Appendix A. Legal Description for Ada County CO Maintenance Area

The legal description of the area boundaries is as follows:

- Beginning at a point in the center of the channel of the Boise River where the section line between Sections 15 and 16 of Township 3 North, Range 4 East, crosses the Boise River.

Northern Boundary

- Thence down the center of the channel of the Boise River to a point opposite the mouth of Mores Creek.
- Thence in a straight-line going 44 degrees north and 38 minutes west until said line intersects the north line of Township 5 North in Range 1 East.
- Thence west to the northwest corner of Section 6, Township 5 North, Range 1 West.

Western Boundary

- Thence south to the northwest corner of Section 6, Township 3 North, Range 1 West.
- Thence east to the northeast corner of Section 5, Township3 North, Range 1 West.
- Thence south to the southeast corner of Section 32, Township 2 North, Range 1 West.
- Thence west to the northwest corner of Section 6, Township 1 North, Range 1 West.
- Thence south to the southwest corner of Section 31, Township 1 North, Range 1 West.

Southern Boundary

- Thence east to the southeast corner of Section 33, Township 1 North, Range 4 East.

Eastern Boundary

- Thence north to the point of beginning.

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Appendix B. References Cited

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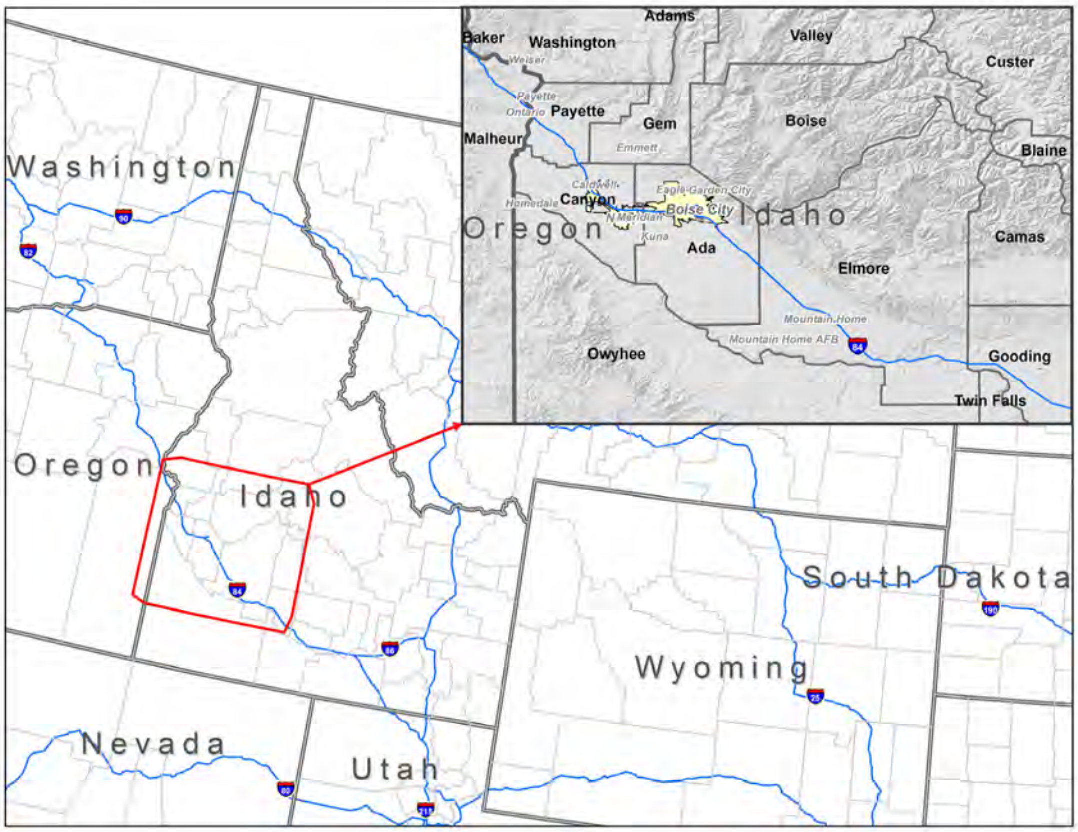
2008, 2015, AND 2023 EMISSIONS INVENTORIES FOR THE TREASURE VALLEY AIRSHED

Final Report



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August 31, 2010

2008, 2015, AND 2023 EMISSIONS INVENTORIES FOR THE TREASURE VALLEY AIRSHED

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ACRONYMS

$\mu g/m^3$	microgram per cubic meter
µm	micrometers
AAR	Association of American Railroads
ADT	average daily traffic
AEO	Annual Energy Outlook
AFB	Air Force Base
AFS	Air Facility System
ALVW	adjusted loaded vehicle weight
AP-42	*Compilation of Air Pollutant Emission Factors*
APU	auxiliary power units
ASCII	American Standard Code for Information Interchange
ATADS	Air Traffic Activity Data System
Atm	standard atmosphere, a unit of pressure
ATR	automatic traffic recorder
BEIS	Biogenic Emission Inventory System
BLS	Bureau of Labor Statistics
CARB	California Air Resources Board
CDL	cropland data layer
CH_4	methane
CMAQ	Congestion Mitigation and Air Quality
CMU	Carnegie Mellon University
CO	carbon monoxide
CO_2	carbon dioxide
COMPASS	Community Planning Association of Southwest Idaho
CONCEPT MV	Consolidated Community Emissions Processing Tool On-Road Motor Vehicle Model
CTIC	Conservation Technology Information Center
DEQ	Department of Environmental Quality
DQOs	Data Quality Objectives
EDMS	Emissions and Dispersion Modeling System
EEA	European Environment Agency

EIA	Energy Information Administration
EIIP	Emission Inventory Improvement Program
ERG	Eastern Research Group, Inc.
ETBE	ethyl tert-butyl ether
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FIPS	Federal Information Processing Standards
FRA	Federal Railroad Administration
FRS	Facility Registry System
ft^3	cubic feet
g/l	grams per liter
GIS	Geographic Information System
Gmol	grams per mole
GSE	ground support equipment
GTM	gross ton-mile
GVWR	gross vehicle weight rating
HC	hydrocarbons
HDDV	Heavy-Duty Diesel Vehicle
HDGV	Heavy-Duty Gasoline Vehicle
HP	horsepower
HPMS	Highway Performance Monitoring System
I/M	inspection and maintenance
ICAO	International Civil Aviation Organization
ID	identification number
IDPR	Idaho Department of Parks and Recreation
IDWR	Idaho Department of Water Resources
IFIRS	Idaho Fire Incident Reporting System
INPR	Idaho Northern Pacific Railroad
IPM	Integrated Pest Management
IPP	Inventory Preparation Plan
ISDA	Idaho State Department of Agriculture

ITD	Idaho transportation department
km	kilometers
lbs	pounds
LDDT	Light-Duty Diesel Truck
LDDV	Light-Duty Diesel Vehicle
LDGT	Light-Duty Gasoline Truck
LDGV	Light-Duty Gasoline Vehicle
LPG	liquefied petroleum gas
LTOs	landing-takeoff cycles
LULC	land use-land cover
MC	Motorcycles
MEGAN	Model of Emissions of Gases and Aerosol from Nature
Mg	Megagrams
MM5	Fifth-Generation NCAR/Penn State Mesoscale Model
mmHG	millimeters of mercury
MMscf	million standard cubic feet
MOVES	MOtor Vehicle Emission Simulator
mph	miles per hour
mps	meters per second
MSDS	Material Safety Data Sheets
MTBE	methyl tert-butyl ether
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NASS	National Agricultural Statistics Service
NEI	National Emissions Inventory
NH_3	ammonia
NO	nitric oxide
NO_x	nitrogen oxides
O_3	ozone
ORIS	Office of Regulatory Information Systems
OSD	ozone season daily

PAN	Pesticide Action Network
PBR	permit by rule
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter of 10 micrometers or less
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 micrometers or less
POSST	Point Source Survey Tool
ppm	parts per million
ppmv	parts per million by volume
psi	pounds per square inch
PTC	Permit to construct
QA	quality assurance
QAP	Quality Assurance Plan
QC	quality control
RVP	Reid vapor pressure
RWC	residential wood combustion
SCC	Source Classification Code
scf	standard cubic feet
SIC	Source Industrial Classification
SIP	State Implementation Plan
SMOKE	Sparse Matrix Operator Kernel Emissions
SO_2	sulfur dioxide
SSURGO	Soil Survey Geographic Database
STATSGO	State Soil Geographic Database
TAF	Terminal Area Forecast
TAME	tert-amyl methyl ether
TAZ	Transportation Analysis Zone
TDM	Transportation Demand Model
TIMs	Time-in modes
TPD	tons per day
TPY	tons per year
TRI	Toxic Release Inventory

TVRDS	Treasure Valley Road Dust Study
U.S. EPA	United States Environmental Protection Agency
UP	Union Pacific
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UW	University of Washington
VIN	vehicle identification number
VKT	vehicle kilometers travelled
VMT	vehicle miles travelled
VOC	volatile organic compounds
VTRIS	Vehicle Travel Information System
WRAP	Western Regional Air Partnership
WRCC	Western Regional Climate Center
WRF	Weather Research and Forecasting
WSFO	National Weather Service Forecast Office
WWTPs	wastewater treatment plants

1.0 INTRODUCTION

This report was prepared by the team of Eastern Research Group, Inc. (ERG) and ENVIRON International Corporation (ENVIRON), with assistance from Aurora Research Group (Aurora), according to the scope of Idaho Department of Environmental Quality (DEQ) Contract C774, dated March 26, 2009.

1.1 Background

The Treasure Valley Airshed consists of Ada and Canyon counties in total; portions of Elmore, Boise, Gem, Payette, and Owyhee counties in Idaho; plus, a portion of Malheur County, Oregon (see report cover). This airshed boundary was determined using population, model runs, seasonal episodic events for particulate matter (PM) with an aerodynamic diameter of 2.5 µm or less ($PM_{2.5}$) and ozone (O_3), and meteorological data such as average mixing heights. Activity in all of the counties contributes to the air quality conditions, as emissions mix within and are essentially trapped in the roughly 60-mile by 100-mile bathtub-shaped Treasure Valley. The terrain includes mountains northwest-north-northeast that rise to more than 7,000 feet (i.e., the Boise Front); a nearly closed end of the valley to the southeast where a rise off the Boise Front sometimes keeps pollutants from being transported away; mountains to the south-southwest rise to over 8,000 feet (i.e., the Owyhee Mountains); and the valley is open to the west-northwest.

The Treasure Valley, and especially Ada County, has a history of problems with PM with an aerodynamic diameter of 10 micrometers (µm) or less (PM_{10}), and carbon monoxide (CO). Local weather patterns that occur in winter months, terrain, and human activities contributed to episodes of particulate build-up. Northern Ada County was designated as in nonattainment of the PM_{10} National Ambient Air Quality Standard (NAAQS) in 1986. Violations of the PM_{10} NAAQS have not occurred since 1991 and northern Ada County remains in maintenance.

The CO problem stems from automobile exhaust and residential wood heating during winter inversions. Exceedance of the 8-hour CO NAAQS has not occurred since January 1991 and the area remains in maintenance since that time.

Currently, the Treasure Valley is close to violating the O_3 NAAQS. Air quality monitoring data indicate the area has equaled the 0.075 parts per million (ppm) NAAQS when averaging the fourth-highest readings from 2006, 2007, and 2008. Sunny summer weather, air stagnation, increased vehicle miles traveled from rapid population growth, industrial activity, and the terrain all contribute to high O_3 levels. The occasional nearby wildfire and transport from other urban areas in the region also contribute to high levels of O_3 in the valley.

After approaching the 35 microgram per cubic meter ($\mu g/m^3$) 24-hour NAAQS for $PM_{2.5}$, favorable meteorological conditions in the Treasure Valley during the winters of 2006/2007 and 2007/2008 have allowed the $PM_{2.5}$ design value to decrease. Lower frequency and shorter duration inversion conditions have occurred as synoptic weather systems passed through Southwestern Idaho with more regularity. Although the Treasure Valley is not in danger of violating the annual $PM_{2.5}$ standard in the short term, interest remains in obtaining accurate $PM_{2.5}$ emissions data for use in modeling and air quality studies should the typical winter inversions return.

Planning efforts and special projects have identified certain contributors to the O_3, PM_{10}, and $PM_{2.5}$ issues in the Treasure Valley, as well as a need for more recent SIP-level emissions inventory data. DEQ has begun an extensive effort to reduce O_3 levels in the valley, as well as ensuring $PM_{2.5}$ problems remain in check even if stagnant winter weather patterns return. To be fully able to control certain pollutant contributions to the airshed, DEQ must first have the emissions inventory data to be able to determine controls and the human behavioral changes necessary to possibly keep the area from going into nonattainment for one or both of these pollutants.

Idaho DEQ needed an accurate emissions inventory of O3 precursors, and primary PM_{10} and $PM_{2.5}$ and their precursors for the Treasure Valley Airshed. This emissions inventory must be of sufficient quality and detail to:

- Support development of O_3, PM_{10}, and $PM_{2.5}$ control strategies;
- Support photochemical grid modeling for control strategy development; and
- If necessary, in the event of a non-attainment designation, to fully meet U.S. Environmental Protection Agency (U.S. EPA) expectations and guidance as part of an O3, PM_{10}, or $PM_{2.5}$ non-attainment area SIP and maintenance plan submittal.

The Treasure Valley emissions inventory project was funded through the Congestion Mitigation and Air Quality (CMAQ) grant program, which is distributed via the Idaho

Transportation Department (ITD). DEQ is the lead agency on the project, working cooperatively with ITD; the local Metropolitan Planning Organization, COMPASS; and the contractor team of ERG, ENVIRON, and Aurora.

The emissions inventory was developed according to Emission Inventory Improvement Program (EIIP) Level II requirements (EIIP, 1997a).

1.2 Inventory Scope

The scope of the Treasure Valley emissions inventory includes these characteristics:

- Pollutants: Emissions were estimated for the following pollutants:
  - Ozone precursors: nitrogen oxides (NO_x), volatile organic compounds (VOC), and CO;
  - Primary PM_{10} and $PM_{2.5}$; and
  - Precursors of PM_{10} and $PM_{2.5}$: NO_x, sulfur dioxide (SO_x), VOC, and ammonia (NH_3).
- Time Frame and Temporal Resolution: The base year inventory was developed is for calendar year 2008. Projections were developed for years 2015 and 2023. In addition to annual inventories, estimates were also developed for ozone season daily (OSD) and PM_{10}/$PM_{2.5}$ (PM) season daily emissions. The ozone season is April 1 through October 31, and the PM season is November 1 through February 28.

- Sources: The inventories included estimates of emissions from industrial point sources, area sources, and nonroad mobile sources. Also, ENVIRON estimated link-level on-road motor vehicle emissions for the 15-day period of February 1-15, 2008. DEQ then used the CONCEPT-MV system and identical methodologies, with assistance and peer review by ENVIRON, to estimate on-road emissions for each season during all three inventory years (i.e., 2008, 2015, and 2023). DEQ has also completed the CONCEPT-MV on-road modeling procedure for the year 2030 to support update of a PM_{10} Maintenance Plan.

- Geographic Domain and Resolution: The inventories were estimated for the subject pollutants and sources located entirely within Ada, Canyon, and Elmore counties, Idaho. For the point sources, specific location coordinates will be provided. For area and nonroad mobile sources, emissions will be provided at the county level.

Table 1-1 lists the source types and pollutants included in the Treasure Valley emissions inventory.

The contract scope includes the following tasks:

- Task 1: Work Plan for the Development of the Emissions Inventory

- Task 2: Inventory Preparation Plan and Quality Assurance Plan (IPP/QAP)

Table 1-1. Source Types and Categories Included in the Treasure Valley Emissions Inventories

Source Type	Source Category	Pollutants
Point	Industrial Facilities (Various)[a]	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
Area	Industrial Fuel Combustion (distillate, LPG, natural gas)	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Commercial/ Institutional Fuel Combustion (distillate, kerosene, LPG, natural gas)	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Residential Fuel Combustion (distillate, kerosene, LPG, natural gas)	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Residential Wood Combustion (fireplaces, woodstoves, fireplaces with inserts, pellet stoves)	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Paved Road Dust	PM_{10}, $PM_{2.5}$
	Unpaved Road Dust	PM_{10}, $PM_{2.5}$
	Commercial Cooking	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Construction Dust	PM_{10}, $PM_{2.5}$
	Architectural Surface Coating	VOC
	Traffic Markings	VOC
	Autobody Refinishing	VOC
	Industrial Surface Coating	VOC
	Degreasing	VOC
	Graphic Arts	VOC
	Industrial Refrigeration/Cold Storage	NH_3
	Consumer Solvent Use	VOC
	Bakeries	VOC
	Dry Cleaning	VOC
	Asphalt Application	VOC
	Agricultural Pesticides	VOC
	Gasoline Transport and Distribution	VOC
	Wastewater Treatment Plant	VOC
	Landfills	VOC
	Open Burning (yard waste, household waste)	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Agricultural Tilling	PM_{10}, $PM_{2.5}$
	Agricultural Harvesting	PM_{10}, $PM_{2.5}$
	Agricultural Burning (fields, irrigation ditches)	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Beef Cattle Feedlots	VOC, PM_{10}, $PM_{2.5}$
	Structural Fires	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Vehicle Fires	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Windblown Dust	PM_{10}, $PM_{2.5}$
	Livestock Ammonia	NH_3
	Agricultural Fertilizer	NH_3
	Domestic Ammonia	NH_3
	Wild Animals	NH_3
	Native soils	NH_3
Nonroad Mobile	Nonroad Equipment	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Aircraft	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
	Locomotives	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
On-Road Motor Vehicles	• Vehicle Types (8) • Roadway Types	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3
Biogenics	To be provided by DEQ	NO_x, VOC

[a] Industrial point sources include facilities that emit pollutant quantities above the following amounts: 5 tons per year (TPY) PM_{10}, $PM_{2.5}$, SO_2, or NH_3; 10 TPY VOC; 25 TPY NO_x or CO. Sources with annual emissions below these amounts will be included in the area sources inventory.

- Task 3: 2008 Point Sources Emissions Inventory
- Task 4: 2008 Area Sources Emissions Inventory
- Task 5: 2008 Nonroad Mobile Sources Emissions Inventory
- Task 6: Emissions Inventory Document
- Task 7: Emissions Inventory Data Spreadsheets
- Task 8: Peer Review Biogenic and On-Road Motor Vehicle Emissions
- Task 9: Provide all Data to DEQ
- Task 10: Emissions Inventory Projections (2015 and 2023)
- Task 11: CONCEPT MV Motor Vehicle Emissions Modeling

All work under all tasks has been completed. The methods used and results achieved are documented in this final report. All data files (e.g., emissions inventory calculation spreadsheets, model-ready formatted files, etc.) are being submitted along with this final report.

1.3 Report Contents

The remainder of this report is organized as follows:

- Section 2.0 presents the methodologies and results for the 2008 point source inventory;
- Section 3.0 provides the methodologies and results for the 2008 area source inventory;
- Section 4.0 presents review and results for the 2008 on-road motor vehicle inventory;
- Section 5.0 provides the methodologies and results for the 2008 nonroad mobile source inventory;
- Section 6.0 provides the review and results for the 2008 biogenic inventory;
- Section 7.0 outlines the methodologies used to project the 2008 point, area, on-road motor vehicle, nonroad mobile, and biogenic inventories to the future years of 2015 and 2023;
- Section 8.0 describes the emissions inventory data formatting that was conducted;
- Section 9.0 lists all of the references that were used in the development of the overall emissions inventory.

The report appendices contain various supplemental information, including the following:

- Appendix A – Listing of PBR and Unpermitted Facilities
- Appendix B – Letters to Tier 1 and 2 Facilities; PBR and Unpermitted Facilities
- Appendix C – Area Source Surveys (Fuel Dealer and Distributor Survey, Dry Cleaning Survey, Wastewater Treatment Survey, and Landfill Survey)
- Appendix D – Aurora Residential Wood Combustion Survey Report
- Appendix E – DEQ CONCEPT-MV Technical Memorandum
- Appendix F – Biogenics Technical Memorandum
- Appendix G – Detailed Area Source Emission Inventory Summaries

2.0 2008 POINT SOURCE EMISSIONS INVENTORY

2.1 Point Source Data Collection

Early in the development of the point source inventory, it was decided that the industrial point source facilities would be divided into two categories: permitted sources and unpermitted sources. The permitted sources include facilities that operate under a current Tier 1 permit (i.e., Title V) or a Tier 2 (including permit to construct [PTC]) permits. The unpermitted sources include facilities that were operating under a permit by rule (PBR) (i.e., portable sand and gravel equipment and dairies), as well as the possible universe of industrial facilities that do not possess current DEQ air permits. DEQ provided a list of the Tier 1 and Tier 2 permitted facilities and the PBR facilities, including facility and contact name and address.

For the Treasure Valley emissions inventory, point sources are defined to include industrial facilities emitting greater than one of the following thresholds:

- 5 tons per year (tpy) of PM_{10}, $PM_{2.5}$, SO_x, or NH_3;
- 10 tpy of VOC; or
- 25 tpy of NO_x or CO.

Sources with annual emissions below these levels will be included in the area sources inventory.

The procedure described below was used to develop a master database of potential point source facilities located within the Treasure Valley Airshed (i.e., Ada, Canyon, and Elmore counties) in order to include full contact information needed for mailing point source survey letters. The data sources used were DEQ's Tier 1, Tier 2/PTC, and PBR lists; 2002 and 2005 National Emissions Inventory (NEI); the U.S. EPA's Facility Registry System (FRS); Idaho Secretary of State Business Listing; and 2005-2007 Toxic Release Inventories (TRI). The procedure steps included the following:

- The starting point was the DEQ's Tier 1 and Tier 2/PTC permit lists (109 facilities). Information for these facilities included contact person, facility name(s), and address. A unique facility identification number (ID) was assigned. This information was given the highest priority in the merged database.
- Using the 2002 and 2005 NEI, facility information was merged with the above permits list (42 facilities). For overlapping facilities, IDs were updated. Non-

overlapping facilities were appended into the master database and a unique Facility ID was assigned. Information included: facility name(s), address information, SIC/NAICS/Industry codes and descriptors, location coordinates, and other facility identifiers (i.e., NEI Site ID, ORIS Facility Code, TRI ID and FRS ID). This information was assigned the second highest priority.

- Using DEQ's listing of facilities with PBRs (i.e., portable rock crushers and dairies), facility information was added to database. Information for these facilities included contact person, facility name(s), and address. Also, these facilities were assigned an SIC of either 1442 (Construction Sand and Gravel) or 0241 (Dairy Farms). A unique Facility ID was assigned, along with a POSST User Name and Password. This information was assigned the third highest priority.

- The next data source used for the merge was from U.S. EPA's FRS. For Ada, Canyon, and Elmore counties, over 2,100 unique facilities were identified. For non-overlapping facilities, the information obtained from FRS included facility name(s), address information, location coordinates, SIC/NAICS codes, and other facility identifiers (i.e., FRS ID, NEI ID, AFS ID, and TRI ID). This information was assigned the fourth highest priority.

- A business listing provided by the Idaho Secretary of State was merged with the above list, and appended to the master database for non-overlapping businesses. Information included contact person, facility name(s), and address information. This information was assigned the fifth highest priority.

- The final data source to be merged into the master database was the 2005 through 2007 TRI datasets. While the basic facility information was contained in the FRS data source, the TRI datasets also contained contact information. This information was assigned the lowest priority.

Using this procedure, the following quantities of potential point source facilities were identified:

- Tier 1 and Tier 2 permitted facilities: 109 (see Table 2-1)

- PBR facilities (portable rock crushers and dairies): 23 portable plants and 6 dairies (see Table 2-2)

- Unpermitted facilities: 1,654 facilities

A listing of the 1,683 total PBR and unpermitted facilities is presented in Appendix A.

Table 2-1. Permitted Point Sources in the Treasure Valley

Co.	Facility Name	2008 Emissions Data	Co.	Facility Name	2008 Emissions Data
Ada	Ada Animal Crematorium	✓	Ada	Western Aircraft	
	Ada County/Hidden Hollow Landfill			Western Electronics Inc	✓
	American Paving Company	✓		Western Idaho Cabinets	✓
	Arrow Planers & Moulding		Canyon	Ace Supply Inc	
	B & D Foods	✓		The Amalgamated Sugar Co (TASCO)-Nampa	✓
	BFI Boise	✓		Boise Packaging & Newsprint LLC Nampa	✓
	Boise Independent School District - Victory	✓		C & B Quality Trailer Works Inc	✓
	Boise Moulding & Lumber			Carco Mineral Resources Inc	
	C Wright Construction	✓		Chevron USA Inc SS 98628	
	Chen Northern Inc			Crookham Company	
	Chevron/NW Terminalling Boise	✓		Darigold-Caldwell	✓
	Circle K Store #440			Eco-Tech Services Inc	
	Classic Kitchen Doors			Environmental Oil Services	
	Cremation Society Of Idaho	✓		Flahiff Funeral Chapels Inc	✓
	Darling International			Fleetwood Homes of Idaho Inc 04-1	✓
	Earl Scheib Inc			Idaho Ethanol Processing	
	Empire Transport Inc Cloverdale			Interstate Group LLC	✓
	Envirosafe Svcs of Idaho Inc			JC Penney Co Inc	
	EPSCO Corporation			J.R. Simplot Company-Diversified Nampa	✓
	Fiber Composites LLC	✓		J.R. Simplot	
	Fiberglass Systems Inc Kuna			J.R. Simplot Company - Food Group	✓
	Fiberglass Systems Incorporated	✓		Low's Ready Mix Inc	✓
	G2 Energy LLC			Mercy Medical Center	✓
	Hewlett Packard Co - Boise Site	✓		Micron Technology Inc Nampa	✓
	Idaho Timber of Boise LLC	✓		Mirage Enterprises Inc	✓
	Jack's Tire & Oil Inc	✓		Oldcastle Precast Inc	✓
	Lar-Ken Septic Tanks Inc	✓		Pacific Press Publishing Assoc	✓
	Larson Miller Inc			Pyro Energy	
	MAACO Collision Repair And Auto Center			Rogers NK Seed Co	
	Michaels of Oregon	✓		Seedbiotics	✓
	Micron Technology Inc.	✓		Seminis Vegetable Seeds	✓
	Mike's Sand & Gravel			Snake River Chemicals Caldwell	
	Motivepower Truck and Engine Annex (TEA)	✓		Snake River Trailer Company	✓
	Mountain View Animal Clinic			Sorrento Lactalis Inc Swiss Village Plant	✓
	Mountain View Funeral Home Boise	✓		Summit Seed Coatings	✓
	Mountain View Power			Teton Sales Co	✓
	Northwest Pipeline GP Boise	✓		Univar USA Inc Nampa	
	Nxedge Inc Of Boise	✓		US Army National Guard OMS2	
	Plum Creek Northwest Lumber	✓		Western Farm Service – Caldwell	✓
	Pre Cote Industries	✓		Western Stockmens Inc	✓
	Safety Kleen Corporation	✓		Western World Incorporated	
	Saint Alphonsus Regional Medical Center	✓		White's Hauling & Farm	✓
	Saint Luke's Meridian Medical Center	✓		Woodgrain Millwork Inc Nampa	
	Semmaterials L.P.-Boise Id Plant	✓		XI Four Star Beef	
	Sinclair Pipeline Company	✓		Z Casting Inc	
	St. Luke's Regional Medical Center		Elmore	Double J Milling LLC	✓
	Summers Funeral Home			Evander Andrews Power Complex	✓
	Tesoro Refining and Marketing Co., Boise	✓		Glenns Ferry Cogeneration Partners Ltd	
	Treasure Valley Forest Products Boise	✓		Idaho Fresh Pak (Plant #4) Glenns Ferry	
	Turner Sand & Gravel			Idaho Power Co - Bennett Mountain	✓
	Turner Sand & Gravel			Northwest Pipeline Gp Mountain Home	✓
	USAF Idaho Air National Guard			Simplot Livestock Company Grandview	
	US DOT FAA Traffic Control Tower			Treasure Valley Forest Products	
	Valley Sand & Gravel			US Air Force-Mountain Home	✓
	West Park/Walla Walla Shopping Center				

Table 2-2. Facilities Operating Under Permit by Rule in the Treasure Valley Air Shed

DEQ ID or County	Type of Facility	Facility Name
1677700335	Portable	C Wright Construction Co Inc
1677700418	Portable	C Wright Construction Co Inc
1677700158	Portable	Camas Gravel Company
1677700093	Portable	Central Paving Company
1677700024	Portable	Central Paving Company
1677700243	Portable	Central Paving Company
1677700304	Portable	Combined Districts Crushing Fund
1677700099	Portable	Concrete Placing Company Inc
1677700389	Portable	Debco Construction
1677700370	Portable	Deerflat Sand & Gravel
1677700378	Portable	Knife River (Masco Inc)
1677700209	Portable	Nelson-Deppe Inc
1677700390	Portable	Rambo Crushing Company
1677700162	Portable	River Rock Sand & Gravel LLC
1677700100	Portable	Seubert Excavators Inc
1677700103	Portable	Seubert Excavators Inc
1677700373	Portable	Staker & Parson Companies
77700407	Portable	Staker & Parson Company
777-00422	Portable	STP Concrete Co., Inc
041-00007	Portable	Treasure Canyon Calcium
1677700231	Portable	Western Construction
1677700042	Portable	Western Construction
1677700212	Portable	Western Construction
Ada	Dairy	Degroot Dairy
Canyon	Dairy	Beranna Dairy
Canyon	Dairy	Dry Lakes Dairy
Canyon	Dairy	Sun Ridge Dairy
Canyon	Dairy	T&T Cattle
Elmore	Dairy	TLK Dairy

It should be noted that the listing of PBR and unpermitted sources does not include landfills, fuel suppliers/distributors, dry cleaners, municipal wastewater treatment plants (WWTPs), beef cattle feedlots, and airports (to the extent that they could be identified). The reason for excluding these sources is because their activity data will be collected separately to use with methods for estimating their emissions which are unique to those source categories. These methodologies for these source categories are discussed in the following sections:

- Fuel suppliers/distributors (Section 3.1.1)
- Dry cleaners (Section 3.1.13)
- Wastewater treatment plants (Section 3.1.17)

- Landfills (Section 3.1.18)
- Beef cattle feedlots (Section 3.1.23)
- Airports (Section 5.1.2)

The final database was provided to DEQ. DEQ then assigned a POSST User Name and Password to each record, and used the file to print names and contact information on each of the letters for both the permitted and PBR/unpermitted sources. Letters were then developed to mail to each facility to request completion of the POSST forms. The permitted sources were requested to complete the full POSST form (previously developed by DEQ for annual reporting), while the unpermitted facilities were allowed to complete a simplified “EZ” form (i.e., emission estimates were not required). Examples of these letters (i.e., one for the Tier 1 and Tier 2 permitted facilities, and another for the PBR and unpermitted facilities) are included in Appendix B. Finally, the contact information and POSST User Names and Passwords from the final merged database were transferred to the POSST survey letters and mailed to each facility.

2.2 Emission Calculation Methodologies – Annual

The methodologies used to calculate annual point source emissions for the 2008 base year are presented in this section. The estimation of the seasonal ozone and PM daily emissions for 2008 is discussed in Section 2.3, while the development of the future 2015 and 2023 projected point source emissions inventories is presented in Section 7.1.1.

Annual point source emissions were developed from data collected electronically by DEQ using the POSST submittal process. Of the 109 permitted facilities, a total of 60 facilities submitted 2008 annual emissions either through the complete POSST or as a separate facility-wide emissions inventory (see Table 2-1). Initial quality assurance (QA) was conducted by DEQ before emissions data were compiled.

Following DEQ’s QA, an additional QA step was conducted for consistency. The PM data submitted through POSST was very inconsistent. Some facilities submitted primary PM_{10} (PM_{10}-PRI) emissions, while others submitted filterable PM_{10} (PM_{10}-FIL) emissions. Most combustion sources did not submit condensable PM (PM-CON) emissions, even though such emissions would be expected. Some facilities submitted $PM_{2.5}$ emissions that were identical to PM_{10} emissions based on an apparent assumption of equality, even though such an assumption was incorrect. In order to address the inconsistency in PM emissions, the PM augmentation scheme utilized in the 2002 NEI was implemented (U.S. EPA, 2006). The PM augmentation scheme provided look-up tables of SCC-specific conversion factors (e.g., PM_{10}-PRI to PM_{10}-FIL, PM_{10}-FIL to PM-CON, PM_{10}-FIL to $PM_{2.5}$-FIL, etc.). The augmentation scheme was applied to either PM_{10}-PRI or PM_{10}-FIL emissions for every point source process reported in POSST. Wherever possible, identified controls were accounted for in this augmentation procedure. Application of the augmentation procedure resulted in PM_{10}-FIL, $PM_{2.5}$-FIL, and PM-CON emissions for every point source process. For inclusion in this report, these point source emissions were reported as PM_{10}-PRI (i.e., sum of PM_{10}-FIL and PM-CON) and $PM_{2.5}$-PRI (i.e., sum of $PM_{2.5}$-FIL and PM-CON). However, in the formatted data files to be provided along with the final report, the filterable and condensable PM emissions will be provided, instead of the primary PM emissions.

Of the 1,683 unpermitted and PBR facilities included in Appendix A, a total of 632 facilities (i.e., nearly a 38 percent return rate) submitted a simplified “EZ” form to DEQ. DEQ then performed the initial compilation of the EZ data. Subsequent QA was then conducted and facilities with unusable data were discarded.   Because the unpermitted and PBR facilities had little or no previous interaction with DEQ concerning air emissions, there were considerable amounts of invalid data that were submitted to DEQ. Some issues included:

- Because the selection of the 1,683 unpermitted and PBR facilities was fairly broad, there were a large number of facilities that did not have emissive processes (e.g., businesses run out of homes, land management companies, etc.).
- Some facilities reported nonsensical units (e.g., tons of electricity, million cubic feet of heat, 1000 gallons of vehicles, gallons of steel, etc.).
- Some reported material quantities were not reasonable (e.g., a particular facility’s reported fuel use was a significant fraction of the state’s total industrial or commercial fuel use, etc.).
- Some reported material quantities did not match the reported SCC.
- There were handful of instances where submitted incorrect or missing data were corrected (i.e., typically based upon notes found elsewhere in the submitted data records), but, in general, the intent of incorrect or missing data was not discernible and so these facilities were discarded.

After these QA steps, a total of 291 facilities that submitted EZ data remained with valid and reasonable activity data.

The next step for these 291 facilities was to determine which facilities exceeded the point source thresholds (i.e., 5 tpy for PM_{10}, $PM_{2.5}$, SO_x, and NH_3; 10 tpy for VOC; and 25 tpy for NO_x and CO). This was accomplished by using emission factors from a variety of sources including emission factors from AP-42 and other guidance documents, as well as information submitted by respondents (e.g., paint or adhesive VOC content, etc.). For example, the threshold determination for natural gas combustion used the AP-42 emission factors for small natural gas boilers (i.e., 100 lbs $NO_x/10^6$ ft^3, 0.6 lbs $SO_2/10^6$ ft^3, 5.5 lbs $VOC/10^6$ ft^3, 84 lbs $CO/10^6$ ft^3, 7.6 lbs $PM_{10}/10^6$ ft^3, and 7.6 lbs $PM_{2.5}/10^6$ ft^3) (U.S. EPA, 2010). The resultant natural gas quantities needed to exceed the respective pollutant thresholds were: 500×10^6 ft^3 for NO_x, $16,667 \times 10^6$ ft^3 for SO_2, $3,636 \times 10^6$ ft^3 for VOC, 595×10^6 ft^3 for CO, and $1,316 \times 10^6$ ft^3 for PM_{10} and $PM_{2.5}$. The lowest quantity (i.e., 500×10^6 ft^3 for NO_x) was then used to determine which facilities had natural gas combustion sources that exceeded the thresholds and should be considered to be point sources. Threshold determinations were conducted for the following source categories: fuel combustion (i.e., natural gas, LPG, distillate oil, and waste oil), gasoline distribution, rock crushing, concrete batching, graphic arts, aviation gasoline distribution, and adhesive application. Following the threshold determination, a total of 33 non-permitted sources were identified as exceeding DEQ's point source thresholds with 24 of these being gasoline stations. Because of the potential difficulty associated with modeling some gasoline stations as point sources and some as area sources, all gasoline stations were kept in the gasoline distribution area source category, even though 24 gasoline stations exceeded DEQ's point source thresholds. The remaining nine non-permitted sources that exceeded DEQ's point source thresholds are listed in Table 2-3.

The reconciliation between point source activity data and area source activity data was performed. Due to incompatibilities between activity data and estimation methodologies, activity data reconciliation was only possible for natural gas combustion in the industrial and commercial sectors. The activity data reconciliation is described further in Section 3.1.1 (industrial and commercial natural gas combustion).

Table 2-3. Unpermitted Facilities that Exceeded Point Source Thresholds in 2008 Emissions

Facility Name	County
C Wright Construction Co., Inc. (Fac Id: 1677700418)	Ada
Guerdon Enterprises LLC	Ada
Knife River	Ada
Western Construction (Portable Plant)	Ada
C Wright Construction Co., Inc. (Fac Id: 1677700335)	Canyon
Combined Districts Crushing Fund	Canyon
Kit Home Builders West	Canyon
Nelson-Deppe Inc.	Canyon
River Rock Sand & Gravel LLC	Canyon

2.3 Emission Calculation Methodologies – Ozone and PM Season

After the annual point source emissions were estimated using the methodologies described in Section 2.2, the daily ozone season and PM season emission estimates were developed. The ozone season extends from April 1 through October 31 (i.e., 214 days), while the PM season is from November 1 through February 29 (2008 is a leap year) (i.e., 121 days). The seasonal emissions were developed using a seasonal temporal allocation profiles. All of the sources that submitted electronic data via the POSST or EZ submittal identified the percent of operations, as number between 0 and 100, that occurred during the spring (i.e., March through May), summer (i.e., June through August), fall (i.e., September through November), and winter (i.e., December through February) for each process. In a few instances, the seasonal percent of operations was not identified for a particular process at a facility. These were gapfilled based upon seasonal percent information for other processes at the same facility.

The ozone season and PM season factors were developed using the following equations:

$$OSF = \left(\frac{\mathrm{SPR}}{100}\right) \times \left(\frac{61}{92}\right) + \left(\frac{\mathrm{SUM}}{100}\right) + \left(\frac{\mathrm{FAL}}{100}\right) \times \left(\frac{61}{91}\right)$$

$$PSF = \left(\frac{\mathrm{FAL}}{100}\right) \times \left(\frac{30}{91}\right) + \left(\frac{\mathrm{WIN}}{100}\right)$$

Where:

OSF	=	Ozone seasonal factor
PSF	=	PM seasonal factor
SPR	=	Percent of operations in spring
SUM	=	Percent of operations in summer
FAL	=	Percent of operations in fall
WIN	=	Percent of operations in winter

The ozone season and PM season daily emissions were calculated by multiplying annual emissions by the ozone/PM season factors and then dividing by the number of days in the ozone/PM season. This is shown with the following equations:

$$E_{OS} = \frac{E_A \times OSF}{214}$$

$$E_{PS} = \frac{E_A \times PSF}{121}$$

Where:

E_A	=	Annual emissions (tons/year);
E_{OS}	=	Ozone season daily emissions (tons/day);
E_{PS}	=	PM season daily emissions (tons/day);
OSF	=	Ozone seasonal factor; and
PSF	=	PM seasonal factor.

2.4 Emission Results by Facility

The facility-level annual point source emissions are presented in Table 2-4. The facilities are listed alphabetically by county. The permitted point sources are identified as a POSST facility type; the unpermitted point sources are identified as an EZ facility type. Table cells containing a value of 0.0 represent some non-zero value less than 0.05 tons per year (tpy); blank cells represent zero emissions. One facility listed in Table 2-1 (Fiberglass Systems in Ada County) submitted a POSST submittal with zero emissions and was not included in Table 2-4. Similarly, the facility-level ozone season and PM season emissions are presented in Table 2-5 and 2-6, respectively. Table cells containing a value of 0.00 represent some non-zero value less than 0.005 tons per day (tpd); blank cells represent zero emissions. All facility-level point source data presented in Tables 2-4, 2-5, and 2-6 are included in the electronic data files submitted in conjunction with this final report.

2.5 QA/QC Procedures

For the point source inventory development, a number of QA/QC procedures were described in the project IPP/QAP (ERG and ENVIRON, 2009). However, the actual point source inventory development process was somewhat different than envisioned in the IPP/QAP. ERG's involvement with the POSST and EZ data processing and manipulation was considerably reduced with DEQ taking on a larger role. However, ERG did conduct some QA/QC following

Table 2-4. 2008 Annual Point Source Emissions (Tons/Year)

Facility Name	County	Facility Type	NO_x	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$	NH_3
Ada Animal Crematorium	Ada	POSST	0.4	0.1	0.0	0.2	0.1	0.1	
American Paving Company	Ada	POSST				4.5	1.3	0.3	
B & D Foods	Ada	POSST	1.2	0.0	0.1	1.0	0.6	0.4	
BFI Boise	Ada	POSST							0.0
Boise Independent School District - Victory	Ada	POSST			0.0		0.0	0.0	
C Wright Construction	Ada	POSST	0.6	0.1	1.1	3.1	1.1	0.3	
C Wright Construction Co., Inc. (Fac Id: 1677700418)	Ada	EZ					5.2	1.7	
Cremation Society Of Idaho	Ada	POSST	0.1		0.0	0.1	0.1	0.1	
Fiber Composites LLC	Ada	POSST					29.5	21.3	
Guerdon Enterprises LLC	Ada	EZ			21.4				
Hewlett Packard Co - Boise Site	Ada	POSST	50.4	2.0	3.0	16.2	3.0	2.9	
Idaho Timber of Boise LLC	Ada	POSST					0.1	0.0	
Jack's Tire & Oil Inc	Ada	POSST	0.1	0.0	0.1	0.1	0.0	0.0	0.0
Knife River	Ada	EZ	7.2	5.3	2.2	24.0	0.3	0.2	
LAR KEN Septic Tanks Inc	Ada	POSST					0.5	0.2	
Micron Technology Inc	Ada	POSST	34.0	1.4	17.1	24.6	36.7	34.2	45.9
MotivePower Truck & Engine Annex (TEA)	Ada	POSST	10.2	0.8	33.8	5.1	0.6	0.6	
Mountain View Funeral Home Boise	Ada	POSST	0.5	0.0	0.0	0.1	0.1	0.1	
Northwest Pipeline - Boise	Ada	POSST	84.6		0.5	2.9	2.9	2.9	
NW Terminalling, Boise	Ada	POSST	4.5		74.4	11.2	2.7	1.9	
Nxedge Inc of Boise	Ada	POSST	0.3	0.0	0.1	0.3	0.1	0.1	
Plum Creek Northwest Lumber	Ada	POSST					25.2	24.4	
Pre Cote Industries	Ada	POSST			11.5				
Safety Kleen Corporation	Ada	POSST			0.2				
Saint Alphonsus Regional Medical Center	Ada	POSST	14.3	0.1	0.4	6.3	0.6	0.6	
Saint Luke's Meridian Medical Center	Ada	POSST	21.7	3.7	1.2	17.5	7.6	7.4	
Saint Luke's Regional Medical Center	Ada	POSST	115.1	46.9	4.1	52.9	23.6	23.3	
Semmaterials L.P.- Boise Plant	Ada	POSST	2.7	0.0	2.9	2.2	0.9	0.5	
Sinclair Pipeline	Ada	POSST			54.8				

Table 2-4. Continued

Facility Name	County	Facility Type	NO_x	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$	NH_3
Company									
Tesoro Refining and Marketing Company, Boise	Ada	POSST	0.0	0.0	20.9	0.0	0.0	0.0	
Treasure Valley Forest Products, Boise	Ada	POSST	0.5	0.0	1.1	1.9	25.8	18.9	
Western Construction (Portable Plant)	Ada	EZ	7.3	5.4	2.2	24.4	0.3	0.2	
Western Electronics Inc	Ada	POSST	0.0		0.0	0.0			0.0
Western Idaho Cabinets	Ada	POSST			15.1		0.1	0.1	
Boise Packaging & Newsprint LLC Nampa	Canyon	POSST	2.1	0.0	25.2	2.2	1.8	1.3	
C Wright Construction Co., Inc. (Fac Id: 1677700335)	Canyon	EZ					9.7	3.1	
C&B Quality Trailer Works	Canyon	POSST	0.1	0.0	33.1	0.0	0.2	0.2	
Combined Districts Crushing Fund	Canyon	EZ					11.3	3.7	
Darigold-Caldwell	Canyon	POSST	16.0	0.1	0.9	13.0	8.4	5.4	
Flahiff Funeral Chapels Inc	Canyon	POSST	1.2	0.4	0.0	0.0	0.2	0.1	
Fleetwood Homes of Idaho Inc 04-1	Canyon	POSST			10.6		0.3	0.2	
Interstate Group LLC	Canyon	POSST	0.0		14.3	0.0	0.7	0.5	
JR Simplot Company – Diversified Nampa	Canyon	POSST	31.3	0.2	41.6	32.5	52.1	39.0	
JR Simplot Company - Food Group	Canyon	POSST	57.0	36.0	17.9	67.5	119.6	102.2	240.1
Kit Home Builders West	Canyon	EZ			36.1				
Low's Ready Mix, Inc.	Canyon	POSST					0.2	0.1	
Mercy Medical Center	Canyon	POSST	1.8	0.0	0.1	1.5	0.1	0.1	
Micron Technology Inc Nampa	Canyon	POSST	3.1	0.1	40.6	2.1	1.0	0.9	0.5
Mirage Enterprises Inc	Canyon	POSST			12.7		0.3	0.2	
Nelson-Deppe Inc.	Canyon	EZ					36.8	12.0	
Oldcastle Precast Inc	Canyon	POSST	0.0	0.0	0.0	0.0	0.0	0.0	
Pacific Press Publishing Assoc	Canyon	POSST	1.3	0.0	20.0	1.1	0.1	0.1	
River Rock Sand & Gravel LLC	Canyon	EZ					6.1	2.0	
Seedbiotics	Canyon	POSST					9.4	8.7	
Seminis Vegetable Seeds	Canyon	POSST	0.9		2.9	21.6	0.1	0.1	
Snake River Trailer Company	Canyon	POSST			0.0				
Sorrento Lactalis Incorporated Swiss Village Plant	Canyon	POSST	37.6	0.3	2.1	40.4	17.5	17.2	
Summit Seed Coatings	Canyon	POSST	0.3	0.0	0.0	0.2	0.3	0.2	
TASCO Nampa	Canyon	POSST	1,203.5	1,969.9	29.2	862.4	219.0	80.2	175.7

Table 2-4. Continued

Facility Name	County	Facility Type	NO_x	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$	NH_3
Teton Sales Company	Canyon	POSST	0.1	0.0	16.2	0.1	0.1	0.1	
Western Farm Service - Caldwell	Canyon	POSST	0.1	0.3	0.0	0.0	0.1	0.1	4.3
Western Stockmens Inc	Canyon	POSST	0.1	0.0	0.0	0.1	0.3	0.1	
White's Hauling & Farm	Canyon	POSST					0.2	0.1	
Double J Milling LLC	Elmore	POSST	5.3	0.0	0.3	4.5	5.3	3.1	
Evander Andrew Complex	Elmore	POSST	29.1	0.5	1.8	32.7	5.6	5.6	
Idaho Power - Bennett Mountain	Elmore	POSST	18.6	0.1	0.6	6.4	1.7	1.7	
Mountain Home Air Force Base	Elmore	POSST	100.6	1.8	18.1	49.3	123.2	48.2	
Northwest Pipeline - Mountain Home	Elmore	POSST	206.6	0.0	5.8	12.3	0.0	0.0	
Ada County			**355.6**	**65.7**	**268.1**	**198.5**	**169.1**	**142.6**	**46.0**
Canyon County			**1,356.5**	**2,007.3**	**303.4**	**1,044.7**	**495.9**	**277.8**	**420.6**
Elmore County			**360.3**	**2.5**	**26.6**	**105.3**	**135.9**	**58.7**	**0.0**
Total			**2,072.4**	**2,075.4**	**598.1**	**1,348.5**	**800.9**	**479.0**	**466.6**

Table 2-5. 2008 Ozone Season Point Source Emissions (Tons/Day)

Facility Name	County	Facility Type	NO_x	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$	NH_3
Ada Animal Crematorium	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
American Paving Company	Ada	POSST				0.01	0.00		
B & D Foods	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
BFI Boise	Ada	POSST							0.00
Boise Independent School District - Victory	Ada	POSST			0.00		0.00	0.00	
C Wright Construction	Ada	POSST	0.00	0.00	0.00	0.01	0.00	0.00	
C Wright Construction Co., Inc. (Fac Id: 1677700418)	Ada	EZ					0.01	0.00	
Cremation Society Of Idaho	Ada	POSST	0.00		0.00	0.00	0.00	0.00	
Fiber Composites LLC	Ada	POSST					0.08	0.06	
Guerdon Enterprises LLC	Ada	EZ			0.06				
Hewlett Packard Co - Boise Site	Ada	POSST	0.14	0.01	0.01	0.04	0.01	0.01	
Idaho Timber of Boise LLC	Ada	POSST					0.00	0.00	
Jack's Tire & Oil Inc	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Knife River	Ada	EZ	0.03	0.02	0.01	0.10	0.00	0.00	
LAR KEN Septic Tanks Inc	Ada	POSST					0.00	0.00	
Micron Technology Inc	Ada	POSST	0.08	0.00	0.05	0.06	0.10	0.09	0.12
MotivePower Truck & Engine Annex (TEA)	Ada	POSST	0.03	0.00	0.09	0.01	0.00	0.00	
Mountain View Funeral Home Boise	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
Northwest Pipeline - Boise	Ada	POSST	0.23		0.00	0.01	0.01	0.01	
NW Terminalling, Boise	Ada	POSST	0.01		0.21	0.03	0.01	0.01	
Nxedge Inc of Boise	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
Plum Creek Northwest Lumber	Ada	POSST					0.07	0.07	
Pre Cote Industries	Ada	POSST			0.03				
Safety Kleen Corporation	Ada	POSST			0.00				
Saint Alphonsus Regional Medical Center	Ada	POSST	0.04	0.00	0.00	0.02	0.00	0.00	
Saint Luke's Meridian Medical Center	Ada	POSST	0.06	0.01	0.00	0.04	0.02	0.02	
Saint Luke's Regional Medical Center	Ada	POSST	0.29	0.09	0.01	0.13	0.05	0.05	
Semmaterials L.P.- Boise Plant	Ada	POSST	0.01	0.00	0.01	0.01	0.00	0.00	
Sinclair Pipeline	Ada	POSST			0.15				

Table 2-5. Continued

Facility Name	County	Facility Type	NO_x	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$	NH_3
Company									
Tesoro Refining and Marketing Company, Boise	Ada	POSST	0.00	0.00	0.06	0.00	0.00	0.00	
Treasure Valley Forest Products, Boise	Ada	POSST	0.00	0.00	0.00	0.01	0.08	0.06	
Western Construction (Portable Plant)	Ada	EZ	0.03	0.02	0.01	0.09	0.00	0.00	
Western Electronics Inc	Ada	POSST	0.00		0.00	0.00			0.00
Western Idaho Cabinets	Ada	POSST			0.04		0.00	0.00	
Boise Packaging & Newsprint LLC Nampa	Canyon	POSST	0.01	0.00	0.07	0.01	0.01	0.00	
C Wright Construction Co., Inc. (Fac Id: 1677700335)	Canyon	EZ					0.03	0.01	
C&B Quality Trailer Works	Canyon	POSST	0.00	0.00	0.10	0.00	0.00	0.00	
Combined Districts Crushing Fund	Canyon	EZ					0.03	0.01	
Darigold-Caldwell	Canyon	POSST	0.04	0.00	0.00	0.04	0.02	0.01	
Flahiff Funeral Chapels Inc	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
Fleetwood Homes of Idaho Inc 04-1	Canyon	POSST			0.03		0.00	0.00	
Interstate Group LLC	Canyon	POSST	0.00		0.04	0.00	0.00	0.00	
JR Simplot Company – Diversified Nampa	Canyon	POSST	0.09	0.00	0.11	0.09	0.14	0.11	
JR Simplot Company - Food Group	Canyon	POSST	0.13	0.10	0.05	0.16	0.32	0.28	0.65
Kit Home Builders West	Canyon	EZ			0.10				
Low's Ready Mix, Inc.	Canyon	POSST					0.00	0.00	
Mercy Medical Center	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
Micron Technology Inc Nampa	Canyon	POSST	0.01	0.00	0.11	0.00	0.00	0.00	0.00
Mirage Enterprises Inc	Canyon	POSST			0.03		0.00	0.00	
Nelson-Deppe Inc.	Canyon	EZ					0.11	0.04	
Oldcastle Precast Inc	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
Pacific Press Publishing Assoc	Canyon	POSST	0.00	0.00	0.06	0.00	0.00	0.00	
River Rock Sand & Gravel LLC	Canyon	EZ					0.02	0.01	
Seedbiotics	Canyon	POSST					0.01	0.01	
Seminis Vegetable Seeds	Canyon	POSST	0.00		0.01	0.07	0.00	0.00	
Snake River Trailer Company	Canyon	POSST			0.00				
Sorrento Lactalis Incorporated Swiss Village Plant	Canyon	POSST	0.10	0.00	0.01	0.11	0.05	0.05	
Summit Seed Coatings	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
TASCO Nampa	Canyon	POSST	3.14	5.10	0.06	1.63	0.57	0.21	0.40

Table 2-5. Continued

Facility Name	County	Facility Type	NO_x	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$	NH_3
Teton Sales Company	Canyon	POSST	0.00	0.00	0.04	0.00	0.00	0.00	
Western Farm Service - Caldwell	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Western Stockmens Inc	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
White's Hauling & Farm	Canyon	POSST					0.00	0.00	
Double J Milling LLC	Elmore	POSST	0.01	0.00	0.00	0.01	0.01	0.01	
Evander Andrew Complex	Elmore	POSST	0.11	0.00	0.01	0.13	0.02	0.02	
Idaho Power - Bennett Mountain	Elmore	POSST	0.04	0.00	0.00	0.01	0.00	0.00	
Mountain Home Air Force Base	Elmore	POSST	0.27	0.00	0.05	0.13	0.34	0.13	
Northwest Pipeline - Mountain Home	Elmore	POSST	0.56	0.00	0.02	0.03	0.00	0.00	
Ada County			**0.96**	**0.16**	**0.75**	**0.58**	**0.46**	**0.38**	**0.12**
Canyon County			**3.52**	**5.20**	**0.82**	**2.11**	**1.31**	**0.73**	**1.07**
Elmore County			**1.00**	**0.01**	**0.07**	**0.32**	**0.38**	**0.17**	**0.00**
Total			**5.48**	**5.36**	**1.64**	**3.01**	**2.15**	**1.28**	**1.20**

Table 2-6. 2008 PM Season Point Source Emissions (Tons/Day)

Facility Name	County	Facility Type	NO_x	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$	NH_3
Ada Animal Crematorium	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
American Paving Company	Ada	POSST				0.00	0.00		
B & D Foods	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
BFI Boise	Ada	POSST							0.00
Boise Independent School District - Victory	Ada	POSST			0.00		0.00	0.00	
C Wright Construction	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
C Wright Construction Co., Inc. (Fac Id: 1677700418)	Ada	EZ					0.01	0.00	
Cremation Society Of Idaho	Ada	POSST	0.00		0.00	0.00	0.00	0.00	
Fiber Composites LLC	Ada	POSST					0.08	0.06	
Guerdon Enterprises LLC	Ada	EZ			0.05				
Hewlett Packard Co - Boise Site	Ada	POSST	0.14	0.01	0.01	0.04	0.01	0.01	
Idaho Timber of Boise LLC	Ada	POSST					0.00	0.00	
Jack's Tire & Oil Inc	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Knife River	Ada	EZ	0.00	0.00	0.00	0.01	0.00	0.00	
LAR KEN Septic Tanks Inc	Ada	POSST					0.00	0.00	
Micron Technology Inc	Ada	POSST	0.11	0.00	0.05	0.09	0.10	0.10	0.13
MotivePower Truck & Engine Annex (TEA)	Ada	POSST	0.03	0.00	0.09	0.01	0.00	0.00	
Mountain View Funeral Home Boise	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
Northwest Pipeline - Boise	Ada	POSST	0.23		0.00	0.01	0.01	0.01	
NW Terminalling, Boise	Ada	POSST	0.01		0.19	0.03	0.01	0.01	
Nxedge Inc of Boise	Ada	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
Plum Creek Northwest Lumber	Ada	POSST					0.07	0.07	
Pre Cote Industries	Ada	POSST			0.03				
Safety Kleen Corporation	Ada	POSST			0.00				
Saint Alphonsus Regional Medical Center	Ada	POSST	0.04	0.00	0.00	0.02	0.00	0.00	
Saint Luke's Meridian Medical Center	Ada	POSST	0.06	0.01	0.00	0.07	0.03	0.03	
Saint Luke's Regional Medical Center	Ada	POSST	0.36	0.19	0.01	0.17	0.08	0.08	
Semmaterials L.P.- Boise Plant	Ada	POSST	0.00	0.00	0.01	0.00	0.00	0.00	
Sinclair Pipeline	Ada	POSST			0.15				

Table 2-6. Continued

Facility Name	County	Facility Type	NO_x	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$	NH_3
Company									
Tesoro Refining and Marketing Company, Boise	Ada	POSST	0.00	0.00	0.06	0.00	0.00	0.00	
Treasure Valley Forest Products, Boise	Ada	POSST	0.00	0.00	0.00	0.00	0.04	0.03	
Western Construction (Portable Plant)	Ada	EZ	0.00	0.00	0.00	0.01	0.00	0.00	
Western Electronics Inc	Ada	POSST	0.00		0.00	0.00			0.00
Western Idaho Cabinets	Ada	POSST			0.04		0.00	0.00	
Boise Packaging & Newsprint LLC Nampa	Canyon	POSST	0.01	0.00	0.07	0.01	0.01	0.00	
C Wright Construction Co., Inc. (Fac Id: 1677700335)	Canyon	EZ					0.03	0.01	
C&B Quality Trailer Works	Canyon	POSST	0.00	0.00	0.06	0.00	0.00	0.00	
Combined Districts Crushing Fund	Canyon	EZ					0.03	0.01	
Darigold-Caldwell	Canyon	POSST	0.04	0.00	0.00	0.04	0.02	0.01	
Flahiff Funeral Chapels Inc	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
Fleetwood Homes of Idaho Inc 04-1	Canyon	POSST			0.03		0.00	0.00	
Interstate Group LLC	Canyon	POSST	0.00		0.04	0.00	0.00	0.00	
JR Simplot Company – Diversified Nampa	Canyon	POSST	0.09	0.00	0.11	0.09	0.14	0.11	
JR Simplot Company - Food Group	Canyon	POSST	0.21	0.10	0.05	0.23	0.33	0.28	0.66
Kit Home Builders West	Canyon	EZ			0.10				
Low's Ready Mix, Inc.	Canyon	POSST					0.00	0.00	
Mercy Medical Center	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
Micron Technology Inc Nampa	Canyon	POSST	0.01	0.00	0.11	0.01	0.00	0.00	0.00
Mirage Enterprises Inc	Canyon	POSST			0.03		0.00	0.00	
Nelson-Deppe Inc.	Canyon	EZ					0.09	0.03	
Oldcastle Precast Inc	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
Pacific Press Publishing Assoc	Canyon	POSST	0.00	0.00	0.05	0.00	0.00	0.00	
River Rock Sand & Gravel LLC	Canyon	EZ					0.02	0.01	
Seedbiotics	Canyon	POSST					0.05	0.04	
Seminis Vegetable Seeds	Canyon	POSST	0.00		0.01	0.06	0.00	0.00	
Snake River Trailer Company	Canyon	POSST			0.00				
Sorrento Lactalis Incorporated Swiss Village Plant	Canyon	POSST	0.10	0.00	0.01	0.11	0.05	0.05	
Summit Seed Coatings	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
TASCO Nampa	Canyon	POSST	3.94	6.40	0.14	4.22	0.72	0.27	0.68

Table 2-6. Continued

Facility Name	County	Facility Type	NO_x	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$	NH_3
Teton Sales Company	Canyon	POSST	0.00	0.00	0.04	0.00	0.00	0.00	
Western Farm Service - Caldwell	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Western Stockmens Inc	Canyon	POSST	0.00	0.00	0.00	0.00	0.00	0.00	
White's Hauling & Farm	Canyon	POSST					0.00	0.00	
Double J Milling LLC	Elmore	POSST	0.01	0.00	0.00	0.01	0.01	0.01	
Evander Andrew Complex	Elmore	POSST	0.03	0.00	0.00	0.03	0.01	0.01	
Idaho Power - Bennett Mountain	Elmore	POSST	0.07	0.00	0.00	0.03	0.01	0.01	
Mountain Home Air Force Base	Elmore	POSST	0.28	0.00	0.05	0.14	0.34	0.13	
Northwest Pipeline - Mountain Home	Elmore	POSST	0.57	0.00	0.02	0.03	0.00	0.00	
Ada County			**1.00**	**0.22**	**0.70**	**0.48**	**0.45**	**0.39**	**0.13**
Canyon County			**4.41**	**6.50**	**0.86**	**4.76**	**1.49**	**0.83**	**1.34**
Elmore County			**0.97**	**0.01**	**0.07**	**0.24**	**0.37**	**0.15**	**0.00**
Total			**6.38**	**6.73**	**1.63**	**5.48**	**2.31**	**1.37**	**1.47**

the transmittal of the POSST and EZ data from DEQ. Before initiating any emission calculations, ERG conducted a high-level review of the transmitted POSST and EZ data files and examined the data for any questionable outliers. Questions regarding these outliers were then communicated to DEQ staff. Analysis of the EZ data did involved some QA/QC procedures (e.g., identification of non-emissive processes, nonsensical units, unreasonably high material quantities, SCC-material inconsistencies, incorrectly input information, etc.). Subsequent manipulation of point source data included frequent summation checks to ensure that individual process emissions were not accidentally omitted.

3.0 2008 AREA SOURCE EMISSIONS INVENTORY

Area sources are defined as those sources emitting annual emissions less than the point source thresholds. The Treasure Valley emissions inventory includes all of the area source emission categories listed in Table 1-1. In general, these are identical to the categories identified in the IPP/QAP document (ERG and ENVIRON, 2009). The only significant changes are that a few additional ammonia source categories (i.e., wild animal ammonia and soil ammonia) and a few specialized categories (i.e., industrial refrigeration/cold storage and irrigation ditch burning) have been added.

3.1 Emissions Calculation Methodologies – Annual

The annual area source emissions calculation methodologies are briefly summarized in Table 3-1 (i.e., the Area Source Matrix). The Area Source Matrix was previously presented in the IPP/QAP and summarized the preferred and alternative methodologies for each area source category, as well as activity data and emission factors. The Area Source Matrix has been modified based upon the methodologies, activity data, and emission factors actually used; in addition, each details of each methodology are presented in the subsections below.

3.1.1 Fuel Combustion

Fuel combustion includes three distinct sectors (i.e., industrial, commercial/ institutional, and residential) and a number of different fuels (e.g., natural gas, distillate fuel oil, liquefied petroleum gas [LPG], etc.); residential wood combustion is treated as a separate area source category, which is described in the following section.

Activity data for industrial, commercial/institutional, and residential fuel combustion were collected using a mail-out survey (included as Appendix C) that was sent to fuel dealers and distributors in September 2009. The survey was mailed to a total of 66 fuel dealers and distributors located in Ada, Canyon, or Elmore counties, or in adjacent counties (i.e., Boise, Gem, Gooding, Owyhee, Payette, and Twin Falls counties) that might sell fuel within Ada, Canyon, or Elmore counties. The list of fuel dealers and distributors was compiled from four on-line business directories or listings (i.e., Yellow Pages, Dun & Bradstreet, Manta, and Hoover's).

Table 3-1. Area Source Matrix

Source Category	Pollutants	Methodology	Activity Data	Notes
Industrial Fuel Combustion	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3	Emission factors: AP-42 (Sections 1.3, 1.4, and 1.5); 2002 NEI Documentation; EIIP Ammonia Report	Local fuel survey (fuel quantities and sulfur content)	Includes distillate, natural gas, and LPG. Point source reconciliation conducted for natural gas only.
Commercial/ Institutional Fuel Combustion	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3	Emission factors: AP-42 (Sections 1.3, 1.4, and 1.5); 2002 NEI Documentation; EIIP Ammonia Report	Local fuel survey (fuel quantities and sulfur content)	Includes distillate, natural gas, LPG, and kerosene. Point source reconciliation conducted for natural gas only.
Residential Fuel Combustion (excluding wood)	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3	Emission factors: AP-42 (Sections 1.3, 1.4, and 1.5); 2002 NEI Documentation; EIIP Ammonia Report	Local fuel survey (fuel quantities and sulfur content)	Includes distillate, natural gas, LPG, and kerosene.
Residential Wood Combustion	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$, NH_3	Emission factors: 2002 NEI Documentation	Local residential wood combustion survey	
Paved Road Dust	PM_{10}, $PM_{2.5}$	TVRDS methodology (Ada and Canyon); AP-42 (Section 13.2.1) (Elmore)	VMT, silt loading	
Unpaved Road Dust	PM_{10}, $PM_{2.5}$	TVRDS methodology (Ada and Canyon); AP-42 (Section 13.2.2) (Elmore)	VMT, silt content	
Commercial Cooking	VOC, CO, PM_{10}, $PM_{2.5}$	Emission factors: 2002 NEI Documentation	Number of equipment, annual meat cooked per equipment	Includes charbroiling, deep fat frying, and griddle frying
Bakeries	VOC	Per capita emission factors: EIIP (Vol. III, Abstracts)	Population, per capita bread consumption	
Construction	PM_{10}, $PM_{2.5}$	Emission factors: 2002 NEI Documentation	Number of building permits	
Industrial Refrigeration/ Cold Storage	NH_3	Per employee emission factors: EIIP Ammonia Report	Employee counts	
Architectural Surface Coating	VOC	Emissions ratioing based on population and employment: 2002 NEI Documentation	2002 NEI emissions; population and employee counts	
Autobody Refinishing	VOC	Per employee emission factors: 2002 NEI Documentation	Employee counts	
Traffic Markings	VOC	Mass balance	Traffic marking quantities; VOC content	

Table 3-1. Continued

Source Category	Pollutants	Methodology	Activity Data	Notes
Industrial Surface Coating	VOC	Emissions ratioing based on employment: 2002 NEI Documentation	2002 NEI emissions; employee counts	No point source reconciliation conducted.
Degreasing	VOC	Emissions ratioing based on employment: 2002 NEI Documentation	2002 NEI emissions; employee counts	No point source reconciliation conducted.
Dry Cleaning	VOC	Mass balance	Local survey (quantity of solvent used)	
Graphic Arts	VOC	Per employee emission factors: 2002 NEI Documentation	Employee counts	
Consumer Solvent Use	VOC	Per capita emission factors: 2002 NEI Documentation	Population	
Pesticide Application	VOC	Emission factors: EIIP (Vol. III, Chap. 9)	Planted acreage, application rates, % active ingredient, formulation type	
Gasoline Transport and Distribution	VOC	Emission factors: AP-42 (Section 5.2), on-road motor vehicle modeling files	Quantity of fuel, Stage I/II controls	Point source reconciliation conducted.
Open Burning (Household and Yard)	NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$	Emission factors: 2002 NEI Documentation	Population not subject to burn bans	
Wastewater Treatment	VOC, NH_3	Emission factors: 2002 NEI Documentation	Local survey (quantity of water treated)	
Landfills	VOC	Theoretical first-order kinetic model: AP-42 (Section 2.4)	Local survey (refuse acceptance rate, landfill opening/closing)	
Agricultural Tilling	PM_{10}, $PM_{2.5}$	Emission factors: ARB Area Source Method (Section 7.4)	Acreage planted, planting practices	
Agricultural Harvesting	PM_{10}, $PM_{2.5}$	Emission factors: ARB Area Source Method (Section 7.5)	Acreage harvested, harvesting practices	
Agricultural Burning – Fields	VOC, CO, PM_{10}, $PM_{2.5}$	Emission factors: AP-42 (Section 2.5)	Burned acreage, fuel loading, burning practices	
Agricultural Burning – Irrigation Ditches	VOC, CO, PM_{10}, $PM_{2.5}$	Emission factors: AP-42 (Section 2.5)	Burned acreage, fuel loading, burning practices	
Beef Cattle Feedlots	VOC, PM_{10}, $PM_{2.5}$	Emission factors: ARB Area Source Method (Section 7.6)	Head of cattle, residence time	
Structural Fires	NO_x, VOC, CO, PM_{10}, $PM_{2.5}$	Emission factors: EIIP (Vol. III, Chap. 18)	Number of houses burned	
Vehicle Fires	NO_x, VOC, CO,	Emission factors: EIIP (Vol. III, Abstracts)	Number of vehicles	

Table 3-1. Continued

Source Category	Pollutants	Methodology	Activity Data	Notes
	PM_{10}, $PM_{2.5}$		burned	
Windblown Dust	PM_{10}, $PM_{2.5}$	WRAP windblown dust model	Wind speeds, soil textures, crop acreages, crop calendars	
Livestock Ammonia	NH_3	WRAP NH_3 emissions model	Livestock population	
Agricultural Fertilizer	NH_3	WRAP NH_3 emissions model	Harvested acreage, type and quantity of fertilizers	
Domestic Ammonia	NH_3	WRAP NH_3 emissions model	Population	
Wild Animals	NH_3	WRAP NH_3 emissions model	Wild animal population	
Soil Ammonia	NH_3	WRAP NH_3 emissions model	Land use/land cover acreages	

Out of the 66 surveys that were mailed out, 7 of the surveys were returned as undeliverable. Of the 59 surveys that were successfully delivered, only 16 surveys were returned by actual active fuel dealers or distributors. However, an additional 11 surveys were identified as being associated with these 16 fuel dealers/distributors (e.g., duplicates, under common ownership, recently purchased, etc.). In addition, another 20 surveys were returned with an indication of no fuel sales or distribution. Based on these actual positive and negative responses, the nominal fuel survey return rate was nearly 80 percent (i.e., 47 surveys returned out of 59 delivered). However, examination of the remaining 12 non-respondent surveys points to a potentially even higher return rate; a total of 9 of the non-respondent surveys were identified as being either definitively out of business or potentially out of business based upon a number of factors (e.g., available contact numbers being disconnected, all available contact numbers being wrong numbers, no answer after repeated calls, no available contact numbers, etc.). Actual contact was only made with 3 of the 12 non-respondent surveys; in spite of this contact, these 3 companies failed to return the survey.

Based upon the survey results, the following 11 sector/fuel combinations were included in the Treasure Valley emissions inventory:

- Industrial distillate oil
- Industrial natural gas
- Industrial LPG
- Commercial/institutional distillate oil
- Commercial/institutional natural gas
- Commercial/institutional LPG
- Commercial/institutional kerosene
- Residential distillate oil
- Residential natural gas
- Residential LPG
- Residential kerosene

Although the IPP/QPP indicated an expectation that residual fuel oil and coal would be sold or distributed in the inventory domain, neither of these fuels were identified in the returned surveys. The industrial and commercial/institutional natural gas quantities were adjusted downward as part of the point and area source reconciliation based upon the quantities identified by point source facilities during the POSST submittal process.

In general, fuel combustion emissions were estimated using emission factors from *AP-42* (U.S. EPA, 1995). Additional emission factors for kerosene combustion and distillate combustion (NH_3 only) were obtained from other guidance documents (U.S. EPA, 2006; EIIP, 2004). Two different distillate sulfur contents (i.e., 15 ppm and 500 ppm) were identified by the fuel survey respondents; both sulfur contents were used to calculate weighted SO_x estimates.

The general equation used to estimate emissions from fuel combustion was:

$$E_{f,p} = U_f \times EF_{f,p} \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right)$$

Where:

$E_{f,p}$ = Emissions for fuel *f* and pollutant *p* (tons/year);
U_f = Fuel usage for fuel *f* (10^6 ft^3 or 10^3 gal); and
$EF_{f,p}$ = Emission factor for fuel *f* and pollutant *p* (lb/10^6 ft^3 or lb/10^3 gal).

A sample calculation using this equation for estimating annual NO_x emissions from Ada County residential natural gas usage is as follows:

U_{NG} = 9,321 MMscf (i.e., 10^6 ft^3) natural gas
$EF_{NG,NOx}$ = 94 lbs NO_x/MMscf natural gas
$E_{NG,NOx}$ = 9,321 MMscf × 94 lbs NO_x/MMscf natural gas × (1 ton/2,000 lbs)
= 438.1 tons NO_x

3.1.2 Residential Wood Combustion

The residential wood combustion source category includes emissions from fireplaces, woodstoves, fireplaces with inserts, and pellet stoves. Activity data for residential wood combustion were obtained from a residential wood combustion (RWC) survey conducted by Aurora (ERG's subcontractor) (Aurora, 2009). The RWC survey report is included as Appendix D. The following steps were followed to derive activity data for each county.

1. Determine number of existing devices (i.e., fireplace, woodstove/insert, and pellet stove) by applying existing device ratio from RWC survey to the number of households.
2. Disaggregate number of woodstoves/inserts into number of woodstoves and number of inserts using woodstove/insert ratio from RWC survey.
3. Determine number of actively used devices by applying device-specific use ratio from RWC survey to number of existing devices.
4. For woodstoves and inserts, determine the number of conventional, catalytic, and non-catalytic devices by applying device type ratios from RWC survey to number of actively used devices.
5. For each group of devices (i.e., fireplace, woodstove, insert, and pellet stove) determine the average wood use (i.e., cordwood and processed log) per device using RWC survey response – assumed weight of cordwood is 1.163 tons/cord and assumed weight of processed logs is 6 lbs/log. Based upon survey findings, the predominant wood type used in fireplaces, woodstoves, and inserts is softwood; lesser amounts of hardwood and unspecified wood are also used. Only minor amounts of processed wood logs, scrap wood/building materials, and other materials are burned.

The general equation used to estimate emissions from residential wood combustion was:

$$E_p = D \times W \times EF_p \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right)$$

Where:

E_p	=	Emissions for pollutant *p* (tons/year);
D	=	Number of in-use devices;
W	=	Wood usage per device (tons/yr); and
EF_p	=	Emission factor for fuel *f* and pollutant *p* (lb/ton).

A sample calculation using this equation for estimating annual NO_x emissions from Ada County residential natural gas usage is as follows:

D	=	20,608 in-use fireplaces
W	=	0.739 tons wood/device
EF_{NOx}	=	2.6 lbs NO_x/ton wood
E_{NOx}	=	20,608 in-use fireplaces × 0.739 tons wood/fireplace × 2.6 lbs NO_x/ton wood × (1 ton/2,000 lbs) = 19.8 tons NO_x

Emission factors for the residential wood combustion category were obtained from a recent review of residential wood combustion emission factors (Houck and Eagle, 2006).

3.1.3 Paved Road Dust

Fugitive dust from paved roads is a significant source of particulate matter emissions. In general, the processes that affect paved road dust emissions include the weight of the vehicles that drive on the roadway surface, vehicle speed, the particles on the roadway surface available for entrainment, and precipitation on the roadway which decreases road dust emissions. In 2002, the Treasure Valley Road Dust Study (TVRDS) (Etymezian et al., 2002) was completed. The TVRDS included real-time measurements of paved road dust emissions made in Ada and Canyon counties and paved road dust emission inventories were developed for Ada and Canyon counties. This is a primary source of data used in the development of paved road dust emissions.

The paved road dust activity data were vehicle miles traveled (VMT) that were estimated for the on-road motor vehicle emissions inventory (see Section 2.3). The 2008 COMPASS TDM VMT were used for Ada and Canyon counties and DEQ 2008 VMT estimates were used for Elmore County. The COMPASS TDM data included a very limited number of unpaved roads that were excluded from the paved road dust emissions, but included with the unpaved road dust emissions (see Section 3.1.4).

Ada and Canyon County

Paved road dust emissions in Ada and Canyon counties were calculated based upon the methodology developed in the TVRDS; however, changes were made to the estimation of the precipitation adjustment estimates as described below.

The paved road dust emissions potential was estimated according to the following equation (COMPASS, 2005):

$$b = C_{C,S,T} \times s^{-x}$$

Where:

b	=	roadway emissions potential (grams PM_{10}/VKT/meters per second [mps]);
$C_{C,S,T}$	=	constant dependent on county, setting, and season (grams PM_{10}/VKT/mps);
s	=	roadway speed (mph); and
x	=	empirically derived exponent dependent on county, setting, and season.

The paved road dust emission factors were estimated according to the following equation (COMPASS, 2005):

$$EF_{S,T} = b_{S,T} \times s$$

Where:

$EF_{S,T}$ = roadway PM_{10} emissions factor per setting and season (grams PM_{10}/VKT);
$b_{S,T}$ = roadway emissions potential per setting and season (grams PM_{10}/VKT/mps); and
s = roadway speed (mph).

TDM and residential roadway emission potential estimates were taken from the TVRDS (Etymezian et al., 2002). The TDM roadway emission potential estimates are shown in Table 3-2, while the residential roadway emission potential estimates are shown in Table 3-3.

Table 3-2. Emissions Potentials for Roads that are Physically Represented in the TDM

Season	County	Setting	$C_{C,S,T}$ (g/vkt/mps)	x
Summer	Ada	Rural	47	-1.47
Summer	Ada	Urban	45	-1.39
Summer	Canyon	Rural	370	-2.05
Summer	Canyon	Urban	462	-2.03
Winter	Ada	Rural	43	-1.32
Winter	Ada	Urban	72	-1.38
Winter	Canyon	Rural	12	-1.05
Winter	Canyon	Urban	318	-1.86

Table 3-3. Emissions Potentials for Residential Roads

Season	County	Setting	$C_{C,S,T}$ (g/vkt/mps)
Summer	Ada	Rural	0.67
Summer	Ada	Urban	0.76
Summer	Canyon	Rural	0.95
Summer	Canyon	Urban	1.32
Winter	Ada	Rural	0.77
Winter	Ada	Urban	1.04
Winter	Canyon	Rural	0.71
Winter	Canyon	Urban	1.00

Because annual, spring, and fall emission potentials were not available, summer emission potentials were assumed for 75% of the year and winter emission potentials were assumed for 25% of the year, consistent with the assumptions made in the TVRDS (Etymezian et al., 2002).

Precipitation adjustments were made according to the AP-42 methodology (U.S. EPA, 2010a). The standard AP-42 methodology was used because the TVRDS precipitation adjustment estimates were based on engineering judgment rather than actual measurements; therefore, standard AP-42 methodology was used. The adjusted emission estimates were calculated according to the following equation:

$$E_C = E_{UC}\left(1 - \frac{N_P}{4N_D}\right)$$

Where:

E_C = estimate of actual emissions, accounting for precipitation control (tons);
E_{UC} = estimate of emissions without accounting for precipitation control (tons);
N_P = number of days in a given period with at least 0.01 inches of precipitation; and
N_D = total number of days in a given period.

Precipitation correction factors were estimated using 2008 precipitation data from the Western Regional Climate Center (WRCC) (WRCC, 2009). Data from the Boise WSFO Airport Station (No. 1001022) was used for Ada County, while data from the Caldwell Station (No. 101380) was used for Canyon County. These data are presented in Table 3-4.

Table 3-4. Ada and Canyon County Days with at least 0.01 Inches of Rain

Month	Ada	Canyon
January	12	10
February	10	8
March	10	8
April	8	7
May	8	6
June	6	5
July	2	2
August	2	2
September	4	3
October	6	5
November	10	9
December	11	10

Based upon the TVRDS, the $PM_{2.5}$ fraction of PM_{10} was estimated to be 0.057 (Etymezian et al., 2002).

Elmore County

Because Elmore County was not included in the TVRDS, paved road dust emission estimates for Elmore County were based upon the AP-42 methodology (U.S. EPA, 2010a). The estimation equation is shown below:

$$E = \left(k \left[\frac{sL}{2} \right]^{0.65} \left[\frac{W}{3} \right]^{1.5} - C \right) \left(1 - \frac{P}{4N} \right)$$

Where:

E	=	particulate emission factor (g/VMT);
k	=	particle size multiplier for particle size range and units of interest (g/VMT);
s	=	road surface silt loading (g/m^2);
W	=	mean vehicle weight (tons);
C	=	emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear;
P	=	number of days with at least 0.01 inch of precipitation; and
N	=	number of days in the averaging period.

The AP-42 default input parameters that were used are shown in Table 3-5 (U.S. EPA, 2010a). A mean vehicle weight of 3.58 tons was estimated based upon the estimated on-road vehicle mix (DEQ, 2006). Silt loading estimates were estimated as shown in Table 3-6.

Table 3-5. Elmore County Paved Road Parameters

Parameter	PM_{10}	$PM_{2.5}$
k (g/VMT)	7.3	1.1
C (g/VMT)	0.2119	0.1617

Table 3-6. Elmore County Silt Loading Estimates

Road Type	Winter Silt Loading (g/m^2)	Summer Silt Loading (g/m^2)	Source
Arterial	1.9	0.5	Etymezian et al., 2002
Local	4.0	0.4	Etymezian et al., 2002
Freeway	0.015	0.015	DEQ, 2006

The precipitation correction factors for Elmore County were estimated using 2008 precipitation data from the Western Regional Climate Center (WRCC) (WRCC, 2009). Data from the Mountain Home Station (No. 106174) was used. These data are shown in Table 3-7.

Table 3-7. Elmore County Days with at Least 0.01 Inches of Rain

Month	Elmore
January	8
February	7
March	7
April	6
May	5
June	4
July	2
August	1
September	2
October	4
November	8
December	8

The resultant emission estimates by county and roadway type are shown in Table 3-8.

Table 3-8. 2008 Annual Paved Road Dust Emission Estimates

Roadway Type	Annual (TPY)	
	PM_{10}	$PM_{2.5}$
Ada County		
Rural Principal Arterial – Interstate	808	46
Rural Major Collector	78	4
Rural Minor Arterial	445	25
Rural Local System	1,752	100
Urban Principal Arterial – Interstate	6,129	349
Urban Principal Arterial – Other Freeways or Expressways	927	53
Urban Principal Arterial – Other	8,691	495
Urban Collector	1,466	84
Urban Minor Arterial	5,883	335
Urban Local System	74	4
Urban Ramp	418	24
Total	**26,669**	**1,520**
Canyon County		
Rural Principal Arterial – Interstate	508	29
Rural Major Collector	406	23
Rural Minor Arterial	667	38
Rural Local System	1,089	62
Urban Principal Arterial – Interstate	2,314	132
Urban Principal Arterial – Other Freeways or Expressways	221	13
Urban Principal Arterial – Other	2,913	166
Urban Collector	444	25
Urban Minor Arterial	1,533	87
Urban Local System	55	3
Urban Ramp	163	9
Total	**10,315**	**588**
Elmore County		
Rural Interstate	29	0
Rural Local	584	137
Rural Principal Arterial	640	147
Total	**1,253**	**284**

Although the TVRDS was conducted around 2000, it represents the best available data for estimating past and present emission rates from dry paved roads in the Treasure Valley Area. Municipalities responsible for road maintenance indicated that winter sanding application has decreased in some areas and the frequency of road sweeping has increased in some areas. While such practices will likely decrease road dust emissions, the quantification of the effect that these practices would have on emissions is not possible based on available data.

3.1.4 Unpaved Road Dust

Similar to paved roads, fugitive dust from unpaved roads is a significant source of particulate matter emissions. In general, the processes that affect unpaved road dust emissions include roadway surface material properties and moisture content, vehicle speed, and precipitation on the roadway. As with paved road dust, the primary source of data used in the development of unpaved road dust emissions is the TVRDS.

Unpaved roadway activity estimates were obtained from a number of sources including highway districts (HDs), cities, and COMPASS as shown in Table 3-9. In most cases, the data available was limited to unpaved roadway length, although in some cases estimates of average daily traffic (ADT) was available. In cases where average daily traffic estimates were not available, an ADT estimate was assigned based on existing data as identified in Table 3-9. Annual VMT was estimated as unpaved roadway length multiplied by average daily traffic. Average speed estimates were not available; therefore, an average speed of 25 mph was assumed for all unpaved roads per the TVRDS.

Ada and Canyon Counties

As with paved road dust, the unpaved road dust emissions estimation methodology was taken from the TVRDS for Ada and Canyon counties. Emissions were estimated according to the following equation:

$$EF = b \times s$$

Where:

EF	=	roadway PM_{10} emissions factor (grams PM_{10}/VMT);
b	=	roadway emissions potential (grams PM_{10}/VMT/mph); and
s	=	roadway speed (mph).

Table 3-9. 2008 Unpaved Road Dust Activity Data and Sources

City/Highway District /Area	Length (miles)	ADT (vehicles per day)	Annual VMT (miles)	Source
Ada County				
Included in TDM	6	36	73,910	Waldinger, 2010
Not in TDM	70	129[a]	3,292,940	Waldinger, 2010
Totals	88		4,220,303	
Canyon County				
City of Caldwell	11.4	20[a]	82,892	Baker, 2010
City of Greenleaf	0	-	0	Amick, 2010
City of Middleton	0.3[c]	20[a]	2,518	[c]
City of Melba	0.1[c]	20[a]	371	[c]
City of Nampa	8.9[c]	20[a]	64,755	[c]
City of Wilder	0.1	20[a]	438	Lane, 2010
Nampa Highway District	2	30	21,900	Bequeath, 2010
Notus-Parma Highway District	9	20	65,700	Bowman, 2010a
Canyon Highway District	3	67	78,790	Richard, 2010a
Golden Gate Highway District	18	40	259,150	Norris, 2010b
Totals	53		576,514	
Elmore County				
Atlanta Highway District	54	87.5	1,724,625	Gill, 2010
Mountain Home Highway District	291	87.5[b]	9,293,813	Tindall, 2010a
Glenns Ferry Hwy Highway District	250	87.5[b]	7,984,375	Gluch, 2010
Totals	595		19,002,813	

[a]Estimate taken from TVRDS (Etymezian et al., 2002).
[b]Assumed equivalent to Atlanta Highway District since these data were not available.
[c]Estimated based on average length of unpaved roadway per population identified for other cities.

A dry emissions potential value of 11.9 grams/VMT/mph from TVRDS was used across all unpaved roads.

Unlike the paved road dust source category where precipitation related control estimates were based on engineering judgment in the TVRDS, unpaved road dust precipitation related control estimates were based directly on TVRDS observations. Consequently, the TVRDS precipitation control methodology was used (Etymezian et al., 2002). Table 3-10 shows the adjustment factors used to account for precipitation. It should be noted that although precipitation events might have an effect on unpaved roadway activity, data were not available to estimate the influence of such an effect. Therefore, while unpaved roadway VMT activity was adjusted for seasonality as described in Section 3.2.4, the specific effect that precipitation events may have on unpaved roadway activity was not accounted for. Accounting for seasonality as described above is typical for regional unpaved road dust emission inventories.

Table 3-10. Unpaved Road Dust Precipitation Adjustments

Month	Fractional discount due to snow	Fractional discount due to precipitation effects	Total fractional discount	Dry emissions multiplier
January	0.118	0.120	0.237	0.763
February	0.118	0.113	0.231	0.769
March	0.118	0.098	0.215	0.785
April	0.000	0.133	0.133	0.867
May	0.000	0.119	0.119	0.881
June	0.000	0.095	0.095	0.905
July	0.000	0.038	0.038	0.962
August	0.000	0.038	0.038	0.962
September	0.000	0.057	0.057	0.943
October	0.000	0.090	0.090	0.910
November	0.000	0.161	0.161	0.839
December	0.000	0.176	0.176	0.824

Based upon the TVRDS, the $PM_{2.5}$ fraction of PM_{10} was estimated to be 0.057 (Etymezian et al., 2002).

Elmore County

For Elmore County, the AP-42 methodology (U.S. EPA, 2010a) was used to estimate unpaved road dust emissions as shown below:

$$E = \left\{ \left[\frac{k(s/12)^a (S/30)^d}{(M/0.5)^c} \right] - C \right\} \times \left(\frac{N-P}{N} \right)$$

Where:

E = particulate emission factor (lb/VMT);
k, a, c, d = empirical constants;
s = road surface silt content (%);
M = road surface moisture content (%);
S = mean vehicle speed (mph);
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear (g/VMT);
P = number of days with at least 0.01 inch of precipitation; and
N = number of days in the averaging period.

The summer and winter road surface material silt content estimates were taken from the TVRDS and annual silt content was assumed to be the average of winter and summer silt content (Table 3-11). The AP-42 empirical constants, brake and tire wear emission factor estimates, and road surface moisture content defaults were used and are shown in Table 3-12.

Table 3-11. Elmore County Unpaved Road Surface Silt Content

Description	Silt Content (%)
Summer	3.5
Winter	1.4
Annual average	2.45

Table 3-12. Unpaved Emissions Estimation Parameters

Parameter	AP-42 Default
k – PM_{10} (lb/VMT)	1.8
k – $PM_{2.5}$ (lb/VMT)	0.18
a	1
d	0.5
c	0.2
M (%)	0.5
C – PM_{10} (g/VMT)	0.00047
C – $PM_{2.5}$ (g/VMT)	0.00036

The days of precipitation greater than 0.01 inches estimated for Elmore County paved roads (see Table 3-7) was also used for Elmore County unpaved roads.

The resultant emission estimates by county are presented in Table 3-13. Elmore County contains the highest unpaved roadway mileage and therefore has the highest unpaved road dust emission estimates of the three counties in the Treasure Valley.

Table 3-13. 2008 Annual Unpaved Road Dust Emission Estimates

County	Annual (TPY)	
	PM_{10}	$PM_{2.5}$
Ada	966	55
Canyon	165	9
Elmore	2,648	262
Totals	**3,779**	**327**

3.1.5 Commercial Cooking

The commercial cooking category includes five subcategories: conveyerized (or chain-driven) charbroiling, under-fired charbroiling, deep fat frying, flat griddle frying, and clamshell griddle frying.

Commercial cooking emissions were estimated using the methodology (e.g., national average number of equipment pieces, meat cooking quantities, etc.) and associated emission factors presented in the 2002 National Emissions Inventory documentation (U.S. EPA, 2006). The number of county-level establishments was obtained from *2007 County Business Patterns* (U.S. Census, 2009a). The types of restaurant were determined from the *2002 Economic Census* (U.S. Census, 2005a).

The equation for estimating emissions from each of the commercial cooking subcategories is the following is:

$$E_p = EF_p \times EQ \times M \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}}\right)$$

Where:

E_p	=	Emissions for pollutant *p* (tons/year);
EF_p	=	Emission factor for pollutant *p* (lbs/ton meat cooked);
EQ	=	Number of pieces of equipment; and
M	=	Annual meat cooked per piece of equipment (tons meat cooked/equipment-year).

A sample calculation using this equation for estimating annual VOC emissions from chain-driven charbroilers is as follows:

EF_{VOC}	=	4 lbs VOC/ton meat cooked
EQ	=	892 chain-driven charbroilers
M	=	1,623.6 lbs meat/equipment-week × 52 weeks = 84,427.2 lbs/equipment-year
E_{VOC}	=	892 × 84,427.2 lbs/equipment-year × 4 lbs VOC/ton meat × (1 ton VOC/2,000 lbs VOC) = 75.3 tons VOC

3.1.6 Construction

County-level residential building permit data were obtained from the U.S. Census (U.S. Census, 2010). Construction durations and construction dust emission factors were obtained from the 2002 NEI methodology document for the following residence types: single family, two family, three and four family, and five or more family units (U.S. EPA, 2006). Discussions with government agencies that issue building permits indicated that industrial and commercial building activity during 2008 was minimal and that relevant activity data were not available (Webb, 2009; Radek, 2009; Hunter, 2009; Winterfield, 2009).

3.1.7 Architectural Surface Coatings

The architectural surface coatings category was estimated following the hybrid approach outlined in the 2002 NEI methodology document (U.S. EPA, 2006). The hybrid approach utilized national-level emissions that were scaled down using both county-level population and county-level employee statistics. The scaling was weighted 40 percent for population and 60 percent for employees. The employee portion of the scaling was conducted in the same manner as industrial surface coating (Section 3.1.9), degreasing (Section 3.1.10), and other per employee source categories (Section 3.1.11) and was based on employee counts for NAICS 238320 (Painting and Wall Covering Contractors).

3.1.8 Traffic Markings

Usage quantities of traffic markings within the three-county area, as well as relevant material safety data sheets (MSDS) and product specifications, were obtained through telephone contacts with nine different government agencies (i.e., Idaho Transportation Department, county highway departments, city public works departments, and local highway districts). The identified traffic marking usage quantities were 45,250 gallons for Ada County, 40,381 gallons for Canyon County, and 6,590 gallons for Elmore County. The MSDSs and product specifications indicated various VOC contents; however, 150 grams per liter (g/l) was the most prevalent. Therefore, this VOC content was used for the estimating emissions. Emissions were calculated using the methodologies identified in the EIIP guidance document (EIIP, 1997b).

3.1.9 Industrial Surface Coating

The industrial surface coating category consists of 13 subcategories (e.g., factory finished wood, wood furniture, plastic products, etc.) that were inventoried for the Treasure Valley inventory. These subcategories were all estimated by ratioing emission estimates from the 2002 NEI. Each of the 13 industrial surface coating subcategories were assigned a specific NAICS code for which county-level employee data for 2002 and 2007 were obtained from County Business Patterns (U.S. Census, 2009a). Employee data were not available for 2008, so it was assumed that 2007 employee data were a reasonable approximation of 2008 employee data.

The specific county-level NAICS code assignments for the 13 industrial surface coating subcategories are shown in Table 3-14. The 2007 employee data were adjusted downward based upon employee counts obtained from telephone contacts with permitted point sources having NAICS codes relevant to the industrial surface coating area source category. These adjustments are also indicated in Table 3-14.

Table 3-14. NAICS Code Assignments for Industrial Surface Coating Subcategories

Industrial Surface Coating Subcategory	NAICS Codes
Factory Finished Wood	321XXX (Wood Product Manufacturing)[a]
Wood Furniture	337XXX (Furniture and Related Product Manufacturing)[b]
Metal Furniture	337XXX (Furniture and Related Product Manufacturing)[b]
Paper	322XXX (Paper Manufacturing)[c]
Plastic Products	326XXX (Plastics and Rubber Products Manufacturing)
Miscellaneous Finished Metals	332XXX (Fabricated Metal Product Manufacturing)[b]
Machinery and Equipment	333XXX (Machinery Manufacturing)
Electronic and Other Electrical	334XXX (Computer and Electronic Product Manufacturing)[a]
Motor Vehicles	3362XX (Motor Vehicle Body and Trailer Manufacturing)[c]
Aircraft	3364XX (Aerospace Products and Parts Manufacturing)
Marine	3366XX (Ship and Boat Building)
Railroad	3365XX (Railroad Rolling Stock Manufacturing)[b]
Miscellaneous Manufacturing	31XXXX (Manufacturing)

[a]Employee counts adjusted downward for Ada and Canyon counties.
[b]Employee counts adjusted downward for Ada County.
[a]Employee counts adjusted downward for Canyon County.

The Area Source Matrix previously presented in the IPP/QAP indicated that emission factors from EIIP guidance would be used for all industrial surface coating subcategories. As discussed for other categories above, it was felt that the per capita factors from the 2002 NEI documentation would be more representative of current conditions associated with industrial surface coating since the EIIP guidance is from 1997.

The general equation used to estimate emissions for the industrial surface coating subcategories was:

$$E_{2007} = E_{2002} \times \left(\frac{\mathrm{EM}_{2007}}{\mathrm{EM}_{2002}} \right)$$

Where:

E_{2007} = Emissions for 2007 inventory year (tons/year);
E_{2002} = Emissions for 2002 inventory year (tons/year);
EM_{2007} = Employees for 2007 inventory year (adjusted for point source employment, if necessary) (people); and
EM_{2002} = Employees for 2002 inventory year (people).

A sample calculation using this equation for estimating annual VOC emissions from factory finished wood industrial surface coating in Ada County is as follows:

E_{2002} = 79.9 tons VOC
EM_{2002} = 883 people
EM_{2007} = 1,029 people
E_{2007} = 79.9 tons VOC × (1,029 people/883 people) = 93.1 tons VOC

3.1.10 Degreasing

The degreasing category consists of open top degreasing and cold cleaning for 13 sectors (e.g., furniture and fixtures, primary metal industries, fabricated metal products, etc.) for a total of 26 subcategories that were inventoried for the Treasure Valley inventory. As with industrial surface coating, these subcategories were estimated by ratioing emission estimates from the 2002 NEI with employee count data. Each of the 26 degreasing subcategories were assigned a specific NAICS code for which county-level employee data for 2002 and 2007 were obtained from *County Business Patterns* (U.S. Census, 2009a). Employee data were not available for 2008, so it was assumed that 2007 employee data were a reasonable approximation of 2008 employee data.

The specific county-level NAICS code assignments for the 26 degreasing subcategories are shown in Table 3-15. The 2007 employee data were adjusted downward based upon employee counts obtained from telephone contacts with permitted point sources having NAICS codes relevant to the degreasing area source categories. These adjustments are also indicated in Table 3-15.

Table 3-15. NAICS Code Assignments for Degreasing

Degreasing Subcategory (Open Top Degreasing and Cold Cleaning)	NAICS Codes
Furniture and Fixtures	337XXX (Furniture and Related Product Manufacturing)[a]
Primary Metal Industries	331XXX (Primary Metal Manufacturing)
Secondary Metal Industries	331XXX (Primary Metal Manufacturing)
Fabricated Metal Products	332XXX (Fabricated Metal Product Manufacturing)[a]
Industrial Machinery and Equipment	333XXX (Machinery Manufacturing)
Electronic and Other Electrical	334XXX (Computer and Electronic Product Manufacturing)[b]
	335XXX (Electrical Equipment, Appliance, and Component Manufacturing)
Transportation Equipment	336XXX (Transportation Equipment Manufacturing)[b]
Instruments and Related Products	3345XX (Navigational, Measuring, Electromedical and Control Instruments Manufacturing)
Miscellaneous Manufacturing	339XXX (Miscellaneous Manufacturing)
Transportation Maintenance Facilities	488XXX (Support Activities for Transportation)
Automotive Dealers	4411XX (Automobile Dealers)
Auto Repair Services	8111XX (Automotive Repair and Maintenance)[a]
Miscellaneous Repair Services	811XXX (Repair and Maintenance) except 8111XX (Automotive Repair and Maintenance)

[a]Employee counts adjusted downward for Ada County.
[b]Employee counts adjusted downward for Ada and Canyon counties.

The Area Source Matrix previously presented in the IPP/QAP indicated that emission factors from EIIP guidance would be used for all of the degreasing subcategories. As discussed for other categories above, it was felt that the per capita factors from the 2002 NEI documentation would be more representative of current conditions associated with degreasing since the EIIP guidance is from 1997.

