

ENVIRON

MEMORANDUM

To: BAAQMD Staff
CARB Staff
Bay Area 2004 SIP Modeling Advisory Committee

From: Gerard Mansell, Chris Emery

Date: 21 May 2003

Subject: Development of 1-km Resolution Gridding Surrogates

Introduction

The Bay Area Air Quality Management District (BAAQMD) is currently funding a project to develop an ozone emissions control plan to demonstrate attainment of the 1-hour ozone National Ambient Air Quality Standards (NAAQS) promulgated by the US Environmental Protection Agency (EPA). Ozone nonattainment areas must develop control strategies and demonstrate attainment of the ozone NAAQS by the date specified in the Clean Air Act Amendments (CAAA) in the form of a State Implementation Plan (SIP). The SIP ozone attainment demonstration is usually accomplished using air quality modeling.

A critical component of air quality modeling is the emission inventory. Emission inventories for grid-based air quality models require regional- and/or county-level criteria pollutant emission estimates to be chemical speciated for the appropriate chemical mechanism implemented in the air quality model, and temporally and spatially allocated for the time period and modeling grid, respectively. Currently the finest domain employed in the BAAQMD air quality modeling efforts are at a 4-km horizontal resolution. Given the complex terrain features and the importance and concentration of emission sources within the San Francisco Bay Area it is desirable to model the area at a higher spatial resolution than currently being utilized. The implementation of a high resolution 1-km nested grid within the air quality model requires the development of gridded emissions data at this resolution. Model-ready emissions data files for the BAAQMD air quality modeling are prepared using the EMS-95 emissions model. Application of EMS, as is the case with most emissions processing systems, requires the development of spatial allocation factors (SAFs) to allocate regional- and/or county-level emission estimates to the air quality modeling grid cells.

This Technical Memorandum summarizes proposed approaches for the development of SAFs for use in the EMS emissions modeling system to generate model-ready emissions data files at 1-km horizontal resolution. Applicable data sources required for spatial surrogate development are identified and discussed. Ultimately, a technical approach consistent with the

available project resources and schedule is recommended.

Spatial Surrogate Development

Spatial allocation of regional or county-level emission estimates is accomplished through the use of spatial surrogates or spatial allocation factors (SAFs) for each emission source category or group of source categories. Spatial surrogates are typically based on the proportion of a known region-wide characteristic variable that exists within the region of interest.

Traditionally the development of spatial gridding surrogates for dispersion modeling applications has been performed by a variety of methods depending on the emission source category being considered, the required spatial resolution, the geographic extent of the domain, and the particular characteristics of the geospatial data available. Spatial surrogates must define the percentage of regional or county level emissions from a particular source category that is to be allocated to some spatial region, typically a modeling grid cell. For most area and off-road sources, these percentages are based on areas of a particular land use/land cover type while for on-road mobile source categories, the percentages are usually based on total length of a certain road type or a transportation network. Often human population is also used as a spatial surrogate for certain emission source categories. The processing and development of gridding surrogates is most efficiently accomplished using a geographic information system (GIS).

Development of 1-km Spatial Surrogates for the BAAQMD Modeling Project

Possible approaches for generation of the required gridded spatial surrogates for development of 1-km model-ready emissions data files are presented below.

- 1) The existing gridding surrogates used in the project were developed at a spatial resolution of 4-km for the California Air Resources Board (CARB) by Sonoma Technologies, Inc (STI). These surrogates were developed from a variety of geospatial data including the National Land Cover Database (NLCD), 2000 US Census TIGER/Line files, California Department of Water Resources (DWR) surveys, population, housing and employment statistics, and locations of auto body refinishers, gas stations, and dry cleaners, among others. Under this option, ENVIRON would obtain these databases and develop 1-km gridding surrogates for input to the EMS emissions model.
- 2) ENVIRON currently has in-house many, but not all, of the same geospatial databases used by STI for the development of the 4-km gridding surrogates. Under this option, ENVIRON would use these data to develop 1-km gridding surrogates. Because not all the same databases are currently and immediately available to ENVIRON, the emission source category/surrogate assignments previously used by STI would be reviewed and reassigned using the most appropriate surrogate for each emission source category. The resulting gridding surrogates would then be reformatted for use in EMS.
- 3) The EPA is currently developing a national database of gridded emission surrogates for use in emission inventory development. All of the GIS data sets EPA has developed to



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date have been acquired by ENVIRON. These include many of the types of data and sources used by STI. The EPA will develop a SCC-surrogate cross-reference list for use with these data. Completion of this work is not expected for a couple of months, although all the geospatial data is currently available. This option would involve use of the EPA-developed geospatial data to develop 1-km gridding surrogates. As in option (2) above, the source category/surrogate assignments would need to be reviewed and re-assigned, as appropriate, to best reflect the assignments used by STI in the development of the 4-km gridding surrogates.

- 4) ENVIRON has developed literally hundreds of emission inventories for use in air quality modeling, including the development of gridding surrogates. Gridding surrogates are based on readily available geospatial databases, while the EPS2 emissions processing system is used for gridding county-level emissions estimates to the modeling domain. Under this option, ENVIRON would apply the EPS2 modeling system to develop model-ready 1-km resolution emissions data files.

Option (1) above is the best option with respect to consistency with both the underlying data used in the development of the CARB gridding surrogates and the assignment of surrogates to emission source categories. However, acquisition of all the data used by STI in developing the 4-km gridding surrogates would be overly prohibitive in terms of available project resources and schedule. Although option (4) above would be relatively straightforward and the most efficient with respect to computational processing (as ENVIRON has completed numerous emission inventory development projects using this approach), this option is the least desirable in terms of consistency between gridding surrogates and emissions modeling systems, and would potentially require much work to adapt EPS2 to the CARB's foundation file formats (i.e., raw county-level emissions from CEFS). Option (3) has the advantage of being consistent with EPA recommendations for spatial allocation of emissions data. However, the EPA has not yet completed the development of these data and the source category/surrogate assignments. The data must also undergo quality assurance/quality control procedures and, as a result, may be subject to modification. Option (2) represents a reasonable approach consistent with the available project resources and schedule.

Recommended Approach

Given the advantages and disadvantages of each of the approaches proposed above, and with consideration of available project resources and schedule, option (2) described above is recommended. The geospatial databases that will be used under this approach are described below.

