((35 + (2/60))/60) = -87.5839$

### **Additional Discussion Regarding Pool of Potential End Users**

As noted in the Overview section on page 1, the Locator contains select data from EPA's National Emissions Inventory (NEI 2005 version 2 released in 2009), EPA's Boiler/Process Heater NESHAP 2008 Survey database (posted in 2011), EPA's Renewable Fuel Standards (RFS) List of Registered Fuel Providers (2008 data), and US DATA Corporation (2011 data). Most facilities in the NEI (emitters of hazardous and/or criteria air pollutants), excluding landfills, portable facilities, and facilities such as gas stations, were included in the tool, while all facilities were included from the Boiler/Process Heater survey database. From the RFS List, ethanol and biodiesel generators were selected for inclusion in the tool. Businesses that may be good candidates for landfill gas beneficial use were selected from US DATA Corporation's database of United States businesses based on their SIC codes.

There is overlap of facilities between at least three of the data sets listed above (NEI, Boiler Survey, US DATA), and perhaps between all four sources. Given the large volume of records involved, the duplicate records cannot be resolved within the tool's database. Therefore, it is likely that for some searches, a user will see a given facility listed more than once in the results, due to being included from more than one dataset.

In addition, the potential end user search results provided by this tool are intended only as a preliminary starting point, and further research by the user would be required to determine the viability of facilities as potential end users of landfill gas. Similarly, landfill search results provided by the tool would also require further research to determine actual landfill gas availability as well as interest on the part of the landfill owner.