The general equation used to estimate emissions for the degreasing subcategories was:

$$E_{2007} = E_{2002} \times \left(\frac{\mathrm{EM}_{2007}}{\mathrm{EM}_{2002}} \right)$$

Where:

E_{2007}	=	Emissions for 2007 inventory year (tons/year);
E_{2002}	=	Emissions for 2002 inventory year (tons/year);
EM_{2007}	=	Employees for 2007 inventory year (adjusted for point source employment, if necessary) (people); and
EM_{2002}	=	Employees for 2002 inventory year (people).

A sample calculation using this equation for estimating annual VOC emissions from furniture and fixture open top degreasing in Ada County is as follows:

E_{2002}	=	12.6 tons VOC
EM_{2002}	=	325 people
EM_{2007}	=	566 people
E_{2007}	=	12.6 tons VOC × (566 people/325 people) = 21.9 tons VOC

3.1.11 Other Per Employee Emission Factor Source Categories

In addition to industrial surface coating and degreasing, there were three other area source categories that were estimated using employee counts and per employee emission factors. These categories were autobody refinishing, industrial refrigeration/cold storage (NH_3), and graphic arts.

County-level employee data were obtained from *County Business Patterns* (U.S. Census, 2009a) for 2007; employee data were not available for 2008, so it was assumed that 2007 employee data were a reasonable approximation of 2008 employee data. The specific county-level NAICS code assignments for autobody refinishing, industrial refrigeration/cold storage, and graphic arts are shown in Table 3-16. For autobody refinishing and graphic arts, the 2007 employee data were adjusted downward based upon employee counts obtained from telephone contacts with permitted point sources having relevant NAICS codes. These adjustments are also indicated in Table 3-16.

Table 3-16. NAICS Code Assignments for Autobody Refinishing, Industrial Refrigeration/Cold Storage, and Graphic Arts Categories

Category	NAICS Codes
Autobody Refinishing	492XXX (Couriers and Messengers)
	5321XX (Automotive Equipment Rental and Leasing)
	8111XX (Automotive Repair and Maintenance)[a]
Industrial Refrigeration/ Cold Storage	31132X (Chocolate and Confectionery Manufacturing from Cacao Beans)
	31133X (Confectionery Manufacturing from Purchase Chocolate)
	3114XX (Fruit and Vegetable Preserving and Specialty Food Manufacturing)
	3115XX (Dairy Product Manufacturing)
	3116XX (Animal Slaughtering and Processing)
	3117XX (Seafood Product Preparation and Packaging)
	31181X (Bread and Bakery Product Manufacturing)
	311991 (Perishable Prepared Food Manufacturing)
	311999 (Other Miscellaneous Food Manufacturing)
	3121XX (Beverage Manufacturing)
	325211 (Plastics Material and Resin Manufacturing)
	493120 (Refrigerated Warehousing and Storage)
Graphic Arts	3222XX (Converted Paper Product Manufacturing)[b]
	32311X (Printing)

[a]Employee counts adjusted downward for Ada County.
[b]Employee counts adjusted downward for Canyon County.

For autobody refinishing and graphic arts, the per employee emission factors were obtained from the 2002 NEI documentation (U.S. EPA, 2006). The Area Source Matrix previously presented in the IPP/QAP indicated that emission factors from EIIP guidance would be used for these categories (i.e. per employee factors for autobody refinishing and per capita factors for graphic arts). As discussed for other categories above, it was felt that the per capita factors from the 2002 NEI documentation would be more representative of current conditions. The per employee emission factor for industrial refrigeration/cold storage was obtained from EIIP ammonia guidance for anthropogenic nonagricultural sources (EIIP, 2004).

The general equation used to estimate emissions for categories using per employee emission factors was:

$$E = EF \times EM \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right)$$

Where:

E = Emissions (tons/year);
EF = Per capita emission factor (lbs/person-year); and
EM = Employees (people).

A sample calculation using this equation for estimating annual NH_3 emissions from Ada County cold storage is as follows:

EM = 635 people
EF = 30 lbs NH_3/person
E = 635 people × 30 lbs NH_3/person × (1 ton/2,000 lbs) = 9.5 tons NH_3

3.1.12 Bakeries and Consumer Solvents

Two source categories were estimated using per capita emission factors. These categories were bakeries and consumer solvents (e.g., personal care products, household products, etc.).

County-level population data were obtained from the U.S. Census (U.S. Census, 2009b). For bakeries, an annual per capita bread consumption rate of 70 lbs of bread/person was combined with an emission factor of 5 lbs VOC per 1,000 lbs of sponge-dough bread produced. Both the emission factor and the consumption rate were obtained from EIIP guidance (EIIP, 1999). The per capita emission factors for consumer solvents were obtained from the 2002 NEI documentation (U.S. EPA, 2006). The Area Source Matrix previously presented in the IPP/QAP indicated that the per capita emission factors from EIIP guidance would be used for consumer solvents; however, the EIIP guidance for consumer solvents is from 1996 and it was felt that the per capita factors from the 2002 NEI documentation would be more representative of current conditions associated with consumer solvents.

The general equation used to estimate emissions for categories using per capita emission factors was:

$$E = EF \times P \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right)$$

Where:

E = VOC emissions (tons/year);
EF = VOC per capita emission factor (lbs/person-year); and
P = Population (people).

A sample calculation using this equation for estimating annual VOC emissions from Ada County consumer products (personal care products) is as follows:

P	=	380,920 people
EF	=	2.04 lbs VOC/person
E	=	380,920 people × 2.04 lbs VOC/person × (1 ton/2,000 lbs) = 388.5 tons VOC

3.1.13 Dry Cleaning

Activity data for dry cleaning were collected using a mail-out survey (included as Appendix C) that was sent to dry cleaners located in Ada, Canyon, and Elmore counties in October 2009. Additional follow-up was conducted via phone during in January 2010. A total of 24 dry cleaners were identified as conducting on-site cleaning in the three counties. Of these 24 dry cleaners, 13 exclusively used perchloroethylene, 10 exclusively used petroleum solvents, and 1 used both perchloroethylene and petroleum solvents. Since perchloroethylene is not a VOC species, it was not included in the emission calculations. The petroleum solvents used by the 11 petroleum solvent dry cleaners included Stoddard solvent, ECOSOLV, and DF-2000. A total of 1,815 gallons of petroleum solvent were identified for Ada County; while a total of 600 gallons of petroleum solvent were identified for Canyon County. Only two dry cleaners identified solvent being sent off-site; for both of these facilities, the off-site quantities exceeded the purchase statistics, so the purchase statistics for these facilities were excluded. Solvent densities were obtained from material safety data sheets (MSDSs) provided by the dry cleaners. It was assumed that purchase statistics were equal to emissions (i.e., all purchased solvent was used and subsequently evaporated).

3.1.14 Asphalt Application

Usage quantities of asphalt within the three-county area, as well as relevant material safety data sheets (MSDS) and product specifications, were obtained through telephone contacts with 11 different government agencies. These government agencies included the following:

- Idaho Transportation Department (ITD), District 3 (Morrison, 2010a)
- Highway districts:
  - Ada County Highway District (including City of Boise) (Nobel, 2010)
  - Nampa (Canyon County) Highway District No. 1 (Kennedy, 2010)
  - Notus-Parma (Canyon County) Highway District No. 2 (Bowman, 2010b)
  - Golden Gate (Canyon County) Highway District No. 3 (Norris, 2010b)

- Canyon (Canyon County) Highway District No. 4 (Richard, 2010c)
- Mountain Home (Elmore County) Highway District (Tindall, 2010b)

- City public works departments:
  - City of Caldwell Streets Department (Caldwell, 2010)
  - City of Middleton Public Works Department (Green, 2010)
  - City of Mountain Home Public Works Department (Harvel, 2010)
  - City of Nampa Public Works Department (Barr, 2010)

Usage quantities were collected for hot mix asphalt, emulsified asphalt, and cutback asphalt. However, based upon the survey-based methodologies identified in EIIP guidance documents (EIIP, 2001a), emissions were only estimated for emulsified asphalt and cutback asphalt (i.e., emissions are typically not estimated for hot mix asphalt and an appropriate methodology was not identified).

Most of the asphalt applied in the three-county area is hot mix asphalt. Five agencies (i.e., ITD District 3, Nampa Highway District No. 1, City of Middleton, City of Mountain Home, and City of Nampa) used hot mix asphalt exclusively. Only two agencies (i.e., Golden Gate Highway District No. 3 and Mountain Home Highway District) identified any cutback asphalt usage with a total of only 75 tons. Emulsified asphalt usage was identified in four agencies (i.e., Ada County Highway District, Golden Gate Highway District No. 3, Canyon Highway District No. 4, and Mountain Home Highway District) with a total of 7,875 tons.

Asphalt usage could not be obtained from Notus-Parma Highway District No. 2 and the City of Caldwell. Consideration was given to gap fill the missing data for these two agencies, but a reasonable approach could not be identified. For the City of Caldwell, asphalt data from the other three cities contacted was limited to hot mix asphalt, so there was no basis for extrapolation of cutback or emulsified asphalt. For Notus-Parma Highway District No.2, data from the three other highway districts in Canyon County were examined. However, these three highway districts did not provide a reasonable set of data to base a gap filling extrapolation upon (i.e., hot mix asphalt only for Nampa Highway District No. 1, emulsified and cutback asphalt for Golden Gate Highway District No. 3, and emulsified asphalt only for Canyon Highway District No. 4.).

A number of assumptions from the EIIP guidance were used to calculate emissions (EIIP, 2001a). The cutback asphalt was assumed to be medium cure cutback and the emulsified asphalt was assumed to be medium set emulsified. In addition, asphalt densities of 7.8 lb/gal and 8.34 lb/gal were assumed for cutback and emulsified, respectively. Likewise, diluent densities of 6.67 lb/gal (cutback) and 8.34 lb/gal (emulsified) were also assumed. It was assumed that the diluent content of cutback asphalt was 35 percent (EIIP, 2001a), while recent research has indicated that the diluent content of emulsified asphalt is approximately 12 percent (Midwest, 2006). Finally, it was assumed that 75 percent of the cutback diluent evaporated, while 100 percent of the emulsified diluent evaporated..

Ozone seasonal daily emissions were estimated by dividing annual emissions by the number of days in the ozone season (i.e., 214 days). All of the agencies contacted indicated that asphalt application is typically not conducted during the PM season, so PM seasonal daily emissions were not calculated.

3.1.15 Pesticide Application

Emissions from agricultural pesticide application were estimated as indicated in the IPP/QAP Area Source Matrix. Planted crop acreage data were obtained from the *2007 Census of Agriculture* (USDA, 2009). Pesticide application information (i.e., fraction of acreage applied, quantity of active ingredient per acre, and applications per year) were obtained from crop profiles: however, only 11 crop profiles were available (i.e., apples, barley, dry beans, sweet corn, lentils, mint, dry peas, green peas, potatoes, sugar beets, and wheat) (IPM Center, 2010). Only pesticides with application rates in terms of pounds per acre were considered; pesticides with unusual application rates (e.g., ounces per hundredweight of seed, ounces per linear row, etc.) were not included. Emissions were estimated using the methodology outlined in the EIIP guidance (EIIP, 2001c). Typical pesticide characteristics (i.e., percent active ingredient and formulation type) were obtained from a pesticide database (PAN, 2010). Wherever possible, the product names and/or formulation types indicated by the IPM Center crop profiles were followed. If assumptions were made for specific pesticides, then pesticides with an active U.S. product regulatory status were selected.

Emissions were estimated using the methodology outlined in the EIIP guidance (EIIP, 2001c). Typical pesticide characteristics (i.e., percent active ingredient and formulation type) were obtained from a pesticide database (PAN, 2010). Wherever possible, the product names and/or formulation types indicated by the IPM Center crop profiles were followed. If assumptions were made for specific pesticides, then pesticides with an active U.S. product regulatory status were selected.

The equation for estimating emissions from pesticide application was as follows:

$$E_{p,t} = E_{p,a} + E_{p,i} = \left(R_p \times A_p \times a_p \times EF_p \times \frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right) + \left(R_p \times A_p \times i_p \times V_p \times \frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right)$$

Where:

$E_{p,t}$	=	Total emissions from pesticide *p* (tons VOC/year);
$E_{p,a}$	=	Emissions from active ingredient of pesticide *p* (tons VOC/year);
$E_{p,i}$	=	Emissions from inert ingredient of pesticide *p* (tons VOC/year);
R_p	=	Application rate of pesticide *p* (lbs/acre-year);
A_p	=	Harvested acreage that had application of pesticide p (acres);
a_p	=	Percent of active ingredient in pesticide *p* (%);
EF_p	=	Emission factor for active ingredient in pesticide *p* (lbs/ton);
i_p	=	Percent of inert ingredient in pesticide *p* (%); and
V_p	=	Volatile content of inert fraction of pesticide *p* (%).

A sample calculation using this equation for estimating annual VOC emissions from the application of Bravo 500 (active ingredient chlorothalonil) on potatoes in Elmore County is as follows:

R_p	=	9.282 lbs/acre-year
A_p	=	8,967 acres × 0.60 (application fraction) = 5,380.2 acres
a_p	=	40.4 percent active ingredient
i_p	=	59.6 percent inert ingredient
V_p	=	56 percent volatile content of inert ingredient
EF_p	=	1,160 lbs VOC/ton active ingredient applied (vapor pressure 1 × 10^{-3} mmHg)
$E_{p,a}$	=	9.282 lbs/acre-year × 5,380.2 acres × 0.404 × 1,160 lbs VOC/ton active ingredient applied × 1 ton VOC/2,000 lbs VOC = 5.85 tons VOC
$E_{p,I}$	=	9.282 lbs/acre-year × 5,380.2 acres × 0.596 × 0.56 × 1 ton VOC/2,000 lbs VOC
	=	8.34 tons VOC
$E_{p,t}$	=	$E_{p,a}$ + $E_{p,i}$ = 5.85 tons VOC + 8.34 tons VOC = 14.19 tons VOC

3.1.16 Gasoline Distribution

State-level gasoline consumption statistics were obtained from the Idaho Tax Commission (Walters, 2010). These state-level gasoline statistics were disaggregated down to the individual county-level based upon 2008 population estimates (U.S. Census, 2009b). Although 24 gasoline stations were identified as exceeding DEQ's point source thresholds, all gasoline stations were kept in the gasoline distribution area source category in order to avoid potential modeling difficulty.

Emission factors for underground tank filling (Stage I), breathing and emptying losses, and tank truck transit losses were obtained from EIIP guidance (EIIP, 2001b). It was assumed that the Stage I underground tank filling was submerged fill throughout Ada, Canyon, and Elmore counties. Refueling (Stage II) emission factors were developed from MOBILE6 input files used by ENVIRON in their on-road motor vehicle analysis (Grant, 2010).

The equation for estimating emissions from gasoline distribution is as follows:

$$E = EF \times T \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right)$$

Where:

E	=	Emissions (tons VOC/year);
EF	=	Emission factor (lbs/gal throughput); and
T	=	Annual fuel throughput (gal/year).

A sample calculation using this equation for estimating annual VOC emissions from Ada County Stage I underground tank filling is as follows:

T	=	151,687,674 gallons (or 151,687.674 × 10^3 gallons)
EF	=	7.3 lbs VOC/10^3 gallons
E	=	151,687.674 × 10^3 gallons × 7.3 lbs VOC/10^3 gallons × (1 ton/2,000 lbs) = 553.7 tons VOC

3.1.17 Wastewater Treatment

Activity data for wastewater treatment were collected using a mail-out survey (included as Appendix C) was that sent to wastewater treatment facilities located in Ada, Canyon, and Elmore counties in October 2009. A total of 17 surveys were mailed out of which 14 surveys were returned that identified the monthly quantities of wastewater treated. Additional follow-up was attempted for the three non-respondent facilities (i.e., Glenns Ferry, Kuna, and Notus), but contact could not be made. Since these non-respondent facilities are located in small communities, they are likely comparatively small facilities and their missing data is unlikely to affect the overall uncertainty of the emission estimates. In addition, the wastewater quantities from the Eagle Sewer District Treatment Plant were not included since effluent from that facility is pumped to the West Boise Wastewater Treatment Plant for further processing. The emission factors were obtained from the 2002 NEI documentation report (U.S. EPA, 2006).

It should be noted that the WATER9 model was identified as the wastewater treatment source category methodology in the IPP/QAP Area Source Matrix. However, further investigation revealed that the collection of the activity data needed to run WATER9 was extensive and it would be infeasible to collect for all of the wastewater treatment facilities located in Ada, Canyon, and Elmore counties. Therefore, the alternate emission factor methodology described above was used to estimate emissions from wastewater treatment.

3.1.18 Landfills

Landfill gas is generated by microorganism within the landfill under anaerobic conditions. The primary landfill gas constituents are methane (CH_4) and carbon dioxide (CO_2); however, lesser amounts of VOC are also generated either from decomposition products or the volatilization of biodegradable wastes.

Activity data for landfills were collected using a mail-out survey (included as Appendix C) that was sent to landfills located in Ada, Canyon, and Elmore counties in October 2009. A total of 14 surveys were mailed out. However, not all locations identified as landfills were actually landfills (e.g., slash piles, illegal dump sites, etc.). Only 3 surveys were returned: Ada County Landfill (i.e., Hidden Hollow), Pickles Butte Sanitary Landfill (Canyon County), and Mountain Home AFB (Elmore County). Emissions calculations for these three landfills confirmed that none of them exceed the VOC point source threshold of 10 tpy VOC. Therefore, emissions from these landfills were inventoried as an area source.

Emissions were estimated using the methodology outlined in Section 2.4 of AP-42 (U.S. EPA, 2010). This methodology is based on a theoretical first-order kinetic model of CH_4 production.

The equations for estimating emissions from landfills are as follows:

$$Q_{CH4} = 1.3L_o \times R \times \left(e^{-kc} - e^{-kt}\right)$$

Where:

Q_{CH4} = Methane generation rate at time t (m^3/yr);
L_o = Methane generation potential (m^3 CH_4/Mg) (default value of 100 m^3 CH_4/Mg);
R = Average annual refuse acceptance rate during active life (Mg/yr);
k = Methane generation rate constant (yr^{-1}) (default value of 0.02);
c = Time since landfill closure (years); and
t = Time since the initial refuse placement (years).

$$Q_{VOC} = \frac{Q_{CH4} \times C_{VOC}}{C_{CH4} \times (1 \times 10^6)}$$

Where:

Q_{VOC} = Emission rate of VOC (m^3/yr);
C_{VOC} = Concentration of VOC in landfill gas (ppmv) (default value of 835 ppmv); and
C_{CH4} = Concentration of CH_4 in landfill gas (assumed to be 50% expressed as 0.5).

$$UM_{VOC} = Q_{VOC} \times \frac{MW_{VOC} \times (1\,\mathrm{atm})}{\left(\frac{0.00008205\,\mathrm{m}^3\text{ - atm}}{\mathrm{gmol\text{-}K}}\right) \times \left(\frac{1000\,\mathrm{g}}{\mathrm{kg}}\right) \times (273 + \mathrm{T})}$$

Where:

UM_{VOC} = Uncontrolled mass emissions of VOC (kg/yr);
Q_{VOC} = Emission rate of VOC (m^3/yr);
MW_{VOC} = Molecular weight of VOC (g/gmol) (default value of 86.18 as hexane); and
T = Temperature of landfill gas (°C).

A sample calculation using these equations for estimating annual VOC emissions from the Ada County Landfill is as follows:

L_o = 100 m^3 CH_4/Mg
R = 299,420 Mg refuse/year
k = 0.02
c = 0 years (active landfill)
t = 35 years
Q_{CH4} = 1.3(100 m^3 CH_4/Mg)(299,420 Mg refuse/year)($e^{-[0.02 \times 0]} - e^{-[0.02 \times 35]}$) = 19,595,216 m^3/yr CH_4

C_{VOC} = 835 ppmv
C_{CH4} = 0.5
Q_{VOC} = (19,595,216 m^3/yr CH_4 × 835 ppmv)/(0.5 × 1,000,000) = 32,724 m^3 VOC/yr

MW_{VOC} = 86.18 g/gmol
T = 25 °C
UM_{VOC} = [(32,724 m^3 VOC/yr)(86.18 g/gmol)(1 atm)]/{(0.00008205 m3-atm/gmol-K)(1000 g/1 kg)(273 + 25K)} = 5,038 kg VOC/yr = 5.6 ton VOC/yr

3.1.19 Open Burning (Yard Waste and Household Waste)

The methodology identified in the IPP/QAP Area Source Matrix was tentatively identified as a mass balance approach which incorporates waste generation rates and local landfilling and recycling rates. Some landfilling information was available; however, in general, it was not possible to positively distinguish between local landfill material (i.e., originating in Ada, Canyon, or Elmore counties) and landfill material originating outside of the three-county area. In addition, conversations with Ada County Solid Waste Management Department staff indicate that open burning activity, as reflected by public nuisance complaints, has dramatically decreased in recent years. Furthermore, concerns over air quality and fire hazards have also affected the public acceptance level of open burning (Hutchinson, 2010). Therefore, an alternative methodology was used to estimate open burning emissions.

The city and county codes were examined for all government entities located within Ada, Canyon, and Elmore counties. The codes were examined for mandatory residential waste collection requirements and prohibitions of household and/or yard waste burning. This examination was greatly facilitated by the availability of city/county codes on-line. The Boise city code was available from the City of Boise website (Boise, 2010). The city/county codes for 14 other government entities (i.e., Caldwell, Eagle, Garden City, Greenleaf, Kuna, Meridian, Middleton, Mountain Home, Nampa, Parma, Star, Wilder, Ada County, and Canyon County) were maintained on-line by a codifying company (Sterling, 2010). The city/county codes for only four government entities (i.e., Glenns Ferry, Melba, Notus, and Elmore County) could not be identified. Based on the review of these city/county codes, the following information was determined:

- Mandatory residential waste collection
  - Required in most areas located within Ada, Canyon, and Elmore counties
  - Not explicitly required in Glenns Ferry, Greenleaf, Melba, Notus, Parma, Star, and the unincorporated portions of Canyon and Elmore counties

- Household waste burning
  - Explicitly banned in most areas located within Ada, Canyon, and Elmore counties
  - Not explicitly banned in Glenns Ferry, Greenleaf, Melba, Notus, and the unincorporated portion of Elmore County
- Yard waste burning
  - Explicitly banned in only a few areas (i.e., Boise, Caldwell, Meridian, Nampa, and the unincorporated portion of Ada County)
  - Allowed in the other areas subject to necessary burn permits (typically from local fire agencies) and sufficiently low air quality index (AQI) values.

It was assumed that household waste (i.e., municipal solid waste) and yard waste burning was conducted in all areas without explicit codified bans. National per capita waste generation rates for 2008 were derived from national statistics (U.S. EPA, 2009a). The per capita yard waste generation was reduced by 50 percent to account for the grass clippings portion which is typically not burned. These per capita waste generation rates were applied to the populations in the non-ban areas (i.e., 18,691 for household waste burning and 139,846 for yard waste burning). Based upon the methodology used in the 2002 NEI, it was assumed that 28 percent of the household and yard waste generated was actually burned (U.S. EPA, 2006). Emission factors for the residential and yard waste burning were obtained from the documentation from the 2002 National Emissions Inventory (U.S. EPA, 2006).

The equation for estimating emissions open burning (household waste or yard waste) is:

$$E_p = [BF \times W \times P] \times EF_p \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right)$$

Where:

E_p	=	Emissions for pollutant *p* (tons/year);
BF	=	Fraction of generated waste burned;
W	=	Per capita waste generation rate (tons/person-day);
P	=	Population (people); and
EF_p	=	Emission factor for pollutant *p* (lbs/ton).

A sample calculation using this equation for estimating annual VOC emissions from Elmore County household waste burning is as follows:

BF	=	28% of generated waste is burned
W	=	3.18 lbs waste/day
P	=	16,615 people without household waste burning bans

EF_p	=	30 lbs VOC/ton waste
E	=	0.28 × 3.18 lbs waste/person-day × 16,615 people × 366 days/year × 1 ton waste/2,000 lbs waste × 30 lbs VOC/ton waste × (1 ton/2,000 lbs) = 40.6 tons VOC

3.1.20 Agricultural Tilling and Harvesting

Emissions from both agricultural tilling and agricultural harvest operations were estimated using per-acre emission factors developed by the California Air Resources Board (CARB, 2003a; CARB, 2003b). It was assumed that these per-acre emission factors provide a reasonable approximation of conditions in the Treasure Valley. Planted and harvested crop acreage data were obtained from the *2007 Census of Agriculture* (USDA, 2009).

The equation for estimating emissions from agricultural tilling and harvest activities is as follows:

$$E_c = EF_c \times A_c \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right)$$

Where:

E_c	=	Emissions for crop *c* (tons PM_{10}/year);
EF_c	=	Emission factor for crop *c* (lbs PM_{10}/acre planted/harvested); and
A_c	=	Acres planted/harvested for crop *c* (acres/year).

A sample calculation using this equation for estimating annual PM_{10} emissions from sugarbeet tilling in Ada County household waste burning is as follows:

EF_c	=	22.8 lbs PM_{10}/acre planted
A_c	=	1,976 planted acres of sugarbeets
E	=	1,976 acres × 22.8 lbs PM_{10}/acre × 1 ton/2,000 lbs = 22.5 tons PM_{10}

3.1.21 Agricultural Burning – Fields

As part of the recently implemented Crop Residue Burning Program, agricultural field burning was only allowed between September 1 and October 31, 2008. County-level field burning acreage statistics for the Southwest Idaho Burn Management Area were obtained from DEQ staff (Pettit, 2009). Field burning acreage was limited to 29.2 acres of cereal grains in Ada County and 202 acres of other crops in Canyon County. For estimation purposes, backfired wheat fuel loading and emission factors were assumed for the Ada County cereal grain acreage. Likewise, backfired alfalfa loading and emission factors were assumed for the Canyon other acreage. Fuel loadings and emissions were estimated using appropriate emission factors from AP-42 (U.S. EPA, 2010a).

The equation for estimating emissions from agricultural open burning is as follows:

$$E_{p,c} = AB_c \times FL_c \times EF_{p,c} \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}}\right)$$

Where:

$E_{p,c}$	=	Emissions for pollutant *p* and crop *c* (tons/year);
AB_c	=	Acreage burned for crop *c* (acres/year);
FL_c	=	Fuel loading for crop *c* (tons/acre); and
$EF_{p,c}$	=	Emission factor for pollutant *p* and crop *c* (lbs/ton).

A sample calculation using this equation for estimating annual CO emissions from field burning of other crops in Canyon County is as follows:

AB	=	202 acres other crops (assumed to be alfalfa)
FL	=	0.8 tons/acre
$EF_{p,c}$	=	119 lbs CO/ton
E	=	202 acres × 0.8 tons/acre × 119 lbs CO/ton × 1 ton/2,000 lbs = 9.6 tons CO

3.1.22 Agricultural Burning – Irrigation Ditches

An additional source of agricultural burning that was not identified in the IPP/QAP Area Source Matrix was the burning of weeds in irrigation canals and ditches. The weeds in the ditch bottoms are typically burned during the month of March just before the irrigation water is first released in the spring. Although the ditch width is quite variable (i.e., from 3 feet to over 70 feet), a typical ditch width was assumed to be 5 feet. The ditch length within a given irrigation district or ditch company can be quite extensive, but not necessarily well quantified. For instance, it was roughly estimated within the Nampa & Meridian Irrigation District that there were 500 to 600 miles of ditches (Anderson, 2010). A total of 56 irrigation districts and ditch companies have been identified by the Idaho Department of Water Resources in Ada and Canyon counties (IDWR, 2006; IDWR, 2007). Therefore, it was not feasible to contact all of the irrigation districts and ditch companies. An alternative data source for ditch lengths was identified in the U.S. Geological Service's National Hydrography Dataset (USGS, 2010); ditch lengths were derived from a data layer of canals and ditches. Based on the National Hydrography Dataset, the county ditch lengths were estimated to be 796.28 kilometers (km) for

Ada County, 1,980.25 km for Canyon County, and 366.00 km for Elmore County. Emissions were estimated using appropriate fuel loadings (assumed to be unspecified weeds) and emission factors from AP-42 (U.S. EPA, 2010a). The emission estimation equation is identical to that used for agricultural field burning.

3.1.23 Beef Cattle Feedlots

This category includes PM_{10} and $PM_{2.5}$ emissions from beef cattle feedlots and VOC emissions from all cattle and calves; NH_3 emissions are addressed under the livestock ammonia category in Section 3.1.26.

The total number of cattle and calves was obtained from the 2007 Census of Agriculture (USDA, 2009). In addition, the number of cattle on feed was also obtained from the same data source. The population of cattle on feed for Canyon County was explicitly reported; however, the population of cattle on feed for Ada County and Elmore County were not presented due to confidentiality reporting requirements. The overall population of cattle on feed for those counties in Idaho with confidentiality "shielded" data (including Ada and Elmore) was determined by subtracting known county populations of cattle on feed from the overall state population of cattle on feed resulting in the state shielded population. The state shielded population of cattle on feed was then allocated to the shielded counties based upon the reported quantity of other cattle (i.e., not beef cows or milk cows). The total number of cattle and calves was 66,476 head for Ada County, 129,561 head for Canyon County, and 109,065 head for Elmore County. The total number of cattle on feed was 13,770 head for Ada County, 7,221 head for Canyon County, and 24,862 head for Elmore County.

The emission factors were obtained from the California Air Resources Board (CARB, 2004). The PM_{10} emission factor was 28.9 lbs/1000 head-day, while the VOC emission factor was 12.8 lbs/head-year. Since the PM_{10} emission factor was units of lbs/head-day, it was necessary to determine how long each head of cattle on feed is typically present in the feedlot. A typical residence time of 136 days was obtained from a feedlot cattle behavioral study (Stanford et al., 2009). The annual VOC emissions were calculated for all cattle and calves regardless of whether or not they were located on a feedlot.

The equation for estimating emissions from beef cattle feedlots is as follows:

$$E = EF \times BC \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right)$$

Where:

E	=	Emissions (tons/year);
EF	=	Emission factor (lbs/head); and
BC	=	Beef cattle population (head).

A sample calculation using this equation for estimating annual VOC emissions from Ada County is as follows:

BC	=	66,476 head
EF	=	12.8 lbs VOC/head-year
E	=	66,476 head × 12.8 lbs VOC/head-year × (1 ton/2,000 lbs) = 425.4 tons VOC

3.1.24 Other Fires

The other fire source category includes structural fires and vehicle fires. County-level structural and vehicle fire statistics were obtained from the Idaho State Fire Marshal's Idaho Fire Incident Reporting System (IFIRS) (Karnowski, 2009). Review of the statistics indicates nearly 100 percent reporting by the fire districts located in Ada, Canyon, and Elmore counties. Based on the IFIRS summary data, the assignment of fire types to the structural and vehicle sources categories is shown in Table 3-17. The specific county-level employee data obtained were for the following NAICS codes:

Table 3-17. Fire Code Assignments for the Structural Fire and Vehicle Fire Source Categories

Category	IFIRS Codes
Structural Fires	111 (Building fire)
	112 (Fire in structures other than buildings)
	120 (Fire in mobile property used as a fixed structure)
	121 (Fire in mobile home used as fixed residence)
	122 (Fire in motor home, camper, recreational vehicle used as fixed residence)
	123 (Fire in portable building at a fixed location)
Vehicle Fires	130 (Mobile property/vehicle fire)
	131 (Passenger vehicle fire)
	132 (Road freight or transport vehicle fire)
	134 (Water vehicle fire)
	137 (Camper or recreational vehicle fire)
	138 (Off-road vehicle or heavy equipment fire)

Emission factors for structural fires and vehicle fires were obtained from EIIP guidance documents (EIIP, 2001c; EIIP, 2000). Based on the EIIP guidance documents, a fuel loading of

1.15 tons/fire was assumed for structural fires and a fuel loading of 0.25 tons/fire was assumed for vehicle fires.

The general equation for estimating emissions from structural and vehicle fires is as follows:

$$E_p = F \times FL \times EF_p \times \left(\frac{1\,\text{ton}}{2{,}000\,\text{lbs}} \right)$$

Where:

E_p	=	Emissions for pollutant *p* (tons/year);
F	=	Annual structural or vehicle fires (fires/year);
FL	=	Fuel loading (tons material/fire); and
EF_p	=	Emission factor for pollutant *p* (lbs/tons material).

A sample calculation using this equation for estimating annual CO emissions from Ada County structural fire is as follows:

F	=	150 fires
FL	=	1.15 tons material/fire
EF	=	60 lbs CO/ton material
E	=	150 fires × 1.15 tons/fire × 60 lbs CO/person × (1 ton/2,000 lbs) = 5.2 tons CO

3.1.25 Windblown Dust

The windblown fugitive dust emissions for the Treasure Valley Airshed were developed using the estimation methodology developed for the Western Regional Air Partnership (WRAP) by a team of contractors led by ENVIRON (ENVIRON, 2004a) and subsequently revised by Mansell and others (Mansell, 2003a; 2003b; Mansell, et al. 2004). The methodology was based upon the results of wind tunnel studies and a detailed characterization of vacant lands. Windblown dust emissions were estimated hourly on a gridded modeling domain using hourly averaged wind speeds and other meteorological parameters. Hourly emission estimates were developed for each hour in 2008. The methodology involves application of wind speed- and soil-dependent emission factors to estimate emissions rates on a gridded modeling domain. Land use characteristics were used to estimate threshold friction velocities, based on gridded meteorological data, to determine the potential for wind erosion. Additional agricultural adjustments were applied to capture the impacts of crop-specific planting and harvesting practices. A detailed description of the windblown dust model estimation methodology and implementation is provided below.

While the Treasure Valley Airshed emissions inventory is limited to Ada, Canyon, and Elmore counties, the implementation of the modeling system for the development of windblown fugitive dust PM emissions requires the use of a larger Cartesian modeling grid domain. As such, the emission estimates described below include additional Idaho counties, as well as neighboring counties in Oregon. Figure 3-1 displays the modeling domain for which windblown dust PM emissions were estimated. In addition, the model requires hourly gridded meteorological data and generates emission estimates for each hour for the entire time period considered. For the DEQ inventory, these estimates are aggregated to counties and summed across all hours of calendar year 2008, as described below.

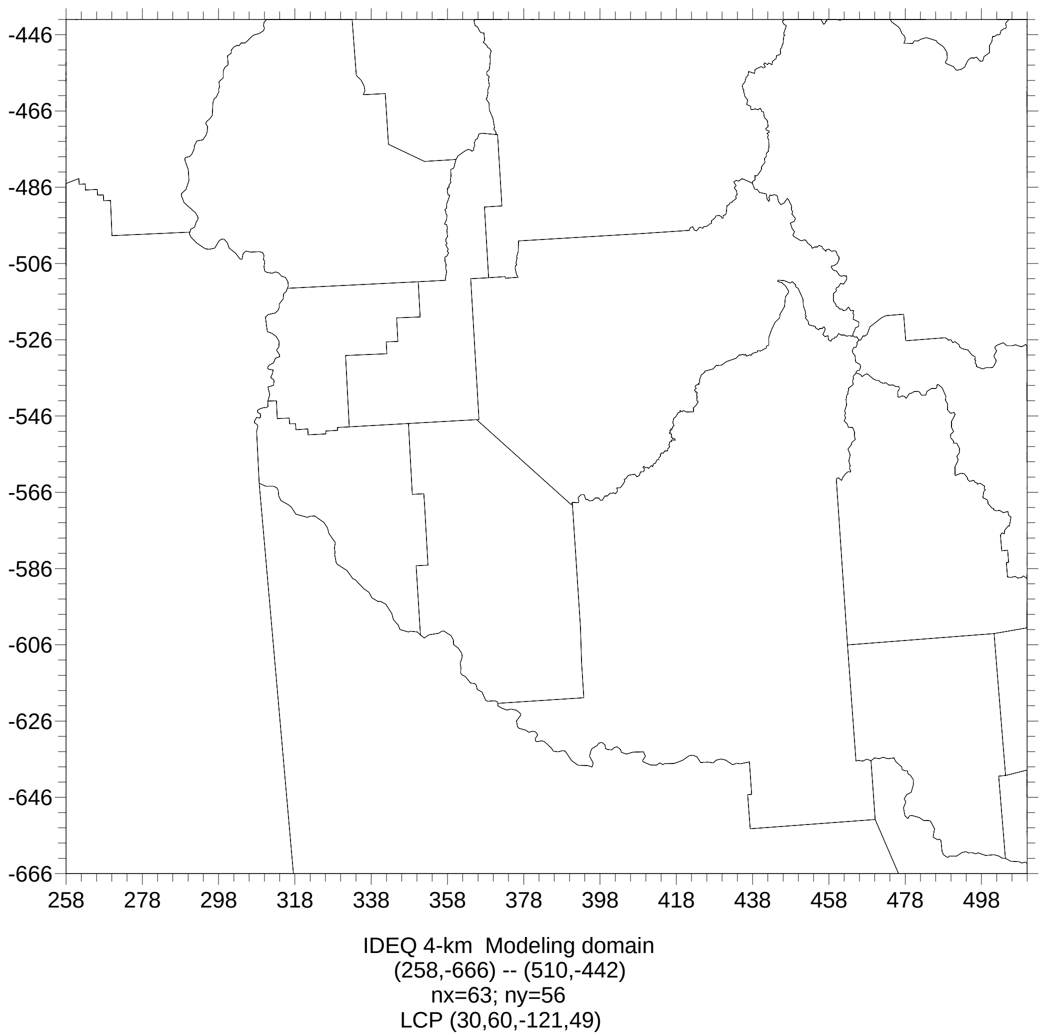

Figure 3-1. DEQ 4-km Modeling Domain for Windblown Dust Emissions Development

Data Collection

Input data required by the model include:

- Soil characteristics;
- Land use/land cover data;
- Crop-specific agricultural data; and
- Meteorology

Soil Characteristics

Application of the emission factor relations, described below, requires the characterization of soil texture in terms of the four soil groups considered by the model. The characteristics or type of soil is one of the parameters of primary importance for the application of the emission estimation relations derived from wind tunnel study results.

The windblown dust model utilized the Soil Survey Geographic Database (SSURGO) available from the USDA (USDA, 2010). In some parts of the country, the SSURGO data are incomplete. Alternatively, the State Soil Geographic Database (STATSGO) was used to gap-fill the SSURGO data for the modeling domain (USDA, 1994). The STATSGO database provides detailed information concerning the taxonomy of the soils, including soil texture class, percentage of sand, silt and clay, and the available water capacity of the soil. Figure 3-2 displays the final merged soil texture data, which combines the SSURGO and STATSGO databases, as used in the windblown dust model.

Land Use-Land Cover

Land use-land cover (LULC) data required for the windblown dust model was derived from crop-specific GIS data layers obtained from the USDA NASS Cropland Data Layer (CDL) Program and represent agricultural, as well as non-agricultural, lands throughout the region based on data for calendar year 2007 (NASS, 2007). The primary purpose of the CDL Program is to use satellite imagery to provide acreage estimates to the Agricultural Statistics Board for the state's major commodities and produce digital, crop-specific, categorized geo-referenced output products. These data were reviewed and processed for use in the windblown dust model. Figure 3-3 presents a display of the final land use/land cover data for the 4-km modeling domain.

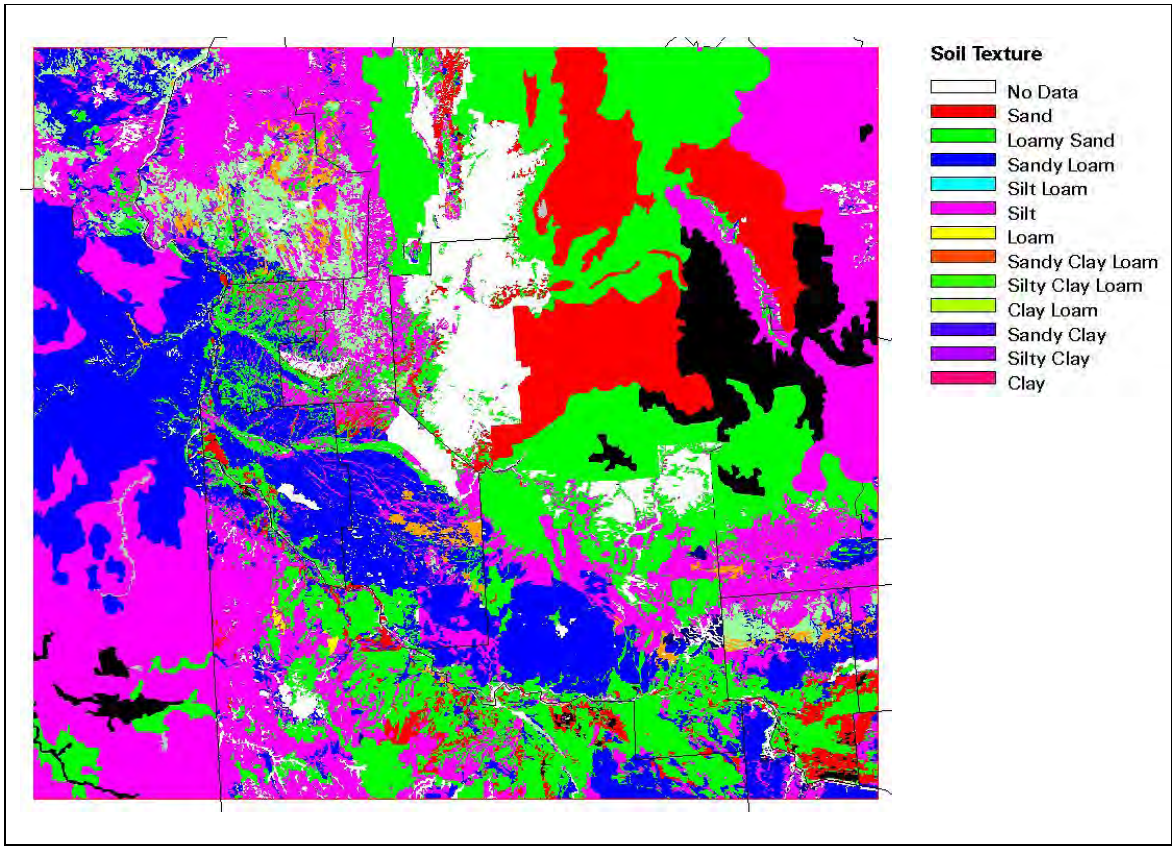

Figure 3-2. Merged Soil Texture Data from the SSURGO and STATSGO Databases

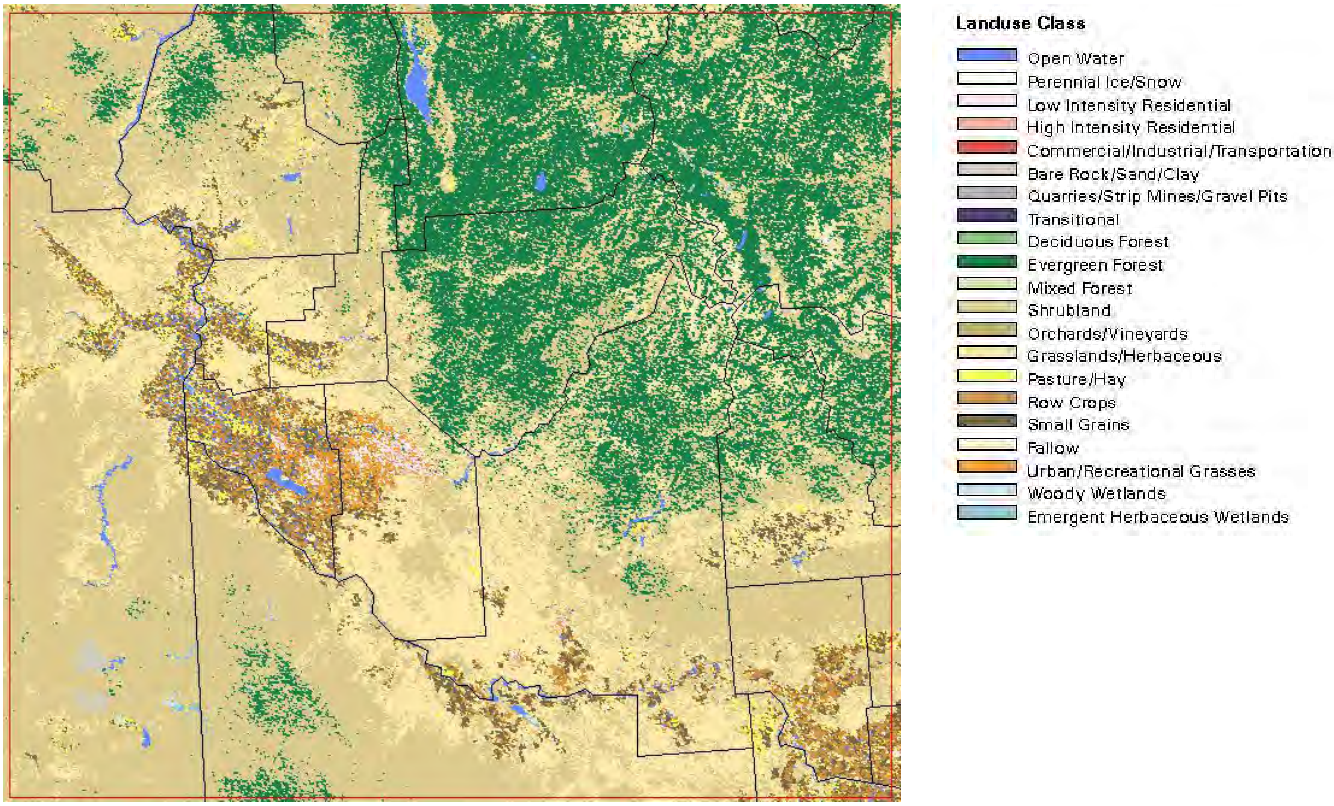

Figure 3-3. Land Use/Land Cover Data Used for the DEQ Windblown Dust PM Emissions Inventory Development

Agricultural Data

Unlike other types of vacant land, windblown dust emissions from agricultural land are subject to a number of non-climatic influences, including irrigation and seasonal crop growth. As a result, several non-climatic correction or adjustment factors were developed for applicability to the agricultural wind erosion emissions. These factors included:

- Long-term effects of irrigation (i.e., soil “clodiness”);
- Crop canopy cover;
- Post-harvest vegetative cover (i.e., residue);
- Bare soil (i.e., barren areas within an agriculture field that do not develop crop canopy for various reasons, etc.); and
- Field borders (i.e., bare areas surrounding and adjacent to agricultural fields).

The methodology used to develop individual non-climatic correction factors was based upon previous work performed by the California Air Resources Board in their development of California-specific adjustment factors for the USDA’s Wind Erosion Equation (CARB, 1997).

In order to apply the agricultural adjustments described above, crop information, including types of crops and planting schedules, were required. These crop data (i.e., crop types, tilling and harvesting practices, crop calendars, and planting and harvesting schedules) were obtained from the National Agricultural Statistics Service and the U.S. Department of Agriculture (NASS, 2009b; USDA, 1997; USDA, 2009). In the windblown dust model, specific crop types were mapped to those recognized by the model, based on the Conservation Technology Information Center (CTIC) crop database, in order to provide a link between specific crop planting and harvesting schedules, tilling and irrigation practices, and canopy growth curves. Table 3-18 summarizes the Idaho-specific crop types and the mapping between DEQ’s data and the CTIC crop types.

The windblown dust model used the percentage of canopy cover for each crop type as crops are grown throughout the year to apply various adjustments to the estimated hourly wind blown dust emissions. For the 2008 inventory, the crop canopy cover data, developed from crop report data (NASS, 2009b; USDA, 1997), are summarized in Table 3-19, which provides the percentage of canopy cover for each crop type in 15-day increments throughout the year. Table 3-20 presents the Idaho crop canopy information regarding planting and harvesting dates by crop type and region used in combination with the canopy growth curves shown in Table 3-19. These data are available for broad regions within the State of Idaho including the Central (C), Southwestern (SW) and South Central (SC) regions of the state, as indicated in Table 3-20.

Table 3-18. DEQ and CTIC Crop Type Mapping and Descriptions

DEQ Crop Code	Description	CTIC Crop Name	CTIC Crop Code
FD01	Barley (grain)	Barley	BAR01
FD02	Corn (grain)	Corn	COR01
FD03	Dry edible beans (excluding limas)	Peas/Beans	BEA01
FD04	Dry lima beans	Peas/Beans	BEA01
FD05	Dry edible peas	Peas/Beans	BEA01
FD06	Mustard seed	Canola	POT01
FD07	Oats (grain)	Oats	OAT01
FD08	Safflower	Canola	POT01
FD09	Sugarbeets (sugar)	Sugar Beets	SUG01
FD10	Triticale	Wheat	WHE02
FD11	Winter wheat (grain)	Wheat	WHE02
FD12	Durum wheat (grain)	Wheat	WHE01
FD13	Spring wheat (grain)	Wheat	WHE01
SH01	All grass seeds	Forage Crops	HAY01
SH02	Hay (alfalfa)	Forage Crops	ALF01
SH03	Hay (small grain)	Forage Crops	HAY01
SH04	Hay (other tame)	Forage Crops	HAY01
SH05	Hay (wild)	Forage Crops	HAY01
SH06	Corn (silage and greenchop)	Corn	COR01
OT01	Hops	n/a	n/a
OT02	Mint for oil (peppermint)	Canola	POT01
OT03	Mint for oil (spearmint)	Canola	POT01
OT04	Sweet corn (for seed)	Corn	COR01
VG01	Onions, Dry	Vegetables	ONI01
VG02	Peas, Chinese (sugar and snow)	Vegetables	PEA01
VG03	Potatoes	Potatoes	POT01
VG04	Sweet Corn	Corn	COR01
FR01	Apples	n/a	n/a
FR02	Cherries, Sweet	n/a	n/a
FR03	Grapes	n/a	n/a
FR04	Peaches	n/a	n/a
FR05	Plums and Prunes	n/a	n/a

Table 3-19. Idaho Crop Canopy Cover by Crop Type and Julian Day Since Planting (%)

% canopy cover (CC)	Day																							
Canopy_Spr or Canopy_Fall	**0**	**15**	**30**	**45**	**60**	**75**	**90**	**105**	**120**	**135**	**150**	**165**	**180**	**195**	**210**	**225**	**240**	**255**	**270**	**285**	**300**	**315**	**330**	**345**	**360**
BAR01	0	1	15	55	95	95	95	95	95	95	95														
OAT01	0	10	35	60	85	95	95	95																	
SUG01	0	5	10	20	30	40	60	80	90	95															
POT01	0	10	25	40	55	65	80	70																	
WHE01	0	5	10	30	75	95	95	95	95	95	95														
WHE02	0	5	10	20	25	25	25	25	25	25	25	25	30	30	40	65	95	95	95	95	95				
COR01	0	5	10	50	75	95	95	95	95	95	85	65													
BEA01	0	5	15	40	65	75	75	60	30																
ONI01	1	5	7	10	15	20	15	10																	
HAY01	43	50	63	78	90	80	75	90	95	80	75	90	95	75	67	75	80	75	67	57	50	50	53	58	43
ALF01	47	55	67	25	47	67	82	92	95	42	48	53	48	43	40	37	35	35	35	35	37	38	45	55	47

Table 3-20. Idaho Planting and Harvesting Dates (Julian Day) and Crop Canopy Crop Type

Crop Code	Crop Description	Region	Plant_Spr	Harv_Spr	Plant_Fall	Harv_Fall	Canopy_Spr	Canopy_ Fall
FD01	Barley (grain)	SW	91	218			BAR01	
FD01	Barley (grain)	SC	102	228			BAR01	
FD01	Barley (grain)	E	129	251			BAR01	
FD02	Corn (grain)	SW	134	299			COR01	
FD02	Corn (grain)	SC	134	299			COR01	
FD02	Corn (grain)	E	134	299			COR01	
FD03	Dry edible beans	SW	148	261			BEA01	
FD03	Dry edible beans	SC	148	261			BEA01	
FD03	Dry edible beans	E	148	261			BEA01	
FD04	Dry lima beans	SW	148	261			BEA01	
FD04	Dry lima beans	SC	148	261			BEA01	
FD04	Dry lima beans	E	148	261			BEA01	
FD05	Dry edible peas	SW	133	235			BEA01	
FD05	Dry edible peas	SC	133	235			BEA01	
FD05	Dry edible peas	E	133	235			BEA01	
FD06	Mustard seed	SW	116	207			POT01	
FD06	Mustard seed	SC	116	207			POT01	
FD06	Mustard seed	E	116	207			POT01	
FD07	Oats (grain)	SW	118	242			OAT01	
FD07	Oats (grain)	SC	118	242			OAT01	
FD07	Oats (grain)	E	118	242			OAT01	
FD08	Safflower	SW	116	269			POT01	
FD08	Safflower	SC	116	269			POT01	
FD08	Safflower	E	116	269			POT01	
FD09	Sugarbeets (sugar)	SW	99	303			SUG01	
FD09	Sugarbeets (sugar)	SC	107	300			SUG01	
FD09	Sugarbeets (sugar)	E	114	295			SUG01	
FD10	Triticale	SW			268	217		WHE02
FD10	Triticale	SC			265	225		WHE02
FD10	Triticale	E			269	233		WHE02
FD11	Winter wheat (grain)	SW			268	217		WHE02
FD11	Winter wheat (grain)	SC			265	225		WHE02
FD11	Winter wheat (grain)	E			269	233		WHE02
FD12	Durum wheat (grain)	SW	83	220			WHE01	
FD12	Durum wheat (grain)	SC	90	227			WHE01	
FD12	Durum wheat (grain)	E	118	246			WHE01	
FD13	Spring wheat (grain)	SW	83	220			WHE01	
FD13	Spring wheat (grain)	SC	90	227			WHE01	
FD13	Spring wheat (grain)	E	118	246			WHE01	
FR01	Apples	SW						
FR01	Apples	SC						
FR01	Apples	E						
FR02	Cherries, Sweet	SW						
FR02	Cherries, Sweet	SC						
FR02	Cherries, Sweet	E						
FR03	Grapes	SW						
FR03	Grapes	SC						
FR03	Grapes	E						
FR04	Peaches	SW						
FR04	Peaches	SC						
FR04	Peaches	E						
FR05	Plums and Prunes	SW						
FR05	Plums and Prunes	SC						
FR05	Plums and Prunes	E						

Table 3-20. Continued

Crop Code	Crop Description	Region	Plant_Spr	Harv_Spr	Plant_Fall	Harv_Fall	Canopy_Spr	Canopy_ Fall
OT01	Hops	SW						
OT01	Hops	SC						
OT01	Hops	E						
OT02	Mint for oil (peppermint)	SW						
OT02	Mint for oil (peppermint)	SC						
OT02	Mint for oil (peppermint)	E						
OT03	Mint for oil (spearmint)	SW						
OT03	Mint for oil (spearmint)	SC						
OT03	Mint for oil (spearmint)	E						
OT04	Sweet corn (for seed)	SW	131	233			COR01	
OT04	Sweet corn (for seed)	SC	131	233			COR01	
OT04	Sweet corn (for seed)	E	131	233			COR01	
SH01	All grass seeds	SW	106	105			HAY01	
SH01	All grass seeds	SC	106	105			HAY01	
SH01	All grass seeds	E	106	105			HAY01	
SH02	Hay (alfalfa)	SW	122	121			ALF01	
SH02	Hay (alfalfa)	SC	122	121			ALF01	
SH02	Hay (alfalfa)	E	122	121			ALF01	
SH03	Hay (small grain)	SW	106	105			HAY01	
SH03	Hay (small grain)	SC	106	105			HAY01	
SH03	Hay (small grain)	E	106	105			HAY01	
SH04	Hay (other tame)	SW	106	105			HAY01	
SH04	Hay (other tame)	SC	106	105			HAY01	
SH04	Hay (other tame)	E	106	105			HAY01	
SH05	Hay (wild)	SW	106	105			HAY01	
SH05	Hay (wild)	SC	106	105			HAY01	
SH05	Hay (wild)	E	106	105			HAY01	
SH06	Corn (silage/greenchop)	SW	134	277			COR01	
SH06	Corn (silage/greenchop)	SC	134	277			COR01	
SH06	Corn (silage/greenchop)	E	134	277			COR01	
VG01	Onions, Dry	SW	96	263			ONI01	
VG01	Onions, Dry	SC	96	263			ONI01	
VG01	Onions, Dry	E	96	263			ONI01	
VG02	Peas, Chinese	SW	106	172			PEA01	
VG02	Peas, Chinese	SC	106	172			PEA01	
VG02	Peas, Chinese	E	106	172			PEA01	
VG03	Potatoes	SW	112	257			POT01	
VG03	Potatoes	SC	116	278			POT01	
VG03	Potatoes	E	133	280			POT01	
VG04	Sweet Corn	SW	131	233			COR01	
VG04	Sweet Corn	SC	131	233			COR01	
VG04	Sweet Corn	E	131	233			COR01	

Meteorological Data

Gridded hourly meteorological data, required for the dust estimation methodology, were based on MM5/WRF model simulation results provided by DEQ (Zhang, 2009). Required data fields included wind speeds, precipitation rates, soil temperatures and ice/snow cover. These data were obtained from DEQ and then reviewed and formatted for use in the windblown dust model.

<u>Emissions Calculation</u>

As noted above, the windblown fugitive dust PM emissions for the Treasure Valley Airshed were developed for each day of 2008 using the estimation methodology previously developed for the WRAP and were estimated hourly on a gridded modeling domain using hourly averaged meteorology, surface characteristics (soil and land use) and crop-specific agricultural information as described above. The windblown dust model estimation methodology was developed based on a review of wind tunnel studies which noted that the two important components to characterize the dust emission process from an erodible surface were the threshold friction velocity that defines the inception of the emission process as a function of the wind speed and as influenced by the surface characteristics, and the strength of the emissions that follow the commencement of particle movement. The two critical factors affecting emission strength are the wind speed (wind friction velocity) that drives the saltation system, and the soil characteristics.

Friction Velocities

Surface friction velocities are determined from the aerodynamic surface roughness lengths and wind speeds derived from the MM5/WRF model simulations. Friction velocity, u_*, is related to the slope of the velocity versus the natural logarithm of height through the relationship:

$$\frac{u_z}{u_*} = \frac{1}{\kappa} \ln \frac{z}{z_o}$$

Where:

u_z	=	wind velocity at height z (m/s);
u_*	=	friction velocity (m/s);
κ	=	von Karman’s constant (0.4); and
z_0	=	aerodynamic roughness height (m).

The threshold friction velocities, u_{*t}, are determined using empirical relationships that are functions of the aerodynamic surface roughness length, z_0 (Marticorena et al., 1997). Surface friction velocities, including the threshold friction velocity, are a function of the aerodynamic surface roughness lengths. The surface friction velocities are, in turn, dependent upon surface characteristics, particularly land use/land cover. The empirical relationships implemented in the model are shown in Figure 3-4.

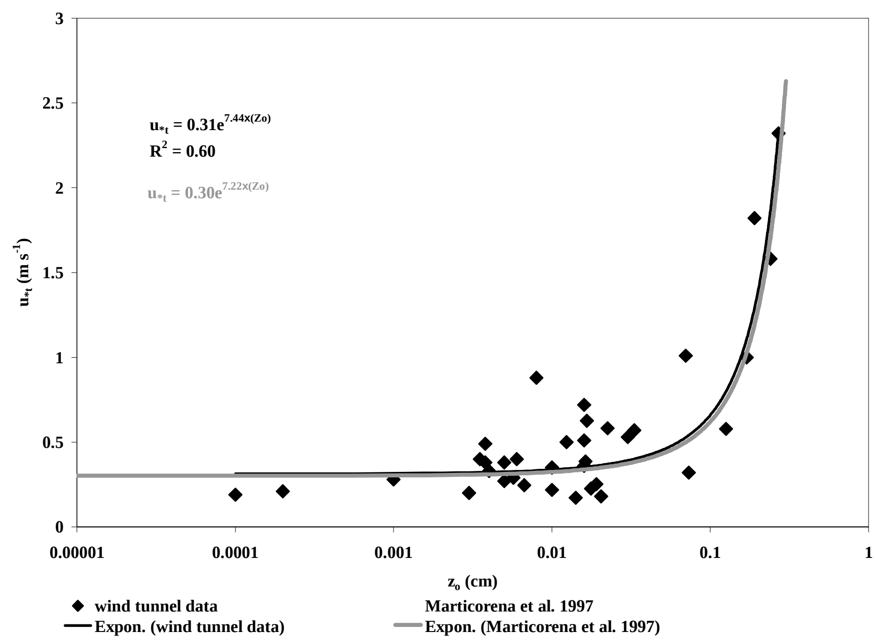

Figure 3-4. Comparison Between the Marticorena *et al.* (1997) Modeled Relationship of Threshold Friction Velocity and Aerodynamic Roughness Length and Wind Tunnel Data from Gillette *et al.* (1980, 1982), Gillette (1988) and Nickling and Gillies (1989)

Emission Fluxes

Emission fluxes, or emission rates, are determined as a function of surface friction velocity and soil texture. Key relationships were established between the 12 soil types in the classical soil texture triangle and their four dry soil types (i.e., silt [FSS], sandy silt [FS], silty sand [MS], and sand [CS]) (Chatenet et al., 1996). Dust emission fluxes were estimated using relationships developed for each of the soil texture groups (Alfaro and Gomes, 2001; Alfaro et al., 2004). These relationships are presented in Figure 3-5. The mapping used to relate the soil textures to the soil groups are presented in Table 3-21.

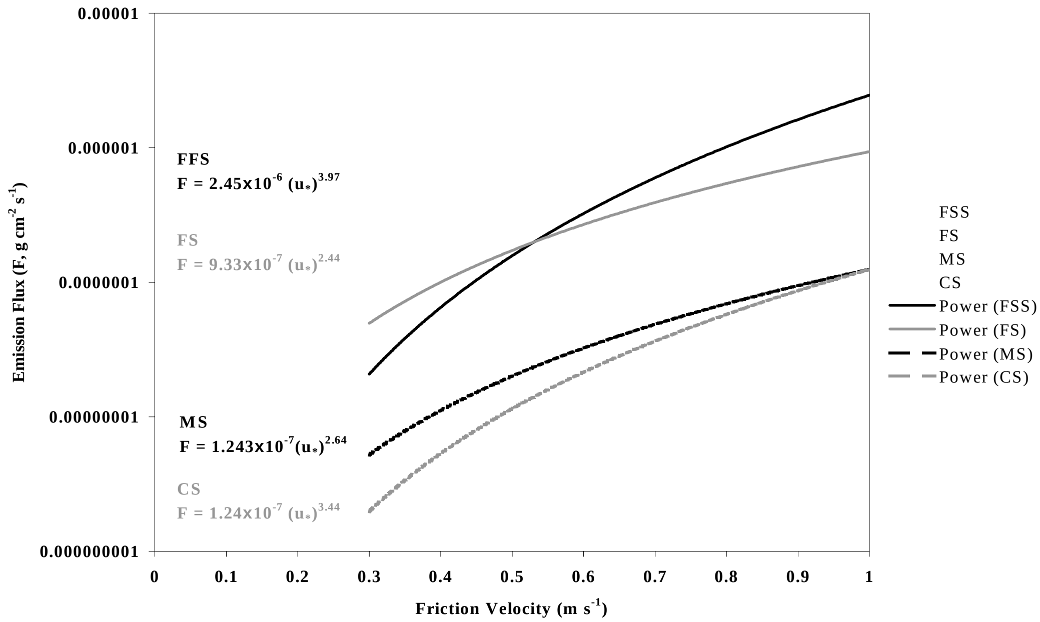

Figure 3-5. The Emission Flux as a Function of Friction Velocity Predicted by the Alfaro and Gomes (2001) Model Constrained by the Four Soil Geometric Mean Diameter Classes of Alfaro et al. (2004)

Table 3-21. Soil Texture and Soil Group Codes

Soil Texture	Soil Texture Code	Soil Group	Soil Group Code
No Data	0	N/A	0
Sand	1	CS	4
Loamy Sand	2	CS	4
Sandy Loam	3	MS	3
Silt Loam	4	FS	2
Silt	5	FSS	1
Loam	6	MS	3
Sandy Clay Loam	7	MS	3
Silty Clay Loam	8	FSS	1
Clay Loam	9	MS	3
Sandy Clay	10	MS	3
Silty Clay	11	FSS	1
Clay	12	FS	2

Surface Roughness Lengths

Surface roughness lengths can vary considerably for a given land type, and are assigned as a function of land use type based on a review of information reported in the literature. The disturbance level of various surfaces has the effect of altering the surface roughness lengths, which in turn impact the potential for vacant lands to emit dust from wind erosion.

An examination of the relationship between the threshold surface friction velocity and the aerodynamic surface roughness length, reveals that for surface roughness lengths larger than approximately 0.1 cm, the threshold friction velocities increase rapidly above values that can be realistically expected to occur in the meteorological data used in the model implementation. Therefore to simplify the model implementation, only those land types with roughness length less than or equal to 0.1 cm are considered as potentially erodible surfaces.

For a given surface roughness, as determined by the land use type, the threshold friction velocity has a constant value. Thus, the land use data is mapped to an internal dust code used within the model to minimize computer resource requirements and coding efforts. The mapping of land use types to dust codes 3 (agricultural), 4 (grassland), 6 (shrubland), and 7 (barren) is presented in Table 3-22; dust codes 1 (water/wetlands), 2 (forest/urban), and 5 (orchards/vineyards) are not included.

Table 3-22. Surface Characteristics by Dust Code and Land Use Category

Dust Code	3	4	6	7
Land use category	Agricultural	Grassland	Shrubland	Barren
Surface roughness length, $Z_{0\ (cm)}$	0.031	0.1	0.05	0.002
Threshold friction velocity (m/s)	3.72	6.17	4.30	3.04
Threshold wind velocity at 10 meter height (m/s [mph])	13.2 [29.5]	19.8 [44.3]	14.6 [32.8]	12.7 [28.5]

Soil Reservoir Characteristics

Soil reservoirs are classified as limited for stable land parcels and unlimited for unstable land parcels. Classification of soil reservoirs as limited or unlimited has implications with respect to the duration of time over which the dust emissions are generated. In general, soil reservoirs should be classified in terms of the type of soils, the depth of the soil layer, soil moisture content and meteorological parameters. Finally, the time required for a soil reservoir to recharge following a wind event is influenced by a number of factors, including precipitation and snow events and freezing conditions of the soils. A recharge time of 24 hours was assigned to all surfaces. In addition, it was assumed that no surface will generate emissions for more than 10 hours in any 24-hour period.

The duration and amount of precipitation and snow and freeze events will also affect the dust emissions from wind erosion. A set of conditions were developed for treating these events based on seasons, soil characteristics and the amounts of rainfall and snow cover (Barnard, 2003). In addition, the time necessary to re-initiate wind erosion after a precipitation event ranges from 1 to 10 days, depending on the soil type, season of the year, and whether the precipitation event rainfall amount exceeds 2 inches.

Soil Disturbance

The disturbance level of a surface has the effect of lowering the threshold surface friction velocity. Except for agricultural lands, which are treated separately in the model as described below, vacant land parcels are typically undisturbed unless some activity is present such as to cause a disturbance (e.g., off-road recreational vehicle activity in desert lands, animal grazing on rangelands, etc.). It was assumed that all non-agricultural land types were undisturbed, since there is no *a priori* information to indicate otherwise for the regional scale modeling domain.

Other Adjustments

Two other adjustments to modeled air quality impacts related to fugitive dust transportability and partitioning between fine and coarse fractions of PM_{10}. Transport fractions as a function of land use were assigned to all emission estimates (Pace, 2003; Pace, 2005). In addition, new fine fraction values developed from controlled wind tunnel studies of western soils were applied to determine the fine and coarse fractions of wind-generated fugitive dust emissions (MRI, 2005).

Model Application

The windblown fugitive dust model was applied for the entire calendar year 2008 at a spatial resolution of 4-km on a modeling domain encompassing the Treasure Valley Airshed. The model generates estimates of PM_{10} dust emissions. The fine fraction of dust is obtained by using a $PM_{2.5}/PM_{10}$ ratio of 0.10 (MRI, 2005). Gridded emissions estimates were allocated to counties using GIS processing techniques and are summarized below.

Emission Results for 2008

Annual 2008 windblown dust emissions are presented in Table 3-23 for Ada, Canyon and Elmore counties. Annual emissions were calculated by summing hourly emission estimates across all days in calendar year 2008.

Table 3-23. 2008 Annual Windblown Fugitive PM Dust Emissions for Ada, Canyon and Elmore Counties (Tons/Year)

Annual 2008 (tpy)			
County	**FIPS**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Ada	16001	8,606	861
Canyon	16027	888	89
Elmore	16039	17,720	1,772
Total		**27,214**	**2,721**

3.1.26 Ammonia Emissions

Ammonia emissions come from a variety sources including: livestock, agricultural fertilizer application, natural soils, domestic sources, wild animals, and ammonia from cold storage/industrial refrigeration. With the exception of ammonia from cold storage/industrial refrigeration (see Section 3.1.11), emissions have been developed using a GIS-based ammonia emissions modeling system developed for the WRAP (Chitjian and Mansell, 2003a; Chitjian and Mansell, 2003b; Mansell, 2005). The activity and emission factor data and sources are described below. A description of the emission estimation methodology, as well as summaries of the ammonia emission estimates are also provided.

Like the windblown dust model, the implementation of the modeling system for the development of ammonia emissions for the Treasure Valley Airshed emissions inventory requires the use of a Cartesian modeling grid domain that is larger than Ada, Canyon, and Elmore counties. As such, the emission estimates described below include additional Idaho counties, as well as neighboring counties in Oregon. Figure 3-6 displays the modeling domain for which ammonia emissions were estimated. In addition, the model requires hourly gridded meteorological data and generates emission estimates for each hour for the entire time period considered. For the DEQ inventory, these estimates are aggregated to counties and summed across all hours of calendar year 2008, as described below.

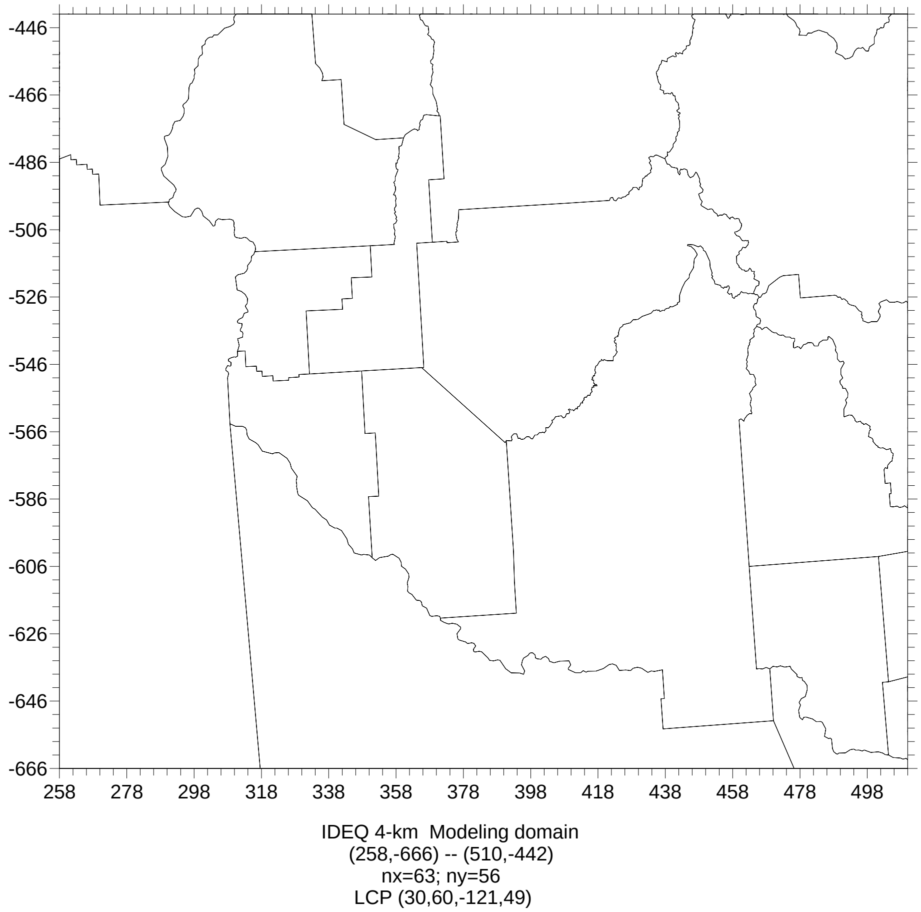

Figure 3-6. DEQ 4-km Modeling Domain for Ammonia Emissions Development

Data Collection

Input data required by the model for each subcategory (i.e., livestock, fertilizer application, natural soil, domestic sources, wild animals, etc.) include:

- Activity data;
- Emission factors; and
- Temporal variations.

In addition, land use/land cover data and meteorology data for the inventory domain were used to run the model.

Livestock Activity Data

Ammonia emissions from livestock were developed using county-level head counts and dairy and beef cattle feedlot estimates provided by the DEQ (Strachan, 2009). The DEQ obtained these data (i.e., headcounts for dairy cattle and beef cattle on feedlots, including specific locations of dairies and feedlots) from the Idaho State Department of Agriculture. However, in order to avoid disclosure of detailed information regarding any particular dairy or feedlot, DEQ subsequently aggregated these data to the 4-km grid cells within the modeling domain. The gridded dairy and beef cattle data for all Idaho counties were then used to spatially allocate county-level headcounts for 2008, obtained from the USDA National Agricultural Statistics Service (NASS, 2009a). All other livestock ammonia emissions (i.e., poultry, swine, sheep and horses) within Idaho were estimated based on 2007 county-level head counts, which were obtained from the *2007 Census of Agriculture* (USDA, 2009) and spatially allocated using gridding surrogates. For the portions of the two Oregon counties (i.e., Baker and Malheur) within the domain, livestock emissions were developed based on county-level activity data obtained from the USDA National Agricultural Statistics Service and spatially allocated as described below. Estimates for sheep, poultry and swine were obtained from NASS (NASS, 2009a). Table 3-24 summarizes the county-level livestock activity data for calendar year 2008.

Livestock Emission Factors

The approach used in the WRAP ammonia model does not treat the individual processes leading to ammonia emissions from various manure management practices, as has been the subject of recent research in the emission inventory development community. Instead, emission factors based on a "whole animal" approach are used. The emission factors are based on a recent literature review and are presented in Table 3-25 (Chinkin et al., 2003).

Table 3-24. 2008 Annual County-Level Livestock Head Counts

County	Beef Cattle	Dairy Cattle	Swine	Poultry	Sheep	Horses
Ada	10,065	56,411	1,837	1,948	1,806	3,904
Adams	6,175	6,543	41	206	609	749
Blaine	8,042	7,700	11	67	13,789	915
Boise	1,827	457	0	144	0	338
Camas	3,938	1,287	0	57	0	100
Canyon	13,908	115,653	1,534	6,737	19,627	6,525
Custer	18,057	8,008	99	218	481	1,625
Elmore	23,904	85,971	56	654	717	1,161
Gem	10,939	11,799	74	911	6,138	2,831
Gooding	11,035	270,877	160	459	0	1,826
Jerome	10,231	209,322	282	298	1,081	1,386
Lincoln	8,701	61,162	0	301	537	1,182
Owyhee	36,586	109,786	149	687	5,228	2,687
Payette	9,095	53,598	332	887	1,289	2,410
Twin Falls	25,898	146,861	0	982	14,007	2,457
Valley	3,024	3,545	18	196	120	235
Washington	19,154	28,522	300	400	15,532	1,551
Baker (OR)	46,608	34,273	111	663	5,509	4,211
Malheur (OR)	70,562	142,763	311	811	10,104	5,825

Table 3-25. Ammonia Emission Factors for Livestock

Source Category	Emission Factor (kg/animal-yr)
Beef Cattle	9.0
Dairy Cattle	25.0
Poultry	0.1
Swine	7.0
Horses	8.0
Sheep	1.34

Livestock Temporal Variations

A review of current literature reveals a lack in consistency of results quantifying temporal variations in ammonia emissions from livestock (Chitjian and Mansell, 2003a). However, a preponderance of the studies cited concluded that ammonia emissions from livestock display both a seasonal and diurnal variation consistent, in general, with increased ammonia emissions associated with warmer temperatures.

Seasonal allocation factors have been developed using inverse modeling results (Chinkin et al., 2003; Gilliland et al., 2003). The factors were further adjusted to reflect the current ORD-recommended emission factors, which were not available when the initial modeling methodology was developed (U.S. EPA, 2002a), which were not available at the time the modeling was performed by Gilliland et al. The adjusted factors are shown on Table 3-26, which indicates over a threefold increase in emissions during the warmest months and minimum emissions during the late fall, as opposed to the coldest months. The minimum in the fall is explained by the relatively dry conditions at that time of the year.

Table 3-26. Monthly Livestock Allocation Factors

Month	Temporal Allocation Factor
January	67
February	75
March	75
April	82
May	126
June	164
July	183
August	154
September	115
October	73
November	51
December	51

The diurnal variation of livestock ammonia emissions was also previously investigated (Chitjian and Mansell, 2003a). In general, the literature reports an increase in daytime emissions relative to nighttime emissions. A theoretical equation (i.e., Russell and Cass equation) was developed to predict diurnal emission variations as a function of meteorological data (Russell and Cass, 1986). The Russell and Cass equation relates hourly ammonia emission rates to temperature and wind speed as follows:

$$E_i \propto \left[2.36^{(T_i - 273/10)}\right] V_i A$$

Where:

E_i = emission rate at hour *i* from animal waste decomposition;
A = daily total emission rate for ammonia from animal waste = $\sum E_i$;
T_i = ambient temperature in degrees Kelvin at hour *i*; and
V_i = wind speed in meters per second (m/s) at hour *i* (a minimum wind speed of 0.1 m/s).

Although the seasonal and diurnal variations presented above are empirically based, they are consistent with the theory that greater temperatures and greater wind speeds will result in larger ammonia volatilization rates.

For the 2008 DEQ inventory, the Russell and Cass equation was used to provide the diurnal variation of livestock ammonia emissions. This approach is consistent with first principal assumptions and with measurements showing increased ammonia release with increased temperature and wind speed. The monthly livestock allocation factors shown in Table 3-26 were used to allocate annual emission estimates to each month of the year.

Fertilizer Application Activity

Although the Idaho State Department of Agriculture (ISDA) was contacted in order to obtain local county-level data, ISDA only maintains these data at a state-wide basis. Additionally, ISDA's state-wide data did not include details on the specific types of fertilizers applied, as required by the WRAP GIS NH_3 model. Therefore, ammonia emissions from fertilizer application were developed using monthly county-level fertilizer activity data obtained from the Carnegie Mellon University (CMU) Ammonia Model input database developed from the USDA's National Agricultural Statistics Survey (NASS) (Strader et al., 2004). Table 3-27 summarizes the annual county-level fertilizer activity data used for modeling of the Treasure Valley inventory domain.

Fertilizer Emission Factors

Emission factors for ammonia emissions from fertilizer application were based upon data from the European Environment Agency (EEA, 2002) as recommended by the WRAP model methodology (Chitjian and Mansell, 2003b). Emission factors for fertilizer application are presented in Table 3-28. As discussed in the WRAP model methodology (Chitjian and Mansell, 2003a), fertilizer emission factors were adjusted as a function of the soil pH. Based upon recent research, the emission factors are scaled according to the following relation as a function of the soil pH (Potter et al., 2001):

$$a = 0.3125 \times pH - 1.01$$

Table 3-27. 2008 Annual Fertilizer Application Data by Type and County (kg/year)

County	State	Anhydrous Ammonia	Aqueous Ammonia	Nitrogen Solutions	Urea	Ammonium Nitrate	Ammonium Sulfate	Ammonium Thiosulfate	Ammonium Phosphates	Calcium Ammonium Nitrate	Potassium Nitrate
Ada	Idaho	313,638	14,867	332,092	898,450	300,150	284,480	48,777	3,050,300	325	34
Adams	Idaho	12,072	571	12,766	34,549	11,540	10,930	1,876	117,230	12	1
Blaine	Idaho	107,032	5,077	113,318	306,690	102,476	97,060	16,658	1,041,600	111	11
Boise	Idaho	4,426	210	4,690	12,698	4,243	4,020	689	43,076	4	0
Camas	Idaho	60,099	2,845	63,575	172,068	57,507	54,452	9,336	584,340	62	6
Canyon	Idaho	1,562,920	74,098	1,655,040	4,478,000	1,495,900	1,416,830	243,278	15,191,000	1,622	169
Custer	Idaho	34,458	1,632	36,479	98,748	32,971	31,237	5,365	334,960	35	3
Elmore	Idaho	541,010	25,648	572,460	1,549,100	517,810	490,700	84,235	5,257,700	561	58
Gem	Idaho	94,452	4,472	99,886	270,264	90,382	85,546	14,695	917,980	97	10
Gooding	Idaho	446,610	21,192	473,140	1,281,720	428,290	405,640	69,552	4,348,700	464	48
Jerome	Idaho	669,030	31,704	707,470	1,916,560	640,480	606,120	104,098	6,502,500	695	72
Lincoln	Idaho	151,368	7,163	160,234	432,790	144,836	137,088	23,523	1,473,100	157	16
Owyhee	Idaho	432,650	20,498	457,880	1,239,260	413,780	392,120	67,301	4,206,700	449	47
Payette	Idaho	259,124	12,298	274,398	741,760	248,242	235,088	40,327	2,519,900	269	28
Twin Falls	Idaho	1,131,320	53,482	1,201,180	3,269,500	1,091,410	1,038,610	177,732	11,252,000	1,151	124
Valley	Idaho	19,078	904	20,181	54,558	18,260	17,288	2,968	185,470	20	2
Washington	Idaho	193,948	9,191	205,400	555,660	185,754	175,930	30,170	1,884,600	201	21
Baker	Oregon	177,090	6,235	301,240	796,800	97,240	155,110	8,280	623,200	1,487	538
Malheur	Oregon	1,320,700	46,564	2,248,600	5,944,000	726,000	1,157,000	61,724	4,651,400	11,087	4,011

Table 3-28. Ammonia Emissions Factors for Fertilizer Application

Fertilizer Type	%N volatized as NH_3	kg NH_3/kg fertilizer applied
Anhydrous ammonia	4	0.04857
Aqueous ammonia	2.4	0.02914
Nitrogen solutions	8	0.09714
Urea	15	0.18214
Ammonium nitrate	2	0.02428
Ammonium sulfate	10	0.12143
Calcium ammonium nitrate	2	0.02428
Ammonium thiosulfate	2.4	0.02914
Other straight nitrogen	2.4	0.02914
Ammonium phosphates	5	0.06071
N-P-K	2	0.02428
Potassium nitrate	2.4	0.02914

Soil pH scalars were not applied to urea emission factors as research has indicated that urea emissions are not affected by initial soil pH. Soil pH data used for the Treasure Valley emissions inventory are described below.

Fertilizer Temporal Variation

Emissions from fertilizer application were temporally allocated monthly based on the monthly activity data. Diurnal variations in fertilizer emissions are expected as temperature and wind speed affect ammonia production and volatilization. The Russell and Cass equation, described above, was used to temporally allocate daily emissions to each hour of the day as a function of temperature and wind speed, as was done for livestock emissions.

Natural Soil Activity

Ammonia emissions from natural soils are based on land use/land cover acreages. The same database used for the windblown dust model was used for the estimation of ammonia emissions from natural soils. Land use-land cover (LULC) data required for the windblown dust model was derived from crop-specific GIS data layers obtained from the USDA NASS Cropland Data Layer (CDL) Program and represent agricultural, as well as non-agricultural, lands throughout the region based on data for calendar year 2007 (NASS, 2007). The primary purpose of the CDL Program is to use satellite imagery to provide acreage estimates to the Agricultural Statistics Board for the state's major commodities and produce digital, crop-specific, categorized geo-referenced output products. These data were reviewed and processed for use in the windblown dust model. Figure 3-3 (windblown dust section) presents a display of the final land use/land cover data for the 4-km modeling domain.

Natural Soil Emission Factors:

Natural soil ammonia emissions were estimated based on emission factors developed from recent research (Battye et al., 2003; Chinkin et al., 2003); these emission factors are presented in Table 3-29.

Table 3-29. Ammonia Emission Factors for Native Soils

Land type	Emission Factor (kg/km^2-yr)
Urban	10
Barren/Desert land	10
Deciduous Forest	174
Evergreen Forest	54
Mixed Forest	114
Shrubland	400
Grasslands	400
Fallow	205
Urban/Recreational Grasses	400
Wetlands	400

A previous study estimated ammonia emissions from native soils based on several environmental variables including monthly rainfall, surface air temperature, solar radiation, soil texture, land cover type and vegetative type (Potter et al., 2001). The model first calculated the available mineral nitrogen substrate for ammonia emissions and then modified this value by applying scalars for soil surface temperature (T_s), pH, and soil moisture content (M). The scalars are of the form:

$$\left\{ \frac{1}{1+10^{\left[0.09018+\left(\frac{2729.92}{273.16+T_s}\right)-(pH\times c)\right]}} \right\} \times (1-M)$$

where ‘c’ is a constant, which determines the sensitivity to pH. The study authors used ‘c’ values of 1.3 (i.e., consistent with measurements made) and 10 (i.e, to produce results with minimal pH effects). The emission factors presented in Table 3-29 were modified for temperature and pH effects using these scalars using a ‘c’ value of 1.3. Soil temperature and soil moisture content are taken from the meteorological data used for the project as discussed below.

Natural Soil Temporal Variation

The temporal allocation of native soil ammonia emissions were calculated using the emission factor scalars described above, which are temporally resolved based on the hourly meteorological data.

Domestic Sources Activity Data

Domestic sources of ammonia emissions considered in the current inventory include human respiration and perspiration, disposable and cloth diapers and domestic pets (cats and dogs). Ammonia emissions from domestic sources use county-level populations as activity data. County-level populations were obtained from the U.S. Census (U.S. Census, 2009c). Estimates of total county-level populations are needed for human perspiration and respiration. The number of cats and dogs are scaled based on total population. County-level estimates of infant populations are used to estimate ammonia emissions from cloth and disposable diapers. The 2008 county-level population estimates are presented in Table 3-30 for all counties within the 4-km modeling domain used for the project.

Table 3-30. 2008 County-Level Population Estimates

County	State	Total Population	Infant Population
Ada	Idaho	380,920	29,211
Adams	Idaho	3,499	184
Blaine	Idaho	21,731	1,437
Boise	Idaho	7,504	314
Camas	Idaho	1,126	85
Canyon	Idaho	183,939	17,764
Custer	Idaho	4,254	180
Elmore	Idaho	28,997	2,594
Gem	Idaho	16,513	1,113
Gooding	Idaho	14,295	1,212
Jerome	Idaho	20,468	1,955
Lincoln	Idaho	4,503	417
Owyhee	Idaho	10,877	852
Payette	Idaho	22,966	1,694
Twin Falls	Idaho	74,284	6,008
Valley	Idaho	8,862	531
Washington	Idaho	10,206	659
Baker	Oregon	15,983	791
Malheur	Oregon	30,907	2,192
Total		**861,834**	**69,193**

Domestic Source Emission Factors

Domestic source emissions were estimated based on emission factors recommended by recent studies (Chitjian et al., 2000; Chitjian and Mansell, 2003a). Table 3-31 presents the emission factors used for the project.

Table 3-31. Ammonia Emission Factors for Domestic Ammonia Sources

Source	Emission Factor	Unit
Cats	0.348	lb N/cat-yr
Dogs	2.17	lb N/dog-yr
Human Perspiration	0.55	lb NH_3/person-yr
Human Respiration	0.0035	lb NH_3/person-yr
Cloth Diapers	6.9	lb NH_3/infant-yr
Disposable Diapers	0.36	lb NH_3/infant-yr

Domestic Sources Temporal Variation

The ammonia emissions from domestic sources were assumed to be temporally invariant.

Wild Animal Activity Data

Although ammonia emissions from wild animals constitute a comparatively small portion of the overall ammonia emission inventory, these emissions were included given the availability of activity data. Ammonia emissions from wild animals are based upon estimates of the number of animals at the county level. These data were obtained from the Carnegie Mellon University (CMU) Ammonia Model input database (Strader et al., 2004). It should be noted that county-level wild animal populations are obtained from state-level data allocated to counties based on surrogates. Consequently, the county-level populations may result in fractional numbers, particularly for those animals with relatively small overall populations.

Wild Animal Emission Factors

Ammonia emissions from wild animals were estimated using emission factors obtained from the CMU NH_3 model (Strader, et al., 2004) and are presented in Table 3-32.

Table 3-32. Ammonia Emission Factors for Wild Animal Ammonia Sources

Source	Emission Factor	Unit
Black bears	4.536	kg NH_3/animal-yr
Grizzly bears	4.536	kg NH_3/animal-yr
Elk	24.48	kg NH_3/animal-yr
Deer	4.536	kg NH_3/animal-yr

Wild Animal Temporal Variations

The ammonia emissions from wild animals were assumed to be temporally invariant.

Land Use/Land Cover Data

The Land Use/Land Cover (LULC) data used for the ammonia inventory were developed from the NASS CDL database described above (NASS, 2007). LULC data is directly used for estimating natural soil ammonia emissions, as well as for spatial allocation of livestock and fertilizer application emissions, as described below. The land use classifications available in the CDL database are presented in Table 3-33. Figure 3-7 displays the CDL data for the 4-km DEQ modeling and are summarized at the county-level in Table 3-34.

Soil pH is used in the ammonia model for applying adjustments to emission factors for natural soil and fertilizer application emissions. The State Soil Geographic Database (STATSGO) was used to specify the soil pH necessary for the development of the emission inventory for the project (USDA, 1994). Figure 3-8 displays the mean soil pH for the DEQ modeling domain.

Meteorology

Gridded hourly meteorological data required for the model include wind speeds, ambient temperatures, soil temperatures and soil moisture and are based on the MM5/WRF model simulation results provided by DEQ (Zhang, 2009).

<u>Emission Calculation</u>

Model Application

A GIS-based modeling system was used to generate the gridded ammonia emissions inventory incorporating various improvements as implemented for the WRAP (Chitjian and

Table 3-33. CDL Classifications and NH_3 Model Cross-References

CDL Code	NH_3 Code	Crop Description	LU Description
1	10	Corn	Row Crops
2	10	Cotton	Row Crops
3	10	Rice	Row Crops
4	10	Sorghum	Row Crops
5	10	Soybeans	Row Crops
6	10	Sunflowers	Row Crops
10	10	Peanuts	Row Crops
11	10	Tobacco	Row Crops
21	10	Barley	Grains/Hays/Seeds
22	10	Durum Wheat	Grains/Hays/Seeds
23	10	Spring Wheat	Grains/Hays/Seeds
24	10	Winter Wheat	Grains/Hays/Seeds
25	10	Other Small Grains	Grains/Hays/Seeds
26	10	Winter Wheat/Soybeans Double-Cropped	Grains/Hays/Seeds
27	10	Rye	Grains/Hays/Seeds
28	10	Oats	Grains/Hays/Seeds
29	10	Millet	Grains/Hays/Seeds
30	10	Speltz	Grains/Hays/Seeds
31	10	Canola	Grains/Hays/Seeds
32	10	Flaxseed	Grains/Hays/Seeds
33	10	Safflower	Grains/Hays/Seeds
34	10	Rape seed	Grains/Hays/Seeds
35	10	Mustard	Grains/Hays/Seeds
36	10	Alfalfa	Grains/Hays/Seeds
37	10	Other Hays	Grains/Hays/Seeds
41	10	Sugarbeets	Other Crops
42	10	Dry Beans	Other Crops
43	10	Potatoes	Other Crops
44	10	Other Crops	Other Crops
45	10	Sugarcane	Other Crops
46	10	Sweet Potatoes	Other Crops
47	10	Miscellaneous Vegetables & Fruit	Other Crops
48	10	Watermelon	Other Crops
50	10	Pickles	Other Crops
51	10	Chick Peas	Other Crops
52	10	Lentils	Other Crops
53	10	Peas	Other Crops
58	10	Clover/Wildflowers	Other Crops
61	12	Fallow/Idle Cropland	Open Non-Crop
62	9	Grass/Pasture/Non-agricultural	Open Non-Crop
63	5	Woodland	Open Non-Crop
64	6	Shrubland	Open Non-Crop
65	2	Barren	Open Non-Crop
67	10	Peaches	Tree Crops
68	10	Apples	Tree Crops
69	10	Grapes	Tree Crops

Table 3-33. Continued

CDL Code	NH_3 Code	Crop Description	LU Description
70	10	Christmas Trees	Tree Crops
71	10	Other Tree Nuts & Fruit	Tree Crops
72	10	Citrus	Tree Crops
73	10	Other Tree Fruit	Tree Crops
80	10	Other Non-Tree Fruit	Tree Crops
81	13	Clouds	Other Non-Crops
82	1	Urban/Developed	Other Non-Crops
83	13	Water	Other Non-Crops
87	8	Wetlands	Other Non-Crops
92	13	Aquaculture	Other Non-Crops
111	13	NLCD-Open Water	NLCD Non-Crop
112	13	NLCD-Perennial Ice/Snow	NLCD Non-Crop
121	1	NLCD-Developed/Open Space	NLCD Non-Crop
122	1	NLCD-Developed/Low Intensity	NLCD Non-Crop
123	1	NLCD-Developed/Medium Intensity	NLCD Non-Crop
124	1	NLCD-Developed/High Intensity	NLCD Non-Crop
131	2	NLCD-Barren	NLCD Non-Crop
141	3	NLCD-Deciduous Forest	NLCD Non-Crop
142	4	NLCD-Evergreen Forest	NLCD Non-Crop
143	5	NLCD-Mixed Forest	NLCD Non-Crop
152	6	NLCD-Shrubland	NLCD Non-Crop
171	7	NLCD-Grassland Herbaceous	NLCD Non-Crop
181	9	NLCD-Pasture/Hay	NLCD Non-Crop
182	10	NLCD-Cultivated Crop	NLCD Non-Crop
190	8	NLCD-Woody Wetlands	NLCD Non-Crop
195	8	NLCD-Herbaceous Wetlands	NLCD Non-Crop

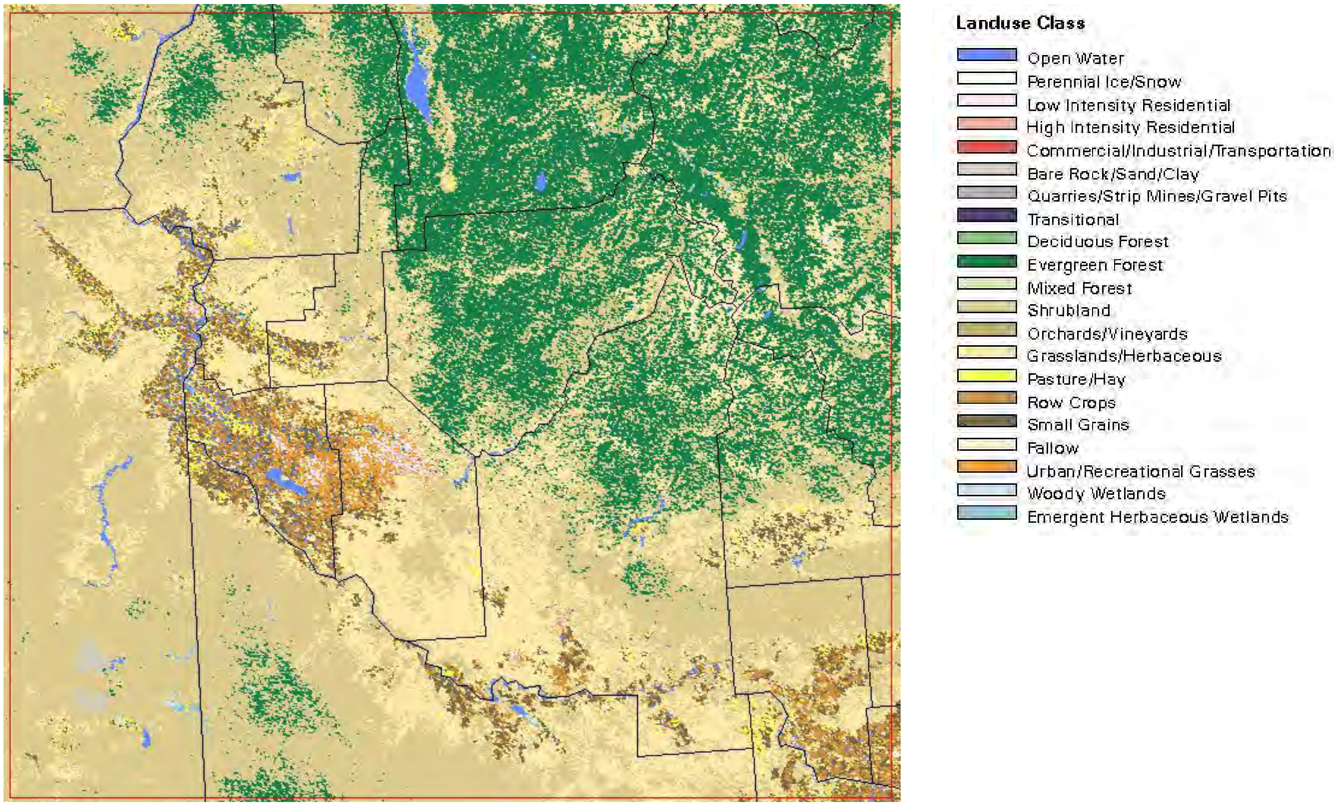

Figure 3-7. Land Use/Land Cover Data Used for the DEQ Ammonia Emissions Inventory Development

Table 3-34. Land Use Summary by Category and County for the 4-Km Modeling Domain (Acres)

County	State	Urban Land	Forest Land/Wetlands	Agricultural Lands	Grasslands	Shrublands	Barren Lands
Ada	Idaho	100,990	7,539	46,682	354,735	157,842	2,327
Adams	Idaho	2,078	113,107	494	18,003	152,634	0
Blaine	Idaho	655	170,408	140	59,807	81,215	2,988
Boise	Idaho	4,690	676,163	279	152,293	375,662	1,147
Camas	Idaho	5,950	167,759	29,348	196,542	257,873	1,346
Canyon	Idaho	80,459	3,183	186,583	83,998	9,364	4,942
Custer	Idaho	1,730	840,939	185	200,777	254,396	10,205
Elmore	Idaho	34,270	388,334	74,469	721,049	734,830	4,836
Gem	Idaho	10,231	51,890	23,639	117,980	153,711	309
Gooding	Idaho	23,664	844	107,229	104,031	226,637	556
Jerome	Idaho	5,171	0	21,756	7,751	4,025	62
Lemhi	Idaho	0	39,380	0	8,521	10,170	0
Lincoln	Idaho	2,093	0	6,552	12,035	50,050	62
Owyhee	Idaho	20,011	86,658	104,867	411,322	1,174,541	4,633
Payette	Idaho	12,667	2,612	39,963	159,559	41,392	1,173
Twin Falls	Idaho	5,831	453	33,579	50,096	30,445	310
Valley	Idaho	3,577	735,764	124	75,919	214,516	0
Washington	Idaho	9,404	117,440	30,869	199,095	549,927	611
Baker	Oregon	6,354	41,817	3,818	48,107	418,567	0
Malheur	Oregon	40,403	24,951	126,640	491,460	1,626,267	29,037
Domain Total		**370,227**	**3,469,242**	**837,215**	**3,473,078**	**6,524,066**	**64,545**

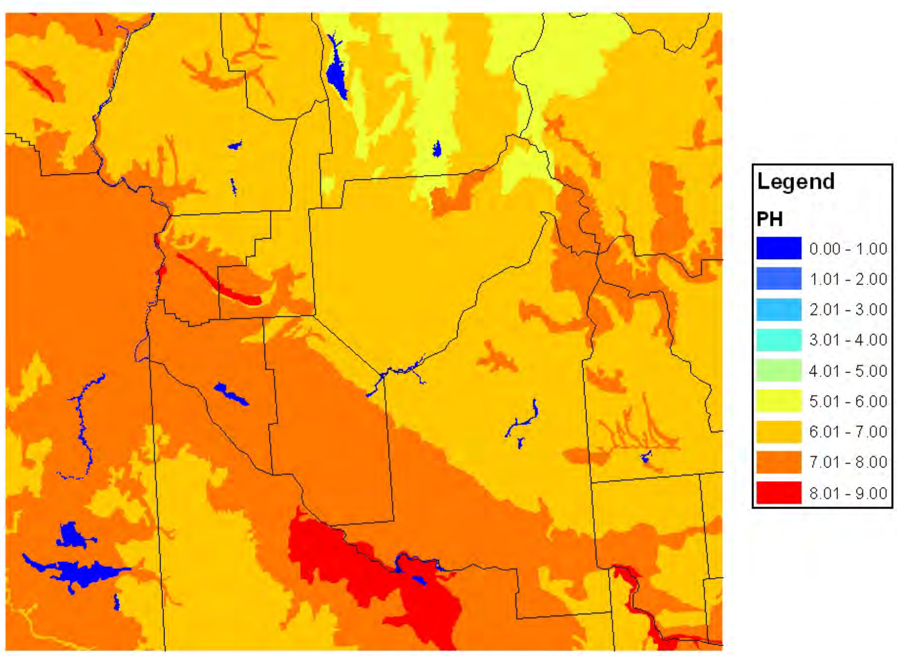

Figure 3-8. Mean Soil pH for the DEQ Modeling Domain from the STATSGO Database

Mansell, 2003a; Chitjian and Mansell, 2003b; Mansell, 2005). The county level activity data were used in conjunction with the emission factors and environmental factors described above to generate a gridded inventory of ammonia emissions on the DEQ 4-km resolution modeling domain. The gridded emission inventory was temporally resolved hourly.