ENVIRON has previously developed a Land Use/Land Cover (LULC) GIS coverage for the entire state of California at a spatial resolution of 1-km. This database is a combination of the NLCD and the DWR LULC databases. The NLCD data was obtained from the USGS EROS Data Center web site (<http://edcftp.cr.usgs.gov/pub/data/landcover/states>). This dataset provides dominant land use data for each state at a spatial resolution of 30 meters. The data includes 21 LULC categories based on a Modified Anderson Level 2 categorization scheme. The LULC categories available in the NLCD are presented in Table 1. More detailed descriptions of the NLCD land use types are available from the USGS web site.



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Table 1. NLCD Land Cover Classification Codes.

Code	Description
11	Open Water
12	Perennial Ice/Snow
21	Low Intensity Residential
22	High Intensity Residential
23	Commercial/Industrial/Transportation
31	Bare Rock/Sand/Clay
32	Quarries/Strip Mines/Gravel Pits
33	Transitional
41	Deciduous Forest
42	Evergreen Forest
43	Mixed Forest
51	Shrubland
61	Orchards/Vineyards/Other
71	Grasslands/Herbaceous
81	Pasture/Hay
82	Row Crops
83	Small Grains
84	Fallow
85	Urban/Recreational Grasses
91	Woody Wetlands
92	Emergent Herbaceous Wetlands

The California Department of Water Resources (DWR) Land Use Survey databases are developed by the department's Division of Planning and Local Assistance in order to aid in DWR's efforts to continually monitor land use for the purpose of determining the amount of and changes in the use of water. The data are available at the county level and include detailed agricultural land use classifications, as well as lesser detailed urban and native vegetation land uses. The data were compiled from aerial photography with subsequent extensive field verification and are updated on a rotating basis by county approximately every seven years. Thus the data are based on varying years, depending on the county, ranging from the late 1980's through the late 1990's. Databases for each county are available in AUTOCAD DWG format, as well as ARC/Info shape file format employing a Transverse Mercator coordinate projection and can be obtained from the DWR's developing web site at <http://dplasp.water.ca.gov/landwateruse/>. The classification scheme used allows for up to three land use attributes per polygon (land parcel) and is considered very accurate due to the field survey verification of the aerial photograph imagery. A complete survey legend describing the available LULC categories is available from the DWR website.

Transportation networks, including inland waterways, can be obtained from the US Census Bureau TIGER/Line data files (www.census.gov/geo/www/tiger/tigerua/). Population and



housing data will be based on the 2000 US Census constructed by the EPA as part of their current emission gridding surrogate development project. These datasets are available in the form of GIS shapefiles from the EPA's ftp site (ftp://ftp.epa.gov/EmisInventory/emiss_shp/).

ENVIRON has developed numerous Arc/INFO scripts using the Arc Macro Language (AML) for development of gridding surrogate using these data and can therefore generate these surrogates quickly and efficiently with minimal resource requirements. The emission source category/surrogate assignments used by STI/CARB in the development of 4-km gridding surrogate have been reviewed and appropriately re-assigned based on the surrogates available from the databases described above. This is shown in Attachment 1. The specific locations of airports and marine terminals will be taken from the current 4-km surrogate data and re-mapped to the new 1-km grid.

Finally, the new 1-km surrogate data will be formatted for use in EMS.

ENVIRON is moving ahead with the development of the high resolution spatial surrogates at this time using the recommended approach described above. However, we request that the BAAQMD and CARB carefully review the surrogate mapping provided in the attachment and provide comments and/or suggestions for revisions back to us as soon as possible so that they may be incorporated in a timely fashion.



asct	EIC_NUM	Original STI/ARB Surrogate	scc1_name	scc3_name	New Surrogate
46425	31031616000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
46433	31034616000000	LOCATIONS OF OIL WELLS	TERTIARY OIL PROD.	FUGITIVE LOSSES	Industrial land
46441	31099501000000	LOCATIONS OF OIL WELLS	OIL & GAS EXTRACTION	FUGITIVE LOSSES	Industrial land
46458	31099516000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
46466	33038211000000	LOCATIONS OF BULK PLANTS	BULK PLANT/TERMNL	TANKS	Industrial land
46474	33038411000000	LOCATIONS OF BULK PLANTS	BULK PLANT/TERMNL	TANKS	Industrial land
46482	33039011000000	LOCATIONS OF BULK PLANTS	BULK PLANT/TERMNL	TANK CARS & TRUCKS	Industrial land
46532	33037411000000	LOCATIONS OF GASOLINE SERVICE STATIONS	GASOLINE DISP. FACIL	TANKS	Commercial land
46540	33037811000000	LOCATIONS OF GASOLINE SERVICE STATIONS	GASOLINE DISP. FACIL	VEHICLE REFUELING	Commercial land
46557	33037611000000	LOCATIONS OF GASOLINE SERVICE STATIONS	GASOLINE DISP. FACIL	TANKS	Commercial land
46565	33038011000000	LOCATIONS OF GASOLINE SERVICE STATIONS	GASOLINE DISP. FACIL	VEHICLE REFUELING	Commercial land
46573	33036616000000	PORT LOCATIONS	PETROLEUM MARKETING	MARINE VESSELS	Water Bodies
46599	33036614000000	PORT LOCATIONS	PETROLEUM MARKETING	MARINE VESSELS	Water Bodies
46607	33036816000000	PORT LOCATIONS	PETROLEUM MARKETING	MARINE VESSELS	Water Bodies
46631	33036811000000	PORT LOCATIONS	PETROLEUM MARKETING	MARINE VESSELS	Water Bodies
46714	33037016000000	PORT LOCATIONS	PETROLEUM MARKETING	MARINE VESSELS	Water Bodies
46722	33037216000000	PORT LOCATIONS	PETROLEUM MARKETING	MARINE VESSELS	Water Bodies
46730	33037211000000	PORT LOCATIONS	PETROLEUM MARKETING	MARINE VESSELS	Water Bodies
46748	23099590000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL COATING	Industrial land
46755	52052092000000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
46763	52052091000000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
46771	52052283000000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
46789	23021890000000	LOCATIONS OF AUTOBODY/REFINISHING SHOPS	SOLVENT USE	COMMERCIAL	Commercial land
46797	21020081500000	LOCATIONS OF DRYCLEANERS	SOLVENT USE	DRY CLEANING	Commercial land
46805	21020033000000	LOCATIONS OF DRYCLEANERS	SOLVENT USE	DRY CLEANING	Commercial land
46862	29999580000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL	Industrial land
46870	54056004000000	ROAD DENSITY & H/E/SQFT/PERSON	SOLVENT USE	ASPHALT PAVING	Road density
46888	54056204000000	ROAD DENSITY & H/E/SQFT/PERSON	SOLVENT USE	ASPHALT PAVING	Road density
46896	54056404000000	ROAD DENSITY & H/E/SQFT/PERSON	SOLVENT USE	ASPHALT PAVING	Road density
46904	54056604000000	ROAD DENSITY & H/E/SQFT/PERSON	SOLVENT USE	ASPHALT PAVING	Road density
46938	41040250620000	INDUSTRIAL EMPLOYMENT	CHEMICAL PROCESSES	MANUFACTURING	Industrial land
46946	41040450000000	INDUSTRIAL EMPLOYMENT	CHEMICAL PROCESSES	MANUFACTURING	Industrial land
46953	41040620480000	INDUSTRIAL EMPLOYMENT	CHEMICAL PROCESSES	SODA ASH PRODUCTION	Industrial land
46961	41099549990000	INDUSTRIAL EMPLOYMENT	CHEMICAL PROCESSES	OTHER CHEMICAL	Industrial land
46979	44044070000000	INDUSTRIAL EMPLOYMENT	METAL PROCESSES	SECONDARY PRODUCTIN	Industrial land
46987	43099570000000	SAND/GRAVEL MINE LOCATIONS	MINERAL PROCESSES	OTHER	Quarries/Strip Mines/Gravel Pits
46995	43042270780000	SAND/GRAVEL MINE LOCATIONS	MINERAL PROCESSES	EXCAVATION & PROCES	Quarries/Strip Mines/Gravel Pits
47001	43042470060000	SAND/GRAVEL MINE LOCATIONS	MINERAL PROCESSES	PRODUCTION	Quarries/Strip Mines/Gravel Pits
47019	43042670780000	SAND/GRAVEL MINE LOCATIONS	MINERAL PROCESSES	GRINDING/CRUSHING	Quarries/Strip Mines/Gravel Pits
47027	43042870000000	SAND/GRAVEL MINE LOCATIONS	MINERAL PROCESSES	SURFACE BLASTING	Quarries/Strip Mines/Gravel Pits
47035	43043070180000	SAND/GRAVEL MINE LOCATIONS	MINERAL PROCESSES	PRODUCTION	Quarries/Strip Mines/Gravel Pits
47043	45099502300000	INDUSTRIAL EMPLOYMENT	WOOD AND PAPER	PROCESSING LOSSES	Industrial land
47050	42041860000000	AGRICULTURAL LAND	AGRICULTURAL PROCES.	AGRICULTURAL	Agricultural land
47068	42040860900000	LOCATIONS OF WINERIES	WINE MAKING	WINE	Vineyards
47076	42042060000000	AGRICULTURAL CROPLAND	AGRICULTURAL PROCES.	AGRICULTURAL	Agricultural cropland
47084	49999500000000	INDUSTRIAL EMPLOYMENT	OTHER INDUSTRIAL	PROCESS LOSSES	Industrial land
47142	50995011000000	INDUSTRIAL EMPLOYMENT	FUEL COMBUSTION	INDUS. (UNSPECIFIED)	Industrial land
47159	60995122000000	SERVICE AND COMMERCIAL EMPLOYMENT	FUEL COMBUSTION	COMMERCIAL	Commercial land
47167	60995011000000	SERVICE AND COMMERCIAL EMPLOYMENT	FUEL COMBUSTION	COMMERCIAL	Commercial land
47183	60995150000000	SERVICE AND COMMERCIAL EMPLOYMENT	FUEL COMBUSTION	COMMERCIAL	Commercial land
47191	61099501100000	TOTAL HOUSING	FUEL COMBUSTION	RESIDENTIAL	Housing
47209	61060612200000	TOTAL HOUSING	FUEL COMBUSTION	RESIDENTIAL	Housing
47217	61099501200000	TOTAL HOUSING	FUEL COMBUSTION	RESIDENTIAL	Housing
47233	52995100000000	AGRICULTURAL LAND	FUEL COMBUSTION	AGRICULTURAL	Agricultural land
47241	67066002620000	AGRICULTURAL LAND	WASTE BURNING	AGRICULTURAL DEBRIS	Agricultural land
47258	67066202620000	AGRICULTURAL CROPLAND	WASTE BURNING	AGRICULTURAL DEBRIS	Agricultural cropland
47266	67066802000000	AGRICULTURAL LAND	WASTE BURNING	OTHER	Agricultural land
47274	67066602000000	FOREST LAND	WASTE BURNING	FOREST MNGMNT	Forest land
47282	67066402000000	RANGELAND	WASTE BURNING	RANGE MNGMNT	Rangeland
47290	67067002000000	NON-URBAN LAND	WASTE BURNING	NON-AGRICULTURAL	Rural land
47324	66065602000000	POPULATION	UNPLANNED FIRES	STRUCTURAL FIRES	Population
47332	62061454000000	AGRICULTURAL CROPLAND	FARMING OPERATION		Agricultural cropland
47340	62061654000000	FEEDLOTS	FARMING OPERATION		Feedlots
47357	63062254000000	COMPUTED SURROGATE - RESIDENTIAL	CONST. & DEMOLITION	BUILDING	Residential land
47365	63062454000000	COMPUTED SURROGATE - NON-RESIDENTIAL	CONST. & DEMOLITION	BUILDING	non-residential urban land
47373	63062654000000	COMPUTED SURROGATE - NON-RESIDENTIAL	CONST. & DEMOLITION	BUILDING	non-residential urban land
47381	63063454000000	ROAD DENSITY (ALL ROADS)	CONST. & DEMOLITION	ROAD	Road density