The modeling system applied gridding surrogates (described below) to the county-level emission estimates on an annual basis (or monthly for fertilizer application emissions). The effects of soil pH on the emission factors for fertilizer application were applied to the annual gridded ammonia emission estimates. Other environmental factors were incorporated in the temporal allocation modules since these factors impact the diurnal variation of emissions through gridded, hourly temperatures and wind speeds. For natural soil emissions estimates, the effects of soil conditions (pH and moisture) and meteorological data were both incorporated in the emissions estimates during the temporal allocation process.

Spatial Surrogate

The GIS model used for estimating ammonia emissions applied gridded spatial surrogates to county-level activity and emission factor data to generate gridded hourly emission estimates. Spatial surrogates were developed based on population and land use/land cover data. The land use data used for the project was processed for developing spatial surrogates through aggregation of individual land use classes into more broadly defined classes for spatial allocation of emissions. The spatial surrogate codes, associated land use classes and descriptions, as used in the model, are presented in Table 3-35 and displayed graphically in Figure 3-7 above. Each ammonia emission source category considered was then cross-referenced to the appropriate spatial surrogate code (both primary and secondary surrogate assignments), as shown in Table 3-36. It should be noted that for beef and dairy cattle emissions, spatial surrogates were only used for the portions of the domain within Washington. Within Idaho, beef and dairy cattle were spatially allocated based on the gridded distribution of dairies and feedlots, as discussed above.

Table 3-35. Land Use/Surrogate Cross-Reference

Surrogate Number	CDL Classes	Description
1	1	Urban
2	2	Barren
3	3	Deciduous Forest
4	4	Evergreen Forest
5	5	Mixed Forest
6	6	Shrublands
7	7	Grasslands
8	8	Wetlands
9	9	Grass + Pasture
10	10	Agricultural
11	3-10,12	Rural
12	12	Fallow
13	13	Water
14	3-5,7	Forest + Shrub + Grasslands

Table 3-36. Source Category/Surrogate Cross-Reference

Source category	Primary Surrogate Code and Description	Secondary Surrogate Code and Description
Fertilizers	10 – Agricultural	11 – Rural
Livestock – Dairy & Beef Cattle	9 – Grass + Pasture	11 – Rural
Livestock – Other	9 – Grass + Pasture	11 – Rural
Domestic Respiration	Population	Population
Native Soils – Urban	1 – Urban	1 – Urban
Native Soils – Barren	2 – Barren	2 – Barren
Native Soils – Deciduous Forest	3 – Deciduous Forest	3 – Deciduous Forest
Native Soils – Evergreen Forest	4 – Evergreen Forest	4 – Evergreen Forest
Native Soils – Mixed Forest	5 – Mixed Forest	5 – Mixed Forest
Native Soils – Shrubland	6 – Shrublands	5 – Mixed Forest
Native Soils – Grassland	7 – Grasslands	7 – Grasslands
Native Soils – Fallow	12 – Fallow	12 – Fallow
Native Soils – Urban Grass	1 – Urban	1 – Urban
Native Soils – Wetlands	8 – Wetlands	8 – Wetlands
Wild Animals	14 – Forest + Shrub + Grasslands	14 – Forest + Shrub + Grasslands

Emission Results

The GIS NH_3 model was applied using the data as described above for each day in calendar year 2008 on the 4-km modeling domain. For reporting purposes, the hourly, gridded emissions were aggregated to the county level using a GIS processing approach. For each county border-line grid cell, emissions were distributed among the counties intersecting the grid cell in proportion to the area of each of these counties within the grid cell.

Annual 2008 ammonia emissions by source category are presented in Table 3-37 for Ada, Canyon and Elmore counties. Annual emissions were calculated by summing hourly emission estimates across all days in calendar year 2008. A comparison with previous inventories developed for calendar year 2010 by ERG/ENVIRON (ENVIRON and ERG, 2002) shows that the 2008 annual ammonia emission estimates for the Ada and Canyon counties are relatively consistent with the current estimates based on the WRAP GIS-based NH_3 model (11,535 tpy from all sources or 8,040 tpy from all non-soil sources versus 6,228 tpy based on previous work not inclusive of soils). Likely reasons for the 30 percent increase in emission estimates are differences in activity data and methodologies.

3.2 Emissions Calculation Methodologies – Ozone and PM Season

After the annual area source emissions were estimated using the methodologies described in the various subsections of Section 3.1, the daily ozone season and PM season emission estimates were developed. The ozone season extends from April 1 through October 31 (i.e., 214 days), while the PM season is from November 1 through February 29 (2008 was a leap year) (i.e., 121 days). Wherever possible, Idaho-specific activity/surrogate data were used to develop temporal allocation profiles. If Idaho-specific data were not available, then U.S. EPA's default temporal allocation profiles from its emissions modeling clearinghouse were used instead (U.S. EPA, 2002b).

3.2.1 Fuel Combustion

As part of the fuel survey mailed out to fuel dealers and distributors, monthly fuel quantity data were requested. In general, fuel respondents were able to furnish relevant monthly statistics. In a few cases, respondents were contacted by phone to clarify the appropriate seasonal distribution. These monthly fuel quantity data were used to develop seasonal fuel quantities which were then divided by the number of days in the season resulting in seasonal daily fuel use. As pointed out by several respondents, it should be noted that the monthly fuel quantity data were based upon fuel deliveries and not actual consumption. As a result, the reported monthly fuel quantity data probably lead consumption by a few weeks (i.e., fuel would ordered and stockpiled prior to the winter heating season).

Table 3-37. 2008 Annual Ammonia Emissions for Ada, Canyon, and Elmore Counties by Source Category (Tons/Year)

2008 Annual Ammonia Emissions (tpy)				
SCC	**Description**	**Ada**	**Canyon**	**Elmore**
2805023300	Dairy Cattle	1,554.56	3,187.14	2,369.17
2805003100	Beef Cattle	99.85	137.98	237.15
2805025000	Swine	14.17	11.84	0.43
2805030000	Poultry	0.21	0.74	0.07
2805035000	Horses	34.43	57.54	10.24
2805040000	Sheep	2.67	28.99	1.06
Total Livestock		**1,705.9**	**3,424.2**	**2,618.1**
9999101002	Native Soils – Urban	26.41	27.04	14.54
9999101003	Native Soils – Barren	0.00	0.00	0.24
9999101004	Native Soils – Deciduous Forest	0.19	0.00	0.02
9999101005	Native Soils – Evergreen Forest	4.92	0.45	103.55
9999101006	Native Soils – Mixed Forest	0.47	0.00	0.00
9999101007	Native Soils – Shrubland	49.55	3.10	100.11
9999101008	Native Soils – Grassland	127.48	22.80	173.45
9999101009	Native Soils – Fallow	19.45	31.57	19.30
9999101010	Native Soils – Urban Grass	1,056.44	1,081.63	581.46
9999101011	Native Soils – Wetlands	6.90	30.11	13.04
Total Native Soils		**1,291.8**	**1,196.7**	**1,005.7**
8888101001	Wild Animals – Black bears	1.26	0.12	4.58
8888101002	Wild Animals – Grizzly bears	0.00	0.00	0.01
8888101003	Wild Animals – Elk	35.08	3.32	127.37
8888101004	Wild Animals – Deer	2.07	0.20	7.55
Total Wild Animals		**38.4**	**3.6**	**139.5**
6906950001	Domestic – Respiration	0.66	0.32	0.05
6906950002	Domestic – Perspiration	104.75	50.58	7.97
6906950006	Domestic – Cloth Diapers	100.78	61.29	8.95
6906950007	Domestic – Disposable Diapers	5.26	3.20	0.47
6906950008	Domestic – Cats	6.43	3.10	0.49
6906950010	Domestic – Dogs	59.72	28.84	4.55
Total Domestic		**277.6**	**147.3**	**22.5**
2801700001	Fertilizer – Anhydrous Ammonia	21.52	109.18	39.05
2801700002	Fertilizer – Aqueous Ammonia	0.61	3.11	1.11
2801700003	Fertilizer – Nitrogen Solutions	45.57	231.23	82.63
2801700004	Fertilizer – Urea	180.39	899.07	311.02
2801700005	Fertilizer – Ammonium Nitrate	10.29	52.24	18.68
2801700006	Fertilizer – Ammonium Sulfate	48.80	247.45	88.54
2801700007	Fertilizer – Ammonium Thiosulfate	2.01	10.20	3.65
2801700009	Fertilizer – All Ammonium Phosphates	261.59	1,326.44	474.30
2801700011	Fertilizer – Calcium Ammonium Nitrate	0.01	0.06	0.02
2801700012	Fertilizer – Potassium Nitrate	0.00	0.01	0.00
Total Fertilizers		**570.8**	**2,879.0**	**1,019.0**
Grand Total		**3,884**	**7,651**	**4,805**

3.2.2 Residential Wood Combustion

Annual residential wood quantities were allocated to the ozone and PM seasons based upon results from the residential wood combustion survey (Aurora, 2010). The seasonal fractions were derived from survey responses concerning the number of times a particular device (i.e., fireplace, woodstove, insert, or pellet stove) was used each month. Seasonal fractions were estimated for each county and device type. These seasonal fractions were then multiplied by the annual residential wood quantities resulting in seasonal wood quantities. Finally, these seasonal wood quantities were then divided by the number of days in each season.

3.2.3 Paved Road Dust

The temporal allocation factors developed for on-road motor vehicles using traffic counter data were also used for paved road dust emissions. This is discussed further in Section 4.0. Summer season emission potentials were assumed for the ozone season, while winter season emission potentials were assumed for the PM season. Precipitation adjustment factors were estimated for each season based on the number of days with at least 0.01 inches of rain as shown in Table 3-4 and Table 3-7.

Seasonal emission estimates by county and roadway type are shown in Table 3-38. As shown, emissions are higher in the PM season than the ozone season due to emissions potentials that were generally higher in the PM season than in the ozone season. Although precipitation factors and temporal activity factors have the effect of decreasing emissions in the PM season relative to the ozone season, differences in emission potentials cause higher emissions in the PM season relative to the ozone season.

3.2.4 Unpaved Road Dust

Temporal allocation of unpaved road dust emissions was performed in the same way as described in Section 3.2.3 for paved road dust. Although it is possible that unpaved road dust temporal allocations may differ from paved road dust allocations, there were no seasonal activity data available specific to unpaved roads. Therefore, paved road temporal allocations were assumed. Summer and winter road surface material silt content estimates taken from the TVRDS were used for the ozone and winter season, respectively.

Emission estimates by county are presented in Table 3-39. As noted in Section 3.1.4, Elmore County contains the highest unpaved roadway mileage and the highest unpaved road dust emission estimates of all counties in the Treasure Valley. Ozone season emission estimates are considerably higher than PM season emission estimates due to seasonal precipitation adjustments and higher estimated activity levels in the ozone season.

Table 3-38. 2008 Seasonal Paved Road Dust Emission Estimates

	PM Season (TPD)		Ozone Season (TPD)	
Roadway Type	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**
Ada County				
Rural Principal Arterial – Interstate	2.8	0.2	2.1	0.1
Rural Major Collector	0.3	0.0	0.2	0.0
Rural Minor Arterial	1.5	0.1	1.2	0.1
Rural Local System	4.8	0.3	5.1	0.3
Urban Principal Arterial – Interstate	21.4	1.2	15.8	0.9
Urban Principal Arterial – Other Freeways or Expressways	3.2	0.2	2.4	0.1
Urban Principal Arterial – Other	30.3	1.7	22.4	1.3
Urban Collector	5.1	0.3	3.8	0.2
Urban Minor Arterial	20.5	1.2	15.2	0.9
Urban Local System	0.3	0.0	0.2	0.0
Urban Ramp	1.5	0.1	1.1	0.1
Total	**91.7**	**5.2**	**69.2**	**3.9**
Canyon County				
Rural Principal Arterial – Interstate	1.8	0.1	1.3	0.1
Rural Major Collector	1.3	0.1	1.1	0.1
Rural Minor Arterial	2.3	0.1	1.7	0.1
Rural Local System	2.1	0.1	3.5	0.2
Urban Principal Arterial – Interstate	7.0	0.4	6.3	0.4
Urban Principal Arterial – Other Freeways or Expressways	0.6	0.0	0.6	0.0
Urban Principal Arterial – Other	8.6	0.5	8.1	0.5
Urban Collector	1.3	0.1	1.2	0.1
Urban Minor Arterial	4.5	0.3	4.3	0.2
Urban Local System	0.2	0.0	0.2	0.0
Urban Ramp	0.5	0.0	0.5	0.0
Total	**30.3**	**1.7**	**28.7**	**1.6**
Elmore County				
Rural Interstate	0.1	0.0	0.1	0.0
Rural Local	2.6	0.6	0.6	0.1
Rural Principal Arterial	2.4	0.6	1.0	0.2
Total	**5.1**	**1.2**	**1.7**	**0.3**

Table 3-39. 2008 Seasonal Unpaved Road Dust Emission Estimates

County	PM Season (TPD)		Ozone Season (TPD)	
	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Ada	1.65	0.09	3.03	0.17
Canyon	0.28	0.02	0.52	0.03
Elmore	3.44	0.34	12.20	1.21
Totals	**5.36**	**0.45**	**15.75**	**1.41**

3.2.5 Commercial Cooking

No definite seasonality could be established for the five commercial cooking subcategories. Therefore, it was assumed that emissions were equally distributed throughout the year, so seasonal daily emissions were calculated by dividing annual emissions by 366.

3.2.6 Construction

Inclement weather can possibly affect construction activities in the winter. The seasonal profile for construction activities was developed using precipitation adjustment factors based on the number of days with at least 0.01 inches of rain as shown in Table 3-4 and Table 3-7. For any day with precipitation, it was assumed that either construction activity did not occur or that the construction activities did occur did not have emissions due to wet soil.

3.2.7 Architectural Surface Coatings

Idaho-specific temporal usage patterns were not identified for architectural surface coatings. Therefore, the U.S. EPA's default temporal allocation profiles from its emissions modeling clearinghouse were used for architectural surface coating (U.S. EPA, 2002b). This temporal allocation profile is shown in Table 3-40.

Table 3-40. Temporal Allocation Profile Assignment for Architectural Surface Coating

Category	Profile ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ozone Factor	PM Factor
Architectural Surface Coating	199	82	82	81	81	81	85	85	85	85	85	85	82	0.5876	0.3313

3.2.8 Traffic Markings

Local staff at the Idaho Transportation Department and the Canyon Highway District were contacted regarding the seasonality of traffic marking application (Morrison, 2010b; Newlun, 2010; Richard, 2010c). These staff indicated that generally traffic marking application corresponds with the ozone season months and is not conducted during the winter (i.e., PM season). Therefore, daily ozone season traffic marking emissions were calculated by dividing annual emissions by the number of days in the ozone season (i.e., 214 days).

3.2.9 Industrial Surface Coating

Idaho-specific temporal usage patterns were not identified for industrial surface coating. Therefore, the U.S. EPA's default temporal allocation profiles from its emissions modeling clearinghouse were used for the 13 industrial surface subcategories (U.S. EPA, 2002b). The assignment of these temporal allocation profiles is shown in Table 3-41. The monthly values shown in Table 3-41 represent the monthly fractional value out of an annual total of 1,000. The ozone season and PM season factors are calculated by summing up the monthly fractional values for the respective seasons and then dividing by 1,000.

Table 3-41. Temporal Allocation Profile Assignments for Industrial Surface Coating Subcategories

Subcategory	Profile ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ozone Factor	PM Factor
Factory Finished Wood	173	81	81	82	82	82	86	86	86	85	85	85	81	0.5908	0.3273
Wood Furniture	287	84	84	79	79	79	84	84	84	86	86	86	84	0.5826	0.3383
Metal Furniture	287	84	84	79	79	79	84	84	84	86	86	86	84	0.5826	0.3383
Paper	257	83	83	82	82	82	84	84	84	84	84	84	83	0.5846	0.3333
Plastic Products	200	82	82	81	81	81	86	86	86	85	85	85	82	0.5888	0.3303
Miscellaneous Finished Metals	253	83	83	81	81	81	84	84	84	85	85	85	83	0.5846	0.3343
Machinery and Equipment	253	83	83	81	81	81	84	84	84	85	85	85	83	0.5846	0.3343
Electronic and Other Electrical	253	83	83	81	81	81	84	84	84	85	85	85	83	0.5846	0.3343
Motor Vehicles	140	80	80	79	79	79	87	87	87	87	87	87	80	0.5936	0.3273
Aircraft	169	81	81	80	80	80	87	87	87	86	86	86	81	0.5918	0.3283
Marine	266	83	83	83	83	83	84	84	84	83	83	83	83	0.5846	0.3323
Railroad	169	81	81	80	80	80	87	87	87	86	86	86	81	0.5918	0.3283
Miscellaneous Manufacturing	260	83	83	82	82	82	85	85	85	85	85	85	83	0.5861	0.3323

3.2.10 Degreasing

Idaho-specific temporal usage patterns were not identified for degreasing. Therefore, the U.S. EPA's default temporal allocation profiles from its emissions modeling clearinghouse were used for degreasing (U.S. EPA, 2002b). Unlike industrial surface coating, the same temporal allocation profile was assigned to all of the degreasing subcategories. This temporal allocation profile is shown in Table 3-42.

Table 3-42. Temporal Allocation Profile Assignment for Degreasing

Category	Profile ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ozone Factor	PM Factor
Degreasing	253	83	83	81	81	81	84	84	84	85	85	85	83	0.5846	0.3343

3.2.11 Other Per Employee Emission Factor Source Categories

No Idaho-specific seasonality could be established for two of the per employee emission factor source categories (i.e., autobody refinishing and industrial refrigeration/cold storage). Therefore, it was assumed that emissions were equally distributed throughout the year, so seasonal daily emissions were calculated by dividing annual emissions by 366.

For graphic arts, the U.S. EPA's default temporal allocation profiles from its emissions modeling clearinghouse were used (U.S. EPA, 2002b). This temporal allocation profile is shown in Table 3-43.

Table 3-43. Temporal Allocation Profile Assignment for Graphic Arts

Category	Profile ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ozone Factor	PM Factor
Graphic Arts	257	83	83	82	82	82	84	84	84	84	84	84	83	0.5846	0.3333

3.2.12 Bakeries and Consumer Solvents

No Idaho-specific seasonality could be established for the per capita emission factor source categories (i.e., consumer bakeries and solvents). Therefore, it was assumed that emissions were equally distributed throughout the year, so seasonal daily emissions were calculated by dividing annual emissions by 366.

3.2.13 Dry Cleaning

Although the dry cleaning survey included a question regarding month-to-month variations, almost all of the dry cleaning facilities that returned the survey did not respond to this question. Therefore, the U.S. EPA's default temporal allocation profiles from its emissions modeling clearinghouse were used for dry cleaning (U.S. EPA, 2002b). This temporal allocation profile is shown in Table 3-44.

Table 3-44. Temporal Allocation Profile Assignment for Dry Cleaning

Category	Profile ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ozone Factor	PM Factor
Dry Cleaning	199	82	82	81	81	81	85	85	85	85	85	85	82	0.5876	0.3313

3.2.14 Asphalt Application

Local staff at the Idaho Transportation Department and the Canyon Highway District were contacted regarding the seasonality of asphalt application (Morrison, 2010b; Newlun, 2010; Richard, 2010b). These staff indicated that generally asphalt application corresponds with the ozone season months and is not conducted during the winter (i.e., PM season). Therefore, daily ozone season asphalt emissions were calculated by dividing annual emissions by the number of days in the ozone season (i.e., 214 days).

3.2.15 Pesticide Application

As discussed below in Section 3.2.20, it was assumed that all tilling and harvesting activities occur during the ozone season. Based upon this assumption, it is also reasonable to assume that most pesticide application also occurs during the ozone season (i.e., between tilling and harvesting). The crop profiles examined during the development of the annual pesticide application emissions indicate only minimal amounts of pre-planting or off-season pesticide use. Daily emissions were calculated by dividing annual emissions by the number of days in the ozone season (i.e., 214 days).

3.2.16 Gasoline Distribution

The gasoline distribution statistics were originally provided on a monthly basis. These monthly gasoline quantities were then used to develop seasonal gasoline quantities which were then divided by the number of days in the season resulting in seasonal daily gasoline use.

3.2.17 Wastewater Treatment

As part of the fuel survey mailed out to wastewater treatment facilities, monthly treatment quantities were requested. In general, the treatment facilities were able to furnish relevant monthly statistics. In a few cases, respondents were contacted by phone to clarify the appropriate seasonal distribution. These monthly treatment quantities were used to develop seasonal treatment quantities which were then divided by the number of days in the season resulting in seasonal daily treatment quantities.

3.2.18 Landfills

Although emissions from landfills are affected by the landfill gas temperature, it was not clear what the relationship between landfill gas temperature and ambient temperature was.

Therefore, it was assumed that emissions were equally distributed throughout the year, so seasonal daily emissions were calculated by dividing annual emissions by 366.

3.2.19 Open Burning (Yard Waste and Household Waste)

No definite seasonality could be established for the open burning of yard waste and household waste. Therefore, it was assumed that emissions were equally distributed throughout the year, so seasonal daily emissions were calculated by dividing annual emissions by 366. It is possible that an announced burn ban might prevent open burning on a particular day with poor air quality, but the open burning would likely only be postponed to the next allowable burn day and would not significantly affect the overall temporal profile. It is also possible that an announced burn ban might also be ignored.

3.2.20 Agricultural Tilling and Harvesting

Based upon the *Idaho Crop Progress and Condition Reports* issued by the National Agricultural Statistics Service (NASS, 2009b), the weekly crop progress (from April 6 to October 28) was identified. These weekly progress reports indicate regional climate, crop growth progress, and percent planted and harvested for the primary Idaho crops in four different regions. Nearly all of the Idaho crops within Ada, Canyon, and Elmore counties are planted and harvested during the crop progress reporting period. Since the crop progress reporting period very closely corresponds to the ozone season, it was assumed that all tilling and harvesting activities occur during the ozone season. Daily emissions were calculated by dividing annual emissions by the number of days in the ozone season (i.e., 214 days).

3.2.21 Agricultural Burning – Fields

As indicated in Section 3.1.21, agricultural field burning was only allowed between September 1 and October 31, 2008. Daily emissions were calculated by dividing annual emissions by the number of days in the ozone season (i.e., 214 days).

3.2.22 Agricultural Burning – Irrigation Ditches

As indicated in Section 3.1.22, irrigation ditch burning is typically conducted during the month of March. Since March is not included in either the ozone season or PM season, no daily seasonal emissions were calculated.

3.2.23 Beef Cattle Feedlots

No definite seasonality could be established for beef cattle feedlots. Therefore, it was assumed that emissions were equally distributed throughout the year, so seasonal daily emissions were calculated by dividing annual emissions by 366.

3.2.24 Other Fires

The Idaho Fire Incident Reporting System (IFIRS) did not provide any seasonal distribution of structure fires or vehicles. Therefore, it was assumed that emissions were equally distributed throughout the year, so seasonal daily emissions were calculated by dividing annual emissions by 366.

3.2.25 Windblown Dust

As discussed in Section 3.1.25, annual emissions were calculated by summing hourly emission estimates across all days in calendar year 2008. Ozone season day emissions were calculated by summing all hourly estimates across all days in the season (April through October) and dividing by the total number of days in the ozone season. Similarly, PM season emission estimates were obtained by summing across all hours from November through February and dividing by the total number of days in the PM season.

3.2.26 Ammonia Emissions

As discussed in Section 3.1.26, the GIS NH_3 model was run for each day in the 2008 calendar year on the 4-km modeling domain. Annual emissions were calculated by summing hourly emission estimates across all days in calendar year 2008. Ozone season day emissions were calculated by summing all hourly estimates across all days in the season (April through October) and dividing by the total number of days in the ozone season. Similarly, PM season emission estimates were obtained by summing across all hours from November through February and dividing by the total number of days in the PM season.

3.3 Emission Results

The 2008 annual area source emissions are presented in Table 3-45 (all counties), 3-46 (Ada County), 3-47 (Canyon County), and 3-48 (Elmore County). These emissions have been presented for aggregated source categories. Detailed 2008 annual area source emission inventories are presented in Appendix G.

Table 3-45. Summarized 2008 Annual Area Source Emissions – All Counties

Aggregated Source Category	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
Industrial Combustion	269	2	13	194	19	17	9
Commercial/Institutional Combustion	311	11	15	226	22	22	4
Residential Combustion (excluding wood)	689	5	39	280	53	52	129
Residential Wood Combustion	269	33	2,760	14,774	2,712	2,712	0
Commercial Cooking	0	0	191	600	1,201	1,133	0
Other Industrial Activities[a]	0	0	104	0	161	16	51
Industrial Surface Coating	0	0	3,235	0	0	0	0
Other Surface Coating[b]	0	0	1,245	0	0	0	0
Degreasing	0	0	7,383	0	0	0	0
Consumer Solvents	0	0	2,142	0	0	0	0
Other Solvent Application[c]	0	0	1,541	0	0	0	0
Gasoline Transport and Distribution	0	0	1,397	0	0	0	0
Open Burning	9	2	70	262	87	82	0
Other Fires	1	0	5	23	7	7	0
Waste Disposal[d]	0	0	88	0	0	0	1
Agricultural Burning	0	0	20	174	31	31	0
Other Agricultural[e]	0	0	1,953	0	1,408	387	0
Paved Road Dust	0	0	0	0	38,237	2,392	0
Unpaved Road Dust	0	0	0	0	3,779	327	0
Windblown Dust	0	0	0	0	27,214	2,722	0
Ammonia - Fertilizer	0	0	0	0	0	0	4,469
Ammonia - Livestock	0	0	0	0	0	0	7,748
Ammonia - Domestic Ammonia	0	0	0	0	0	0	447
Ammonia - Wild Animals	0	0	0	0	0	0	182
Ammonia - Soils	0	0	0	0	0	0	3,494
Total	**1,547**	**52**	**22,201**	**16,533**	**74,931**	**9,900**	**16,534**

[a] Includes bakeries, construction, and industrial refrigeration.
[b] Includes architectural surface coating, autobody refinishing, and traffic markings.
[c] Includes dry cleaning, graphic arts, asphalt application, and pesticides application.
[d] Includes landfills and wastewater treatment.
[e] Includes agricultural tilling, agricultural harvesting, and beef cattle feedlots.

Table 3-46. Summarized 2008 Annual Area Source Emissions – Ada County

Aggregated Source Category	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
Industrial Combustion	110	1	5	80	8	7	4
Commercial/Institutional Combustion	225	8	11	168	16	16	2
Residential Combustion (excluding wood)	463	3	27	194	37	37	94
Residential Wood Combustion	122	15	1,239	6,713	1,208	1,208	0
Commercial Cooking	0	0	145	455	912	860	0
Other Industrial Activities[a]	0	0	67	0	94	9	10
Industrial Surface Coating	0	0	2,229	0	0	0	0
Other Surface Coating[b]	0	0	889	0	0	0	0
Degreasing	0	0	4,749	0	0	0	0
Consumer Solvents	0	0	1,374	0	0	0	0
Other Solvent Application[c]	0	0	837	0	0	0	0
Gasoline Transport and Distribution	0	0	887	0	0	0	0
Open Burning	0	0	9	47	10	10	0
Other Fires	0	0	3	13	4	4	0
Waste Disposal[d]	0	0	63	0	0	0	1
Agricultural Burning	0	0	5	44	8	8	0
Other Agricultural[e]	0	0	425	0	185	49	0
Paved Road Dust	0	0	0	0	26,669	1,520	0
Unpaved Road Dust	0	0	0	0	966	55	0
Windblown Dust	0	0	0	0	8,606	861	0
Ammonia - Fertilizer	0	0	0	0	0	0	571
Ammonia - Livestock	0	0	0	0	0	0	1,706
Ammonia - Domestic Ammonia	0	0	0	0	0	0	278
Ammonia - Wild Animals	0	0	0	0	0	0	38
Ammonia - Soils	0	0	0	0	0	0	1,292
Total	**921**	**27**	**12,963**	**7,715**	**38,723**	**4,644**	**3,995**

[a]Includes bakeries, construction, and industrial refrigeration.
[b]Includes architectural surface coating, autobody refinishing, and traffic markings.
[c]Includes dry cleaning, graphic arts, asphalt application, and pesticides application.
[d]Includes landfills and wastewater treatment.
[e]Includes agricultural tilling, agricultural harvesting, and beef cattle feedlots.

Table 3-47. Summarized 2008 Annual Area Source Emissions – Canyon County

Aggregated Source Category	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
Industrial Combustion	156	1	7	112	11	10	5
Commercial/Institutional Combustion	71	2	3	51	5	5	1
Residential Combustion (excluding wood)	195	2	10	74	14	13	31
Residential Wood Combustion	123	14	1,269	6,670	1,251	1,251	0
Commercial Cooking	0	0	39	123	246	232	0
Other Industrial Activities[a]	0	0	32	0	59	6	39
Industrial Surface Coating	0	0	905	0	0	0	0
Other Surface Coating[b]	0	0	327	0	0	0	0
Degreasing	0	0	2,403	0	0	0	0
Consumer Solvents	0	0	663	0	0	0	0
Other Solvent Application[c]	0	0	539	0	0	0	0
Gasoline Transport and Distribution	0	0	428	0	0	0	0
Open Burning	1	0	16	73	19	19	0
Other Fires	0	0	2	8	3	3	0
Waste Disposal[d]	0	0	22	0	0	0	0
Agricultural Burning	0	0	13	111	20	20	0
Other Agricultural[e]	0	0	829	0	720	206	0
Paved Road Dust	0	0	0	0	10,315	588	0
Unpaved Road Dust	0	0	0	0	165	9	0
Windblown Dust	0	0	0	0	888	89	0
Ammonia - Fertilizer	0	0	0	0	0	0	2,879
Ammonia - Livestock	0	0	0	0	0	0	3,424
Ammonia - Domestic Ammonia	0	0	0	0	0	0	147
Ammonia - Wild Animals	0	0	0	0	0	0	4
Ammonia - Soils	0	0	0	0	0	0	1,197
Total	**546**	**19**	**7,508**	**7,222**	**13,716**	**2,450**	**7,727**

[a] Includes bakeries, construction, and industrial refrigeration.
[b] Includes architectural surface coating, autobody refinishing, and traffic markings.
[c] Includes dry cleaning, graphic arts, asphalt application, and pesticides application.
[d] Includes landfills and wastewater treatment.
[e] Includes agricultural tilling, agricultural harvesting, and beef cattle feedlots.

Table 3-48. Summarized 2008 Annual Area Source Emissions – Elmore County

Aggregated Source Category	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
Industrial Combustion	3	0	0	2	0	0	0
Commercial/Institutional Combustion	14	1	0	7	1	1	0
Residential Combustion (excluding wood)	30	0	2	12	2	2	4
Residential Wood Combustion	25	3	252	1,391	254	254	0
Commercial Cooking	0	0	7	22	44	41	0
Other Industrial Activities[a]	0	0	5	0	8	1	3
Industrial Surface Coating	0	0	102	0	0	0	0
Other Surface Coating[b]	0	0	29	0	0	0	0
Degreasing	0	0	231	0	0	0	0
Consumer Solvents	0	0	105	0	0	0	0
Other Solvent Application[c]	0	0	165	0	0	0	0
Gasoline Transport and Distribution	0	0	82	0	0	0	0
Open Burning	8	1	46	142	57	53	0
Other Fires	0	0	0	2	0	0	0
Waste Disposal[d]	0	0	4	0	0	0	0
Agricultural Burning	0	0	2	19	3	3	0
Other Agricultural[e]	0	0	698	0	502	133	0
Paved Road Dust	0	0	0	0	1,253	284	0
Unpaved Road Dust	0	0	0	0	2,648	262	0
Windblown Dust	0	0	0	0	17,720	1,772	0
Ammonia - Fertilizer	0	0	0	0	0	0	1,019
Ammonia - Livestock	0	0	0	0	0	0	2,618
Ammonia - Domestic Ammonia	0	0	0	0	0	0	22
Ammonia – Wild Animals	0	0	0	0	0	0	140
Ammonia - Soils	0	0	0	0	0	0	1,006
Total	**80**	**6**	**1,730**	**1,596**	**22,492**	**2,806**	**4,812**

[a] Includes bakeries, construction, and industrial refrigeration.
[b] Includes architectural surface coating, autobody refinishing, and traffic markings.
[c] Includes dry cleaning, graphic arts, asphalt application, and pesticides application.
[d] Includes landfills and wastewater treatment.
[e] Includes agricultural tilling, agricultural harvesting, and beef cattle feedlots.

3.4 QA/QC Procedures

For the area source inventory development, the procedures described in the project IPP/QAP (ERG and ENVIRON, 2009) were used to check, and correct when necessary, the area source emission estimates. Area source emissions were estimated using calculational spreadsheets. Separate spreadsheets were developed for each area source category; these category-specific spreadsheets were then linked to a summary spreadsheet. The calculational spreadsheets were well-documented and clearly identify the source of various activity data. All emission calculations were internally checked by senior ERG staff and reviewed by the project QA/QC manager. Special attention was paid to the source categories for which a survey was conducted (i.e., fuel dealers and distributors, dry cleaners, wastewater treatment, and landfills). After obtaining the returned survey forms in scanned PDF format, ERG manually transcribed the data into an Access database using a front-end form. All input data were checked against the returned survey forms by senior ERG staff for accuracy.

4.0 2008 ON-ROAD MOTOR VEHICLE SOURCE EMISSIONS INVENTORIES

On-road mobile source emissions were estimated for eight vehicle classes shown in Table 4-1. Emissions were estimated using vehicle miles traveled (VMT) activity data and emission factors from U.S. EPA's MOBILE6 vehicle model. For Ada and Canyon counties, the emissions were estimated on a link basis using the CONCEPT-MV model and output from the COMPASS transportation demand model (TDM) for the Boise metropolitan area. For Elmore County, emissions were estimated using county-wide VMT data. U.S. EPA recently (December 2009) released a entirely new vehicle emissions model, the MOtor Vehicle Emission Simulator 2010 (MOVES2010) (U.S. EPA, 2010c). MOVES is now the official U.S. EPA vehicle emissions model to be used in SIP modeling; it will completely replace its predecessor model MOBILE6 after a grace period for SIPs that were already in progress at the time of the new model's release. The emissions reported here were estimated using MOBILE6, but DEQ has initiated work with MOVES to ultimately replace MOBILE6-based emissions.

Table 4-1. On-Road Motor Vehicle Categories

Abbreviation	Description
LDGV	Light-Duty Gasoline Vehicles (Passenger Cars)
LDGT1	Light-Duty Gasoline Trucks (0-6,000 lbs. GVWR, 0-5750 lbs LVW)
LDGT2	Light-Duty Gasoline Trucks (6,001-8,500 lbs. GVWR, 0 to >5761 lbs. ALVW)
HDGV	Heavy-Duty Gasoline Vehicles (8,501 to >60,000 lbs. GVWR)
LDDV	Light-Duty Diesel Vehicles (Passenger Cars)
LDDT	Light-Duty Diesel Trucks (0-8,500 lbs. GVWR)
HDDV	Heavy-Duty Diesel Vehicles (8,501 to >60,000 lbs. GVWR)
MC	Motorcycles (gasoline)

ALVW = adjusted loaded vehicle weight
GVWR = gross vehicle weight rating
LVW = loaded vehicle weight

On-road motor vehicle emissions were estimated for Ada, Canyon and Elmore counties as part of the Treasure Valley Airshed emission inventory analysis. ENVIRON generated the episodic on-road mobile source emissions from February 1, 2008 to February 15, 2008 using CONCEPT-MV for Ada and Canyon County; transferred the entire CONCEPT-MV setup and code to DEQ; and trained DEQ staff to run CONCEPT-MV. DEQ then ran CONCEPT-MV for other time periods in 2008 and future years and estimated annual and average PM and ozone season day emissions for 2008, 2015 and 2023. ENVIRON performed a separate analysis for

Elmore County using emission factors from MOBILE6 and county-level VMT provided by DEQ in order to estimate annual and average PM and ozone season day emissions for 2008, 2015, and 2023. The future year methodology and results for 2015 and 2023 are discussed in Section 7.0.

There were various data required to estimate emissions from on-road motor vehicles including transportation network information and traffic counts for developing temporal profiles, These data are described below.

Boise Transportation Network and Temporal Profiles

The CONCEPT-MV model calculates motor vehicle emissions on an hourly basis by vehicle class. The primary source of activity data comes from transportation demand model (TDM) output, which is typically provided for multi-hour periods (e.g., annual average weekday for am peak/pm peak/off-peak, etc.). The 2008 transportation network data used for the Boise network were provided by the Community Planning Association of Southwest Idaho (COMPASS). The traffic volume link data from the COMPASS TDM were provided as 24-hour daily total (Waldinger, 2009).

CONCEPT used total volume hourly profiles to split the multi-hour period (i.e., daily in Boise's case) volumes into hourly volumes per link. The total volume temporal profiles were specified by roadway type, hour of day, day of week, and month. Temporal allocation was applied to the VMT, volume, and capacity data. CONCEPT then split the hourly VMT into the eight vehicle classes listed in Table 4-1 using vehicle mix temporal profiles, which are specified on an hourly basis by roadway type, month, and day of week.

Total Volume Temporal Profiles

The data used in developing the temporal profiles were provided by the Idaho Transportation Department (ITD) (Fugit, 2010). The data consisted of twelve months of 2009 observations from automatic traffic recorder (ATR) data in the Boise region. The ATR data consisted of fifteen-minute counts of vehicles by length bin and lane. The length bins included Bin 1 (0-5.9 feet), Bin 2 (6-22.9 feet), Bin 3 (23-39.9 feet), Bin 4 (40-69.9 feet), and Bin 5 (greater than 70 feet). Descriptions of the ATR sites used in the analysis are provided in Table 4-2.

Table 4-2. Automatic Traffic Recorder Sites Used in Temporal Profile Analysis

ATR #	Name	Route	FHWA Road Type Description	FHWA Road Type Code
272	Star Rd	STC 3770	Rural Minor Arterial	6
9	Caldwell	SH 19	Rural Minor Arterial	6
274	Firebird	SH 16	Rural Principle Arterial	2
263	Overland W.B.	I 84	Urban Interstate	11
262	Orchard W.B.	I 84	Urban Interstate	11
261	Orchard E.B.	I 84	Urban Interstate	11
165	Broadway IC EB	I 84	Urban Interstate	11
94	West Nampa	I 84	Urban Interstate	11
271	Linder Rd	STC 3781	Urban Minor Arterial	16
275	McMillan	SH 55	Urban Principle Arterial	14
236	H-P	US 20	Urban Principle Arterial	14

The ATR data used consisted of all twelve months in 2009 with the exception of January 2008 at ATR sites 272, 274, and 275. These sites experienced equipment trouble during that month, so the January observations from 2008 were substituted.

The roadway type definitions used in CONCEPT-MV are those of the FHWA roadway classification system, shown in Table 4-3. The temporal profiles were constructed for these roadway classes, and the TDM data were also mapped to these classes.

Table 4-3. FHWA Roadway Classifications

FHWA Road Type	Description
Rural	
01	Principal Arterial – Interstate
02	Principal Arterial – Other
06	Minor Arterial
07	Major Collector
08	Minor Collector
09	Local System
Urban	
11	Principal Arterial – Interstate
12	Principal Arterial – Other Freeways or Expressways
14	Principal Arterial – Other
16	Minor Arterial
17	Collector
19	Local System

Not all FHWA roadway types were measured in the ATR data; in cases where there were no data, the temporal profiles generated from the closest roadway type were assigned to the missing types. Table 4-4 displays the roadway type assignment for these missing classes of roads.

Table 4-4. Assignment of Temporal Profiles to Missing Roadway Types

Missing Road Type	Substitute Road Type
Rural Interstates (1)	Urban Interstates (11)
Rural Major Collectors (7)	Rural Minor Arterials (6)
Rural Minor Collector (8)	Rural Minor Arterials (6)
Rural Local (9)	Rural Minor Arterials (6)
Urban Other Freeway or Expressway (12)	Urban Interstates (11)
Urban Collector(17)	Urban Minor Arterials (16)
Urban Local (19)	Urban Minor Arterials (16)

The steps followed in generating the total volume profiles were as follows:

1) The vehicle counts were summed over all length bins, lanes, and 15 minute intervals in each hour.
2) Each observation hour was checked for completeness; partial hours (less than four 15 minute intervals) were dropped from the analysis.
3) Each observation day was checked for completeness; days with fewer than 24 complete hours of observations were dropped.
4) Each month at each site was checked for completeness; a month of data at a site was dropped if fewer than all seven days of the week were observed. Note that there were no incomplete site-months in these data, and so none were dropped.
5) Average hourly counts by day of week and month were calculated at each site.
6) Average hourly counts were tabulated across all sites for each roadway type. The reason for tabulating the average hourly counts at each site prior to averaging across sites was so that each site is weighted equally. Sites with more observations were not given greater weight than sites with fewer observations in a month.
7) The hourly profiles were calculated for each month, day of week, and roadway type as the fraction of the daily total.
8) The day of week profiles were calculated for each month and roadway type as the fraction of the weekly total.
9) Prior to calculating the annual temporal profiles, sites with fewer than 12 months of complete observations (with all seven days of the week represented) were dropped from the analysis. In this case, sites 165 and 262 were dropped from the analysis.
10) The monthly temporal profiles were calculated by roadway type as the fraction of the annual total.

An example of the hourly temporal profiles for urban interstates is presented in Figure 4-1, where the profiles are from Sunday through Saturday (going from left to right). For each day of the week and month, the profiles sum to 1.0. In this figure, the morning and afternoon peaks are clearly visible Monday through Friday (i.e., the middle five days in the figure).

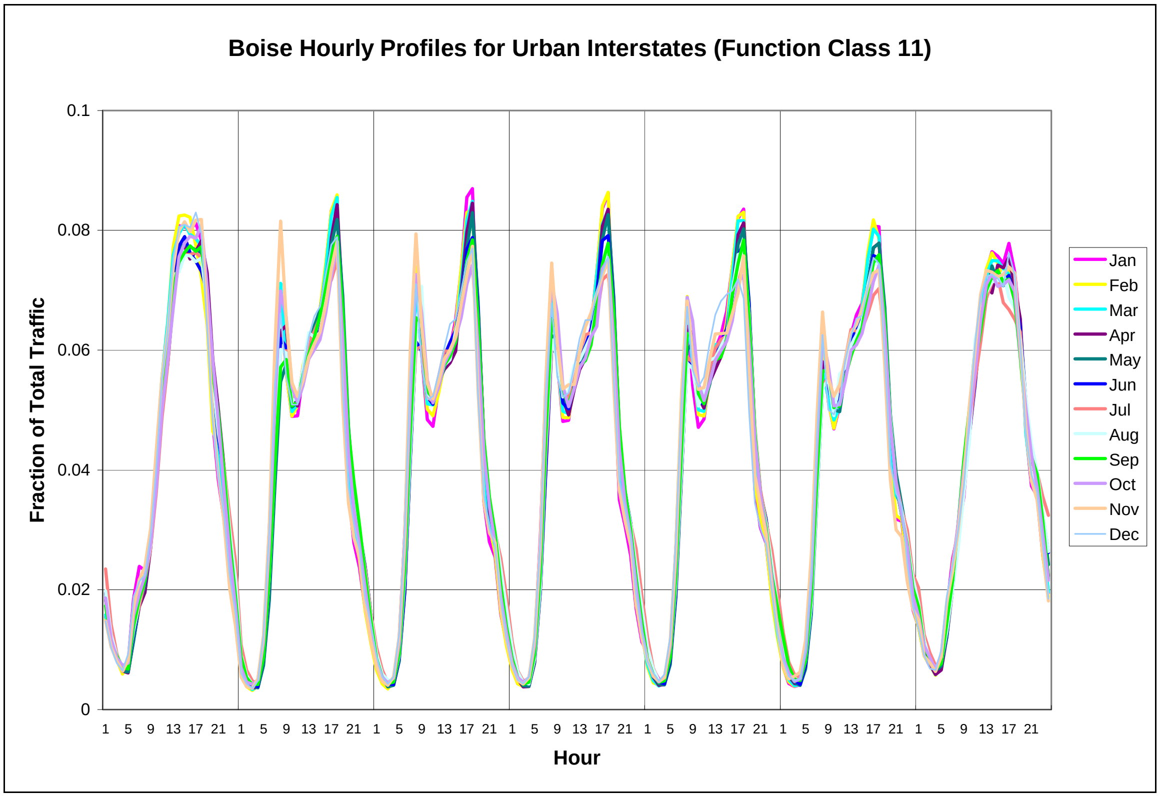

Figure 4-1. Hourly Temporal Profiles for Urban Interstates

An example of the day of week profiles for urban interstates is presented in Figure 4-2. The profiles show a small peak on Fridays, less traffic on Saturdays, and even less on Sundays. In these profiles, the profiles sum to 1 across the days of week for each month.

An example of the monthly temporal profiles for all roadway types is presented in Figure 4-3. In general, there is greater traffic during summer months.

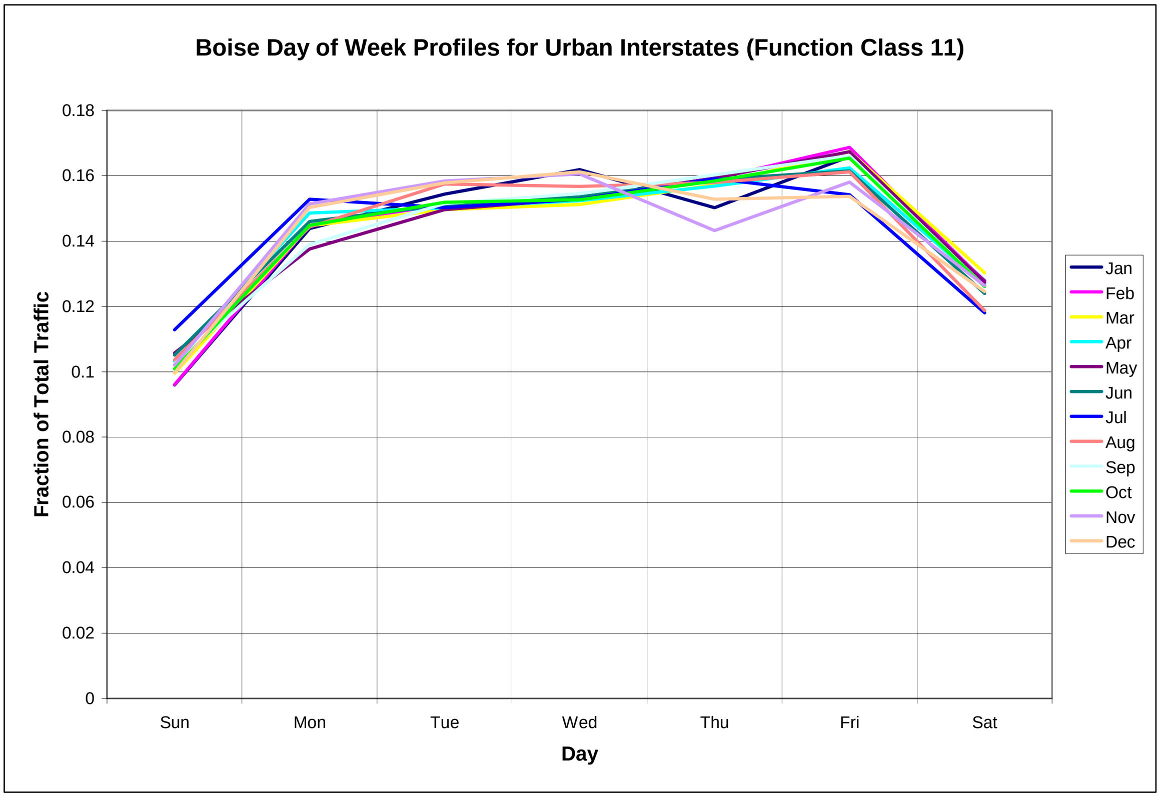

Figure 4-2. Day of Week Temporal Profiles for Urban Interstates

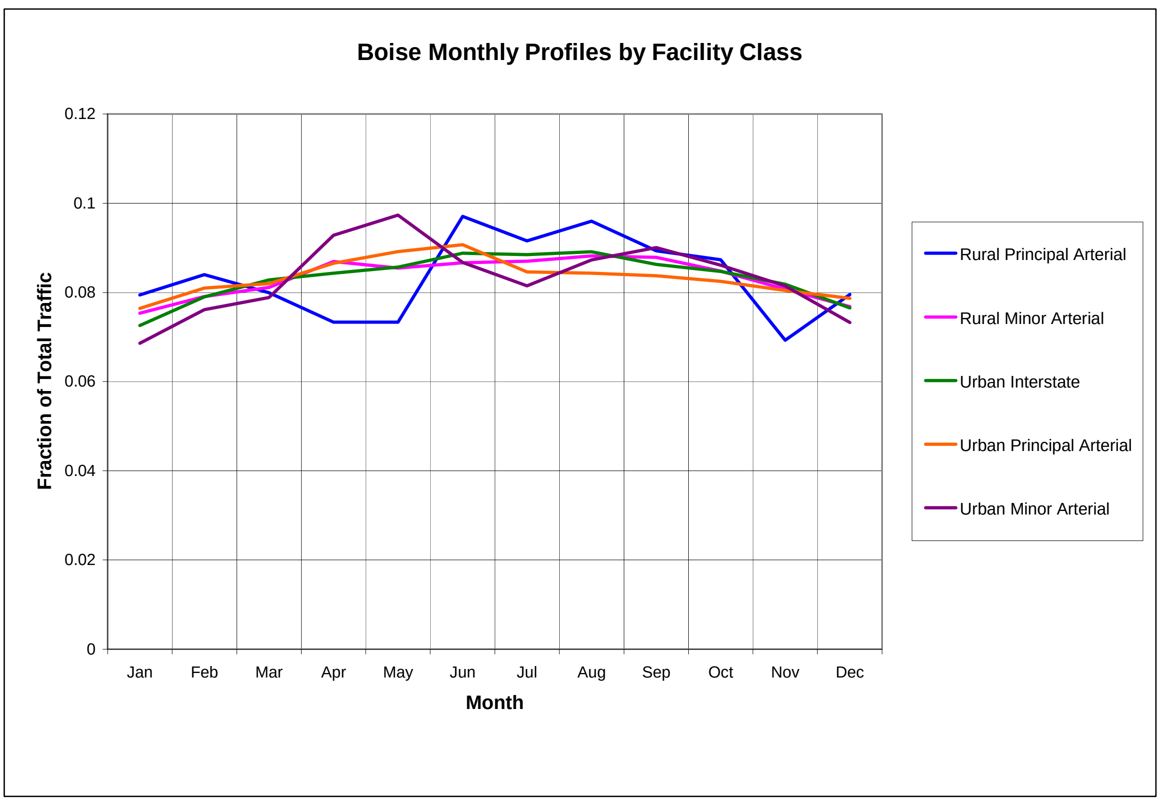

Figure 4-3. Monthly Temporal Profiles by Roadway Type for Boise

Vehicle Classification Temporal Profiles

The vehicle mix profiles were used to provide hourly estimates of vehicle type, especially of heavy and light-duty vehicle types that are matched with MOBILE6 emission factors. CONCEPT requires only hourly vehicle mix profiles, but they must be specified for each roadway type by day of the week and month of the year. The vehicle mix profiles were generated using the same vehicle length data provided by ITD as that used to create the total volume temporal profiles. The vehicle lengths were converted to the MOBILE vehicle classes in a two-step process. First, the lengths were mapped to FHWA vehicle classes (defined in Table 4-5), and then the FHWA vehicle classes were mapped to the MOBILE classes (using the matrix displayed in Table 4-6). A detailed discussion of the development of the cross-reference assignments of the FHWA vehicle classes to the MOBILE classes has been developed by U.S. EPA (U.S. EPA, 2007).

Table 4-5. FHWA Vehicle Classifications

FHWA Class	VTRIS Vehicle Type
1	Motorcycle
2	Passenger cars
3	Other 2-axle, 4-tire single unit vehicles
4	Buses
5	2-axle, 6-tire single-unit vehicles
6	3-axle, 6-tire single-unit vehicles
7	4+ axle single-unit vehicles
8	4 or less axle combination vehicles
9	5-axle combination vehicles
10	6+ axle combination vehicles
11	5-axle multi-trailer vehicles
12	6-axle multi-trailer vehicles
13	7+ axle multi-trailer vehicles
14	Unclassified
15	Unclassifiable

Table 4-6. Fractional Allocation of FHWA Vehicle Classes to MOBILE Vehicle Classes

FHWA Class	LDGV	LDGT1	LDGT2	HDGV	LDDV	LDDT	HDDV	MC
1	0	0	0	0	0	0	0	1
2	0.52225	0.35340	0.11183	0.00748	0.00085	0.00180	0.00238	0
3	0.51365	0.34758	0.11956	0.00689	0.00084	0.00190	0.00957	0
4	0	0	0	0.16928	0	0	0.83072	0
5	0	0.24070	0.19405	0.12262	0	0.00287	0.43976	0
6	0	0.24070	0.19405	0.12262	0	0.00287	0.43976	0
7	0	0.24070	0.19405	0.12262	0	0.00287	0.43976	0
8	0	0.00031	0.00701	0.02044	0	0.00010	0.97214	0
9	0	0.00031	0.00701	0.02044	0	0.00010	0.97214	0
10	0	0.00031	0.00701	0.02044	0	0.00010	0.97214	0
11	0	0.00031	0.00701	0.02044	0	0.00010	0.97214	0
12	0	0.00031	0.00701	0.02044	0	0.00010	0.97214	0
13	0	0.00031	0.00701	0.02044	0	0.00010	0.97214	0

ITD provided the mapping of the length data to the FHWA classes as follows:

- ITD Length Bin 1 (0-5.9 feet) – Condensed Class 1 (Motorcycles)
- ITD Length Bin 2 (6-22.9 feet) – Condensed Class 2 and Class 3 (Small cars and trucks)
- ITD Length Bin 3 (23-39.9 feet) – Condensed Class 5-7 (Single unit trucks, small truck/trailer combinations)
- ITD Length Bins 4 and 5 (40-69.9 feet, 70 feet and over) – Condensed Class 8-13 (Large trucks and combinations)

This information was nearly sufficient to complete the mapping of the length data to the FHWA classes. The FHWA Class groups 5-7 and 8-13 were mapped with the same fractions to the MOBILE classes in Table 4-6. However, FHWA Classes 2 and 3 were split differently. In order to split Classes 2 and 3, the relative fractions of Classes 2 and 3 in the 2000 national Vehicle Travel Information System (VTRIS) dataset were used by roadway type. These relative splits are presented in Table 4-7. The split factors for rural road types 8 and 9 were set equal to that of Class 7, and the split factors for urban road types 17 and 19 were set equal to that of road type 16.

Table 4-7. FHWA Class 2 and 3 Splits from 2000 VTRIS Dataset

Road Type	Class 2	Class 3
1	0.79	0.21
2	0.73	0.27
6	0.75	0.25
7	0.63	0.37
11	0.81	0.19
12	0.83	0.17
14	0.77	0.23
16	0.81	0.19

Figures 4-4 and 4-5 display some of the hourly vehicle mix profiles from Sunday through Saturday for urban interstates and urban minor arterials. In these figures, the sum of the class fractions for a specific hour (along the vertical axis) sum to 1. In these figures, the fraction of the heavy-duty diesel vehicles is greater on the interstates than the minor arterials. In addition, the fraction of the fleet that is heavy-duty is greater during the early morning hours, with a rise mid-day.

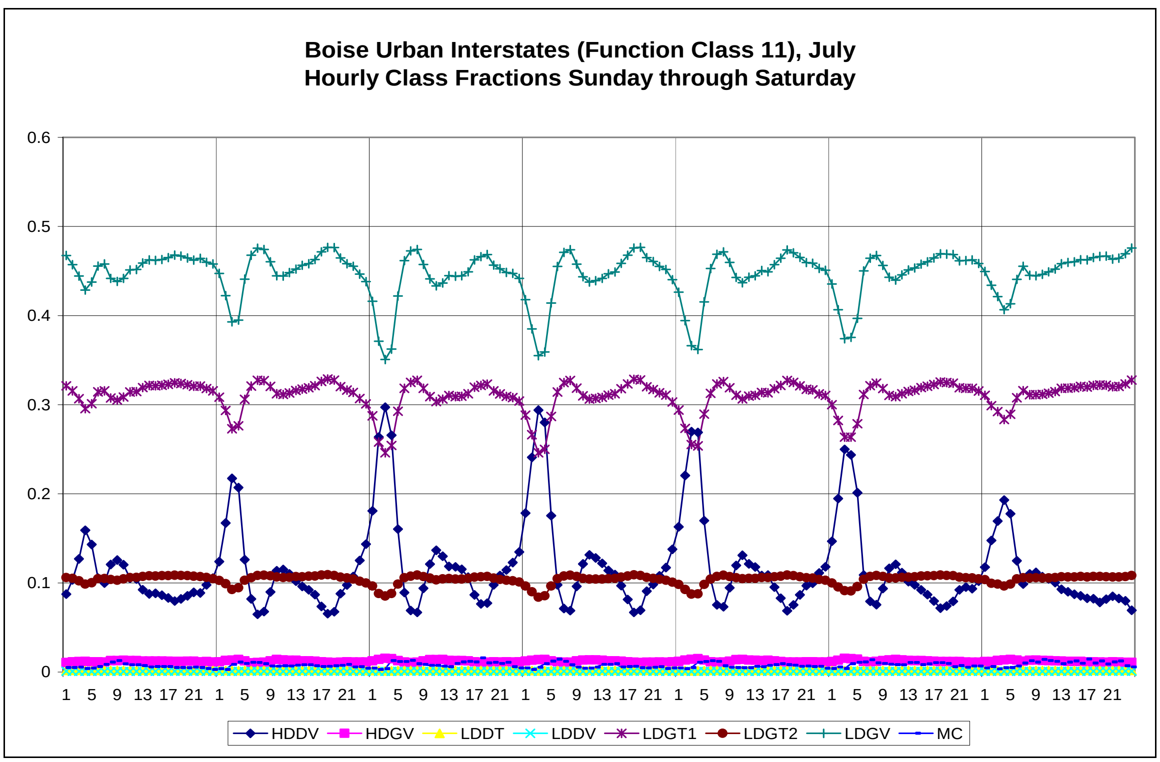

Figure 4-4. Hourly Vehicle Mix Temporal Profiles for Urban Interstates in July

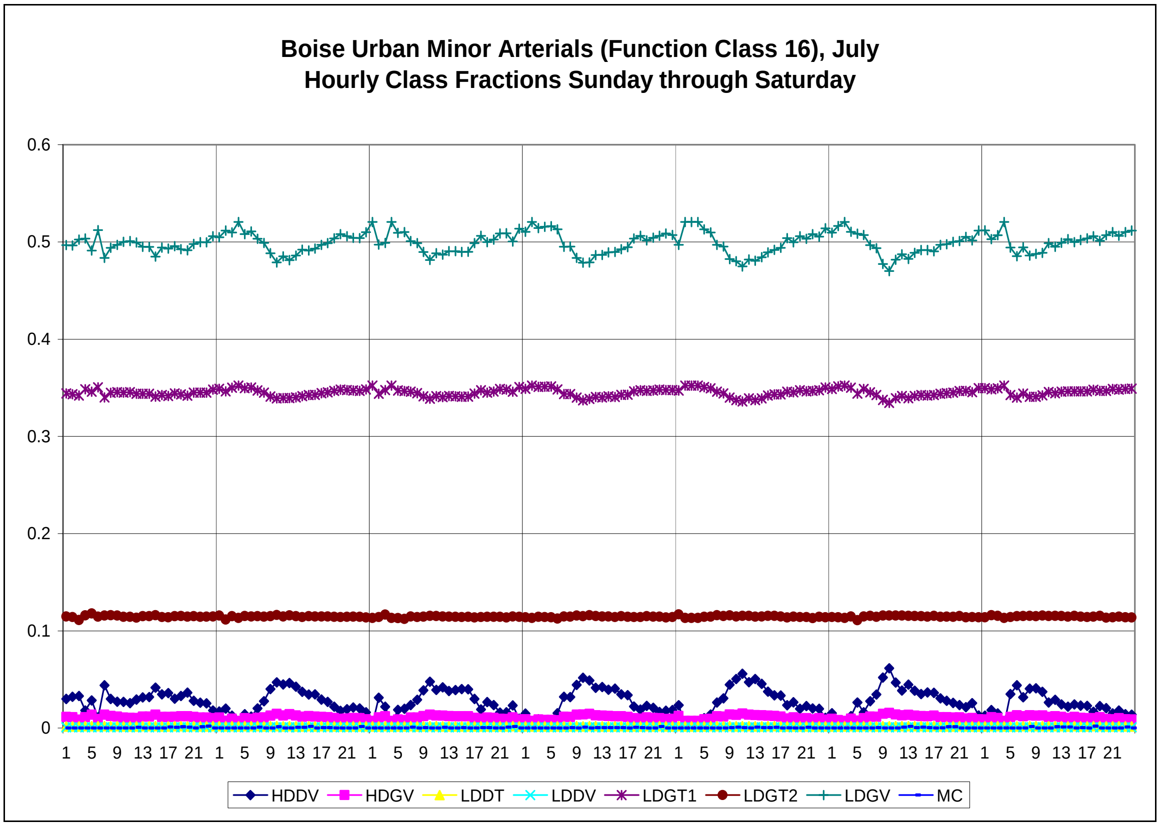

Figure 4-5. Hourly Vehicle Mix Temporal Profiles for Urban Minor Arterials in July

Spatial Allocation

CONCEPT-MV spatially allocates emissions by hour to grid cells that are covered by the link network and has the ability to allocate emissions using additional gridding surrogates. Start exhaust emissions can be allocated to grid cells using the Transportation Analysis Zone (TAZ) network distribution of trip starts. Similarly, hot soak emissions can be allocated to grid cells using the TAZ network distribution of trip ends. The spatial distribution of engine starts and hot soaks varies throughout the day, and the temporal detail of the trip starts and ends by TAZ reflects the spatial changes by time period of day. Because the COMPASS TDM and TAZ time period was a daily total, the TAZ network was not included as a spatial surrogate due to insufficient temporal detail. All emissions were allocated to grid cells by hour using the link network surrogate shown below in Figure 4-6.

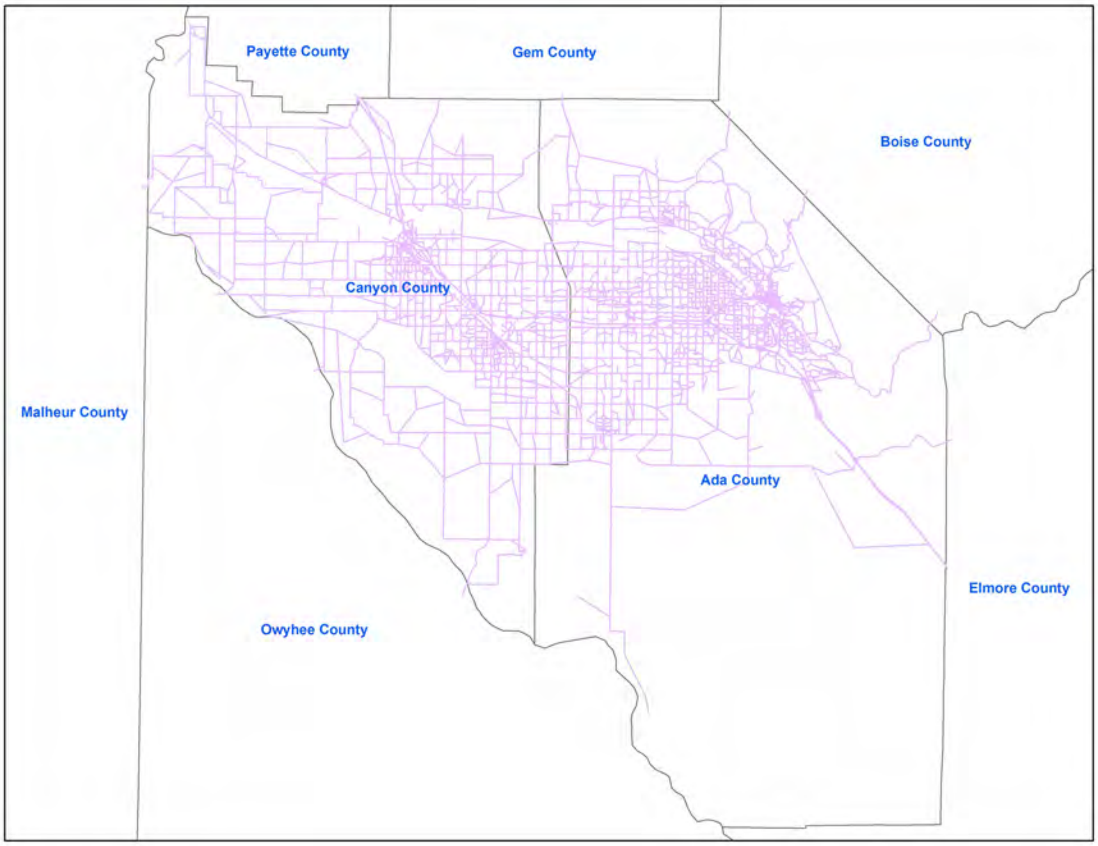

Figure 4-6. 2008 COMPASS TDM Link Network

Adjustments to TDM Volumes

TDMs in general often underestimate travel on local roads and a typical correction for this problem is to scale the local roadway volumes to match HPMS data within the T3 processing. However, the COMPASS TDM is considered a more conservative source than ITD HPMS data; VMT totals from COMPASS were higher than ITD estimates. COMPASS is a trusted source that provides their VMT for inclusion in the National Emission Inventory (NEI) for Ada and Canyon counties. Per agreement with DEQ, COMPASS VMT was used directly from the TDM without any scaling.

MOBILE6 Inputs

Seasonal fuel properties were provided by DEQ with differences for winter, spring, summer and fall. Winter fuel properties were used in the CONCEPT modeling for the February episode modeling. All four seasons were modeled in the Elmore County analysis.

Local registration data were available for Ada and Canyon counties from a recent VIN decoder study (Sierra, 2006). The local distributions for light duty vehicles were used in the MOBILE6 runs within CONCEPT-MV. For heavy duty vehicles, national default age distribution patterns were assumed because much of heavy duty VMT is from interstate travel. No local registration data were available for Elmore County, so the national default distribution provided with MOBILE6 was used. Tables 4-8, 4-9, and 4-10 describe the MOBILE6 inputs used in the base year 2008 modeling for anti-tampering parameters, inspection and maintenance (I/M) programs and all other inputs, respectively.

Table 4-8. 2008 MOBILE6 Inputs by County: Anti-Tampering Program Parameters

Anti-Tampering Program Parameters	Ada County	Canyon County	Elmore County
Program Start Year	1984	-	-
First Vehicle Model Year Applied	1981	-	-
Last Vehicle Model Year Applied	2050	-	-
Vehicle Types Applied	LDGV, LDGT1, LDGT2, LDGT3, LDGT4, HDGV2B, HDGV3, HDGV4, HDGV5, HDGV6, HDGV7, HDGV8A, HDGV8B, HDGB	-	-
Inspection Frequency	Annual	-	-
Compliance Rate	98%	-	-
Inspection Conducted	air pump, catalyst, fuel inlet restrictor, EGR, and the gas cap	-	-

Table 4-9. 2008 MOBILE6 Inputs by County: I/M Program Parameters

I/M Program Type	I/M Program Parameters	Ada County	Canyon County	Elmore County
Exhaust Test Only Program – Two speed test (idle and 2500 RPM)	Start Year	1984	-	-
	End Year	2050	-	-
	Frequency	Annual	-	-
	First Vehicle Model Year Applied	1965	-	-
	Last Vehicle Model Year Applied	1995	-	-
	Vehicle Types Applied	LDGV, LDGT1, LDGT2, LDGT3, LDGT4, HDGV2B, HDGV3, HDGV4, HDGV5, HDGV6, HDGV7, HDGV8A, HDGV8B, HDGB	-	-
	Stringency (pre-1981 only)	27	-	-
	Compliance Rate	98%	-	-
	Waiver Rate (expressed as a percentage of the vehicles that fail the I/M program)	Pre-1981: 1%	-	-
		1981 and later 1: 1%		
	Grace Period (the age at which vehicle first become subject to I/M testing)	1	-	-
Exhaust Test Only Program – OBD I/M	Start Year	2000	-	-
	End Year	2050	-	-
	Frequency	Annual	-	-
	First Vehicle Model Year Applied	1996	-	-
	Last Vehicle Model Year Applied	2050	-	-
	Vehicle Types Applied	LDGV, LDGT1, LDGT2, LDGT3, LDGT4, HDGV2B, HDGV3, HDGV4, HDGV5, HDGV6, HDGV7, HDGV8A, HDGV8B, HDGB	-	-
	Stringency (expected exhaust inspection failure rate for pre-1981 model year vehicles)	27	-	-
	Compliance Rate	98%	-	-
	Waiver Rate (expressed as a percentage of the vehicles that fail the I/M program)	Pre-1981: 0%	-	-
		1981 and later 1: 1%		
	Grace Period (the age at which vehicle first become subject to I/M testing)	1	-	-

Table 4-10. 2008 MOBILE6 Inputs by County: Other

Other Parameters	Ada County	Canyon County	Elmore County
Temperature	Varied by each hour each grid cell	Varied by each hour each grid cell	Min/Max (°F) Winter: 22.0/40.9 Spring: 35.1/63.2 Summer: 53.5/89.1 Fall: 35.8/66.1
Absolute Humidity	Varied by each hour each grid cell	Varied by each hour each grid cell	(grains/lb) Winter: 20.0 Spring: 28.21 Summer: 45.64 Fall: 30.36
Fleet Mix	ITD Traffic Count (Varied by month, day of week, hour)	ITD Traffic Count (Varied by month, day of week, hour)	VMT FRACTIONS provided within M6 input files from DEQ
Facility Speed	Varied by TDM network link	Varied by TDM network link	(mph) Freeway: 54.1 Arterial: 34.1 Local: 19.6
Registration Age Distribution	Light Duty from Sierra Research report, Motorcycles and Heavy Duty use M6 National Defaults	Light Duty from Sierra Research report, Motorcycles and Heavy Duty use M6 National Defaults	All vehicles use M6 National Defaults
Fuel Program	3 = Conventional Gasoline West	3 = Conventional Gasoline West	3 = Conventional Gasoline West
Fuel Reid Vapor Pressure (RVP)	June – September: 8.6 Other Months: 15	June – September: 8.6 Other Months: 15	Winter: 15.0 Spring: 13.5 Summer: 9.0 Fall: 11.5
Diesel Fuel Sulfur Content	15 ppm	15 ppm	15 ppm
Alcohol blend such as Ethanol blended market Share (0.00 – 1.00)	0.68	0.68	0
Average oxygen content of alcohol blend fuels (percent weight, expressed as a decimal fraction)	0.03448	0.03448	0
RVP Waiver granted to allow “splash” blending of alcohol-based oxygenates	Yes	Yes	No
Ether blend market share (such as MTBE, ETBE, TAME blended)	0	0	1
Average oxygen content of ether blend fuels (percent weight, expressed as a decimal fraction)	0	0	0.000893 (0.5% by volume)

CONCEPT-MV specifications – Ada and Canyon County

Below are the details of the CONCEPT-MV modeling setup and results of the February episode.

<u>Region Definition</u>

The CONCEPT modeling region was defined in meters as:

- grid name: o3tv4km
- origin: (258000., -666000.)
- cell resolution: 4,000
- Number of cells in X direction: 63
- Number of cells in Y direction: 56

<u>Episode Days</u>

The modeling episode days that were modeled by ENVIRON and DEQ were:

- ENVIRON: February 1-15, 2008 (demonstration episode)
- DEQ: January 1-31, 2008 (also for 2015 and 2023)
  April 1-30, 2008 (also for 2015 and 2023)
  July 1-31, 2008 (also for 2015 and 2023)
  October 1-31, 2008 (also for 2015 and 2023)

The episodes modeled by DEQ are full months. Each episode day was run in a separate CONCEPT MV run, a total of 123 runs for the base year, and 369 runs total for 2008, 2015 and 2023 together.

<u>Day Specific Meteorology</u>

The hourly gridded modeled meteorological dataset used in the modeling was generated by DEQ from archived University of Washington (UW) MM5 and WRF model forecast runs. In 2008, UW switched their forecasting system from MM5 to WRF on April 15. UW provided a program to convert WRF outputs back to MM5 data format. Therefore, one portion of DEQ's

2008 MM5 data set is from MM5 model run (i.e., from January 1 to April 14) and the other portion is from WRF model runs (i.e., from April 15 to December 31).

Results for February 2008 demonstration runs

The emissions results for the February 1-15, 2008 demonstration episode are briefly described in the following text and figures. DEQ generated the annual emissions and O_3 and $PM_{2.5}$ daily emissions, and those calculations and results are summarized in later sections.

Emissions varied by day within the 15-day February episode due to meteorological differences between days and differences in VMT activity by vehicle class and day of week. Figures 4-7, 4-8, and 4-9 show emissions by episode day for TOG, NO_x and $PM_{2.5}$, respectively. Figure 4-10 shows the average minimum and maximum temperature across grid cells in the link network. Figures 4-11 and 4-12 show the hourly VMT activity by episode day, while Figures 4-13 and 4-14 show overall VMT with fleet mix for one weekday and weekend day, respectively. Figure 4-15 shows the spatial distribution of the gridded emissions.

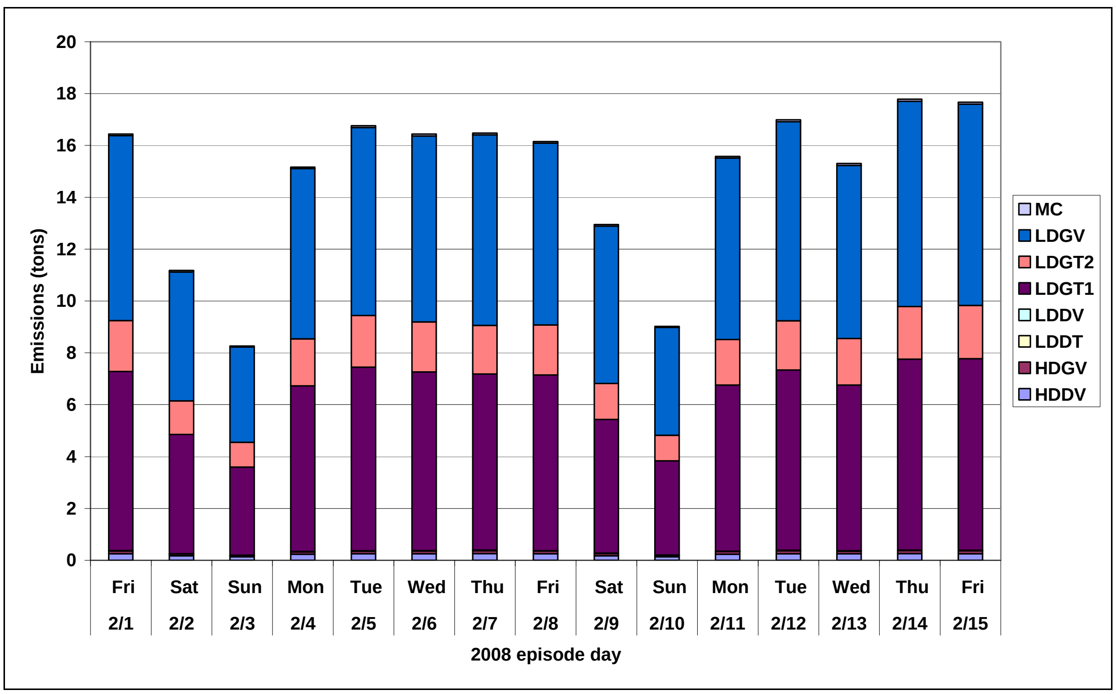

Figure 4-7. TOG Emissions by Day Showing Vehicle Class Contributions

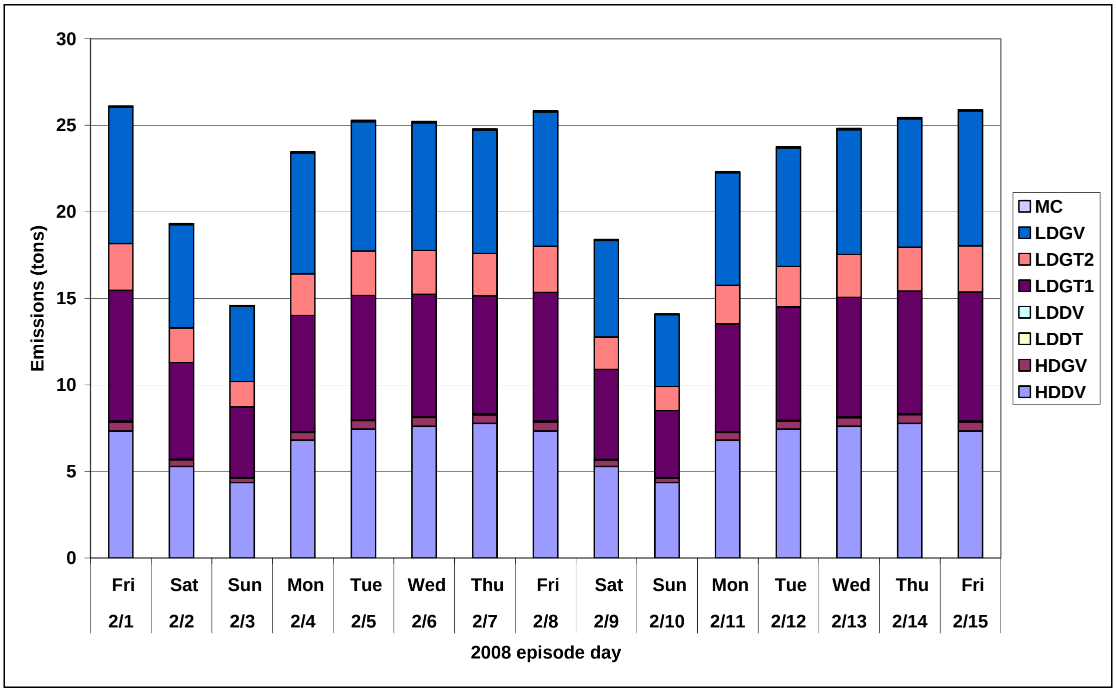

Figure 4-8. NO_x Emissions by Day Showing Vehicle Class Contributions

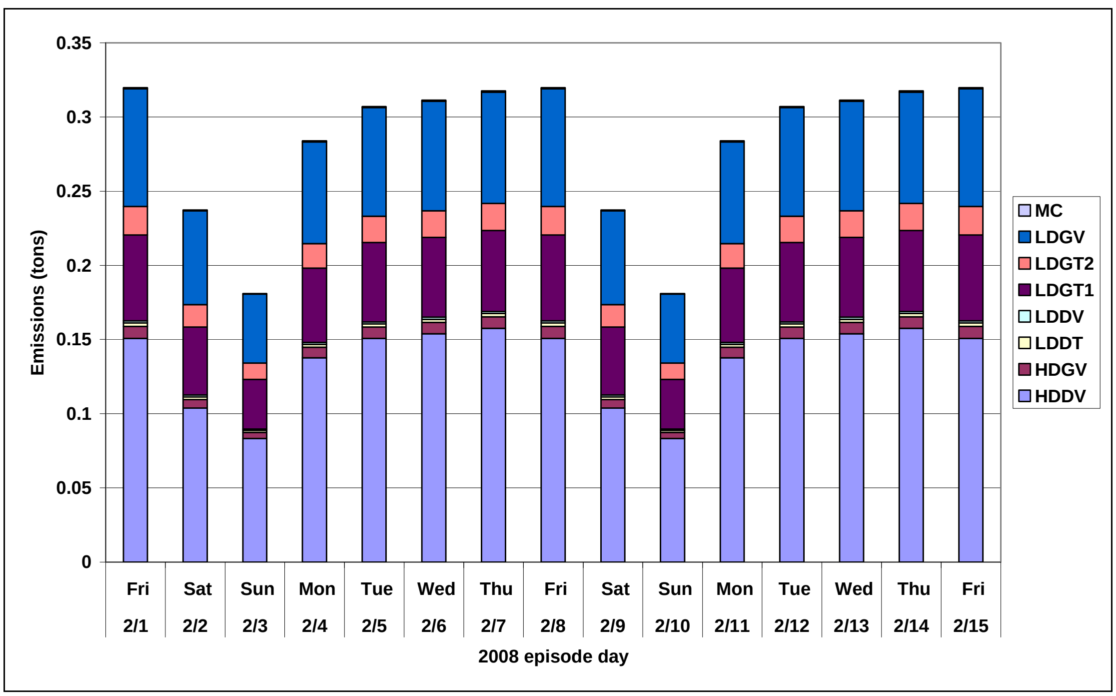

Figure 4-9. $PM_{2.5}$ Emissions by Day Showing Vehicle Class Contributions

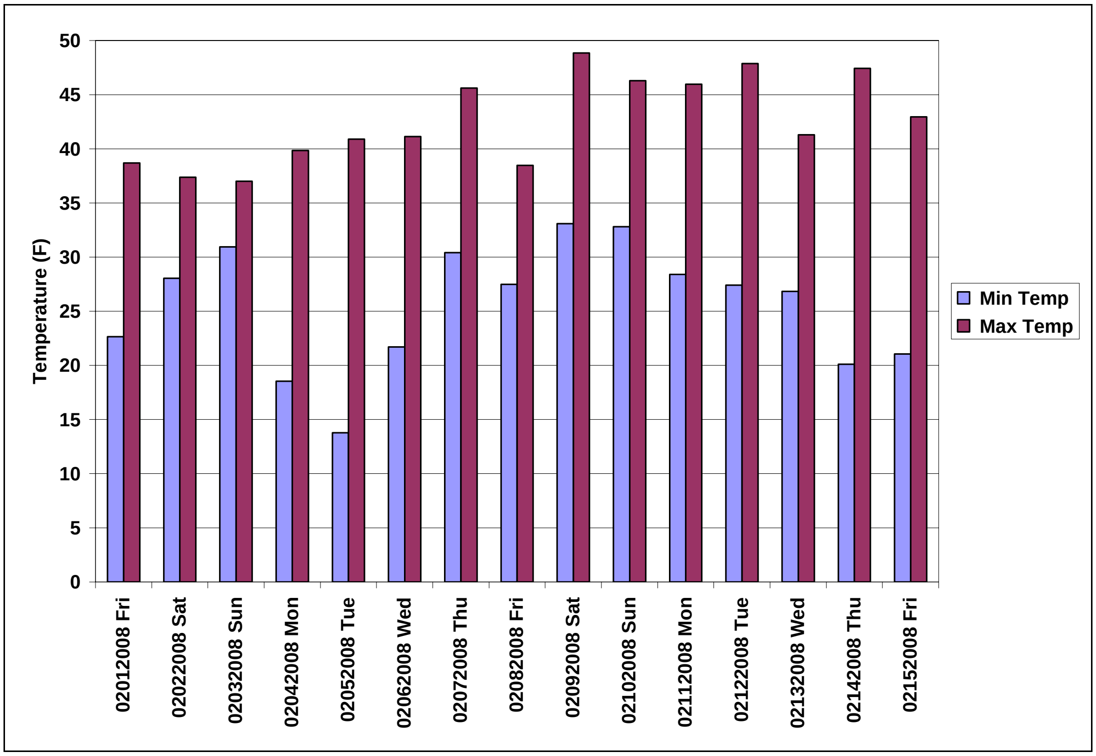

Figure 4-10. Daily Minimum and Maximum Temperatures (Degrees Fahrenheit) Averaged Across Grid Cells Containing Roadway Links

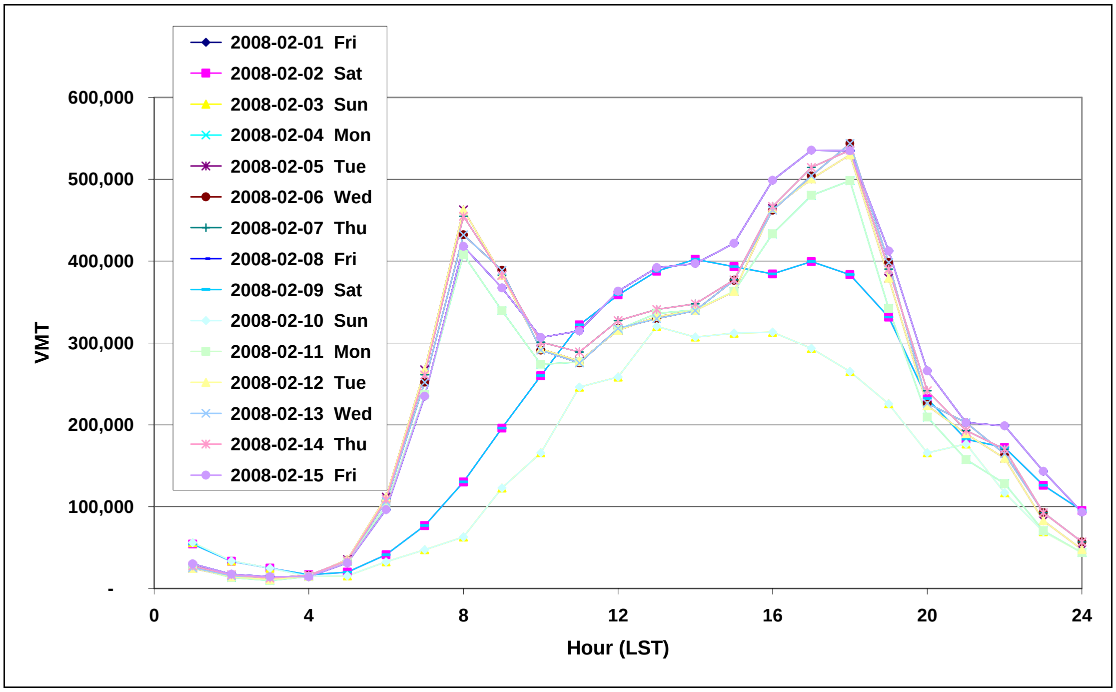

Figure 4-11. Light Duty Gasoline Vehicles (LDGV) Hourly VMT Profiles by Episode Date

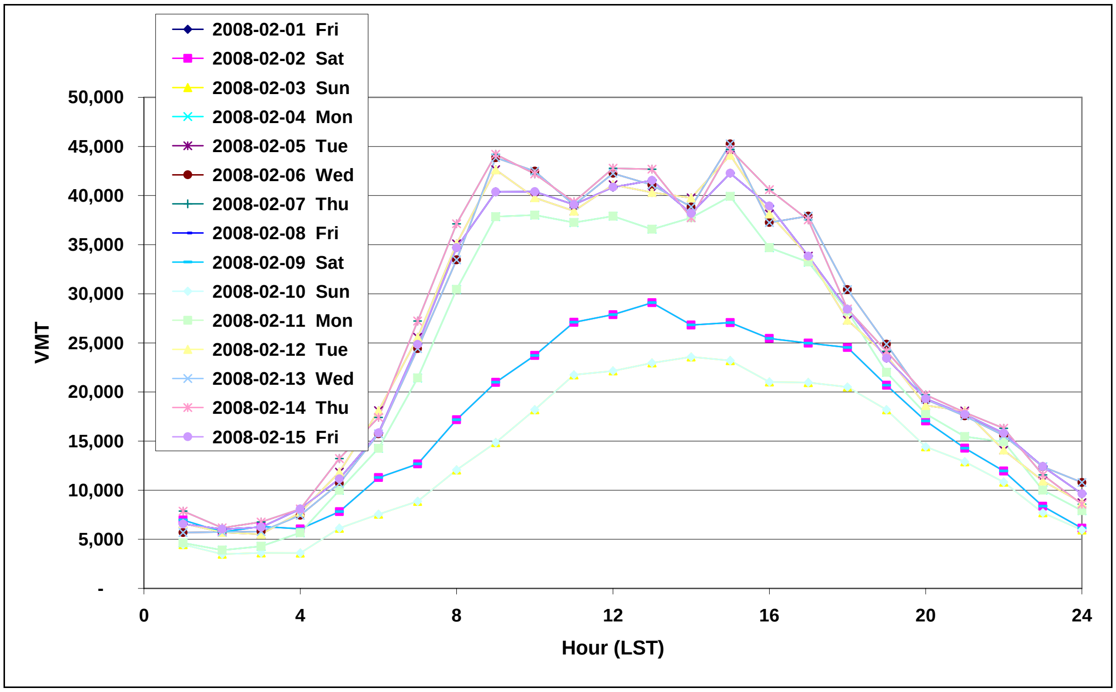

Figure 4-12. Heavy Duty Diesel Vehicles (HDDV) Hourly VMT Profiles by Episode Date

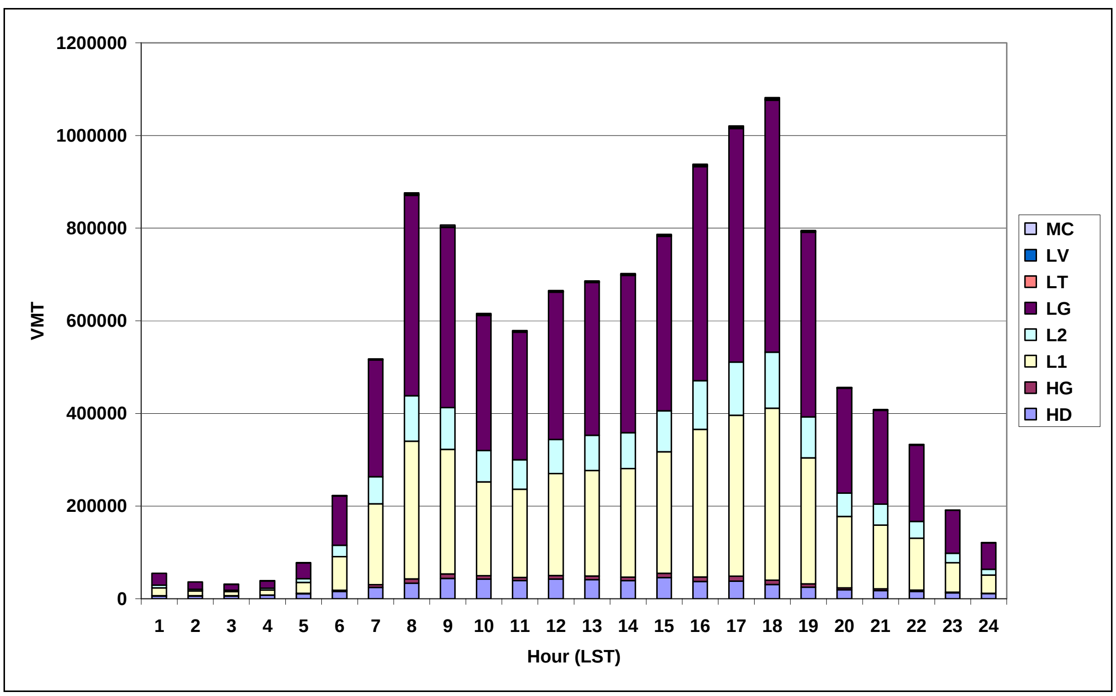

Figure 4-13. VMT Mix by Hour for a Weekday Episode Day (Wednesday 2/13/2008)

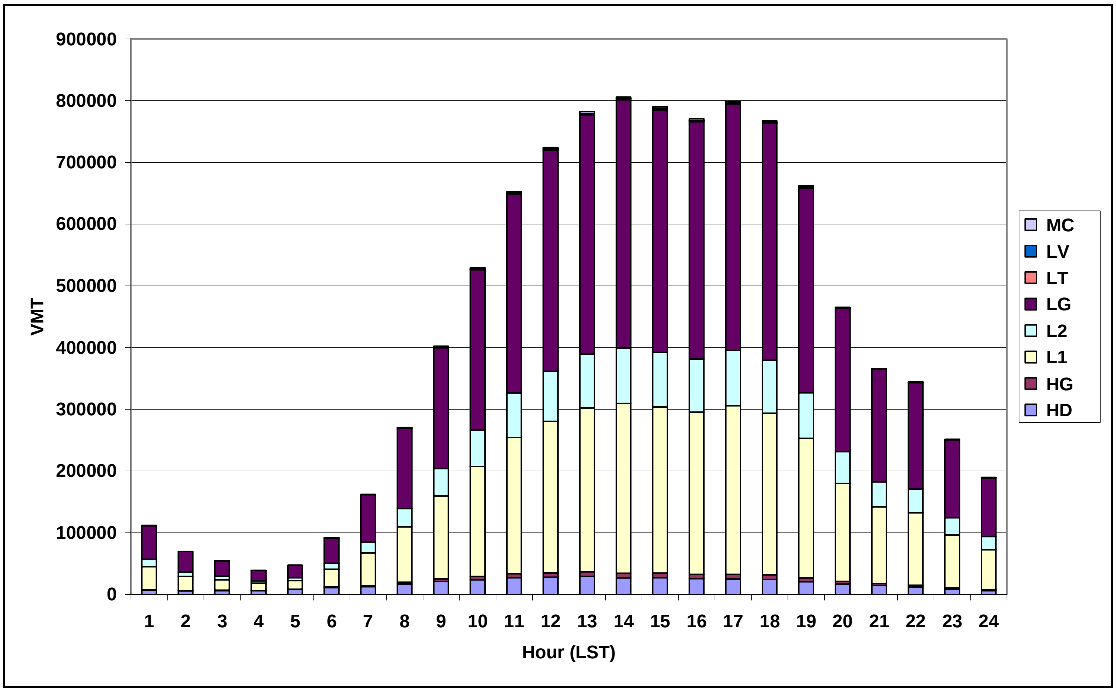

Figure 4-14. VMT Mix by Hour for a Weekend Episode Day (Saturday 2/9/2008)

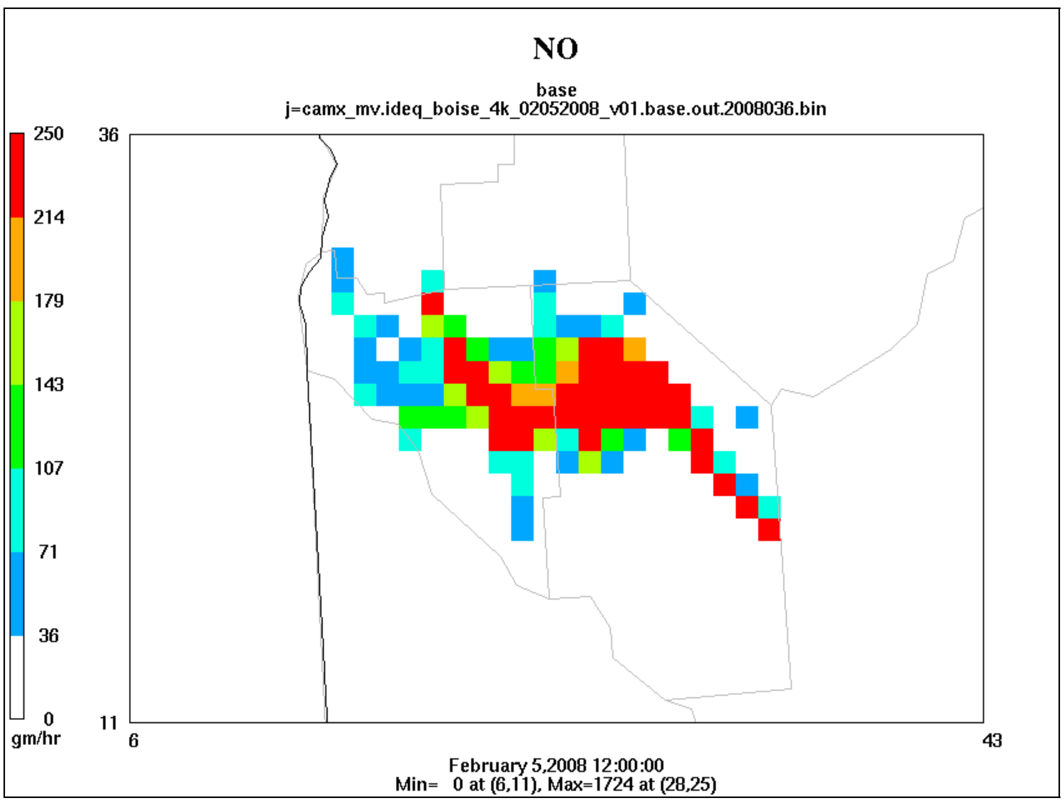

Figure 4-15. Spatial Distribution at 4km Resolution of the BOISE Network Emissions, Showing Nitric Oxide (NO)

The two dominant sources of TOG in the Boise network are the LDGV and LDGT1 vehicle classes. The daily TOG emissions shown in Figure 4-7 follow VMT patterns by day of week and they are also highly sensitive to day-specific temperatures (shown in Figure 4-10) and relative humidity.

HDDV is a significant contributor to NO_x and the highest contributor to $PM_{2.5}$ vehicle emissions in the Boise network. Although HDDV makes up a low percentage of the VMT, HDDV vehicles have significantly higher emission rates of both NO_x and $PM_{2.5}$. Figures 4-13 and 4-14 show the small proportion of VMT that HDDV comprises in the Boise network. The other significant contributors to PM and NO_x emissions are LDGV, LDGT1, and LDGT2. Unlike HDDV, these light gasoline vehicle classes are lower emitters on a per mile basis, but make up a large proportion of the VMT.

Figure 4-9 shows a repetitive pattern in the overall emissions by day of week (e.g., Tuesdays [February 5 and February 12] have the same $PM_{2.5}$ emissions, etc.) not seen in TOG or NO_x charts (Figures 4-7 and 4-8). This is because, unlike TOG and NO_x, $PM_{2.5}$ has no temperature dependency in the MOBILE6 model. $PM_{2.5}$ emissions depend only on fuel property inputs (specifically, fuel sulfur) and VMT. The entire February episode used a single winter fuel so the day-to-day changes in $PM_{2.5}$ emissions are only due to the VMT variation between days of the week.

4.1 Emission Calculation Methodologies – Annual

DEQ ran CONCEPT-MV for four months to represent the four seasons shown in Table 4-11. For each month (i.e., January, April, July, and October 2008), DEQ determined the average emissions per day. DEQ then scaled the emissions per day by the total number of days in each season represented by the month. The sum of each season total emissions yielded annual emissions.

Table 4-11. Representative Month for Each Season

Month	Season	Representative Month
December	Winter	January
January		
February		
March	Spring	April
April		
May		
June	Summer	July
July		
August		
September	Fall	October
October		
November		

Annual emissions for Elmore County for the 2008 base year were estimated using emission factors from the MOBILE6 model and VMT provided by DEQ. MOBILE6 was run for calendar year 2008 for three road types (i.e., freeway, arterial, and local) and four seasons (i.e., winter, spring, summer, and fall) for a total of 12 scenarios. VMT was provided by three road types (i.e., interstate, arterial, and "other") and at annual resolution. Annual VMT was subdivided into seasons by using monthly temporal profiles developed for use in CONCEPT for Ada and Canyon counties. The monthly fractions from these temporal profiles summed to one over the 12 months and reflected actual changes in VMT by month based on continuous traffic recorder counts in the Boise metropolitan area. Months were assigned to MOBILE6 season as shown in Table 4-11 above. Annual emissions for Elmore County were calculated as the sum of emissions over the four seasons.

4.2 Emission Calculation Methodologies – Ozone and PM Season

For Ada and Canyon counties, the average O_3 season daily emissions were computed by dividing the modeled summer season total emissions for each county by the number of days in summer. Similarly, average $PM_{2.5}$ season daily emissions were estimated by dividing the winter season total emissions by the number of days in winter.

For Elmore County, the average season daily emissions were estimating by computing the season daily VMT for O_3 and $PM_{2.5}$ seasons and applying them to the MOBILE6 emission factors. Division of the VMT from annual to season was described above.

4.3 Emission Results by Source Category

Table 4-12 presents 2008 annual and average season day emissions for each county. July average emissions were used to best represent peak ozone season on-road motor vehicle emissions; similarly, January average emissions were used to best represent PM season emissions. Figures 4-16 through 4-24 show the percentage of Table 4-12 emissions that come from each of the eight MOBILE vehicle classes.

Table 4-12. 2008 On-road Emissions Summary (Tons/Year and Tons/Day)

Averaging Period	County	NO_X	SO_2	VOC	CO	PM_{10}	$PM_{2.5}$	NH_3
Annual	Ada	5,114.3	27.2	4,022.0	45,574.2	125.2	75.6	311.6
	Canyon	3,138.5	12.7	3,093.9	33,553.8	60.4	37.0	143.5
	Elmore	576.6	3.1	529.8	5,460.8	14.7	9.3	30.7
Average Ozone Season Day	Ada	13.4	0.1	10.8	80.8	0.4	0.2	0.9
	Canyon	8.3	0.0	8.4	61.8	0.2	0.1	0.4
	Elmore	1.5	0.0	1.5	11.0	0.0	0.0	0.1
Average PM Season Day	Ada	13.3	0.1	6.6	146.1	0.3	0.2	0.8
	Canyon	8.2	0.0	5.3	103.6	0.1	0.1	0.3
	Elmore	1.6	0.0	1.1	17.2	0.0	0.0	0.1

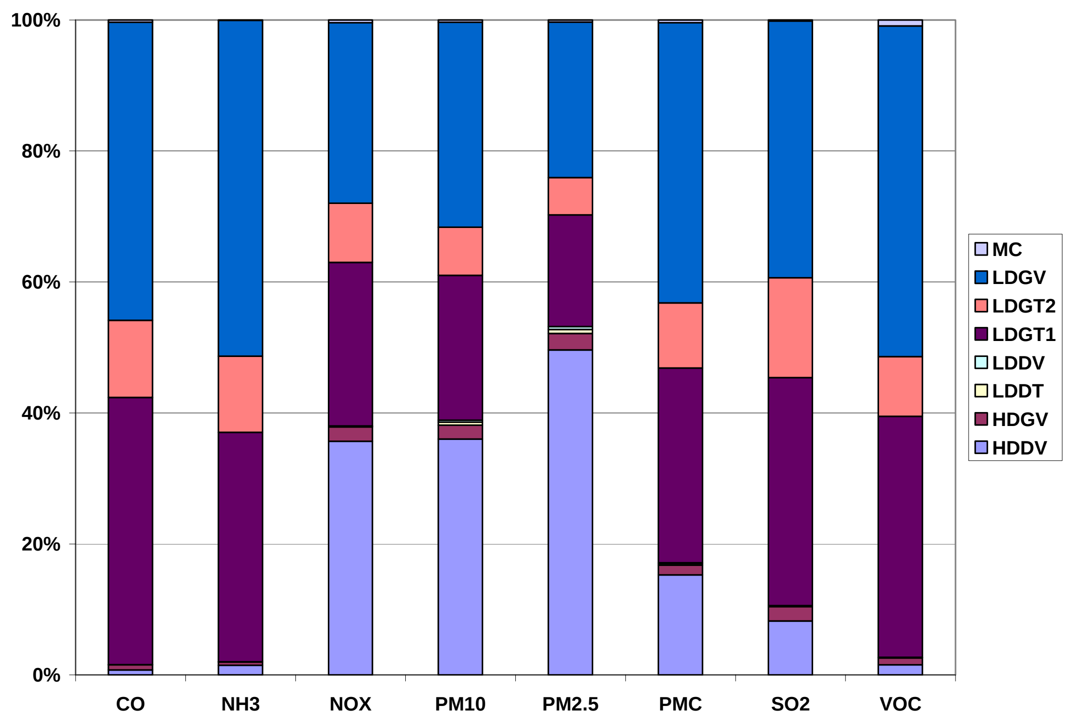

Figure 4-16. Vehicle Class Percent Contributions to 2008 Ada County Annual Emissions

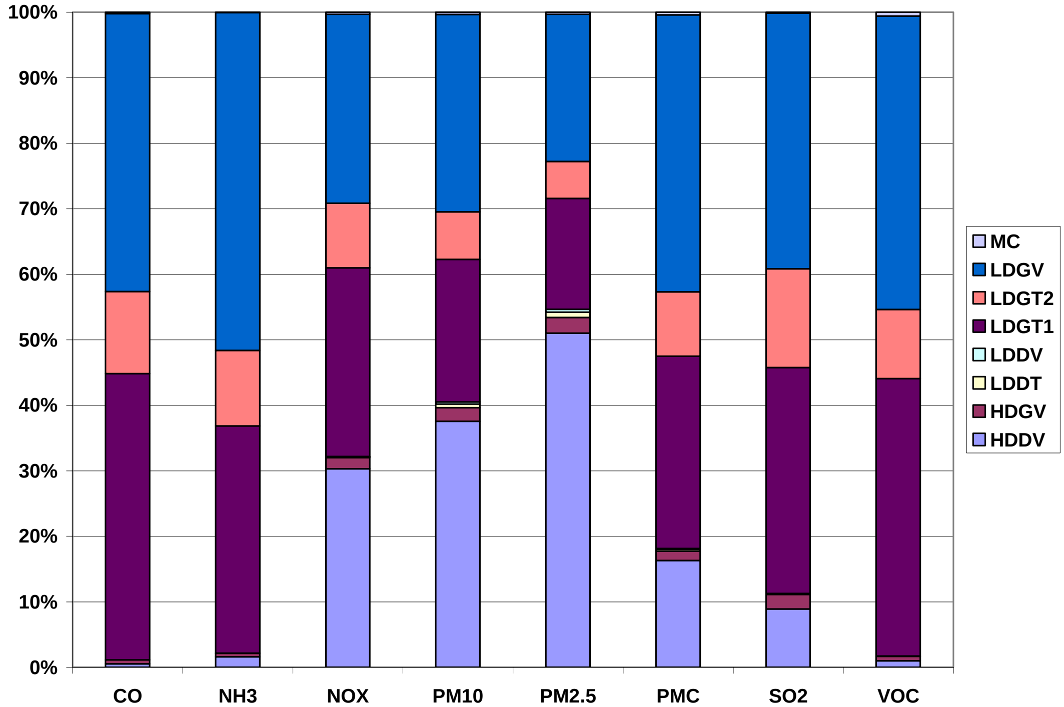

Figure 4-17. Vehicle Class Percent Contributions to 2008 Canyon County Annual Emissions

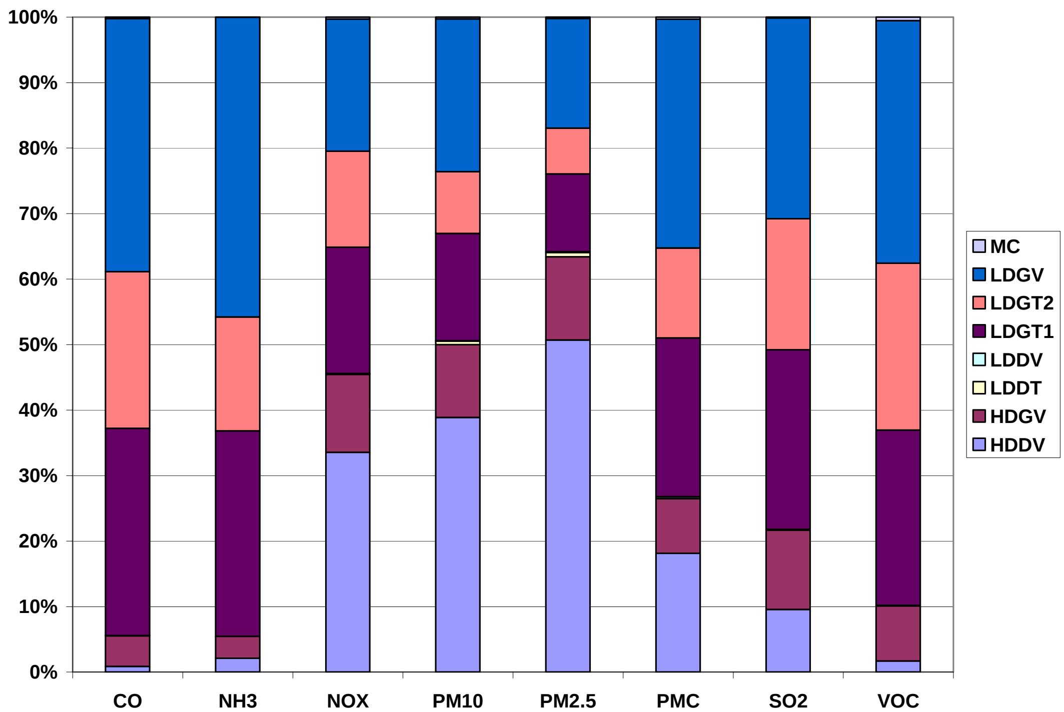

Figure 4-18. Vehicle Class Percent Contributions to 2008 Elmore County Annual Emissions

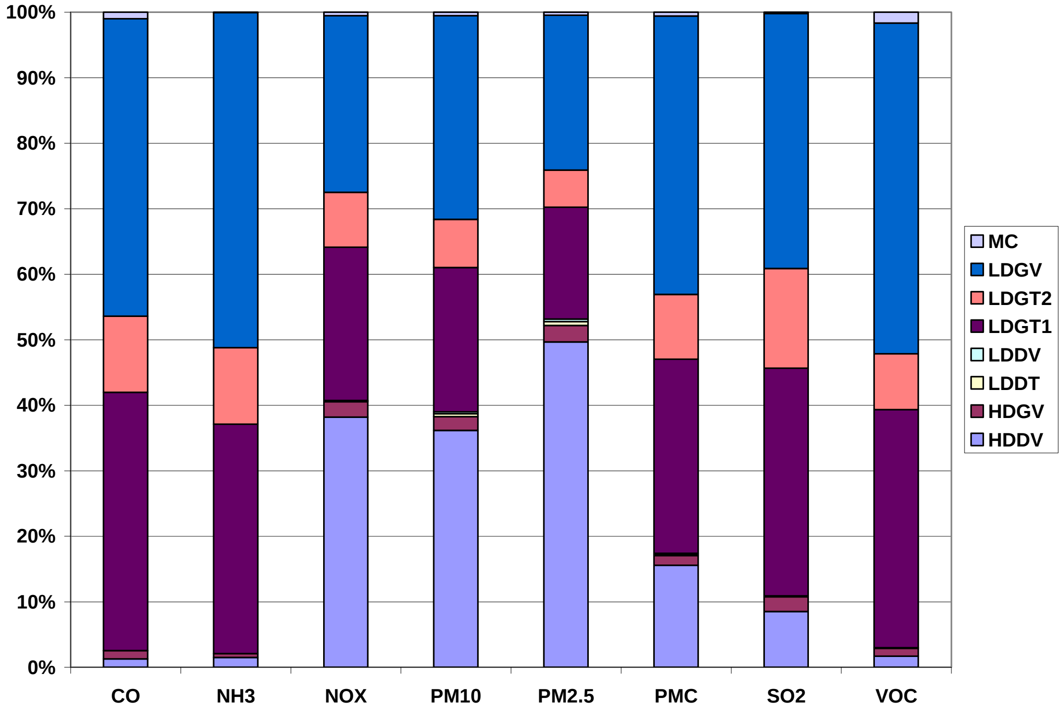

Figure 4-19. Vehicle Class Percent Contributions to 2008 Ada County Average Ozone Season Day Emissions

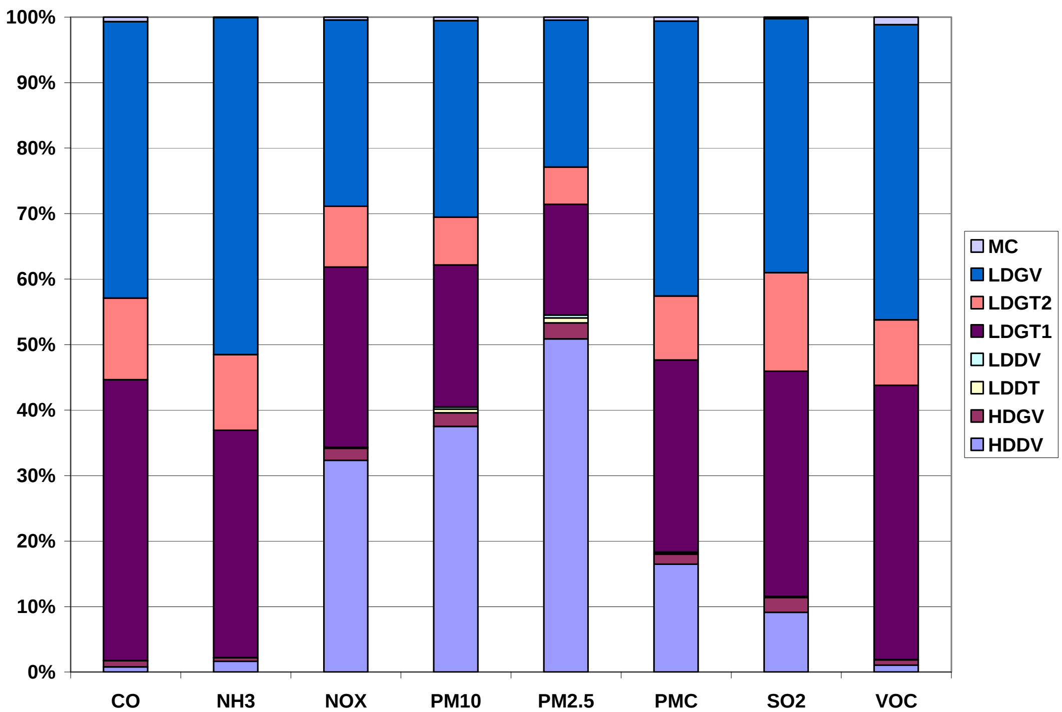

Figure 4-20. Vehicle Class Percent Contributions to 2008 Canyon County Average Ozone Season Day Emissions

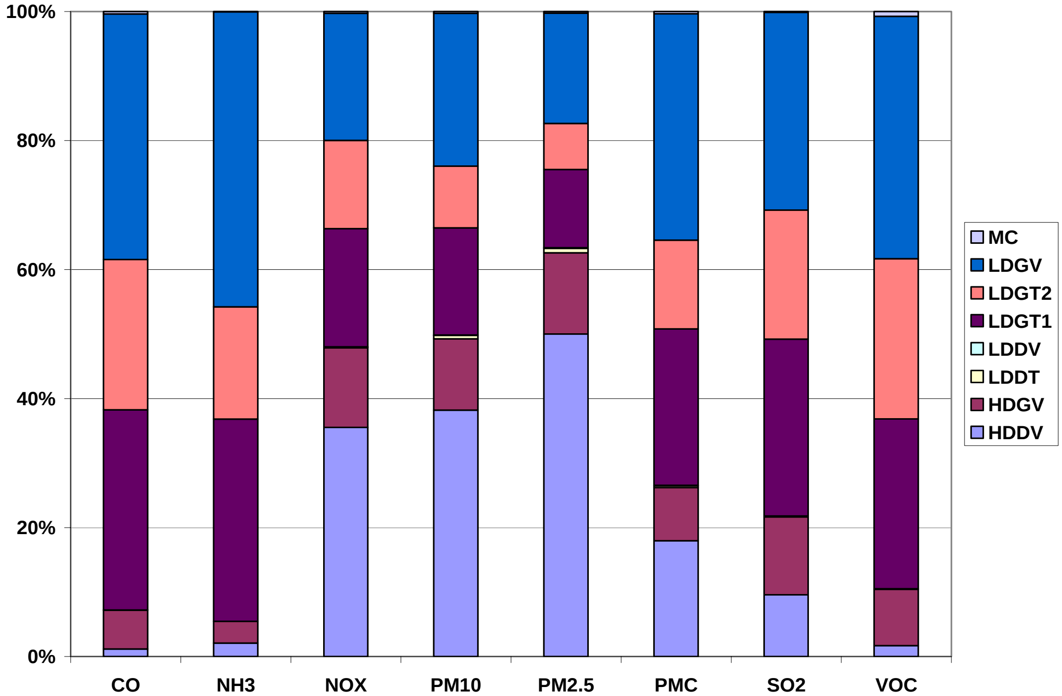

Figure 4-21. Vehicle Class Percent Contributions to 2008 Elmore County Average Ozone Season Day Emissions

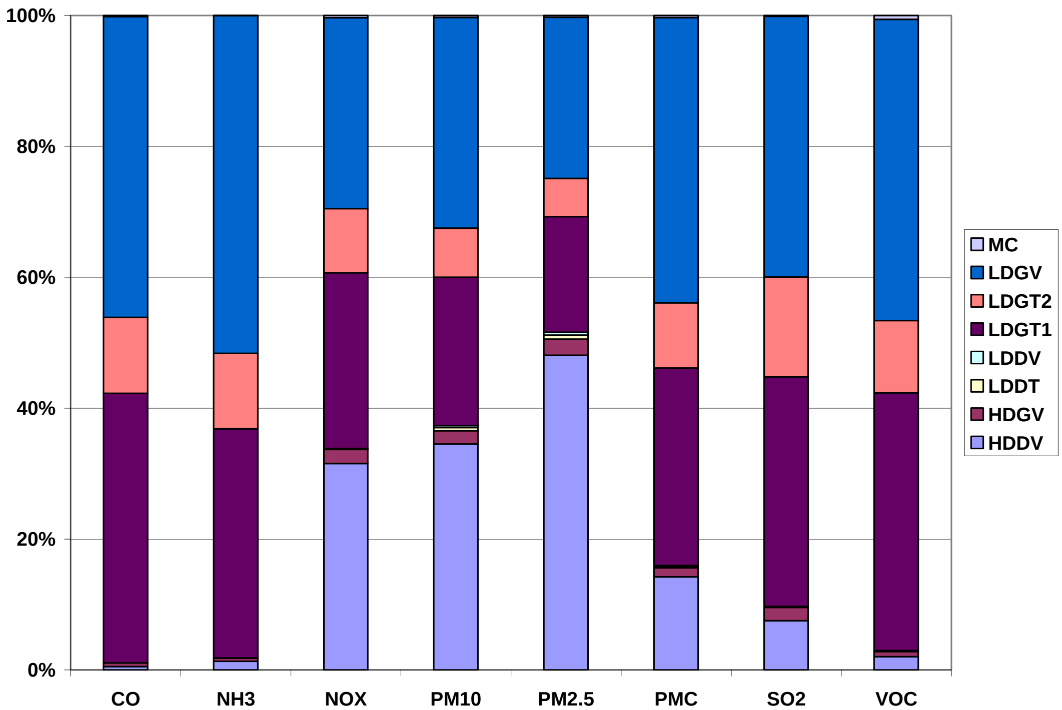

Figure 4-22. Vehicle Class Percent Contributions to 2008 Ada County Average PM Season Day Emissions

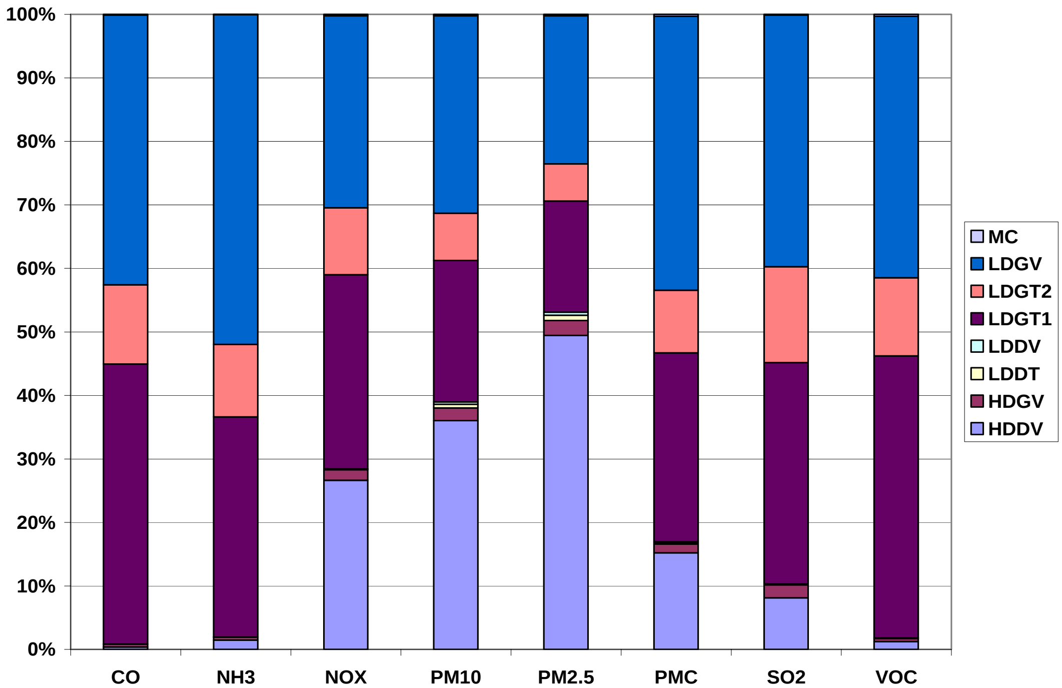

Figure 4-23. Vehicle Class Percent Contributions to 2008 Canyon County Average PM Season Day Emissions

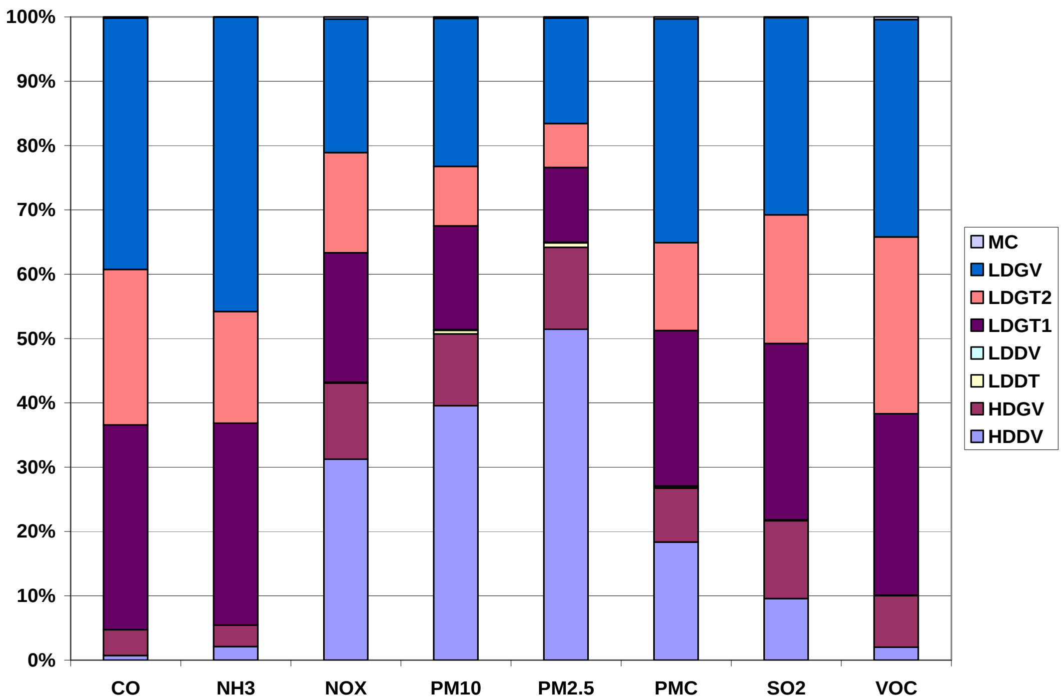

Figure 4-24. Vehicle Class Percent Contributions to 2008 Elmore County Average PM Season Day Emissions

4.4 QA/QC Procedures

DEQ implemented ENVIRON's quality assurance (QA) tool to generate a series of detailed graphs showing different aspects the CONCEPT-MV results for seven consecutive days in each of four months and years modeled. ENVIRON reviewed all 12 CONCEPT-MV QA spreadsheets by checking that emissions comparisons by day of week and hour of day track with temperature and VMT temporal changes by day of week, and that all emissions were in alignment with expectations based on hundreds of other CONCEPT-MV simulations performed and reviewed by ENVIRON. ENVIRON also reviewed all DEQ run scripts and log files. Finally, ENVIRON generated an additional QA comparison of emissions between the four months and three years with detail by emissions mode as part of Task 8. The results of ENVIRON's review of DEQ CONCEPT-MV work are detailed in a separate technical memorandum (DenBleyker et al., 2010), provided in Appendix E.

For the Elmore County analysis, ENVIRON staff performed QA on all emissions estimates by a thorough review of the emissions results for annual, average ozone season day, and average PM season day.

5.0 2008 NONROAD MOBILE SOURCE EMISSIONS INVENTORY

Nonroad mobile sources encompass a wide variety of equipment types that either move under their own power or are capable of being moved from site to site. Nonroad mobile equipment sources, not licensed or certified as highway vehicles, are defined as those that move or are moved within a 12 month period and are covered under the U.S. EPA's emissions regulations as nonroad mobile sources. There are three types of nonroad mobile sources: nonroad equipment, locomotives, and aircraft

5.1 Emission Calculation Methodologies – Annual

The methodologies used to calculate annual nonroad mobile source emissions for the 2008 base year are presented in this section. Methods pertaining to nonroad equipment, aircraft, and locomotives are discussed.

5.1.1 Nonroad Equipment

The largest group of nonroad mobile sources are nonroad equipment that are estimated with the NONROAD2008 model (U.S. EPA, 2009b). The NONROAD model estimates emissions from nonroad equipment in the categories shown below; Treasure Valley emissions from all listed categories but airport ground support equipment were estimated using the NONROAD model.

- Agricultural equipment (e.g., tractors, combines, balers, etc.)
- Airport ground support (e.g., terminal tractors, etc.)
- Construction equipment (e.g., graders, backhoes, etc.)
- Industrial and commercial equipment (e.g., forklifts, sweepers, etc.)
- Recreational vehicles (e.g., all-terrain vehicles, off-road motorcycles, etc.)
- Residential and commercial lawn and garden equipment (e.g., lawnmowers, leaf blowers, snow blowers, etc.)
- Logging equipment (e.g., shredders, large chain saws, etc.)
- Recreational equipment (e.g., off-road motorbikes, snowmobiles, etc.)
- Recreational marine vessels (e.g., power boats, etc.).

Data Collection

Key inputs for determining nonroad equipment emissions using the NONROAD model are equipment population and activity data, and allocation factors. Nonroad equipment population by county is estimated in the model by geographically allocating national engine population through the use of econometric indicators, such as construction valuation. U.S. EPA encourages state and local agencies to develop local data from surveys, but such work is expensive and difficult to carry out, and only a few agencies in the country have done so. However, some local information for Idaho populations was available and these data were used to update the NONROAD model data as described below.

Pleasure Craft and Recreational Equipment Population

Pleasure craft and recreational equipment population data were collected from the Idaho Department of Parks and Recreation (IDPR, 2009a; IDPR, 2009b). The state registration data were assumed to be equal to the state total pleasure craft and recreational equipment population. Although county-level registration data were available, county-level data were not used for county allocation purposes. Registration is not considered to be a suitable surrogate for pleasure craft or recreational equipment activity because these types of equipment are often used in counties other than where they are registered. The current U.S. EPA NONROAD allocation method uses water surface area for pleasure craft and the number of RV parks and recreational camps (NAICS code 72121X) from *County Business Patterns* because they are considered to be better indications of actual usage in each area.

Table 5-1 shows a comparison of NONROAD model default and Parks and Recreation derived by-county population estimates for 2008.

Table 5-1. 2008 Pleasure Craft and Recreational Equipment Populations

	NONROAD Default			Revised		
Equipment Type	**Ada**	**Canyon**	**Elmore**	**Ada**	**Canyon**	**Elmore**
Pleasure Craft						
Inboards	94	242	396	100	256	420
Outboards	379	976	1599	412	1060	1737
Personal watercraft	51	132	216	56	143	235
Recreational Equipment						
All terrain vehicles	12539	1567	3135	10113	1264	2528
Motorcycles: off-road	3033	379	758	3093	387	773

One potential source of double-counting could not be eliminated in the recreational marine data. The Idaho Department of Parks and Recreation does not make a distinction in its boat registrations for boats that are completely non-motorized (i.e., sailboats with no on-board engines). Although these boats do not contribute to emissions, there was no way to determine the fraction of the registered boats that fit this category. It was assumed that these non-motorized sailboats comprise a negligible portion of the recreational marine population.

Agricultural Equipment Population

Agricultural equipment population estimates obtained from the *2007 Census of Agriculture* (USDA, 2009) were used to modify the NONROAD default population files. Table 5-2 shows the NONROAD model default and revised agricultural equipment populations. Given the large differences in agricultural tractor population estimates between the NONROAD model and the *Census of Agriculture*, it is important to note that the *Census of Agriculture* statistics may not be fully compatible with the NONROAD model activity estimates (hours per year). NONROAD equipment population estimates may consider only those pieces of equipment that are active, while the *Census of Agriculture* counts all equipment types including those pieces of equipment that are rarely used. In the NONROAD model, agricultural equipment population estimates are derived by allocating the nationwide population to the state level according to the fraction of harvested cropland within each state; statewide population is then allocated to the county level using the same metric. The advantage of using the *Census of Agriculture* is that it contains actual population estimates for specific types of agricultural equipment in each county, as opposed to the NONROAD model, which relies on the scaling of nationwide data to the county level.

Table 5-2. NONROAD Model Default and Revised Agricultural Equipment Populations

Equipment Type	NONROAD Default			Revised		
	Ada	Canyon	Elmore	Ada	Canyon	Elmore
Agricultural Equipment						
2-Wheel tractors	1	4	2	14	23	4
Agricultural tractors	320	971	482	1921	4335	878
Combines	65	196	97	59	201	34

Agricultural Equipment Temporal Profile

Areas of harvested crop acreage and crop budgets were obtained from the National Agricultural Statistics Service (NASS) (NASS, 2009a; NASS, 2009b). This information was used to develop the monthly agricultural equipment usage profile shown in Figure 5-1. Similar to the default profile, the local profile shows high activity for agricultural equipment in the summer, and it also incorporates higher activity in spring and fall months due to planting and harvesting operations which occur during these seasons.

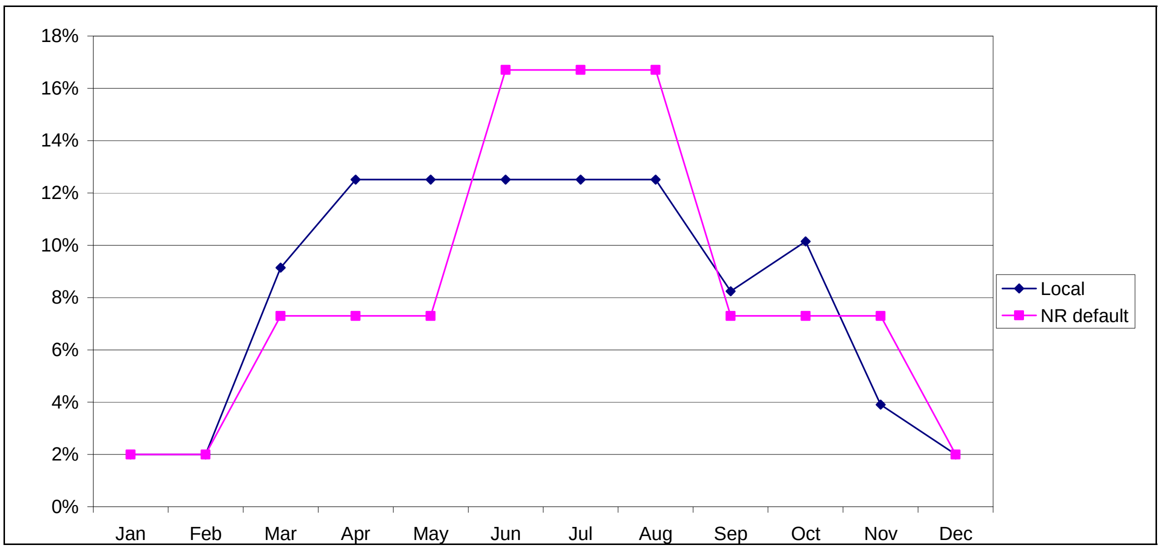

Figure 5-1. Local Off-Road Agricultural Equipment Monthly Temporal Profile

Construction Equipment Temporal Profile

Telephone interviews were conducted with municipal government staff located within the inventory domain with knowledge of various types of construction (McCain, 2010; Winterfeld, 2010; Walter, 2010; Chase, 2010; Girard, 2010). Based on employee input, local construction equipment monthly temporal profiles were estimated as shown in Figure 5-2. Similar to the default profile, the local profile shows high activity for construction equipment in the summer, and it incorporates higher activity in the late spring months relative to the default profile.

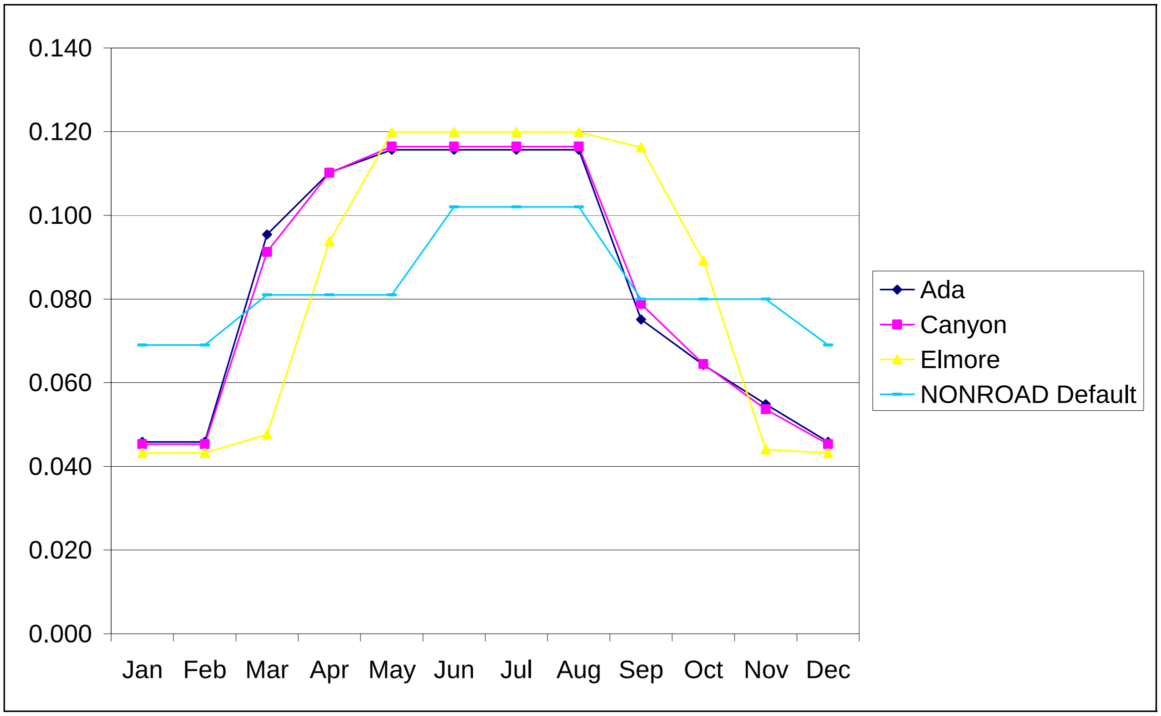

Figure 5-2. Local Construction Equipment Monthly Temporal Profile

Lawn and Garden Equipment Temporal Profiles

Lawn and garden equipment temporal profiles were developed using a methodology similar to what was applied to develop lawn and garden equipment temporal profiles for the Lake Michigan Air Directors Consortium (ECR, 2005). Lawn and garden equipment was divided into four usage associations: lawn-related, soil-related, leaf-related, and wood-related, the details of these usage associations are shown in Table 5-3.

Staff from the City of Boise Park and Recreational Service Department (Woodward, 2010; Teddicken, 2010), Ada County Highway District (Mills, 2010) and the City of Nampa Parks (Moran 2010) were contacted regarding monthly temporal profiles for the usage of each of these types of equipment. Based upon these local data, local lawn and garden equipment seasonal usage profiles were estimated as shown in Figures 5-3 and 5-4. The NONROAD default temporal profile is a single profile applied to all types of lawn and garden equipment and shows the highest activity in the summer and relatively lower activity in the spring and fall and very little activity in the winter. Local data indicated that lawn-related equipment usage was highest in the summer, as expected, with activity in the spring slightly higher than activity in the autumn and very low activity in the winter. For soil-related equipment, the highest activity was associated with the spring and fall due to activities such as planting and plant removal which occur during these seasons. Wood-related equipment activity was estimated to be the highest in the spring due to wood cutting activity that occurs during this season.

Table 5-3. Lawn and Garden Equipment Temporal Profile Groupings

Equipment Type	Usage Association
Front mowers	Lawn
Lawn & garden tractors	
Lawn mowers	
Other lawn & garden equipment	
Rear engine riding mowers	
Trimmers/edgers/brush cutters	
Leafblowers/vacuums	Leaf
Commercial turf equipment	Soil
Rotary tillers < 6 HP	
Chain saws < 6 HP	Wood
Chippers/stump grinders	
Shredders < 6 HP	
Wood splitters	

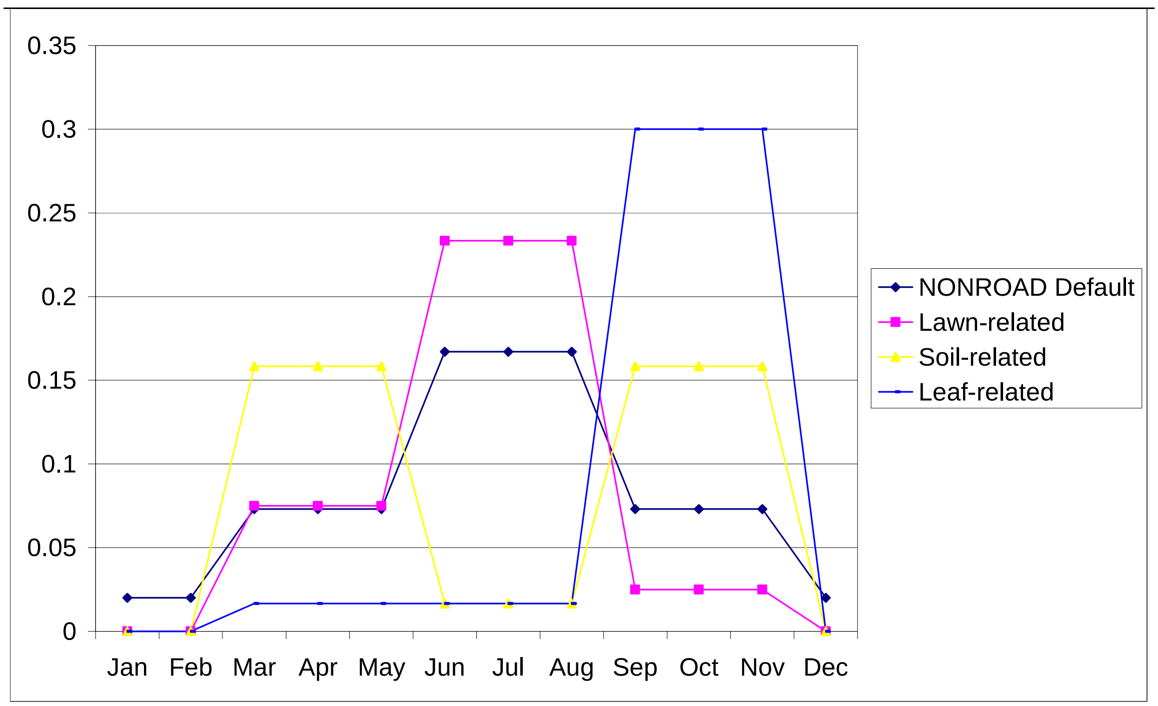

Figure 5-3. Local Lawn-, Soil-, and Leaf-Related Lawn and Garden Equipment Monthly Temporal Profiles

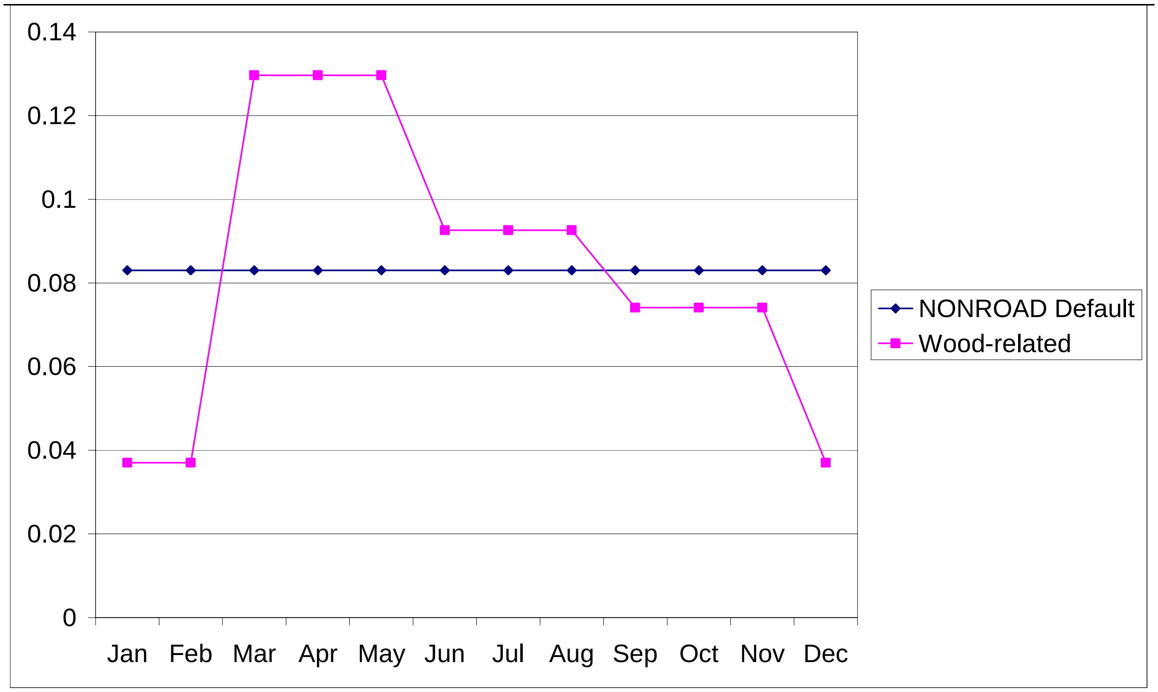

Figure 5-4. Local Wood-Related Lawn and Garden Equipment Monthly Temporal Profile

Emission Calculation Methodology

In order to incorporate seasonal changes in climate and fuels, annual emissions were estimated by running the NONROAD model for each of the four seasons, then summing the seasonal emissions to generate annual emissions. Seasonal average maximum, minimum, and mean temperatures were based on period of record monthly averages from the Western Regional Climate Center for the following stations: Boise WSFO Airport (Ada County), Nampa Sugar Factory (Canyon County), and Mountain Home (Elmore County) (WRCC, 2009). Gasoline Reid vapor pressure (RVP) consistent with on-road MOBILE6 inputs by county and season are shown in Table 5-4. Gasoline was assumed to have a fuel sulfur content of 30 parts per million, consistent with on-road gasoline, while diesel fuel was assumed to have a fuel sulfur content of 500 parts per million per the federal Tier 4 nonroad diesel rule.

Table 5-4. 2008 Gasoline RVP (psi) by Season

Season	Ada County	Canyon County	Elmore County
Winter	15	15	15
Spring	15	15	13.5
Summer	8.6	8.6	9
Autumn	8.6	8.6	11.5

Annual base year 2008 nonroad equipment emissions are shown in Table 5-5 and Table 5-6 by county and equipment type, respectively. A majority of the nonroad equipment emissions for all pollutants were emitted in Ada County. Like most nonroad emission inventories, the primary source of VOC and CO emissions was lawn and garden equipment which is primarily made up of gasoline fueled equipment. The highest contributors to NO_x, PM_{10}, $PM_{2.5}$, SO_2, and NH_3 emissions were agricultural and construction equipment, which are primarily diesel-fueled equipment.

Table 5-5. 2008 Annual Nonroad Equipment Emissions by County

County	VOC	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	NH_3
Annual Total (tons/year)							
Ada	1,946	23,923	2,402	236	226	66	2.5
Canyon	656	7,345	1,515	147	142	44	1.4
Elmore	316	1,566	328	35	34	9	0.3
Total	**2,918**	**32,835**	**4,245**	**418**	**402**	**119**	**4.2**

Table 5-6. 2008 Annual Nonroad Equipment Emissions by Equipment Type (Ada, Canyon, and Elmore Counties Combined)

Category	VOC	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	NH_3
Annual Total (tons/year)							
Agricultural Equipment	146	1,040	1,254	130	126	38	1.0
Commercial Equipment	343	6,766	240	21	20	5	0.4
Construction and Mining Equipment	284	2,326	1,919	171	166	64	1.8
Industrial Equipment	141	2,336	552	21	20	8	0.2
Lawn and Garden Equipment	1,162	17,215	214	52	48	3	0.7
Logging Equipment	4	38	7	1	1	0	0.0
Pleasure Craft	261	829	35	5	4	0	0.1
Railroad Equipment	1	12	5	1	1	0	0.0
Recreational Equipment	576	2,273	19	17	16	0	0.1
Underground Mining Equipment	0	0	0	0	0	0	0.0
Total	**2,918**	**32,835**	**4,245**	**418**	**402**	**119**	**4.2**

5.1.2 Aircraft

Base year 2008 emissions from aircraft and associated equipment (i.e., auxiliary power units [APU] and airport ground support equipment [GSE], for 2008 were obtained from work performed to develop U.S. EPA's 2008 National Emissions Inventory (NEI2008). Activity data for aircraft emissions are landing-takeoff cycles (LTOs), and emission factors are primarily from the Federal Aviation Administration (FAA) Emissions and Dispersion Modeling System (EDMS).

The FAA EDMS model combines specified aircraft and activity levels with default emissions factors in order to estimate annual inventories for a specific airport. Aircraft activity levels in EDMS are expressed in terms of LTOs, which consist of the four aircraft operating modes: taxi and queue, take-off, climb-out, and landing. Default values for the amount of time a specific aircraft spends in each mode, or the time-in-modes (TIMs), are coded into EDMS.

Aircraft emissions were estimated for four aircraft categories:

- Air carriers (i.e., larger turbine-powered commercial aircraft with at least 60 seats or 18,000 lbs payload capacity);
- Air taxis (i.e., commercial turbine or piston-powered aircraft with less than 60 seats or 18,000 lbs payload capacity);
- General aviation aircraft (i.e., small piston-powered, non-commercial aircraft); and
- Military aircraft.

Airport GSE includes equipment such as fuel trucks, cabin service truck, baggage belt loaders, and pushback tugs and tractors. Auxiliary power units are used to power ventilation, cooling, and heating systems when an aircraft's engine is off and to provide power to start the main aircraft engines.

Necessary LTO activity and emissions data in database format, as well as aircraft emissions documentation (ERG, 2010) were obtained from U.S. EPA's NEI2008 website (U.S. EPA, 2010b).

The Boise airport was the only airport in the study region for which EDMS was run with airport specific activity data. For all other airports, LTO data were applied to average LTO time-in-mode and emission factors. Additional calculations were performed to estimate ammonia emissions, which were not included in the NEI2008 data. For ammonia, air carriers and military aircraft were assumed to be dominated by turbine-powered aircraft running lean, thus producing a negligible amount of ammonia. For general aviation and air taxi piston engine aircraft LTOs, ammonia emissions were estimated using a fleet-average fuel consumption rate from the EDMS data for piston engines, operational mode-specific fuel flow rates weighted by the typical time spent in each mode, average hours of operation estimated from FAA data, and a grams per gallon emission factor for non-catalyst light-duty gasoline engines.

Airport GSE and APU emissions were estimated for the NEI2008 by using EDMS activity defaults associated with commercial aircraft LTOs and time-in-mode. Airport GSE emission factors in EDMS are derived from EPA's NONROAD2005 model. The main change to NONROAD2008 emission rates was incorporating recreational marine diesel and spark ignition engine standards; airport ground equipment emission rates did not undergo major changes. The NONROAD model estimates county level 2008 airport GSE populations by growing historic national population to 2008, and allocating national population according to 2002 National Emission Inventory (NEI2002) NO_x emissions. The NEI2008 airport GSE emission estimates were used because these emissions were based on actual 2008 commercial aircraft data rather than estimates based on growth projections and allocations used in the NONROAD model.

Aircraft associated emissions (including aircraft, APUs, and airport GSE) are presented by airport in Table 5-7 and graphically by emission source in Figure 5-5. Consistent with LTO activity distribution, Treasure Valley 2008 aircraft associated emissions were dominated by a few major airports: Boise Air Terminal/Gowen Field, Caldwell Industrial, and Nampa Muni. Together, these airports accounted for 80 percent or more of the aircraft emissions for all pollutants, except for NH_3. NO_x and SO_2 emissions are dominated by commercial aircraft, while VOC, CO, PM_{10}, $PM_{2.5}$, and NH_3 emissions are primarily from general aviation aircraft.

5.1.3 Locomotives

Locomotive emissions are a significant source of NO_x and PM emissions. The overwhelming majority of locomotive activity in the United States is from a handful of Class 1 freight railways, and only one of these, Union Pacific, operates in the Treasure Valley study region.

Railroads operate two types of locomotives – line-haul or switching. Line-haul locomotives pull trains over the main line rail system primarily between yards, but may also serve individual customers. Switching locomotives assemble and disassemble trains, and serve individual customers usually with small trains or individual cars. The line-haul locomotives are usually not based at any individual rail yard, and so can operate over a wide region, even across the entire country. Switching locomotives are based at individual rail yards for a longer period (i.e., 6 months or longer) and therefore operate close to that rail yard.

Table 5-7. 2008 Aircraft Associated Emissions by Airport (Tons/Year)

Facility Name	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	NH_3
Ada County							
Boise Air Terminal/Gowen Field	64.573	208.339	856.022	12.532	9.991	21.498	0.0111
Boise Plaza	0.080	0.005	0.847	0.017	0.012	0.001	0.0000
Green Acres	1.486	0.086	15.810	0.311	0.215	0.013	0.0006
Larkin	1.142	0.066	12.151	0.239	0.165	0.010	0.0005
Nampa Valley	0.080	0.005	0.847	0.017	0.012	0.001	0.0000
Peaceful Cove	1.371	0.079	14.590	0.287	0.198	0.012	0.0006
St. Alphonsus	0.080	0.005	0.847	0.017	0.012	0.001	0.0000
St. Luke’s Boise Medical Center	0.080	0.005	0.847	0.017	0.012	0.001	0.0000
Young	0.080	0.005	0.847	0.017	0.012	0.001	0.0000
Ada County Total	**68.97**	**208.59**	**902.81**	**13.45**	**10.63**	**21.54**	**0.01**
Canyon County							
Caldwell Industrial	39.367	2.351	433.518	8.590	5.927	0.352	0.0170
Hubler Field	2.908	0.167	30.951	0.610	0.421	0.026	0.0012
Mercy	0.080	0.005	0.847	0.017	0.012	0.001	0.0000
Nampa Municipal	30.940	1.785	329.965	6.502	4.487	0.274	0.0132
Parma	0.960	0.055	10.212	0.201	0.139	0.009	0.0004
Sky Ranch North	1.075	0.062	11.436	0.225	0.155	0.010	0.0005
Sky Ranch South	1.075	0.062	11.436	0.225	0.155	0.010	0.0005
Snake River Skydiving	1.075	0.062	11.436	0.225	0.155	0.010	0.0005
Symms	0.960	0.055	10.217	0.201	0.139	0.009	0.0004
Whelan’s	0.080	0.005	0.847	0.017	0.012	0.001	0.0000
Canyon County Total	**78.52**	**4.61**	**850.87**	**16.81**	**11.60**	**0.70**	**0.03**
Elmore County							
Atlanta	0.254	0.015	2.703	0.053	0.037	0.002	0.0001
Coyote Run	0.850	0.049	9.049	0.178	0.123	0.008	0.0004
Dorothy Roeber Memorial	0.080	0.005	0.847	0.017	0.012	0.001	0.0000
Elmore Medical Center	0.080	0.005	0.847	0.017	0.012	0.001	0.0000
Glenns Ferry Municipal	0.113	0.007	1.201	0.024	0.016	0.001	0.0000
Graham USFS	0.254	0.015	2.703	0.053	0.037	0.002	0.0001
Health Center	0.080	0.005	0.847	0.017	0.012	0.001	0.0000
Mountain Home AFB	3.601	1.464	38.188	0.757	0.526	0.112	0.0015
Mountain Home Municipal	5.613	0.373	68.615	1.370	0.946	0.054	0.0024
P and R Field	1.944	0.112	20.688	0.408	0.281	0.017	0.0008
Pine	0.395	0.023	4.205	0.083	0.057	0.004	0.0002
Red Baron Airpark	1.996	0.115	21.245	0.419	0.289	0.018	0.0009
Smith Prairie	0.339	0.020	3.604	0.071	0.049	0.003	0.0001
South Fork Ranch	3.544	0.204	37.715	0.743	0.513	0.031	0.0015
Weatherby USFS	0.212	0.012	2.253	0.044	0.031	0.002	0.0001
Elmore County Total	**19.35**	**2.42**	**214.71**	**4.25**	**2.94**	**0.26**	**0.01**
Treasure Valley Total	**166.84**	**215.62**	**1968.38**	**34.52**	**25.17**	**22.49**	**0.06**

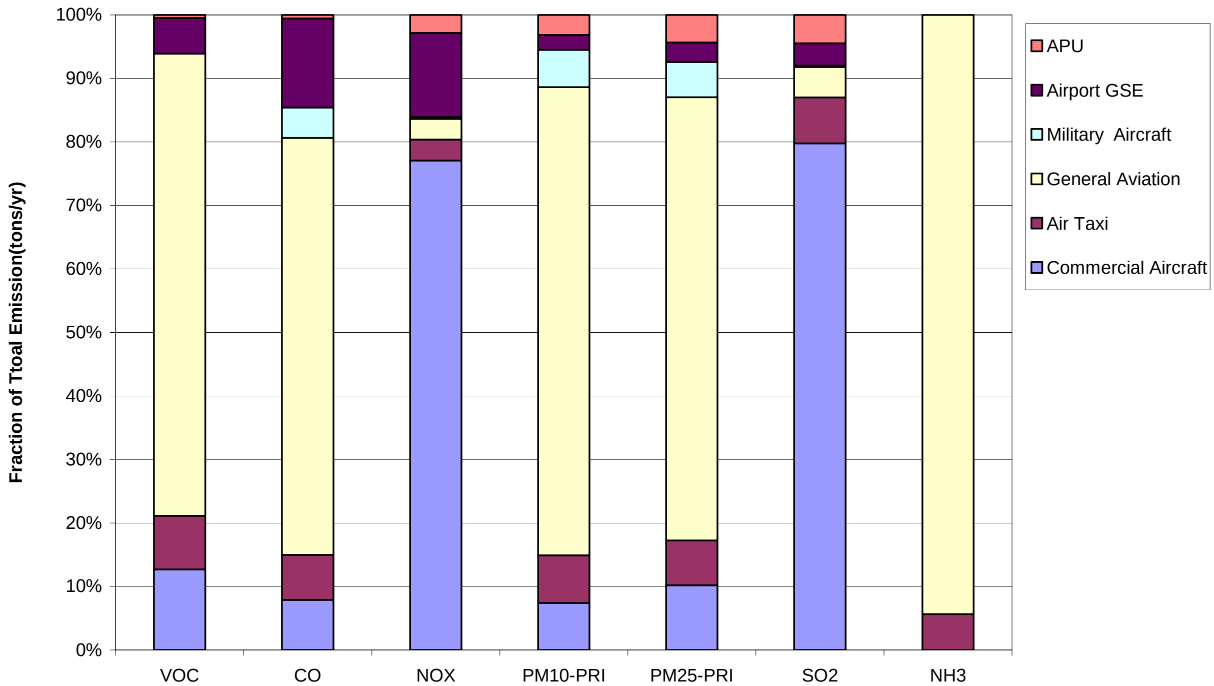

Figure 5-5. 2008 Aircraft Associated Emissions Contributions

Data for the Idaho Treasure Valley study region was gathered from the railroads operating within the region and public sources. The line-haul activity data were obtained through the Federal Railroad Administration (FRA) with the permission of the Class 1 railroad (Union Pacific) in the region. Smaller railroads received a data request for 2008 line-haul and switching locomotive activity estimates. Switching data was gathered by requesting for the typical shift schedules within each rail yard. The activity data gathered is presented in the sections below along with the procedures used to estimate emissions for 2008 and future years.

Line-haul

The activity data used for the line haul emission calculations were gathered from the FRA and through data requests. The primary activity data collected under this program are gross tonnage (combines the weight of the locomotives, cars, and freight) that are combined with the rail link length to estimate gross ton-miles of freight movements (Wright, 2010). Permission was obtained from the Class 1 railroad Union Pacific to release the railroad specific activity data for 2008 within the study domain. Public databases of rail activity for the National Transportation Atlas Database only provide link-level mainline activity in activity ranges (BTS, 2009), but the FRA data gathered specific activity for the purpose of estimating emission inventories. The FRA data was developed as a result of the request of the Eastern Regional Technical Advisory Committee Rail Subgroup, a group of state air quality agencies, to provide accurate rail activity estimates.

The FRA dataset attributes are described in Table 5-8. The FRA dataset provided information about rail links and nodes in the form of ArcGIS shapefiles that provide attribute information and location for all rail links at a 1:100,000 scale and was designed for use in regional network analysis applications. Rail links were spatially defined polylines that contain a large amount of attributes describing a link. The link data relevant to the project included the rail line spatial descriptions, as well as the specific activity. The node descriptions were latitude and longitude point estimates with actual sinuous link length between nodes. The rail owner field defined the primary owner and other railroads that operate on the link. The link status included what type of track (i.e., main line, siding, or yard trackage), as well as whether the link is in operation or abandoned. The FRA dataset is more precise than the National Transportation Atlas Data public databases that only provide ranges of gross ton activity rather than the specific values used in this report.

Table 5-8. FRA Rail Link Definitions

Data Field	Description
FRA Link ID	Numeric identifier
Link Node Descriptions	Spatial description
Length	Actual length of link
State	
County	
Rail Owner	Primary and secondary
Link Status	Operational, main line, etc.
Freight Density	Specific annual gross tonnage

Rail ownership was described within the FRA shapefiles in three separate fields. The primary owner was assumed to be the first, and most populated, rail owner provided in the dataset. Link status provided a code value describing whether the rail link was abandoned, an active mainline, or an active non-mainline. Upon review of the active mainline and non-mainline links, it was determined that active mainline links were representative of line-haul tracks and non-mainline links were representative of switch or siding tracks. In addition to the link route data, the FRA link nodes file spatially described the beginning and end point coordinates of every link. The detailed FRA freight tonnage data were cross-referenced with the mainline link route data. Figure 5-6 shows the network densities within the study domain.

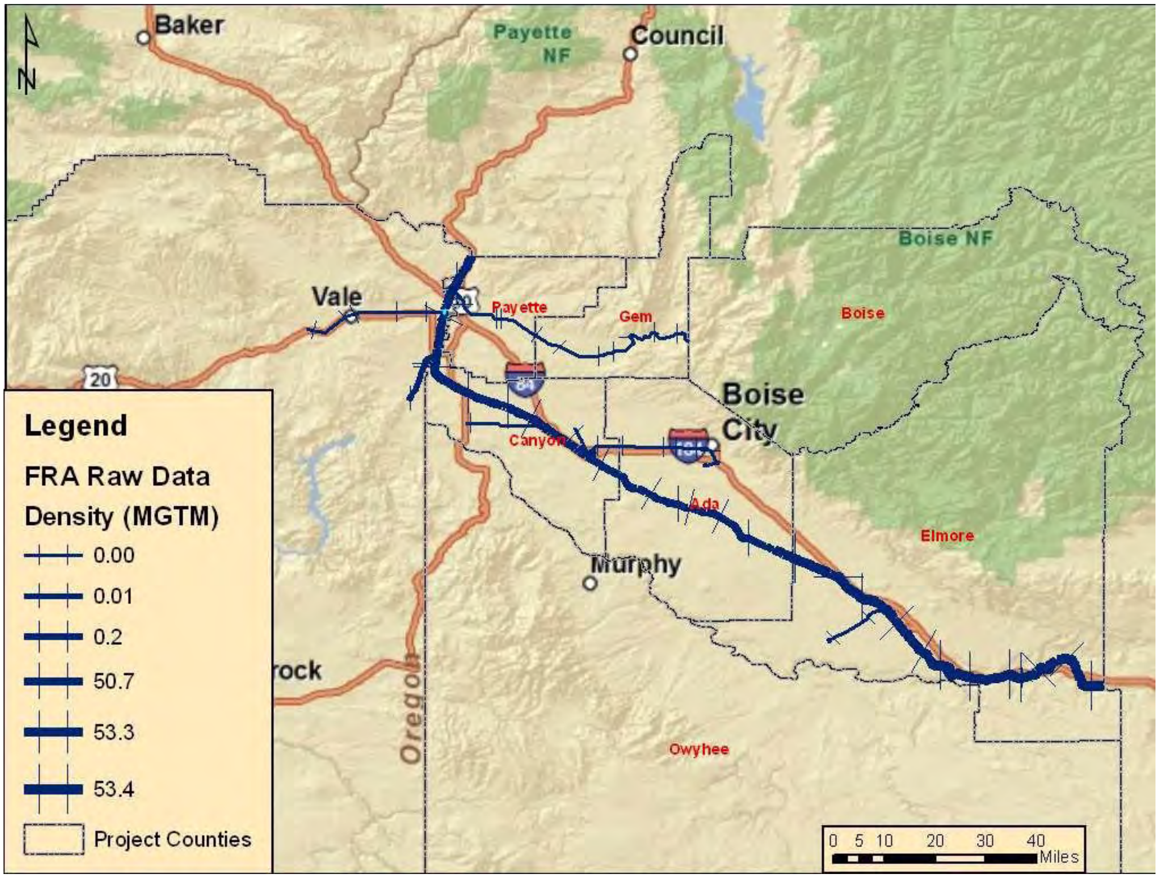

Figure 5-6. FRA Line-Haul Freight Density

The FRA data did not include the Idaho Northern Pacific Railroad (INPR) shortline activity that occurs between Boise and Nampa. INPR activity data were obtained through a data request to the company (Olmanson, 2010). The data received from INPR is provided in Table 5-9 below.

Table 5-9. Idaho Northern Pacific Railroad Activity Data

INPR Data Request	
Locomotive model	GP30s
Train count	1 train
Locomotives per train	2 locomotives
Weekly activity	5 days/week
Daily activity	9 hours/day
Fuel consumption[a]	226 gal/day
Annual fuel consumption	44,070 gal/year

[a] Fuel consumption based on 24 hours of operation per day

Line-haul

The 2008 line-haul emissions were estimated using the methodology described in the U.S. EPA final emission standards (U.S. EPA, 2009c). This method converted rail gross ton-miles to fuel consumption using railroad freight efficiency to estimate fuel consumption for each rail link. The U.S. EPA guidance provided fleet averaged emission factors in terms of grams per gallon. This calculation is as follows:

$$E = FT \times M \times FE \times EF$$

Where:

E	=	emissions (grams);
FT	=	freight tonnage (tons);
M	=	rail link mileage (miles);
FE	=	freight efficiency (gallons/ton-mile); and
EF	=	emission factor (grams/gallons)

The U.S. EPA final emission standards included an analysis of the expected benefit of normal fleet turnover and the additional benefit of the U.S. EPA rule. The emission standards included both new engine and existing equipment retrofit standards. Existing Tier 0, 1, and 2 engines will be subject to retrofit at the time of rebuild; so the engines will be rebuilt gradually throughout their remaining useful life. The emission standards and implementation dates are provided in Tables 5-10 and 5-11 for line-haul and switching locomotives; the emission standard values depend primarily upon the duty cycle (i.e., a schedule of time in modes).

The U.S. EPA final emission standards forecasted average emission factors for hydrocarbons (HC), carbon monoxide (CO), nitrogen oxides (NO_x), and particulate matter (PM) in terms of grams per gallon for the calendar years from 2006 to 2040. These U.S. EPA forecasts included the impact of new engine emissions standards and the expected rates of new locomotive purchases and older locomotive retirements.

Table 5-10. Locomotive Emission Standards for Line-haul (Duty Cycle) Engines

Emission Standard	Applicable Year	HC (g/hp-hr)	CO (g/hp-hr)	NO_x (g/hp-hr)	PM (g/hp-hr)
Uncontrolled Emissions	Pre-1973	0.48	1.28	13.0	0.32
Tier 0 – original	1973-2001	1.00	5.0	9.5	0.60
Tier 0 – final[a]	2008/2010	1.00	5.0	8.0	0.22
Tier 1 – original	2002-2004	0.55	2.2	7.4	0.45
Tier 1 – final[a]	2008/2010	0.55	5.0	7.4	0.22
Tier 2 – original	2005	0.30	1.5	5.5	0.20
Tier 2 – final[a]	2010/2013	0.30	1.5	5.5	0.10
Tier 3	2012-2014	0.30	1.5	5.5	0.10
Tier 4[b]	2015	0.14	1.5	1.3	0.03

[a]Retrofit standards at the time of rebuild and phased in as retrofit kit availability.
[b]The Tier 4 NO_x standard can be a 1.4 NO_x + HC standard.

Table 5-11. Locomotive Emission Standards for Switching (Duty Cycle) Engines

Emission Standard	Applicable Year	HC (g/hp-hr)	CO (g/hp-hr)	NO_x (g/hp-hr)	PM (g/hp-hr)
Uncontrolled Emissions	Pre-1973	1.01	1.83	17.4	0.44
Tier 0 – original	1973-2001	2.10	8.0	14.00	0.72
Tier 0 – final[a]	2008/2010	2.10	8.0	11.80	0.26
Tier 1 – original	2002-2004	1.20	2.5	11.00	0.54
Tier 1 – final[a]	2008/2010	1.20	2.5	11.00	0.26
Tier 2 – original	2005	0.60	2.4	8.10	0.24
Tier 2 – final[a]	2010/2013	0.60	2.4	8.10	0.13
Tier 3	2012-2014	0.60	2.4	5.00	0.10
Tier 4[b]	2015	0.14	2.4	1.30	0.03

[a]These are retrofit standards at the time of rebuild and phased in as retrofit kit availability allows.
[b]The Tier 4 NO_x standard can be a 1.3 NO_x + HC standard.

The U.S. EPA forecast emission factors were scaled from the 1999 uncontrolled emission factors (see Table 5-12) on a yearly basis (U.S. EPA, 1997b). The uncontrolled emission factors (g/hp-hr) are shown above in Table 5-10 and the 2008, 2015, and 2023 emission factors (g/gal) are provided in Table 5-13. The forecast emission factors were converted to grams per gallon of fuel using an average of 20.8 horsepower-hours per gallon of fuel for the larger Class 1 railroads and 18.2 horsepower-hours per gallon of fuel for other smaller Class 2/3 railroads as described in the U.S. EPA standards (U.S. EPA, 2009c). The CO emission rates were not predicted to change with the emission controls, so the CO emission rates remain 26.6 grams per gallon for Class 1 and 23.3 grams per gallon for smaller railroads for all calendar years. The SO_2 emission rates were determined by converting the fuel sulfur where the fuel sulfur level was assumed to be 351 ppm for 2008 based on the U.S. EPA standards (U.S. EPA, 2009c) and 15 ppm for 2015 and 2023 based on the implementation schedule for locomotive fuel regulations.

Table 5-12. Locomotive Emission Factors for Calendar Years 1999 and Earlier

Locomotive Type	HC (g/hp-hr)	CO (g/hp-hr)	NO_x (g/hp-hr)	PM (g/hp-hr)	Fuel Consumption (hp-hr/gallon)
Line-Haul[a]	0.48	1.28	13.0	0.32	20.8

[a]Line-haul locomotives over the line-haul duty-cycle.

Table 5-13. Average Line-Haul Locomotive Emission Factors

	Class 1			Class 2/3 Line-Haul		
Year	HC (g/gal)	NO_x (g/gal)	PM (g/gal)	HC (g/gal)	NO_x (g/gal)	PM (g/gal)
2008	9.0	169	5.1	11.7	242	5.7
2015	5.7	129	3.4	11.7	240	5.5
2023	3.0	84	1.9	11.7	223	5.2

In order to derive emission factors in terms of the gross tonnage activity, conversion factors from grams per gallon to grams per gross tonnage were estimated. Fuel usage and gross tonnage by railroad for the entire system-wide activity were obtained from the AAR (AAR, 2009). Table 5-14 presents the average system-wide fuel efficiency as well as the individual system-wide fuel efficiency for the Class 1 railroad operating in the study region. Combining the emission factors in Table 5-13 with the fuel efficiency estimates in Table 5-14, emission factors in units of grams per gross ton-mile (GTM) were developed as shown in Table 5-15.

Table 5-14. Fuel Efficiency by Railroad

Railroad	Fuel Gal/ (GTM)
Average Class 1	0.001020
UP	0.000971

Table 5-15. Class 1 Railroad Emission Factors for 2008

Year	Railroad	HC (g/GTM)	CO (g/GTM)	NO_x (g/GTM)	PM (g/GTM)
2008	Average	0.0092	0.027	0.172	0.0052
2008	UP	0.0087	0.026	0.164	0.0050

The emissions factors from Table 5-15 were applied to the FRA activity data by link and summed by county; the line-haul emissions results are shown in Table 5-16.

Table 5-16. 2008 Line-haul Locomotive Emissions (Tons/Year)

Railroad	County	HC	VOC	CO	NO_x	PM_{10}	SO_2	NH_3
UP	Ada	14.68	15.46	43.43	275.70	8.32	3.06	0.19
	Canyon	17.91	18.86	52.97	336.24	10.15	3.74	0.23
	Elmore	31.11	32.76	92.03	584.18	17.63	6.49	0.40
	Total	74.30	78.23	219.79	1395.13	42.10	15.50	0.96
INPR Shortline	Ada	0.41	0.43	0.82	8.52	0.20	0.004	0.07
	Canyon	0.16	0.16	0.31	3.24	0.08	0.002	0.03
	Total	0.57	0.60	1.13	11.76	0.28	0.01	0.09

Switching

Switching locomotives are used for a variety of tasks. The primary task for switchers is to break and assemble trains and shuttle rail cars around a rail yard; however, switchers also perform short haul duty that includes whole trains, sets of cars, and repositioning equipment along the mainline rail lines. The switching locomotives that reposition or short haul freight along the mainline were captured under the line-haul gross tonnage, so only the in-yard activity was considered for switching locomotive emissions estimates to avoid double counting the activity.

Shift schedules or other estimates of the hours of operation for switching locomotives were requested in order to identify the total engine hours of operation at each yard. In general, typical shifts were eight or twelve hours using one or two locomotives in tandem. The number of hours for each shift was assumed to be the engine operating time; however, this could be an overestimate if the engines have idle reduction devices or operators are encouraged to shut off the engines during inactive periods of the shift.

At any given time, the roster of switching locomotives assigned to a given yard was usually available and was collected as part of the information request. The roster of these locomotives could change from week to week, but in general, a sample of the locomotive roster at any time in 2008 could be considered a relatively constant fleet mix. The reported switching engines ranged from 1,200 to 3,800 rated horsepower. The switching locomotive models were all either Tier 0 or precontrolled with no Tier 1 or 2 models. The data in Table 5-17 represented the switching activity data for the Nampa Yard obtained from the railroad survey.

Table 5-17. Switching Locomotive Activity Data for the Nampa Yard

Number	Days per Week	Days per Year	Hours per Day	Hours per Year
Switcher No. 1	5	260	4.5	1170
Switcher No. 2	5	260	7.5	1950
Switcher No. 3	5	260	8.0	2080
Switcher No. 4	1	52	7.5	390
Switcher No. 5	5	260	7.5	1950

Base emission factors and expected forecasted emission rates for switching locomotives were provided in U.S. EPA documentation (U.S. EPA, 2008) and are shown in Table 5-18.

Table 5-18. Switching Locomotive Emission Factors

Year	HC (g/gal)	CO (g/gal)	NO_x (g/gal)	PM (g/gal)
2008	14.5	27.8	243	5.5
2015	12.6	27.8	215	4.8
2023	9.5	27.8	172	3.7

A daily fuel consumption estimate of 226 gallons of fuel per day was provided by other U.S. EPA locomotive guidance documentation (U.S. EPA, 1992). The provided fuel consumption estimate assumes continuous 24 hour activity resulting in a per hour fuel consumption of 9.42 gallons. Annual fuel consumption can be estimated using the following equation:

$$FC = A \times C$$

Where:

FC = fuel consumption (gallons/year);
A = activity (hours/year); and
C = fuel consumption per hour (9.42 gallons/hour).

The emission factors provided in Table 5-18 were combined with the engine-hours in Table 5-17 and 9.42 gallons per hour average fuel consumption rate to estimate per yard emissions as shown in Table 5-19.

Table 5-19. Estimated Switching Locomotive Emissions in 2008

Year	Fuel Consumption (gal)	HC (tons)	VOC (tons)	CO (tons)	NO_X (tons)	PM_{10} (tons)	SO_2 (tons)	NH_3 (tons)
2008	71,002	0.92	0.96	1.82	18.94	0.45	0.01	0.15

$PM_{2.5}$ emission estimates were estimated based on PM_{10} emission estimates. The percentage of PM_{10} emissions expected to be $PM_{2.5}$ is assumed to be 97% for locomotives (U.S. EPA, 2009c)

In general, the county assignment for the rail yard emissions was straightforward because the switching locomotive activity was specific to a particular yard. However, Nampa operations could span up to two counties since most of the Nampa tracks are in Canyon County where the emissions were allocated, but the tracks may also reach into Ada County.

The 2008 annual emissions by source category are provided in Table 5-20.

Table 5-20. 2008 Annual Locomotive Emissions by Source Category

SCC	SCC Description	County	FIPS	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2285002006	Diesel Line Haul Locomotives: Class I operations	Ada	16001	275.70	3.06	15.46	43.43	8.32	8.07	0.19
2285002006	Diesel Line Haul Locomotives: Class I operations	Canyon	16027	336.24	3.74	18.86	52.97	10.15	9.84	0.23
2285002006	Diesel Line Haul Locomotives: Class I operations	Elmore	16039	584.18	6.49	32.76	92.03	17.63	17.10	0.40
2285002007	Diesel Line Haul Locomotives: Class II/III operations	Ada	16001	8.52	0.00	0.43	0.82	0.20	0.19	0.07
2285002007	Diesel Line Haul Locomotives: Class II/III operations	Canyon	16027	3.24	0.00	0.16	0.31	0.08	0.07	0.03
2285002010	Diesel Yard Operations	Canyon	16027	18.94	0.01	0.96	1.82	0.45	0.43	0.15

5.2 Emission Calculation Methodologies – Ozone and PM Season

After the annual nonroad mobile source emissions were estimated using the methodologies described in Section 2.4.1, the daily ozone season and PM season emission estimates were developed. The ozone season extends from April 1 through October 31 (i.e., 214 days), while the PM season is from November 1 through February 29 (2008 is a leap year) (i.e., 121 days).

5.2.1 Nonroad Equipment

Ozone and PM season daily emission estimates for nonroad equipment were based on NONROAD model runs for the summer and winter season, respectively. Fuel properties for the ozone and $PM_{2.5}$ season were set to summer and winter season values, respectively, as described in Section 2.4.1.1. Climate inputs were derived based on ozone and PM season averages as obtained from the WRCC (WRCC, 2009).

Seasonal base year 2008 nonroad equipment emissions are shown in Table 5-21 and Table 5-22 by county and equipment type, respectively. Since most equipment (except snowmobiles and snowblowers) were used more frequently in the summer compared to the winter, ozone season emissions are greater than PM season emissions in all counties.

Table 5-21. 2008 Seasonal Nonroad Equipment Emissions by County

County	VOC	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	NH_3
Ozone Season (tons/day)							
Ada	6.97	82.83	8.70	0.87	0.84	0.24	0.009
Canyon	2.51	26.38	5.84	0.58	0.56	0.17	0.005
Elmore	1.56	7.18	1.35	0.15	0.14	0.04	0.001
Total	**11.03**	**116.40**	**15.89**	**1.59**	**1.53**	**0.45**	**0.016**
PM Season (tons/day)							
Ada	4.24	60.18	4.21	0.36	0.35	0.10	0.005
Canyon	1.20	16.85	1.88	0.16	0.16	0.05	0.002
Elmore	0.34	2.36	0.32	0.03	0.03	0.01	0.000
Total	**5.78**	**79.39**	**6.42**	**0.56**	**0.54**	**0.16**	**0.007**

Table 5-22. 2008 Seasonal Nonroad Equipment Emissions by Equipment Type (Ada, Canyon, and Elmore Counties Combined)

Category	VOC	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	NH_3
Ozone Season (tons/day)							
Agricultural equipment	0.59	4.26	5.12	0.53	0.52	0.15	0.004
Commercial equipment	0.93	18.69	0.64	0.06	0.05	0.01	0.001
Construction and mining equipment	1.07	8.86	7.27	0.65	0.63	0.24	0.007
Industrial equipment	0.46	7.64	1.80	0.07	0.07	0.03	0.001
Lawn and garden equipment	3.79	60.76	0.73	0.18	0.16	0.01	0.002
Logging equipment	0.01	0.11	0.02	0.00	0.00	0.00	0.000
Pleasure craft	1.52	5.16	0.22	0.03	0.03	0.00	0.000
Railroad equipment	0.00	0.03	0.01	0.00	0.00	0.00	0.000
Recreational equipment	2.65	10.89	0.08	0.08	0.07	0.00	0.001
Underground mining equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Total	**11.03**	**116.40**	**15.89**	**1.59**	**1.53**	**0.45**	**0.016**
PM Season (tons/day)							
Agricultural equipment	0.10	0.69	0.84	0.09	0.08	0.03	0.001
Commercial equipment	0.90	18.30	0.70	0.06	0.05	0.01	0.001
Construction and mining equipment	0.43	3.48	2.92	0.26	0.25	0.10	0.003
Industrial equipment	0.32	5.20	1.24	0.05	0.05	0.02	0.001
Lawn and garden equipment	3.09	48.33	0.64	0.08	0.07	0.01	0.002
Logging equipment	0.01	0.10	0.02	0.00	0.00	0.00	0.000
Pleasure craft	0.15	0.44	0.02	0.00	0.00	0.00	0.000
Railroad equipment	0.00	0.03	0.01	0.00	0.00	0.00	0.000
Recreational equipment	0.78	2.81	0.03	0.02	0.02	0.00	0.000
Underground mining equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Total	**5.78**	**79.39**	**6.42**	**0.56**	**0.54**	**0.16**	**0.007**

5.2.2 Aircraft

To estimate seasonal emission inventories, the monthly distribution of activity for the Boise airport in the Treasure Valley study region was obtained from the FAA's Air Traffic Activity Data System (ATADS) (FAA, 2010). The ATADS is the official source for historical monthly or annual air traffic statistics for airports with FAA-operated or FAA-contracted traffic control towers. The average seasonal activity fractions were calculated by aircraft type from the ATADS dataset. The seasonal activity fractions (shown in Table 5-23) were then applied to the Treasure Valley annual emission by aircraft type to derive the ozone and PM season emissions.

Table 5-23. Fraction of Aircraft Activity Occurring in the Ozone and PM Seasons

Type	Ozone Season	PM Season
Commercial aircraft	59%	32%
Ground support equipment	59%	32%
Auxiliary power units	59%	32%
Air taxi aircraft	62%	28%
General aviation aircraft	66%	26%
Military aircraft	61%	30%

5.2.3 Locomotives

The daily emissions for locomotives are reported as the equivalent of the annual emissions on a daily scale. The railroads do not report temporal activity and typical of locomotive emission inventories, emissions are assumed to be constant year-round. The daily emissions were determined by dividing the annual emissions by 365 days per year.

The 2008 ozone and PM season daily emissions by source category are provided in Table 5-24.

Table 5-24. 2008 Ozone and PM Season Daily Locomotive Emission Estimates by Source Category

SCC	SCC Description	County	FIPS	NO_x (tpd)	SO_2 (tpd)	VOC (tpd)	CO (tpd)	PM_{10} (tpd)	$PM_{2.5}$ (tpd)	NH_3 (tpd)
2285002006	Diesel Line Haul Locomotives: Class I operations	Ada	16001	0.755	0.008	0.042	0.119	0.023	0.022	0.0005
2285002006	Diesel Line Haul Locomotives: Class I operations	Canyon	16027	0.921	0.010	0.052	0.145	0.028	0.027	0.0006
2285002006	Diesel Line Haul Locomotives: Class I operations	Elmore	16039	1.600	0.018	0.090	0.252	0.048	0.047	0.0011
2285002007	Diesel Line Haul Locomotives: Class II/III operations	Ada	16001	0.023	0.000	0.001	0.002	0.001	0.001	0.0002
2285002007	Diesel Line Haul Locomotives: Class II/III operations	Canyon	16027	0.009	0.000	0.000	0.001	0.000	0.000	0.0001
2285002010	Diesel Yard Operations	Canyon	16027	0.052	0.000	0.003	0.005	0.001	0.001	0.0004

5.3 QA/QC procedures

In order to ensure the highest quality emissions estimates, a number of different QA/QC steps were implemented during the development of the nonroad mobile source emissions inventory. These are outlined below:

- Nonroad Equipment
  - NONROAD model inputs, outputs and message files were checked by the data generator and reviewed by QA/QC staff.
  - QA/QC staff reviewed local data collected and evaluated against national defaults.
  - Base year emission inventories were compared to U.S.EPA NEI inventories.
- Aircraft
  - Aircraft compilation spreadsheets were reviewed by QA/QC staff.
  - For airports in the FAA TAF database, NEI2008 LTO activity was checked against FAA TAF activity.
- Locomotives
  - Locomotive spreadsheets were reviewed by the data generator and reviewed by QA/QC staff to assure that calculation inputs and equations were correct.
  - Senior QA/QC staff approved emission estimation methodologies and reviewed the reference activity data for validity.
  - Source identification and data collection were approved by the DEQ staff.
  - Senior QA/QC staff confirmed thorough pollutant coverage.
  - QA/QC staff reviewed and approved the emission factors and activity data used within the emission calculations.

6.0 2008 BIOGENIC SOURCE EMISSIONS INVENTORY

Under Task 8 of the contract, the ERG/ENVIRON team provided review of DEQ's 2008 biogenic emissions inventory. This review was summarized in a technical memorandum submitted to DEQ (Mansell and Sakulyanonvittaya, 2009); this technical memo is provided in Appendix F. The technical memo examined the available biogenic emission inventory modeling systems, as well as the land cover and vegetation data required for implementation of these models. The review also focused on a comparison between DEQ's biogenics inventory developed using the Biogenic Emission Inventory System (BEIS) and an alternative inventory developed by ENVIRON using the Model of Emissions of Gases and Aerosol from Nature (MEGAN).

6.1 Emissions Calculation Methodologies – Annual

Input from DEQ modeling staff indicate that the BEIS emission estimates should be incorporated into the draft final report and its emission inventory (Hardy, 2010). Therefore, the annual biogenic emission summaries for BEIS from Table 2 of the memo were used (Mansell and Sakulyanonvittaya, 2009).

6.2 Emissions Calculation Methodologies – Ozone and PM Season

Monthly biogenic emission summaries for BEIS from Table 2 of the memo were used to develop ozone and PM season daily emissions (Mansell and Sakulyanonvittaya, 2009). The monthly emissions from April to October were summed and then divided by 214 (i.e., the number of days in the ozone season) to derive ozone season daily emissions. Likewise, the monthly emissions from November to February were summed and then divided by 121 (i.e., the number of days in the PM season) to derive PM season daily emissions.

6.3 Emission Results

The emissions presented in the biogenics technical memorandum were developed for nitric oxide (NO), CO, VOC, and isoprene. These emissions are shown in Table 6-1.

Table 6-1. Annual, Ozone Season, and PM Season Biogenic Emissions

	Ada	Canyon	Elmore	Total
Annual – NO (tpy)	202.3	283.9	465.2	951.3
Annual – CO (tpy)	2,246.5	1,650.2	6,425.0	10,321.8
Annual – VOC (tpy)	12,802.5	8,902.4	30,982.3	52,687.1
Annual – Isoprene (tpy)	741.2	139.1	2,073.0	2,953.4
Ozone Season – NO (tpd)	0.7	1.0	1.7	3.4
Ozone Season – CO (tpd)	9.4	6.9	26.7	43.0
Ozone Season – VOC (tpd)	55.6	38.5	132.4	226.5
Ozone Season – Isoprene (tpd)	3.4	0.6	9.6	13.6
PM Season – NO (tpd)	0.3	0.4	0.7	1.4
PM Season – CO (tpd)	1.5	1.1	4.7	7.3
PM Season – VOC (tpd)	5.8	4.2	17.3	27.2
PM Season – Isoprene (tpd)	0.1	0.0	0.1	0.2

For purposes of the overall summary tables (Tables 7-5 through 7-16), NO was considered to be equivalent to NO_x while isoprene was not included since it is a VOC species.

7.0 2015 AND 2023 PROJECTED EMISSIONS INVENTORIES

The development of the 2008 base year emissions inventory was described in Sections 2.0 through 6.0. This was followed by the development of projected emissions inventories for the future years of 2015 and 2023. In addition, on-road motor vehicle emissions were also projected for the future year of 2030 in Ada and Canyon counties. The methodologies used to develop these projections are described in this section. In general, the projection methodologies identified in the IPP/QAP were used; however, some minor adjustments were made based upon projections information availability and are identified herein.

7.1 Development of 2015 and 2023 Projection Factors

7.1.1 Point Sources

In an effort to ascertain the future plans for expansion, etc., (on which to base growth factors) for the point source facilities located in the Treasure Valley, a total of 18 permitted point source facilities were contacted by telephone in May 2010. The facility contacts were informally surveyed regarding overall short- and long-term growth and expansion plans. The 18 permitted point source facilities constituted the 10 largest VOC emitting facilities, the 3 largest NH_3 emitting facilities, and the 5 largest emitting facilities for each of the other pollutants; in some cases, a particular facility was a significant emitter of multiple pollutants. Of the 18 facilities contacted, a total of 14 contacts responded to the request for information. The facilities that responded included the following (listed alphabetically):

- Boise Packaging and Newsprint
- C & B Quality Trailer Works
- Fiber Composites LLC
- Micron Technology
- MotivePower
- Mountain Home Air Force Base
- Northwest Pipeline
- Pacific Press Publishing Association

- Plum Creek Northwest Lumber
- Saint Alphonsus Regional Medical Center
- Sinclair Boise Products Terminal
- Sorrento Lactalis
- TASCO – Nampa
- Tesoro Refining and Marketing

Based on these contacts' responses, the overall short-term outlook (i.e., out to 2015) for these facilities is essentially "maintenance of the current status quo"; while the long-term outlook (i.e., out to 2023) is basically "unforeseeable", but some minimal growth is expected. The recent economic recession apparently has dampened most expectations for growth in the near-term with most facilities moving into a survival posture until the recession has passed. Given these anecdotal responses, a 2015 growth factor of 1.0000 (i.e., no growth) and a 2023 growth factor of 1.1000 (i.e., minimal 10 percent growth between the years 2015 and 2023) were assigned to all point sources. The only exception to this general growth factor assignment was that Sorrento Lactalis is currently expanding their facility processing capacity from 4 million gallons of milk per day to 5 million gallons of milk per day. This expansion commenced after the 2008 annual emissions submittal and so it is not reflected in the base year 2008 inventory (York, 2010). Thus, a growth factor of 1.2500 reflecting expanded facility capacity was assigned to both 2015 and 2023 for the Sorrento Lactalis facility.

7.1.2 Area Sources

The 2015 and 2023 area source projections were developed using a variety of sources of projections data. These are described below.

7.1.2.1 Fuel Combustion

All fuel combustion area source categories (i.e., distillate, natural gas, liquefied petroleum gas [LPG], kerosene, and wood for the industrial, commercial/ institutional, and residential sectors) were estimated using projections data from the *Annual Energy Outlook (AEO)* published by the Energy Information Administration (EIA) (EIA, 2010). Regional consumption projections for the Mountain Census Division (i.e., Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming) were used to develop growth factors for 2015 and 2023.

7.1.2.2 Population

Population projections were used to develop projection factors for a wide range of area source categories where population is an appropriate surrogate for growth. These categories include the following:

- Commercial cooking (i.e., charbroiling and frying)
- Architectural surface coating
- Graphic arts
- Consumer solvents
- Open burning (i.e., yard waste and household waste)
- Wastewater treatment
- Structure fires
- Vehicle fires

Population projections for Ada and Canyon counties were obtained from the Community Planning Association of Southwest Idaho (COMPASS) (COMPASS, 2010). However, county-level population projections were not available for Elmore County; therefore, the overall state-level population projections for Idaho were used as a surrogate for Elmore County (U.S. Census, 2005b). The population projections for 2015 were used directly, while the population projection for 2023 was derived from a linear interpolation of the 2020 and 2025 population projections.

7.1.2.3 Industrial Output Projections

Industrial output projections for 2008, 2015, and 2023 (in terms of constant 2000 year dollars) were used to project emissions for a number of industrial area sources, including:

- Industrial surface coating (all subcategories)
- Degreasing (all subcategories)

- Autobody refinishing
- Dry cleaning
- Construction
- Bakeries
- Industrial refrigeration/cold storage

Appropriate output projections were selected at the 4-digit NAICS level from data obtained from Economy.com (Economy.com, 2010). The growth factors were developed by ratioing the future year output for a particular NAICS code by the 2008 year output for the same NAICS code.

7.1.2.4 Long-Term Agricultural Averages

Unlike many other area source categories, agricultural sources are thought to be somewhat cyclical in nature. This is due to limited arable land, cyclical commodity prices, and a number of other factors. As a result, long-term averages of county-level agricultural acreage were used to develop appropriate projection factors. Specifically, the total average acreage of significant Idaho field crops (i.e., alfalfa, barley, corn for grain, corn for silage, potatoes, sugarbeets, and wheat) from 1988 to 2007 was calculated. Data were obtained from the National Agricultural Statistics Service (NASS) (NASS, 2010). The projection factor is the ratio of this total average acreage divided by the 2008 acreage for these same crops. The resultant factors are 1.1548 for Ada County, 1.0562 for Canyon County, and 0.8255 for Elmore County.

7.1.2.5 Vehicle Miles Travelled (VMT)

As is typically done, future year vehicle miles travelled (VMT) projections were developed for estimating projected on-road motor vehicle emissions (see Section 3.1.3). These future year VMT projections were also used to develop growth factors for the source categories associated with gasoline marketing (i.e., Stage I, Stage II, breathing and emptying losses, and tank truck transport). As described in Section 7.1.1, the effects of Idaho Rule 592 were also incorporated with future year area source Stage I emissions.

7.1.2.6 No Growth

For a few area source categories, no growth (i.e., a growth factor of 1.0000) was assigned. In these cases, either no growth was anticipated to occur in the future or no appropriate growth surrogate could be reasonably determined. These categories included the following:

- Traffic markings
- Asphalt application
- Irrigation ditch burning
- Beef cattle feedlots

7.1.2.7 Ammonia Sources

With the exception of ammonia from industrial refrigeration/cold storage, ammonia emissions were estimated using an ammonia model as described in the previous progress reports. The projected ammonia emissions were also modeled using the same model. Finally, a few area source categories emitting ammonia were assigned no growth (i.e., a growth factor of 1.0000). The following assumptions were made for the various modeled ammonia emission source categories:

- Population projection factors described above (Section 7.1.2.2) were used for domestic ammonia emissions;
- Long-term agricultural average projection factors described above (Section 7.1.2.4) were used for fertilizer emissions; and
- No growth was assumed for livestock (i.e., due to apparent cyclical production trends), wild animals, and soils

7.1.2.8 Road Dust

Future year emissions for paved road dust were estimated using the same methodology as used for the 2008 base year (see Section 2.3) along with estimates of 2015 and 2023 VMT. Elmore County 2015 and 2023 VMT estimates were based on data developed for the on-road vehicle emission estimates as described above. Ada and Canyon County VMT estimates were taken from COMPASS transportation demand model (TDM) output for 2015 and 2025. COMPASS 2015 VMT estimates were used directly while 2023 VMT was estimated by linearly interpolating between the 2015 and 2025 data provided by COMPASS. No change in paved road dust emission rates was estimated based on the assumption of unchanged future maintenance practices.

Future year emissions for unpaved road dust were estimated using the same methodology as the base year. In Ada County, a reduction in VMT of 1.95 percent per year was assumed per the Ada County conformity documentation (COMPASS, 2005). For all other areas, VMT was assumed unchanged from 2008 based on conversations with local highway districts and municipalities which indicated that even minimal projected conversion of unpaved to paved roads in future years would be dependent on funding levels. No change in unpaved road dust emission rates was estimated based on the assumption of unchanged future maintenance practices.

7.1.3 On-Road Motor Vehicles

Ada and Canyon county emissions in future years 2015, 2023, and 2030 were estimated within CONCEPT-MV. COMPASS provided DEQ and ENVIRON with TDM output from 2015 and 2025. DEQ ran CONCEPT-MV using the TDM for 2008, 2015, and 2030 directly for those calendar years. To generate the 2023 dataset, DEQ developed growth factors by county and roadway type by interpolating between 2015 and 2025 COMPASS data. The growth function of the T3 tool was used to generate 2023 dataset for CONCEPT. Some of the MOBILE6 input parameters were updated in 2015, 2023, and 2030 (i.e., limited to changes in anti-tampering parameters and inspection and maintenance [I/M] parameters). Anti-tampering and I/M programs were not in place for Canyon County in 2008, but were added for 2015, 2023, and 2030 and the parameters are similar to the 2008 Ada County programs described in Tables 4-8 and 4-9, except for the program change to biennial testing and testing of light-duty vehicles only. Tables 7-1 and 7-2 show the future year updated parameters for anti-tampering and I/M, respectively. Alcohol blend E10 market share also changed from 68% in 2008 to 100% in future years. There were no other changes in MOBILE6 inputs for the CONCEPT-MV work.