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47399	64563854000000	NON-URBAN LAND	UNPAVED ROAD TRAVEL	ENTRAINED ROAD DUST	Secondary rural roads
47407	64564054000000	ROAD DENSITY (UNPAVED)	UNPAVED ROAD TRAVEL	ENTRAINED ROAD DUST	Secondary rural roads
47423	64564454000000	ROAD DENSITY (UNPAVED)	UNPAVED ROAD TRAVEL	ENTRAINED ROAD DUST	Secondary rural roads
47431	64564654000000	AGRICULTURAL LAND	UNPAVED ROAD TRAVEL	ENTRAINED ROAD DUST	Agricultural land
47456	64063654000000	ROAD DENSITY (ALL ROADS)	PAVED ROAD TRAVEL	ENTRAINED ROAD DUST	Road density
47464	85087211000000	ROAD DENSITY (UNPAVED)	OFF-ROAD VEHICLES	RECREATIONAL	Secondary rural roads
47514	85087011000000	ELEVATION > 5000 FT	OFF-ROAD VEHICLES	RECREATIONAL	Forest land
47555	81081014000000		OTHER AIRCRAFT	JET AIRCRAFT	Commercial land
47555	81081014500000		INTERNLCOMBUSTION	FIXED WING AIRCRAFT	Commercial land
47563	81080611400000	AGRICULTURAL CROPLAND	AIRCRAFT-OTHER	AGRICULTURAL	Agricultural cropland
47571	81080814000000		GOVERNMENT AIRCRAFT	MILITARY	Commercial land
47571	81080814300000		INTERNLCOMBUSTION	FIXED WING AIRCRAFT	Commercial land
47589	81081214000000		OTHER AIRCRAFT	JET AIRCRAFT	Commercial land
47589	81081214500000		INTERNLCOMBUSTION	FIXED WING AIRCRAFT	Commercial land
47597	82082012100000	RAILROAD DENSITY	TRAINS	LOCOMOTIVES	Railroads
47605	82082212100000	LOCATIONS OF RAIL YARDS	TRAINS	LOCOMOTIVES	Railyards
47613	83083015000000	PORT LOCATIONS	SHIPS	MANEUVERING	Water bodies
47621	83083215000000	PORT LOCATIONS	SHIPS	MANEUVERING	Water bodies
47639	83083412100000	PORT LOCATIONS	SHIPS	MANEUVERING	Water bodies
47647	83083612100000	PORT LOCATIONS	SHIPS	MANEUVERING	Water bodies
47654	83083810000000	PORT LOCATIONS	SHIPS	MANEUVERING	Water bodies
47662	83084015000000	PORT LOCATIONS	SHIPS	BERTHING	Water bodies
47670	83084215000000	PORT LOCATIONS	SHIPS	BERTHING	Water bodies
47688	83084412100000	PORT LOCATIONS	SHIPS	BERTHING	Water bodies
47696	83084612100000	PORT LOCATIONS	SHIPS	BERTHING	Water bodies
54353	86088412100000	TOTAL EMPLOYMENT & ROAD DENSITY	OFF-ROAD EQUIPMENT	TRANS REFRIGERATION	Secondary rural roads
54411	85087611000000	ROAD DENSITY (UNPAVED)	OFF-ROAD VEHICLES	RECREATIONAL	Secondary rural roads
54551	63062854000000	COMPUTED SURROGATE - NON-RESIDENTIAL	CONST. & DEMOLITION	BUILDING	non-residential urban land
54569	61066010000000	TOTAL HOUSING	FUEL COMBUSTION	RESIDENTIAL	Housing
54577	61066010000000	TOTAL HOUSING	FUEL COMBUSTION	RESIDENTIAL	Housing
54585	61061001100000	TOTAL HOUSING	FUEL COMBUSTION	RESIDENTIAL	Housing
57281	12012202420000	LOCATIONS OF LANDFILLS	WASTE DISPOSAL	BIODEGRADATION	Rural Land
57307	66065802000000	ROAD DENSITY (PRIMARY ROUTE)	UNPLANNED FIRES	AUTOMOBILE FIRES	Primary Roads
57315	81080211400000	COMMERCIAL AIRPORT LOCATIONS	OTHER AIRCRAFT	PISTON AIRCRAFT	Commercial land
57323	81080011400000	MILITARY BASE LOCATIONS	GOVERNMENT AIRCRAFT	MILITARY	Commercial land
57331	81080411400000	ALL AIRPORTS	INTERNLCOMBUSTION	FIXED WING AIRCRAFT	Commercial land
57331	81080411400000	ALL AIRPORTS	OTHER AIRCRAFT	PISTON AIRCRAFT	Commercial land
57349	42041260120000	LOCATIONS OF RESTAURANTS/BAKERIES	BAKING	COMMERCIAL	Commercial land
58602	84086412100000	LAKES/RESERVOIRS/COASTLINE	OFF-ROAD VEHICLES	RECREATIONAL	Water bodies
58628	83085812100000	SHIPPING LANES	COMMERCIAL BOATS		Water bodies
58636	83085811000000	SHIPPING LANES	COMMERCIAL BOATS		Water bodies
58644	83084815000000	SHIPPING LANES	SHIPS	IN-TRANSIT	Water bodies
58651	83085015000000	SHIPPING LANES	SHIPS	IN-TRANSIT	Water bodies
58669	83085212100000	SHIPPING LANES	SHIPS	IN-TRANSIT	Water bodies
58677	83085412100000	SHIPPING LANES	SHIPS	IN-TRANSIT	Water bodies
58685	33031801100000	TOTAL HOUSING AND TOTAL EMPLOYMENT	GAS DISTRIBUTION	TRANSMISSION LOSSES	Housing
58727	60995012000000	SERVICE AND COMMERCIAL EMPLOYMENT	FUEL COMBUSTION	COMMERCIAL	Commercial land
58735	60020011000000	SERVICE AND COMMERCIAL EMPLOYMENT	FUEL COMBUSTION	COMMERCIAL	Commercial land
58743	60030011000000	SERVICE AND COMMERCIAL EMPLOYMENT	FUEL COMBUSTION	COMMERCIAL	Commercial land
60400	63063054000000	COMPUTED SURROGATE - NON-RESIDENTIAL	CONST. & DEMOLITION	BUILDING	Non-residential urban land
60418	69068060000000	LOCATIONS OF RESTAURANTS/BAKERIES	COOKING	COMMERCIAL	Commercial land
60467	42041060900000	LOCATIONS OF WINERIES	WINE MAKING	WINE & BRANDY	Vineyards
66605	62061802620000	FEEDLOTS, DAIRIES, AND POULTRY FARMS	FARMING OPERATION		Feedlots, dairies, and poultry farms
66613	23022090000000	PORT LOCATIONS	SOLVENT USE	INDUSTRIAL COATING	Water bodies
66621	23022290000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL COATING	Industrial land
66639	23022490000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL COATING	Industrial land
66647	23022690000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL COATING	Industrial land
66654	23022890000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL COATING	Industrial land
66662	23023090000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL COATING	Industrial land
66670	23023290000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL COATING	Industrial land
66712	19999502600000	NON-URBAN LAND	WASTE DISPOSAL	UNSPECIFIED	Rural land
66720	54059004000000	ROAD DENSITY & H/E/SQFT/PERSON	SOLVENT USE	OTHER	Road density
66738	69999500000000	POPULATION	OTHER	UNSPECIFIED	Population
66787	50040011000000	INDUSTRIAL EMPLOYMENT	FUEL COMBUSTION	INDUSTRL IC ENGINES	Industrial land
66795	50995012000000	INDUSTRIAL EMPLOYMENT	FUEL COMBUSTION	INDUSTRIAL	Industrial land
66803	50995122000000	INDUSTRIAL EMPLOYMENT	FUEL COMBUSTION	INDUSTRIAL	Industrial land
66811	69068260000000	LOCATIONS OF RESTAURANTS/BAKERIES	COOKING	COMMERCIAL	Commercial land
66829	24099580000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	PRINTING & PUBLISH	Industrial land

66837	9999500120000	INDUSTRIAL EMPLOYMENT	OTHER	UNSPECIFIED	Industrial land
66845	49999500100000	INDUSTRIAL EMPLOYMENT	OTHER	UNSPECIFIED	Industrial land
74674	41040350180000	INDUSTRIAL EMPLOYMENT	CHEMICAL PROCESSES	FABRICATION	Industrial land
74682	2099500120000	INDUSTRIAL EMPLOYMENT	FUEL COMBUSTION	OTHER	Industrial land
81950	31030016000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
81968	31030216000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
81976	31030416000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
81984	31030616000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
81992	31030816000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
82008	31031016000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
82016	31031216000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
82024	31031416000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
82032	31034216000000	LOCATIONS OF OIL WELLS	TERTIARY OIL PROD.	FUGITIVE LOSSES	Industrial land
82040	31034416000000	LOCATIONS OF OIL WELLS	TERTIARY OIL PROD.	FUGITIVE LOSSES	Industrial land
82065	19919003000000	LOCATION OF POTWS	WASTE DISPOSAL	EVAPORATION	Rural land
82073	30040100000000	LOCATIONS OF OIL WELLS	FUEL COMBUSTION	PETROLEUM PRODUCTIO	Industrial land
82081	30040010000000	LOCATIONS OF OIL WELLS	FUEL COMBUSTION	PETROLEUM PRODUCTIO	Industrial land
82099	50040120000000	INDUSTRIAL EMPLOYMENT	FUEL COMBUSTION	INDUSTRL IC ENGINES	Industrial land
82107	50040001200000	INDUSTRIAL EMPLOYMENT	FUEL COMBUSTION	INDUSTRL IC ENGINES	Industrial land
82115	61060002300000	SINGLE DWELLING UNITS	FUEL COMBUSTION	RESIDENTIAL	housing
82123	61060202300000	SINGLE DWELLING UNITS	FUEL COMBUSTION	RESIDENTIAL	housing
82131	67099502400000	NON-URBAN LAND	WASTE BURNING	OTHER	Rural land
82156	64564854000000	NON-URBAN LAND	UNPAVED ROAD TRAVEL	ENTRAINED ROAD DUST	Rural land
82172	83099510000000	PORTS AND SHIPPING LANES	SHIPS		Water Bodies
82180	69068460000000	LOCATIONS OF RESTAURANTS/BAKERIES	COOKING	COMMERCIAL	Commercial land
82198	30060121000000	LOCATIONS OF OIL WELLS	FUEL COMBUSTION	PETROLEUM PRODUCTIO	Industrial land
82214	83086010000000	LOCATIONS OF OFFSHORE OIL WELLS	COMMERCIAL BOATS	OFF SHORE OIL PROD.	Water Bodies
82230	31035016000000	LOCATIONS OF OIL WELLS	OIL PRODUCTION	FUGITIVE LOSSES	Industrial land
82248	33099511000000	LOCATIONS OF BULK PLANTS	BULK PLANT/TERMNL	STORAGE/TRANSFER	Industrial land
82305	21020081020000	LOCATIONS OF DRYCLEANERS	SOLVENT USE	DRY CLEANING	Commercial land
82321	30065121000000	LOCATIONS OF OIL WELLS	FUEL COMBUSTION	PETROLEUM PRODUCTIO	Industrial land
83030	25029282020000	INDUSTRIAL EMPLOYMENT + COMPUTED SURROGATE (R	SOLVENT USE	ADHESIVE & SEALENT	Industrial land
83048	33036615000000	PORT LOCATIONS	PETROLEUM MARKETING	MARINE VESSELS	Water Bodeis
83055	99080001200000	INDUSTRIAL EMPLOYMENT	FUEL COMBUSTION	OTHER	Industrial land
83063	25029282500000	INDUSTRIAL EMPLOYMENT + COMPUTED SURROGATE (R	SOLVENT USE	ADHESIVE & SEALENT	Industrial land
83071	50995150000000	INDUSTRIAL EMPLOYMENT	FUEL COMBUSTION	INDUSTRIAL	Industrial land
83295	23024083000000	NON-RETAIL EMPLOYMENT	SOLVENT USE	INDUS. SOLVENT USE	Industrial land
83337	65065054000000	NON-PASTURE AGRICULTURAL LAND	FUGITIVE DUST	WINDBLOWN DUST	Non-pasture agricultural land
83352	65065254000000	NON-URBAN LAND	FUGITIVE DUST	WINDBLOWN DUST	Rural land
83451	31035201000000	LOCATIONS OF GAS WELLS	OIL & GAS EXTRACTION	FUGITIVE LOSSES	Industrial land
83477	85087411000000	ROAD DENSITY (UNPAVED)	OFF-ROAD VEHICLES	RECREATIONAL	Secondary rural roads
83550	53053032250000	AGRICULTURAL CROPLAND	PESTICIDE APPLICATN.	AGRICULTURAL	Agricultural cropland
83568	53053057020000	AGRICULTURAL CROPLAND	PESTICIDE APPLICATN.	AGRICULTURAL	Agricultural cropland
83576	53054032250000	H/E/SQFT/PERSON	PESTICIDE APPLICATN.	STRUCTURAL	Housing
83584	53054057020000	H/E/SQFT/PERSON	PESTICIDE APPLICATN.	STRUCTURAL	Housing
83618	64063554000000	ROAD DENSITY (PRIMARY ROUTE)	PAVED ROAD TRAVEL	ENTRAINED ROAD DUST	Primary roads
83626	64063754000000	ROAD DENSITY (SECONDARY ROUTE)	PAVED ROAD TRAVEL	ENTRAINED ROAD DUST	Secondary roads
83634	64063954000000	ROAD DENSITY (SECONDARY ROUTE)	PAVED ROAD TRAVEL	ENTRAINED ROAD DUST	Secondary roads
83642	64064154000000	ROAD DENSITY (SECONDARY ROUTE)	PAVED ROAD TRAVEL	ENTRAINED ROAD DUST	Secondary roads
83659	22020405000000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83667	22020430220000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83675	22020430830000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83683	22020431760000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83691	22020432040000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83709	22020432460000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83717	22020433330000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83725	22020433390000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83733	22020433440000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83741	22020481040000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83758	22020481060000	INDUSTRIAL EMPLOYMENT	DEGREASING	COLD CLEANING	Industrial land
83766	22020630830000	INDUSTRIAL EMPLOYMENT	DEGREASING	VAPOR DEGREASING	Industrial land
83774	22020631070000	INDUSTRIAL EMPLOYMENT	DEGREASING	VAPOR DEGREASING	Industrial land
83782	22020633000000	INDUSTRIAL EMPLOYMENT	DEGREASING	VAPOR DEGREASING	Industrial land
83790	22020633010000	INDUSTRIAL EMPLOYMENT	DEGREASING	VAPOR DEGREASING	Industrial land
83808	22020633440000	INDUSTRIAL EMPLOYMENT	DEGREASING	VAPOR DEGREASING	Industrial land
83816	22020633460000	INDUSTRIAL EMPLOYMENT	DEGREASING	VAPOR DEGREASING	Industrial land
83832	22020805000000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83840	22020830220000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land