Table 7-1. 2015, 2023, and 2030 MOBILE6 Inputs by County: Anti-Tampering Program Parameters

Anti-Tampering Program Parameters	Ada County	Canyon County	Elmore County
Program Start Year	2010	2010	-
First Vehicle Model Year Applied	Same as Ada 2008	Same as Ada 2008	-
Last Vehicle Model Year Applied	Same as Ada 2008	Same as Ada 2008	-
Vehicle Types Applied	Same as Ada 2008	LDGV, LDGT1, LDGT2 LDGT3, LDGT4	-
Inspection Frequency	Biennial	Biennial	-
Compliance Rate	Same as Ada 2008	Same as Ada 2008	-
Inspection Conducted	Same as Ada 2008	Same as Ada 2008	-

Table 7-2. 2015, 2023, and 2030 MOBILE6 Inputs by County: I/M Program Parameters

I/M Program Type	I/M Program Parameters	Ada County	Canyon County	Elmore County
Exhaust Test Only Program – Two speed test (idle and 2500 RPM)	Start Year	2010	2010	-
	End Year	2050	2050	-
	Frequency	Biennial	Biennial	-
	First Vehicle Model Year Applied	1981	1981	-
	Last Vehicle Model Year Applied	1995	1995	-
	Vehicle Types Applied	Same as Ada 2008	LDGV, LDGT1, LDGT2, LDGT3, LDGT4	-
	Stringency (pre-1981 only)	Same as Ada 2008	Same as Ada 2008	-
	Compliance Rate	Same as Ada 2008	Same as Ada 2008	-
	Waiver Rate (expressed as a percentage of the vehicles that fail the I/M program)	Same as Ada 2008	Same as Ada 2008	-
	Grace Period (the age at which vehicle first become subject to I/M testing)	4	5	-
Exhaust Test Only Program – OBD I/M	Start Year	2010	2010	-
	End Year	2050	2050	-
	Frequency	Biennial	Biennial	-
	First Vehicle Model Year Applied	Same as Ada 2008	Same as Ada 2008	-
	Last Vehicle Model Year Applied	2050	2050	-
	Vehicle Types Applied	Same as Ada 2008	LDGV, LDGT1, LDGT2, LDGT3, LDGT4	-
	Stringency (expected exhaust inspection failure rate for pre-1981 model year vehicles)	Same as Ada 2008	Same as Ada 2008	-
	Compliance Rate	Same as Ada 2008	Same as Ada 2008	-
	Waiver Rate (expressed as a percentage of the vehicles that fail the I/M program)	Same as Ada 2008	Same as Ada 2008	-
	Grace Period (the age at which vehicle first become subject to I/M testing)	4	5	-

Elmore County emissions in future years 2015 and 2023 were estimated by multiplying emission factors specific to 2015 and 2023 with projected VMT from 2008 to the future years.

Elmore County emissions were not estimated for 2030. Emission factors for 2015 and 2023 were generated by running MOBILE6 for those calendar years, which accounts for federally mandated gasoline sulfur reductions by calendar year and captures emission rate reductions due to increasingly stringent vehicle emission standards. The MOBILE6 national default registration distribution was used in all three years 2008, 2015 and 2023. Per DEQ, fuel parameters and vehicle inspection and maintenance programs do not change from 2008 in Elmore County. The MOBILE6 national default registration distribution was used in all three years 2008, 2015 and 2023. In addition, MOBILE6 accounts for federally mandated gasoline sulfur reductions by year and contains estimates of emission rate reductions due to increasingly stringent vehicle emission standards.

2008 Elmore County VMT was projected to 2015 and 2023 using scaling factors based on the COMPASS TDM outputs for 2008, 2015 and 2025. The COMPASS TDM includes link-level volumes and distances (thus VMT) by urban and rural roadway types that were readily classifiable into the three road types of the original 2008 Elmore County total VMT: "interstate," "arterial," and "other" for roadways that were not interstate or arterial. VMT estimates for 2023 were calculated by linearly interpolating VMT between 2015 and 2025 datasets. The final projection factors for rural interstates, rural arterials and rural "other" roadways were developed by scaling 2015/2008 and 2023/2008. The projected VMT and future year emission factor sets were used to estimate future year emissions using the same approach as the base year modeling.

7.1.4 Nonroad Mobile Sources

The 2015 and 2023 nonroad mobile source projections were developed using a variety of sources of projections data. These are described below.

7.1.4.1 Nonroad Equipment

The NONROAD model incorporates the effects of all "on the books" regulations. The model also contains growth factors for all equipment types, which have been derived by U.S. EPA from a proprietary database of equipment sales for several years.

The NONROAD model was run for 2015 and 2023 analogous to what was done for 2008. Climate, local population, and temporal profiles used in the base year inputs were similarly used in the development of future year emissions. Fuel properties remained unchanged from base year estimates, except for the nonroad diesel sulfur level which was set to 15 ppm for 2015 and 2023 as required by the federal Tier 4 nonroad diesel rule.

7.1.4.2 Aircraft

Aircraft emissions were projected to future years from the 2008 emissions, by airport and aircraft type, using LTO forecasts available from the FAA. Aircraft and APU emission factors were assumed to be unchanged over time. The International Civil Aviation Organization (ICAO) has promulgated NO_x and CO emission standards for commercial aircraft (exempting general aviation and military engines from the rule) (ICAO, 1998); the majority of engines are already meeting this standard. U.S. EPA officially promulgated the ICAO standards for air carriers in a final rule in November 2005.

The historic and projected LTO data by airport are available online from the Federal Aviation Administration (FAA) Terminal Area Forecast (TAF) database for all aircraft categories for which emissions were estimated (FAA, 2008). Projected LTO data for years 2015, 2023, and historic data for 2008 were used to develop future year growth factors for all aircraft types by airport. Growth factors were calculated as the ratio of the sum of LTOs by airport and aircraft type in each future year to the sum of LTOs by airport and aircraft type in 2008. For airports that were included in the 2008 analysis, but are not in the FAA TAF database, growth factors were calculated as the ratio of the sum of LTOs by aircraft type in each future year over the entire Treasure Valley study region to the sum of LTOs by aircraft type in 2008 over the entire Treasure Valley study region. These future year growth factors were then applied to 2008 emission estimates by airport and aircraft type to develop future year emission inventories. Base year LTOs and future year growth factors are shown in Table 7-3.

Auxiliary power unit activity growth was assumed equivalent to commercial aircraft activity growth estimates. Airport GSE engines are subject to U.S. EPA nonroad engine standards. Fleet turnover to newer, engines meeting more stringent standards over time will decrease fleetwide airport GSE emission rates over time. Therefore, airport GSE projection factors must incorporate estimates of both activity growth and fleetwide emission rate decreases due to fleet turnover. Airport GSE fleetwide emission rate decreases were calculated based on the NONROAD model estimates of emission changes by fuel type in airport GSE emissions due to fleet turnover. To incorporate future year activity growth in airport GSE, commercial aircraft growth rates were applied.

Table 7-3. Base Year Aircraft LTO Activity Data and Future Year Projection Factors

Airport	Commercial Aircraft	Air Taxi Aircraft	General Aviation Aircraft	Military Aircraft
2008 LTOs				
Boise Air Terminal/Gowen Field	20,636	12,804	36,557	6,158
Caldwell Industrial	0	2,000	67,486	0
Nampa Municipal	0	0	54,813	50
Mountain Home Municipal	0	254	9,657	500
Other airports not in TAF database[a]	14	0	46,578	0
2015/2008 LTOs				
Boise Air Terminal/Gowen Field	105%	67%	95%	104%
Caldwell Industrial	-	100%	118%	100%
Nampa Municipal	-	-	123%	100%
Mountain Home Municipal	-	100%	114%	100%
Other airports not in TAF database[a]	105%	-	113%	104%
2023/2008 LTOs				
Boise Air Terminal/Gowen Field	130%	88%	116%	104%
Caldwell Industrial	-	100%	141%	100%
Nampa Municipal	-	-	157%	100%
Mountain Home Municipal	-	100%	131%	100%
Other airports not in TAF database[a]	130%	-	138%	104%

[a] Emissions projected for these airports based on estimated projections of total activity at the four airports for which data was available from FAA's TAF database

7.1.4.3 Locomotives

Future year locomotive emission estimates were based on projections of activity growth and emission reductions. The activity growth was forecasted on the basis fuel consumption. The emission reduction forecasts account primarily for the fleet turnover and the lower emission standards, which were based on data available in EPA documents (U.S. EPA, 1997a; U.S. EPA, 1997b; U.S. EPA, 2008).

A fuel consumption trend was estimated using a least squares regression analysis of annual fuel consumption obtained from the Association of American Railroads (AAR) for six years between 1999 and 2008 (AAR, 2009). Within the study domain the only Class 1 railroad operating was Union Pacific (UP). To accurately forecast activity, UP nationwide fuel consumption was analyzed (see Table 7-4). The UP data were also used to forecast the Idaho Northern Pacific Railroad and switching locomotive emissions; it is expected that the short-line and switching activity will have similar growth to the estimates for the mainline railroad (i.e., UP) that operates in the study domain. Based on the least squares linear regression analysis, a growth rate of 4,264,472 gallons of fuel per year was estimated.

Table 7-4. Union Pacific Historic Fuel Consumption

Year	Fuel (gallons)
1999	1,252,111,733
2002	1,325,049,398
2005	1,362,933,944
2006	1,382,778,469
2007	1,338,300,581
2008	1,240,874,008

The growth rate was applied to the 2008 fuel consumption to generate 2015 and 2023 estimates of 1,270,725,311 gallons and 1,304,841,085 gallons, respectively. The 2015 and 2023 fuel consumption estimates represent a 2.40% and 5.16% increase from 2008, respectively.

The emission reduction estimates were based on the U.S. EPA line-haul and switching locomotive forecasted emission reductions relative to the locomotive fleets (U.S. EPA, 1997a; U.S. EPA, 1997b; U.S. EPA, 2008). Based on the U.S. EPA reports estimates of future year average emissions by the fleet type, representative emissions reductions from 2008 to 2015 and 2008 to 2023 were extracted.

7.1.5 Biogenic Sources

Although it is expected that there will be year-to-year variability in biogenic emissions, it is not possible to predict this variability. Therefore, the 2008 biogenic emission estimates were also used for the 2015 and 2023 emission inventories.

7.2 2015, 2023, and 2030 Inventory Summaries

Using all of the projection factors described in Section 7.1, the 2015 and 2023 projected emissions inventories were developed. In addition, the on-road motor vehicle emission inventories for Ada and Canyon counties were developed for 2030. County-level summaries of these inventories by source type are provided in this section. For ease of comparison, the 2008 county-level summaries are also presented. The annual summaries are presented in Tables 7-5

(2008), 7-6 (2015), 7-7 (2023), and 7-8 (2030). The ozone season summaries are provided in Tables 7-9 (2008), 7-10 (2015), 7-11 (2023), and 7-12 (2030) while the PM season summaries are shown in Tables 7-13 (2008), 7-14 (2015), 7-15 (2023), and 7-16 (2030).

Table 7-5. 2008 County-Level Annual Emissions Summarized by Source Type

County	Source Type	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
Ada	Point	355.6	65.7	268.1	198.5	169.1	142.6	46.0
	Area	920.7	26.9	12,962.8	7,715.1	38,723.5	4,643.9	3,995.3
	On-Road	5,114.3	27.2	4,022.0	45,574.2	125.2	75.6	311.6
	Nonroad	2,894.6	90.4	2,031.2	24,870.5	257.8	244.8	2.8
	Biogenic	202.3	0.0	12,802.5	2,246.5	0.0	0.0	0.0
	Total	**9,487.6**	**210.2**	**32,086.6**	**80,604.9**	**39,275.6**	**5,106.8**	**4,355.7**
Canyon	Point	1,356.5	2,007.3	303.4	1,044.7	495.9	277.8	420.6
	Area	545.8	19.1	7,507.9	7,221.7	13,715.9	2,450.2	7,726.9
	On-Road	3,138.5	12.7	3,093.9	33,553.8	60.4	37.0	143.5
	Nonroad	1,878.3	47.9	754.1	8,251.3	174.7	164.0	1.8
	Biogenic	283.9	0.0	8,902.4	1,650.2	0.0	0.0	0.0
	Total	**7,203.0**	**2,087.0**	**20,561.6**	**51,721.7**	**14,446.9**	**2,929.0**	**8,292.8**
Elmore	Point	360.3	2.5	26.6	105.3	135.9	58.7	0.0
	Area	80.5	5.8	1,730.0	1,595.8	22,491.9	2,806.1	4,812.3
	On-Road	576.6	3.1	529.8	5,460.8	14.7	9.3	30.7
	Nonroad	914.8	16.1	368.6	1,873.0	56.8	53.6	0.7
	Biogenic	465.2	0.0	30,982.3	6,425.0	0.0	0.0	0.0
	Total	**2,397.3**	**27.5**	**33,637.3**	**15,460.0**	**22,699.2**	**2,927.7**	**4,843.7**
Total	Point	2,072.4	2,075.4	598.1	1,348.5	800.9	479.0	466.6
	Area	1,547.1	51.8	22,200.7	16,532.7	74,931.3	9,900.2	16,534.5
	On-Road	8,829.4	43.0	7,645.7	84,588.8	200.3	121.9	485.8
	Nonroad	5,687.6	154.5	3,153.8	34,994.8	489.3	462.4	5.4
	Biogenic	951.4	0.0	52,687.2	10,321.7	0.0	0.0	0.0
	Total	**19,087.8**	**2,324.8**	**86,285.5**	**147,786.6**	**76,421.8**	**10,963.5**	**17,492.2**

Table 7-6. 2015 County-Level Annual Emissions Summarized by Source Type

County	Source Type	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
Ada	Point	355.6	65.7	268.1	198.5	169.1	142.6	46.0
	Area	900.0	23.6	14,551.2	6,885.8	46,687.8	5,109.4	4,143.2
	On-Road	3,069.7	35.1	2,821.8	40,996.1	122.5	61.9	402.7
	Nonroad	1,979.8	28.2	1,480.7	21,192.5	196.9	185.8	3.2
	Biogenic	202.3	0.0	12,802.5	2,246.5	0.0	0.0	0.0
	Total	**6,507.4**	**152.6**	**31,924.3**	**71,519.5**	**47,176.3**	**5,499.7**	**4,595.0**
Canyon	Point	1,365.9	2,007.3	303.9	1,054.8	500.3	282.1	420.6
	Area	509.7	16.7	7,690.9	6,310.3	18,855.7	2,616.2	7,907.8
	On-Road	2,047.2	17.7	2,206.5	26,166.7	62.3	31.6	202.1
	Nonroad	1,351.8	6.6	546.1	7,047.7	126.9	116.8	2.0
	Biogenic	283.9	0.0	8,902.4	1,650.2	0.0	0.0	0.0
	Total	**5,558.4**	**2,048.3**	**19,649.8**	**42,229.7**	**19,545.2**	**3,046.7**	**8,532.6**
Elmore	Point	360.3	2.5	26.6	105.3	135.9	58.7	0.0
	Area	74.0	5.3	1,781.0	1,412.5	22,923.7	2,876.3	4,636.3
	On-Road	425.7	4.6	458.9	6,040.8	15.8	8.3	46.9
	Nonroad	701.7	7.3	260.1	1,723.9	39.7	37.0	0.8
	Biogenic	465.2	0.0	30,982.3	6,425.0	0.0	0.0	0.0
	Total	**2,026.8**	**19.7**	**33,508.9**	**15,707.5**	**23,115.1**	**2,980.2**	**4,684.0**
Total	Point	2,081.8	2,075.5	598.6	1,358.6	805.3	483.3	466.6
	Area	1,483.7	45.6	24,023.1	14,608.6	88,467.1	10,601.9	16,687.3
	On-Road	5,542.6	57.4	5,487.2	73,203.6	200.6	101.8	651.7
	Nonroad	4,033.2	42.1	2,286.8	29,964.1	363.6	339.6	6.0
	Biogenic	951.4	0.0	52,687.2	10,321.7	0.0	0.0	0.0
	Total	**14,092.7**	**2,220.6**	**85,082.9**	**129,456.6**	**89,836.6**	**11,526.6**	**17,811.6**

Table 7-7. 2023 County-Level Annual Emissions Summarized by Source Type

County	Source Type	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
Ada	Point	391.2	72.3	294.9	218.4	186.0	156.8	50.6
	Area	951.9	23.8	18,062.8	7,146.3	58,495.6	5,966.6	4,207.4
	On-Road	1,724.8	43.2	1,972.9	41,804.2	137.8	64.3	496.3
	Nonroad	1,355.0	33.8	1,407.9	22,622.6	135.8	125.9	3.6
	Biogenic	202.3	0.0	12,802.5	2,246.5	0.0	0.0	0.0
	Total	**4,625.1**	**173.1**	**34,541.0**	**74,038.0**	**58,955.2**	**6,313.6**	**4,757.9**
Canyon	Point	1,497.7	2,208.0	334.0	1,155.2	548.1	308.1	462.7
	Area	519.3	16.9	8,820.6	6,469.1	28,232.7	3,199.1	7,930.7
	On-Road	1,216.9	23.5	1,464.4	26,854.2	74.9	35.0	268.4
	Nonroad	860.7	6.9	504.2	7,402.5	83.6	73.5	2.3
	Biogenic	283.9	0.0	8,902.4	1,650.2	0.0	0.0	0.0
	Total	**4,378.6**	**2,255.4**	**20,025.7**	**43,531.2**	**28,939.4**	**3,615.7**	**8,664.0**
Elmore	Point	396.3	2.7	29.3	115.8	149.5	64.5	0.0
	Area	75.2	5.4	1,900.3	1,459.2	23,710.4	3,066.6	4,639.0
	On-Road	340.6	6.5	422.6	7,416.2	19.8	9.4	66.0
	Nonroad	457.5	7.6	191.7	1,714.4	25.0	22.5	0.8
	Biogenic	465.2	0.0	30,982.3	6,425.0	0.0	0.0	0.0
	Total	**1,734.8**	**22.2**	**33,526.2**	**17,130.6**	**23,904.7**	**3,163.0**	**4,705.9**
Total	Point	2,285.3	2,283.0	658.2	1,489.4	883.6	529.5	513.2
	Area	1,546.4	46.1	28,783.7	15,074.6	110,438.6	12,232.2	16,777.1
	On-Road	3,282.3	73.2	3,859.9	76,074.6	232.5	108.7	830.7
	Nonroad	2,673.1	48.3	2,103.8	31,739.4	244.5	222.0	6.8
	Biogenic	951.4	0.0	52,687.2	10,321.7	0.0	0.0	0.0
	Total	**10,738.4**	**2,450.7**	**88,092.8**	**134,699.8**	**111,799.2**	**13,092.4**	**18,127.8**

Table 7-8. 2030 County-Level Annual On-Road Emissions for Ada and Canyon Counties

County	Source Type	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
Ada	On-Road	1,468.4	50.9	2,170.8	46,795.6	159.7	73.3	584.8
Canyon	On-Road	1,006.7	28.9	1,643.3	30,471.3	90.8	41.7	331.5

Table 7-9. 2008 County-Level Ozone Season Emissions Summarized by Source Type

County	Source Type	NO_x (tpd)	SO_2 (tpd)	VOC (tpd)	CO (tpd)	PM_{10} (tpd)	$PM_{2.5}$ (tpd)	NH_3 (tpd)
Ada	Point	1.0	0.2	0.7	0.6	0.5	0.4	0.1
	Area	1.4	4.6	33.7	4.8	102.4	9.9	12.7
	On-Road	13.4	0.1	10.8	80.8	0.4	0.2	0.9
	Nonroad	10.1	0.3	7.2	85.6	0.9	0.9	0.0
	Biogenic	0.7	0.0	55.6	9.4	0.0	0.0	0.0
	Total	**26.5**	**5.2**	**108.1**	**181.2**	**104.2**	**11.4**	**13.8**
Canyon	Point	3.5	5.2	0.8	2.1	1.3	0.7	1.1
	Area	0.9	1.3	18.4	3.8	36.5	4.1	23.8
	On-Road	8.3	0.0	8.4	61.8	0.2	0.1	0.4
	Nonroad	6.8	0.2	2.8	29.2	0.7	0.6	0.0
	Biogenic	1.0	0.0	38.5	6.9	0.0	0.0	0.0
	Total	**20.6**	**6.7**	**69.0**	**103.8**	**38.6**	**5.6**	**25.3**
Elmore	Point	1.0	0.0	0.1	0.3	0.4	0.2	0.0
	Area	0.1	0.8	4.5	1.4	73.5	8.3	15.2
	On-Road	1.5	0.0	1.5	11.0	0.0	0.0	0.1
	Nonroad	3.0	0.1	1.7	8.1	0.2	0.2	0.0
	Biogenic	1.7	0.0	132.4	26.7	0.0	0.0	0.0
	Total	**7.3**	**0.8**	**140.2**	**47.5**	**74.1**	**8.7**	**15.3**
Total	Point	5.5	5.4	1.6	3.0	2.2	1.3	1.2
	Area	2.4	6.7	56.6	10.1	212.4	22.3	51.8
	On-Road	23.2	0.1	20.7	153.6	0.6	0.3	1.4
	Nonroad	19.8	0.6	11.7	122.8	1.8	1.7	0.0
	Biogenic	3.4	0.0	226.5	43.0	0.0	0.0	0.0
	Total	**54.3**	**12.7**	**317.2**	**332.5**	**216.9**	**25.6**	**54.4**

Table 7-10. 2015 County-Level Ozone Season Emissions Summarized by Source Type

County	Source Type	NO_x (tpd)	SO_2 (tpd)	VOC (tpd)	CO (tpd)	PM_{10} (tpd)	$PM_{2.5}$ (tpd)	NH_3 (tpd)
Ada	Point	1.0	0.2	0.7	0.6	0.5	0.4	0.1
	Area	1.3	3.8	38.4	4.7	123.4	11.5	13.1
	On-Road	8.1	0.1	7.7	67.6	0.4	0.2	1.1
	Nonroad	6.8	0.1	5.2	72.6	0.7	0.7	0.0
	Biogenic	0.7	0.0	55.6	9.4	0.0	0.0	0.0
	Total	**17.9**	**4.2**	**107.6**	**155.0**	**124.9**	**12.8**	**14.4**
Canyon	Point	3.5	5.2	0.8	2.1	1.3	0.7	1.1
	Area	0.9	1.1	19.3	3.5	51.6	5.0	24.3
	On-Road	5.4	0.1	6.2	44.6	0.2	0.1	0.6
	Nonroad	4.9	0.0	2.0	24.6	0.5	0.4	0.0
	Biogenic	1.0	0.0	38.5	6.9	0.0	0.0	0.0
	Total	**15.7**	**6.4**	**66.8**	**81.7**	**53.5**	**6.3**	**26.0**
Elmore	Point	1.0	0.0	0.1	0.3	0.4	0.2	0.0
	Area	0.1	0.6	4.7	1.3	74.1	8.4	14.8
	On-Road	1.1	0.0	1.3	11.8	0.1	0.0	0.1
	Nonroad	2.3	0.0	1.1	7.4	0.1	0.1	0.0
	Biogenic	1.7	0.0	132.4	26.7	0.0	0.0	0.0
	Total	**6.2**	**0.7**	**139.7**	**47.5**	**74.6**	**8.7**	**14.9**
Total	Point	5.5	5.4	1.6	3.0	2.2	1.3	1.2
	Area	2.3	5.6	62.4	9.5	249.0	24.9	52.2
	On-Road	14.6	0.2	15.2	124.1	0.6	0.3	1.9
	Nonroad	14.0	0.1	8.3	104.6	1.3	1.2	0.0
	Biogenic	3.4	0.0	226.5	43.0	0.0	0.0	0.0
	Total	**39.9**	**11.2**	**314.0**	**284.2**	**253.1**	**27.8**	**55.3**

Table 7-11. 2023 County-Level Ozone Season Emissions Summarized by Source Type

County	Source Type	NO_x (tpd)	SO_2 (tpd)	VOC (tpd)	CO (tpd)	PM_{10} (tpd)	$PM_{2.5}$ (tpd)	NH_3 (tpd)
Ada	Point	1.1	0.2	0.8	0.6	0.5	0.4	0.1
	Area	1.4	3.6	48.0	5.1	154.1	13.7	13.3
	On-Road	4.7	0.1	5.3	66.1	0.4	0.2	1.4
	Nonroad	4.5	0.1	4.8	77.0	0.5	0.4	0.0
	Biogenic	0.7	0.0	55.6	9.4	0.0	0.0	0.0
	Total	**12.3**	**4.0**	**114.5**	**158.2**	**155.5**	**14.8**	**14.8**
Canyon	Point	3.9	5.7	0.9	2.3	1.5	0.8	1.2
	Area	0.9	1.0	22.3	3.6	78.6	6.6	24.4
	On-Road	3.3	0.1	4.0	43.4	0.2	0.1	0.8
	Nonroad	3.1	0.0	1.7	25.4	0.3	0.3	0.0
	Biogenic	1.0	0.0	38.5	6.9	0.0	0.0	0.0
	Total	**12.1**	**6.8**	**67.5**	**81.7**	**80.6**	**7.8**	**26.3**
Elmore	Point	1.1	0.0	0.1	0.4	0.4	0.2	0.0
	Area	0.1	0.6	5.0	1.4	74.5	8.6	14.8
	On-Road	0.9	0.0	1.2	14.5	0.1	0.0	0.2
	Nonroad	1.5	0.0	0.8	7.2	0.1	0.1	0.0
	Biogenic	1.7	0.0	132.4	26.7	0.0	0.0	0.0
	Total	**5.3**	**0.7**	**139.5**	**50.1**	**75.1**	**8.9**	**15.0**
Total	Point	6.0	5.9	1.8	3.3	2.4	1.4	1.3
	Area	2.4	5.2	75.3	10.1	307.3	29.0	52.4
	On-Road	8.8	0.2	10.5	124.0	0.7	0.3	2.4
	Nonroad	9.1	0.1	7.3	109.6	0.9	0.8	0.0
	Biogenic	3.4	0.0	226.5	43.0	0.0	0.0	0.0
	Total	**29.8**	**11.4**	**321.4**	**289.9**	**311.2**	**31.5**	**56.1**

Table 7-12. 2030 County-Level Ozone Season On-Road Emissions for Ada and Canyon Counties

County	Source Type	NO_x (tpd)	SO_2 (tpd)	VOC (tpd)	CO (tpd)	PM_{10} (tpd)	$PM_{2.5}$ (tpd)	NH_3 (tpd)
Ada	On-Road	4.3	0.1	6.7	148.2	0.5	0.2	1.7
Canyon	On-Road	2.9	0.1	5.1	95.5	0.3	0.1	1.0

Table 7-13. 2008 County-Level PM Season Emissions Summarized by Source Type

County	Source Type	NO_x (tpd)	SO_2 (tpd)	VOC (tpd)	CO (tpd)	PM_{10} (tpd)	$PM_{2.5}$ (tpd)	NH_3 (tpd)
Ada	Point	1.0	0.2	0.7	0.5	0.5	0.4	0.1
	Area	4.4	0.1	39.1	49.7	124.5	18.3	8.5
	On-Road	13.3	0.1	6.6	146.1	0.3	0.2	0.8
	Nonroad	5.6	0.2	4.4	62.5	0.4	0.4	0.0
	Biogenic	0.3	0.0	5.8	1.5	0.0	0.0	0.0
	Total	**24.5**	**0.6**	**56.7**	**260.3**	**125.7**	**19.3**	**9.4**
Canyon	Point	4.4	6.5	0.9	4.8	1.5	0.8	1.3
	Area	2.4	0.1	24.4	46.2	42.4	11.2	17.7
	On-Road	8.2	0.0	5.3	103.6	0.1	0.1	0.3
	Nonroad	2.9	0.1	1.4	18.9	0.2	0.2	0.0
	Biogenic	0.4	0.0	4.2	1.1	0.0	0.0	0.0
	Total	**18.3**	**6.7**	**36.1**	**174.5**	**44.3**	**12.3**	**19.3**
Elmore	Point	1.0	0.0	0.1	0.2	0.4	0.2	0.0
	Area	0.4	0.0	5.1	9.0	47.2	7.1	10.5
	On-Road	1.6	0.0	1.1	17.2	0.0	0.0	0.1
	Nonroad	1.9	0.0	0.5	3.1	0.1	0.1	0.0
	Biogenic	0.7	0.0	17.3	4.7	0.0	0.0	0.0
	Total	**5.5**	**0.1**	**24.1**	**34.3**	**47.7**	**7.3**	**10.6**
Total	Point	6.4	6.7	1.6	5.5	2.3	1.4	1.5
	Area	7.1	0.3	68.6	104.9	214.2	36.6	36.7
	On-Road	23.1	0.1	13.0	266.9	0.4	0.3	1.2
	Nonroad	10.4	0.3	6.3	84.5	0.7	0.7	0.0
	Biogenic	1.4	0.0	27.3	7.3	0.0	0.0	0.0
	Total	**48.4**	**7.4**	**116.9**	**469.1**	**217.6**	**39.0**	**39.4**

Table 7-14. 2015 County-Level PM Season Emissions Summarized by Source Type

County	Source Type	NO_x (tpd)	SO_2 (tpd)	VOC (tpd)	CO (tpd)	PM_{10} (tpd)	$PM_{2.5}$ (tpd)	NH_3 (tpd)
Ada	Point	1.0	0.2	0.7	0.5	0.5	0.4	0.1
	Area	4.3	0.1	42.8	43.5	151.4	19.2	8.9
	On-Road	8.0	0.1	4.4	134.9	0.3	0.2	1.0
	Nonroad	3.8	0.1	3.3	54.5	0.3	0.3	0.0
	Biogenic	0.3	0.0	5.8	1.5	0.0	0.0	0.0
	Total	**17.4**	**0.5**	**57.0**	**234.9**	**152.4**	**20.1**	**10.0**
Canyon	Point	4.4	6.5	0.9	4.8	1.5	0.8	1.3
	Area	2.3	0.1	24.2	40.0	56.1	10.9	18.2
	On-Road	5.4	0.0	3.3	85.1	0.2	0.1	0.5
	Nonroad	2.0	0.0	1.1	16.6	0.2	0.2	0.0
	Biogenic	0.4	0.0	4.2	1.1	0.0	0.0	0.0
	Total	**14.6**	**6.7**	**33.6**	**147.6**	**57.9**	**12.0**	**20.0**
Elmore	Point	1.0	0.0	0.1	0.2	0.4	0.2	0.0
	Area	0.3	0.0	5.2	7.9	48.5	7.2	10.0
	On-Road	1.2	0.0	0.9	18.8	0.0	0.0	0.1
	Nonroad	1.5	0.0	0.4	2.9	0.1	0.1	0.0
	Biogenic	0.7	0.0	17.3	4.7	0.0	0.0	0.0
	Total	**4.6**	**0.1**	**23.9**	**34.5**	**49.0**	**7.4**	**10.1**
Total	Point	6.4	6.7	1.6	5.5	2.3	1.4	1.5
	Area	6.8	0.2	72.2	91.4	256.0	37.4	37.1
	On-Road	14.6	0.1	8.6	238.8	0.5	0.3	1.6
	Nonroad	7.3	0.1	4.8	74.0	0.6	0.5	0.0
	Biogenic	1.4	0.0	27.3	7.3	0.0	0.0	0.0
	Total	**36.6**	**7.2**	**114.5**	**417.0**	**259.3**	**39.5**	**40.2**

Table 7-15. 2023 County-Level PM Season Emissions Summarized by Source Type

County	Source Type	NO_x (tpd)	SO_2 (tpd)	VOC (tpd)	CO (tpd)	PM_{10} (tpd)	$PM_{2.5}$ (tpd)	NH_3 (tpd)
Ada	Point	1.1	0.2	0.8	0.5	0.5	0.4	0.1
	Area	4.5	0.1	52.6	44.8	191.8	22.1	9.1
	On-Road	4.4	0.1	3.2	139.6	0.3	0.2	1.2
	Nonroad	2.8	0.1	3.3	59.2	0.2	0.2	0.0
	Biogenic	0.3	0.0	5.8	1.5	0.0	0.0	0.0
	Total	**13.2**	**0.6**	**65.6**	**245.6**	**192.8**	**22.9**	**10.5**
Canyon	Point	4.9	7.2	0.9	5.3	1.6	0.9	1.5
	Area	2.3	0.1	27.4	41.0	81.2	12.6	18.3
	On-Road	3.2	0.1	2.3	89.1	0.2	0.1	0.7
	Nonroad	1.3	0.0	1.1	18.0	0.1	0.1	0.0
	Biogenic	0.4	0.0	4.2	1.1	0.0	0.0	0.0
	Total	**12.1**	**7.3**	**35.9**	**154.5**	**83.1**	**13.7**	**20.4**
Elmore	Point	1.1	0.0	0.1	0.3	0.4	0.2	0.0
	Area	0.3	0.0	5.5	8.1	51.4	7.9	10.0
	On-Road	0.9	0.0	0.9	23.0	0.1	0.0	0.2
	Nonroad	1.0	0.0	0.3	3.1	0.0	0.0	0.0
	Biogenic	0.7	0.0	17.3	4.7	0.0	0.0	0.0
	Total	**4.0**	**0.1**	**24.1**	**39.2**	**51.9**	**8.1**	**10.2**
Total	Point	7.0	7.4	1.8	6.0	2.5	1.5	1.6
	Area	7.2	0.3	85.5	93.9	324.3	42.6	37.4
	On-Road	8.6	0.2	6.3	251.7	0.6	0.3	2.0
	Nonroad	5.1	0.1	4.7	80.3	0.4	0.4	0.0
	Biogenic	1.4	0.0	27.3	7.3	0.0	0.0	0.0
	Total	**29.3**	**8.0**	**125.6**	**439.3**	**327.9**	**44.8**	**41.0**

Table 7-16. 2030 County-Level PM Season On-Road Emissions for Ada and Canyon Counties

County	Source Type	NO_x (tpd)	SO_2 (tpd)	VOC (tpd)	CO (tpd)	PM_{10} (tpd)	$PM_{2.5}$ (tpd)	NH_3 (tpd)
Ada	On-Road	3.8	0.1	3.3	157.2	0.4	0.2	1.4
Canyon	On-Road	2.6	0.1	2.3	101.9	0.2	0.1	0.8

8.0 EMISSIONS INVENTORY DATA FORMATTING

As indicated in the discussion of contract scope in Section 1.2, all contract tasks have been completed. The emissions results presented in this final report have been generated using either calculational spreadsheets or computer models.

In order to facilitate their use in air quality models, the relevant emissions data were exported to ASCII comma-delimited (.csv) files for re-formatting as input files to the Sparse Matrix Operator Kernel Emissions (SMOKE) model. Relevant parameters included pollutant emissions (i.e., annual, ozone season daily, and PM season daily), pollutant codes, SCCs, and county FIPS codes. For stationary point sources, information related to stack parameters and operating schedules were also needed. Where applicable, local temporal and speciation profiles were also provided in spreadsheet format. Computer scripts developed with Perl were then used to re-format emissions data for SMOKE. These script procedures were implemented by ENVIRON, who routinely performs these procedures and has developed a robust set of scripts, including limited internal data consistency checks, to accomplish this task.

Besides the final emissions inventory report, all inventory data (i.e., supporting data, spreadsheets, SMOKE-ready files, and all other ancillary information needed to duplicate the emissions inventory) have also been submitted to DEQ. The level of detail provided by the ERG/ENVIRON team ensures a transparent and defensible inventory that DEQ will be able to understand and replicate.

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APPENDIX A

LISTING OF PBR AND UNPERMITTED FACILITIES

10% Ethanol	All Star Freight	Besco Htg & A/C
27th Street Automotive LLC	Allied Seed Cooperative Inc.	Best Western Vista Inn
3 Horse Ranch Vineyards, LLC	Alpha I Alternative School	Beto's Mexican Food
44 Quick Stop	Als Car Care	BFI
7 Eleven # 22165	Aluma Glass Industries Inc.	BFI of Idaho Inc. Nampa
7-Eleven #19591	Alura Lawn	BHS Marketing - Nampa
7-Eleven Incorporated	American Biodynamics	Big River Trading Company
7-Eleven Store #12973	American Homestar West Incorporated	Big Smoke
7-K Motel	American Linen	Birch Elementary School
983 West State	American National Red Cross	Bis Manufacturing
A & G Upholstery	American Trailer Mfg	Black Canyon Irrigation District
A Campos Market LLC	American Woodworking	Black Dog Fabrications
A P & D Group - Energy	Amity Elementary School	Black Stone Construction
A Shade Better Painting	Amoco Oil Company	Blackers Furniture (Formerly Known As)
A&B Custom Mfg.,Inc.	Anai's Janitorial & Chemical Supply	Blackstone Security Group, LLC
A. Beth Isreal (Asbestos)	Anderson Auto Care Center	Blue Water Dories
A+ Aragon Landscaping	Anderson Foundry	Bluegrass Bakery
AAA Collision Repair	Anodizers Inc.	B-Mor Inc.
AAA Painting	ANR Freight	Bob Nicholes Oil Company
AAA-1 Enterprises	Anser Charter School	Bobs Auto Body
AAMCO Transmissions	Applied Materials	Bobs Body Shop
Able Cleanup Technologies Inc.	Arch Chemicals Inc.	Bogus Basin Recreational Association
Acclaim Technology	Architectural Glass and Glazing	Boise Ada Disposal Co., Inc.
Accord Technology LLC	Army Barracks (Former) Asbestos	Boise Airport Snow Removal Equip Bldg
Accura Bullets LLC	Arnold Machinery Co Boise	Boise Army Navy
Ace Quality Floor Covering	Arnold Machinery Co Meridian	Boise Asphalt
ACECO Precision Manufacturing Inc.	Artech	Boise Body Shop Supply
ACECO Semiconductor	Artistic Fire and Glass, Inc.	Boise Cascade Aviation
Action Trailer	Ascent Media Systems & Technology Services	Boise Cascade Aviation
Ada County Risk Mgmt	Asgrow Seed Company Nampa	Boise Cascade Corp Boise
Ada County Ems Building	Associated Dairies	Boise City Equipment Svc Shop
Ada County Fairgrounds	Associated Food Stores	Boise City Independent School
Ada County Highway Department (All Districts)	Associated Foods Warehouse	Boise Collision Ctr
Ada County Juvenile Center	Atlanta Gold Corp of America (Atlanta ,ID)	Boise Concrete
Ada County Public Safety Building	ATT Boise Idma L52067	Boise Deseret Industries
Ada Electric Co., Inc.	Atta Boi Concrete LLC.	Boise Evening School
Ada Prof-Tech Center	Auld Investment Properties	Boise Family YMCA
Ada Towing Vacant	Austin Mfg. Services	Boise Fire Dept Maintenance
Adams Elementary School	Auto Body Center Incorporated	Boise Glass Blowing Center, LLC
Adams Paint	Auto Body Specialists Inc.	Boise Hydraulics
Addies Restaurant	Auto Service Garage	Boise Independent Sd
Ads Partnership Davis Packing	Automated Office Systems	Boise Independent Sd Boise Hs
Advanced Auto Cosmedics	Automotive Collision Tech Inc.	Boise Mobile Equipment
Advanced Bio-Energy Systems LLC	Avid Aircraft Inc.	Boise Muffler
Advanced Casting Technology	Avid Aviation	Boise Parks & Recreation Dept
Advanced Environmental Tech Services	Avis Rent A Car	Boise Product Terminal Big West Oil Co
Advanced Thermographic Imaging	B & A Automotive	Boise Ranch Golf Course
Aegis Technologies	B & D Automotive	Boise School District Facility Yard
Agri-Lines Irrigation Inc.	B & K Fabricators	Boise Senior High School
Agripro Biosciences Inc.	B and J Farm	Boise State University (Boiler Plant)
AH Schade Inc. Gem Stop Co 12th Ave	Back Fourty Farms	Boise Towne Square Mall
AH Schade Inc. Gem Stop Co 2Nd St	Backyard Bakery, LLC	Boise Valley Feeders LLC
AH Schade Inc. Gem Stop Co 323 Cb	Bagel Bakery	Boise Valley Fence Company
AH Schade Inc. Gem Stop Co 612 Nb	Bar Lazy J Ranch	Boise Valley Jr Academy Sda
AH Schade Inc. Gem Stop Co Broadway	Barber Ponds-Barber Sewer District	Bon Marche
AH Schade Inc. Gem Stop Co Curtis	Basf Wyandotte Corp Mill	Bon Marche Boise
AH Schade Inc. Gem Stop Co Guss Gas&Grub	Bass Auto Body	Bon Marche Nampa
Airport Chevron Service	Batt Trucking	Booth Memorial School
Alameda Chemical & Scientific Inc.	Battery Exchange (The)	Borah Building
Albertsons – Multiple Stations	Baxter Foundry & Machine Works	Borah Senior High School
Albertsons Printing and Supply	BC Oil LLC.	Boss Technologies
Alchem Laboratories	BCT Inc.	Bown Crossing LLC
Alexander Clark Graphics	Beacon Light Chevron	Bradley Custom Cabinets
Alexander-Clark Inc.	Beacon Light Products Inc.	Brandt Agency
All Freight Transportation Inc.	Beatty	Brice Construction
All Hours Pumping	Bechtel Oil, Gas and Chemicals, Inc.	Brown Bus Co.

Bull Transportation	Bed Rock Stone Works	Bruce and Rod's Tire Factory
Burks Tractor Co LLC	Benjamin's Rural Disposal	Bucks' Barnyard
Burks Tractor Co LLC	Beranna Dairy	Buck's Tractor Works
Burlington Resources Oil & Gas Company LP C & B Quality Trailer Works Inc.	Bernie Lacey Autobody & Paint Cheywidden Trucking & Excavating	Budget Inn Creekside Tile & Stone, LLC
C A C Machineworks	Chief Joseph Elementary School	Creekstone and Assoc.Construction L.L.C.
C Wright Construction Co., Inc. (1677700335)	Chinden Chevron	Crimson Point 3 (Quilceda)
C Wright Construction Co., Inc. (1677700418)	Choutchourrou's Dairy	Croman Corporation
C.L. "Butch" Otter	Christine Donnell School of Arts	Crop Production Services Inc.
C.M. Company	Chuck Degroot	Crossroads Middle School
Caldwell ID 232	Cimm Technologies LLC	Crown Lift Trucks
Caldwell Auto Supply Co., Inc.	Circle K 6627 Overland	Cummins Intermountain Inc. Boise
Caldwell Chevron	City of Boise (Geothermal)	Currentechnologies
Caldwell Sd 132	City of Kuna	Curt & Hal Incorporated
Caldwell Senior High School	City of Kuna	Curtis Meadow Apartments
Caldwell Transportation Company	City of Melba	Custom Concrete & Labor
CAM Machine, LLC	City of Star Horse Arena	Custom Direct Metal Buildings, LLC
Camas Gravel Company	Clarence Vander Stelt and Sons	Custom Wood Interiors LLC
Campbell Tractor Nampa	Clark's Concrete Const	Cynthia Mann Elementary School
Canyon Auto Sales	Classic Stone Supply, LLC	D & B Supply
Canyon Creek Woodworking	Clear Choice Water Treatment	D & B Supply
Canyon Pool and Spa	Clearwater Bldg (Frm Ch2M Hill)	D & B Supply
Canyon Springs Alt High School	Clements Excavation and Concrete LLC	D & L Marine
Capital Exxon	Clover Club Borden Packaging	D & R Antifreeze Recycling
Capital Senior High School	Cloverdale Funeral Home & Memorial Park	D and D Farms
Capitol Auto Body Inc.	CM Company Inc.	Dairy #1 and Dairy #2
Capitol Copy & Print	Coast 2 Coast LLC	Dairy Health Inc.
Capitol Lithography & Printing	Coatings Plus	Dale's Auto Care
Capitol Polysteel LLC	Cole Elementary School	Dale's Service Co
Cardinal Health 200 Inc.	Cole Village Chevron	Dan Van Grouw Dairy
Caribbean Tan	College Blvd Body Shop	Dan Wiebold Ford
Carlisle Spring Brake Products	Collister Elementary School	Dan Wiebold Ford Detail Bldg
Carousel and Syringa Farms	Collister Exxon	Dan's Ferry Service
Carquest Automotive Finishes Garden City	Color Craft Painting Inc.	Darigold-Boise
Carquest Automotive Finishes Nampa	Coltstone LLC	David Marsh Farmer
Carr's Home Lumber Company Incorporated	Columbia High School	David S Weiss Co., Inc.
Castle Wood Products	Columbia Paint & Coatings Co Boise	David W Gunder
Catchray Technologies Inc.	Columbia Paint & Coatings Co Caldwell	Davison Air Svc
Caxton Printers Ltd	Combined Districts Crushing Fund	DEBCO Construction
CDI - Proposed Parking Lot	Comfort Suites Motel	Deco Rock of Idaho
Cecil D Andrus Elementary School	Commercial Fuel Recycling LLC	Deerflat Sand & Gravel
Cenex Land Olakes	Community Activities Center	Degroot Dairy
Cenex Lol Express Center Nampa	Community Health Clinics Inc.	Dehryl A Dennis Prof-Tech Center
Centennial Elementary School	Compass Public Charter School	Dennis Dillon Auto Park Center
Centennial High School	Compton Transfer & Storage	Dennis Dillon Truck & Used Car
Centerpoint Alternative High	Computrol Inc.	Dent Pro
Central Canyon Elementary School	Con Way Freight Western	Dentpro
Central Elementary School	Concrete Cutting Services, Inc.	Dentpro Inc.
Central Idaho Building Supply	Concrete Evolutions	Desert Express Inc.
Central Paving Company (1677700024)	Concrete Innovations	Desert Sage Elementary School
Central Paving Company (1677700093)	Concrete Placing Co., Inc.	Designs By Human
Central Paving Company (1677700243)	Concrete Placing Company Inc.	Diamond A Facility
Chad Lowry Cattle Company	Concrete Surface Solutions	Diamond Signs
Chaparral Elementary School	Conectl Test Corp	Diamond Street Recycling LLC
Chaparral Research and Development	Consolidated Concrete Co	Diamond Z Manufacturing
Charles H Lilly Co	Container Systems Corp	Dillon Auto Recycling Incorporated
Charlie’s Auto Painting	Containers West Inc.	Dinamo
Checkmate Industries Inc.	Contract Decorators of Idaho	Diocese of Boise
Chem Freight Inc.	Cope Automotive Inc.	Discovery Elementary School
Chemical Coating Applicators L.L.C.	Corner Market	Disruptive Technologies Manufacturing, LLC
Chevrolet of Boise	Cornerstone Development	Diversity Machining LLC
Chevrolet of Caldwell	Cornerstone Furniture L.L.C.	Dora Bull
Chevron Chemical Nampa	Cossa	Double D Service Center
Chevron Pipeline Co, Lang	Costco Wholesale 16	Double Oo Dairy
Chevron Texaco	Costco Wholesale 734	Double R Trailers
Chevron USA Inc. Boise Bulk Plant	Costco Wholesale 761	Double Xl Ranch

Chevron USA Inc. Mtn Home Bulk Plnt	Country Club Property Owners Inc.	Doufas Painting Contractors Meridian
Chevron USA Inc. Ss 92226	Country Corner Store	Doufas Painting Contractors Mh
Chevron USA Inc. Ss 92348	Coutry Club 3	Doug Gross Farms Incorporated
Chevron USA Inc. Ss 94698	Cox Autobody Inc.	Downtown Chevron
Durham Transportation Csc21	Cpm Precision Machine, Inc.	Dream Bakery and Cafe
Eagle Academy	CR Wood Products	Dreamscape Ranch & Llamas
Eagle Elementary School	Crane West Inc.	Dry Creek Development
Eagle Fish Hatchery	Creative Technologies, LLC	Dry Lakes Dairy
Eagle High School	Feed Service Inc. Caldwell	Gem Stop #9
Eagle Hills Elementary School	Fiberglass Systems Inc.	Gempler Trucking
Eagle Masonry and Stone, Inc.	Fiberguide Ind Inc.	General Electric of Boise
Eagle Middle School	Finley Tank Trucking Inc.	Gene's Automotive
Eagle Precast - Caldwell Facility	Firestone Tire & Rubber Broadway 4878	Gillingham-Wood Gravel Pit
Eagle Road Chevron	Firestone Tire & Rubber Fairview 4849	Glenn Dick Equipment Co
Eagle-Star Technology Corridor	Firestone Tire & Rubber Nampa	Glenns Ferry City Of
Earnst Bldg	First Choice Collision Repair Inc.	Glenns Ferry Elementary School
East Canyon Elementary School	First Choice Curbing and Concrete LLC	Glenns Ferry High School
East Elementary School	Fiscal Funding Co., Inc. Vacant Bldg	Glenns Ferry Highway Dist
East Junior High School	Flying J Fuel Stop – Multiple Stations	Glenns Ferry Middle School
East Valley Middle School	Fmc Corp Agricultural Chemical Group	Glenns Ferry Sd 192
Eby Brothers Inc.	Food	Glenwood Station #37
Ecco	Foothills Chevron	Global Travel Office Bldg
Ecological Auto Technologies, Inc.	Formal and Bridal Ctr	Goicoechea Jerry
Econo Lube N Tune 305	Former Great Western Chemical	Gold Shield Interiors Inc.
Econo Lube N Tune 310	Fort Boise Cattle Co	Golden Eagle Mine, LLC
Econo Lube N Tune 326	Fort Boise Mid High (Alt) School	Golden West Advertising Inc.
Econo Wash	Fran Warner Dba Fran Warner Trucking	Goodman Oil
Ed Johnson Farms Inc.	Frank Field - Former Frank Airfield	Goodson's LLC
Ed Van Grouw Dairy	Franklin Auto Body	Goofy Lock Stock & Barrel
Edmark Chevrolet	Franklin Building Supply	Grace Assisted Living Expansion
Edmark Gmc Pontiac Buick	Franklin Chevron	Grandview Farms
Edmark Gmc Pontiac Buick Body Shop	Franklin Elementary School	Great Harvest/Wood Family Bread Co.
El Beto's Mexican Food LLC	Franklin Gem Stop #021	Great Wall Stone Co. (The)
Electronic Controls Co	Fremont H Teed Elementary School	Green Arrow Inc.
Elite Concrete Innovations LLC	Fresca Mexican Foodds	Greenhurst Elementary School
Elite Custom Concrete & Curbing LLC	Freund/Spencer (Nampa, Id)	Greenhurst Nursery and Garden Center
Emerald Tile, Stone and Stucco	Friesian Valley Dairy	Greenleaf Friends Academy
Empire Transport Inc. Overland	From The Garden	Greenleaf Mini Aussies
Entera Technology, LLC	Frontier Elementary School	Greenlight Technologies
Environmental Mgt Solutions Inc. Gc1	Frontier Feeds Inc.	Greenspeed Pest & Lawn Mgt 34th
Environmental Mgt Solutions Inc. Gc2	Fruehauf Division	Greenspeed Pest & Lawn Mgtgarnet
Environmental Mgt Solutions Inc. M1	Fuel Energizer, LLC	Guerdon Industries
Environmental Mgt Solutions Inc. M2	Fuel Flex International, LLC	H.B. Mabee Company
Envirosafe Svcs of America	Fuel Injection Service Co., Inc.	Haasch Whitesel Trust
Episcopal Diocese Office	Fuel Synergies, Inc.	Hacker Middle School
ESI	Fulfers Environmental Svc	Hackler Gus
ESP Inc.	Fusion Packaging Solutions	Hahnman Inc. Dba Idaho Auto Sales
Everett Johnson Trucking	G & B Redi-Mix Nampa	Hailstone Furriers, LLC
Evergreen Environmental Group Inc.	Galaxy Airbrush Manufacturing Company	Hammett Valley Market
Ewing Animal Hospital	Galen Blanc Auto Body	Hammock Mgmt Inc.
Ewing Concrete	Galey Construction	Hampton Inn & Suites
Express Printing	Garden City Community Charter School	Hansen Rice Inc.
Exxon	Garfield Elementary School	Hansen-Rice Inc.
Eyton Steel Products, Inc.	Garret Park Chevron	Happy Day Ford
Fahrlander's Custom Tile and Stone, Inc.	Garrity Blvd Body Shop	Harbor Oil Inc.
Fairly Reliable Bobs	Gary Van Vliet	Hard Rock Concrete
Fairmont Junior High School	Gary Zurn Property	Harolds Auto Body
Faith-Full Farms	Gas N Dash	Harper Stone Inc.
Falcon Ridge Public Charter School	Gas Star	Harris Moran Seed Company Nampa
Family Medical Group	Gate City Steel Key Bank	Harrison Technologies, LLC
Far West Landscape and Garden Cntr	Gayle Manufacturing Co	Hawley's Automotive
Farm & City	Gem Meat Packing Company	Hawthorne Elementary School
Farm Bed Manufacturing Inc.	Gem State Academy	Haztox Inc.
Farm Fresh Turkeys	Gem State Alloys Inc.	Haztox/Mile High Academy
Farm Store	Gem State Broadcasting	Hd Supply Utilities Ltd Hg 3306
Farmers Warehouse	Gem State Concrete Coatings	Hd Supply Water Works Ltd Ww 3060

Fearless Farris Stinker Nampa 48	Gem State Mfg Inc. Caldwell	Hdr Food Services, Inc.
Fearless Farris Stinker Station	Gem State Mfg Inc. Nampa	Heath Electronics Mfg
Fearless Farris Stinker Station	Gem State Oil Recovery	Heimbuck Bldg
FedEx Freight West	Gem State Pest Control Century Way	Helicopter Maintenance Inc.
FedEx Freight West	Gem State Pest Control Fairview	Hennessey Transport
Federal Express Corp Boiair	Gem State Woodworks	Hickman Farms
Federal Way	Gem Stop	Hidden Springs Charter School
Federal Way Development	Gem Stop #014	Highlands Elementary School
Hillside Nursery	Gem Stop #016	Hillcity Technology, Llp
Hillview Development Corp.	Gem Stop #017	Hillcrest Elementary School
Hip Red Recycling & Demo	Gem Stop #8	Hillcrest Shopping Bldg
Hitech Ind	Idaho Helicopters Inc.	Hillside Jr. High School
Hobson Fabricating Corp	Idaho Linen	J R Simplot Soilbuilders Wilder
Hobson Fabricating Inc.	Idaho Maximum Security Prison	J R Simplot Transportation
Hoffman Auto Body	Idaho National Guard Bldg 66J	J. H. Wise Sons Company LLC
Hogeys Antique and Restoration	Idaho Peterbilt Inc.	Jabil Circuit Incorporated
Holly Corp	Idaho Pipeline Corp	Jabil Circuit Incorporated Boise
Holmes Elementary School	Idaho Power Co Boise	Jacks Body Shop
Home Club No 50	Idaho Power Co Boise Amity	Jackson Elementary School
Home Depot 1801	Idaho Power Co Boise Franklin Rd	Jackson Food Stores – Multiple Stations
Home Depot 1804	Idaho Power Co Investment Recovery Ctr	Jackson Livestock
Home Depot 1806	Idaho Registration Service Co	Jadamill Tool Corporation
Home Depot 1809	Idaho Ronald McDonald House	Jake's Funkey Fresh Eggs
Home Depot 8941	Idaho Sand & Gravel Co., Inc.	Jaks Stripping & Refinishing Center
Homeland Realty	Idaho Sand & Gravel Co., Inc.	Jak's Stripping/Ref
Hopper Electric Service	Idaho Sand & Gravel Co., Inc.	James H Jones
Horizon Air Industries Inc. Boi	Idaho Scrap & Salvage	Jaymark Cabinets Inc.
Horizon Elementary School	Idaho St Dept of Corrections	Jbs Body & Fender
Horse World Inc.	Idaho State School & Hospital	Jb's Custom Woodworking, Inc.
House of Stone, LLC (The)	Idaho Statesman (The)	Jefferson Elementary School
Houser Autobody	Idaho Tank & Culvert Inc.	Jefferson Middle School
Houser Autobody Inc.	Idaho Technology Solutions	Jefferson West Apartments
Howards Archery Shoppe	Idaho Truck Specialties	Jeffs Stone & Tile Works
Howe Bros Body & Paint	Idaho Truck Specialties LLC Dba Cobalt	Jemmett Consulting and Research Farm
Hpc Scientific LLC	Idaho Virtual Academy	Jenkins Fabrication & Mill Works
Hrw Manufacturing	Idaho Virtual High Charter School	Jerrys Repair Service
Hubbard Elementary School	Idaho Waste Streams	Jiffy Lube
Hunter Elementary School	Idaho Youth Ranch	JJ Woodworking
Huskey Auto Electric Inc.	Ida-Tran Freight Systems	John Bolt
Hutchison Realty	Idea Inc.	John Deere Tractor (Campbell Tractor Bldg)
HVAC Controls	Ideal of Idaho Inc.	John H Harland Co
Hydrotech Fuel Solutions, LLC	ID-Fish & Game	Johnson Fiberglass
I-84 Uni-Merc	IDX Pathology	Joplin Elementary School
ICCO Caldwell	IHD	Joslyn & Morris Inc.
ICCO Eagle	Image National Inc.	J's Cleaners
ICCO Middelton	Imperial Truck Painting	Jule Evans
ICCO Mountain Home	Independent Auto Body Inc.	Just 4 Fun Stables
ID Adm Eight Street Parking Lot	Independent School District of Boise	Justo's Grocery
ID Agri Caldwell	Indian Creek Demo Project	Juvenile Corrections - Nampa
ID Agri Plant In Lab	Indian Creek Elementary School	K C Supply Co
ID Bsu Nampa	Industrial Administration Building	K J Land and Livestock
ID College of Idaho Inc.	Industrial Coatings	K M Trucking
ID Dfg Boise 44th St	Industrial Hygiene Resources	Kadels Idaho Collision Repair
ID Dhw Bureau of Labs	Industrial Indemnity	Kam Technologies
ID Dhw State School & Hospital	Industrial Indemnity Insurance Co	Kangas Fabrication
ID Dle Bur of Narcotics Clinton St	Industrial Minerals Piocess Consulting	Kaps Warehouse
ID Fg Nampa Fisheries Research	Industrial Solutions Inc.	Kathy's Specialty Foods, LLC
ID Idaho State Police Reg 3 Forensic Lab	Industrial Ventilation Inc. Nampa	Kelly Moore Paint Co., Inc. Boise Broadway
ID Ishs	Inspire Virtual Charter School	Kelly Moore Paint Co., Inc. Boise State
ID Trans Dept Bur of Aeronautics	Insulstone, Inc.	Kelly Moore Paint Co., Inc. Caldwell
ID Trans Dept Chinden	Intermountain Gas Gen Office	Kelly Moore Paint Co., Inc. Eagle
ID Trans Dept Fletcher Foster Site	Intermountain Hospital	Kelly Moore Paint Co., Inc. Meridian
ID Trans Dept Materials Lab	Intermountain Plastics	Kelly Moore Paint Co., Inc. Nampa
ID Ui Caine Vtrc	Intermountain Steel, Inc.	Ketterling Terry L.
ID Ui Parma	Interstate Brands Corp Eddys Bakery	Keystone Enterprises, LLC
Idaho Army Natl Guard	Inventive Products	Meridian McMillan-Linder Ward

Idaho Arts Charter School	Iowa Beef Processors Incorporated	Meridian Medical Arts Charter School
Idaho Asphalt Supply Incorporated	Iowa Elementary School	Meridian Middle School
Idaho Business and Technology Expo	Irena's European Fine Foods LLC	Meridian Night School (Alt)
Idaho Center of Adv Technology Center	Isom Structural Metals, Inc.	Meridian Promenada
Idaho Chemical Industries Incorporated	Ltd - Caldwell MTCE Yard	Meridian School Bus
Idaho Circuit Technology	J & R Industrial Truck Refinisher	Meridian School District
Idaho Commission For The Blind	J Bar Enterprises	Merry X-Ray
Idaho Concrete Co Caldwell	J R Simplot Co Aquaculture Business Unit	Metalcraft Inc. E 45th
Idaho Concrete Nampa	J R Simplot Co Pht Bldg	Michaels Automotive Service
Idaho Correctional Industries	J R Simplot Co Valley Storage	Michaels of Oregon
Idaho Custom Iron Works	J R Simplot Dairy Products Inc.	Micro 100 Tool Corp
Idaho Delivery & Assembly	J R Simplot Meat Products LLC	Micron Communications Inc.
KG Grocery	J R Simplot Soilbuilders	Micron Systems Integration
Kiddie Kandids	J R Simplot Soilbuilders Boise	Micron Technology Fab D
Kimco Design & Manufacturing	J R Simplot Soilbuilders Caldwell	Micron Technology Inc.
King of Glory Luthern Church	Lowell Scott Middle School	Micron Technology Inc. Sig
King's Corner	Lowen Corp	Micron Technology Memory Appl. Group
Kinro	Lowes Hiw Nampa 1785	Middleton Heights Elementary School
Kirk Huff Trucking	LPL Transportation Inc.	Middleton High School
Kit Home Builders West	Lt Lube & Oil	Middleton Middle School
Kit Manufacturing Co	Lube Jockey Inc.	Middleton Mill Creek Elementary School
Kmart 3189	Lynn Industrial Coatings Inc.	Middleton Mill Ditch Co
Kmart 3298	Lynn Plasma Inc.	Middleton Transition School
Kmart 7668	M & J Investments	Milestone Construction & Maintenance LLC
Knife River (Masco Inc.)	M & M Enterprises E 37th	Mills Mountain View Ranch, LLC
Knife River (Nampa)	M & M Enterprises State Conoco	Minit Lube 1017
Koch Materials Company	M & T Inc.	Minit Lube 1505
Koelsch Elementary School	M & W Markets	Minit Lube 1508
Kozgro Inc.	Maaco Auto Painting Fairview	Minit Lube 1509
Kr Recycling	Maaco Auto Painting Federal Way	Mirastar #6
Kuna High School	Maaco Auto Painting Irving	Miron Auto Body
Kuna Jt Sd 3	Maces Auto Body	Missman Electric Co., Inc.
Kuna Middle School	Machinery Connection	Mitchell Chevron
Kupper Etechnology Services LLC	Macs Radiator & Repair Inc.	Mitigation Technology Partners
Kurpjuweit Fred J	Madison Early Childhood School	MK Corporate Flight Div
L & G Trucking	Madison Elementary School	Monroe Elementary School
L & L Furniture Inc.	Maple Grove Elementary School	Mooriah Dairy
L & L Trucking Inc.	Maranatha Christian School	Morehouse Property Mgmt
L B Trucks & Equipment	Maravia Corporation	Morford Farms
L J Machining Service	Maravia Corporation	Motivepower Truck & Engine Annex
L. C. Realization Corp.	Marian Pritchett Memorial School	Motor West
Lake City Intl Truck Amity	Mariposa Labs	Mountain Cove (Alt.) High School
Lake City Intl Truck Fairview	Market Link Mines, LLC	Mountain Home Ford
Lake Hazel Elementary School	Markham Painting Inc. Micron Site	Mountain Home Ford Lin Mer Inc.
Lake Hazel Middle School	Martindales Custom Truck	Mountain Home Highway District
Lake Lowell Market	Mary McPherson Elementary School	Mountain Home Junior High School
Land O'Lakes Farmland Feed	Mason Creek Dairy Inc.	Mountain Home Oil Inc.
Land Pro Development	Master Environmental Inc.	Mountain Home School
Land View Fertilizer Incorporated	Material Testing & Inspection Inc.	Mountain Home Sd 193
Larry Miller Honda	Matrix Construction Inc.	Mountain Home Sr High School
Larry Miller Pontiac Buick Cadillac	Maverick Country Store #209	Mountain Home Trucking Inc.
LB Equestrian and Tennis Academy	Maverick Country Stores Inc. #178	Mountain States Press Inc.
Lead Brokers USA	Maverik Country Stores Inc.	Mountain Top Woodworking
Leaning Tree Farms	Maverik Country Stores Inc.	Mountain View Elementary Sch
Leos Towing	Maxine Johnson Elementary School	Mountain View Equipment Caldwell
Les Bois Junior High School	May Trucking Co Nampa	Mountain View Equipment Meridian
Les Bois Transport	MBG Mold Be Gone LLC	Mountain View High School
Lewis and Clark Elementary Center	McKinley Elementary School	Mousers Auto Body
Lewis and Clark Middle School	McMillan Elementary School	MP Mask Technology Center LLC
Liberty Charter School	McAlvain Construction Inc.	MT Cove High School
Liberty Elementary School	McClures Machine Shop	Mtn Home AFB Primary School
Liberty Elementary School	McDonald Watkins	Murgoitio Dairy
Like-Nu Car Wash	McKim Residence	Nagel Beverage
Lincoln Elementary School	McMillian Elementary School	Nagel Beverage Co
Lincoln Elementary School	Meadow Gold Dairies	Nampa Auto Parts
Linder Elementary School	Med Plaza	Nampa Chamber of Commerce

Lithia Body & Paint of Boise	Medes Concrete and Excavation	Nampa Christian Schools Inc.
Lithia Collision Center	Melba Elementary School	Nampa Exxon
Lithia Ford of Boise	Melba High School	Nampa Fire Stn
Lithia Ford of Boise	Melba Joint Sd 136	Priest Electric
Lithia Volkswagen Audi of Boise	Melba Middle School	Prime Land Development
Lithocraft	Melba Quick Stop	Producers Lumber
Lithographics Inc.	Melva Engineering	Producers Supply Co-Op
Little Cattle Co	Memphis Construction	Producers Supply Co-Op
Little Country Alpacas	Meridian Academy	Prominence Information Technologies, Inc.
Little Russia International Foods, LLC	Meridian Auto Sales	Prospect Elementary School
Lloyd Lumber Co	Meridian Charter High School	Protective Technologies LLC
Local Motion Transportation	Meridian Creamery	Protran Transmission No 2
Logistic Services %Maknteshim-Agt of Na	Meridian Elementary School	Protran Transmission No 3
Long Creek Mining LLC	Meridian Fence	Prudential Jensen Real Estate
Longfellow Elementary School	Meridian Ford	Psimeta Technologies, LLC
Lowell Elementary School	Meridian Ford Sales Inc.	Public Works Shop
Nampa Highway District	Meridian High School	Purdy Farm Spill Site
Nampa Meridian Irrigation District	Meridian Joint School Dist 2	Purple Sage Elementary School
Nampa Paving & Asphalt Co	Meridian Joint Sd 2	Q R Ranch
Nampa Post Office	Pacific Northwest Broadcasting	Quali-T Furniture Stripping
Nampa Realty	Pacific Northwest Chemical	Quality Curbing and Concrete LLC
Nampa Sd 131	Pacific Pride Card Loc	Quarter Circle Dj Ranch
Nampa Senior High School	Pacific Recycling Boise	Quinn Robbins Co., Inc.
Nampa State Fish Hatchery	Pacific Recycling Nampa	Quirt Leatham Trucking Inc.
Nampa Teen Parent Alternative High School	Pacific Steel & Recycling Nampa	Qwest Communications
Nampa Wellhouse	Pacific Steel Fabricators	R & M Steel Co
Nascar HOF Commemorative Brick Program	Pacific Steel Hides Furs Metal Recycling	R & R Hardwood Floors Inc. Gage
National Car Rental	Pacific Subs and Hanger Bar	R & R Hardwood Floors Inc. Lemhi
National Coatings Inc.	Pam Division of US Oil Co., Inc.	R & R Sanitation Inc. E 42Nd
National Interagency Fire Center	Pandora Press Co	R & R Sanitation Inc. Franklin
Natural Chemical Technologies	Park Pointe Realty	R & V Oil Company Incorporated
Naugle Hereford Ranch	Park Ridge Elementary School	R C Bigelow Co
Naylor Auto Repair	Parklane Management Co	R L Drake Co
Naylors Chevron	Parks Royal Body Works Inc.	R Lazy R Farms Ptn
N-Bar Ranch	Parks Westside Body Works	Radiator King
Neighborhood Housing Service	Parkview Early Childhood Center	Rambo Crushing Company
Neighborhood Housing Service	Parma Co	Rays Auto Body Repair Inc.
Nelson-Deppe Inc.	Parma High School	Reagan Elementary School
New Frontier Chrysler	Parma Post & Pole	Red Lobster
Nick Larrea Trk Inc.	Parma Sd 137	Red Rock Tile & Stone
Nick Warrila	Pathways Middle School	Reed Elementary School
Norco Inc.	Patty Clinton Hair Salon	Reed Grain & Bean
North American Recycling	Paul's Concrete	Remick Trucking Ltd
North Elementary School	Payless Drug Store Boise	Residuals Management Inc.
North Jr. High School	Payless Drugs Caldwell	Residuals Management Inc.
North Star Public Charter School	PC Recyclers of Idaho	Rhino Graphics
Northern Iron & Metals	Penske Auto Center Boise	Rhinographics LLC
Northwest Animal Hospital	Penske Auto Center Nampa	Rhone-Poulenc Ag Idaho Dist Corp
Northwest Building Systems	Penske Truck Leasing Co Lp	Ridgecrest Alt High School
Northwest Childrens Home (Alt) High School	Penske Truck Leasing Co Lp	Right Now Inc.
Northwest Childrens Home2	Pepper Ridge Elementary School	Rim Ranches Inc.
Northwest Childrens Home4	Peregrine Elementary School	River Chief Marine LLC
Northwest Childrens Home6	Peregrine Industries Inc.	River Moss Technologies, LLC
Northwest Development Company	Performance Design LLC	River Rock Sand & Gravel LLC
Northwest Mill Creek LLC	Perma Green Lawn Co	River Valley Elementary School
Northwest Nazarene University	Perma Green Lawn Co	Riverglen Jr High School
Northwest Pipeline; Mountain Home	Pest-Go Bye Bye Bug	Riverside Auto Body
Northwest Pipeline Gp Caldwell	Peterson Autoplex	Riverside Elementary School
Northwest Printing	Peterson Dental Laboratory	Riverside Funeral Service & Crematory
Northwest Technologies Inc.	Peterson Town and Country	Riverstone Aviation, LLC
Northwest Trailer Service	Pete's Woodcraft LLC	Roadway Express Inc.
Northwest Woodworks	Photronics Inc.	Roaring Springs Water Park
Notus Elementary School	Pierce Concrete Supplies, Inc.	Robertsons Auto Body
Notus Jr-Sr High School	Pierce Park Elementary School	Robs Rr Hardwood Floors
Notus Sd	Pilot Travel Center #350	Rock Hard Granite LLC
Novartis Seeds Inc. 1300 Chicago	Pin Nip Inc.	Rockin S Ranch

Novartis Seeds Inc. 1403 Chicago	Pine Elem-Jr High School	Rocky Mountain Bank Note
Nuclear Pharmacy of Idaho Incorporated	Pioneer Coatings Inc.	Rocky Mountain Dredging, LLC
Nuclear Technology Solutions, L.L.C.	Pioneer Elementary School	Rocky Mountain Gravel, LLC
Oakley-Moody Service	Pioneer Hi Bred International	Rocky Mountain Soil Stabl. & Dust Control
Odd Fellows Building	Pipe Inc.	Rolling Hills Public Charter School
Office Complex	Pixtech Inc.	Ronald W. Van Auker Inc.
Oil Express	Plant Health Technologies	Ron's Lake Shore Service
Olin Microelectronic Materials	Plexus Electronic Assembly Corp (Ea-Boi)	Sunwest Energy Corp
Omnipure Filter Co	Ponderosa Elementary School	Superior Construction and Excavating Inc.
OMS #2	Ponderosa Paint Manufacturing Incorporated	Superior Fast Freight
One Stone, Inc.	Portrait Innovations	Superior Truck Svc
ORE IDA Food Inc.	Prairie Elem-Jr High School	Supplement Manufacturing Resource L.L.C.
Original Ironworks LLC	Precision Automotive and Transmission	Supreme Court Library
Overland Auto Body	Precision Collision Repair	Swift & Company Beef
Overland Printers	Precision Fencing	Swiss Village Cheese Co
Owners Choice	Precision Flight	Symms Fruit Ranch
Owyhee Elementary School	Precision Flight Inc.	Syngenta Seeds Inc.
Owyhee Elementary School	Precision Propeller Svc Inc.	Syngenta Seeds Inc.
Oxarc Inc.	Preco Automotive Electric	Syngenta Seeds Inc.
Oz-Lo Industrial	Preco Electronics Inc.	Syringa Middle School
Roosevelt Elementary School	Preco Safety Products	Syringa Property Mgt Inc.
Roosevelt Elementary School	Pressure Treated Timber Company	Systems Auto Body Incorporated
Ross Elementary School	Price-Less Mini-Mart	T & LC Farms LLC
Roundtree Chevrolet Inc. Old	Snake River Elementary School	T and C Custom Metal Fab
Roundtree Lincoln Mercury Old	Snake River Farms	T&T Cattle
Roundys Pole Fence Co	Snake River Petroleum LLC	T.A. Dibble Excavation Inc.
Rubens Body Shop Inc.	Snickerdoodle Bakery	Tablerock Printing
Rule Sales & Service Inc.	Softspikes	Tablerock Printing Inc. Grove
Rustic Wood Creations	SOS Environmental	Target Buick
Ryder Truck Rental	South Junior High School	Target Buick Subaru Saab
S & E Auto Parts	South Middle School	Target Store 0617
S & K Livestock	Southside Pallets	Target Store 1230
Sacajawea Elementary School	Southwest Idaho Juvenile Detention Center	Target Store 2206
Safety-Kleen Corp 1-183-08 Ob	Southwest Idaho Prof-Tech Center	Tech Auto Body
Safety-Kleen Systems Inc.	Spalding Elementary School	Techni Chem Corporation
Sage Valley Intermediate School	Spangler Bros Auto Body Repair	Technology Solutions
Saia Motor Freight Line Inc. Boise	Spear Technologies LLC	Tektoniks Corp and Sundance Const Mgmt
Sams Club – Multiple Stations	Specialty Environmental Svcs Inc.	Ten Lane
Sam's Scrub Metal	Specialty Environmental Svcs Inc. 2	Tenos Auto Detail Shop
Samson Truck Line	Spencer Industries Inc.	Terminix Branch 2489
Sawedoff Woodworking	Spyder Technology	Teton Valley Ranch LLC
Sawtooth Construction	SSI Food Services LLC	Tfi Limited Partnership
Sawtooth Forest Industries	St Joseph's Catholic School	The Close Pin Shop
Sawtooth Middle School	St. Lukes Breast Cancer Detection Center	The Daniels Company
SC Construction (Nampa Facility)	St. Michael's Cathedral	The Home and Garden Store
Schober Farms	St. Michael's Cathedral	The Home Depot
SCP Global Technologies	Staker & Parson Companies (1677700373)	The Mode Building
SCP Global Technologies Sw2	Staker & Parson Companies Boise East	The Preferred Company
SCP Global Technologies Wstprk	Staker & Parson Companies Joplin	The Strand Bldg
Scuglia Fabrication	Staker & Parson Company (77700407)	Therm Ox Industries
Sears No. 4138	Star Elementary School	Thermasource Cementing, Inc.
Sears No. 8139	St. of ID Admin. Bldg./Len B. Jordan Bldg.	Thermo Fluids Inc.
Selkirk Metalbestos	State Street Chevron	Thermo Fluids Inc. Nampa
Selway Fabrication, LLC	Statell Ltd	Thomas Jefferson Charter School
Service City Auto Paint	Statewide Transport Inc.	Thomas Nicholson
Seubert Excavators Inc. (1677700100)	Steed Construction Inc.	Thornton Hog Farm
Seubert Excavators Inc. (1677700103)	Steel Resources Inc.	Thoroughbred Collision Center
Seven Mile Lounge	Steelblu LLC	Tiegs Farms Inc.
Seven Oaks Elementary School	Steelhead Collision Center Inc.	Tikal Bakery
SFP Food Service	Stenick Betty	Tile & Stone Installations
Shadow Hills Elementary School	Sterling Battery Co	Timberline High School
Sheppard-Wood Distibutors Inc. 2	Sterling Landscape Co	Titus Manufacturing, Inc.
Sherman Elementary School	Steve Barry Store	TLK Dairy
Sherwin Williams Co Boise	Steve Boschma Dairy	TNB Post N Pole
Sherwin Williams Co Meridian 8420	Steves Collison Repair	TNT Salvage
Sherwin Williams Co Nampa	Sticks-N-Stones	Todd Campbell Construction Inc.

Shoakoi Fish Farm	Stiener Corp	Tom Scott Auto Body
Shulerlane Farms Inc.	Stillwell 117 Ranch Inc.	Tom Scott Mazda
SI McStay Corporation	Stillwell 117 Ranch Inc. (Phillips Bros. Ranch)	Tomkat Printing
SIARCO	Stinker	Tomlinson & Assoc
Sierra View Refiners Incorporated 105	Stinker	Tommy N Thompson (Tnt Insured Towing)
Sierra View Refiners Incorporated 107	Stinker Station 45	Toms Auto Body
Signs Ink	Stone Fly Fishing Products	Tops Machine LLC
Silgan Containers Corp Nampa	Stonebuck, LLC	TR Compton Inc.
Silver Butte Holsteins Inc.	Stonehaven Concepts, Inc.	Tracy's Texaco
Silver Sage Elementary School	Stonehouse Enterprises	Trail Blasers Inc.
Sim Trans Railshop	Stones Inc.	Western Cabinet and Millwork
Simchem (Mountain Home)	Stonewall Masonry LLC	Western Construction
Simple Life Farm	Storage Place (The)	Western Construction (Portable Plant)
Sims Wood Inc.	STP Concrete Co., Inc.	Western Construction (Portable Plant)
Sioux Veneer Panel Co	Straight Edge Lawncare Co.	Western Construction (Portable Plant)
Six Day Technology, Inc.	Stringers Gem Shop	Western Dairyman Coop Inc.
Skyview High School	Summerwind Elementary School	Western Farm Service Glenns Ferry
Slaugher Farm House (Former)	Sun Ridge Dairy	Western Farm Service Parma
Smith Detroit Diesel Allison	Sun Valley Marble	Western Farm Service Star Mill
Smith Eagle Chevron Inc.	Sundance Dairy	Western Idaho Fairgrounds
Smith's Chevron	Sundance Dodge Larry Miller Collision	Western Idaho Potato Processing Company
Smokin Hot Deals	Sunny Ridge Elementary School	Western Laboratories
Smooth Clay Company	Sunnyslope Food and Wine Company LLC	Western Oil
Trailer Home (10 Units)	Sunseed Ltd Lp Parma Branch	Western States Equipment Fairview Ave
Trans Continental Transport Inc.	Sunset Nursery	Western States Equipment Meridian
Transportation SVCS Inc.	Sunset Sports Building	Western States Equipment Overland Rd
Traveleze Northwest	USDA Aphis Ws Boise	Western Trailer Co
Treasure Canyon Calcium	USDA FHA Obendorf Farm	Western Trailers
Treasure Valley Fertilizer Co., Inc.	USDA Forest Service, Boise National Forest	Western World Inc. S 34th
Treasure Valley Green Recycling, LLC	USDA Fs Boise Nf Shop/Warehouse	Westgate Chevron
Treasure Valley Homes Inc.	USDA Fs Intermountain Research Station	Westpark Shopping Center
Treasure Valley Institute For Children's Arts	USDA SCS	Westpoint Transportation Inc.
Treasure Valley Math/Science Center	USDA Wildlife Serv Parker Kelly 27197	Westside Body Works
Treasure Valley Vw Inc.	USDOC National Weather Service	West Valley Millwork
Trebar Kenworth Sales Boise	USDOI WPR Arrowrock Dam Bur of Rec	Westcom Corporation
Tree Top Recycling, Inc.	USF Reddaway Inc.	WESTCORE
Trico Construction Inc.	USPS Boise VMF	Whale Woolies
Trimac Trans Inc. Burns Bros Site	Ustick Elementary School	White Pine Elementary School
Trinity Springs Inc.	UW Freight Line Inc.	Whitecliff Technologies, LLC
Trinity Trailer Manufacturing Inc.	VA Medical Center	Whiteman Industries Inc. Braniff
Tri-Stone Services	Vale Wine Company	Whiteman Industries S Business
Truck Equipment Corp Boise	Vallad & Sons Trucking	Whitney Elementary School
Truck Equipment Corp Meridian	Valley Air Service	Whits Auto Repair
Trus Joist Corp	Valley Auto Body	Whittier Elementary School
TW Technology Inc.	Valley Crankshaft	Wickahoney Cattle Company
Twin Dolphin Pool and Spa	Valley Plating Inc.	Wilbur-Ellis Co Caldwell
Tyson Fresh Meats Inc.	Valley Truss Co., Inc.	Wild West Bakery & Espresso
U Haul	Valley View Elementary School	Wilder Middle/High School
U.S. Forest Service Boise Airtanker Base	Vallivue High School	Wilder Sd 133
Ultra Touch Car Wash	Vallivue Middle School	Wilderness Ranch Wtp
Union Carbide Corp Linde Div	Van Buren Elementary School	Wild-Ida Corp
Union Farm & Garden	Van Waters & Rogers (#8512270110)	William Howard Taft Elementary
Union Farm and Garden	Van Waters & Rogers Inc.	William J. Stone & Associates
Union Seed Co	Van Waters & Rogers Inc. Cole Rd	Willis Shaw Express
Uniroyal Chemical Co., Inc. Nampa	Vandenberg Dairy	Willow Creek Elementary
United Metal & Scrap Inc.	Vander Stelt Dairy	Wilson Co
United Oil Product Terminal #99	Vantron Manufacturing, Inc.	Wilson Elementary School
United Parcel Service Boise Ryan	Vassar Trucking	Windermere Real Estate Nampa-Caldwell
United Parcel Service Garden City	Venetian Tile and Stone	Wiregroove Technology, LLC
United Parcel Service Mt Home	Victor Yamamoto Farms	Wooded River Frniture Co.
United Parcel Service Nampa	Victorious Faith Church	Woods Residence
United Radiator	Victor's Concrete	Wymosa Water Trust
United Water Idaho Inc.	Victory Charter School	Y-3 II
Univar USA Inc. N Milwaukee	Victory Greens	Y-3 II Partnership
Unocal Puregro Unit 771330	Vigoro Industries Inc.	Y-3 II Ranch
Urbane Farms	Visions (Alt) High School	Y-3 Ranch - Jackpot

Uria Auto Body Inc.	Visions Auto Body Inc.	Yanke Machine Shop Incorporated
U AFB Mountain Home Gowen Site	Vista Food	Yellow Freight Systems Inc. BSE
US Army Coe Drms	Vista Plaza	YMC Incorporated
US Army Coe Lucky Peak Dam	Vita Min Corp	YMC Micron Construction Site
US Army ID Natl Guard Oms No Sub 2	Von Russ Enterprises Inc.	YMCA Boise Aquatic Center
US Army Natl Guard Mates	Vopak USA Inc. N Benjamin	Young Electric Sign Company
US Army Reserve Lugenbeel	Wal Mart Supercenter 2508	Yourco Transport Inc.
US Concrete	Wal Mart Supercenter 2780	Zamora and Zamora Partnership
US DOI BLM Natl Interagency FC	Wal Mart Supercenter 2781	Zamzow's Feed & Seed
US DOI BLM Natl Interagency Fc	Wal Mart Supercenter 2782	Zemco Builders Willard Hall
US DOI BOR Boise Diversion Dam & Power	Wal Mart Supercenter 2861	Zeph Creek Elk Hunting Ranch
US DOI BOR Central Snake Project Office	Wal Mart Supercenter 2862	Zero Defects Incorporated
US DOI Bureau of Land Mgm. District Office	Wal Mart Supercenter 3739	Zieman Manufacturing Co Amity Rd
US DOI Geological Survey Ward	Walla Walla Shopping Cntr Asso	Zieman Manufacturing Co Commerce Ave
US DOI, BOR, WPR Anderson Ranch Dam	Wallace Bros Sand & Gravel	Zilog Inc. Idaho Technology Center
US DOJ Dea Boise Office	Waremart Construction Site	Zilog Incorporated
US DOJ Dea Drug Lab Boise Maple Grove	Washington Elementary School	Zion Luthern School
US DOJ Dea Drug Lab Boise Summerwind	Washington Elementary School	ZJ Recycling
US DOJ Dea Drug Lab Nampa Franklin Blvd	Water Cooler Building	
US DOJ Dea Drug Lab Parma Rocky Rd	Waynco Construction	
US DOT FAA Nav Comm Unit Boise	Wells Fargo Bank	
US Ecology Idaho Inc., RTS (SIMCO Rd.)	West Canyon Elementary School	
US GSA Borah Po	West Elementary School	
US GSA Federal Bldg Courthouse, Boise	West Junior High School	
US GSA Fleet Mgmt Center, Boise	West Middle School	
US West (6)	West One Bancorp	
US West (7)	West Side Development	
USA Auto Body Eagle Site	West Valley Medical Center	

APPENDIX B

LETTERS TO TIER 1 AND 2 FACILITIES; PBR AND UNPERMITTED FACILITIES

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, ID 83706 • (208) 373-0502

C. L. "Butch" Otter, Governor
Toni Hardesty, Director

«Date_Sent»

«Contact_Full_Name»
«Facility»
«Address»
«City» «State» «Zip»

RE: 2008 Treasure Valley Emissions Inventory Project – Permitted Industrial Sources

Dear «Contact_Last_Name»:

The Idaho Department of Environmental Quality; Eastern Research Group, Inc. (ERG); and ENVIRON are developing a comprehensive air emissions inventory for the Treasure Valley (Ada, Canyon, and Elmore counties). This inventory fulfills the 10-year update requirement of the EPA-approved North Ada County PM_{10} State Implementation Plan (SIP) and will also allow study of ozone formation and particulate concentrations in the valley. The scope of the inventory includes all stationary industrial sources of air pollution that operated during calendar year 2008.

To achieve our inventory objectives, your cooperation as an operator of a permitted industrial facility is important for accurate collection of data related to your specific emissions source. **Per the Clean Air Act (Section 114, 42 USC 7414) and The Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.122), your participation in this project is required.**

Our Point Source Survey Tool (POSST) Web application will be used to collect your data. If you already provided a full emissions inventory for calendar year 2008, please disregard this request. If you <u>did not</u> provide data for calendar year 2008, or only completed the registration of pollutants for Title V fee purposes, please use the URL, username, and password provided below to access POSST for completion of your full emissions inventory submittal. Each emissions unit listed in your air quality permit must be accounted for in your data submittal made to POSST.

POSST provides specific screens that you will use to record the required information; these include facility, stack, emissions unit (point), process, and pollutant. Some of the requested information and calculations will take time to complete, so please do not delay in assembling and submitting this information as your data and signature sheets must be received by DEQ **no later than December 31, 2009.**

A POSST User's Manual, short viewlets (movies), scroll-over help messages, and telephone or e-mail assistance are available to help you with your data entry and submittal. Please read the

POSST User's Manual in the Links Box on the Main Page before you begin data entry in order to minimize confusion. For further assistance, contact either of the following:

- Chris Ramsdell at 208-373-0237 or Christopher.Ramsdell@deq.idaho.gov
- Gary Reinbold at 208-373-0253 or Gary.Reinbold@deq.idaho.gov.

Log into POSST at the following Web site to make your emissions data submission:
http://www.deq.idaho.gov/air/TVAQ2008

The following are your unique username and password, respectively:

«UserName» **«Password»**

Upon completion and final submission of all emissions data entries to POSST, please print the IDAPA 58.01.01.123 signature page that pops up on screen. Complete and sign this form, as well as attaching copies of all Material Safety Data Sheets (MSDS) for the materials for which you estimated emissions, and mail them to the following address **no later than close of business December 31, 2009**:

Idaho Department of Environmental Quality
Attn: Chris Ramsdell - Air Quality Division
1410 N. Hilton
Boise, ID 83706

Thank you for your assistance in this important air quality project.

Sincerely,

Christopher Ramsdell
Emissions Inventory & Air Information Management Systems Coordinator

c: Bruce Louks, MMEI Manager

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, ID 83706 • (208) 373-0502

C. L. "Butch" Otter, Governor
Toni Hardesty, Director

«Date__Sent»

«Contact_Full_Name»
«Facility»
«Address»
«City» «State» «Zip»

RE: 2008 Treasure Valley Emissions Inventory Project – Unpermitted Sources

Dear «Contact_Last_Name»:

The Idaho Department of Environmental Quality; Eastern Research Group, Inc. (ERG); and ENVIRON are developing a comprehensive air emissions inventory for the Treasure Valley (Ada, Canyon, and Elmore counties). This inventory fulfills the 10-year update requirement of the EPA-approved North Ada County PM_{10} State Implementation Plan (SIP) and will also allow study of ozone formation and particulate concentrations in the valley. The scope of the emissions inventory includes all unpermitted stationary industrial or commercial sources of air pollution that operated during calendar year 2008.

To achieve our emissions inventory objectives, your cooperation as an owner or operator of a facility is important for accurate collection of data related to your specific emissions source. **Per the Clean Air Act (Section 114, 42 USC 7414) and The Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.122), your participation in this project is required.**

A DEQ Web application will be used to collect your facility and 2008 emissions information. Some of the requested data and calculations will take time to complete, so please do not delay in assembling and submitting this information as your data and signature sheets must be received by DEQ **no later than December 31, 2009.**

A Web application User's Manual, scroll-over help messages, and telephone or e-mail assistance are available to help you with your data entry and submittal. Please read the User's Manual before you start in order to minimize any confusion. Should further assistance be necessary, please contact either of the following:

- Chris Ramsdell at 208-373-0237 or Christopher.Ramsdell@deq.idaho.gov
- Gary Reinbold at 208-373-0253 or Gary.Reinbold@deq.idaho.gov.

→

Please log into the following Web site to make your emissions data submission:
http://www.deq.idaho.gov/air/TVAQEZ2008/

The following are your unique username and password, respectively:

«UserName» **«Password»**

Upon completion and final submission of all emissions data entries to the DEQ Web site, please print the IDAPA 58.01.01.123 signature page that pops up on screen. Complete, sign, and mail this form to the following address **no later than close of business December 31, 2009**:

Idaho Department of Environmental Quality
Attn: Chris Ramsdell - Air Quality Division
1410 N. Hilton
Boise, ID 83706

Thank you for your assistance in this important air quality project.

Sincerely,

Christopher P. Ramsdell
Emissions Inventory & Information Management Systems Coordinator

c: Bruce Louks, MMEI Manager

APPENDIX C

AREA SOURCE SURVEYS (FUEL DEALER AND DISTRIBUTOR SURVEY, DRY CLEANING SURVEY, WASTEWATER TREATMENT SURVEY, AND LANDFILL SURVEY)

STATE OF IDAHO

DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, ID 83706 • (208) 373-0502

C. L. "Butch" Otter, Governor
Toni Hardesty, Director

«Date_Project_Letter_Sent»

«Facility»
«Address»
«City», «State» «Zip_Code»

RE: Treasure Valley Emissions Inventory Project – Fuel Suppliers & Distributors

To Whom It May Concern:

The Idaho Department of Environmental Quality is developing an air emissions inventory of ozone and particulate matter pollutants and their precursors for the Treasure Valley (Ada, Canyon, and Elmore counties). The scope of this inventory includes all stationary and mobile sources of air pollution and will consist of emissions released in calendar year 2008.

Per Clean Air Act Section 114, 42 USC 7414 and the Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.122), your participation as a fuel supplier/distributor is required to ensure completion of a comprehensive inventory of all emission sources related to fuel combustion. A brief questionnaire is enclosed that asks specific questions pertaining to your 2008 industrial, commercial/institutional, and residential fuel sales within Ada, Canyon, and Elmore counties. All sales information will remain confidential, as it will only be reported in county-level totals with all supplier and distributor amounts combined.

Please complete the attached survey and sales table, sign, and return them by mail, e-mail, or fax **no later than October 30, 2009** to:

Idaho Department of Environmental Quality
ATTN: Christopher Ramsdell
1410 N Hilton
Boise, ID 83706
E-mail: Christopher.Ramsdell@deq.idaho.gov
Fax: 208-373-0340

Thank you for your participation in this important project.

Sincerely,

Christopher Ramsdell
Emissions Inventory & Air Information Management Systems Coordinator

Treasure Valley Fuel Sales Data Collection Survey

Company Name:____

Address:____

Phone Number:____________________________ Fax Number:_________________________

Contact Name:____________________________

1. Does your company sell or distribute fuel (e.g., natural gas, LPG/propane, distillate fuel oil, residual fuel oil, kerosene, reclaimed/recycled oil, etc.; excluding firewood) in Ada, Canyon, or Elmore counties? ______

If "yes", proceed to Question #2. If "no", please return this page of the survey only, with the contact information listed above and your certification at the bottom completed.

2. What fuel types are sold or distributed by your company? Check all that apply:

Natural gas	_______	Kerosene	_______
LPG/propane	_______	Waste/reclaimed/recycled oil	_______
Distillate fuel oil	_______	Coal	_______
Residual fuel oil	_______	Other (___________)	_______

3. For each fuel type selected in Question #2, please provide 2008 monthly sales information broken out by county (Ada, Canyon, or Elmore) and sector (industrial, commercial/ institutional, or residential) in the attached sales table. Sales outside of the three counties should not be included. Again, sales data will remain confidential.

If multiple fuel types are sold or distributed, then please make copies of the sales table before completing.

4. For each fuel type selected in Question #3, please provide the following fuel characteristics (complete all that apply):

Natural gas:	Sulfur content _____		
LPG/propane:	Sulfur content _____	Propane fraction _____	Butane fraction _____
Distillate fuel oil:	Sulfur content _____	Grade (1 or 2) _____	
Residual fuel oil:	Sulfur content _____	Grade (4, 5, or 6) _____	
Kerosene:	Sulfur content _____		
Waste/reclaimed/recycled oil:	Sulfur content _____		
Coal:	Sulfur content _____	Ash content _____	

5. Is your company the final point of sale for the fuel types sold or distributed? _____
   If "no", what companies do you supply fuel to for final sale or distribution? _____________________
   ____
   Supply information will remain confidential.

6. Every effort was made to send this survey to all fuel sellers/distributors in Ada, Canyon, or Elmore counties, as well as companies located in surrounding counties that might have customers in these three counties. Attached is a comprehensive list of these companies. Please list any other companies not on this list that should also be surveyed:

____

____

7. ***Certification in accordance with IDAPA 58.01.01.123 – The statements and information contained in our emissions inventory submittal are true, accurate, and complete based on reasonable knowledge and inquiry.***

Name of Responsible Official (Please Print): ____

Signature: ____________________________________ **Date:** ____________________

RETURN THIS PAGE

Fuel Sales Table (make copies for multiple fuels)

Company Name:____
Fuel Type (for this form):____________________________________
Fuel Units (i.e., gallons, tons, cubic feet, etc.):__________________________

ADA COUNTY			
	Amount Sold		
Period	**Industrial**	**Commercial and Institutional**	**Residential**
January 2008			
February 2008			
March 2008			
April 2008			
May 2008			
June 2008			
July 2008			
August 2008			
September 2008			
October 2008			
November 2008			
December 2008			
Total 2008			

CANYON COUNTY			
	Amount Sold		
Period	**Industrial**	**Commercial and Institutional**	**Residential**
January 2008			
February 2008			
March 2008			
April 2008			
May 2008			
June 2008			
July 2008			
August 2008			
September 2008			
October 2008			
November 2008			
December 2008			
Total 2008			

ELMORE COUNTY			
	Amount Sold		
Period	**Industrial**	**Commercial and Institutional**	**Residential**
January 2008			
February 2008			
March 2008			
April 2008			
May 2008			
June 2008			
July 2008			
August 2008			
September 2008			
October 2008			
November 2008			
December 2008			
Total 2008			

RETURN THIS PAGE

County	City	Facility
Ada	Boise	A & I Distributors
		American Feeds & Fuels
		Amerigas Propane, L.P.
		Baird Oil
		Boise Petroleum Products Terminal
		Brico of Idaho
		Diasource Inc.
		Gran-Del Petroleum Products Inc.
		On Site Oil & Lube
		Intermountain Gas Company
		Rocky Mtn Filter Supply Inc
		Small Mine Development
		Suburban Propane
		Washington Group International, Inc.
	Eagle	Mineral Extraction
	Garden City	Franklin United Oil
		Fuel West Co. (also DBA Energy West Inc.)
	Meridian	Ameri Gas Storage
		MJ's Oil & Gas LLC
Canyon	Caldwell	Baird Oil
		T.S. Fuel LLC
		United Oil (also DBA Magic Transport)
		V-1 Propane
	Nampa	A.H. Schade Inc
		Amerigas Propane, L.P.
		Baird Oil
		Commercial Fuel Corp.
		Conrad & Bischoff (also DBA Wright Oil & Tire)
		Ed Staub & Sons Petroleum Inc.
		Producers Supply Co-Op Inc.
		Zeo Corp.
	Melba	T.K. Oil Incorporated
Elmore	Glenns Ferry	United Oil (also DBA Franklin United, Inc)
	Mountain Home	Ameri Gas
		Big Sky Oil Co
		D.E. Petroleum
		Hiler Brothers Service
		V-1 Propane
Boise	Garden Valley	Mosquito Mining Corporation
		V-1 Propane-Heritage
Gem	Emmett	Champion Oil
Gooding	Gooding	K-Energy
	Wendell	Valley Co-Ops Wendell
Owyhee	Grand View	Owyhee Calcium Inc.
		United Oil
Payette	Fruitland	Campo Oil Co. Inc.
	New Plymouth	Binghams Pas N Gas
		Blue Sky Bio Diesel
Twin Falls	Buhl	Olson Oil Co.
		Spradling's Petroleum Products
		United Oil
		Valley Co-Ops Buhl
		Wright Fuel/The Coal Company
	Filer	Permagas
	Twin Falls	Ameri Gas
		B & B Oil Company
		Black Petroleum Co.
		Blue Lakes Gas
		Brico of Idaho
		Suburban Propane
		United Oil

RETURN THIS PAGE

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, ID 83706 • (208) 373-0502

C. L. "Butch" Otter, Governor
Toni Hardesty, Director

«Date_Project_Letter_Sent»

«Facility»
«Address»
«City», «State» «Zip_Code»

RE: Treasure Valley Emissions Inventory Project – Dry Cleaning

To Whom It May Concern:

The Idaho Department of Environmental Quality is developing an air emissions inventory of ozone and particulate matter pollutants and their precursors for the Treasure Valley (Ada, Canyon, and Elmore counties). The scope of this inventory includes all stationary and mobile sources of air pollution and will consist of emissions released in calendar year 2008.

Per Clean Air Act Section 114, 42 USC 7414 and the Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.122), your participation is required and will ensure completion of a comprehensive inventory of all emission sources. A brief questionnaire is enclosed that asks specific questions pertaining to your 2008 dry cleaning operations within Ada, Canyon, or Elmore counties. The information you provide will remain confidential, as it will only be reported in county-level totals generated by combining all dry cleaner data received.

Please complete the attached survey and sales table, sign, and return them by mail, e-mail, or fax **no later than November 6, 2009** to:

Idaho Department of Environmental Quality
ATTN: Christopher Ramsdell
1410 N Hilton
Boise, ID 83706
E-mail: Christopher.Ramsdell@deq.idaho.gov
Fax: 208-373-0340

Thank you for your participation in this important project.

Sincerely,

Christopher Ramsdell
Emissions Inventory & Air Information Management Systems Coordinator

Treasure Valley Dry Cleaner Data Collection Survey

Company Name:____

Address:____

Phone Number:____________________________ Fax Number:________________________

Contact Name:____________________________

1. Does your company conduct dry cleaning activities on-site? (Yes or No) ______

If "yes", proceed to Question #2. If "no", please identify the name and location of the dry cleaning plant that you send your customers' garments to: ____ Return this page of the survey only, with the contact information listed above and your certification at the bottom completed.

2. Please check the appropriate line(s) for all dry cleaning solvents used by your facility and supply the 2008 annual amount of each solvent purchased and sent off-site for disposal/recycling (**in gallons**):

Solvent Used		**Purchased Amount**	**Off-Site Amount**
Perc (perchloroethylene)	_____	________________	_______________
CFC-113 (trichlorofluoroethane)	_____	________________	_______________
TCA (1,1,1-trichloroethane)	_____	________________	_______________
Stoddard solvent	_____	________________	_______________
Other petroleum/hydrocarbon solvent	_____	________________	_______________
Liquid silicone	_____	________________	_______________
Other (_________________)	_____	________________	_______________

If 2008 solvent use is limited to perc, CFC-113, and/or TCA, return only this page of the survey with the contact information listed at the top and your certification at the bottom both completed. For all other solvents used, please provide a Material Safety Data Sheet (MSDS) for each one when returning your survey submittal to DEQ.