83857	22020830830000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83865	22020831070000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83873	22020831760000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83881	22020832040000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83899	22020832460000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83907	22020833000000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83915	22020833330000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83923	22020833390000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83931	22020833440000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83949	22020833460000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83956	22020881040000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83964	22020881060000	INDUSTRIAL EMPLOYMENT AND LOCATIONS OF AUTOBO	DEGREASING	HANDWIPING	Industrial land
83980	62061554000000	AGRICULTURAL CROPLAND	FARMING OPERATION		Agricultural cropland
83998	52042120000000	AGRICULTURAL CROPLAND	FUEL COMBUSTION	AG.IRRIGATION ENGINE	Agricultural cropland
84889	51050090000000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
85399	52052091050000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85407	52052091060000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85415	52052091100000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85423	52052091120000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85431	52052091140000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85449	52052091160000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85456	52052091320000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85464	52052091340000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85472	52052091360000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85480	52052091420000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85498	52052091440000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85506	52052091530000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85514	52052091550000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85522	52052091560000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85530	52052091590000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85548	52052091610000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85555	52052091620000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85563	52052091630000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85571	52052091640000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85589	52052091650000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85597	52052091660000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85605	52052091670000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85613	52052091680000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85621	52052091690000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85639	52052091700000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85647	52052091710000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85654	52052091720000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85662	52052091730000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85670	52052091740000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85688	52052091750000	POPULATION	SOLVENT USE	ARCHITECTURAL	Population
85696	52052091760000	ROAD DENSITY (ALL ROADS)	SOLVENT USE	ARCHITECTURAL	Road density
85704	52052091780000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85712	52052091790000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85720	52052092050000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85738	52052092060000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85746	52052092100000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85753	52052092120000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85761	52052092140000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85779	52052092160000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85787	52052092320000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85795	52052092340000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85803	52052092360000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85811	52052092420000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85829	52052092440000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85837	52052092550000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85845	52052092560000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85852	52052092590000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85860	52052092610000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85878	52052092620000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85886	52052092630000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85894	52052092640000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85902	52052092650000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85910	52052092660000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing

85928	52052092680000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85936	52052092690000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85944	52052092720000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85951	52052092730000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85969	52052092740000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85977	52052092760000	ROAD DENSITY (ALL ROADS)	SOLVENT USE	ARCHITECTURAL	Road density
85985	52052092780000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
85993	52052092790000	H/E/SQFT/PERSON	SOLVENT USE	ARCHITECTURAL	Housing
86009	51050090200000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
86017	51050090210000	LOCATIONS OF AUTOBODY/REFINISHING SHOPS	SOLVENT USE	CONSUMER PRODUCTS	Commercial land
86025	51050090510000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
86033	51050090590000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
86041	51050090600000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
86058	51050090710000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
86066	51050090730000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
86074	51050090770000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
86082	51050090800000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
86090	51050090810000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
86108	51050090820000	LOCATIONS OF AUTOBODY/REFINISHING SHOPS	SOLVENT USE	CONSUMER PRODUCTS	Commercial land
86116	51050090830000	LOCATIONS OF AUTOBODY/REFINISHING SHOPS	SOLVENT USE	CONSUMER PRODUCTS	Commercial land
86124	51050090840000	LOCATIONS OF AUTOBODY/REFINISHING SHOPS	SOLVENT USE	CONSUMER PRODUCTS	Commercial land
86132	51050090850000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
87650	23023690000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL COATING	Industrial land
87668	23023790000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL COATING	Industrial land
87676	23023890000000	INDUSTRIAL EMPLOYMENT	SOLVENT USE	INDUSTRIAL COATING	Industrial land
87684	51050665020000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
87692	51050665030000	LOCATIONS OF AUTOBODY/REFINISHING SHOPS	SOLVENT USE	CONSUMER PRODUCTS	Population
87700	51050665040000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
87718	51050665050000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
87726	51050665060000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
87734	51050665070000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
87742	51050665080000	INDUSTRIAL EMPLOYMENT AND POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Industrial land
87759	51050665090000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
87767	51050665100000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
87775	51050665200000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
87783	51050665210000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
87791	51050665300000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
87809	51050665310000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87817	51050665320000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87825	51050665330000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87833	51050665340000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87841	51050665350000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87858	51050665360000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87866	51050665370000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87874	51050665380000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87882	51050665390000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87890	51050665400000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87908	51050665410000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87916	51050665500000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87924	51050665510000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87932	51050665520000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87940	51050665530000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87957	51050665540000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87965	51050665550000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87973	51050665560000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87981	51050665570000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
87999	51050665580000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
88005	51050665590000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
88013	51050665600000	TOTAL HOUSING AND LOCATIONS OF AUTOBODY/REFIN	SOLVENT USE	CONSUMER PRODUCTS	Housing
88021	51050665700000	URBAN LAND	SOLVENT USE	CONSUMER PRODUCTS	Urban land
88039	51050665710000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88047	51050665800000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88054	51050665810000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88062	51050665820000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88070	51050665900000	LOCATIONS OF HOSPITALS, INSTITUTIONS, POPULAT	SOLVENT USE	CONSUMER PRODUCTS	Population
88088	51050665910000	LOCATIONS OF HOSPITALS, INSTITUTIONS, POPULAT	SOLVENT USE	CONSUMER PRODUCTS	Population
88096	51050665920000	LOCATIONS OF HOSPITALS, INSTITUTIONS, POPULAT	SOLVENT USE	CONSUMER PRODUCTS	Population
88104	51050666000000	SINGLE DWELLING UNITS	SOLVENT USE	CONSUMER PRODUCTS	Low intensity Residential land

88112	51050666010000	SINGLE DWELLING UNITS	SOLVENT USE	CONSUMER PRODUCTS	Low intensity Residential land
88120	51050666100000	SINGLE DWELLING UNITS AND NON-URBAN LAND	SOLVENT USE	CONSUMER PRODUCTS	Low intensity Residential land
88138	51050666110000	SINGLE DWELLING UNITS	SOLVENT USE	CONSUMER PRODUCTS	Low intensity Residential land
88146	51050666120000	SINGLE DWELLING UNITS	SOLVENT USE	CONSUMER PRODUCTS	Low intensity Residential land
88153	51050666130000	SINGLE DWELLING UNITS	SOLVENT USE	CONSUMER PRODUCTS	Low intensity Residential land
88161	51050666140000	SINGLE DWELLING UNITS	SOLVENT USE	CONSUMER PRODUCTS	Low intensity Residential land
88179	51050666150000	SINGLE DWELLING UNITS	SOLVENT USE	CONSUMER PRODUCTS	Low intensity Residential land
88187	51050666160000	SINGLE DWELLING UNITS	SOLVENT USE	CONSUMER PRODUCTS	Low intensity Residential land
88195	51050666170000	SINGLE DWELLING UNITS	SOLVENT USE	CONSUMER PRODUCTS	Low intensity Residential land
88203	51050666250000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88211	51050666260000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88229	51050666270000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88237	51050666350000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88245	51050666360000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88252	51050666370000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88260	51050666380000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88278	51050666390000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88286	51050666400000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88294	51050666500000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88302	51050666510000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88310	51050666520000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88328	51050666530000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88336	51050666540000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88344	51050666550000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88351	51050666560000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88369	51050666570000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88377	51050666580000	TOTAL HOUSING AND LOCATIONS OF RESTAURANTS/BA	SOLVENT USE	CONSUMER PRODUCTS	Housing
88385	51050666590000	TOTAL HOUSING AND LOCATIONS OF RESTAURANTS/BA	SOLVENT USE	CONSUMER PRODUCTS	Housing
88393	51050666600000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88401	51050666610000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88419	51050666620000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88427	51050666700000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88435	51050666710000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88443	51050666720000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88450	51050666800000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
88468	51050666810000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
88476	51050666820000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88484	51050666830000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88492	51050666840000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88500	51050666850000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
88518	51050666860000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
88526	51050666870000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88534	51050667000000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88542	51050667010000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88559	51050667020000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88567	51050667030000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88575	51050667100000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88583	51050667110000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88591	51050667120000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88609	51050667130000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88617	51050667140000	TOTAL HOUSING AND COMMERCIAL EMPLOYMENT	SOLVENT USE	CONSUMER PRODUCTS	Housing
88625	51050667200000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing
88633	51050667210000	TOTAL HOUSING AND LOCATIONS OF RESTAURANTS/BA	SOLVENT USE	CONSUMER PRODUCTS	Housing
88641	51050667300000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88658	51050667310000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88666	51050667320000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88674	51050667330000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88682	51050667400000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88690	51050667410000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88708	51050667500000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88716	51050667510000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88724	51050667600000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88732	51050667650000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88740	51050667660000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88757	51050667670000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88765	51050667700000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88773	51050667710000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population
88781	51050667720000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population