3. For each dry cleaning machine at your facility, please complete the following information:

Machine Type **(dry-to-dry or transfer)**	**Solvent Type**	**Load Capacity** **(pounds of garments)**	**Solvent Use per Load** **(gallons of solvent)**	**Controls in Place**
________________	__________	______________	______________	____________
________________	__________	______________	______________	____________
________________	__________	______________	______________	____________

4. What is the average number of days per week that dry cleaning equipment is operating? __________
5. What is the average number of hours per day that dry cleaning equipment is operating? __________
6. Describe any seasonal or month-by-month variations in your dry cleaning operations: ________________
____

7. Please indicate the number of employees at your facility: ______________

8. Every effort was made to send this survey to all dry cleaners in Ada, Canyon, and Elmore counties. Attached is a comprehensive list of these companies. Please list any other companies not on this list that should be surveyed:
____
____

9. ***Certification in accordance with IDAPA 58.01.01.123 – The statements and information contained in our emissions inventory submittal are true, accurate, and complete based on reasonable knowledge and inquiry.***

Name of Responsible Official (Please Print): ____

Signature: __________________________________ **Date:** __________________

RETURN THIS PAGE TO DEQ – Attention: Chris Ramsdell

County	City	Name	Street Address	Zip
Ada	Boise	12th Street Laundry	917 North 12th Street	83702
		Baird's Cleaners	1504 South Vista Avenue	83705
		Baird's Cleaners	2202 Broadway Avenue	83706
		Baird's Dry Cleaners	902 North 8th Street	83702
		Baird's Dry Cleaners	13373 West Chinden Boulevard	83713
		Bairds Dry Cleaners - Fairview Branch Office	5702 West Fairview Avenue	83706
		Best Cleaners	9225 West Chinden Boulevard	83714
		Broadway Laundry	1217 Broadway Avenue	83706
		Cleaners Express	111 Broadway Avenue, Suite 123	83702
		Cleaning Authority The	6052 West Corporal Lane	83704
		Clothesline Cleaners	244 South Orchard Street	83705
		Comet Dry Cleaners and Shirt Laundry	8005 West Fairview Avenue	83704
		Comet Dry Cleaners and Shirt Laundry	201 West Boise Avenue, Suite 101	83706
		Comet Dry Cleaners and Shirt Laundry	389 East Park Center Boulevard	83702
		Crestline Cleaners	3815 West Overland Road	83705
		David's Bridal	8065 West Emerald Street	83704
		Evergreen Dry Cleaners	3135 North Cole Road	83704
		Idaho Custom Cleaning	2315 North Curtis Road	83706
		Martinizing Dry Cleaning	1503 West Washington Street	83702
		Martinizing Dry Cleaning	116 East Myrtle Street	83702
		McRae's Cleaners - Alterations	2753 West State Street	83702
		McRae's Cleaners - Alterations	5612 West Fairview Avenue	83706
		McRae's Cleaners - Alterations	12505 West Chinden Boulevard	83713
		Mr. Clean Jeans	4744 West State Street	83703
		Norge Laundry & Dry Cleaning	515 North 15th Street	83702
		Oak Drycleaners	266 South Cole Road	83709
		On the Spot Cleaners & Laundry	3363 North Cole Road	83704
		Overland Laundry	6555 West Overland Road	83709
		Ragz	7406 Preece Drive	83704
		Ralph's Cleaners	1291 South Orchard Street	83705
		Star Cleaners	1521 South Five Mile Road	83709
		Superwash	6939 W State St	83714
		Vista Maytag Laundry	1504 1/2 South Vista Avenue	83705
		Westco Martinizing	3363 North Five Mile Road	83713
		Westco Martinizing	1337 South Orchard Street	83705
		Westco Martinizing	991 East Parkcenter Boulevard	83706
		Westco Martinizing Dry Cleaning	10418 West Overland Road	83709
		Westco Martinizing Dry Cleaning	13601 West McMillan Road	83713
		Westco Shirt Laundry	1718 West Main Street	83702
	Eagle	Custom Care Cleaners	3210 East Chinden Boulevard	83616
		Custom Care Cleaners	228 East Plaza Street	83616
		Seabreeze Dry Cleaners	621 East State Street	83616
	Garden City	Comet Dry Cleaners and Shirt Laundry	5865 Glenwood Street	83714
		Mr Clean Jeans	4684 West Chinden Boulevard	83714
	Kuna	Marys Downtown Laundry	397 West Main Street	83634
	Meridian	Baird's Dry Cleaners	2941 East Overland Road	83642
		Clothesline Cleaners	1800 South Meridian Road	83642
		Elite Cleaners	1735 West Franklin Road	83642
		Evergreen Dry Cleaners	41 East Fairview Avenue	83642
		Meridian Dry Cleaners	1505 North Main Street	83642
		On the Spot Cleaners	1551 West Cherry Lane	83642
		Ultra Clean Cleaning & Restoration	865 Taylor Ave	83642
		Westco Dry-Cleaning	450 South Meridian Road	83642
	Star	Country Scrub	9876 West State Street	83669
Canyon	Caldwell	J'S Cleaners	723 Main Street	83605
		One Hour Martinizing	903 Blaine Street	83605
		Smiths Laundromat	508 Blaine Street	83605
	Nampa	Attended Maytag Home Style Laundry	205 Caldwell Boulevard	83651
		Cawala Industries Inc	1226 Caldwell Boulevard	83651
		Cleaners Express	920 Caldwell Boulevard	83651
		Holly Dry Cleaning	1407 2nd Street South	83651
		Nampa Dry Cleaners	1015 2nd Street South	83651
		One Hour Martinizing	513 12th Ave Rd	83686
		Star Cleaners	349 Caldwell Boulevard	83651
		Twelfth Avenue Cleaners	916 12th Ave S	83651
Elmore	Glenns Ferry	Diamond Laundry Inc	95 East 2nd Avenue	83623
	Mountain Home	Econowash Laundromat	765 American Legion Boulevard,	83647
		La Mode Cleaners	290 East 4th	83647
	Mountain Home AFB	Mr. Clean Jeans (Ralph's Quality Cleaners)	610 Mountain Home AFB	83648

STATE OF IDAHO

DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, ID 83706 • (208) 373-0502

C. L. "Butch" Otter, Governor
Toni Hardesty, Director

«Date_Project_Letter_Sent»

«Facility»
«Address»
«City», «State» «Zip_Code»

RE: Treasure Valley Emissions Inventory Project – Wastewater Treatment Plants

To Whom It May Concern:

The Idaho Department of Environmental Quality is developing an air emissions inventory of ozone and particulate matter pollutants and their precursors for the Treasure Valley (Ada, Canyon, and Elmore counties). The scope of this inventory includes all stationary and mobile sources of air pollution and will consist of emissions released in calendar year 2008.

Per Clean Air Act Section 114, 42 USC 7414 and the Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.122), your participation is required and will ensure completion of a comprehensive inventory of all emission sources related to wastewater treatment. A brief questionnaire is enclosed that asks specific questions pertaining to 2008 treatment plant operations within Ada, Canyon, or Elmore counties.

Please complete the attached survey, sign, and return by mail, e-mail, or fax **no later than November 6, 2009** to:

Idaho Department of Environmental Quality
ATTN: Christopher Ramsdell
1410 N Hilton
Boise, ID 83706
E-mail: Christopher.Ramsdell@deq.idaho.gov
Fax: 208-373-0340

Thank you for your cooperation with this important project.

Sincerely,

Christopher Ramsdell
Emissions Inventory & Air Information Management Systems Coordinator

Treasure Valley Wastewater Treatment Data Collection Survey

Facility Name:____

Address:____

Phone Number:_________________________ Fax Number:_________________________

Contact Name:________________________

- What is the composition of the wastewater treated by your facility? (Provide responses in terms of %.):

  Industrial ______%
  Commercial ______%
  Residential ______%

- Please provide the monthly quantities of wastewater treated by your facility in 2008, in gallons:

Month	**Treated Quantity (Gallons)**
January	______________
February	______________
March	______________
April	______________
May	______________
June	______________
July	______________
August	______________
September	______________
October	______________
November	______________
December	______________

- Please provide a description of your treatment processes:

  ____
  ____
  ____
  ____

- Does your facility discharge effluent to other wastewater treatment facilities? ________________

- Every effort was made to send this survey to all wastewater treatment facilities in Ada, Canyon, and Elmore counties. Attached is a comprehensive list of these facilities. Please list any other facilities not on this list that should be surveyed:

  ____
  ____
  ____

Certification in accordance with IDAPA 58.01.01.123 – The statements and information contained in our emissions inventory submittal are true, accurate, and complete based on reasonable knowledge and inquiry.

Name of Responsible Official (Please Print): ____

Signature: ________________________________ **Date:** ____________________

RETURN THIS PAGE TO DEQ – Attention: Chris Ramsdell

County	Name_1	Name_2
Ada	City of Boise	Lander Street Wastewater Treatment Plant
	City of Boise	West Boise Wastewater Treatment Plant
	City of Garden City	Wastewater Treatment Plant
	City of Kuna	Wastewater Treatment Plant
	City of Meridian	Wastewater Treatment Plant
	Eagle Sewer District	Wastewater Treatment Plant
	Star Water and Sewer District	Wastewater Treatment Plant
Canyon	City of Caldwell	Wastewater Treatment Plant
	City of Greenleaf	Wastewater Treatment Plant
	City of Middleton	Wastewater Treatment Plant
	City of Nampa	Wastewater Treatment Plant
	City of Notus	Wastewater Treatment Plant
	City of Parma	Wastewater Treatment Plant
	City of Wilder	Wastewater Treatment Plant
Elmore	City of Glenns Ferry	Wastewater Treatment Plant
	City of Mountain Home	Wastewater Treatment Plant
	Mountain Home AFB	Wastewater Treatment Plant

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, ID 83706 • (208) 373-0502

C. L. "Butch" Otter, Governor
Toni Hardesty, Director

«Date_Project_Letter_Sent»

«Salutation» «Contact_Full_Name»
«Facility»
«Address»
«City», «State» «Zip_Code»

RE: Treasure Valley Emissions Inventory Project

Dear «Salutation» «Contact_Last_Name»:

The Idaho Department of Environmental Quality is developing an air emissions inventory of ozone and particulate matter pollutants and their precursors for the Treasure Valley (Ada, Canyon, and Elmore counties). The scope of this air emissions inventory includes all stationary and mobile sources of air pollution and will consist of emissions released in calendar-year 2008.

Per Clean Air Act Section 114, 42 USC 7414, and the Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.122), your participation as a landfill owner or operator is required to ensure completion of a comprehensive inventory of all air emission sources in the Treasure Valley related to landfills. A brief questionnaire is enclosed that asks specific questions pertaining to landfill location, capacity, air emission controls, and other parameters.

Please complete the attached eight-question survey form, sign it, and return by mail, electronic mail, or FAX no later than **October 15, 2009** to:

Christopher Ramsdell
Idaho Department of Environmental Quality
Air Quality Division
1410 N Hilton
Boise, ID 83706
E-mail: Christopher.Ramsdell@deq.idaho.gov
FAX: 208-373-0340

Sincerely,

Christopher Ramsdell
Emissions Inventory & Air Information Management Systems Coordinator

LANDFILL QUESTIONNAIRE

1. **Landfill Name: ____**

2. **Landfill Location:**
   Street Address: ____

   City, State, Zip Code: ____

   Latitude: ________ (degrees, minutes, seconds; North)

   Longitude: _________ (degrees, minutes, seconds; West)

3. **Year Opened: ________________** 4. **Year Closed (or N/A): ________________**

5. **Air Emission Control(s):**

Type (e.g., flare, enclosed combustion, etc., none)	**Capture Efficiency**	**Destruction Efficiency**
	%	%
	%	%
	%	%

6. **Landfill Parameters:**

Landfill Design Capacity	m^3
Average Waste Acceptance Rate (if open)	Mg/year
Total Waste in Place (if closed)	Mg
Landfill Waste Type (e.g., Construction/Demolition, Municipal, Industrial/ Commercial, Co-Disposal)	

7. **Does this landfill participate in U.S. EPA's Landfill Methane Outreach Program,**

   (Yes or No)? ________

8. ***Certification in accordance with IDAPA 58.01.01.123 – The statements and information contained in our emissions inventory submittal are true, accurate, and complete based on reasonable knowledge and inquiry.***

Name of Responsible Official (Please Print): ______________________________

Signature: ________________________________ Date: __________________

APPENDIX D

AURORA RESIDENTIAL WOOD COMBUSTION SURVEY REPORT

Prepared for

State of Idaho Department of Environmental Quality's Residential Wood Combustion Inventory Survey: Treasure Valley Airshed

August 2008 to July 2009

Final Report

January, 2010

Submitted by:

Dawn Morley Chavero &

Naomi E. Holobow, Ph.D.

For

AURORA
Research Group

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STATE OF IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY'S RESIDENTIAL WOOD COMBUSTION INVENTORY SURVEY: TREASURE VALLEY AIRSHED

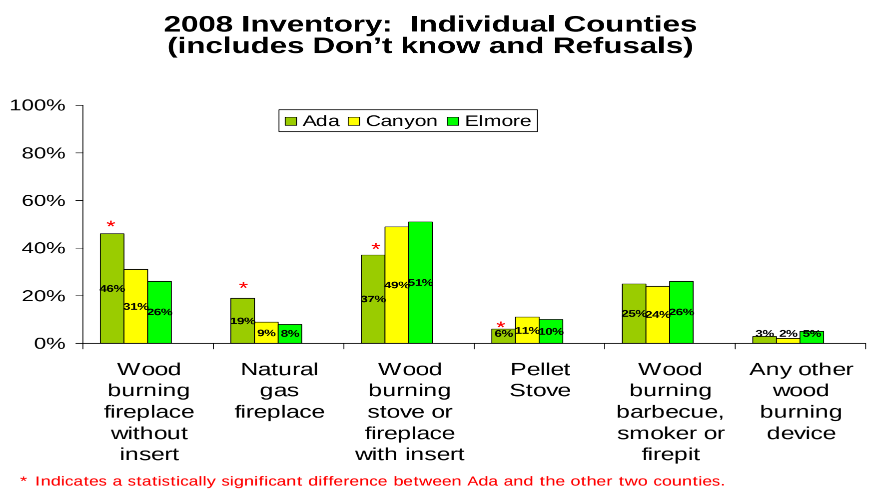
AUGUST 2008 TO JULY 2009

EXECUTIVE HIGHLIGHTS (4 PAGES)

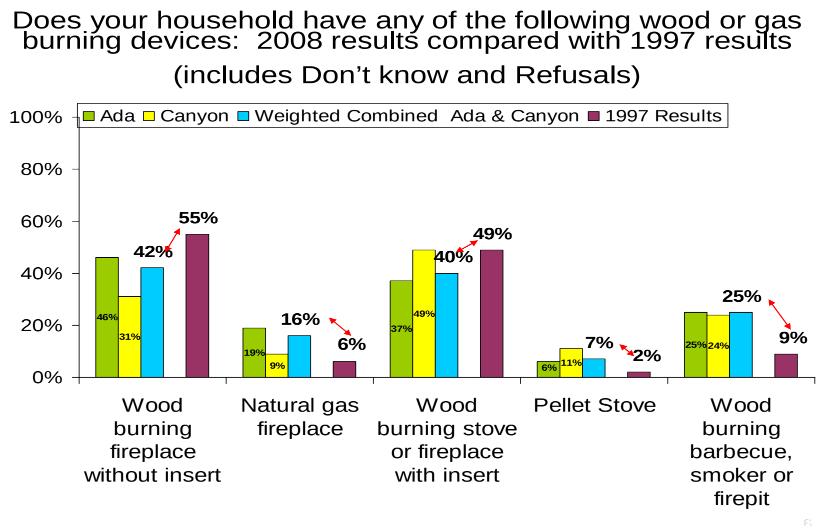
These results and conclusions are based on a telephone survey of 751 residents in the Treasure Valley Airshed region, including the counties of Ada, Canyon and Elmore, which was conducted in September of 2009 by Aurora Research Group. The plurality of regional respondents was female, living in a single-family home that was built before 1980. While they had resided in Treasure Valley for more than 20 years, the length of time in their current residence varied.

Inventory of Heating Devices

- **Forty-one percent (41%) of residential households with wood-burning devices in the Treasure Valley Airshed have a wood burning fireplace without an insert and the same proportion (41%) have one with an insert. One quarter (25%) of all households have a barbecue, smoker or fire pit.**
    - *There were significantly more households in Ada than in either Canyon or Elmore counties with a wood burning fireplace without an insert, and there were significantly fewer households in Ada with a pellet stove.*



- *Significantly fewer residents had wood burning fireplaces or stoves, with or without inserts, in 2008 than in 1997. However, the percentage having pellet stoves and barbecues or fire pits has increased significantly from 1997.*



Percentage Burning at Least 4 Times in Past Year

- **Households having fireplaces without inserts were less likely to have burned wood in them four or more times in the past year (31%) than those with stove or fireplace inserts (78%). The majority of those with pellet stoves used them (79%), as did half (51%) of those with barbecues or fire pits.**
  - *The percentages of households that burned at least four times last year were similar in all three counties with one exception: significantly fewer households in Ada (29%) than in Elmore (49%) counties burned wood in fireplaces without inserts.*
  - *While all comparisons cannot be made with 1997 results, among those that can, it appears that burning wood in fireplaces without inserts as well as in barbecues, smokers or fire pits has declined significantly from 1997.*

Overall Wood Consumption

- **Seventy percent (70%) of respondents burned wood between August 2008 and July 2009, with 38% saying they consumed less than one cord of wood.**
- **Ten percent of all respondents reported burning at least one processed log during the same timeframe, although the vast majority (85%) did not burn any processed logs.**
- **One third (33%) of pellet stove users reported burning an average of 800 pounds of pellets in a year.**
- **Wood burning seems to have increased since 1997 in Ada and Canyon counties combined, but the amount of wood burned is not large.**
  - *Although significantly fewer people said they burned no wood (zero cords) in 2008 (25%) compared with 1997 (47%); the percentage who said they used less than one cord of wood has doubled since 1997 (38% in 2008 vs. 19% in 1997).*

  - *There were no differences found by geographical region in terms of overall wood consumption (the pounds of pellets or number of processed logs, wood logs, or cords of wood burned).*

- **Nearly all (97%) Treasure Valley residents surveyed reported having another source of fuel available besides wood or pellet burning to heat their home.**

Wood Burning Fireplaces Without an Insert Activity

- **Those who burned wood tended to use their fireplaces without inserts mostly from November through February – over 60% burned wood in these four months.**
- **The majority of the wood burned in fireplaces without inserts occurred on the weekends. About seven in ten respondents with fireplaces (without inserts) burned wood fires from 1-3 hours. Nearly all (96%) fireplace (no insert) users burned wood after 4:00 p.m., while only about 15% burned early in the day.**
- **Seven in ten consumed up to ten logs in fireplaces without inserts. Softwood was the most common type of wood burned, with four in ten users (40%) saying they used pine, cedar, fir, aspen, and other softwoods for their fires.**
- **When comparisons were possible, the current results were generally consistent with the 1997 results among those with wood burning fireplaces without an insert.**

Pellet Stove Activity

- **Pellet stove usage was highest during the winter (November through February), with over 70% burning pellets during these winter months and up to half burning 25 plus times a month.**
- **The majority of pellet stove burn activity occurred during the week. About half of the pellet stove users burned pellets all day from 6:00 a.m. to noon (58%) and from noon until 4:00 p.m. (47%); however, activity significantly increased after 4:00 pm: all (97%) pellet stove users burned pellets after 4:00 p.m. On average, pellet burns lasted 11 hours.**
- **The median number of pellets consumed by stove users was 800, or 20 forty-pound bags.**

Wood Burning Stove & Fireplace with Insert Activity

- **About 30% of stove and insert users burned wood in older, conventional stoves and a similar number of users had non-catalytic stoves or inserts (33%). Slightly fewer (21%) had catalytic stoves or inserts.**
  - *Users with multiple types of devices either used their device all the time or not at all. There was very little mixed-device use reported.*
- **Half of the stoves were built after 1986 (24% from 1986 to 1990 and 26% after 1990), although 35% were over 23 year old (built before 1986). About 30% of non-catalytic owners said that their stove or fireplace insert was EPA certified.**
- **Wood burning in stoves and fireplaces with inserts occurred mainly (90%) in December and January, although 69% also burned wood in November and 74% in February. During these peak months, about 40% burned wood fires at least 25 times in each month.**

- **Nearly half (46%) of respondents used their stove or insert 70% or more of the time on weekends. About 70% of wood stove and fireplace insert users burned wood fires for up to 8 hours. About half burned wood from 6:00 a.m. to 4:00 p.m. Wood burning in wood stoves and fireplace inserts jumped significantly to 91% of all users after 4:00 p.m.**
- **In terms of fuel, slightly more than half (55%) burned up to 10 logs. Softwoods were burned by two thirds (65%) of the stove and fireplace insert users surveyed, which is more than double the percentage of those who burned hardwoods (31%).**

Barbeque, Fire Pit, or Smoker Activity

- **Use of barbeques, fire pits, and smokers was most prevalent in the summer – 96% burned wood in an outdoor device in July.**
    - *Not surprisingly, activity was lower in the winter months, although not obsolete.*
- **Overall, among outdoor wood burning devices users, the majority lit them only one to four times per month.**
- **A total of 72% said they burned wood outside in their barbeques, fire pits, and smokers on the weekends only (at least 90% of the time). The vast majority (86%) used their barbeques, fire pits or smokers after 4:00 p.m.**
- **Outdoor wood burners burned an average of three wood logs in their outdoor barbeques, fire pits, and smokers.**
- **Four in ten (39%) respondents who used barbeques, fire pits, and smokers burned hardwood in their outdoor devices.**

State Tax Deduction Incentive Program

- **Only 2 in 10 Treasure Valley Airshed residents (20%) were familiar with the state tax deduction incentive offer for the replacement of older, uncertified wood stoves.**
- **Nearly a quarter (23%) of stove owning respondents reported being likely to take advantage of the state's tax deduction incentive.**
    - *Only 1% said they already had benefited from the program.*

Project Background and Objectives

Overall Objectives: Aurora Research Group (Aurora) was contracted to conduct a Random Digit Dialed (RDD) telephone survey with a representative sample of residents in the Treasure Valley Airshed area comprising Ada, Canyon, and Elmore Counties, Idaho. The survey was designed to take an inventory of residential wood burning devices and to assess wood burning activity. It was also designed to allow for comparisons to be made with inventory results from 1997[1] where possible.

This information will be used by ERG to estimate wood burning emissions for 2008 on both an annual and seasonal (November 1 through February 28) daily average basis. The wood burning emissions data will be incorporated by ERG into the overall three-county emissions inventory of ozone and particulate matter emissions for the Idaho Department of Environmental Quality (DEQ).

Methodology

Questionnaire Design: Meetings were held to discuss the project's information requirements. Aurora translated the stated objectives into research questions that addressed each issue discussed. Using a previous 1997 questionnaire as a draft, questions were added, deleted, and revised. Questions were designed to address the following issues:

- Determine type of residential wood burning devices (fireplace, woodstove, EPA certified, outdoor, insert, etc.)
- Understand the amount and type of wood burned from August 2008 to July 2009
- Identify burning patterns (nighttime, weekends, weekdays, etc.)
- Identify the type of wood burned,
- Compare current results with those of 1997 where possible, and
- Gather relevant demographic information

Most of the questions were asked in a closed-ended format, but up to three questions were asked as open-ended and verbatim responses were captured and later categorized for quantitative analyses. Transcripts of all the verbatim responses are provided with the final report.

The interviews took 12 to 15 minutes on average to administer. Participants were screened for age (adults at least 18 years old[2]); the presence of a wood burning device; and residency in Ada, Canyon, or Elmore Counties was confirmed. Interviewing took place between August 20 and September 12, 2009. The study interviews were conducted in English.

Sampling Design: The sampling design for this survey involved conducting a total of 751 random-digit-dial (RDD) telephone surveys with representative samples of Ada-Canyon-Elmore County residents as follows:

- Ada County – 401 surveys, with a margin of error ± 4.9%, at the 95% confidence level. In other words, one is 95% sure that the true population parameters lie within ± 4.9% of the

[1] The 1997 survey was provided electronically by ERG. Residential Wood Combustion Survey (658) – Freeman, Sullivan & Co., San Francisco, April 10, 1997. In 1997 a total of 267 interviews were conducted with a proportional sample of residents from Ada (222 interviews) and Canyon (45 interviews) counties only.

[2] In order to speak with someone under 18 years of age, by law we would have needed to get the parents' written permission.

sample statistics. As an example, if a response category to a question were chosen by 50% of respondents, one can be 95% sure that the true population parameters are between 45.1% and 54.9% (50.0% ± 4.9%).

- Canyon County – 200 surveys, with a margin of error ± 6.9%.
- Elmore County – 150 surveys, with a margin of error ± 8%.

The margin of error for the study as a whole (751 completed interviews) was + or – 3.6%, at the 95% confidence level.

Aurora Research Group procured its Random-Digit-Dial (RDD) samples from Scientific Telephone Samples (STS), a company which uses high quality, state-of-the-art procedures to construct random digit samples that provide each possible telephone number within the appropriate working blocks with an equal chance of being selected to generate a random digit number. Completed interviews from an STS RDD sample should be highly representative of the population under study.[3]

Results for the 2008 Treasure Valley Airshed inventory as a whole are post-weighted to represent the proportion of residents in each county (according to US Census estimates, Ada County represents 67% of the entire Airshed population, Canyon County represents 29% of all Airshed residents, and Elmore contains 4%.) Individual county comparisons are unweighted. Comparisons with 1997 results include only Ada and Canyon County residents[4], and post-weights were recalculated (Ada represented 70% of the total and Canyon 30%) and applied to the results. [The reader should therefore be advised that there may be slight discrepancies between three-county Airshed 2008 results and the two-county 2008 results used in comparison with 1997 results.]

Implementation and Quality Assurance: Aurora's telephone surveys were conducted by I/H/R Research,[5] a fieldhouse that uses a Computer Assisted Telephone Interviewing (CATI) system, which condenses timelines, increases flexibility, and enhances the accuracy of data collection. Skip patterns and qualifying criteria are built into the program to operate automatically, allowing the interviewer to focus mainly on interviewing. Responses gathered with a CATI system are keyed directly into an electronic database, making data immediately available for statistical analysis. The CATI system easily handles sophisticated branching and randomization patterns, and calculates variables during the course of an interview, either for branching purposes or for expected data analysis. Because of the complexity of the programming and its critical role in the data collection, the CATI instrument undergoes an exhaustive testing of skip patterns and the acceptance of valid values along with multiple proofreadings of text. Further testing was conducted after changes were made to the questionnaire.

In terms of interviewing staff, the firm employs a staff of more than 300 interviewers, many of which are full-time staff members, and employs a 1:8 supervisor-to-interviewer ratio (industry standard). Their interviewers represent a wide range of ages and cultural backgrounds. I/H/R makes a substantial investment in training before new interviewers begin work on live projects, and

[3] STS's sampling frame is based on the largest database of working residential telephone exchanges and working blocks in the United States. The database information is regularly updated four times per year, and crosschecked monthly against area code and assigned exchange lists furnished by the telephone companies. Exchanges and/or working blocks designated for business or governmental telephones, car/boat/plane mobile units, and other commercial or institutional services, are screened out. Disconnects have traditionally been one of the most inefficient parts of random digit sampling. STS PreID normally identifies 50% to 75% of all disconnects in any RDD sample. Many fax numbers are also identified.

[4] The decision to eliminate Elmore from 2008 results when comparing with 1997 results was made at a meeting on October 8, 2009.

[5] I/H/R Research is a research data collection facility with over 30 years of experience.

throughout their employment with the firm. Interviewer candidates are carefully screened for phone manner, clarity of voice, vocabulary, and computer knowledge/aptitude. Once hired, they are trained extensively, beginning with the Marketing Research Association-approved video and workbook training materials and progressing to a more thorough sequence of our own which focuses on probing techniques, practice in recording answers verbatim, administering surveys via computer, controlling interview situations, etc.

All interviewers were trained on the project, supervised and monitored by fieldhouse management. Aurora's project manager also conducted remote monitoring during the pretest and periodically throughout the entire project as an additional quality control measure.

After the questionnaire was programmed for the CATI system, Aurora conducted a pretest, which consisted of 14 completed surveys.[6] This pretest helped identify potential problems with the questionnaire and the research design. The survey was timed to measure compliance with project specifications. A pretest debriefing was held to ascertain interviewers', supervisors', and managers' reactions and feedback. Minor adjustments were made in consultation with ERG. The fieldwork then continued as scheduled.

Multiple attempts were made to reach potential respondents during afternoon/evening hours from 4:30 p.m. to 9:00 p.m. Monday to Thursday and from 10:00 a.m. to 6:00 p.m. only, on the weekends. (Telephone surveys are typically not conducted on Fridays as the response rate is low.) Experience has shown that these hours are the most effective for reaching and interviewing a representative sample of the general public. As per industry standard, interviewers tried each number up to five times until the telephone number was considered "exhausted" (due to answering machines, non-response, non-qualification, partial completion, refusal, etc.), and another number was substituted.

Additional Quality Control Measures: The use of a CATI system (described above) for conducting the interviews is one measure of quality control – CATI condenses timelines, increases flexibility, and enhances the accuracy of data collection. Up to 30% of all interviews were validated by managers as standard procedure, via audio and visual monitoring. Additionally, 10% of those respondents who initially refuse to participate were asked by a senior interviewer to reconsider (typically referred to as refusal conversion). As previously mentioned, Aurora's project manager also conducted remote monitoring during the pretest and periodically throughout the entire project.

Once all the fieldwork was completed, the data were cleaned and verified, including a manual review of all the verbatim responses to open-ended questions. Aurora developed a list of categories based on an initial scan of the responses and coded all responses.

Methods of Analysis: Survey results were analyzed using univariate and bivariate statistical techniques. The type of analysis depended upon the kind of variable analyzed. Normally we would report frequency percentages that are adjusted, meaning that percentages have been adjusted to account for any non-responses (refusals to answer), "don't know" responses, or non-qualified responses (questions not answered due to answers to previous questions). However, because all answer categories were included in the 1997 results, we have followed that format, except when the statistical assumptions underlying certain analyses prevented us from including them.

[6] The pretest interviews occurred on the first night of calling (August 20, 2009) and are considered part of the study.

Researchers are interested in assessing whether or not the differences in observed percentages between certain groups of individuals are due to chance, or if they represent real differences among the subpopulations. Differences between counties and/or 1997 results have been identified by running statistical analyses and are discussed in the report. Statistical significance within crosstabulation tables was calculated using chi square ($\chi 2$) statistics. Tests of proportion were used to identify differences in responses between questions or groups of respondents. The level of significance was generally set to a p value of .05.

Caveat: The sole purpose of this report is to provide a collection, categorization and summary of public opinion data. Aurora Research Group intends to neither endorse nor criticize the state of Idaho Department of Environmental Quality (DEQ) or Eastern Research Group, Inc. (ERG); or their policies, products, board of directors or staff. The Client shall be solely responsible for any modifications, revisions, or further disclosure/distribution of this report.

Results & Conclusions

The survey results are organized and presented in approximately the same order as the questionnaire, as follows: the inventory of all wood-burning devices, followed by the wood consumption (frequency and type) for each are first presented. This is followed by awareness of the state tax deduction as an incentive, and ends with survey demographics. Within each section of the report, the results for the Treasure Valley Airshed as a whole are first presented, based on post-weighted results from the 751 completed surveys with the general population of residents. Next, any significant differences among the three counties in the Airshed are discussed. Finally, any significant differences between 2008 results[7] and the 1997 inventory are presented (when questions were the same).

Inventory of Heating Devices

General Population Results

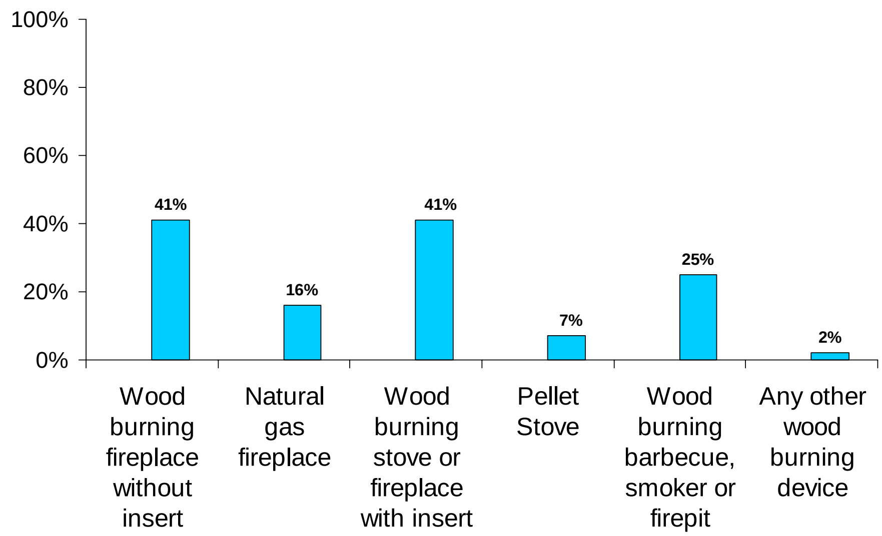
- **1** ***Forty-one percent (41%) of residential households with wood-burning devices in the Treasure Valley Airshed have a wood burning fireplace without an insert and the same proportion (41%) have one with an insert. One quarter (25%) of all households have a barbecue, smoker or fire pit.***

All respondents were asked whether or not their household had any of the following wood or gas burning devices: a wood burning fireplace without an insert, a natural gas fireplace, a wood burning stove or fireplace with an insert, a pellet stove; a wood burning barbecue, smoker, or fire pit; or any other wood burning device. (If respondents had only gas burning fireplaces, they were thanked and the interview was ended. The current results therefore indicate the percentage of wood burning households who also have natural gas fireplaces, and not the percentage of the population with gas fireplaces.) The weighted results for the Treasure Valley Airshed as a whole are shown in Figure 1, and indicate that the same percentage of households (41%) have a wood burning fireplace without an insert as have one with an insert. Twenty-five percent (25%) have a smoker or fire pit, 16% have a natural gas fireplace, 7% have a pellet stove, and 2% have some other wood burning device. The results do not sum to 100% because each question was asked independently and some households had more than one device. However, it was rare that households had stoves or fireplaces both with and without inserts – they tended to have one or the other: only 20 households (or 3% of the total population) had both.

[7] The sample of residents surveyed in 1997 differed from the current sampling strategy in that only residents of Ada (83% or 222 interviews) and Canyon (17% or 45 interviews) counties were included and the total number of completed interviews was smaller at 267 than the current 751. For the 2008 inventory we interviewed 401 residents in Ada County, 200 in Canyon, and 150 in Elmore County, and postweighted results based on proportions estimated from the U.S. Census: 67% Ada, 29% Canyon, and 4% Elmore). For the purposes of the 1997 comparison, we re-weighted 2008 results (70% Ada, 30% Canyon), excluding Elmore County. The reader is therefore cautioned that the weighted three-county and two-county 2008 results may differ.

Figure 1

2008 Inventory: Weighted Results for Treasure Valley Airshed as a Whole (includes Don't know and Refusals)



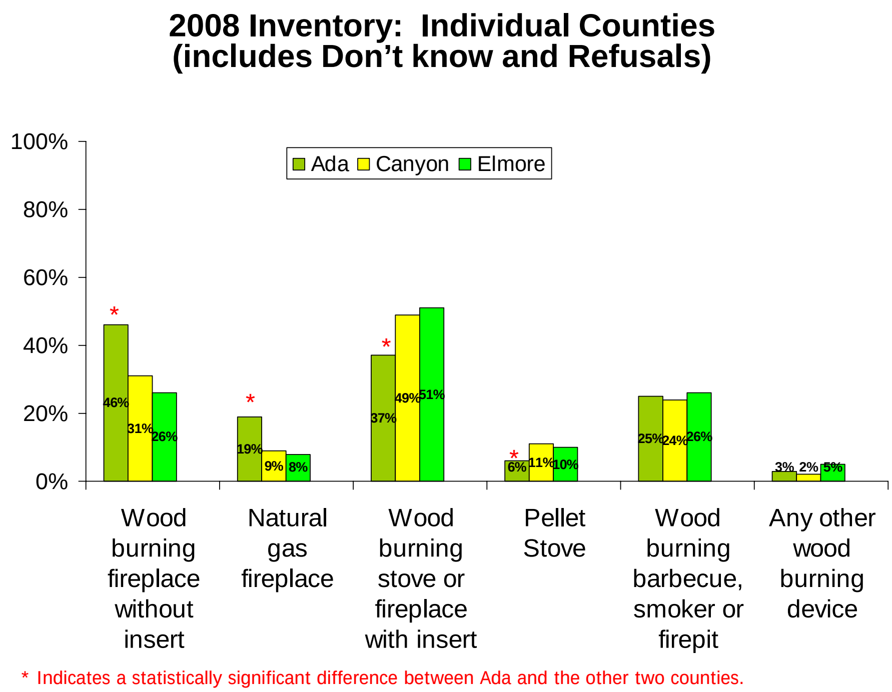
*** Note: Results are independent and will not sum to 100% - households may have more than one device.**

Individual County Results

❖ **2** ***There were significantly <u>more</u> households in Ada than in either Canyon or Elmore counties with a wood burning fireplace <u>without</u> an insert, and there were significantly <u>fewer</u> households in Ada with a pellet stove.***

The next figure shows the inventory of devices within each of the three counties in the Treasure Valley Airshed. It can be seen that there were some significant differences between Ada and the other two counties: for example, while 46% of Ada households had a wood burning fireplace without an insert, only 31% of Canyon and 26% of Elmore households did. However, 19% of households in Ada also had a gas fireplace, significantly more than in Canyon (9%) or Elmore (8%). About half of Canyon (49%) and Elmore (51%) households had a wood stove or fireplace with an insert; significantly more than the 37% of Ada households. Significantly fewer Ada households had pellet stoves. The three counties reported similar levels of ownership of barbecue, smokers or fire pits (about one-quarter of households).

Figure 2



Comparison with 1997 Results

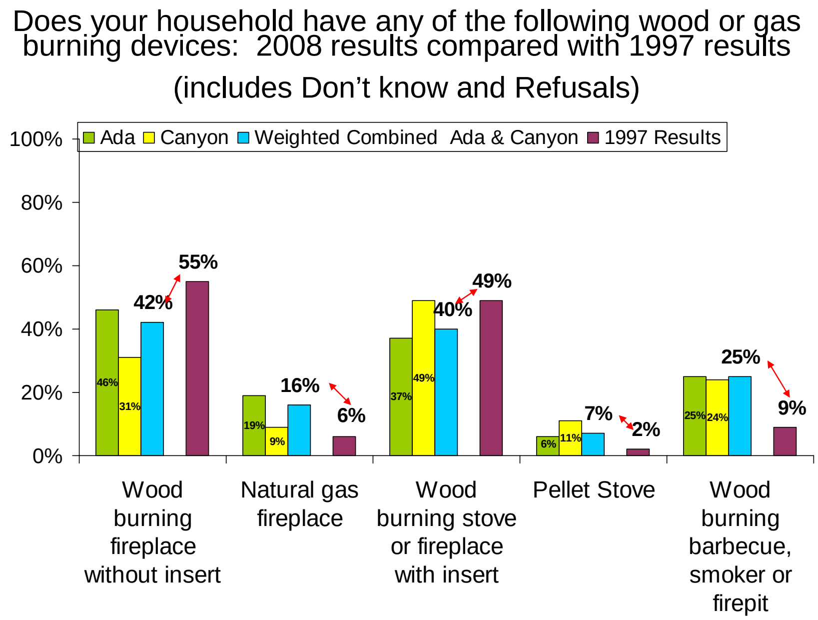
- ***3 Significantly fewer residents had wood burning fireplaces or stoves, <u>with or without</u> inserts, in 2008 than in 1997. However, the percentage having pellet stoves and barbecues or fire pits has increased significantly from 1997.***

The next figure shows that the overall percentage of wood burning fireplaces or stoves has declined since 1997: whether or not fireplace and wood stoves had an insert, the general levels are significantly lower than in 1997. For example, it can be seen that 42% of Ada and Canyon households had wood burning fireplaces without inserts in 2008, significantly fewer than the 55% who did in 1997. [The percentage of homes with more than one device in 1997 was not presented in the frequency results we were given, so that comparison cannot be made.]

It can also be seen that the percentage of households with natural gas fireplaces has possibly increased: from 6% in 1997 to 16% in 2008.[8] Similarly, more households in 2008 reported having pellet stoves in 2008 (7%) than in 1997 (2%); as well as wood burning barbecues, smokers, or fire pits (25% in 2008) compared with 1997 results (9%).

[8] In 2008, the percentage represents those who had natural gas fireplaces in addition to one or more wood burning devices. It is not clear if the 1997 questionnaire did the same. Results therefore might not be directly comparable and should be treated with caution.

Figure 3



Percentage Burning at Least 4 Times in Past Year

General Population Results

- ***4 Households having fireplaces without inserts were less likely to have burned wood in them four or more times in the past year (31%) than those with stove or fireplace inserts (78%). The majority of those with pellet stoves used them (79%), as did half (51%) of those with barbecues or fire pits.***

Respondents were asked if they burned wood (or processed logs or pellets) at least four times in the last twelve months[9] in each of the wood burning devices in the house. Results for the weighted Treasure Valley Airshed as a whole are presented in Figure 4. It can be seen that of those who had fireplaces without inserts, only 31% burned wood in them at least four times this past year, compared with 78% of those having stoves or fireplaces with inserts. The majority of pellet stove owners also burned pellets at least four times (79%), and about half (51%) of those with barbecues, smokers or fire pits burned wood in them during the past twelve months.

[9] "That is, did you burn wood at least 4 times from Aug 2008 to July 2009?"

Figure 4

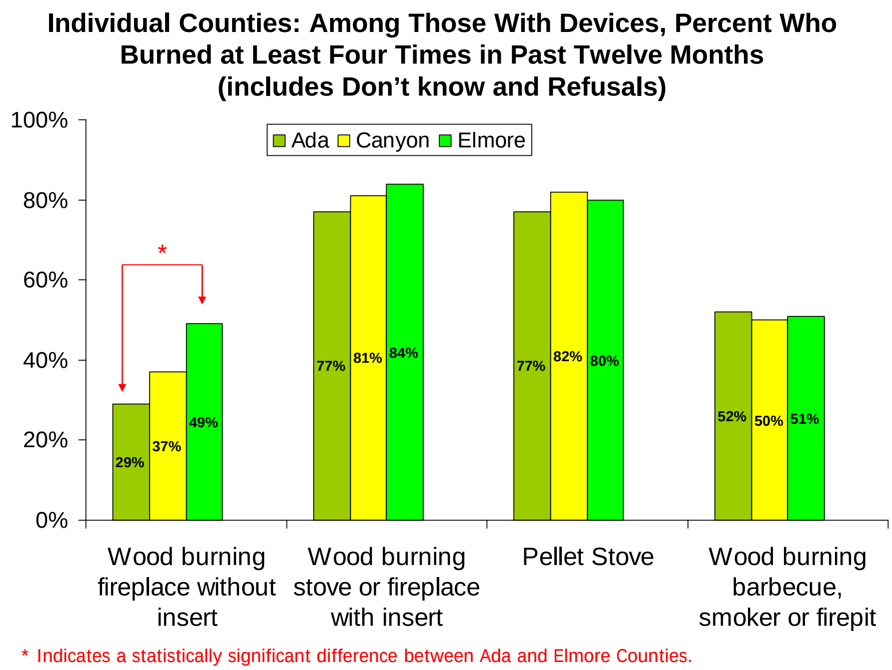
Treasure Valley Airshed: Among Those With Devices, Percent Who Burned at Least Four Times in Past Twelve Months (includes Don't know and Refusals)

Individual County Results

- ***5 The percentages of households that burned at least four times last year were similar in all three counties with one exception: significantly fewer households in Ada (29%) than in Elmore (49%) counties burned wood in fireplaces without inserts.***

Results for the individual counties are presented in Figure 5. It can be seen that, in general, households with wood burning devices in all three counties had similar burning patterns. There was one exception: among those with wood burning fireplaces without inserts, significantly fewer burned wood at least four times in the past year in Ada County (29%) than in Elmore County (49%). [Results from Canyon (37%) did not differ significantly from the other two.]

Figure 5



Comparison with 1997 Results

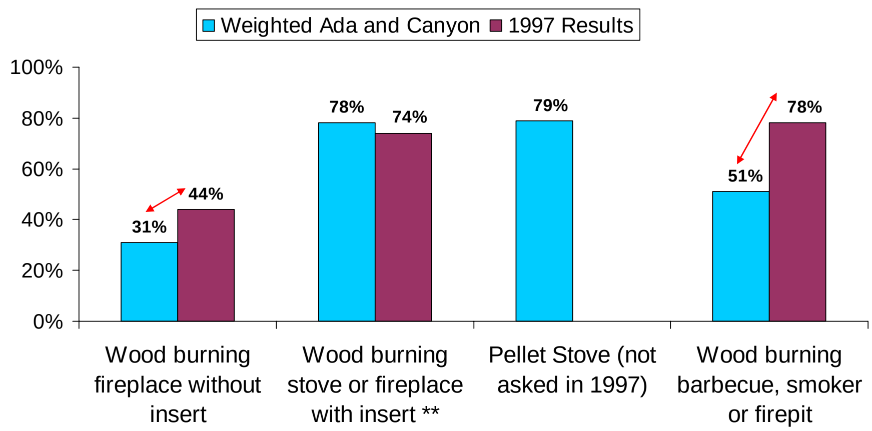
❖ ***6 Not all comparisons can be made with 1997 results due to questionnaire differences. However, among those that can, it appears that burning wood in fireplaces without inserts as well as in barbecues, smokers or fire pits has declined significantly from 1997.***

There were questionnaire differences between 1997 and the current survey and therefore not all comparisons can be made. In addition, we had to recalculate 1997 results to be comparable: for example, the denominator for the percentage of fireplace owners without inserts in the 1997 survey came from Q.3, but the numerator came from Q.4.[10] Further, results from owners of fireplaces and stoves with inserts should be treated with some caution as this question was only asked of stove owners in 1997. That being said, it can be seen that wood burning has declined significantly from 1997: fewer households in 2008 than in 1997 burned wood at least four times a year in their fireplaces without inserts (31% in 2008 compared with 44% in 1997) or in their barbecues, smokers or fire pits (51% in 2008 compared with 78% in 1997).

10 The percentage for stove owners with inserts for 1997 came from Q.8 alone. The percentage for barbecue, smokers or fire pits came from a combination of Q.11 and Q12 in the 1997 survey.

Figure 6

2008 to 1997 Comparison, Ada and Canyon Counties only: Percent Who Burned at Least Four Times in Past Twelve Months (includes Don't know and Refusals)



Arrows indicate statistically significant differences between the years.

** In 1997 the question was asked only of wood stove owners with inserts

6

OVERALL WOOD CONSUMPTION

General Population Results

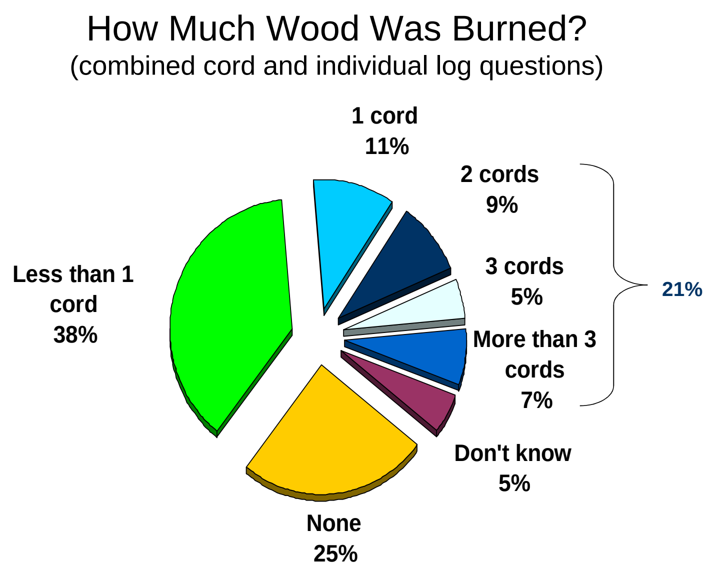
The next set of questions was asked in order to help determine how much overall fuel was burned. The survey asked respondents to estimate the number of cords (or individual logs) of wood, individual processed logs, and pounds of pellets that had been consumed during the year.

- ***7 Seventy percent (70%) of respondents burned wood between August 2008 and July 2009, with 38% saying they consumed less than one cord of wood.***

All respondents were asked, "On the average, how many cords of wood did you burn in the last 12 months in all the wood burning devices you have?" Results indicated that 11% burned about a cord, while 22% burned more. Twenty-eight percent said they used less than a cord of wood. One third (32%) of those asked said none (zero) and a further 8% were undecided.

A follow up question then asked those respondents who had said "zero" or were unsure to estimate the number of wood logs they had burned. The results of the two questions were combined and are shown in the next chart. It can be seen that overall, 25% reported not burning any wood at all (either in terms of cords or logs) and 5% were still unsure. This meant that 70% burned wood. The largest group burned less than one cord of wood in the year (38%). Eleven percent used about a cord and 21% burned more wood than one cord.

Figure 7



❖ 8 ***Ten percent of all respondents reported burning at least one processed log from August 2008 to July 2009, but the vast majority (85%) did not burn any processed logs.***

All respondents were asked to quantify their use of processed fire logs. Overall, the responses ranged from zero to 60, with the most common response among users being 12 processed logs (2%) during the course of the year, which averages to one log per month. However, 85% said they did not burn any (zero). Four percent were unsure and 1% refused, both of which were considered to be non-responses.

Number of Processe Logs	Percent of All Respondents
None	85%
One	<1%
Two	1%
Three	1%
Four	1%
Five – Ten	2%
12	2%
13 or more	2%
Non-response	5%

❖ 9 ***Among pellet stove users, one third (33%) reported burning an average of 800 pounds of pellets in a year.***

Respondents who had a pellet stove were asked to quantify the amount of pellets burned in terms of pounds. (Some respondents reported their fuel in terms of bags, which was later converted into pounds. The assumption was that each bag weighs 40 pounds.) Thirty-three percent of pellet stove owners reported using 800 pounds (or 20 bags). Thirteen percent could not estimate how much they used.

Pounds of Pellets	Percent of Pellet Stove Owners
0	<1%
20	3%
80	3%
120	6%
150	3%
300	3%
400	3%
600	2%
800	33%
960	3%
1000	5%
1200	< 1%
1600	3%
2000	3%
3000	6%
4000	8%
8000	2%
Don't know	13%

- ***10 Nearly all (97%) Treasure Valley residents surveyed reported having another source of fuel available besides wood or pellet burning to heat their home.***

When asked if burning wood or wood pellets was the only possible way to heat their home, most respondents (97%) said they could heat it with another heat source if they wanted to. Two percent reported wood burning as being the only way to heat their home and fewer than 1% were undecided.

Individual County Results

- ***11 There were no differences found by geographical region in terms of overall wood consumption (the pounds of pellets or number of processed logs, wood logs, or cords of wood burned).***

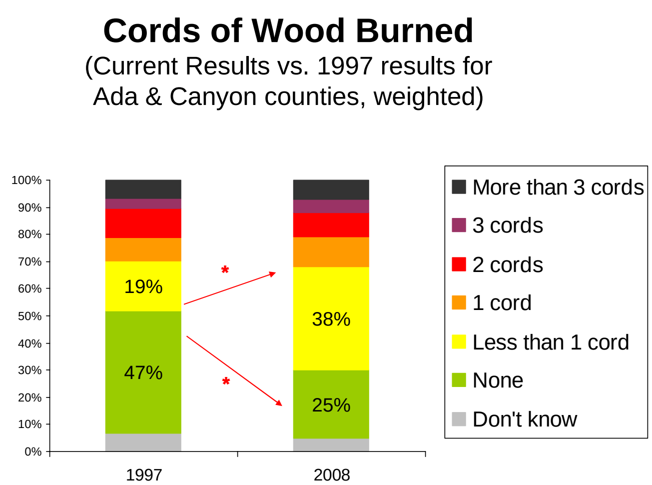
Similarly, the results were consistent across all three counties in terms of having other possible ways to heat their homes: 98% of Ada county respondents, 97% of Canyon county respondents and 96% of Elmore county respondents said they could use another heat source to warm their home if they wanted to.

Comparison with 1997 Results

- ***12 Wood burning seems to have increased since 1997 in Ada and Canyon counties combined, but the amount of wood burned is not large. Although significantly fewer people said they burned no wood (zero cords) in 2008 (25%) compared with 1997 (47%); the percentage who said they used less than one cord of wood has doubled since 1997 (38% in 2008 vs. 19% in 1997).***

  Only the results of Ada and Canyon were used for the comparison with 1997 results. We compared the number of cords only[11] that were consumed in the current survey with those of the 1997 survey and the results are shown in the next chart. It can be seen that the majority of the categories remained about the same with the exception of the first two categories (no wood and less than a cord). There were significantly fewer respondents who said they had not burned any cords of wood in 2008 (25%) than in 1997 (47%). However, the percentage of respondents who consumed less than one cord of wood doubled (from 19% in 1997 to 38% in 2008). In other words, approximately the same combined percentage of respondents in both years burned less than a cord or no wood during the year.

Figure 8



In terms of processed logs and pellets, the slight differences in percentages were not found to be statistically significant. In other words, similar amounts of processed logs and pellets were burned Ada and Canyon counties in 2008 as in 1997. Results are shown in the next two tables.

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[11] Earlier in this report we combined the results of the number of cords of wood and the number of wood logs in order to have a better understanding of how many didn't burn any wood. However, since we only have a hard copy of the frequency report for the 1997 survey, we were only able to compare the results of the number of cords of wood and the number of individual logs separately and not combine them.

Processed Logs	1997 Percent Among All R	2008 Percent Among All R
None	89%	85%
One – 10 logs	3%	6%
11 – 60 logs	3%	5%
Non-response (Don't know & Refused)	5%	4%

Pellets	1997 Percent Among All R	2008 Percent Among All R
None	92%	94%
At least one pound	3%	5%
Non-response (Don't know & Refused)	5%	1%

WOOD BURNING FIREPLACES WITHOUT AN INSERT ACTIVITY

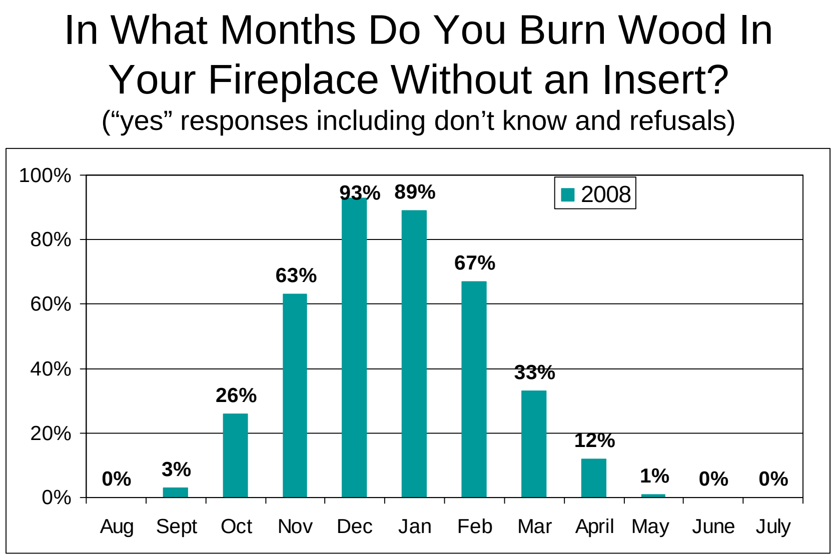
Respondents who owned a fireplace without an insert and used it at least four times in the past year were asked several questions pertaining to the frequency and timing of use, the length of the burn and the quantity and type of fuel consumed.

General Population Results

- ***13 Those who burned wood tended to use their fireplaces without inserts mostly from November through February – over 60% burned wood in these four months.***

Respondents were asked to identify the months (from August of 2008 to July of 2009) in which they burned wood in the fireplace without an insert in their home. [Multiple responses were accepted from respondents so each month should be considered separately.] It can be seen in the next chart that, not surprisingly, there was little fireplace wood burning in September (3%). Then activity increased in October (26%) and November (63%). In December and January, nearly everyone who has a fireplace without an insert used it (93% and 89%, respectively). Then in February, wood burning activity started to taper off.

Figure 9



The following chart provides the results of the number of times that respondents burned wood during each month in their fireplace without an insert. (There was no wood burning in August 2008, June or July 2009 so these months have been excluded from the chart.)

WOODBURNING FIREPLACE WITHOUT INSERT: FREQUENCY OF BURNING FROM AUGUST, 2008 TO JULY, 2009
(AMONG THOSE WHO SAID THEY BURNED WOOD LEAST 4 TIMES IN THE PAST 12 MONTHS)
APPROXIMATELY HOW MANY TIMES DID YOU BURN WOOD DURING THE MONTH OF….

Month (sample size)	1-4 times	5-8 times	9-12 times	13-18 times	9-24 times	25+ times	Don't Know	Refused	Total
Sept 2008 (n=3)	86.2%	-.-	-.-	-.-	-.-	-.-	6.9%	6.9%	100%
Oct 2008 (n=24)	40.4%	26.0%	5.1%	16.4%	4.5%	1.6%	5.1%	0.8%	100%
Nov 2008 (n=60)	33.2%	14.1%	9.6%	5.9%	15.7%	10.3%	8.8%	2.4%	100%
Dec 2008 (n=88)	32.4%	18.2%	11.7%	4.3%	14.3%	11.5%	7.4%	0.2%	100%
Jan 2009 (n=85)	31.2	16.0%	16.2%	5.8%	11.2%	11.7%	7.7%	0.2%	100%
Feb 2009 (n=64)	31.3	17.3%	13.9%	11.6%	6.1%	9.2%	10.2%	0.3%	100%
March 2009 (n=32)	23.8	8.5%	16.4%	26.8%	5.8%	6.0%	12.0%	0.6%	100%
April 2009 (n=12)	31.8	21.2%	38.5%	1.7%	5.1%	-.-	-.-	1.7%	100%
May 2009 (n=1)	100%	-.-	-.-	-.-	-.-	-.-	-.-	-.-	100%

- ***14 In general, the majority of the wood burning done in fireplaces without inserts occurred on the weekends.***

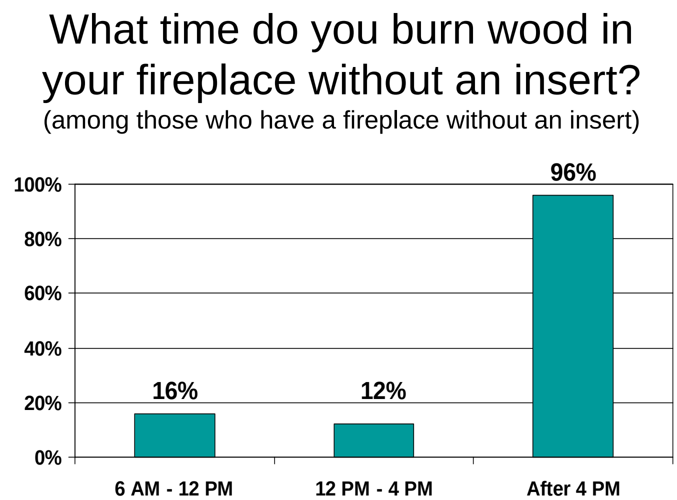
Respondents who indicated that they burn wood at least four times in their fireplace without an insert were asked to think about their wood burning activity in terms of weekday versus weekend habits. The question read: "during a typical week, what percent of the wood burned in your fireplace(s) was burned on weekdays, that is, **Monday through Friday**?" The program then calculated the remaining percent as burning on Saturday and Sunday. Four percent said they burned the same amount every day, Monday through Sunday. Seventeen percent were undecided and 4% refused. These three groups were excluded; the results were recalculated, and are presented in the next table.

FIREPLACE (NO INSERT) BURNING ACTIVITY PERCENT	MONDAY – FRIDAY AMONG THOSE RESPONDING (N=71)	SATURDAY & SUNDAY AMONG THOSE RESPONDING (N=71)
None	21%	0%
1 – 9%	4%	0%
10 - 19%	17%	5%
20 – 29%	16%	7%
30 – 39%	6%	2%
40 – 49%	2%	5%
50 – 59%	16%	17%
60 – 69%	6%	2%
70 – 79%	3%	16%
80 – 89%	3%	6%
90 – 99%	5%	20%
100%	0%	21%

- ***15 Nearly all (96%) fireplace (no insert) users burned wood after 4:00 p.m., while only about 15% had wood fires early in the day.***

Regular users of their fireplace without an insert (and who used it at least 4 times per year) were asked what time of the day or night they burned. They were given three options and were asked, yes or no, if they had started a wood fire during that timeframe from August 2008 to July 2009. The results of those who answered "yes" are shown in the next chart.

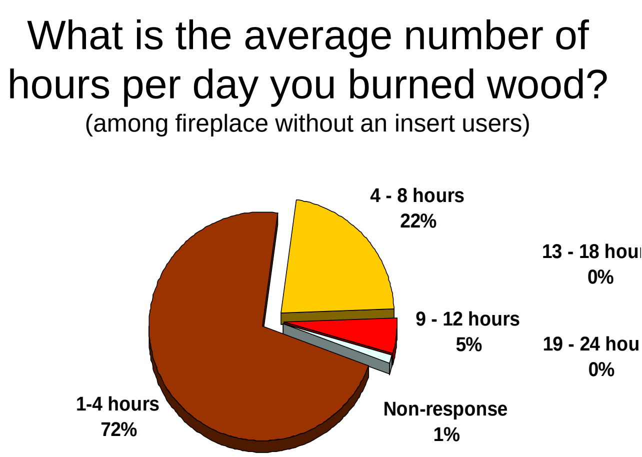
Figure 10



❖ ***16 About seven in ten respondents with fireplaces (without inserts) burned wood fires from 1-3 hours and consumed up to 10 logs.***

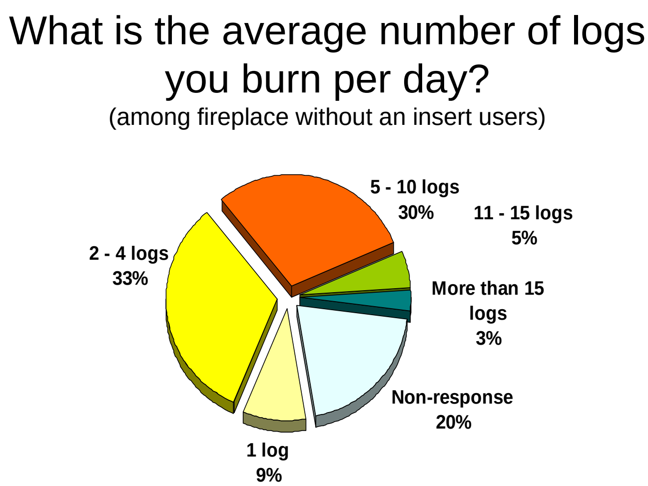
A follow up question asked regular fireplace (without an insert) users: "On the days that you burned wood, what was the average number of hours per day you burned wood in your fireplace?" Responses ranged from 1 hour to 24 hours and the average number of hours was 5. The following graph shows the categorized responses. Nearly three quarters of users (72%) said they burned one to four hours, while nobody (zero) said they used their fireplace with no insert longer than 12 hours.

Figure 11



Respondents were then asked to estimate the number of logs they burned in the fire on an average day. Responses ranged from less than 1 log to 20 logs and the median number of logs was 4. Twenty percent of respondents did not give responses (don't know or refusals). It can be seen in the following chart that a third of those responding said they burned 2 – 4 logs, while 30% burned anywhere from 5 to 10 logs.

Figure 12

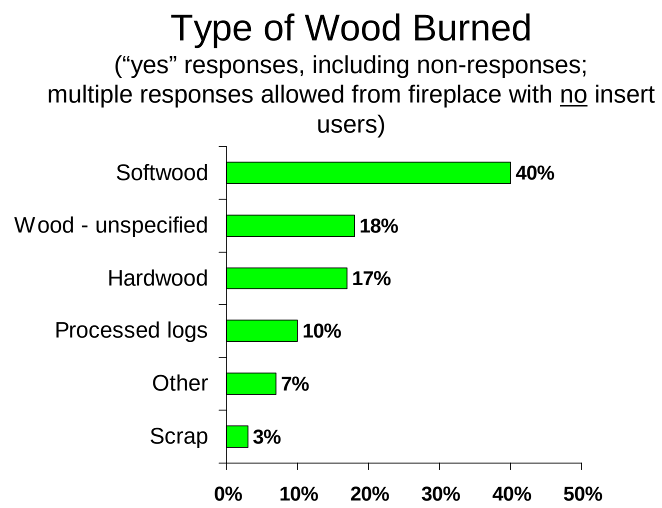


❖ ***17 Softwood was the most common type of wood burned in fireplaces without inserts, with four in ten users (40%) saying they used pine, cedar, fir, aspen, and other softwoods for their fires.***

Respondents were asked to describe the type of wood that was burned. Specific varieties were categorized into "hardwoods" and "softwoods." Multiple responses were allowed so the totals will not sum to 100%.

It can be seen in the next chart that, among fireplace without an insert users, softwood was the most popular type, with four in ten respondents (40%) indicating they usually burn pine, cedar, fir, cottonwood, aspen, poplar, juniper or another softwood. Seventeen percent said they usually burn mesquite, oak, alder, fruit trees or hardwoods.

Figure 13



Individual County Results

There were no significant differences found among fireplace (no insert) users in the three counties in terms of the frequency and timing of use, the length of the burn or the quantity or type of fuel consumed.

Comparison with 1997 Results

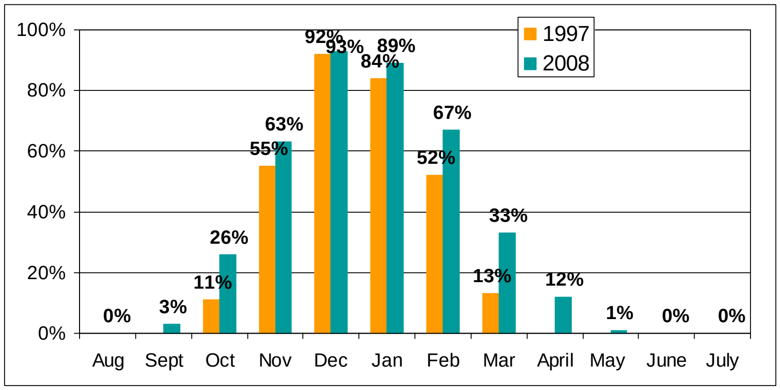
- ***18 When comparisons were possible, the current results were generally consistent with the 1997 results among those with wood burning fireplaces without an insert.***

Results for all questions are not directly comparable between 1997 and 2008 because of questionnaire differences. Results from Q6_2.1 to Q6_2.6 in 1997 along with 2008 results from Ada and Canyon respondents are presented in the next graph. It can be seen that in both years, the majority of burn nights occurred in the months of November through February, with peak use in December and January.

The following graphs are for illustrative purposes.

Figure 14

In What Months Do You Burn Wood In Your Fireplace Without an Insert?
("yes" responses including don't know and refusals)



The comparison of results of other wood burning activity among fireplace without insert owners are presented in the next few tables and charts. It can be seen that results from the two years are generally consistent.

WEEK DAY BURNING ACTIVITY PERCENT (ADA CANYON ONLY)	**1997** AMONG THOSE RESPONDING (N=54	**2008** AMONG THOSE RESPONDI (N=57)
None	20%	22%
1 – 9%	6%	3%
10 - 19%	13%	17%
20 – 29%	9%	16%
30 – 39%	6%	5%
40 – 49%	2%	2%
50 – 59%	20%	16%
60 – 69%	7%	7%
70 – 79%	16%	3%
80 – 89%	0%	4%
90 – 99%	2%	5%
100%	6%	0%

Weekend Burning Activity Percent (Ada & Canyon Only	1997 Among Those Responding (n=54	2008 Among Those Respondi (n=57)
None	0%	6%
1 – 9%	0%	0%
10 - 19%	5%	2%
20 – 29%	7%	6%
30 – 39%	2%	6%
40 – 49%	5%	6%
50 – 59%	17%	20%
60 – 69%	2%	2%
70 – 79%	16%	9%
80 – 89%	5%	11%
90 – 99%	19%	13%
100%	22%	20%

Figure 15

What time do you burn wood in your fireplace without an insert?
(among those who have a fireplace without an insert among Ada and Canyon respondents)

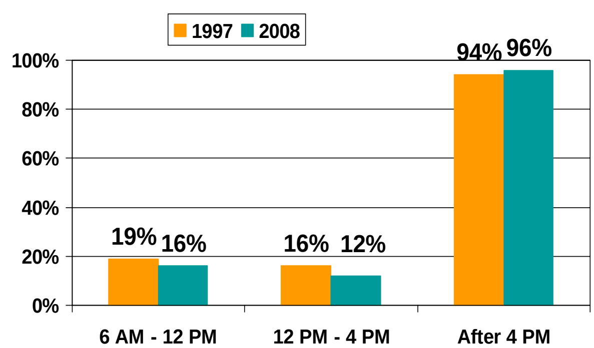


Figure 16

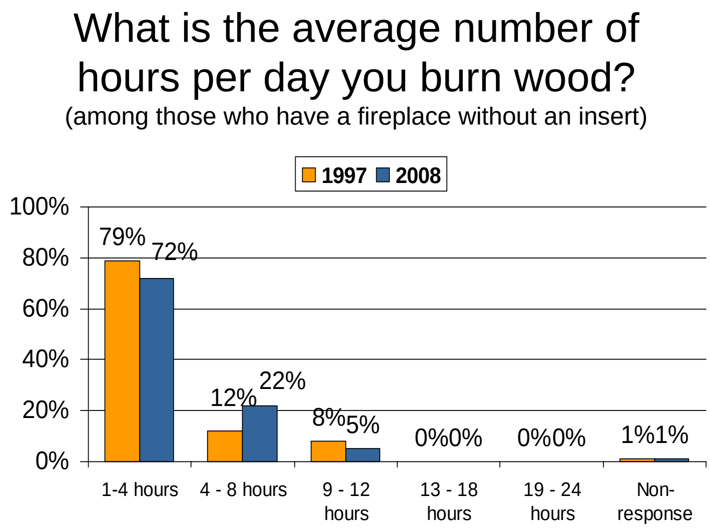


Figure 17

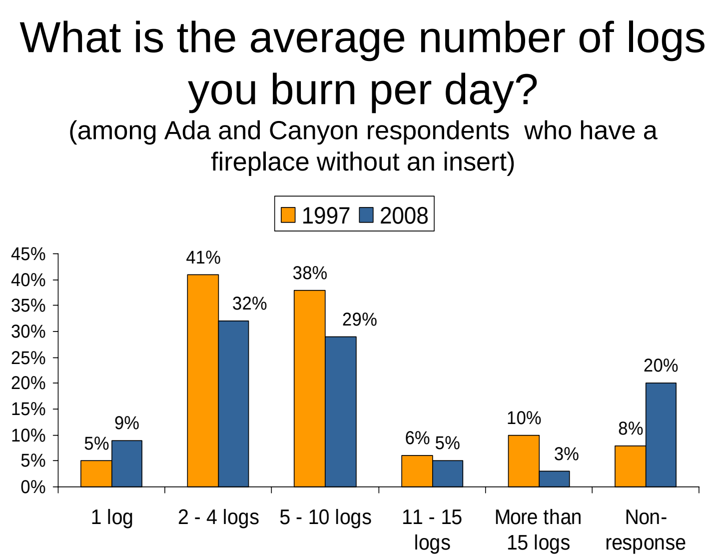
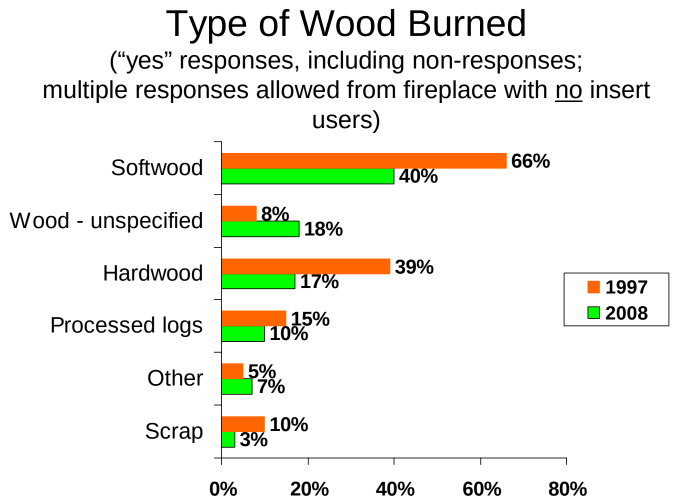


Figure 18



PELLET STOVE ACTIVITY

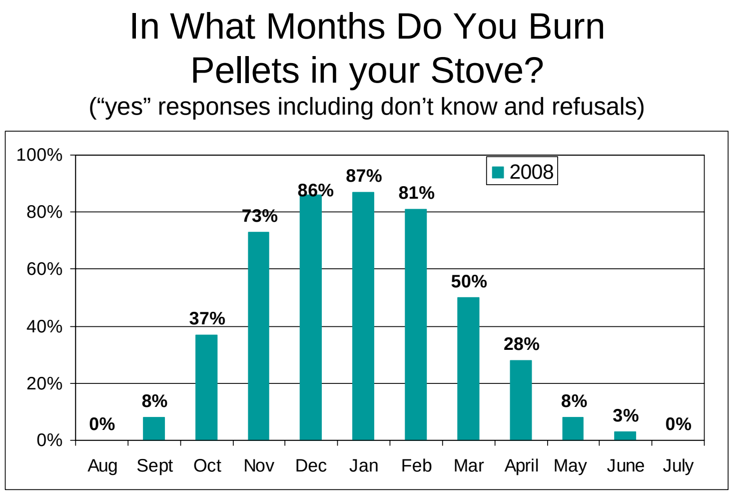
This section contains the results from respondents who owned a pellet stove and used it at least four times in the past year. As noted in Figure 1 on page 12, 7% of all respondents said they owned a pellet stove, and, furthermore, as illustrated in Figure 4, 79% of all pellet stove owners said they used their device at least four times last year. In other words, pellet stove users represented 6% of all respondents.

General Population Results

- ***19 Pellet stove usage was highest during the months of November through February, with over 70% burning pellets during these winter months and up to half burning 25 plus times a month.***

  Pellet stove users were asked about the usage of their device by month and the results are presented in the next chart. [Respondents were asked whether or not they used their pellet stove in each month and the "yes" responses are illustrated in the next chart.] It can be seen that the majority used their pellet stove from the months of November (73%) to February (81%) and reduced burn activity during the spring and fall months. Pellet stove use was practically non-existent during the summer months of August 2008, June and July 2009.

Figure 19



The following table provides the results of the number of times that respondents burned pellets during each month in their stove. It is interesting to note that, during the winter months, usage was very heavy (25+ times) among 40 – 50% of stove users. (There was no pellet burning reported in August or July so those months have been excluded from the chart.)

PELLET STOVE: FREQUENCY OF BURNING FROM AUGUST, 2008 TO JULY, 2009
(among those who said they burned pellets at least 4 times in the past 12 months)
Approximately how many TIMES did you burn wood during the month of….

Month (sample size)	1-4 times	5-8 times	9-12 times	13-18 times	19-24 times	25+ times	Don't Know	Refused	Total
Sept 2008 (n=3)	-.-	-.-	-.-	-.-	36.6%	-.-	63.4	-.-	100%
Oct 2008 (n=16)	1.2%	7.8%	20.2%	9.0%	7.8%	37.0%	17.0%	-.-	100%
Nov 2008 (n=60)	1.9%	0.6%	7.4%	11.4%	16.6%	39.1%	22.9%	-.-	100%
Dec 2008 (n=88)	3.9%	7.3%	6.3%	13.1%	-.-	56.3%	13.1%	-.-	100%
Jan 2009 (n=38)	7.7%	3.9%	3.9%	13.0%	5.8%	52.7%	13.0%	-.-	100%
Feb 2009 (n=35)	4.7%	4.1%	4.1%	10.3%	16.9%	46.0%	13.9%	-.-	100%
March 2009 (n=21)	0.9%	0.9%	6.9%	28.6%	11.8%	33.8%	16.9%	-.-	100%
April 2009 (n=12)	-.-	9.0%	28.3%	12.0%	20.7%	19.3%	10.6%	-.-	100%
May 2009 (n=4)	-.-	-.-	-.-	34.9%	-.-	34.9%	30.3%	-.-	100%
June 2009 (n=1)	100%	-.-	-.-	-.-	-.-	-.-	-.-	-.-	-.-

❖ 20 The majority of pellet stove burn activity occurred during the week.

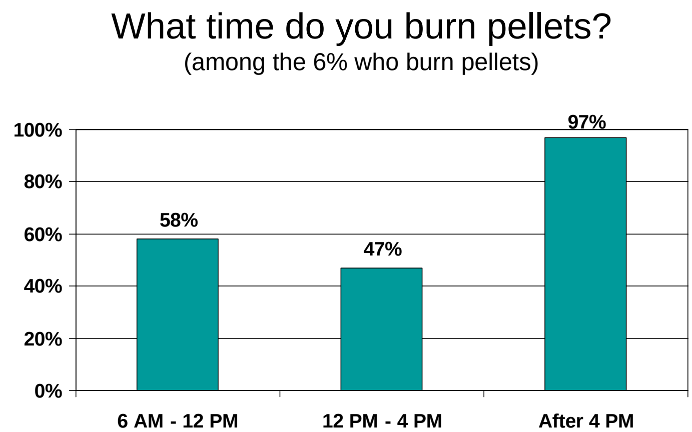
Respondents who indicated that they burned pellets at least four times in their stove were also asked to think about their burning activity in terms of weekday versus weekend habits. They were asked how much (percentage) burn activity happened Monday through Friday and then the program calculated the weekend activity (by subtracting the weekday activity from 100%). Seventeen percent said they burned the same amount every day and a third (34%) were unsure. These groups were then excluded; the results were recalculated, and are presented in the next table. [Note: the remaining number of respondents answering this question is quite small.]

Pellet Stove Activity Percent	Monday – Friday Among Those Responding (n=21)	Saturday & Sunday Among Those Responding (n=21)
None	0%	5% (1 respondent)
1 – 9%	0%	0%
10 - 19%	7% (1 respondent)	0%
20 – 29%	0%	12% (3)
30 – 39%	0%	23% (5)
40 – 49%	7% (1)	22% (5)
50 – 59%	17% (4)	17% (4)
60 – 69%	35% (8)	7% (1)
70 – 79%	22% (5)	0%
80 – 89%	6% (1)	0%
90 – 99%	0%	7% (1)
100%	5% (1)	0%

❖ 21 About half of the pellet stove users burned pellets all day from 6:00 a.m. to noon (58%) and from noon until 4:00 p.m. (47%); however, activity significantly increased after 4:00 pm: all (97%) pellet stove users burned pellets after 4:00 p.m.

Regular pellet stoves users (used it at least 4 times per year) were asked what time of the day or night did they burn. They were given three timeframes and asked, yes or no, if they had used their pellet stove during that period from August 2008 to July 2009. The results of those who answered "yes" are shown in the next chart.

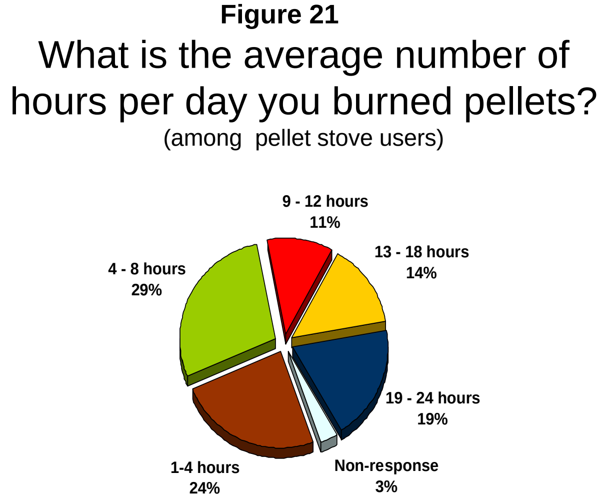
Figure 20



❖ ***22 In terms of the activity length, the average number of hours of pellet burning was 11.***

When asked about the average number of hours that pellets were burned in their stove, responses ranged from 1 to 24 hours and three percent were undecided. Excluding the undecided responses, the average number of hours that pellet stoves were used was 11. The responses were grouped into categories and are shown in the next chart.

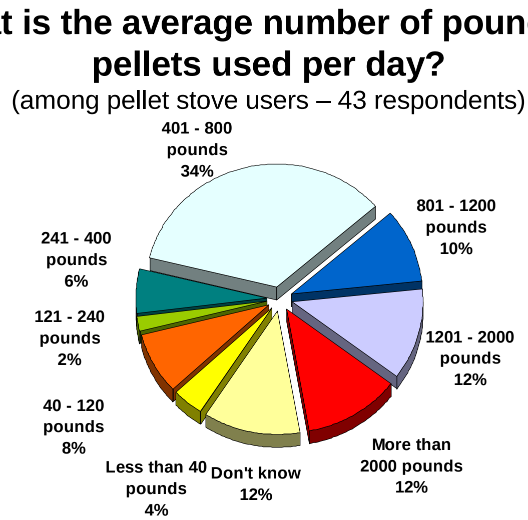
Figure 21



❖ ***23 The median number of pellets consumed by stove users was 800, or 20 forty-pound bags.***

Respondents were also asked to quantify the total number of pounds of pellets they used during the year. Some respondents gave answers in terms of bags of pellets, which were converted under the assumption that the average commercial bag of pellets weights 40 pounds. Twelve percent (6 respondents) were unsure and excluded from the analyses to get a median[12] of 800 pounds of pellets consumed by stove users. The responses (including don't know responses) were categorized and are displayed in the following graph.

Figure 22



Individual County Results

Only 47 respondents of the 751 included in the sample (or 6%) were asked the in-depth series of questions about pellet stove activity. Due to such a small subset, none of crosstabulation analyses were found to be statistically significant. In other words, respondents of Ada, Canyon and Elmore counties were just as likely as one another to burn as frequently, on the weekdays, for the same periods of time, and the same quantity of fuel.

Comparison with 1997 Results

In the 1997 survey, the pellet stove questions were intertwined with the wood burning stove questions and, therefore, no direct comparisons can be made with the current results.

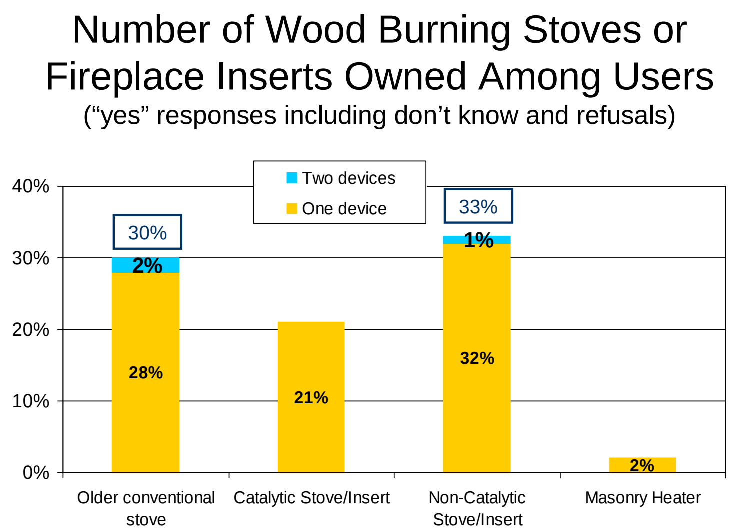
WOOD BURNING STOVE & FIREPLACE WITH INSERT INVENTORY

- ***24 About 30% of stove and insert users burned wood in older, conventional stoves and a similar number of users had non-catalytic stoves or inserts (33%). Slightly fewer (21%) had catalytic stoves or inserts. However, there were 28% of users who said they did not have any of the four types of stoves or inserts mentioned.***

12 The median represents the 50th percentile, whereby 50% of the responses fall above and 50% of the responses fall below the number.

Respondents who said they had a wood burning stove or fireplace with an insert were read a list of four types of devices and asked: "How many of the following types of wood burning stoves or fireplace inserts do you have?" About a third reported having an older conventional stove (30%) and a similar amount said they had a non-catalytic stove or insert (33%). Twenty-one percent had a catalytic stove or insert.[13]

Figure 23



❖ ***25 Users owning multiple types of devices either burned wood in their device all the time or not at all. There was very little mixed-device use reported.***

Among those who had more than one type of stove or insert, respondents were asked how frequently they used each of their devices. The program was set to double check that the totals summed to 100%. Overall, the majority of respondents either used their device all of the time (100%) or not at all (0%), as the largest groups of responses were at the opposite ends of the scale.

Percent	Older Conventional Stoves (n=33)	Catalytic Stoves (n=28)	Non-Catalytic Stoves (n=28)	Masonry Stoves (n=8)
0	39.3%	44.1%	53.5%	83.8%
2	-.-	-.-	3.9%	-.-
10	1.2%	-.-	1.4%	-.-
20	-.-	3.9%	-.-	-.-
25	-.-	4.5%	-.-	-.-
34	-.-	-.-	0.7%	-.-
40	3.8%	4.5%	-.-	-.-
48	-.-	3.9%	-.-	-.-
50	3.3%	-.-	-.-	-.-

[13] However, 28% percent of stove and insert users said they did not have any of these devices.

60	3.8%	-.-	-.-	16.2%
66	-.-	0.7%	-.-	-.-
75	-.-	-.-	4.5%	-.-
80	3.3%	0.7%	-.-	-.-
90	0.6%	-.-	0.7%	-.-
100	44.8%	37.7%	35.4%	-.-
Total	**100%**	**100%**	**100%**	**100%**

❖ ***26 Half of the stoves were built after 1986 (24% from 1986 to 1990 and 26% after 1990), although 35% were over 23 year old (built before 1986). About 30% of non-catalytic owners said that their stove or fireplace insert was EPA certified.***

Non-catalytic stove or insert owners were asked whether or not they knew the year in which their wood stove or insert was made. They were given three categories: before 1986, between 1986 and 1990, and after 1990. The question was asked about each device owned, although only three respondents said they had a second device and only one person said they had a third device. When talking about their (first and often only) device, 14% did not know they year the device was made. About a quarter (26%) said they had a stove from 1991 or newer. A similar number (24%) indicated that their stove was built between 1986 and 1990. The largest group (35%) said their stove was over 23 years old, as it was built before 1986. [Note: the number of responses may not always sum to the total because of weighting].

When was it made?	FIRST non-catalytic stove/FP insert		SECOND non-catalytic stove/FP insert		THIRD non-catalytic stove/FP insert	
Response	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Before 1986	N=26	35%	N=1	43%	N=1	100%
1986 to 1990	N=18	24%	N=1	50%	N=0	-.-
After 1990	N=19	26%	N=0	-.-	N=0	-.-
Don't know	N=10	14%	N=0	7%	N=0	-.-
Total	**N=73**	**100%**	**N=3**	**100%**	**N=1**	**100%**

Non-catalytic stove or insert owners were also asked whether or not they knew their device was EPA certified. Results are shown in the next table. It can be seen that, for the first stove discussed, more than half (55%) did not know. While the numbers are small, 29% said they had an EPA certified unit and 16% said they did not.

	Is the FIRST non-catalytic stove/FP insert EPA certified?		Is the SECOND non-catalytic stove/FP insert EPA certified?		Is the THIRD non-catalytic stove/FP insert EPA certified?	
RESPONSE	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
Yes	N=21	29%	N=1	50%	N=0	-.-
No	N=12	16%	N=0	-.-	N=0	-.-
Don't know	N=40	55%	N=1	50%	N=1	100%
Total	**N=73**	**100%**	**N=3**	**100%**	**N=1**	**100%**

WOOD STOVE OR FIREPLACE WITH INSERT ACTIVITY

General Population Results

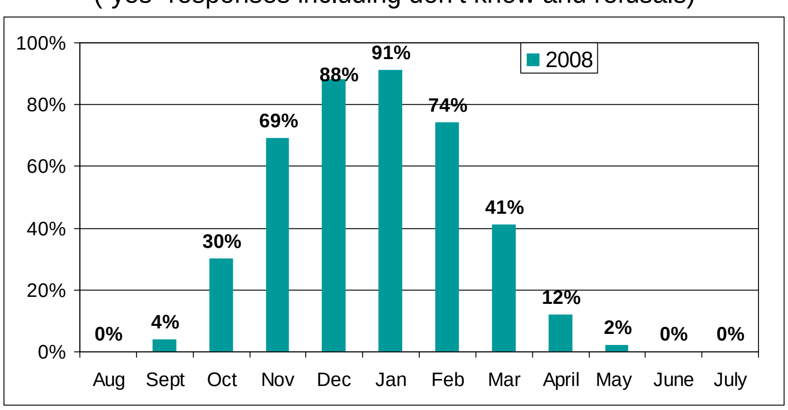
❖ ***27 Wood burning in stoves and fireplaces with inserts occurred mainly in December and January (90%), although 69% in November and 74% in February were also burning wood in their devices. During these months, about 40% were burning at least 25 times in each month.***

Respondents with stoves or fireplaces with inserts were asked about their usage each month and the results are presented in the next chart (responses of "yes"). It can be seen that the majority burned from the months of November (69%) to February (74%), with the highest use occurring during December (88%) and January (91%). Burn activity was reduced during the spring and fall months, and non-existent during the summer months of June, July and August.

Figure 24

In What Months Do You Burn Wood in your Stove or Fireplace With an Insert?

("yes" responses including don't know and refusals)



The results of the number of times that respondents burned wood in their stoves or fireplace inserts during each month are shown in the next table. Similar to pellet stoves, usage was heaviest during the months of November to February, when about 40% of wood stove and fireplace insert users burned at least 25 times. (Wood burning in August 2008 and June and July of 2009 was non-existent (0%) and has been excluded from the following table.

WOOD STOVE: FREQUENCY OF BURNING FROM AUGUST, 2008 TO JULY, 2009

(among those who said they burned wood at least 4 times in the past 12 months)

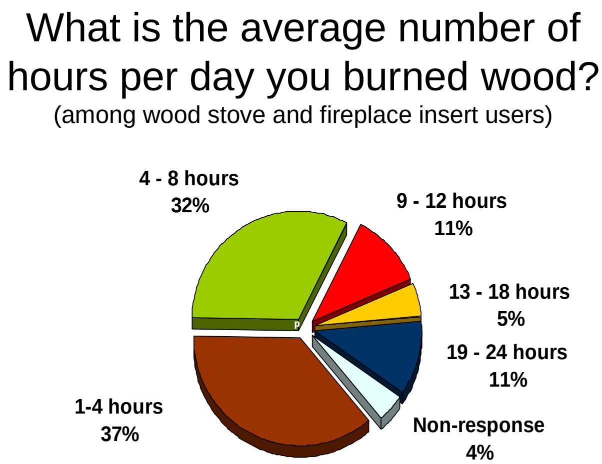
Approximately how many TIMES did you burn wood during the month of….

Month (sample size)	1-4 times	5-8 times	9-12 times	13-18 times	19-24 times	25+ times	Don't Know	Refused	Total
Sept 2008 (n=7)	36.0%	2.9%	5.7%	31.2%	2.9%	18.5%	2.9%	-.-	100%
Oct 2008 (n=52)	19.9%	15.4%	18.2%	13.7%	5.0%	15.5%	12.3%	-.-	100%
Nov 2008 (n=119)	14.9%	12.7%	7.8%	8.7%	11.5%	34.0%	9.4%	0.9%	100%
Dec 2008 (n=153)	16.4%	12.6%	9.8%	5.8%	10.0%	38.2%	7.2%	-.-	100%
Jan 2009 (n=157)	15.2%	16.1%	8.5%	4.8%	7.9%	41.4%	6.0%	0.1%	100%
Feb 2009 (n=128)	15.7%	11.1%	9.8%	8.7%	7.8%	40.5%	6.4%	-.-	100%
March 2009 (n=70)	15.0%	7.3%	9.6%	19.8%	14.3%	25.7%	8.3%	-.-	100%
April 2009 (n=20)	8.2%	7.2%	7.4%	37.5%	7.4%	19.1%	13.4%	-.-	100%
May 2009 (n=4)	5.1%	10.2%	59.4%	20.3%	-.-	5.1%	-.-	-.-	100%

❖ ***28 On average, wood stove and fireplace insert users burned wood fires for 8 hours. In terms of fuel, slightly more than half (55%) burned up to 10 logs.***

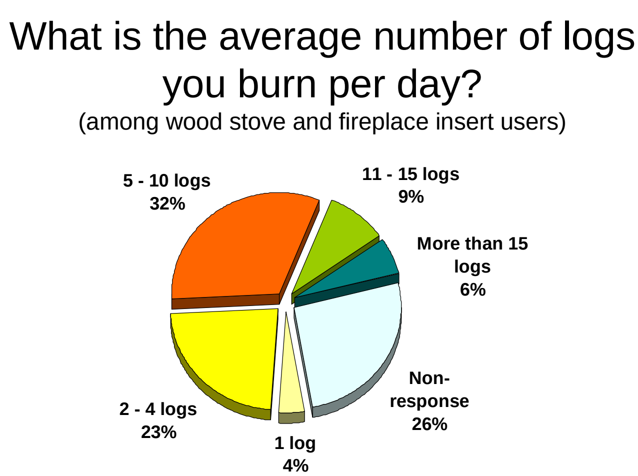
A follow up question asked regular fireplace (with an insert) users: "On the days that you burned wood, what was the average number of hours per day you burned wood in your fireplace?" Four percent of respondents were undecided, as shown in the following chart. In order to calculate the average, these responses were excluded. Responses ranged from one hour to 24 hours and the average was 8 hours. The following graph shows the categorized responses. More than a third (37%) burned wood for 1–4 hours, and slightly fewer (32%) burned wood for 4 – 8 hours per day. Eleven percent burned wood nearly all day and night (19-24 hours).

Figure 25



Respondents were then asked to estimate the number of logs they burned in the fire on an average day. Responses ranged from less than one log to 30 logs and the median number of logs was eight. A quarter of those asked (26%) could not give an answer (don't know or refusals). It can be seen in the following chart that a third of those responding said they burned 2 – 4 logs, while 30% burned anywhere from 5 to 10 logs.

Figure 26



❖ ***29 Nearly half (46%) stove or insert users light fires 70% or more of the time on weekends.***

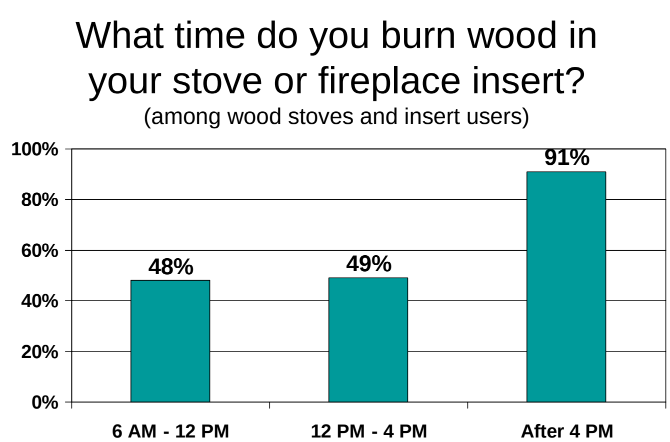
As in previous sections, wood stove and fireplace insert users who indicated that they burned wood in their devices at least four times in the year were asked to think about their burning activity in terms of weekday versus weekend habits. Eight percent said they burned the same amount every day and one in five (21%) were unsure. These groups were then excluded; the results were recalculated, and are presented in the next table.

Wood Stove / Fireplace Insert Activity Percent	Monday – Friday Among Those Responding (n=122)	Saturday & Sunday Among Those Responding (n=122)
None	10%	9%
1 – 9%	7%	1%
10 - 19%	10%	2%
20 – 29%	14%	14%
30 – 39%	4%	7%
40 – 49%	8%	2%
50 – 59%	12%	12%
60 – 69%	3%	8%
70 – 79%	12%	10%
80 – 89%	9%	9%
90 – 99%	2%	17%
100%	9%	10%

❖ ***30 About half of those asked burned wood from 6:00 a.m. to 4:00 p.m. After 4:00 p.m., wood burning activity in stoves and fireplace inserts jumped significantly to 91% of all users.***

Users of stoves or fireplaces with inserts (used them at least 4 times per year) were asked what time of the day or night they burned. They were given three timeframes and asked, yes or no, if they had used their devices during the period from August 2008 to July 2009. The results of those who answered "yes" are shown in the next chart.

Figure 27

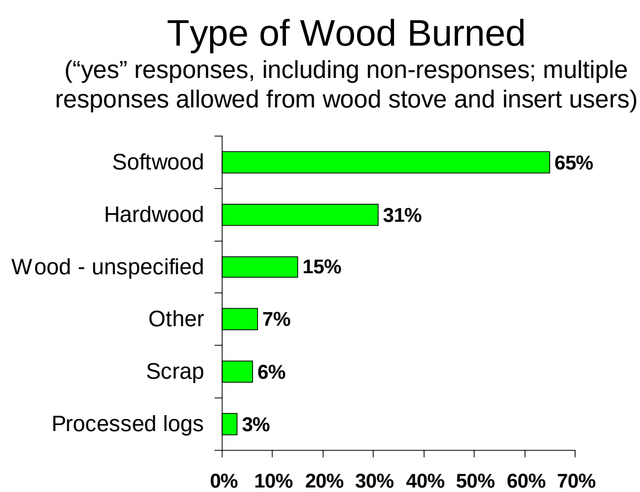


❖ ***31 In terms of the type of wood burned, softwoods were burned by two thirds (65%) of the stove and fireplace insert users surveyed, which is more than double the percentage of those who burned hardwoods (31%).***

Respondents were asked to describe the type of wood that they used to fuel the fires in their wood stoves and fireplace inserts. As in the previous section, specific varieties were categorized into "hardwoods" and "softwoods" and multiple responses were allowed so the totals may not sum to 100%.

Softwoods, such as pine, cedar, fir, cottonwood, aspen, etc., were the most frequently mentioned type of wood burned in stoves and inserts, mentioned by nearly two thirds of users (65%). Hardwoods were less common, although three in ten users (31%) said they burned mesquite, oak, alder, fruit trees or hardwoods in their stove or insert.

Figure 28



Individual County Results

There were no significant differences among the counties in terms of respondents' use of their stove or fireplace insert devices.

Comparison with 1997 Results

Due to questionnaire differences between 1997 and 2008, results from stove or fireplace insert users cannot be compared.