88799	51050667800000	TOTAL HOUSING	SOLVENT USE	CONSUMER PRODUCTS	Housing	
88807	51050667810000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population	
88815	51050667820000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population	
88823	51050667830000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population	
88831	51050667840000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population	
88849	51050667900000	POPULATION, INSTITUTIONS, AND COMMERCIAL EMPL	SOLVENT USE	CONSUMER PRODUCTS	Population	
88856	51050667910000	POPULATION, INSTITUTIONS, AND COMMERCIAL EMPL	SOLVENT USE	CONSUMER PRODUCTS	Population	
88864	51050667920000	POPULATION, INSTITUTIONS, AND COMMERCIAL EMPL	SOLVENT USE	CONSUMER PRODUCTS	Population	
88872	51050669000000	POPULATION	SOLVENT USE	CONSUMER PRODUCTS	Population	
88880	84086411000020	LAKES/RESERVOIRS/COASTLINE	RECREATIONAL BOATS	RECREATIONAL BOATS	Water bodies	
88898	84086411000040	LAKES/RESERVOIRS/COASTLINE	RECREATIONAL BOATS	RECREATIONAL BOATS	Water bodies	
88930	86088311000020	RESIDENTIAL, SERVICE, COMMERCIAL, GOLF COURSE	OFF-ROAD EQUIPMENT	LAWN AND GARDEN	Residential/commercial land, golf courses	
88948	86088311000040	RESIDENTIAL, SERVICE, COMMERCIAL, GOLF COURSE	OFF-ROAD EQUIPMENT	LAWN AND GARDEN	Residential/commercial land, golf courses	
88955	86088312100000	RESIDENTIAL, SERVICE, COMMERCIAL, GOLF COURSE	OFF-ROAD EQUIPMENT	LAWN AND GARDEN	Residential/commercial land, golf courses	
88963	86088411000040	TOTAL EMPLOYMENT & ROAD DENSITY	OFF-ROAD EQUIPMENT	TRANS REFRIGERATION	Road density	
88971	86088511000020	SERVICE AND COMMERCIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	LIGHT COMM EQUIP	Commercial land	
88989	86088511000040	SERVICE AND COMMERCIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	LIGHT COMM EQUIP	Commercial land	
88997	86088501100000	SERVICE AND COMMERCIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	LIGHT COMM EQUIP	Commercial land	
89003	86088512100000	SERVICE AND COMMERCIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	LIGHT COMM EQUIP	Commercial land	
89011	86088611000020	INDUSTRIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	INDUSTRIAL EQUIPMENT	Industrial land	
89029	86088611000040	INDUSTRIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	INDUSTRIAL EQUIPMENT	Industrial land	
89037	86088601100000	INDUSTRIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	INDUSTRIAL EQUIPMENT	Industrial land	
89045	86088612100000	INDUSTRIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	INDUSTRIAL EQUIPMENT	Industrial land	
89052	86088711000020	COMPUTED SURROGATE - NON-RESIDENTIAL	OFF-ROAD EQUIPMENT	CONSTRUCT AND MINING	Rural land	
89060	86088711000040	COMPUTED SURROGATE - NON-RESIDENTIAL	OFF-ROAD EQUIPMENT	CONSTRUCT AND MINING	Rural land	
89078	86088712100000	COMPUTED SURROGATE - NON-RESIDENTIAL	OFF-ROAD EQUIPMENT	CONSTRUCT AND MINING	Rural land	
89086	86088811000020	FOREST LAND	OFF-ROAD EQUIPMENT	LOGGING EQUIPMENT	Forest land	
89094	86088811000040	FOREST LAND	OFF-ROAD EQUIPMENT	LOGGING EQUIPMENT	Forest land	
89102	86088812100000	FOREST LAND	OFF-ROAD EQUIPMENT	LOGGING EQUIPMENT	Forest land	
89110	86088911000040	ALL AIRPORTS	OFF-ROAD EQUIPMENT	AIRPORT GRND SUPPORT	Commercial land	
89128	86088901100000	ALL AIRPORTS	OFF-ROAD EQUIPMENT	AIRPORT GRND SUPPORT	Commercial land	
89136	86088912100000	ALL AIRPORTS	OFF-ROAD EQUIPMENT	AIRPORT GRND SUPPORT	Commercial land	
89151	86089012100000	BAY/PORT LOCATIONS	OFF-ROAD EQUIPMENT	DREDGING	Water Bodies	
89193	86089212100000	MILITARY BASE LOCATIONS	OFF-ROAD EQUIPMENT	MILITARY TACTICAL	Land Area	
89219	86099512100000	INDUSTRIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	OTHER	Land Area	
89227	87089311000040	AGRICULTURAL LAND	FARM EQUIPMENT	AGRICULTURAL EQUIP	Agricultural land	
89235	87089312100000	AGRICULTURAL LAND	FARM EQUIPMENT	AGRICULTURAL EQUIP	Agricultural land	
89243	89089511000041	POPULATION			Population	
89250	84086411000021	SINGLE DWELLING UNITS	RECREATIONAL BOATS	RECREATIONAL BOATS	Water Bodies (or Low Intensity Residential)	
89268	84086411000041	SINGLE DWELLING UNITS	RECREATIONAL BOATS	RECREATIONAL BOATS	Water Bodies (or Low Intensity Residential)	
89276	85087111000021	ROAD DENSITY (UNPAVED)	OFF-ROAD REC VEHICLE	RECREATIONAL EQUIP	Secondary rural roads	
89284	85087111000041	ROAD DENSITY (UNPAVED)	OFF-ROAD REC VEHICLE	RECREATIONAL EQUIP	Secondary rural roads	
89292	86088311000021	RESIDENTIAL, SERVICE, COMMERCIAL, GOLF COURSE	OFF-ROAD EQUIPMENT	LAWN AND GARDEN	Residential/commercial land, golf courses	
89300	86088311000041	RESIDENTIAL, SERVICE, COMMERCIAL, GOLF COURSE	OFF-ROAD REC VEHICLE	RECREATIONAL EQUIP	Residential/commercial land, golf courses	
89318	86088411000041		OFF-ROAD EQUIPMENT	TRANS REFRIGERATION	Secondary rural roads	
89326	86088511000021	SERVICE AND COMMERCIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	LIGHT COMM EQUIP	Commercial land	
89334	86088511000041	SERVICE AND COMMERCIAL EMPLOYMENT	OFF-ROAD EQUIPMENT	LIGHT COMM EQUIP	Commercial land	
89342	86088611000021		OFF-ROAD EQUIPMENT	INDUSTRIAL EQUIPMENT	Industrial land	
89359	86088611000041		OFF-ROAD EQUIPMENT	INDUSTRIAL EQUIPMENT	Industrial land	
89367	86088711000021		OFF-ROAD EQUIPMENT	CONSTRUCT AND MINING	Rural land	
89375	86088711000041		OFF-ROAD EQUIPMENT	CONSTRUCT AND MINING	Rural land	
89383	86088811000021	FOREST LAND	OFF-ROAD EQUIPMENT	LOGGING EQUIPMENT	Forest land	
89391	86088811000041	FOREST LAND	OFF-ROAD EQUIPMENT	LOGGING EQUIPMENT	Forest land	
89417	86088911000041		OFF-ROAD EQUIPMENT	AIRPORT GRND SUPPORT	Commercial land	
89466	87089311000041		FARM EQUIPMENT	AGRICULTURAL EQUIP	Agricultural land	