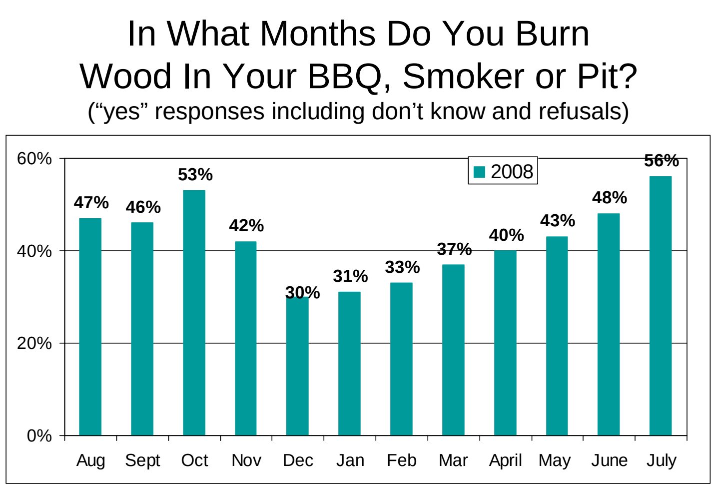
BARBEQUE, FIRE PIT OR SMOKER

General Population Results

❖ ***32 The use of barbeques, fire pits, and smokers was most prevalent in the summer, specifically July (96%). Not surprisingly, activity was lower in the winter months, although not obsolete (30% burned wood in an outdoor device in December).***

Respondents who used outdoor devices, such as barbeques, smokers, and fire pits at least 4 times in the past year, were asked to indicate whether or not they burned in each month. Results are shown in the next chart. Not surprisingly, July was the most common month for use, with nearly all users (96%) indicating they lit a fire outside during the middle of the summer. During the other months when the weather was warm, from May to October (excluding July), nearly half (47%) of the users lit an outside wood fire. Usage in the winter months dropped in December and January (30% and 31%, respectively), but was not eliminated.

Figure 29



❖ ***33 Overall, the majority of barbeque, smoker and fire pit users burned wood outdoors one to four times each month,.***

The following chart shows barbeque, fire pit and smoker usage by month in terms of frequency. It can be seen that among monthly users, the majority used their outdoor devices only 1 to 4 times each month.

BBQ/FIRE PIT/SMOKER: FREQUENCY OF BURNING FROM AUGUST, 2008 TO JULY, 2009

(among those who said they burned pellets at least 4 times in the past 12 months)
Approximately how many TIMES did you burn wood during the month of….

Month (sample size)	1-4 times	5-8 times	9-12 times	13-18 times	19-24 times	25+ times	Don't Know	Refused	Total
Aug 2008 (n=45)	76.3%	8.5%	8.2%	0.4%	3.7%	2.8%	-.-	-.-	100%
Sept 2008 (n=43)	69.3%	8.4%	6.4%	0.9%	3.4%	2.9%	8.7%	-.-	100%
Oct 2008 (n=44)	78.5%	13.0%	3.0%	0.8%	2.5%	-.-	2.2%	-.-	100%
Nov 2008 (n=39)	83.4%	11.9%	1.0%	0.5%	3.2%	-.-	-.-	-.-	100%
Dec 2008 (n=29)	75.9%	13.2%	1.4%	0.7%	4.4%	-.-	4.4%	-.-	100%
Jan 2009 (n=29)	80.2%	8.5%	2.0%	-.-	4.3%	-.-	4.9%	-.-	100%
Feb 2009 (n=31)	85.7%	3.5%	2.0%	-.-	4.1%	-.-	4.1%	-.-	100%
March 2009 (n=35)	78.9%	10.9%	1.2%	0.6%	3.6%	0.6%	4.2%	-.-	100%
April 2009 (n=37)	78.1%	9.6%	4.0%	1.1%	3.4%	0.5%	3.4%	-.-	100%
May 2009 (n=41)	73.8%	12.4%	6.2%	0.5%	3.6%	0.5%	3.1%	-.-	100%
June 2009 (n=45)	70.7%	14.2%	2.4%	5.6%	6.1%	0.4%	0.4%	-.-	100%
July 2009 (n=52)	77.8%	11.7%	4.5%	2.4%	2.8%	0.4%	0.4%	-.-	100%

❖ ***34 A total of 72% burned wood outside in their barbeques, fire pits, and smokers mostly (at least 90%) on the weekends only.***

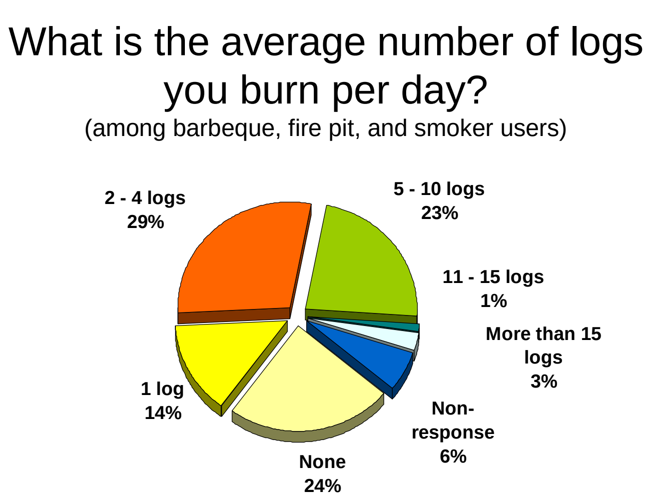
In terms of weekday versus weekend habits, first of all, no one (0%) said they used their outdoor device the same amount every day. Additionally, 9% were undecided. The results shown in the next chart exclude these two response categories. It can be seen that nearly half (45%) used their outdoor devices only on Saturday and Sunday (100% of the time), and an additional 27% used it at least 90% on the weekends (only); indicating that a total of 72% used their outdoor devices nearly exclusively on weekends.

BARBEQUE, FIRE PIT & SMOKER ACTIVITY PERCENT	MONDAY – FRIDAY AMONG THOSE RESPONDING (N=85)	SATURDAY & SUNDAY AMONG THOSE RESPONDING (N=85)
None	45%	1%
1 – 9%	16%	0%
10 - 19%	11%	<1%
20 – 29%	9%	6%
30 – 39%	3%	1%
40 – 49%	1%	<1%
50 – 59%	6%	6%
60 – 69%	<1%	3%
70 – 79%	3%	7%
80 – 89%	5%	3%
90 – 99%	<1%	27%
100%	1%	45%

- ***35 On an average day, outdoor wood burners consumed an average of three wood logs to fuel the fire in their outdoor barbeques, fire pits, and smokers.***

Respondents were then asked to estimate the number of logs they burned in their outdoor barbeques, fire pits or smokers on an average day. Responses ranged from none to 20 logs. The average number of logs was 3. (Six percent could not give an answer (don't know or refusals). The categorized responses are shown in the next figure.

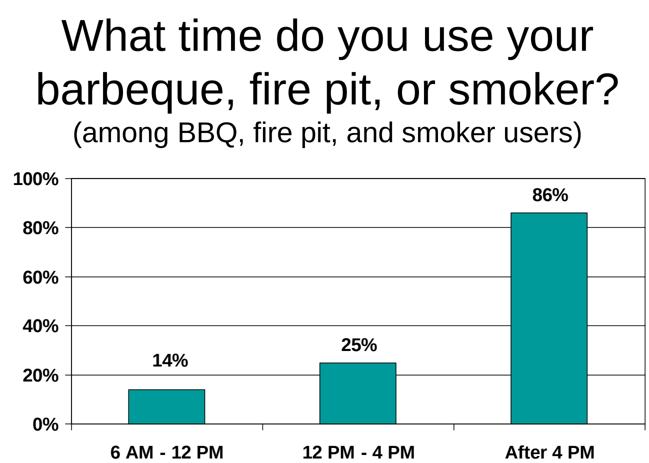
Figure 30



36 *The vast majority (86%) of outdoor users burned wood their barbeques, fire pits or smokers after 4:00 p.m.*

When respondents who used their barbeques, fire pit or smoker at least 4 times per year were asked what time of the day or night they burned, 86% said after 4:00 p.m. Twenty-five percent said they lit an outdoor wood fire between the hours of noon and 4:00 p.m. The results of those who answered “yes” to each of the timeframes discussed in the survey are shown in the next chart.

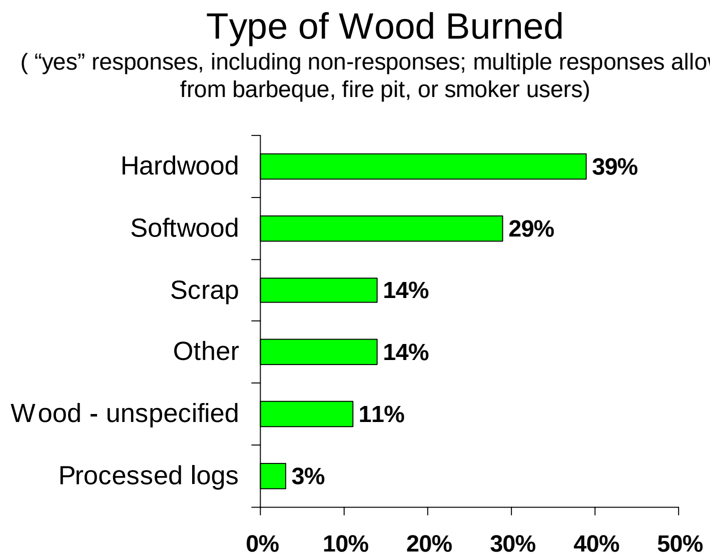
Figure 31



37 *Four in ten (39%) outdoor device users burned hardwood in their barbeques, fire pits, and smokers, and slightly fewer (29%) consumed softwood.*

When asked to describe the type of wood that was burned, outdoor device users most commonly said they fueled the fire with hardwoods (39%). Softwoods, such as pine, cedar, fir, cottonwood, aspen, etc., were mentioned by 29%, followed by scrap wood (14%), and other types (14%). Results are shown in the next chart.

Figure 32



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Individual County Results

There were no significant differences among the counties in terms of respondents' use of their outdoor wood burning devices.

Comparison with 1997 Results

Monthly use of outdoor devices was not asked in 1997. The results of other wood burning activity among barbeque, fire pit, and smoker users from the two years are generally consistent.

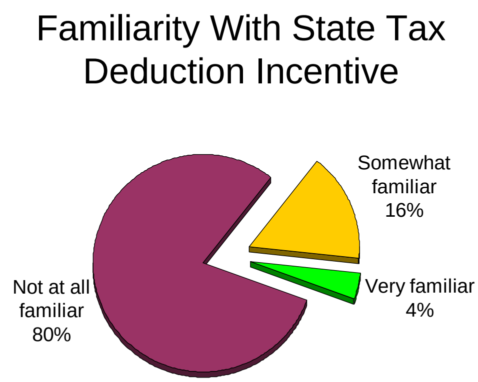
STATE TAX DEDUCTION INCENTIVE PROGRAM

General Population Results

- ***38 Only 2 in 10 Treasure Valley Airshed residents (20%) were familiar with the state tax deduction incentive offer for the replacement of older, uncertified wood stoves.***

Respondents were asked to rate their familiarity with the state tax deduction offered to Idaho taxpayers as an incentive to replace old, uncertified wood stoves using a three-point scale. Results are shown in the following graph. The vast majority of respondents (80%) were not familiar at all with the program, while 20% were aware: 16% were somewhat familiar and 4% were very familiar with the program.

Figure 33



Additional analyses were run to see if stove owners were more or less familiar with the incentive offer than those who did not own a wood burning stove; however, the results indicated that familiarity was independent of stove ownership.

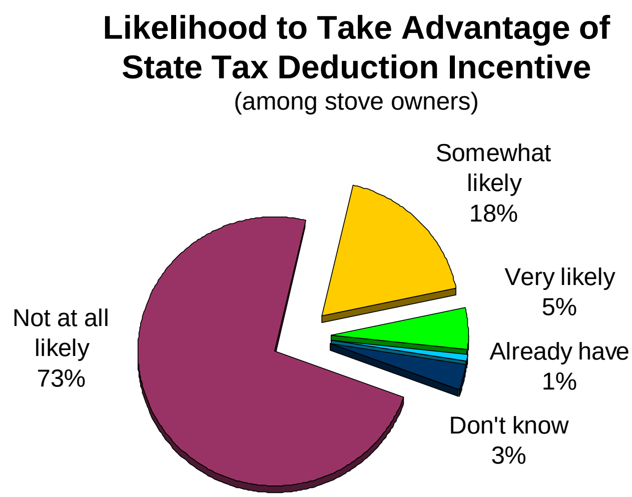
- ***39 Nearly a quarter (23%) of stove owning respondents reported being likely to take advantage of the state's tax deduction incentive. Only 1% said they already had benefited from the program.***

Those who indicated there was a wood burning stove in their household were asked to rate the likelihood that they would actually use the program, which was described as follows:

> *With this program, you can deduct 40% of the cost of purchase and professional installation in the year the wood stove is replaced. Thereafter, you may deduct 20% of the cost of purchase and professional installation per year for the next three years. The total annual deduction cannot exceed $5,000.*

Among stove-owning residents, 5% said they would be "very" likely to take advantage of this program in the next 6 months, and a further 18% said they would be "somewhat" likely. Including the 1% of respondents who said they had already taken advantage of the program, nearly a quarter of the stove-owning residents (24%) indicated some level of likelihood.

Figure 34



Individual County Results

Results of the level of awareness of and interest in the state of Idaho's tax incentive program to reduce the number of old wood burning stoves were independent of respondent residence. In other words, those living in Ada County were just as likely as those living in Canyon or Elmore counties to be either aware of the program or interested in it.

DEMOGRAPHICS

- ***40 The plurality of respondents was female, living in a single-family home that was built before 1980. While they had resided in Treasure Valley for more than 20 years, the length of time in their current residence varied. Overall, the demographics across all three counties were very similar.***

The tables on the following pages indicate the demographic characteristics of the Treasure Valley Airshed respondents as a whole (weighted results) as well as individual county demographics. The percentages of non-responses (either refusals or undecided) are included in these tables and were usually included in the analyses, unless otherwise stated.

DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

GENDER	PERCENT OF TREASURE VALLEY RESPONDENTS	PERCENT OF ADA COUNTY RESPONDENTS	PERCENT OF CANYON COUNTY RESPONDENTS	PERCENT OF ELMORE COUNTY RESPONDENTS
Female	**56%**	**55%**	**59%**	49%
Male	44%	45%	41%	51%
Total	100%	100%	100%	100%
TYPE OF RESIDENCE	**PERCENT OF TREASURE VALLEY RESPONDENTS**	**PERCENT OF ADA COUNTY RESPONDENTS**	**PERCENT OF CANYON COUNTY RESPONDENTS**	**PERCENT OF ELMORE COUNTY RESPONDENTS**
Single-family home	**96%**	**97%**	**94%**	**93%**
Duplex	1%	1%	< 1%	1%
Apartment/Condo	< 1%	< 1%	0%	25
Mobile home	2%	1%	3%	1%
Non-response (Don't know or Refused)	1%	1%	3%	3%
Total	100%	100%	100%	100%
YEAR HOUSE WAS BUILT	**PERCENT OF TREASURE VALLEY RESPONDENTS**	**PERCENT OF ADA COUNTY RESPONDENTS**	**PERCENT OF CANYON COUNTY RESPONDENTS**	**PERCENT OF ELMORE COUNTY RESPONDENTS**
Before 1950	15%	13%	20%	14%
Between 1950 & 1979	**47%**	**47%**	**47%**	**45%**
Between 1980 & 1989	13%	15%	7%	14%
Between 1990 & 1999	12%	12%	12%	7%
From 2000 to now	9%	10%	8%	15%
Non-response (Don't know or Refused)	4%	4%	6%	5%
Total	100%	100%	100%	100%

Length of Time Living at This Residence	Percent of Treasure Valley Respondents	Percent of Ada County Respondents	Percent of Canyon County Respondents	Percent of Elmore County Respondents
Less than 1 year	3%	3%	3%	2%
1 – 5 years	21%	21%	21%	26%
6 – 10 years	19%	17%	22%	19%
11 – 15 years	11%	11%	13%	9%
16 – 20 years	13%	15%	11%	8%
More than 20 years	**31%**	**33%**	**26%**	**32%**
Non-response (Don't know or Refused)	2%	1%	3%	3%
Total	100%	100%	100%	100%
Length of Time Living in Treasure Valley	**Percent of Treasure Valley Respondents**	**Percent of Ada County Respondents**	**Percent of Canyon County Respondents**	**Percent of Elmore County Respondents**
Less than 1 year	1%	1%	<1%	1%
1 – 4 years	6%	5%	6%	11%
5 – 10 years	10%	11%	6%	13%
11 – 20 years	18%	18%	19%	13%
More than 20 years	**64%**	**64%**	**64%**	**57%**
Non-response (Don't know or Refused)	2%	1%	4%	5%
Total	100%	100%	100%	100%

APPENDIX E

DEQ CONCEPT-MV TECHNICAL MEMORANDUM

ENVIRON

MEMORANDUM

To:	Christopher Ramsdell, Idaho DEQ
From:	Allison DenBleyker, Alison Pollack, John Grant, and Michele Jimenez
Cc:	Paula Fields, ERG
Date:	21 May, 2010
Subject:	Peer review of CONCEPT-MV work

INTRODUCTION

The Idaho Department of Environmental Quality (DEQ) has contracted with ERG/ENVIRON to prepare an emission inventory of O3 precursors, and primary PM10 and PM2.5 and their precursors, for base year 2008 and future years 2015 and 2023 in the Treasure Valley Airshed. The on-road mobile source portion of the emission inventory was prepared by the DEQ and ENVIRON.

ENVIRON generated the episodic on-road mobile source emissions from February 1, 2008 to February 15, 2008 using CONCEPT-MV for Ada and Canyon County, transferred the entire CONCEPT-MV setup and code to DEQ, and trained DEQ staff to run CONCEPT-MV. DEQ then ran CONCEPT-MV for other time periods and estimated annual on-road emissions for 2008, 2015 and 2023. This memorandum describes ENVIRON's review of DEQ's CONCEPT-MV work and compares base to future year emissions.

QUALITY ASSURANCE REVIEW

DEQ ran CONCEPT-MV for each day in four months to represent the four seasons: January, April, July and October. Each full month was run for 2008, 2015 and 2023. DEQ then computed average daily emissions in each month and multiplied by the number of days in each season to estimate annual emissions. DEQ implemented ENVIRON's quality assurance (QA) tool to generate a series of detailed graphs showing different aspects of the CONCEPT-MV results for seven consecutive days in each month and year.

ENVIRON has reviewed all 12 CONCEPT-MV QA spreadsheets by checking that emissions comparisons by day of week and hour of day track with temperature and VMT temporal changes by day of week. Finally, ENVIRON performed additional QA on DEQ CONCEPT-MV results to compare emissions between the four months and three years with detail by emissions mode.

ENVIRON also reviewed all CONCEPT run scripts and log files and found only one minor inconsistency. In the 2008 modeling, July was run in Mountain Daylight Time (MDT) and October, April and January were all run in Mountain Standard Time (MST). For the future years 2015 and 2023, only January was run in MST; the other three months were run in MDT. ENVIRON inquired to DEQ about the matter and DEQ confirmed the mistake was in the 2008 modeling. DEQ will redo the base year modeling and will update the Emission Inventory originally compiled by ENVIRON.

FUTURE YEAR COMPARISONS

Multiple factors cause differences in the on-road mobile source emissions between the 2008 and future years 2015 and 2023 in Ada and Canyon counties. Annual average weekday VMT in the COMPASS travel demand model increases 2008 to 2015 to 2023 from 12.7 to 16.8 to 22.4 million miles traveled. MOBILE6 emission factors for pollutants resulting from fuel combustion (e.g. VOC, CO, NOX exhaust) decrease with advancing calendar year as new vehicles are introduced to the fleet, which meet increasingly stringent emission standards. In Canyon County, there was no inspection and maintenance program (I/M program) in effect for 2008, but I/M programs were in effect in 2015/2023 for light duty gasoline vehicles. The frequency of I/M programs in both counties decreased from annual in 2008 to biennial in 2015 and 2023. The market share of fuels sold in Ada and Canyon that contain a low level of alcohol blend oxygenate were projected to change from 68% of the market in 2008 to 100% in 2015 and 2023.

The cumulative effects of all these factors are reflected in the emissions by year, shown for VOC, NOX, PM10 and PM2.5 in Figures 1 though 4. The figures show emissions in tons per day for a weekday in each month and each year, with detail by emissions mode. Figures 1 and 2 show that VOC and NOX decrease significantly over calendar years despite increasing VMT; this is due to cleaner engine technologies becoming introduced into the fleet while older high emitters leave the fleet. Figures 3 and 4 show that PM10 and PM2.5 emissions decrease from 2008 to 2015 and increase from 2015 to 2023. In the base year, a significant portion of PM10 is made up of particulate from brake and tire wear. By contrast, PM2.5 in the base year is primarily from engine exhaust. Figures 3 and 4 show that engine exhaust portion of the overall PM emissions decrease from 2008 to 2015 to 2023 with fleet turnover. The brake and tire wear components of PM10 and PM2.5 increase with calendar year 2008 to 2015 to 2023 due to increasing VMT.

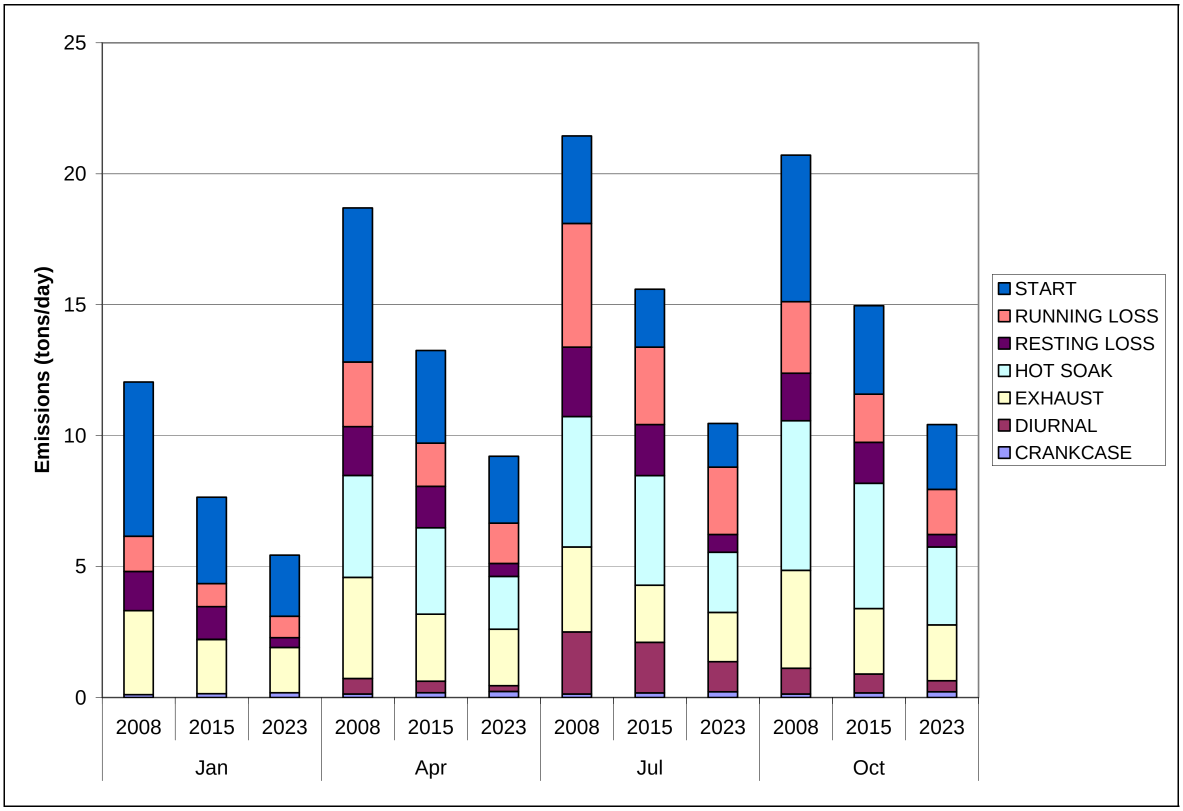


Figure 1. Weekday VOC emissions by mode in the Boise transportation network.

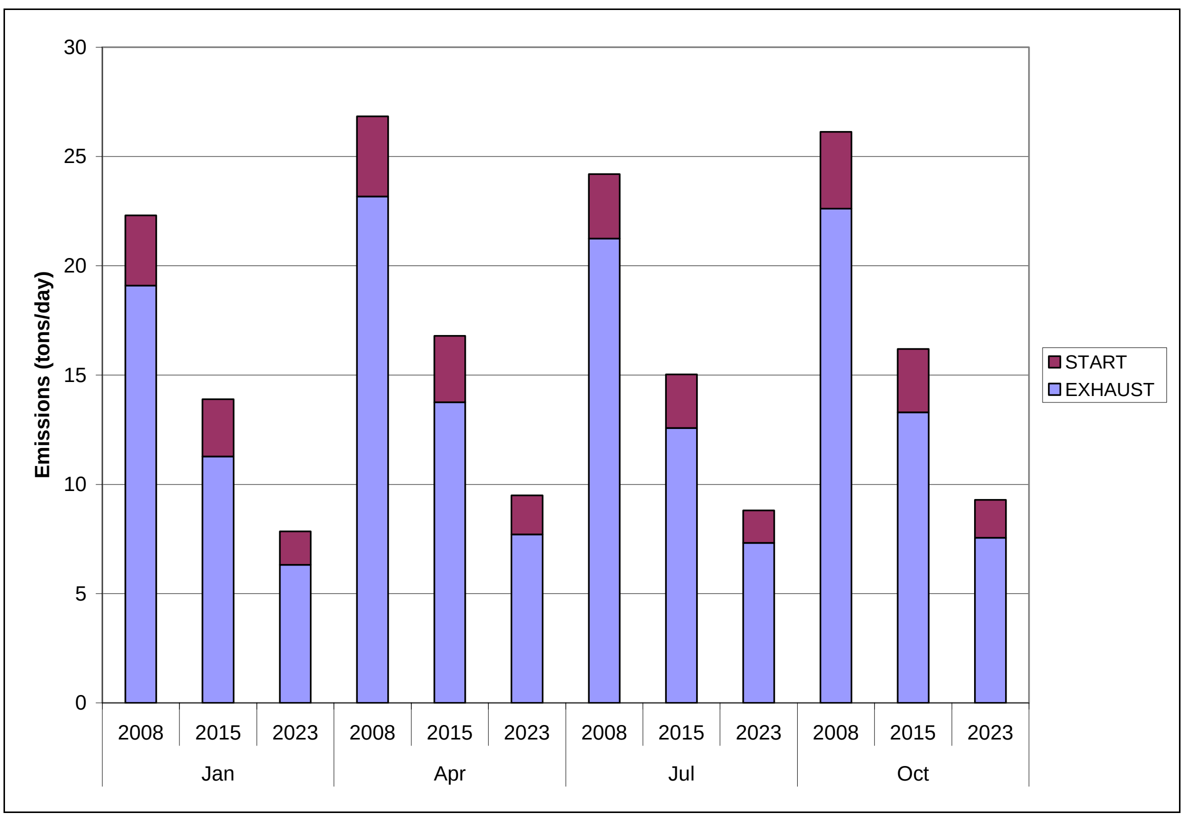


Figure 2. Weekday NOX emissions by mode in the Boise transportation network.

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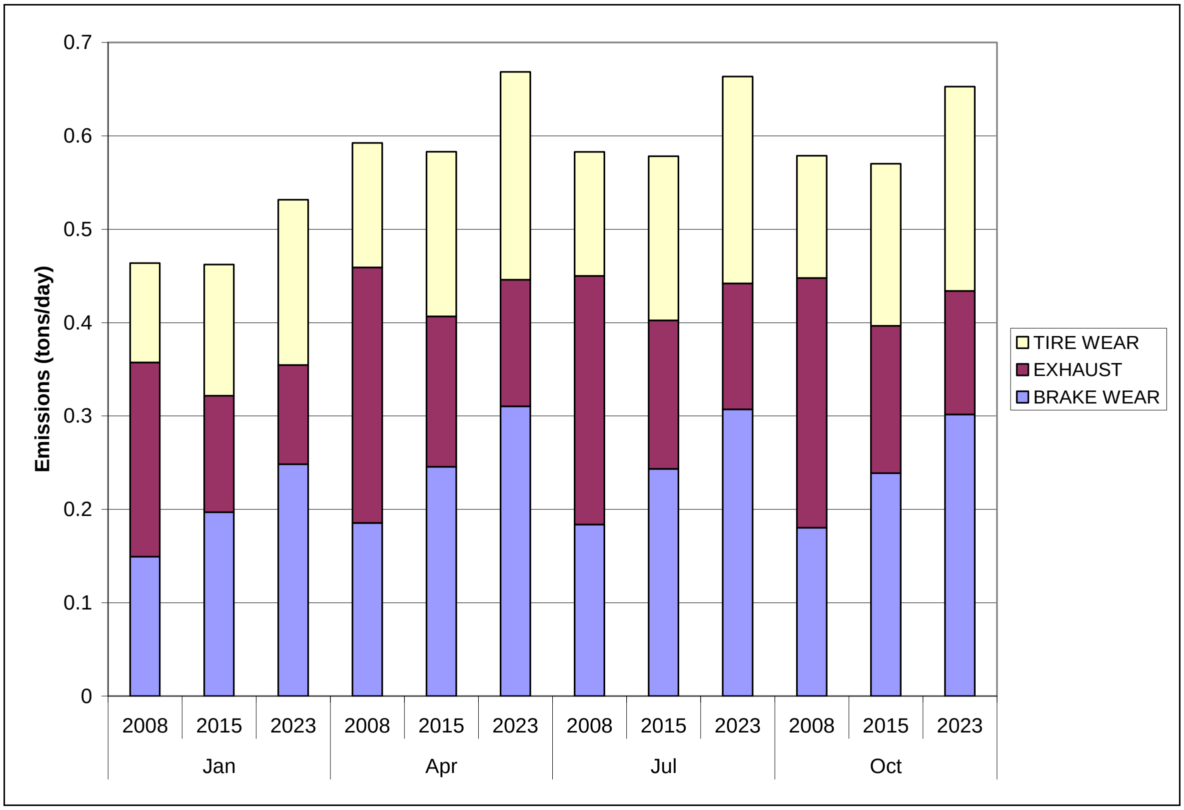

Figure 3. Weekday PM10 emissions by mode in the Boise transportation network.

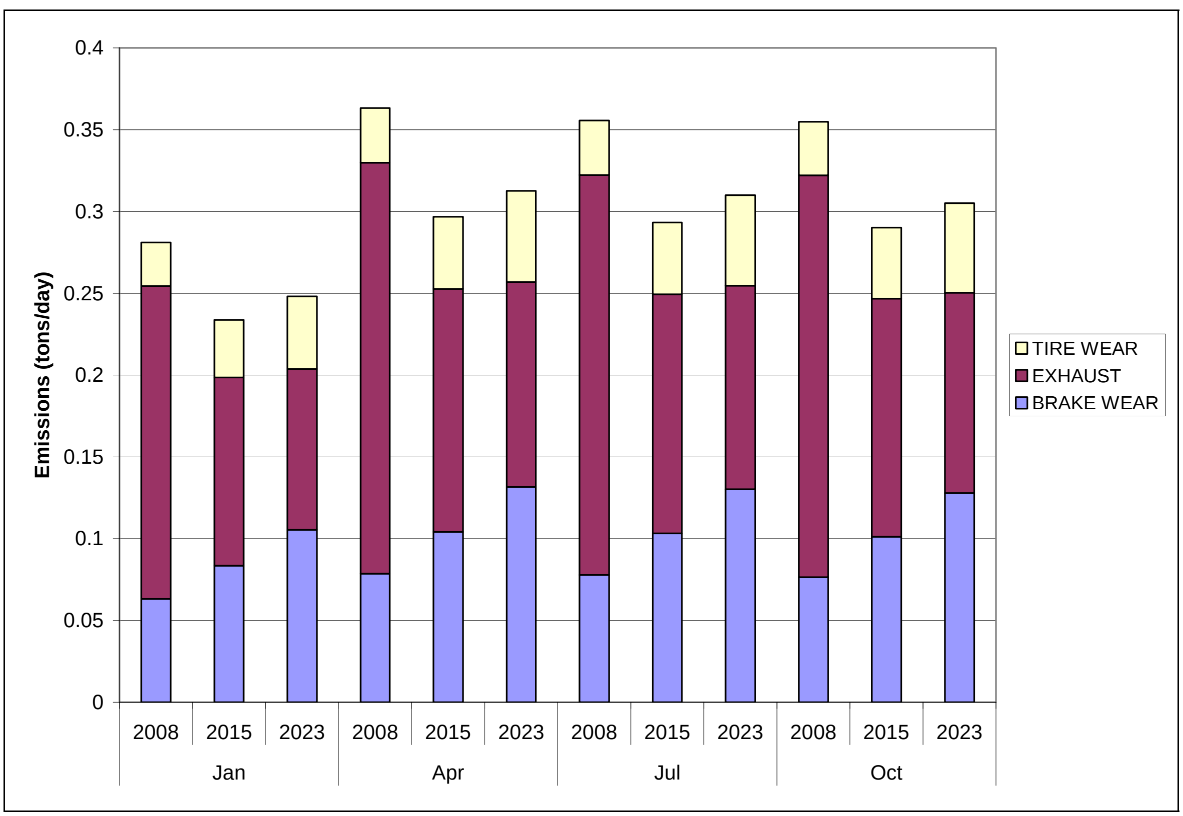

Figure 4. Weekday PM2.5 emissions by mode in the Boise transportation network.

APPENDIX F

BIOGENICS TECHNICAL MEMORANDUM

MEMORANDUM

To:	Christopher Ramsdell and Rick Hardy, Idaho Department of Environmental Quality
cc:	Paula Fields; Eastern Research Group
From:	Gerard Mansell and Tanarit Sakulyanonvittaya, ENVIRON International Corporation
Date:	8 December 2009 – Revised 31 December 2009
Subject:	Review of IDEQ Biogenic Emission Inventory for the Treasure Valley

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INTRODUCTION

The Idaho Department of Environmental Quality (IDEQ) has developed a biogenic emission inventory for calendar year 2008 for inclusion in a SIP-quality emission inventory for the Treasure Valley of southwestern Idaho. ENVIRON and Eastern Research Group (ERG) have been contracted to compile a complete 2008 annual inventory of all anthropogenic emission sources for the three counties within the Treasure Valley Airshed – Ada, Canyon and Elmore Counties. In addition to the development of anthropogenic emissions, ENVIRON has also been tasked with a review of IDEQ's biogenic emission inventory.

This Technical memorandum summarizes the available biogenic emission inventory modeling systems, landcover and vegetation data required for implementation of these models, and provides a review of IDEQ's biogenic emission inventory and comparisons with an alternative model implementation for the Treasure Valley Airshed.

BIOGENIC EMISSIONS MODELING SYSTEMS

A number of models and modeling systems have been developed over the past several years for use in estimating biogenic emissions for use in a variety of applications, including ozone SIPs and PM Maintenance Plans, as well as for use in urban and regional scale air quality modeling. The three primary biogenic emissions modeling systems currently in use by the inventory development and air quality modeling community include:

- the Biogenic Emission Inventory System (BEIS);
- the Global Biosphere Emissions and Interactions System (GloBEIS); and
- the Model of Emissions of Gases and Aerosol from Nature (MEGAN)

Each of these models is briefly summarized below with respect to model capabilities, input data requirements and emission estimation results.

Biogenic Emission Inventory System (BEIS)

The Biogenic Emissions Inventory System (BEIS) family of models estimates emissions of Volatile Organic Compounds (VOC) that are the result of biological activity from land-based vegetative species and nitric oxide (NO) emissions generated from microbial activity from certain soil types. The EPA's third version of the Biogenic Emissions Inventory System has been incorporated within the SMOKE emissions modeling system with various modifications and updates from previous versions.

The types of input data used in BEISv3.xx are similar to those used in earlier versions of the BEIS model. The seven primary inputs to BEIS3 models are:

- Spatially and temporally resolved meteorological data including temperatures, solar radiation and surface pressures
- Spatially resolved, species-specific vegetation
- Species-specific biogenic emissions factors (including a winter adjustment)
- Species-specific leaf area indices (LAI)
- Chemical speciation profiles

BEISv3.xx typically uses meteorological data from the Penn State/National Center for Atmospheric Research Mesoscale Modeling System (MM5). However, the model BEISv3.09 can make use of any meteorological data as long as it is in Network Common Data Format (NetCDF). BEISv3.xx uses the incoming shortwave radiation to estimate the amount of PAR available in the plant canopy.

One of the most important changes included in the BEIS3 modeling system is the use of the Biogenic Emissions Landcover Database version 3 (BELD3). The BELD3 consists of 1-km horizontal resolution for 230 different land use types. The previous version, BELD2, was used in most BEIS2 applications and consisted of mainly county level land use of up to 156 different land use types. BELD3 combines the spatial resolution available from the U.S. Geological Survey (USGS) 1-km data with the detailed tree and crop species information available in county-level forest and agricultural datasets. The BELD3 data is aggregated and/or interpolated to the desired modeling domain and resolution and the land use data input into BEISv3.x must be in NetCDF.

Emission factors in BEISv3.xx consist of isoprene, monoterpene, nitrogen oxide and other VOC factors for all BELD3 land use types. The emissions factors are the flux-rate that each species emits under standard environmental conditions (i.e. 30ºC and 1000 umol$\cdot$ m$_{-2}\cdot$ s$_{-1}$ PAR for isoprene and 30ºC for monoterpenes, other VOCs, and NO). The emissions factors are stored in an ASCII file. This emission factors file also includes a winter adjustment factor and a leaf area index (LAI) for each land use type. Leaf area index (LAI) is defined as the total one-sided, or one half of the total all-sided, green leaf area per unit ground surface area[11]. In BEIS3, LAI is used to adjust the isoprene emissions for the effects of PAR penetrating through the leaf canopy.

The SMOKE- BEISv3.09 modeling system is a two-step process. In step one, the land use data and emissions factors file are input into a program called ***Normbeis3***. The ***Normbeis3*** program estimates normalized emissions (at 30ºC and 1000 umol$\cdot$ m$_{-2}\cdot$ s$_{-1}$ PAR environmental conditions) by multiplying the emissions factor by the appropriate land use for each grid cell. These biogenic emissions data are reported in grams of Carbon or grams of Nitrogen per hour. An average LAI for each grid cell is also calculated in ***Normbeis3***.

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The second step involves the execution of the program ***Tmpbeis3***. The input data for this program consist of the meteorological data, speciation profiles, and the normalize emissions generated after the execution of ***Normbeis3***. The speciation profiles are used to allocate other VOC and monoterpene emissions to species recognized by the chemistry mechanism in the desired air quality model.

The outputs from ***Tmpbeis3*** are gridded, speciated and temporally allocated emissions. The user can assign the units for the output emissions as gram-moles per hour or gram-moles per second. The output is in NetCDF and can be input into Community Multi-scale Air Quality (CMAQ) modeling system. SMOKE also includes the ability to convert the NetCDF BEIS3 output files into a binary format recognized by the Comprehensive Air Quality Model with extensions (CAMx) model.

Global Biosphere Emissions and Interactions System (GloBEIS)

The BEIS series of models are the product of collaboration between researchers at the EPA and the National Center for Atmospheric Research (NCAR). GloBEIS, (Global Biosphere Emissions and Interactions System) is a biogenic emissions modeling system developed by NCAR and Environ International Corporation, based on the BEIS emission factors and algorithms but with an easier-to-use interface and compatibility with a wider range of input data sources (Yarwood, 1999). GLOBEIS was developed to allow users to estimate biogenic emissions of volatile organic compounds, carbon monoxide and soil NOx emissions for any time scale and domain. The model runs in Microsoft Access on Windows based personal computers.

Model of Emissions of Gases and Aerosol from Nature (MEGAN)

The Biological-Atmospheric Interactions (BAI) group of the Atmospheric Chemistry Division (ACD) at the National Center for Atmospheric Research (NCAR) has developed a new biogenic emissions model - the Model of Emissions of Gases and Aerosols from Nature (MEGAN).[1] MEGAN is a modeling system for estimating the net emission of gases and aerosols from terrestrial ecosystems into the atmosphere (Guenther et al., 2006; Sakulyanontvittaya, 2008). It is driven by land cover, weather, and atmospheric chemical composition. MEGAN is a global model with a base resolution of ~ 1 km and can run as a stand-alone model for generating emission inventories as well as being incorporated as an on-line component of chemistry/transport and earth system models.

Several improvements and modifications to previous versions of the MEGAN model have been implemented recently:

- Accounting for spatial variations in soil NO_X emissions.
- Accounting for genetic variations in methanol, acetone, acetaldehyde, and formaldehyde emission capacities.
- Biogenic emissions depend upon temperature and solar radiation input data. Previous versions of MEGAN obtained these data from MM5 simulation outputs. ENVIRON has developed code to allow input of solar radiation from satellite data and temperature from interpolated observations

[1] http://bai.acd.ucar.edu/Megan/

- Pre-processors have been developed to allow the use of alternative modelling grids developed in ArcGIS.
- The MEGAN code is currently capable of outputting model-ready data for CMAQ. The MEGAN code has been modified to include the option of outputting CAMx model-ready data.
- Modification of the MEGAN FORTRAN code that runs on Linux to accept observed temperature data and satellite radiation data and generate emissions for grid-definitions that are developed using ArcGIS.

Input data requirements for the MEGAN biogenic model are described below.

LANDUSE AND VEGETATION DATA

Input data requirements and data sources for the BEIS and MEGAN biogenic emissions models are summarized below. Note that GloBEIS can make use of general landcover and vegetation data, as well as BELD3 database, and is capable of utilizing meteorological data from a variety of sources.

Biogenic Emissions Landcover Database, Version 3 (BELD3)

The primary inputs to the BEIS3 model are discussed below.

1) BEIS3 use MCIP meteorological output data as inputs, while it can also make use of other spatially and temporally resolved meteorological data including temperatures, solar radiation and surface pressures in NetCDF format.

2) BEIS3 uses updated vegetation database Biogenic Emission Landcover Database version 3 (BELD3) in NetCDF format BELD3 contains 230 land use types in 1km resolution grids. In United States, BELD3 combines U.S. Geological Survey (USGS) 1-km data with the detailed tree and crop species information available in county-level forest and agricultural datasets from other sources such as the U.S. department of Agriculture's Census of Agriculture and U.S. Forest Service Eastwide Forest Inventory and Analysis Database (EWDB). The BELD3 data can be aggregated and/or interpolated to the desired modeling domain and resolution. A typical BELD dataset for a specific domain consists of three I/O API NetCDF files: BELD3_A, BELD3_B, and BELD3_TOT. For North America, BELD3 data has been developed by USEPA in both NetCDF and ASCII format. The gridded BELD3 data is broken up into two files (BELD_A and BELD_B) as the I/O API limits the number of variables in any single NetCDF file to 120. The BELD_TOT file contains additional information on the BELD3 data for the same grid as the BELD3_A and BELD3_B files. The BELD3_TOT file contains the following variables and descriptions:

- FIPCODE: Dominant FIPS code for each grid cell
- URW_FLAG: Flag to indicate if grid cells are predominantly urban, rural, or water. (1 = Rural water, 2 = Rural land, 3 = Urban water, 4 = Urban land)
- USGS_TYPE: Dominant USGS land type
- USGS_TOTAL: Percentage of USGS area
- FOREST: Percentage of forest area

- AGRICULTURE: Percentage of agricultural area
- TOTAL_AREA: Percentage of total area
- LAND: Percentage of total land area

3) BEIS3 consist of species-specific biogenic emissions factors (including a winter adjustment) for isoprene, monoterpene, nitrogen oxide and other VOC factors for all BELD3 land use types. The emissions factors are the flux-rate that each species emits under standard environmental conditions. Leaf area index (LAI) is used to adjust the isoprene emissions for the effects of PAR penetrating through the leaf canopy.

The three general landcover types (agricultural cropland, forest lands and other land types) based on the BELD3 database are displayed in Figures 1 through 3 for the IDEQ 4-km modeling domain. Note in these displays, all tree species are aggregated as are all agricultural crops and other landcover types (including urban land, shrublands and grasslands)

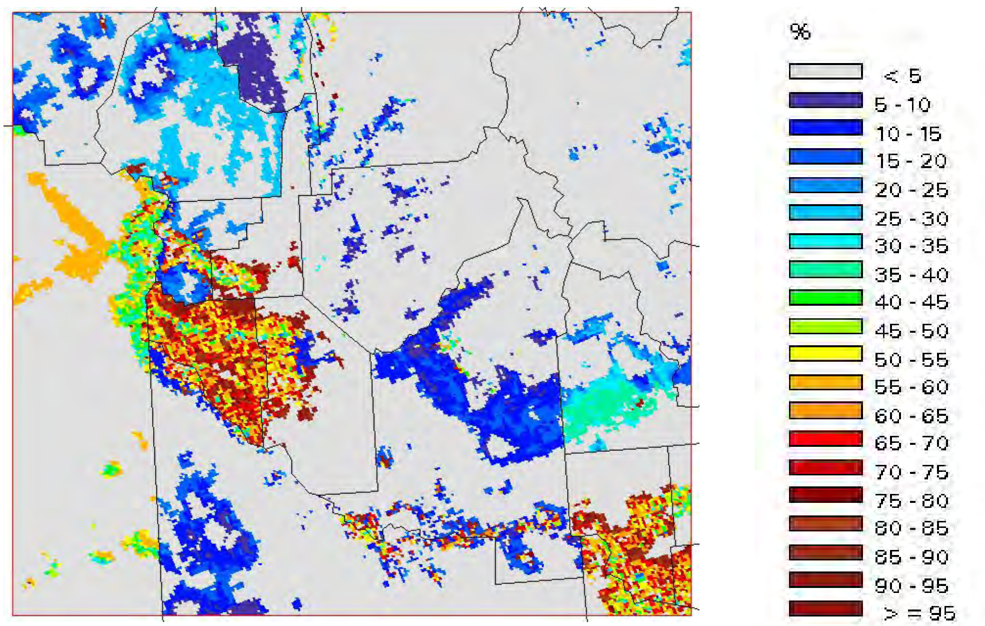

Figure 1. BELD3 Agricultural land (%) for IDEQ 4-km modeling domain.

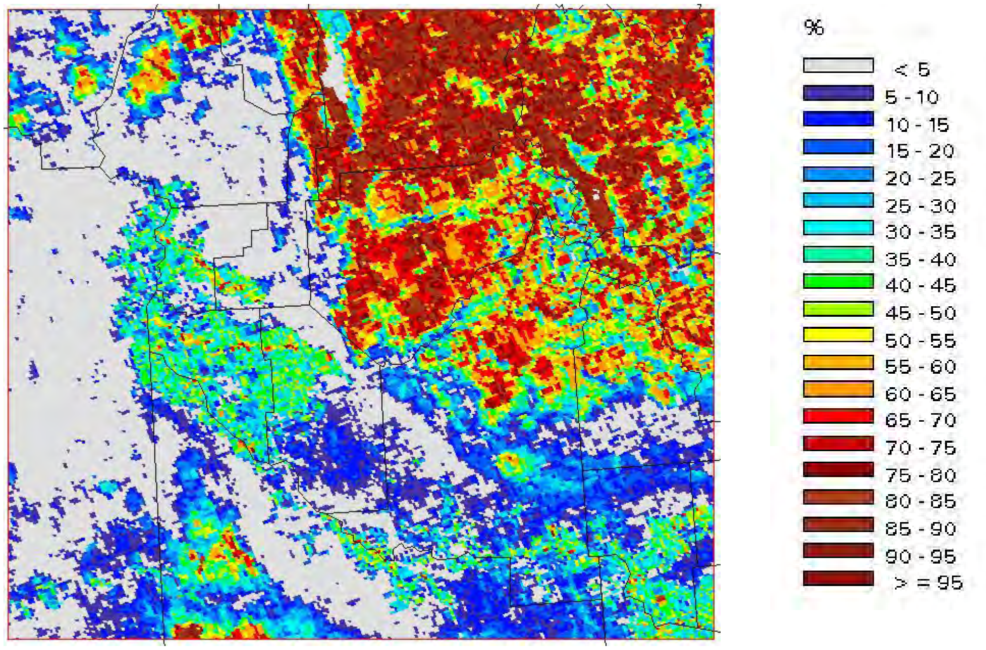

Figure 2. BELD3 Forest land (%) for IDEQ 4-km modeling domain.

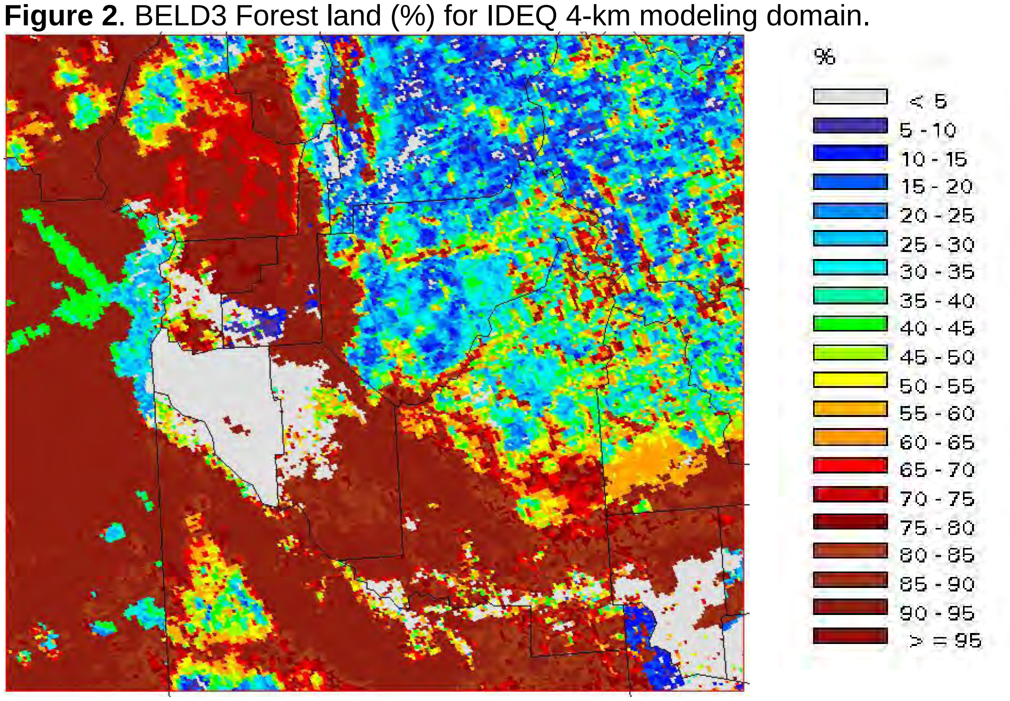

Figure 3. BELD3 Other land (%) for IDEQ 4-km modeling domain.

MEGAN Driving Variable Database (MDVD)

Biogenic emissions depend critically upon landuse/landcover input data. The current MEGAN landcover variables include total Leaf Area Index (LAI), tree fraction and plant species composition. These variables are determined based primarily on satellite observations, such as ~1 km^2 Moderate Resolution Imaging Spectroradiometer (MODIS) and 30 m resolution LANDSAT data. Additionally, biogenic VOC (BVOC) and NO emissions vary considerably on spatial scales ranging from a few meters to thousands of kilometers. The MEGAN model accounts for this variability with high resolution estimates of vegetation type and quantity. MEGAN driving variables include weather data, LAI, plant functional type (PFT) cover and compound-specific emission factors that are based on plant species composition. All of these variables are available at various temporal scales and are provided in a geo-referenced gridded database in several formats (e.g., NetCDF, ESRI GRID). The MEGAN database has global coverage at 30 sec (~ 1 km) spatial resolution. Estimates for a particular region can be improved by using higher resolution satellite imagery and ground observations of landcover characteristics data.

The two main inputs to MEGAN are ECMAP and plant functional type fraction (PFTF) data. The ECMAP input file provides gridded annual emission factors for 20 MEGAN species and monthly leaf area index (LAI) data. It also includes optional daily average temperature and solar radiation data, which will be ignored if online calculation from the meteorological input file is selected by the user. The PFTF input file contains fractions for 5 plant functional types: broad leaf, needle leaf, shrub/brush, cropland and herbaceous.

SCT Distribution (ECMAP)

A species-specific emission factor distribution requires accurate estimates of plant species distributions. This should be accomplished using a landcover database with sufficient detail for representing a relatively constant species composition type. The MEGAN version 2.0 SCT database (SCTv2.0) is described by Guenther et al. (2006).

PFT Distributions

Each MEGAN grid cell location has an estimate of the fraction of the cell covered by each of 5 PFTs (broadleaf trees, needleleaf trees, shrub/brushland, cropland and other herbaceous) with the remainder of the cell considered barren with no vegetation. The PFT version 2.0 database (PFTv2.0; Guenther et al. 2006) was derived from three satellite databases with some adjustments in the U.S. using the USFS Forest Inventory Analysis (FIA) data. The satellite databases include the following:

- 500-m resolution global tree cover and ground vegetation cover based on MODIS data (Hansen et al. 2003)
- 1-km resolution database of broadleaf vs. needleaf tree fraction based on AVHRR data (DeFries et al. 2000)
- 1-km resolution database of landcover based on AVHRR data (Hansen et a. 2000).

The Hansen et al. (2003) database provides an estimate of the fraction of each grid cell covered by trees and the fraction covered by other vegetation. The DeFries et al. (2000) data were used to divide trees into broadleaf and needleleaf fractions. The Hansen et al. (2000) landcover database was combined with a simple scheme to divide non-tree vegetation into shrub, grass and crop fractions. The global coverage of these data provides a convenient approach for characterizing the entire earth system and these estimates provide reasonable results when averaged over large scales. However, Guenther et al. (2006) demonstrated that there are large uncertainties in the PFTv2.0 estimates on local scales and showed that emission estimates varied considerably for alternative landcover databases. The PFT version 2.1 (PFTv2.1) database characterizes PFT distributions on at global 1-km spatial resolution.

Meteorological Data

There are three options to provide temperature and PAR data to MEGAN, which are generated by the TPAR2IOAPI pre-processor. Environment variables (TEMPVAR and SRADVAR) must be set in the MEGAN run script as follows:

Temperature variables (TEMPVAR):

T1P5X	- Temperature from MM5CAMx (K) (default)
T1P5Q	- Temperature at 1.5 m above ground from MCIP
T2Q	- Temperature at 2 m above ground from MCIP
T1P5M	- Temperature from MM5

Solar radiation variables (SRADVAR):

SATPAR	- Solar radiation from UMD satellite data (W/m2) (default)
METPAR	- Solar radiation from MM5 or MCIP data (W/m2)

MEGAN will internally estimate PAR from the selected MCIP solar radiation data assuming half of the solar radiation is in the 400-700 nm spectrum. For CAMx modelling, the user can process MM5CAMx outputs to get temperature at 1.5 m using TPAR2IOAPI processor, which will also prepare PAR directly from satellite PAR data.

Figures 4 through 9 display the MEGAN isoprene emission factors and plant functional types for the IDEQ 4-km modeling domain. As noted above, although the BEIS model utilizes the BELD3 database with improvements to the classification of tree types in forested areas, these landcover types are not as resolved as seen in the MEGAN database as can be seen in Figure 4 which displays the isoprene emission factors which are highly dependent on accurate characterization of tree species. Plant functional types, displayed in Figures 5 through 9, illustrate the increased spatial resolution of the MDVD over the BELD3 database.

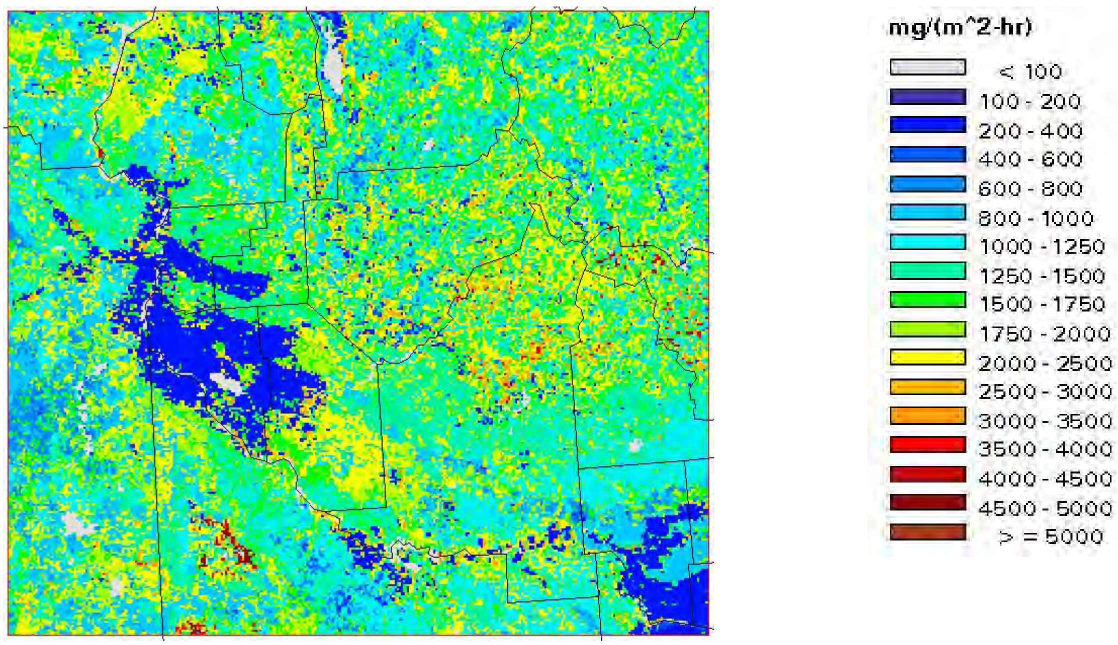

Figure 4. MEGAN v2.1 Isoprene emission factors [mg/(m^2-hr)] for the IDEQ 4-km modeling domain.

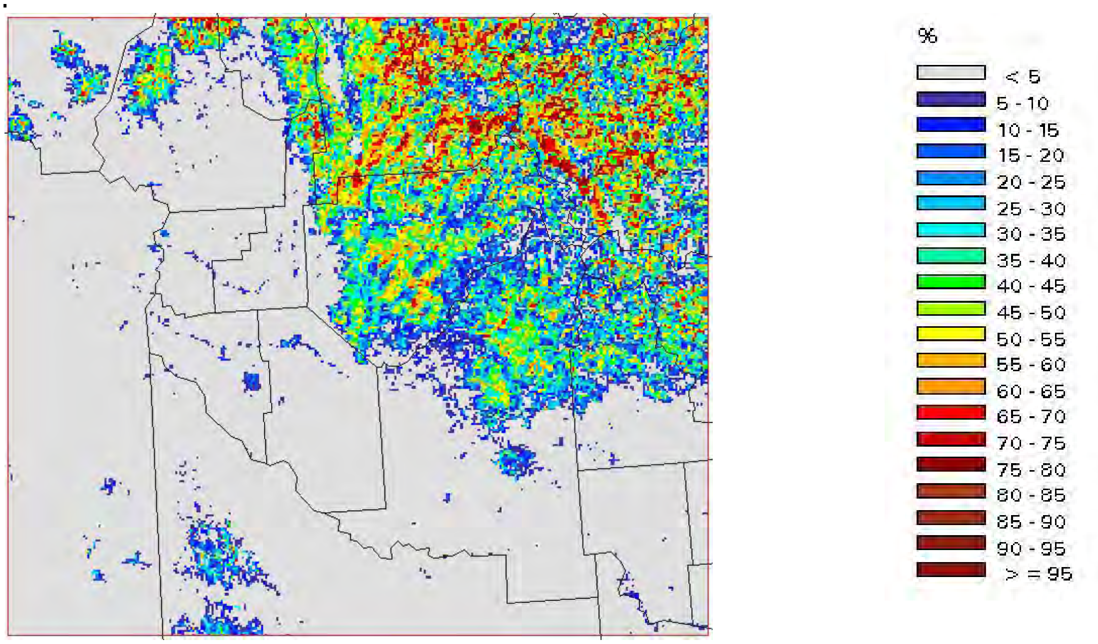

Figure 5. MEGAN v2.1 plant functional type – needle-leaf trees (%) for the IDEQ 4-km modeling domain.

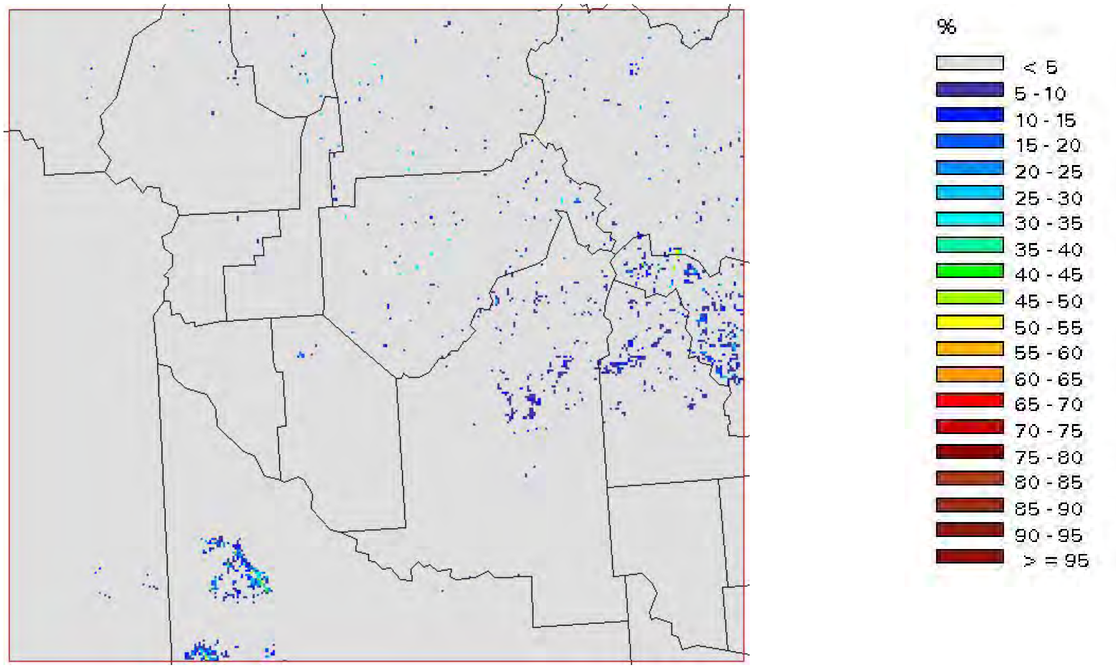

Figure 6. MEGAN v2.1 plant functional type – broad-leaf trees (%) for the IDEQ 4-km modeling domain.

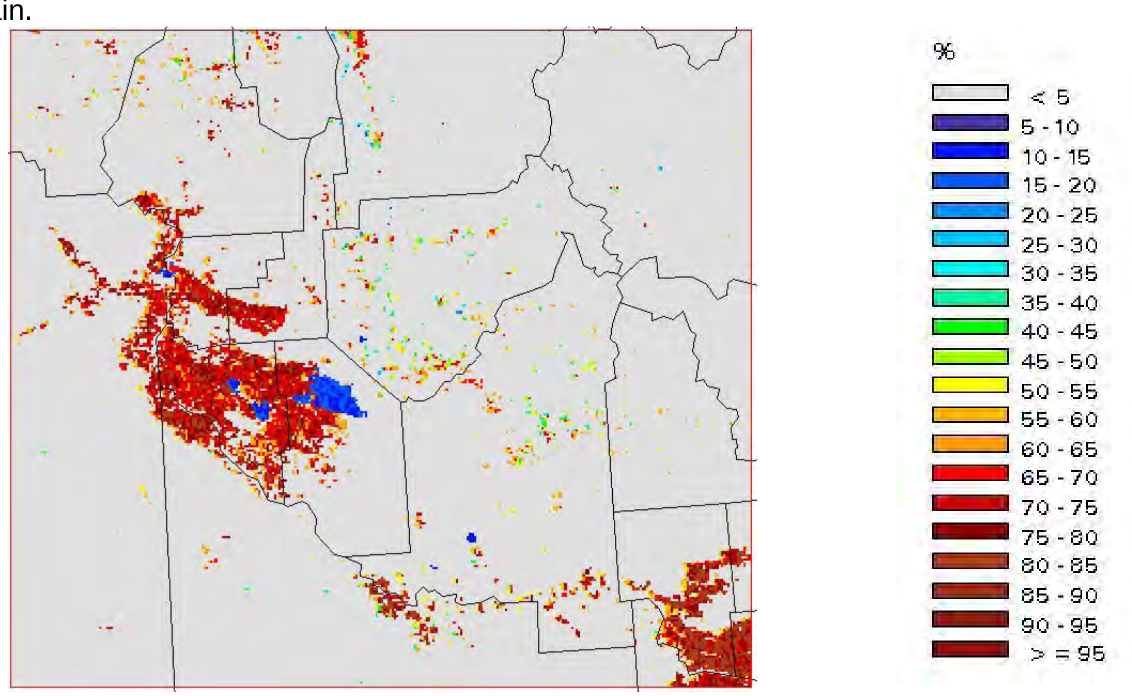

Figure 7. MEGAN v2.1 plant functional type – croplands (%) for the IDEQ 4-km modeling domain.

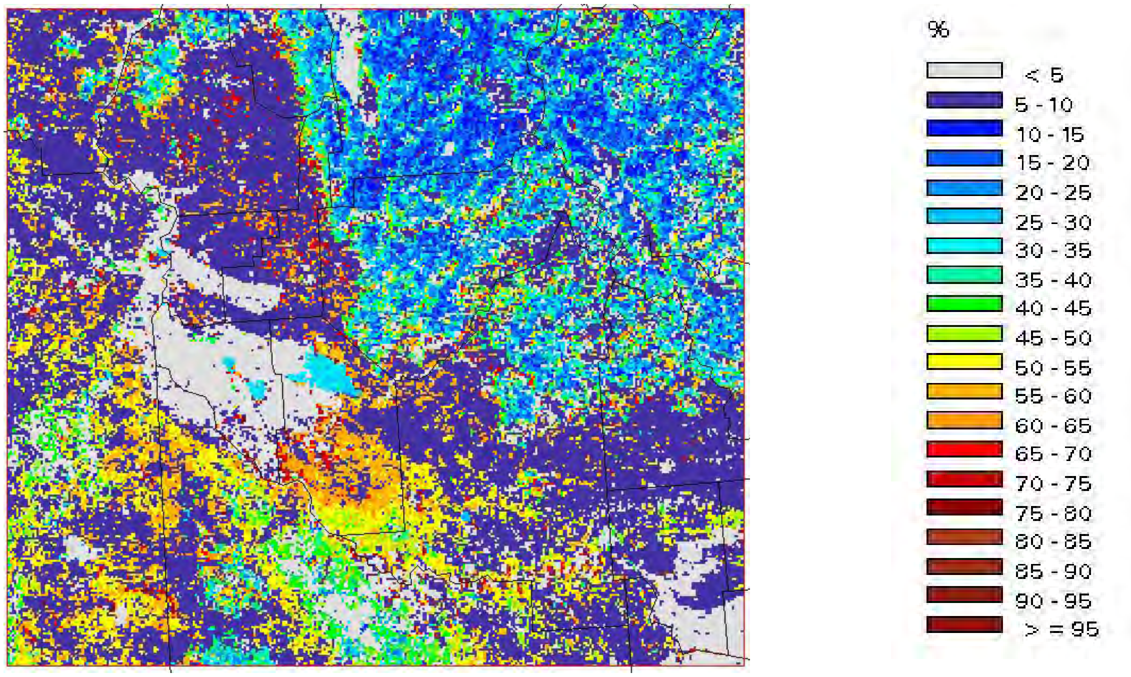

Figure 8. MEGAN v2.1 plant functional type – shrublands (%) for the IDEQ 4-km modeling domain.

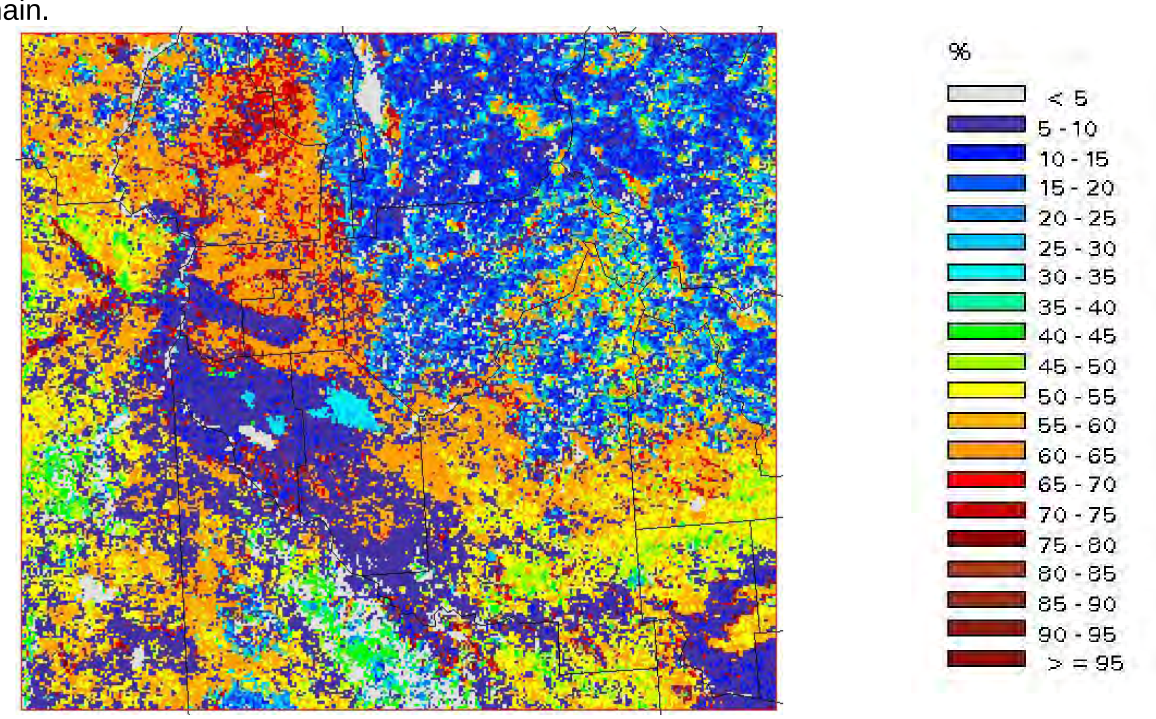

Figure 9. MEGAN v2.1 plant functional type – grasslands (%) for the IDEQ 4-km modeling domain.

EMISSION SUMMARY AND COMPARISON

A summary of IDEQ's biogenic emissions modeling is presented and discussed in this section. Additionally, comparisons are presented between IDEQ's inventory and biogenic emissions estimates developed using the MEGAN biogenic emissions modeling system.

IDEQ BEIS Application

The IDEQ generated biogenic emissions for the time period from January 1, 2008 – December 31, 2008 BEIS version 3.14 integrated within SMOKE2.5. As noted in their biogenic emissions inventory documentation (IDEQ, 2009), IDEQ was advised by EPA Region 10, Washington State University, OAQPS staff and the model developers that for SIP purposes BEIS was an appropriate model to use until the large differences in isoprene emissions between BEIS and MEGAN can be resolved.

The processing approach utilized by IDEQ for its biogenic emissions for the 2008 SIP-quality EI for the Treasure Valley is described in the following steps:

1. ***Normbeis3*** was executed to read gridded land use data and emissions factors and produce gridded normalized biogenic emissions for 35 species/compounds. The gridded land use data was prepared with EPA's spatial allocator using the BELD3 dataset. Both summer and winter emissions factors for each species/compound are provided for each of the 230 BELD3 land use types. ***Normbeis3*** generates gridded summer and winter emission fluxes for the modeling domain normalized to 30 °C and a photosynthetic active radiation (PAR) of 1000 µmol/m^{2}s. Additionally, gridded summer and winter leaf area indices (LAI) were also generated.

2. ***Tmpbeis3*** was utilized to read the gridded, normalized emissions from ***Normbeis3*** and meteorological data from the MCIP-processed MM5/WRF meteorological fields. More specifically, the following MM5/MCIP meteorological variables are used by ***Tmpbeis3*** to compute hour-specific, gridded biogenic emissions from the normalized emission fluxes:

    - surface temperature ("TEMP2")
    - surface pressure ("PRSFC")
    - total incoming solar radiation at the surface ("RGRND")
    - convective ("RC") and non-convective ("RN") rainfall

    The emissions for the species modeled by BEIS3.14 were converted to CO, NO, and the SAPRC99 VOC species utilized in CMAQ via the use of the SAPRC99 speciation profile. In addition, an optional seasonal switch file, `BIOSEASON`, was utilized to determine whether to use summer or winter emissions factors for any given grid cell on any given day. This file was generated by the SMOKE2.5 utility **Metscan** based on layer-1 (surface) air temperatures ("TA") to determine the date of the last spring frost and first fall frost at each grid cell. Summer emission factors are used by **Tmpbeis3** for the time period between the last spring frost and first fall frost at any given grid cell, and winter emission factors are used for the remaining time period.

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3. For reporting purposes, the hourly, speciated, gridded emissions were aggregated to the county level for the entire calendar year 2008. For each county border-line grid cell, emissions were distributed among the counties intersecting the grid cell in proportion to the area of each of these counties within the grid cell. The area gridding surrogates needed for this aggregation were generated using the spatial allocator program based on EPA shape files. Table 1 presents the results of IDEQ biogenic modelling for the three county area.

Table 1. 2008 estimated biogenic emission (tpy) for Ada, Canyon, and Elmore Counties

County	CO	NO	VOC	Isoprene
Ada	2,247	202	12,803	741
Canyon	1,650	284	8,902	139
Elmore	6,425	465	30,982	2,073

MEGAN Model Application

For the purpose of comparison, ENVIRON applied the MEGAN model using the MDVD input database and the same MM5/WRF meteorological data as used by IDEQ. Biogenic emissions were generated for the IDEQ 4-km modeling domain for the entire calendar year 2008. County-level emission totals for NO, CO, TOG and Isoprene were developed using GIS processing approaches, similar to those used by IDEQ, to allocate gridded emissions data to counties. For consistency, the gridded BEIS biogenic emissions provided by IDEQ were also reprocessed along with the MEGAN biogenic emissions to generate county-level emission totals for Ada, Canyon and Elmore Counties.

Table 2 presents summaries by county and pollutant for the three county area of the Treasure Valley. Results are presented for NO, CO, total VOC (TOG) and isoprene emissions from both the BEIS and MEGAN biogenic model applications

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Table 2. Monthly biogenic emission summaries for BEIS and MEGAN for the three county Treasure Valley Area (tons/month)

		NO			CO			TOG			Isoprene		
Model	**Month**	**Ada**	**Canyon**	**Elmore**	**Ada**	**Canyon**	**Elmore**	**Ada**	**Canyon**	**Elmore**	**Ada**	**Canyon**	**Elmore**
BEIS	January	8.1	10.6	14.9	32.6	24.2	113.9	123.0	87.1	402.6	0.6	0.1	1.3
	February	9.4	12.7	19.2	36.6	28.7	127.7	147.3	109.9	465.9	1.4	0.2	3.2
	March	12.1	16.1	25.8	51.1	39.9	168.7	221.5	163.1	637.3	3.4	0.3	7.3
	April	16.3	21.2	33.5	84.1	63.5	257.5	418.4	294.6	1,076.7	13.3	2.0	32.0
	May	22.1	29.2	51.4	227.0	156.8	621.4	1,246.2	814.4	2,870.8	68.0	11.6	164.5
	June	25.8	34.7	59.2	330.7	224.1	951.3	2,001.9	1,284.3	4,803.3	125.1	20.8	371.6
	July	32.7	42.2	80.5	571.7	388.6	1,675.6	3,702.0	2,394.7	9,029.4	249.6	41.4	783.2
	August	30.9	39.4	76.0	513.5	344.2	1,505.4	3,194.2	2,044.1	7,815.1	203.0	33.7	631.0
	September	23.3	29.7	56.7	281.8	184.7	848.6	1,537.1	966.0	3,947.4	81.2	13.6	251.7
	October	18.3	23.1	44.5	167.7	107.2	482.3	791.1	473.8	2,020.5	30.3	4.5	74.5
	November	13.9	17.5	34.2	88.7	55.3	262.8	348.6	207.2	975.1	5.5	0.6	9.9
	December	9.1	12.0	19.2	37.7	27.8	138.9	147.3	103.2	500.5	1.1	0.1	2.6
	Annual Total	**222.2**	**288.4**	**515.2**	**2,423.2**	**1,645.0**	**7,154.1**	**13,878.7**	**8,942.3**	**34,544.5**	**782.6**	**128.7**	**2,332.8**
MEGAN	January	1.0	0.7	1.4	8.9	4.0	17.8	40.2	16.0	87.9	1.6	0.4	3.2
	February	1.3	1.1	1.7	12.8	6.9	23.1	55.2	30.7	108.7	6.3	1.4	12.0
	March	2.2	1.8	2.7	25.0	13.3	39.4	124.2	60.1	199.9	22.4	5.3	38.0
	April	5.1	4.5	6.1	71.0	42.0	117.5	487.0	270.4	840.8	120.1	29.4	210.3
	May	13.1	12.3	18.8	193.8	119.1	384.1	1,408.0	666.4	3,098.6	613.2	159.7	1,136.5
	June	17.9	22.2	31.8	262.1	222.3	710.7	2,002.6	1,314.0	6,264.7	988.4	333.1	2,649.0
	July	30.9	49.0	57.6	389.9	434.5	1,171.8	3,106.7	2,508.8	10,728.9	1,659.5	744.8	5,601.5
	August	23.5	34.4	43.0	260.6	269.3	770.7	1,949.6	1,422.2	6,581.0	991.5	426.6	3,341.4
	September	10.3	13.8	19.0	101.4	98.9	308.3	621.2	459.9	2,164.8	268.7	113.2	912.3
	October	4.8	5.9	9.3	41.4	35.8	124.3	207.3	141.7	700.6	69.6	25.6	229.1
	November	2.2	2.1	4.1	16.9	11.2	50.3	63.3	35.6	212.4	10.4	3.0	32.5
	December	0.8	0.7	1.3	7.2	4.2	14.9	26.5	13.3	55.4	2.6	0.7	6.0
	Annual Total	**113.0**	**148.5**	**196.8**	**1,390.9**	**1,261.5**	**3,733.1**	**10,091.8**	**6,939.1**	**31,043.5**	**4,754.4**	**1,843.2**	**14,171.7**

County-level Emission Summaries

Figures 10 through 13 display the monthly variation of biogenic NO, CO, TOG and Isoprene emissions, respectively, for Ada County. Both BEIS and MEGAN derived emissions are displayed. Corresponding displays of monthly biogenic emissions from both models are presented in Figures 14 through 17 for Canyon County, while Figures 18 through 21 present the results for Elmore County.

A review of Figures 10 through 13 illustrates that for most months, the MEGAN model is estimating lower biogenic emissions of NO, CO and total VOC biogenic emissions for Ada County for all months of the year. The largest differences are seen to occur during the winter and fall months. Isoprene emissions are seen to be higher with MEGAN than BEIS, as would be expected based on various test cases evaluated by the EPA (Pouliot and Pierce, 2008). The results for Canyon County show similar trends, except for the month of July, when biogenic emissions peak for the year. Again, biogenic isoprene emissions are dramatically higher based on the MEGAN model than BEIS, particularly for the summer months. Results for Elmore County, displayed in Figures 18 through 21, illustrate the dependence of biogenic VOC emissions on land cover. As seen, the MEGAN-derived biogenic emissions of NO and CO are lower than those derived from the BEIS model, while biogenic VOC, and especially biogenic isoprene, emissions are estimated to be considerably higher than those estimated with the BEIS model for Elmore County. These results are to be expected given the increased percentage of forestlands in comparison to either Ada or Canyon Counties. For all counties and pollutants, both the BIEIS and MEGAN models are exhibiting similar seasonal variations with higher biogenic emissions during the spring and summer months compared to the winter and fall seasons.

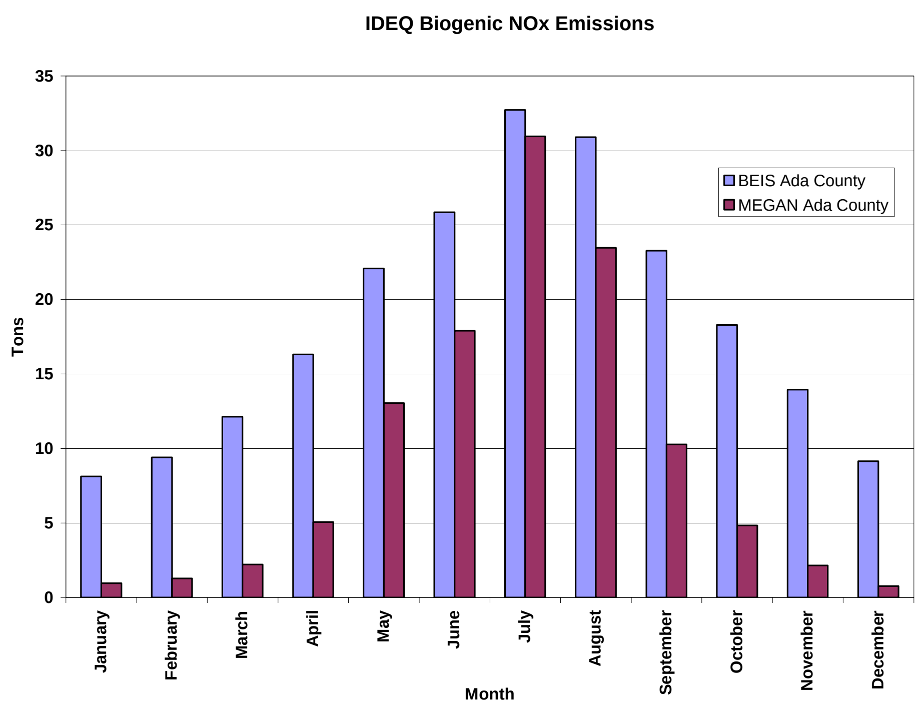

Figure 10. Ada County Biogenic NO emissions for BEIS and MEGAN (tons/month)

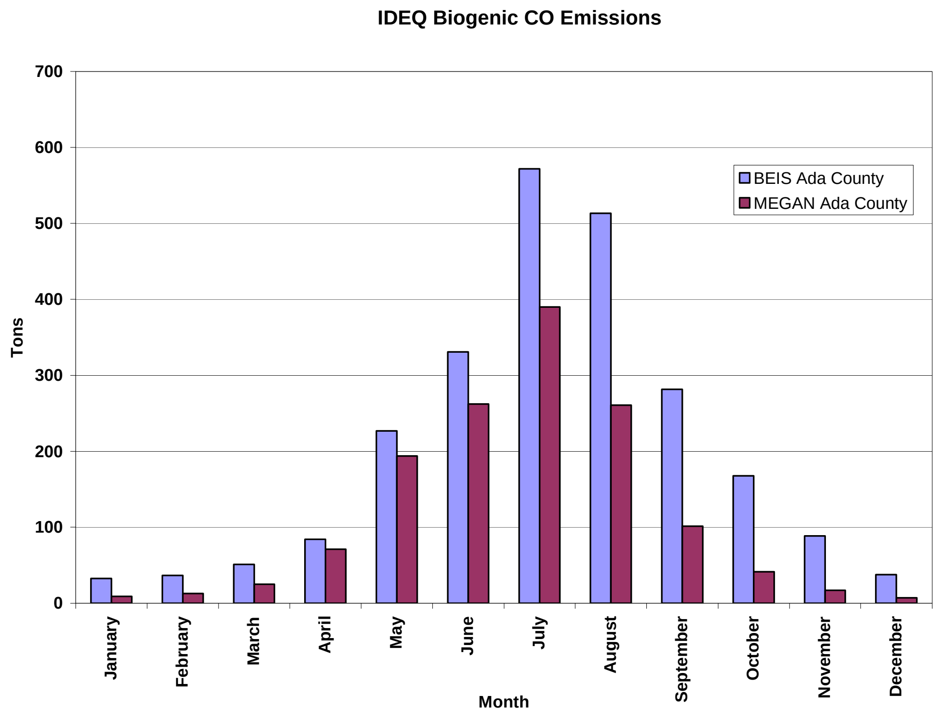

Figure 11. Ada County Biogenic CO emissions for BEIS and MEGAN (tons/month).

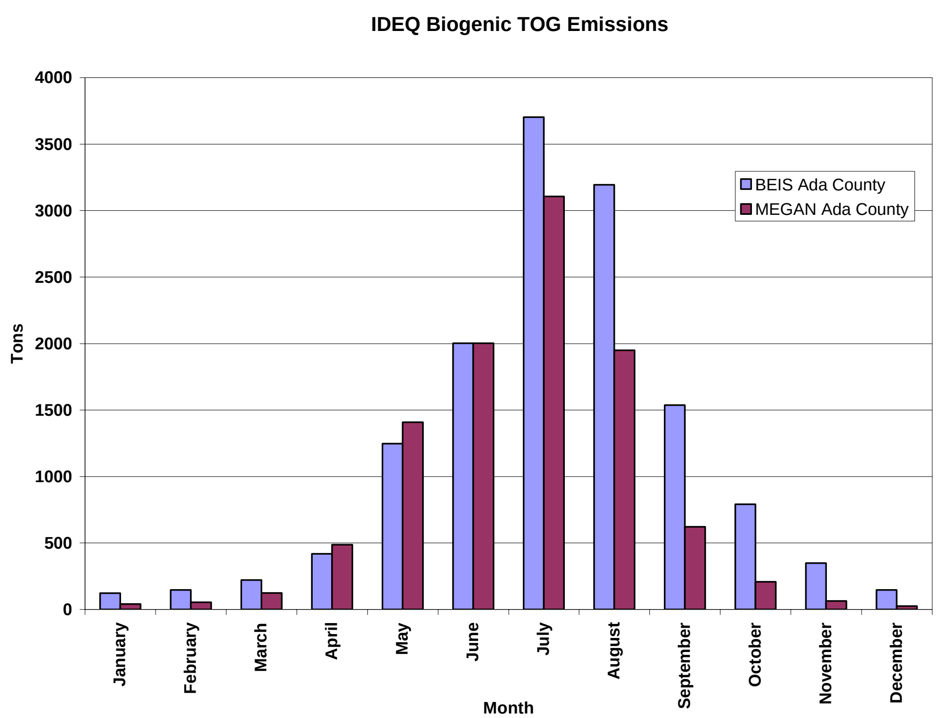

Figure 12. Ada County Biogenic TOG emissions for BEIS and MEGAN (tons/month).

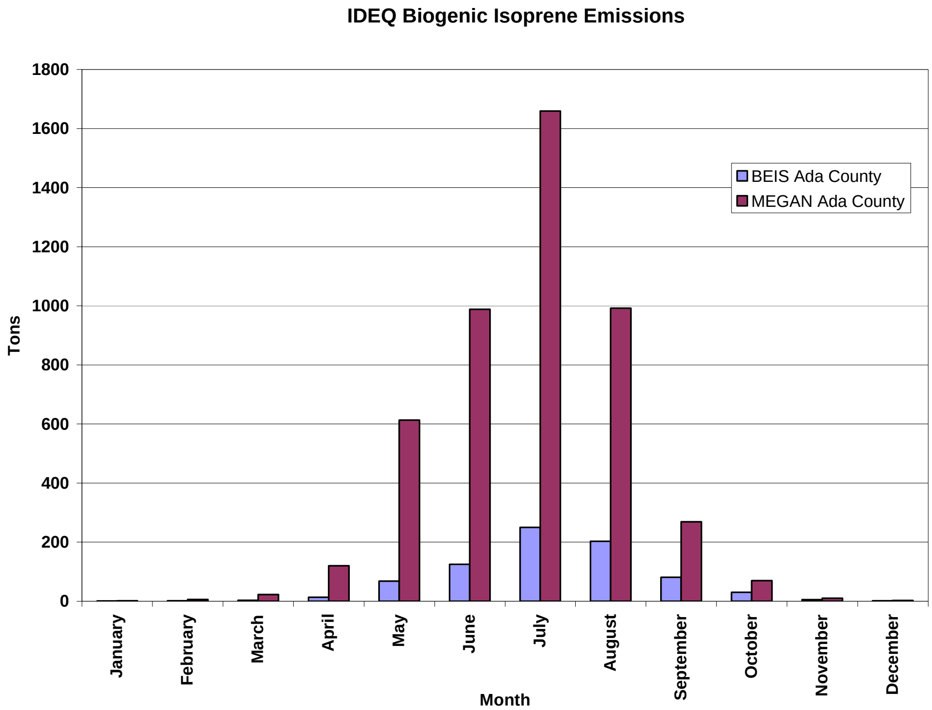

Figure 13. Ada County Biogenic Isoprene emissions for BEIS and MEGAN (tons/month).

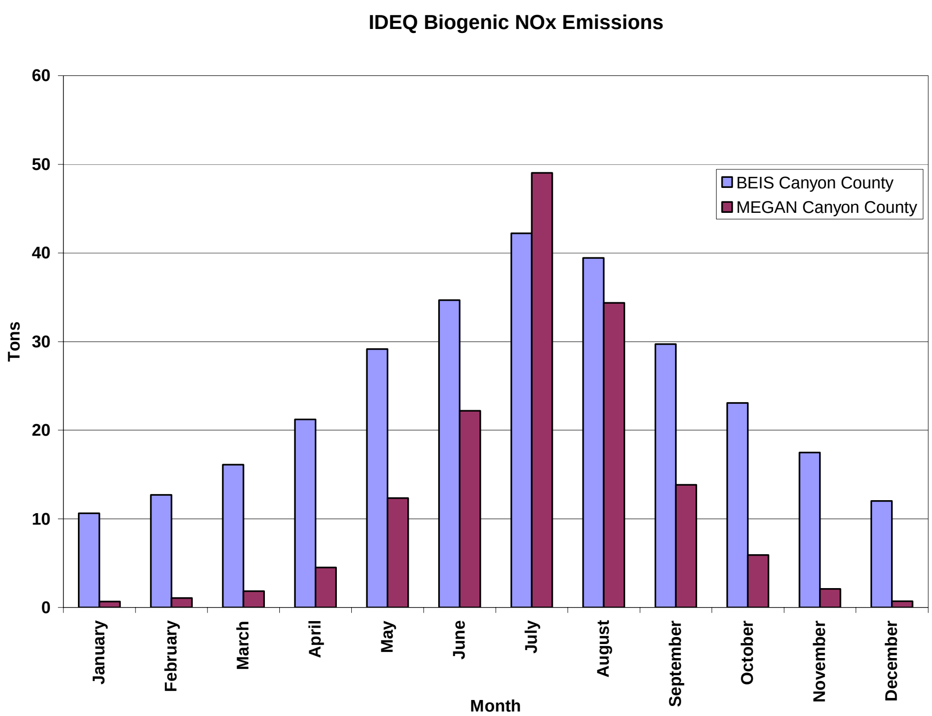

Figure 14. Canyon County Biogenic NO emissions for BEIS and MEGAN (tons/month).

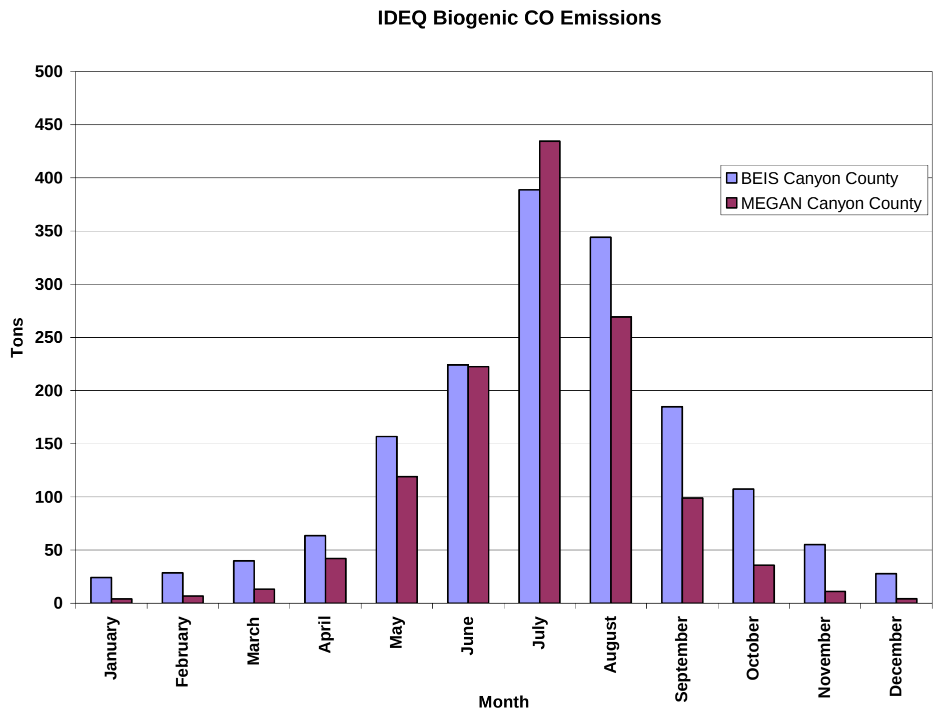

Figure 15. Canyon County Biogenic CO emissions for BEIS and MEGAN (tons/month).

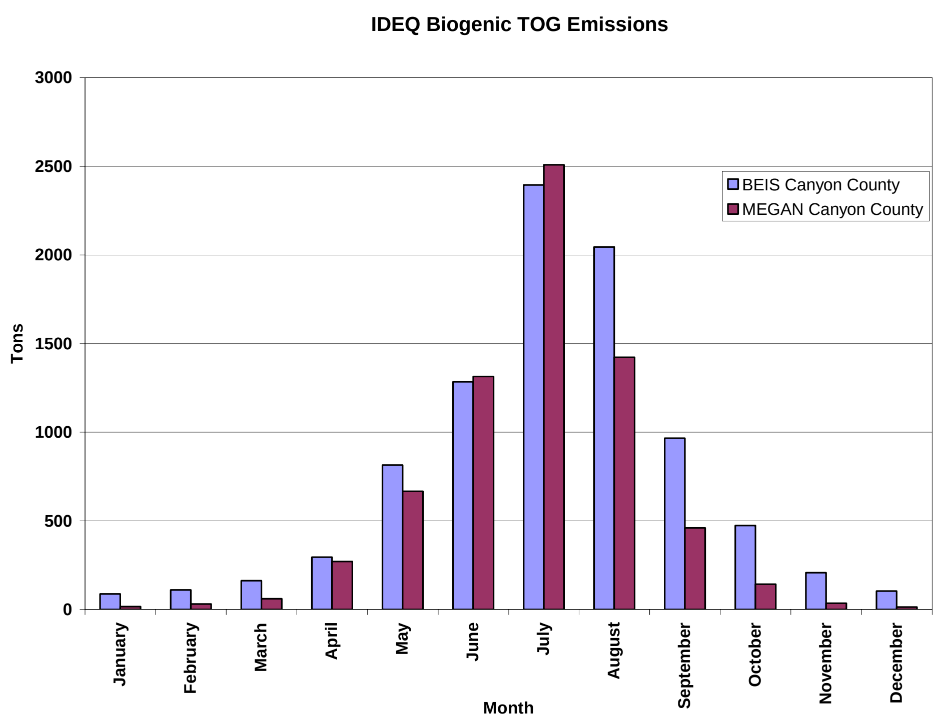

Figure 16. Canyon County Biogenic TOG emissions for BEIS and MEGAN (tons/month).

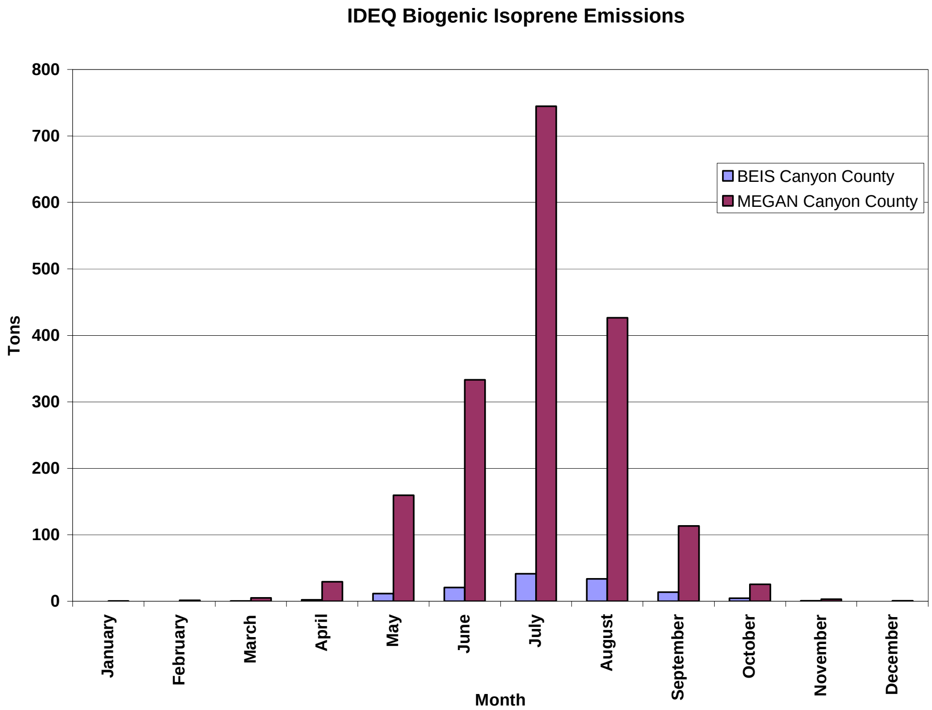

Figure 17. Canyon County Biogenic Isoprene emissions for BEIS and MEGAN (tons/month)

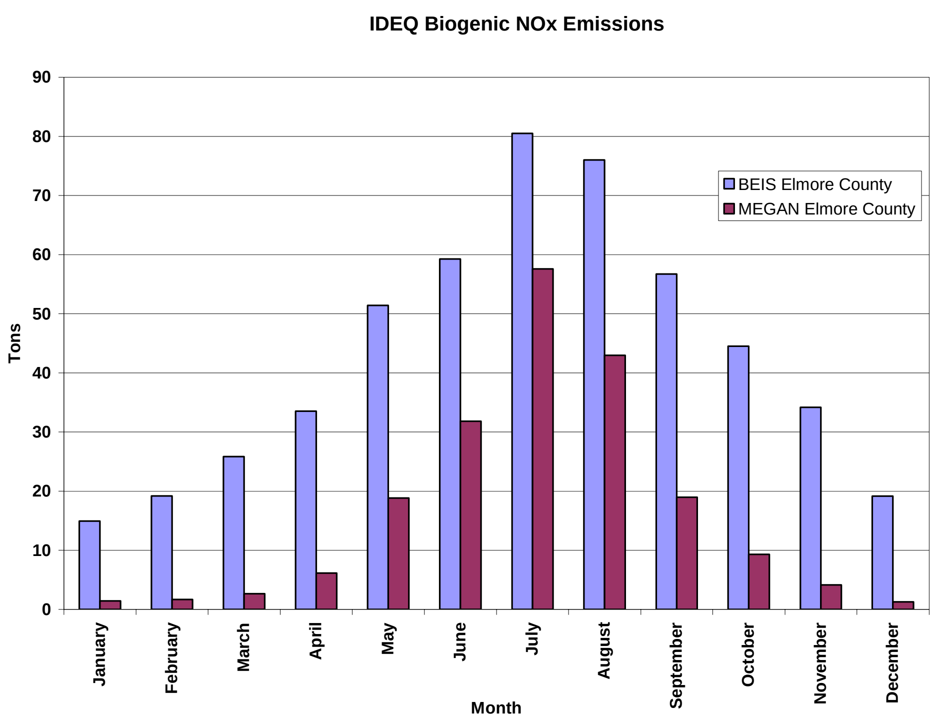

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Figure 18. Elmore County Biogenic NO emissions for BEIS and MEGAN (tons/month).

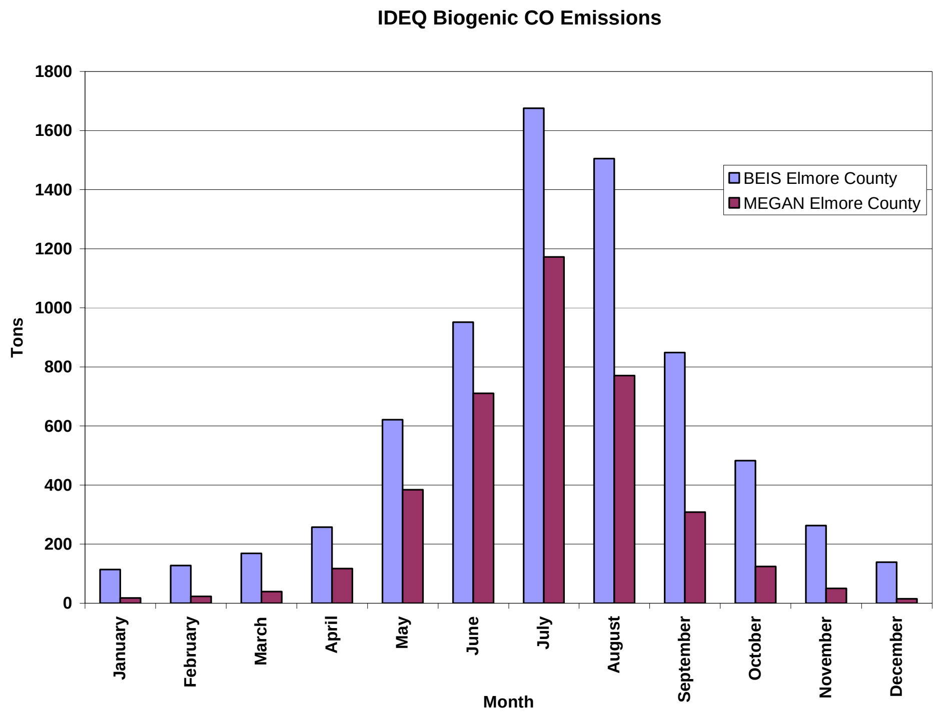


Figure 19. Elmore County Biogenic CO emissions for BEIS and MEGAN (tons/month).

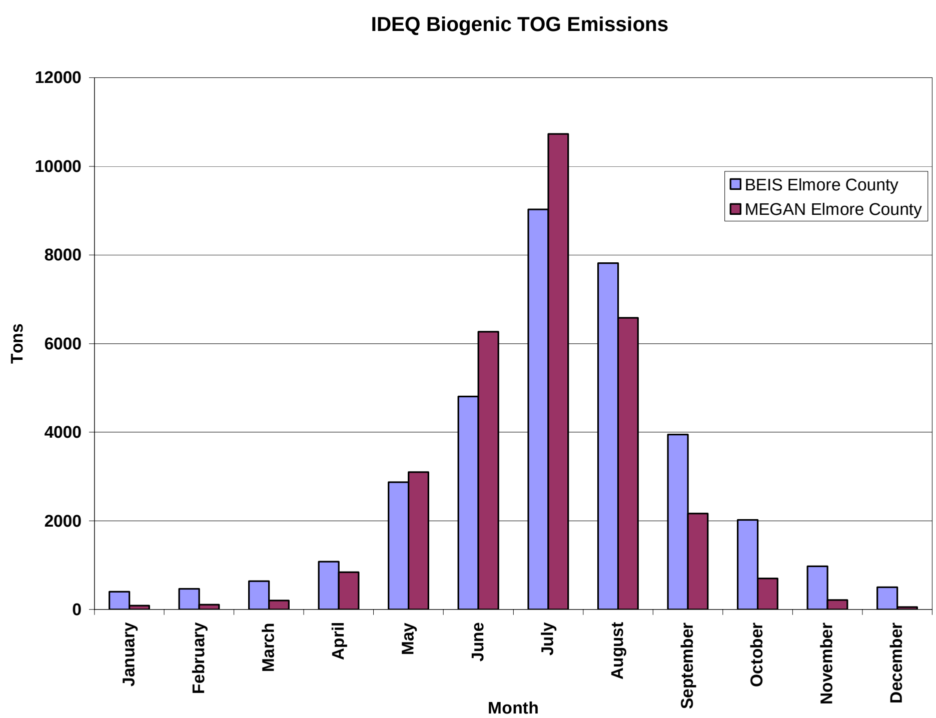


Figure 20. Elmore County Biogenic TOG emissions for BEIS and MEGAN (tons/month).

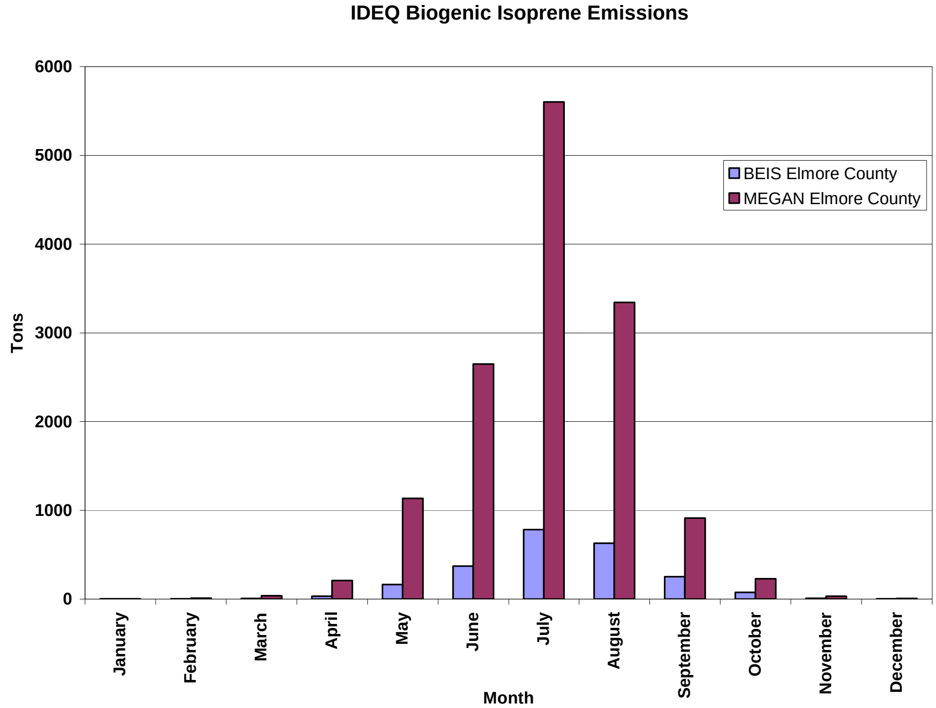


Figure 21. Elmore County Biogenic Isoprene emissions for BEIS and MEGAN (tons/month).

Spatial Distribution of Gridded Emissions

The spatial distributions of gridded biogenic emissions developed by the IDEQ with BEIS were also reviewed and compared those generated with the MEGAN biogenic model. Figures 22 through 25 display the 2008 annual gridded biogenic emissions for BEIS and MEGAN for IDEQ's 4-km modeling domain. Displayed are annual emissions totals for NO, CO total VOC and isoprene. Figures 26 through 29 display the corresponding gridded emissions for the month of July, in tons per month.

Differences in the spatial distributions of emission are clearly evident and reflect differences in the underlying vegetation and landcover databases used by the two models. In general, the results from the MEGAN model are seen to be more highly resolved. The differences in emission magnitudes are consistent with known differences in the ability of each model in estimated specific pollutants.

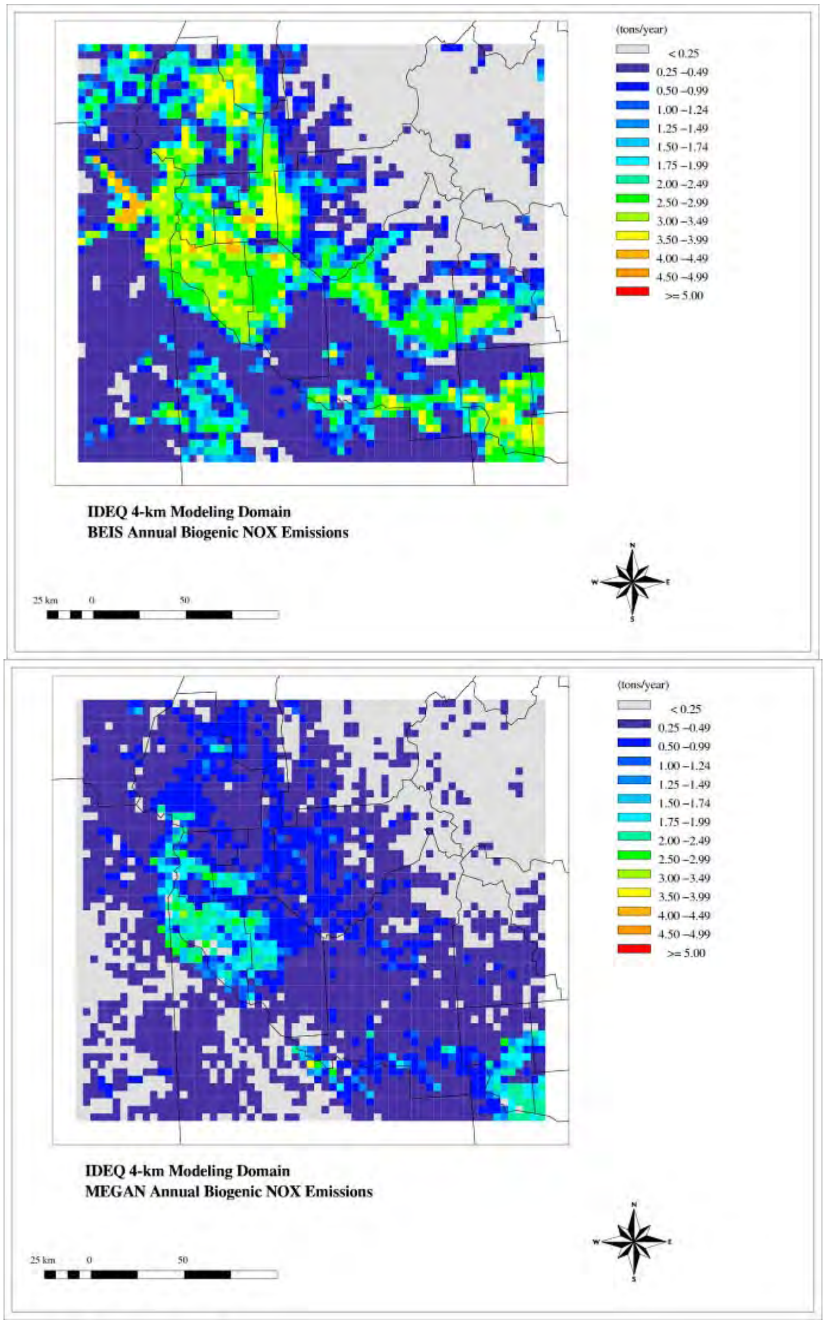


Figure 22. Spatial distribution of 2008 annual biogenic NO emissions (tons/year). Top – BEIS; Bottom - MEGAN

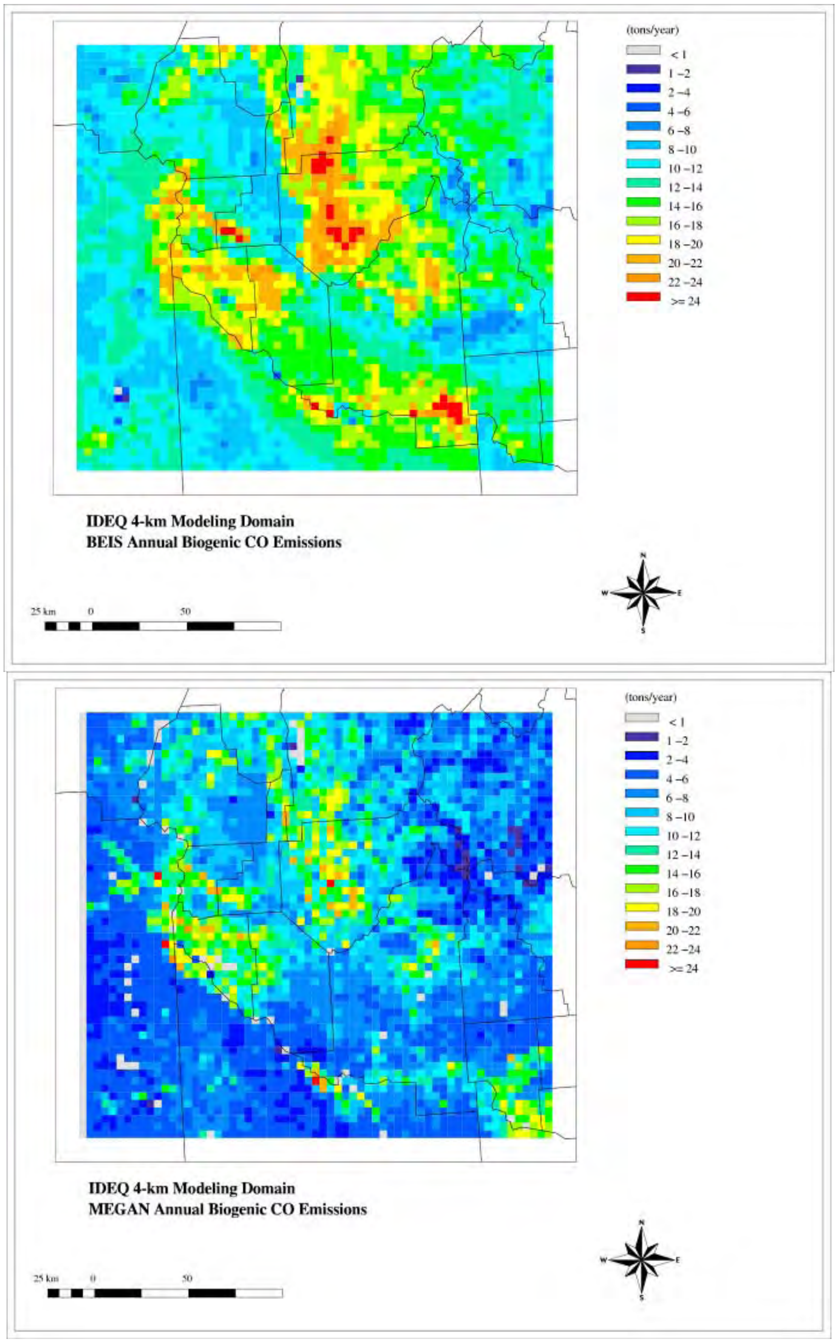


Figure 23. Spatial distribution of 2008 annual biogenic CO emissions (tons/year). Top – BEIS; Bottom - MEGAN

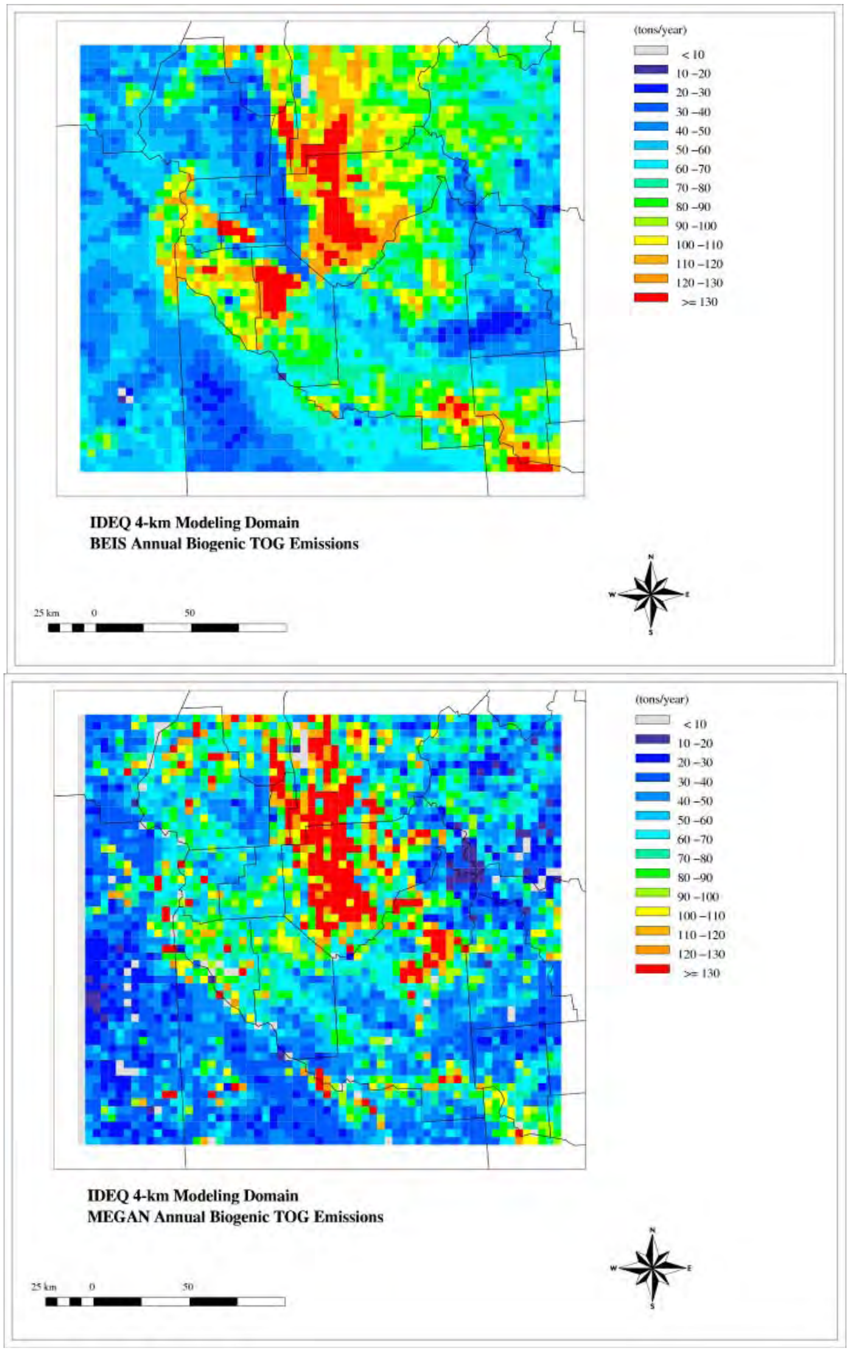


Figure 24. Spatial distribution of 2008 annual biogenic TOG emissions (tons/year). Top – BEIS; Bottom - MEGAN

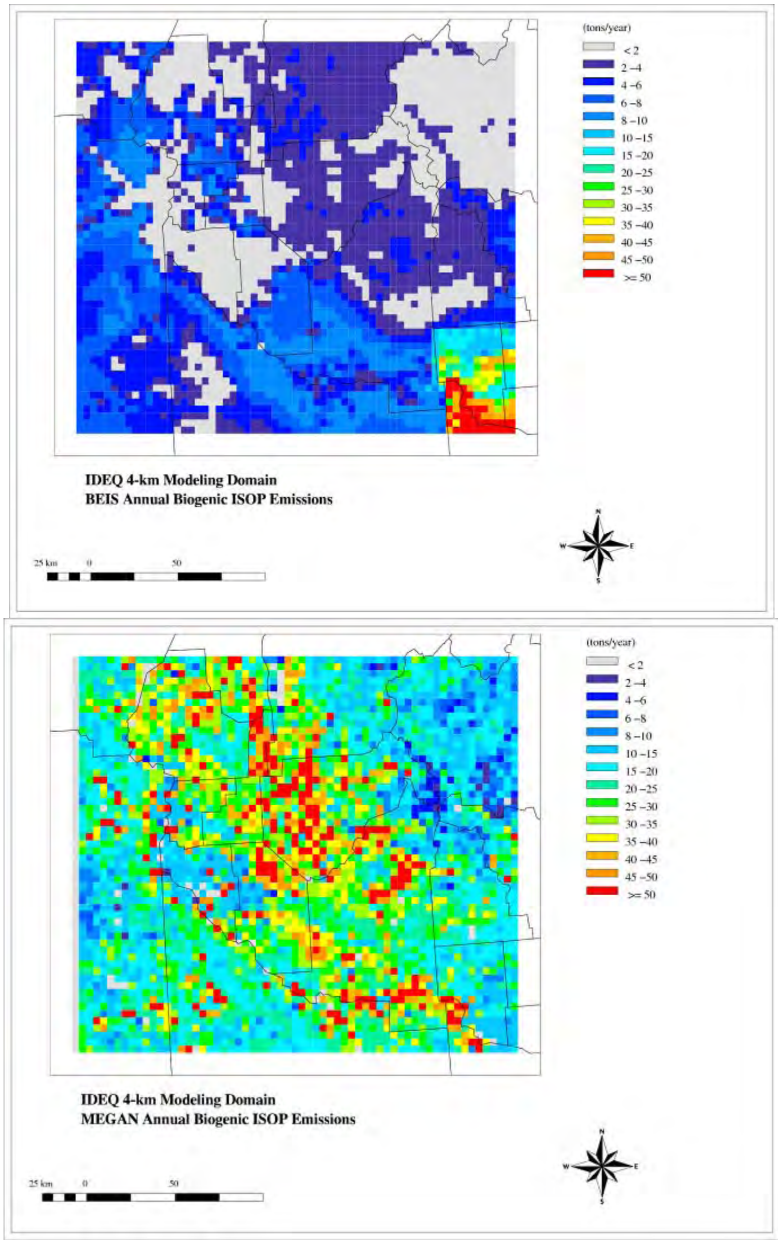


Figure 25. Spatial distribution of 2008 annual biogenic Isoprene emissions (tons/year). Top – BEIS; Bottom - MEGAN

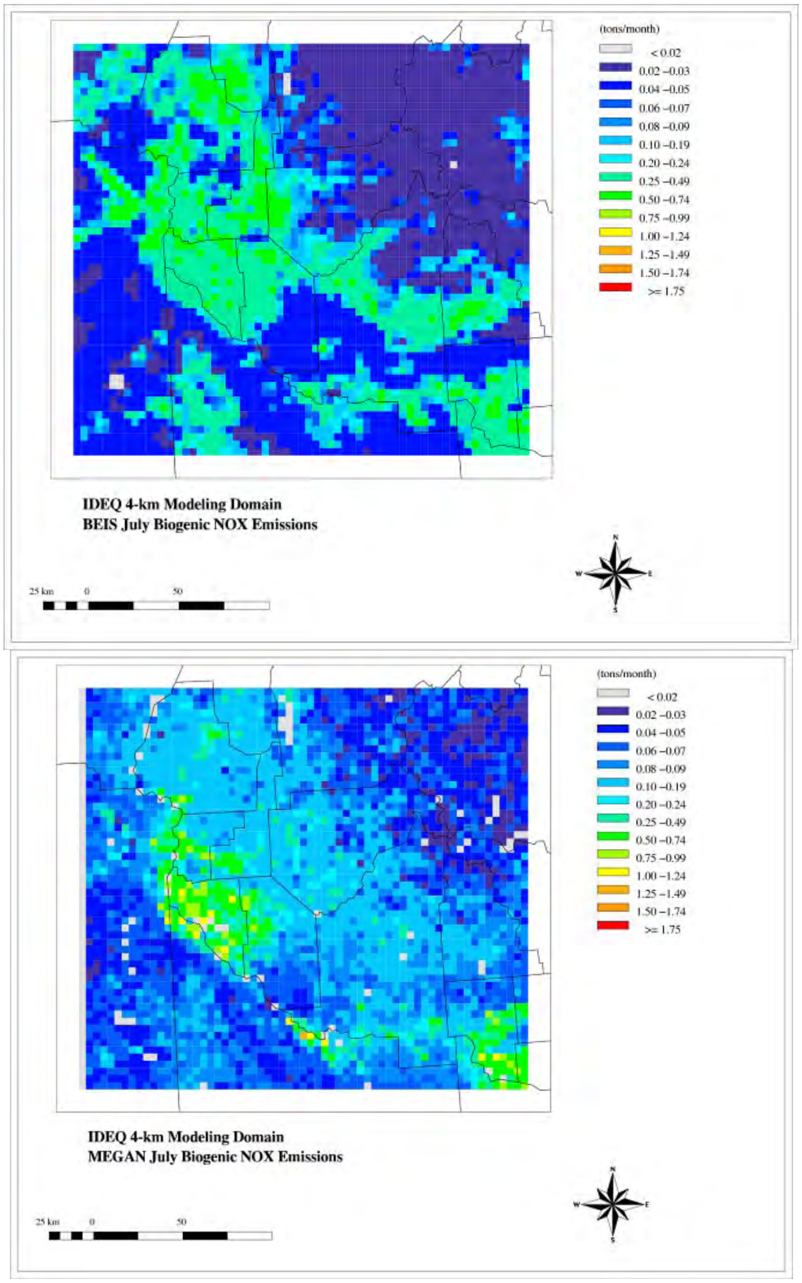
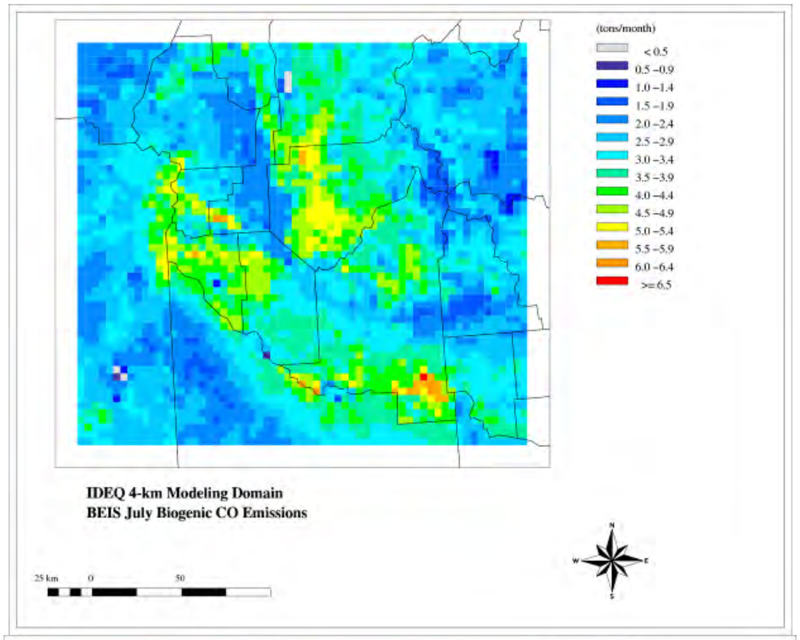


Figure 26. Spatial distribution of July 2008 biogenic NO emissions (tons/month). Top – BEIS; Bottom - MEGAN



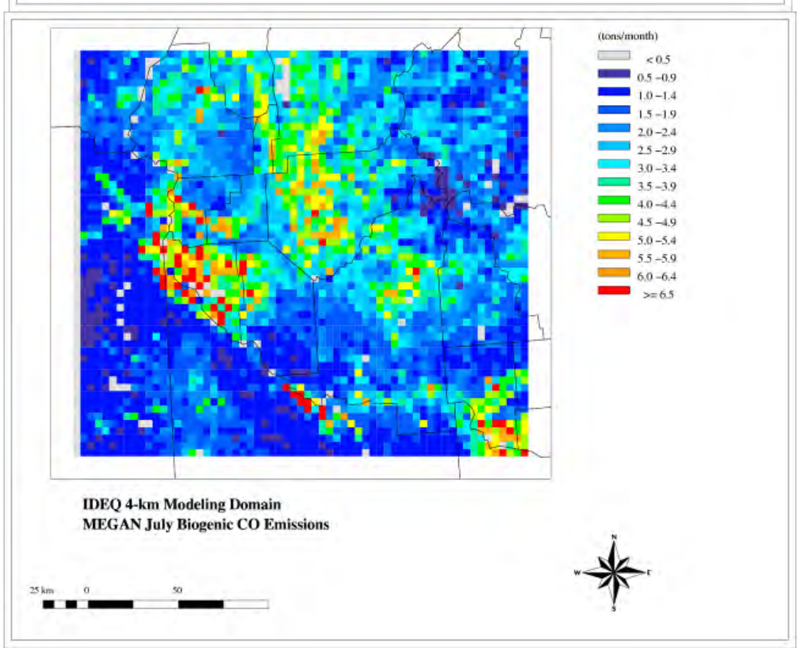


Figure 27. Spatial distribution of July 2008 biogenic CO emissions (tons/month). Top – BEIS; Bottom - MEGAN

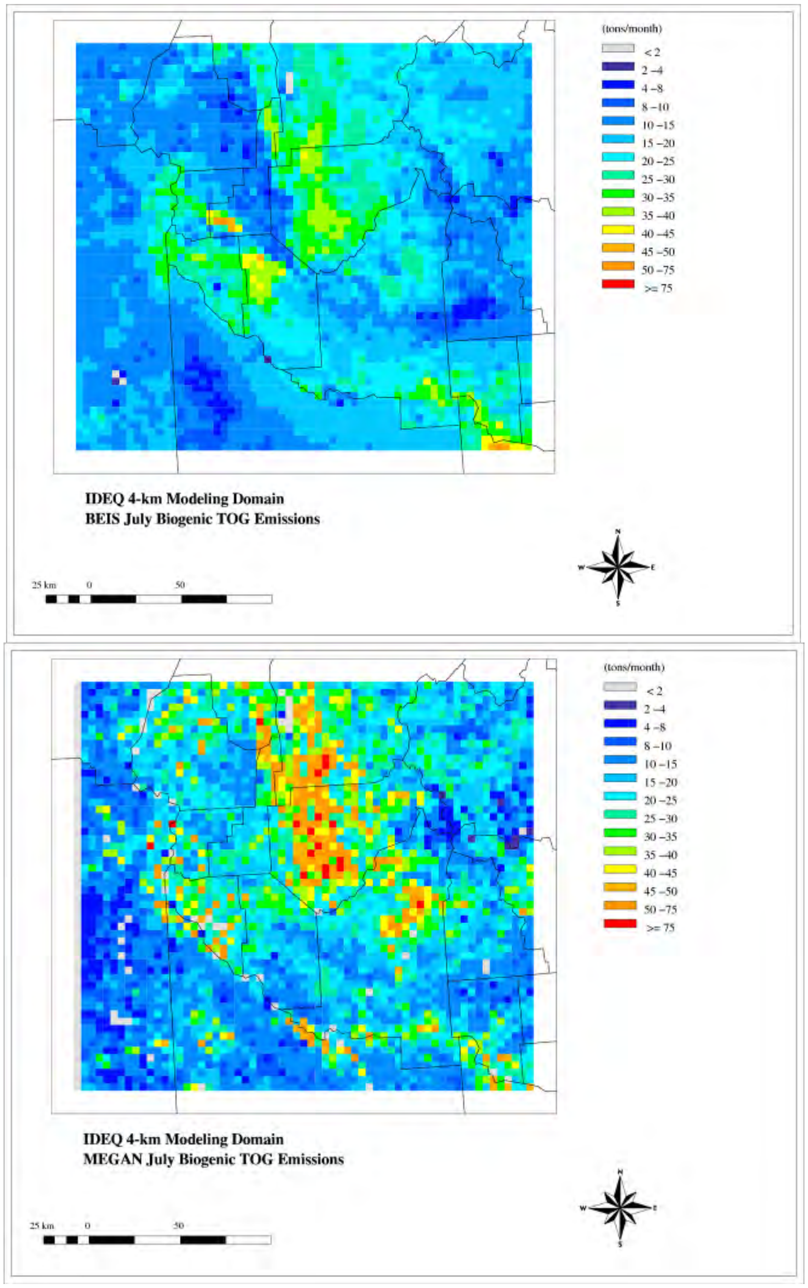


Figure 28. Spatial distribution of July 2008 biogenic TOG emissions (tons/month). Top – BEIS; Bottom - MEGAN

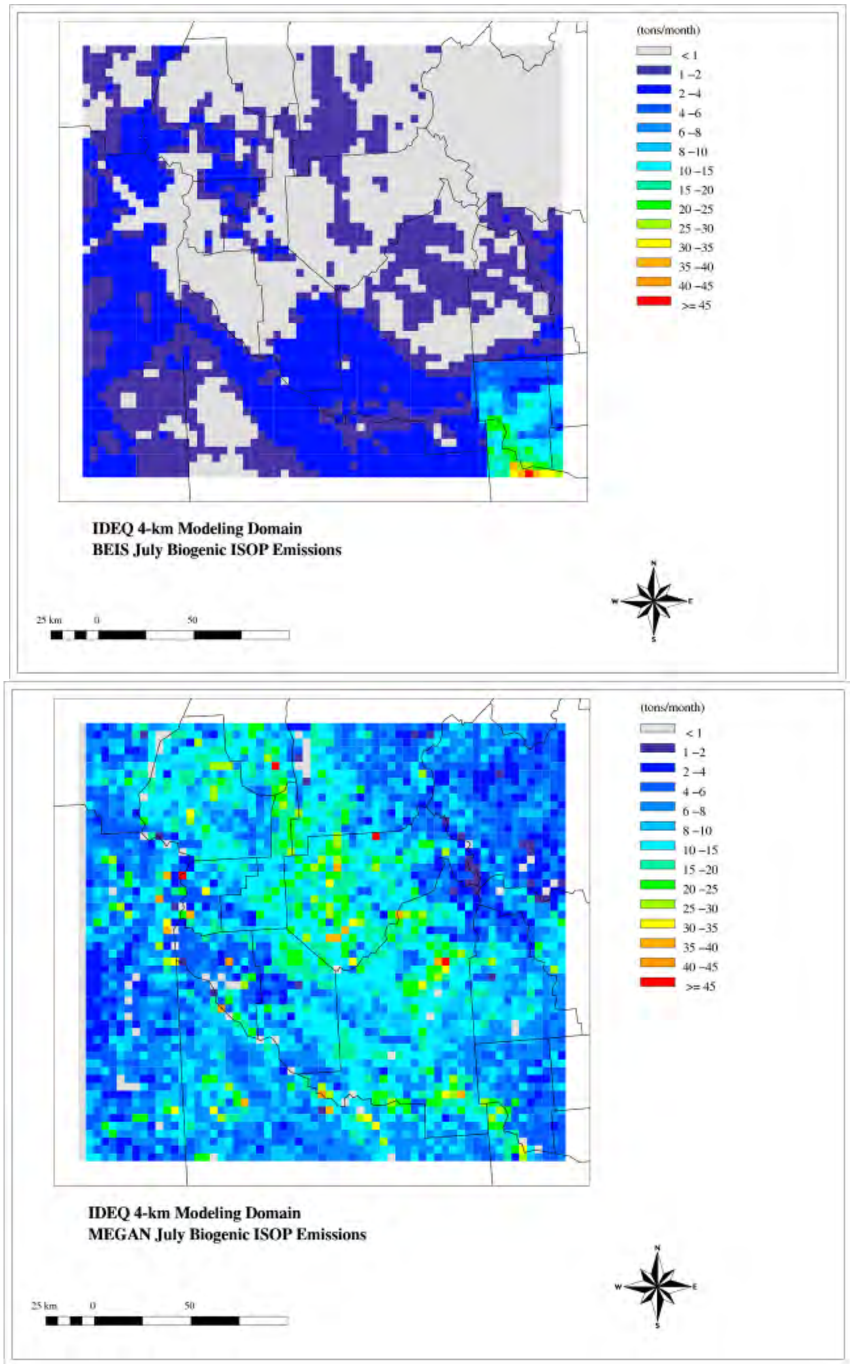


Figure 29. Spatial distribution of July 2008 biogenic Isoprene emissions (tons/month). Top – BEIS; Bottom - MEGAN

CONCLUSIONS

The Idaho Department of Environmental Quality developed biogenic emissions as part of their SIP-quality emissions inventory using the BEIS model, version 3.19. ENVIRON reviewed the inventory, with respect to input data, including landcover and vegetation and meteorology, and model application. In addition a comparison was made between biogenic emissions generated using the BEIS model and an alternative biogenic modeling system, MEGAN.

Based on the inventory review conducted by ENVIRON, IDEQ's biogenic emissions inventory development, including input data and processing, as documented in their report (IDEQ, 2009), appears correct and appropriate for the model selected (BEIS3.19) and provides the necessary SIP-level inventory estimates of biogenic emissions for the Treasure Valley Airshed.

Overall, IDEQ's biogenic emission inventory developed using the BEIS biogenic emissions model appears to reasonably represent biogenic emissions for the region given the model and databases used. A comparison of the BEIS-derived emissions and those derived from the MEGAN model are consistent given the various differences model formulations and input databases, particularly the more highly spatially resolved landcover and vegetation data. Both models exhibit the appropriate seasonal and spatial variations as expected. Differences in emission levels between the two model applications for certain pollutants are also consistent based on previous testing and comparisons of BEIS and MEGAN.

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APPENDIX G

DETAILED AREA SOURCE EMISSION INVENTORY SUMMARIES

Table G-1. 2008 Annual Ada County Area Source Emissions (tpy)

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2102004000	Industrial Distillate Combustion	20.0	0.2	0.2	5.0	1.0	0.2	0.8
2102006000	Industrial Natural Gas Combustion	87.6	0.5	4.8	73.5	6.7	6.7	2.8
2102007000	Industrial LPG Combustion	2.8	0.0	0.2	1.6	0.1	0.1	
2103004000	Commercial/Institutional Distillate Combustion	34.3	6.5	0.6	8.6	1.9	1.4	1.4
2103006000	Commercial/Institutional Natural Gas Combustion	188.6	1.1	10.4	158.4	14.3	14.3	0.9
2103007000	Commercial/Institutional LPG Combustion	2.5	0.0	0.2	1.5	0.1	0.1	
2103011000	Commercial/Institutional Kerosene Combustion	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2104004000	Residential Distillate Combustion	22.2	0.5	0.9	6.2	1.3	1.0	1.2
2104006000	Residential Natural Gas Combustion	438.1	2.8	25.6	186.4	35.4	35.4	93.2
2104007000	Residential LPG Combustion	2.8	0.0	0.2	1.6	0.2	0.2	
2104008001	Residential Wood Combustion - Fireplaces	22.1	3.0	143.5	1,135.6	232.4	232.4	
2104008002	Residential Wood Combustion - Fireplaces w/ insert (conventional/non-certified catalytic)	23.0	1.8	331.3	1,411.4	304.2	304.2	
2104008003	Residential Wood Combustion - Fireplaces w/ insert (certified non-catalytic)	15.9	2.8	140.5	979.3	104.5	104.5	
2104008004	Residential Wood Combustion - Fireplaces w/ insert (certified catalytic)	8.2	1.6	70.4	437.8	68.5	68.5	
2104008010	Residential Wood Combustion - Woodstoves (conventional)	28.3	2.2	407.2	1,735.0	374.0	374.0	
2104008030	Residential Wood Combustion - Woodstoves (catalytic)	5.1	1.0	43.5	270.6	42.3	42.3	
2104008050	Residential Wood Combustion - Woodstoves (non-catalytic)	11.5	2.0	102.2	712.2	76.0	76.0	
2104008053	Residential Wood Combustion - Pellet stoves	7.4	0.6	0.1	31.2	6.0	6.0	
2104011000	Residential Kerosene Combustion	0.1	0.2	0.0	0.0	0.0	0.0	0.0
2294000000	Paved Road Dust					26,669.3	1,520.2	
2296000000	Unpaved Road Dust					965.8	55.1	
2302002100	Commercial Cooking - Conveyorized Charbroiling			75.3	251.6	301.1	291.9	
2302002200	Commercial Cooking - Under-fired Charbroiling			58.8	192.5	490.6	474.2	
2302003000	Commercial Cooking - Deep Fat Fying			4.7				
2302003100	Commercial Cooking - Flat Griddle Frying			5.2	10.7	86.6	65.8	
2302003200	Commercial Cooking - Clamshell Griddle Frying			1.2		33.2	28.1	
2302050000	Bakeries			66.7				

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2311010000	Construction					94.4	9.4	
2399010000	Industrial Refrigeration							9.5
2401001000	Architectural Coatings			674.8				
2401005000	Auto Refinishing			186.0				
2401008000	Traffic Markings			28.3				
2401015000	Surface Coatings - Factory Finished Wood			93.1				
2401020000	Surface Coatings - Wood Furniture			63.4				
2401025000	Surface Coatings - Metal Furniture			2.5				
2401030000	Surface Coatings - Paper			95.9				
2401035000	Surface Coatings - Plastic Products			1,305.4				
2401050000	Surface Coatings - Miscellaneous Finished Metals			6.8				
2401055000	Surface Coatings - Machinery and Equipment			78.6				
2401065000	Surface Coatings - Electronic and Other Electrical			18.8				
2401070000	Surface Coatings - Motor Vehicles			288.1				
2401075000	Surface Coatings - Aircraft			255.7				
2401080000	Surface Coatings - Marine			13.1				
2401085000	Surface Coatings - Railroad							
2401090000	Surface Coatings - Miscellaneous Manufacturing			7.4				
2415105000	Open Top Degreasing - Furniture and Fixtures			21.9				
2415110000	Open Top Degreasing - Primary Metal Industries			1.7				
2415120000	Open Top Degreasing - Fabricated Metal Products			16.8				
2415125000	Open Top Degreasing - Industrial Machinery and Equipment			485.4				
2415130000	Open Top Degreasing - Electronic and Other Electrical			64.6				
2415135000	Open Top Degreasing - Transportation Equipment			34.7				
2415140000	Open Top Degreasing - Instruments and Related Products			2.8				
2415145000	Open Top Degreasing - Miscellaneous Manufacturing			26.8				
2415150000	Open Top Degreasing - Transportation Maintenance Facilities			45.2				
2415155000	Open Top Degreasing - Automotive Dealers			133.5				
2415160000	Open Top Degreasing - Auto Repair Services			54.0				
2415165000	Open Top Degreasing - Miscellaneous Repair Services			120.3				

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2415305000	Cold Cleaning - Furniture and Fixtures			17.9				
2415310000	Cold Cleaning - Primary Metal Industries			1.4				
2415320000	Cold Cleaning - Fabricated Metal Products			13.7				
2415325000	Cold Cleaning - Industrial Machinery and Equipment			396.3				
2415330000	Cold Cleaning - Electronic and Other Electrical			17.3				
2415335000	Cold Cleaning - Transportation Equipment			28.3				
2415340000	Cold Cleaning - Instruments and Related Products			2.3				
2415345000	Cold Cleaning - Miscellaneous Manufacturing			21.8				
2415350000	Cold Cleaning - Transportation Maintenance Facilities			415.0				
2415355000	Cold Cleaning - Automotive Dealers			1,226.3				
2415360000	Cold Cleaning - Auto Repair Services			496.3				
2415365000	Cold Cleaning - Miscellaneous Repair Services			1,104.5				
2420000370	Drycleaning - Special Naphthas			5.8				
2425000000	Graphic Arts			244.6				
2460100000	Consumer Solvents - Personal Care Products			388.5				
2460200000	Consumer Solvents - Household Products			134.0				
2460400000	Consumer Solvents - Automotive Aftermarket Products			235.8				
2460500000	Consumer Solvents - Coatings and Related Products			180.9				
2460600000	Consumer Solvents - Adhesives and Sealants			99.6				
2460800000	Consumer Solvents - FIFRA Related Products			321.8				
2460900000	Consumer Solvents - Miscellaneous Products			13.3				
2461021000	Cutback Asphalt Application							
2461022000	Emulsified Asphalt Application			571.7				
2461850000	Pesticide Application			14.8				
2501060051	Gasoline Distribution - Stage I Filling			553.7				
2501060100	Gasoline Distribution - Stage II Refueling			253.2				
2501060201	Gasoline Distribution - Breathing and Emptying			75.8				
2505030120	Gasoline Distribution - Tank Trucks			4.6				

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2610000100	Open Burning - Yard Waste - Leaf			5.3	21.0	7.1	7.1	
2610000400	Open Burning - Yard Waste - Brush			3.6	26.3	3.2	3.2	
2610030000	Open Burning - Household Waste							
2620000000	Landfills			5.6				
2630000000	Wastewater Treatment			57.1				1.0
2730100000	Wind Erosion					8,606.0	861.0	
2801000003	Agricultural Tilling					133.4	29.7	
2801000005	Agricultural Harvesting					24.9	15.0	
2801500262	Agricultural Field Burning - Wheat (Backfire Burning)			0.2	3.0	0.4	0.4	
2801500999	Irrigation Ditch Burning			4.3	40.8	7.2	7.2	
2801700001	Fertilizer - Anhydrous Ammonia							21.5
2801700002	Fertilizer - Aqueous Ammonia							0.6
2801700003	Fertilizer - Nitrogen Solutions							45.6
2801700004	Fertilizer - Urea							180.4
2801700005	Fertilizer - Ammonium Nitrate							10.3
2801700006	Fertilizer - Ammonium Sulfate							48.8
2801700007	Fertilizer - Ammonium Thiosulfate							2.0
2801700009	Fertilizer - Ammonium Phosphates							261.6
2801700011	Fertilizer - Calcium Ammonium Nitrate							0.0
2801700012	Fertilizer - Potassium Nitrate							
2805001000	Beef Cattle Feedlots			425.4		27.1	4.1	
2805003100	Livestock Ammonia - Beef Cattle							99.9
2805023300	Livestock Ammonia - Dairy Cattle							1,554.6
2805025000	Livestock Ammonia - Swine							14.2
2805030000	Livestock Ammonia - Poultry							0.2
2805035000	Livestock Ammonia - Horses							34.4
2805040000	Livestock Ammonia - Sheep							2.7
2810030000	Structure Fires	0.2		1.9	10.6	1.9	1.9	
2810050000	Vehicle Fires	0.1		0.7	2.7	2.2	2.2	
6906950001	Domestic Ammonia - Respiration							0.7
6906950002	Domestic Ammonia - Perspiration							104.8
6906950006	Domestic Ammonia - Cloth Diapers							100.8
6906950007	Domestic Ammonia - Disposable Diapers							5.3
6906950008	Domestic Ammonia - Cats							6.4
6906950010	Domestic Ammonia - Dogs							59.7
8888101001	Wild animals - Black bears							1.3
8888101002	Wild animals - Grizzly bears							
8888101003	Wild animals - Elk							35.1
8888101004	Wild animals - Deer							2.1
9999101002	Native Soils - Urban							26.4

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
9999101003	Native Soils - Barren							
9999101004	Native Soils - Deciduous Forest							0.2
9999101005	Native Soils - Evergreen Forest							4.9
9999101006	Native Soils - Mixed Forest							0.5
9999101007	Native Soils - Shrubland							49.5
9999101008	Native Soils - Grassland							127.5
9999101009	Native Soils - Fallow							19.4
9999101010	Native Soils - Urban Grass							1,056.4
9999101011	Native Soils - Wetlands							6.9
	Total	**920.7**	**26.9**	**12,962.8**	**7,715.1**	**38,723.5**	**4,643.9**	**3,995.3**

Table G-2. 2008 Annual Canyon County Area Source Emissions (tpy)

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2102004000	Industrial Distillate Combustion	30.6	0.3	0.3	7.7	1.5	0.4	1.2
2102006000	Industrial Natural Gas Combustion	123.3	0.7	6.8	103.6	9.4	9.4	3.9
2102007000	Industrial LPG Combustion	1.7	0.0	0.1	1.0	0.1	0.1	
2103004000	Commercial/Institutional Distillate Combustion	14.1	1.5	0.2	3.5	0.8	0.6	0.6
2103006000	Commercial/Institutional Natural Gas Combustion	54.8	0.3	3.0	46.1	4.2	4.2	0.3
2103007000	Commercial/Institutional LPG Combustion	1.9	0.0	0.1	1.1	0.1	0.1	
2104004000	Residential Distillate Combustion	63.8	0.8	2.5	17.7	3.8	2.9	3.5
2104006000	Residential Natural Gas Combustion	128.2	0.8	7.5	54.6	10.4	10.4	27.3
2104007000	Residential LPG Combustion	3.4	0.0	0.3	2.0	0.2	0.2	
2104008001	Residential Wood Combustion - Fireplaces	22.7	3.1	147.6	1,167.8	239.0	239.0	
2104008002	Residential Wood Combustion - Fireplaces w/ insert (conventional/non-certified catalytic)	17.7	1.4	254.1	1,082.8	233.4	233.4	
2104008003	Residential Wood Combustion - Fireplaces w/ insert (certified non-catalytic)	13.3	2.3	118.0	822.7	87.8	87.8	
2104008004	Residential Wood Combustion - Fireplaces w/ insert (certified catalytic)	6.4	1.3	54.8	341.0	53.4	53.4	
2104008010	Residential Wood Combustion - Woodstoves (conventional)	40.9	3.2	587.9	2,504.9	540.0	540.0	
2104008030	Residential Wood Combustion - Woodstoves (catalytic)	5.2	1.0	44.3	275.7	43.1	43.1	
2104008050	Residential Wood Combustion - Woodstoves (non-catalytic)	7.0	1.2	62.5	435.4	46.4	46.4	
2104008053	Residential Wood Combustion - Pellet stoves	9.6	0.8	0.1	40.0	7.7	7.7	
2104011000	Residential Kerosene Combustion	0.0	0.1	0.0	0.0	0.0	0.0	0.0
2294000000	Paved Road Dust					10,315.0	588.0	
2296000000	Unpaved Road Dust					165.4	9.4	
2302002100	Commercial Cooking - Conveyorized Charbroiling			20.3	67.7	81.1	78.6	
2302002200	Commercial Cooking - Under-fired Charbroiling			15.9	51.9	132.2	127.8	
2302003000	Commercial Cooking - Deep Fat Fying			1.3				
2302003100	Commercial Cooking - Flat Griddle Frying			1.4	2.9	23.3	17.7	
2302003200	Commercial Cooking - Clamshell Griddle Frying			0.3		9.0	7.6	
2302050000	Bakeries			32.2				
2311010000	Construction					58.7	5.9	
2399010000	Industrial Refrigeration							38.8

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2401001000	Architectural Coatings			256.3				
2401005000	Auto Refinishing			45.4				
2401008000	Traffic Markings			25.3				
2401015000	Surface Coatings - Factory Finished Wood			84.3				
2401020000	Surface Coatings - Wood Furniture			10.9				
2401025000	Surface Coatings - Metal Furniture			1.2				
2401030000	Surface Coatings - Paper			7.5				
2401035000	Surface Coatings - Plastic Products			299.1				
2401050000	Surface Coatings - Miscellaneous Finished Metals			10.6				
2401055000	Surface Coatings - Machinery and Equipment			147.7				
2401065000	Surface Coatings - Electronic and Other Electrical			86.9				
2401070000	Surface Coatings - Motor Vehicles			73.6				
2401075000	Surface Coatings - Aircraft			116.0				
2401080000	Surface Coatings - Marine			3.0				
2401085000	Surface Coatings - Railroad			58.0				
2401090000	Surface Coatings - Miscellaneous Manufacturing			6.3				
2415105000	Open Top Degreasing - Furniture and Fixtures			3.8				
2415120000	Open Top Degreasing - Fabricated Metal Products			16.0				
2415125000	Open Top Degreasing - Industrial Machinery and Equipment			8.9				
2415130000	Open Top Degreasing - Electronic and Other Electrical			201.2				
2415135000	Open Top Degreasing - Transportation Equipment			11.7				
2415145000	Open Top Degreasing - Miscellaneous Manufacturing			8.3				
2415150000	Open Top Degreasing - Transportation Maintenance Facilities			45.2				
2415155000	Open Top Degreasing - Automotive Dealers			78.9				
2415160000	Open Top Degreasing - Auto Repair Services			17.3				
2415165000	Open Top Degreasing - Miscellaneous Repair Services			60.9				
2415305000	Cold Cleaning - Furniture and Fixtures			3.1				
2415320000	Cold Cleaning - Fabricated Metal Products			13.1				
2415325000	Cold Cleaning - Industrial Machinery and Equipment			7.3				

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2415330000	Cold Cleaning - Electronic and Other Electrical			54.0				
2415335000	Cold Cleaning - Transportation Equipment			9.5				
2415345000	Cold Cleaning - Miscellaneous Manufacturing			6.8				
2415350000	Cold Cleaning - Transportation Maintenance Facilities			415.0				
2415355000	Cold Cleaning - Automotive Dealers			724.3				
2415360000	Cold Cleaning - Auto Repair Services			159.0				
2415365000	Cold Cleaning - Miscellaneous Repair Services			559.1				
2420000370	Drycleaning - Special Naphthas			1.9				
2425000000	Graphic Arts			101.9				
2460100000	Consumer Solvents - Personal Care Products			187.6				
2460200000	Consumer Solvents - Household Products			64.7				
2460400000	Consumer Solvents - Automotive Aftermarket Products			113.9				
2460500000	Consumer Solvents - Coatings and Related Products			87.4				
2460600000	Consumer Solvents - Adhesives and Sealants			48.1				
2460800000	Consumer Solvents - FIFRA Related Products			155.4				
2460900000	Consumer Solvents - Miscellaneous Products			6.4				
2461021000	Cutback Asphalt Application			11.2				
2461022000	Emulsified Asphalt Application			313.3				
2461850000	Pesticide Application			110.2				
2501060051	Gasoline Distribution - Stage I Filling			267.4				
2501060100	Gasoline Distribution - Stage II Refueling			121.4				
2501060201	Gasoline Distribution - Breathing and Emptying			36.6				
2505030120	Gasoline Distribution - Tank Trucks			2.2				
2610000100	Open Burning - Yard Waste - Leaf			6.5	26.0	8.8	8.8	
2610000400	Open Burning - Yard Waste - Brush			4.4	32.4	3.9	3.9	
2610030000	Open Burning - Household Waste	1.0	0.2	5.1	14.3	6.4	5.9	
2620000000	Landfills			2.3				
2630000000	Wastewater Treatment			19.3				0.3
2730100000	Wind Erosion					888.0	89.0	
2801000003	Agricultural Tilling					582.1	129.4	

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2801000005	Agricultural Harvesting					123.7	74.2	
2801500112	Agricultural Field Burning - Alfalfa (Backfire Burning)			2.3	9.6	2.3	2.3	
2801500999	Irrigation Ditch Burning			10.7	101.4	17.9	17.9	
2801700001	Fertilizer - Anhydrous Ammonia							109.2
2801700002	Fertilizer - Aqueous Ammonia							3.1
2801700003	Fertilizer - Nitrogen Solutions							231.2
2801700004	Fertilizer - Urea							899.1
2801700005	Fertilizer - Ammonium Nitrate							52.2
2801700006	Fertilizer - Ammonium Sulfate							247.5
2801700007	Fertilizer - Ammonium Thiosulfate							10.2
2801700009	Fertilizer - Ammonium Phosphates							1,326.4
2801700011	Fertilizer - Calcium Ammonium Nitrate							0.1
2801700012	Fertilizer - Potassium Nitrate							0.0
2805001000	Beef Cattle Feedlots			829.2		14.2	2.1	
2805003100	Livestock Ammonia - Beef Cattle							138.0
2805023300	Livestock Ammonia - Dairy Cattle							3,187.1
2805025000	Livestock Ammonia - Swine							11.8
2805030000	Livestock Ammonia - Poultry							0.7
2805035000	Livestock Ammonia - Horses							57.5
2805040000	Livestock Ammonia - Sheep							29.0
2810030000	Structure Fires	0.1		1.1	6.1	1.1	1.1	
2810050000	Vehicle Fires	0.1		0.5	1.9	1.5	1.5	
6906950001	Domestic Ammonia - Respiration							0.3
6906950002	Domestic Ammonia - Perspiration							50.6
6906950006	Domestic Ammonia - Cloth Diapers							61.3
6906950007	Domestic Ammonia - Disposable Diapers							3.2
6906950008	Domestic Ammonia - Cats							3.1
6906950010	Domestic Ammonia - Dogs							28.8
8888101001	Wild animals - Black bears							0.1
8888101002	Wild animals - Grizzly bears							
8888101003	Wild animals - Elk							3.3
8888101004	Wild animals - Deer							0.2
9999101002	Native Soils - Urban							27.0
9999101003	Native Soils - Barren							
9999101004	Native Soils - Deciduous Forest							
9999101005	Native Soils - Evergreen Forest							0.4
9999101006	Native Soils - Mixed Forest							
9999101007	Native Soils - Shrubland							3.1
9999101008	Native Soils - Grassland							22.8

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
9999101009	Native Soils - Fallow							31.6
9999101010	Native Soils - Urban Grass							1,081.6
9999101011	Native Soils - Wetlands							30.1
	Total	**545.8**	**19.1**	**7,507.9**	**7,221.7**	**13,715.9**	**2,450.2**	**7,726.9**

Table G-3. 2008 Annual Elmore County Area Source Emissions (tpy)

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2102004000	Industrial Distillate Combustion	0.8	0.0	0.0	0.2	0.0	0.0	0.0
2102006000	Industrial Natural Gas Combustion	0.3	0.0	0.0	0.3	0.0	0.0	0.0
2102007000	Industrial LPG Combustion	1.9	0.0	0.1	1.1	0.1	0.1	
2103004000	Commercial/Institutional Distillate Combustion	8.9	1.0	0.2	2.2	0.5	0.4	0.4
2103006000	Commercial/Institutional Natural Gas Combustion	4.3	0.0	0.2	3.6	0.3	0.3	0.0
2103007000	Commercial/Institutional LPG Combustion	1.3	0.0	0.1	0.7	0.1	0.1	
2104004000	Residential Distillate Combustion	9.1	0.1	0.4	2.5	0.5	0.4	0.5
2104006000	Residential Natural Gas Combustion	17.5	0.1	1.0	7.4	1.4	1.4	3.7
2104007000	Residential LPG Combustion	3.4	0.0	0.3	2.0	0.2	0.2	
2104008001	Residential Wood Combustion - Fireplaces	6.1	0.8	39.7	314.5	64.4	64.4	
2104008002	Residential Wood Combustion - Fireplaces w/ insert (conventional/non-certified catalytic)	3.0	0.2	43.4	184.9	39.9	39.9	
2104008003	Residential Wood Combustion - Fireplaces w/ insert (certified non-catalytic)	2.7	0.5	23.8	166.0	17.7	17.7	
2104008004	Residential Wood Combustion - Fireplaces w/ insert (certified catalytic)	1.0	0.2	9.0	56.1	8.8	8.8	
2104008010	Residential Wood Combustion - Woodstoves (conventional)	6.9	0.5	99.8	425.4	91.7	91.7	
2104008030	Residential Wood Combustion - Woodstoves (catalytic)	1.8	0.4	15.6	96.8	15.1	15.1	
2104008050	Residential Wood Combustion - Woodstoves (non-catalytic)	2.3	0.4	20.6	143.3	15.3	15.3	
2104008053	Residential Wood Combustion - Pellet stoves	0.9	0.1	0.0	3.9	0.7	0.7	
2294000000	Paved Road Dust					1,252.7	283.6	
2296000000	Unpaved Road Dust					2,647.7	262.3	
2302002100	Commercial Cooking - Conveyorized Charbroiling			3.8	12.7	15.2	14.7	
2302002200	Commercial Cooking - Under-fired Charbroiling			2.7	9.0	22.9	22.1	
2302003000	Commercial Cooking - Deep Fat Fying			0.2				
2302003100	Commercial Cooking - Flat Griddle Frying			0.3	0.5	4.3	3.3	
2302003200	Commercial Cooking - Clamshell Griddle Frying			0.0		1.4	1.2	
2302050000	Bakeries			5.1				
2311010000	Construction					7.6	0.8	

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2399010000	Industrial Refrigeration							2.8
2401001000	Architectural Coatings			20.5				
2401005000	Auto Refinishing			4.7				
2401008000	Traffic Markings			4.1				
2401030000	Surface Coatings - Paper			8.8				
2401035000	Surface Coatings - Plastic Products			53.1				
2401065000	Surface Coatings - Electronic and Other Electrical			3.9				
2401075000	Surface Coatings - Aircraft			23.6				
2401080000	Surface Coatings - Marine			0.4				
2401085000	Surface Coatings - Railroad			11.8				
2415130000	Open Top Degreasing - Electronic and Other Electrical			0.5				
2415145000	Open Top Degreasing - Miscellaneous Manufacturing			0.1				
2415150000	Open Top Degreasing - Transportation Maintenance Facilities			5.1				
2415155000	Open Top Degreasing - Automotive Dealers			15.0				
2415160000	Open Top Degreasing - Auto Repair Services			0.8				
2415165000	Open Top Degreasing - Miscellaneous Repair Services			1.7				
2415330000	Cold Cleaning - Electronic and Other Electrical			0.1				
2415345000	Cold Cleaning - Miscellaneous Manufacturing			0.1				
2415350000	Cold Cleaning - Transportation Maintenance Facilities			47.2				
2415355000	Cold Cleaning - Automotive Dealers			137.7				
2415360000	Cold Cleaning - Auto Repair Services			6.9				
2415365000	Cold Cleaning - Miscellaneous Repair Services			15.9				
2425000000	Graphic Arts			5.0				
2460100000	Consumer Solvents - Personal Care Products			29.6				
2460200000	Consumer Solvents - Household Products			10.2				
2460400000	Consumer Solvents - Automotive Aftermarket Products			17.9				
2460500000	Consumer Solvents - Coatings and Related Products			13.8				
2460600000	Consumer Solvents - Adhesives and Sealants			7.6				

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2460800000	Consumer Solvents - FIFRA Related Products			24.5				
2460900000	Consumer Solvents - Miscellaneous Products			1.0				
2461021000	Cutback Asphalt Application			5.6				
2461022000	Emulsified Asphalt Application			60.0				
2461850000	Pesticide Application			94.7				
2501060051	Gasoline Distribution - Stage I Filling			42.1				
2501060100	Gasoline Distribution - Stage II Refueling			33.9				
2501060201	Gasoline Distribution - Breathing and Emptying			5.8				
2505030120	Gasoline Distribution - Tank Trucks			0.3				
2610000100	Open Burning - Yard Waste - Leaf			3.1	12.3	4.2	4.2	
2610000400	Open Burning - Yard Waste - Brush			2.1	15.4	1.9	1.9	
2610030000	Open Burning - Household Waste	8.1	1.3	40.5	114.7	51.3	47.0	
2620000000	Landfills			0.1				
2630000000	Wastewater Treatment			3.5				0.1
2730100000	Wind Erosion					17,720.0	1,772.0	
2801000003	Agricultural Tilling					387.9	86.2	
2801000005	Agricultural Harvesting					65.4	39.3	
2801500999	Irrigation Ditch Burning			2.0	18.7	3.3	3.3	
2801700001	Fertilizer - Anhydrous Ammonia							39.1
2801700002	Fertilizer - Aqueous Ammonia							1.1
2801700003	Fertilizer - Nitrogen Solutions							82.6
2801700004	Fertilizer - Urea							311.0
2801700005	Fertilizer - Ammonium Nitrate							18.7
2801700006	Fertilizer - Ammonium Sulfate							88.5
2801700007	Fertilizer - Ammonium Thiosulfate							3.7
2801700009	Fertilizer - Ammonium Phosphates							474.3
2801700011	Fertilizer - Calcium Ammonium Nitrate							0.0
2801700012	Fertilizer - Potassium Nitrate							
2805001000	Beef Cattle Feedlots			698.0		48.9	7.3	
2805003100	Livestock Ammonia - Beef Cattle							237.2
2805023300	Livestock Ammonia - Dairy Cattle							2,369.2
2805025000	Livestock Ammonia - Swine							0.4
2805030000	Livestock Ammonia - Poultry							0.1
2805035000	Livestock Ammonia - Horses							10.2

SCC	SCC Description	NO_x (tpy)	SO_2 (tpy)	VOC (tpy)	CO (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NH_3 (tpy)
2805040000	Livestock Ammonia - Sheep							1.1
2810030000	Structure Fires	0.0		0.2	1.3	0.2	0.2	
2810050000	Vehicle Fires	0.0		0.1	0.3	0.3	0.3	
6906950001	Domestic Ammonia - Respiration							0.1
6906950002	Domestic Ammonia - Perspiration							8.0
6906950006	Domestic Ammonia - Cloth Diapers							9.0
6906950007	Domestic Ammonia - Disposable Diapers							0.5
6906950008	Domestic Ammonia - Cats							0.5
6906950010	Domestic Ammonia - Dogs							4.6
8888101001	Wild animals - Black bears							4.6
8888101002	Wild animals - Grizzly bears							0.0
8888101003	Wild animals - Elk							127.4
8888101004	Wild animals - Deer							7.6
9999101002	Native Soils - Urban							14.5
9999101003	Native Soils - Barren							0.2
9999101004	Native Soils - Deciduous Forest							0.0
9999101005	Native Soils - Evergreen Forest							103.6
9999101006	Native Soils - Mixed Forest							
9999101007	Native Soils - Shrubland							100.1
9999101008	Native Soils - Grassland							173.5
9999101009	Native Soils - Fallow							19.3
9999101010	Native Soils - Urban Grass							581.5
9999101011	Native Soils - Wetlands							13.0
	Total	**80.5**	**5.8**	**1,730.0**	**1,595.8**	**22,491.9**	**2,806.1**	**4,812.3**

Appendix D. U.S. EPA Air Quality System Quick Look Report

1st and 2nd carbon monoxide maximum from 2004 through 2008 used to determine design value.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: MYV

QUICKLOOK CRITERIA PARAMETERS

Report Request ID: 794648   Report Code: AMP450   Sep. 28, 2010

GEOGRAPHIC SELECTIONS

Tribal	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region	Method	Duration	Begin Date	End Date
	16	001	0014	42101										2004	2008

SELECTED OPTIONS

Option Type	Option Value
EVENTS PROCESSING	EXCLUDE REGIONALLY CONCURRED EVENTS
MERGE PDF FILES	YES

SORT ORDER

Order	Column
1	PARAMETER_CODE
2	STATE_CODE
3	COUNTY_CODE
4	SITE_ID
5	POC
6	DATES
7	EDT_ID

APPLICABLE STANDARDS

Standard Description
CO 1-hour 1971
CO 8-hour 1971

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

Sep. 28, 2010

EXCEPTIONAL DATA TYPES

EDT	DESCRIPTION
0	NO EVENTS
1	EVENTS EXCLUDED
2	EVENTS INCLUDED
5	EVENTS WITH CONCURRENCE EXCLUDED

Note: The * indicates that the mean does
not satisfy summary criteria.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

Sep. 28, 2010

Carbon monoxide (42101) Idaho Parts per million (007)

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	# OBS	1ST MAX 1-HR	2ND MAX 1-HR	OBS >35	1ST MAX 8-HR	2ND MAX 8-HR	OBS >9	CERT	EDT
16-001-0014	1	0511	Boise (corporate name Boise City)	Ada	EASTMAN BLDG/166 N. 9TH ST	2004	054	8765	4.1	3.9	0	2.6	2.4	0	Y	0
16-001-0014	1	0511	Boise (corporate name Boise City)	Ada	EASTMAN BLDG/166 N. 9TH ST	2005	054	8635	5.3	4.6	0	2.5	2.2	0	Y	0
16-001-0014	1	0511	Boise (corporate name Boise City)	Ada	EASTMAN BLDG/166 N. 9TH ST	2006	054	8068	4.8	3.5	0	2.1	2.1	0		0
16-001-0014	1	0511	Boise (corporate name Boise City)	Ada	EASTMAN BLDG/166 N. 9TH ST	2007	054	6228	3.8	3.5	0	1.7	1.6	0		0
16-001-0014	1	0511	Boise (corporate name Boise City)	Ada	EASTMAN BLDG/166 N. 9TH ST	2008	000	6443	8.0	7.3	0	2.9	2.9	0		0

Note: The * indicates that the mean does not satisfy summary criteria.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

Sep. 28, 2010

METHODS USED IN THIS REPORT

PARAMETER	METHOD CODE	COLLECTION METHOD	ANALYSIS METHOD
42101	000	MULTIPLE METHODS	MULTIPLE METHODS
42101	054	INSTRUMENTAL	NONDISPERSIVE INFRARED

Note: The * indicates that the mean does not satisfy summary criteria.

Sep. 28, 2010

PQAOS USED IN THIS REPORT

PQAO	AGENCY DESCRIPTION
0511	Idaho Department Of Health And Welfare-Environment Division

Note: The * indicates that the mean does not satisfy summary criteria.

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Appendix E. Ada County Vehicle Inspection and Maintenance Program

Rules and Regulations for Ada County Automotive Inspection and Maintenance Program

http://www.emissiontest.org/rules.htm

Enforceable Regulations – Local Ordinances Requiring Emissions Testing

Ada County
http://www.emissiontest.org/ordinance.htm

Boise City
Boise City Code
TITLE 8 - HEALTH AND SANITATION
8-13 - VEHICLE EMISSIONS
http://www.cityofboise.org/Departments/City_Clerk/PDF/CityCode/Title8/0813.pdf

Meridian
Meridian, Idaho
City Code
Title 7 - MOTOR VEHICLES AND TRAFFIC
Chapter 3 - MOTOR VEHICLE EMISSIONS CONTROL
http://www.sterlingcodifiers.com/codebook/index.php?book_id=306

Eagle
Eagle, Idaho
City Code
Title 4 - PUBLIC HEALTH AND SAFETY
Chapter 4 - MOTOR VEHICLE EMISSIONS CONTROL
http://www.sterlingcodifiers.com/codebook/index.php?book_id=609

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Air Quality Board Rules and Regulations

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AIR QUALITY BOARD

Rules and Regulations

January 1, 2010

I. AUTHORITY FOR ADOPTION

These Rules and Regulations are established by the Air Quality Board under authority of ordinances titled "Motor Vehicle Emissions Control Ordinance"

Title 6, Chapter 1-3 of the Ada County Motor Vehicle Code
City of Boise, Idaho ordinance Number 5273
Garden City Ordinance Number 558
City of Meridian Ordinance 547
City of Eagle Ordinance Number 177

II. DEFINITIONS

A. Air Quality Board (AQB): the governing body of the AIR Program.

B. AIR Program Station: an approved inspection facility which meets the licensing requirements for an initial emissions test station as outlined in these Rules and Regulations.

C. AIR Program Retest Station: an approved repair facility which meets the licensing requirements for a repair and retest station as outlined in these Rules and Regulations.

D. Audit Gas: the gas specified by the AQB to be used for AIR Program station audits.

E. Automotive Inspection and Readjustment Program (AIR): the program established by Joint Powers Agreement # 1291 between Ada County, and the cities of Boise, Meridian, Eagle, and Garden City to reduce vehicular pollution levels in Ada County.

F. Calibration Gases: gases of manufacturer's specified concentration which are used as references for establishing or verifying the calibration curve of an exhaust analyzer.

G. Certificate of Compliance: the printout from an Air Quality Board approved analyzer showing the results of an emissions inspection (failed test results are valid certificates when accompanied by a Request for Waiver form).

H. "Emissions Technician" means a person who has:

1) Qualified by passing a written and practical exam given by Air Quality Board personnel.

2) Successfully demonstrated the ability to operate, calibrate, and maintain the required analyzers.

3) Applied for and maintains a valid "Emissions Technician" license.

I. Emission Test: the analysis of the exhaust gases emitted from a motor vehicle.

J. Exempt Motor Vehicle: A vehicle which:

1) Is a 1980 or older model year vehicle.

2) Is powered by other than gasoline or diesel fuel (propane, electric, hybrid, etc.).

3) Is a manufacturer's model year vehicle which is within 4 years of the current calendar year (i.e. 2007 model year vehicles and newer would be exempt through the end of 2010).

4) Has a maximum vehicle gross weight of less than 1,500 pounds.

5) Is registered as a Motor Home.

6) Is registered as an Idaho Old Timer or Classic Vehicle.

K. Model Year: the year shown on the motor vehicle registration.

L. Motor Vehicle: as defined by the Idaho Code.

M. Non-Exempt Motor Vehicle: Any vehicle which:

1) Is a 1981 or newer model year vehicle.

2) Is powered by gasoline or diesel fuel.

3) Weighs over 1,500 pounds.

4) Is not a model year vehicle within 4 years of the current calendar year.

5) Is not registered as a Motor Home.

6) Is not registered as an Idaho Old Timer vehicle or Classic vehicle.

N. Span Gas: an authorized AIR Program gas used in weekly analyzer span procedure as described in Section IV.H.

O. Station Sign: the official public designation of an AIR Program Station.

III. EMISSIONS TECHNICIAN LICENSE

A. Applications for License

Application for a license as an Emissions Technician shall be filed with the Air Quality Board. Applications for the Emissions Technician License shall be completed on forms provided by the AQB.

B. Fees

1. The application fee for an Emissions Technician License is $30.00, payable to the Air Quality Board (AQB). There is no fee for annual renewal.

2. Fees for an Emissions Technician License shall be due upon application for license. Payment must be made with a check or money order drawn to the Air Quality Board.

C. Requirements for Issuance of an Emissions Technician License: An applicant must demonstrate the knowledge and skill necessary to perform an emissions test of motor vehicle engines. Such knowledge and skill will be shown by passing:

1. A written or oral Emissions Technician Qualification Test that tests the applicant's knowledge of the following:

a) Operation of an exhaust gas analyzer, including the performance of a span gas procedure and;

b) Those portions of the "Rules and Regulations" with which a technician needs to be familiar in order to effectively carry out his duties.

Note: If an oral exam is given, a written list of answers must accompany the test answer sheet. Interpreters for non-English speaking applicants are to be provided by the applicants.

2. A performance test that demonstrates the applicant's skill in the performance of emissions testing. The performance test will be comprised of one or more of the following items as determined by the Air Quality Board personnel administering the evaluation.

a) Visual inspection of the required emissions control equipment for 1984 and newer vehicles.

b) Demonstration of skill in the proper analyzer use, care, maintenance, and gas spanning.

c) Demonstration of ability to conduct the emissions test.

d) Demonstration of ability to properly use AIR Program forms.

D. Approval Procedure

Applications submitted to the AQB will be reviewed for compliance with paragraph IIIC above. Applicants successfully meeting the requirements for Emissions Technician License will be issued an Emissions Technician License by the AQB.

E. Transfer of Emissions Technician License

1. The Emissions Technician must notify the AQB, in writing within five (5) days, when he/she begins employment at another AIR Program Station or is no longer employed as an Emissions Technician.

2. The AIR Program Station must notify the AQB in writing within five (5) days after employing an Emission Technician who is transferring his/her Emissions Technician License.

F. Lapse of Emissions Technician License

1. It is the responsibility of the Emissions Technician to pursue license renewal.

2. A person issued an Emissions Technician License who does not make application for renewal prior to expiration shall be deemed to have forfeited the said License and shall be required to reapply, remit the required application fee, and pass the Emissions Technician Qualification Test before a new license will be issued.

G. Re-qualification Requirements for Emissions Technician

1. Emission Technicians shall be required to re-qualify if the AQB determines it is necessary to update their technical qualifications.

2. The AQB will mail a notice to the Emissions Technician's AIR Program Station address specifying requirements for re-qualification.

H. Revocation of Emissions Technician License

1. The AQB has the authority to issue warnings, and suspend, or revoke an Emissions Technician License upon showing that emission tests are not being performed in accordance with established ordinances and these Rules and Regulations. This authority is established under the Motor Vehicle Emissions Control Ordinances. The AQB, in accordance with controlling ordinances, delegates authority to its Quality Assurance employees to issue notices of alleged violation of these Rules and Regulations.

2. Upon notice of alleged violation as described in paragraph 1 above, the technician /station cited may, within three work days, notify the AQB that he requests a hearing on the issue. The Executive Director of the AQB (or the Chief, Quality Assurance in the Director's absence) will convene a hearing panel within five work days to determine the validity of the accusations and, if validated, impose penalties. This panel will consist of at least three members, one of whom will be a licensed emissions technician or station owner. Rulings of this panel will

be imposed upon completion of said hearing. Findings of this panel may be appealed to the AQB in accordance with Section V.J.

3. If a hearing is not requested the Executive Director will determine the validity of the accusation and, when necessary, impose appropriate penalties.

4. Violations and penalty guidelines are listed in Section V, Item H, Violations and Penalties.

IV. LICENSING OF AIR PROGRAM STATIONS AND AIR PROGRAM RETEST STATIONS

A. General

1. No person or enterprise shall in any manner represent any place as an AIR Program Station or AIR Program Retest Station unless such station is operated under a valid license issued by the Air Quality Board.

2. No license for any AIR Program Station or AIR Program Retest Station may be assigned, transferred or used by other than the original applicant for that specific station.

3. Applications for license as an AIR Program Station or AIR Program Retest Station shall be made on the forms provided by the AQB. No license shall be issued unless the AQB finds that the facilities, tools and equipment of the applicant comply with the requirements set forth in Section IV.C, Requirements for Licensing of an AIR Program Station or AIR Program Retest Station.

a) Applicants may choose to limit the performance of Emissions Tests to a particular fleet of motor vehicles, make, model, type of motor vehicle or list of customers.

b) Should the station applicant elect to limit the performance of Emissions Tests, the station representative must indicate on the application form, the type(s) of motor vehicle or fleet the station will test. The AIR Program Station may be required to furnish the AQB with special reports describing the station's operating procedures.

c) Should the AIR Program Station desire to expand the emissions testing service to include new vehicle types or additional fleets, the station must notify the AQB in writing five (5) days prior to performing emissions tests on the additional vehicles.

B. Fees

1. The fee for issuance of an initial station license is $30.00

2. Fees for issuance of the station license shall be due upon issuance. Payment must be made with a check or money order drawn to the Air Quality Board.

C. Requirements for Licensed AIR Program Stations

In order to qualify for issuance and continuance of an AIR Program Station License, an establishment must meet the following requirements:

1. Must have a permanent location.

2. Must sign a contract pledging the station will not make any emissions related adjustments or repairs on the vehicles it emissions tests. (AIR Program Stations limiting emissions testing to a particular fleet of vehicles are exempted from this paragraph.)

3. Must employ at least one individual who has been issued an Emissions Technician License by the Air Quality Board.

4. Must demonstrate the ability to perform the emissions test and comply with reporting and record keeping requirements described in Section V.E.

5. Must obtain and maintain in force appropriate business liability insurance.

6. Must have the following tools, equipment and supplies available for performance of the emissions test.

a. AQB approved NDIR exhaust analyzer. The analyzers will be kept in an environment which complies with the manufacturer's specifications. Repair of all exhaust gas analyzers shall be in accordance with the manufacturer's procedures using specified replacement parts. Each NDIR exhaust analyzer will have an associated users manual, published by the original equipment manufacturer, which includes analyzer model and serial number, analyzer calibration instructions, operating instructions, and the manufacturer's recommended periodic maintenance/inspection schedule and procedures. The service(s) to be performed only by the manufacturer shall be clearly identified.

b. Test gas bottles, a gas pressure meter which registers calibration bottle pressure, and a pressure regulator for gas spanning of the analyzer or other systems that equalizes pressure and flow between the test gas bottle and the analyzer.

c. Non-reactive tailpipe extenders or probe adapter for inspecting vehicles with screened or baffled exhaust systems.

d. A diesel exhaust opacity analyzer approved by the Air Quality Board for use in the AIR Program.

6. Pay to AQB the required licensing fee.

D. Requirements for Licensed AIR Program Retest Stations

In order to qualify for issuance and continuance of an AIR Program Retest Station License, an establishment must meet the following requirements:

1. Must have a permanent location.

2. Must employ at least one individual who has been issued an Emissions Technician License by the Air Quality Board.

3. Must demonstrate the ability to perform the emissions test and comply with reporting and record keeping requirements described in Section V.E.

4. Must obtain and maintain in force appropriate business liability insurance.

5. Must have the following tools, equipment and supplies available for performance of the emissions test.

a. AQB approved exhaust analyzer. The analyzers will be kept in an environment which complies with the manufacturer's specifications. Repair of all exhaust gas analyzers shall be in accordance with the manufacturer's procedures using specified replacement parts. Each NDIR exhaust analyzer will have an associated users manual, published by the original equipment manufacturer, which includes analyzer model and serial number, analyzer calibration instructions, operating instructions, and the manufacturer's recommended periodic maintenance/inspection schedule and procedures. The service(s) to be performed only by the manufacturer shall be clearly identified.

b. Test gas bottles, a gas pressure meter which registers calibration bottle pressure, and a pressure regulator for gas spanning of the analyzer or other systems that equalizes pressure and flow between the test gas bottle and the analyzer.

e. Non-reactive tailpipe extenders or probe adapter for inspecting vehicles with screened or baffled exhaust systems.

f. A diesel exhaust opacity analyzer approved by the Air Quality Board for use in the AIR Program.

e. An AIR Program Retest Station can act as a retest station for either gasoline powered vehicles, diesel powered vehicles or both. The AIR Program Retest Station must have the appropriate gas analyzer, as described above, for the type of retest being performed.

6. Pay to AQB the required licensing fee.

E. Approval Procedure

1. Applications received by the Air Quality Board will be reviewed for completeness and an inspection of the facility will be performed. An inspection report will be prepared for the Air Quality Board's review.

2. Stations which meet the requirements of Section IV.C will be granted an AIR Program Station License or AIR Program Retest Station License and issued an AIR Program

Station sign. The station sign and license shall be posted in a conspicuous place, readily visible to the public. The station sign and license shall remain the property of the Air Quality Board.

F. Revocation of AIR Program Station or AIR Program Retest Station license. The Air Quality Board has the authority to issue warnings and suspend or revoke a station license upon a showing that emission tests are not being performed in accordance with established ordinances and these Rules and Regulations. This authority is established under the Motor Vehicle Emissions Control Ordinances. The AQB may assign the authority to issue warnings, and issue a Notice of Suspension or Notice of Revocation to its designated agents.

1. The AQB, in accordance with controlling ordinances, delegates authority to its Quality Assurance employees to issue notices of alleged violation of these Rules and Regulations.

2. Upon notice of alleged violation as described in paragraph 1 above, the station cited may, within three work days, notify the AQB that it requests a hearing on the issue. The Executive Director of the AQB (or the Chief, Quality Assurance in the Director's absence) will convene a hearing panel within five work days to determine the validity of the accusations and, if validated, impose penalties. This panel will consist of at least three members, one of whom will be a licensed emissions mechanic or station owner. Rulings of this panel will be imposed upon completion of said hearing. Findings of this panel may be appealed to the AQB in accordance with Section VJ.

3. If a hearing is not requested the Executive Director will determine the validity of the accusation and, when necessary, impose appropriate penalties.

4. Violations and penalty guidelines are listed in Section V, Item H, Violations and Penalties.

G. Analyzer Specifications

1. No emissions test of a gasoline powered vehicle shall be performed unless the type of instrument used for measuring the exhaust gases has been approved by the Air Quality Board for use in the AIR Program.

2. No emissions test of a diesel powered vehicle shall be performed unless the type of instrument used for measuring the exhaust opacity has been approved by the Air Quality Board for use in the AIR Program.

H. Test Gas Specifications

1. Test Gas Blend

a. Test gas used for spanning exhaust gas analyzers will be produced and supplied to AIR Program Stations in accordance with EPA-A-A-TSS-83-8-B. A copy of this document is available at the Air Quality Board.

b. Containers

1) Test gases shall be supplied in containers which meet all the provisions of the Occupational Safety and Health Administration (OSHA), as specified in 36 Federal Register 105, dated May 29, 1971.

2) Containers may either be low pressure, 7.5 cubic foot DOT 39 non-rechargeable bottles or high pressure, reusable cylinder type. If high pressure, reusable type they must meet the following requirements:

a) The cylinder shall meet DOT specifications for 1-A, 3-A, 3-AA, T, or equivalent cylinders.

b) The rated service pressure shall be a minimum of 1800 psi.

c) GGA-350 Diaphragm packless valves shall be installed in the cylinders.

3. Production

a The gas blender shall produce the test gas in batch form. A batch shall be considered to be any number of cylinders of identical concentrations produced at any given blending.

b The gas blender must follow the blending procedure listed in the technical report, "EPA Recommended Practice For Naming T/M Calibration Gas," EPA-AA-TSS-83-8-B, September 1983. The gas supplier must provide the Air Quality Board with documentation that will certify the gas was blended according to the above procedure. Copies of the procedure are available from the AQB.

4. Gas Supplier Records

a For each batch blended, a record must be kept by the gas supplier as to the whereabouts of each bottle sold. These records must be made available to the Air Quality Board. The records must be kept for one year from the time the last bottle of the batch is sold to an AIR Program Station.

5. Batch Recall Procedure

In the event a batch of test gas is suspected a being out of the specifications listed in Section IV.H.la. the AQB will follow the procedure below:

a. The AQB will request the gas blender to locate all of the bottles from the batch.

b. A check to verify the cylinder concentration will be made.

c. If the batch is confirmed to be out of specifications, the gas supplier will be notified in writing. The gas supplier will have 14 days from the time of notification to provide the Air Program stations new bottles of test gas.

d. The replacement test gas must be produced and undergo the same name verification and approval as specified above.

e. A count of the recalled gas bottles and any bottles which were not located or recalled, for any reason, will be provided to the AQB. This information shall be provided to the AQB within 21 days of written notice.

V. AIR PROGRAM STATION AND RETEST STATION OPERATION

A. General

1. No person shall in any manner represent any place as an AIR Program Station for the performance of emissions tests unless the station has obtained an AIR Program Station license.

2. No person shall in any manner represent any place as an AIR Program Retest Station for the performance of emissions tests unless the station has obtained an AIR Program Retest Station license.

3. No person shall perform an AIR Program vehicle exhaust emissions test unless he/she possesses a valid Emissions Technician's License.

4. The station is required to notify the AQB in writing five (5) days after employing an Emissions Technician.

4. The station is required to notify the AQB within five (5) days of terminating an Emissions Technician.

5. Citizens of Ada County are <u>required</u> to present their vehicles to emission testing stations and they have a right to expect courteous, professional service. Being under the influence of illegal drugs, having alcoholic beverages on the premises, and smoking or using profanity while doing an emissions test are considered inappropriate by the Air Quality Board and will not be tolerated.

a. The Air Quality Board reserves the right to require technicians appearing to be under the influence of alcohol, controlled substances and/or illegal drugs to submit to drug testing.

b. The Air Quality Board will pay for testing and results will be kept confidential except where disclosure is required for disciplinary action.

6. Noncompliance with any section of this document can be justification for denial, suspension or revocation of either the Station License, Emissions Technician's License or both.

B. Verification of Exemption

1. Alternate Fuel Identification. AIR Program Stations are required to identify, at no charge, motor vehicles that are electric hybrids or that do not have gasoline or diesel fueled engines. Vehicle owners may bring their motor vehicles to any AIR Program Station to have their vehicle identified. The licensed Emissions Technician will verify that the vehicle matches the information on the AQB notice form (if presented) and then enter and alternate fueled vehicle record into the analyzer.

2. Vehicles of less than 1500 pounds gross vehicle weight. AIR Program Stations are required to use title/registration documents, technical descriptions, etc. to identify vehicles with a gross vehicle weight of less than 1500 pounds. When documentation is inconclusive, refer customer to the Air Quality Board.

3. Motorcycles, Farm Tractors, Classics and Idaho Old Timers. These vehicles should be exempted by Air Quality Board staff and should not receive notifications. If vehicle owners of these vehicles receive a notice of inspection, they should be referred to the Air Quality Board.

C. Certificates of Compliance

1. General

a. No person shall willfully make, issue or knowingly use any imitation or counterfeit Certificate of Compliance that designates the motor vehicle complies with the AIR Program.

b. No person shall possess a Certificate of Compliance if he knows the same is counterfeit or was issued for another motor vehicle, or was issued without an emissions test having been made.

2. Purchase of Certificates of Compliance

a. Any person acquiring a business which has been licensed as an AIR Program Station or AIR Program Retest Station is prohibited from using the AIR Program Station License or AIR Program Retest Station License and is prohibited from using the emissions testing equipment to produce a Certificate of Compliance until a new station license has been issued.

b. The act of performing an emissions test and issuing a Certificate of Compliance constitutes the purchase of the Certificate of Compliance from the Air Quality Board. Air Quality Board personnel will periodically collect test data from all authorized emissions test analyzers. The Air Quality Board will then bill stations for the number of certificates issued. Failure of a station to pay for Certificates of Compliance when charged is grounds for suspension of the station's license.

c. Payment for Certificates of Compliance is due ten (10) days from the billing date.

d. The Air Quality Board will set the cost of Certificates of Compliance as part of its annual budgeting process. The cost will be calculated to cover all aspects of the operation of the Air Quality Board office but shall not exceed $3.50 per Certificate of Compliance.

e. Whenever a vehicle owner does not pay for an emissions test the testing station may request the Certificate of Compliance be voided and not charged to the testing station. The AQB staff shall void the Certificate and notify the vehicle owner that the test performed is no longer valid.

D. Public Notices

1. Licensed AIR Program Stations and AIR Program Retest Stations shall post in a clearly legible fashion, in a conspicuous place inside the station:

a. Maximum fee chargeable for the emissions test;

b. Minimum expenditure required to quality for waiver of emissions standards.

c. Station license;

d. Each Emissions Technician's License certificate;

e. AIR Program motor vehicle model year emissions standards;

2. The station shall post in a clearly visible place outside the station the official program sign issued by the Air Quality Board. AIR Program Stations that limit the performance of Emissions Tests as described in Section IV.A.3.a through c, are not required to display the station sign along with the public notice signs listed in Section V.D.1.a through e above.

3. Mobile stations must post in a visible place, either on a sign board or the body of the motor vehicle used to transport the analyzer and supplies, the notices in Section V.D.1 and 2 above.

E. Record Keeping

The emissions analyzer maintains internal records of sufficient quality and redundancy to eliminate the need for additional record keeping by AIR Program Stations. In the event that problems develop with maintaining and transferring data from the emissions testing analyzers, the Air Quality Board Director has the authority to require stations to keep printouts of all tests conducted until the problems have been remedied.

F. Quality Control

Quality control is the responsibility of the AIR Program Station. The emissions analyzer is designed to require the accomplishment of certain quality control measures on a regular basis. Emissions inspections cannot be performed if these quality control measures are not accomplished.

G. AIR Program Station Reporting

1. Vehicles tested during registration month: The AIR Program Station will keep all Alternate Powered /New Vehicle Certifications and Waiver forms until picked up by Air Quality Board personnel.

2. Vehicles tested after their required inspection month: The AIR Program Station will keep all Alternate Powered /New Vehicle Certifications and Waiver forms until picked up by Air Quality Board personnel. In addition:

a. Individuals who have their vehicles tested after the required inspection month may be required to pay a late charge, established by the Air Quality Board. Thus far, no late charge penalty has been established. If the incidence of late inspections is great, this charge may be instituted to cover the increased workload caused by special handling required.

b. If late charges are imposed, the AIR Program Station shall collect the late charge when performing the emissions test. The AIR Program Station will be billed for all late tests accomplished.

H. Violations and Penalties

1. The complete operation of an AIR Program Station or AIR Program Retest Station shall be the responsibility of the station owner. Failure to comply with the appropriate provisions of these Rules and Regulations adopted by the Air Quality Board or the provisions of the enabling county/city ordinances will be considered sufficient cause for warning, imposing fines, and/or suspension or revocation of inspection licenses for either the station, emissions technician or both.

2. Notice of Alleged Violation. If a violation of the enabling ordinances or these rules and regulations is detected or alleged, a Notice of Alleged Violation will be issued. Once a Notice of Alleged Violation is issued, the following procedures will be followed:

a. Notice issued to Emission Technician. The Executive Director of the AQB (or the Chief, Quality Assurance in the Director's absence) will convene a hearing panel within five work days to determine the validity of the accusations and, if validated, impose penalties. This panel will consist of at least three members, one of whom will be a licensed emissions technician or station owner. Rulings of this panel will be decided by majority vote of the members. Penalties, when appropriate, will be imposed immediately upon completion of hearing. Findings of this panel may be appealed to the full AQB at its next scheduled meeting.

b. Notice issued to AIR Program Station or AIR Program Retest Station. The Executive Director of the AQB (or the Chief, Quality Assurance in the Director's absence) will complete an investigation into the alleged violation within three work days. If the violation is validated, the Director or his representative will immediately impose appropriate penalties. Rulings by the Director may be appealed to the full AQB at its next scheduled meeting.

2. Penalties. Upon the determination of a violation of these Rules and Regulations or enabling ordinances, the Air Quality Board, or its designated representatives, may assess warnings, impose fines, and/or suspend or revoke the station and/or emissions technician licenses. The station owner/agent bears the burden of proving that proper supervision was provided so that the violation by employed emissions technician could have been prevented.

3. Application. Violation numbers 1.0 through and including 11.0 are of such serious nature that they jeopardize the integrity of the AIR Program. As such, penalties for these may be imposed without prior warning, either verbal or written. The following list of violations and penalties is a guideline. It is not mandatory that these guidelines be followed, however, in the interest of promoting a strong AIR program, it is highly recommended that penalties be enforced as shown.

4. Definitions:

a. **Notice of Alleged Violation**. Notice given to station or technician that a violation of enabling ordinances or rules and regulations is alleged and disciplinary action may result.

b. **Warning**. A written warning advising the AIR Program Station and/or licensed Emissions Technician of the violation and the corrective action to eliminate the violation. The original copy of the warning will be placed in the station's audit history file. A copy will also be delivered to the station and/or technician to whom the warning was issued.

c. **Suspension**. A specified period of time, during which the license of an AIR Program Station and/or Emissions Technician is withheld by the Air Quality Board. All official AQB documents and materials may be retained by the Air Quality Board until the suspension period is completed and any reapplication requirements are fulfilled.

d. **Revocation**. A permanent forfeiture of license and privileges as an AIR Program Station and/or Emissions Technician. All official documents and material will be confiscated by the AQB.

e. **Notice of Suspension or Revocation**. A written notification issued by the Air Quality Board or its agents indicating that there are sufficient grounds to require a license suspension or revocation subject to the right of appeal. The notice shall further specify the action being taken and its effective dates.

f. **Fine**. Monetary penalty imposed for violations of these Rules and Regulations.

5. Recommended penalties for violations:

VIOLATION	FIRST OFFENSE	SECOND OFFENSE	SUBSEQUENT

1.0 Issuance or possession of altered, forged, stolen, or counterfeit compliance certificates.	1 Year Suspension and/or $500 Fine	Revocation	
2.0 Furnish, lend, give, sell, or receive a certificate of compliance without an emission inspection.	1 Year Suspension and/or $500 Fine	Revocation	
3.0 Unnecessary or unauthorized repairs for purpose of inspection.	1 Year Suspension and/or $500 Fine	Revocation	
4.0 Fraudulent record keeping.	1 Year Suspension and/or $500 Fine	Revocation	

VIOLATION	FIRST OFFENSE	SECOND OFFENSE	SUBSEQUENT
5.0 Working while under the influence of illegal drugs or alcohol.	1 Year Suspension and/or $500 Fine	Revocation	
6.0 Inappropriate conduct in the presence of a customer to include smoking or the use of profanity.	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine	Revocation
7.0 Inspection by unlicensed emission technician.	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine	Revocation
8.0 Failure to perform quality control procedures in accordance with manufacturer's specifications.	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine	Revocation
9.0 Failure to produce records upon demand by quality assurance inspector.	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine	Revocation
10.0 Intentional misstatement of fact.	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine	Revocation
11.0 Improper assigning of certificate of compliance.	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine	1 Year Suspension and/or $500 Fine
12.0 Failure to keep records in accordance with the Rules and Regulations.	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine	1 Year Suspension and/or $500 Fine
13.0 Failure to inspect vehicles in accordance with the Rules and Regulations.	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine	1 Year Suspension and/or $500 Fine
14.0 Failure to report an unscheduled	Warning	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine

discontinuance of inspections for a period of more than 24 hours.			
15.0 Failure to notify the Air Quality Board within five days of changes of ownership, location, technician status or other changes affecting the AIR Program Station operation.	Warning	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine
16.0 Failure to maintain certificate of compliance security.	Warning	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine

VIOLATION	FIRST OFFENSE	SECOND OFFENSE	SUBSEQUENT
17.0 Failure to return AQB copy's of Alternate Powered Certification, New Car Exemption or Waiver form in accordance with these Rules and Regulations.	Warning	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine
18.0 Failure to maintain exhaust analyzer operating environment according to manufacture specifications.	Warning	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine
19.0 Required tools, equipment, or supplies missing or broken.	Warning	3 Month Suspension and/or $150 Fine	6 Month Suspension and/or $300 Fine

5. Official documents and materials. Whenever an AIR Program Station, AIR Program Retest Station or Emission Technician License is suspended or revoked, the Air Quality Board or its agents may order the surrender to the Air Quality Board of the following items (as appropriate):

a. Inspection records.

b. Air Station license and sign.

c. Unused AQB certificate of compliance

d. Technician license.

e. Blank data forms.

6. Subsequent violations. Determination of second or subsequent violations is made on the basis of previous violations in the same category within a three (3) year period.

7. Multiple violations. In the case of multiple violations considered at one time, the Air Quality Board of its agents will impose separate penalties for each violation. The Air Quality Board or its agents, at their discretion, may direct that suspensions run concurrently.

8. Voluntary discontinuance. An Air Station License shall be canceled by the Air Quality Board or its agents whenever the owner voluntarily discontinues the operation of an AIR Program Station. Remaining emission inspection materials shall be returned to the air Quality Board or its agents immediately.

9. Abandonment. An Air Station License shall be canceled by the Air Quality Board or its agents, and inspection materials confiscated when the owner of record abandons the place of business and cannot be located within ninety (90) days.

10. Sale of business. If an AIR Program Station is sold or leased to a new owner, an application will not be considered while the station is suspended, or restored pending an appeal of suspension.

11. Confiscated materials. Certificates of compliance and records confiscated as the result of a suspension or revocation will be retained by the Air Quality Board or its agents. They shall be returned to the AIR Program Station if inspection privileges are restored or the station is re-licensed.

12. Remedial Training. Following any suspension, a licensed technician will not be allowed to return to emissions testing duties until he has successfully completed a remedial training course taught by the Air Quality Board or their designated representative.

I. Reapplication

1. If an AIR Program Station, AIR Program Retest Station or Emissions Technician license expires during a suspension period, inspection privileges shall not be restored until an application and fees for relicensing have been received and reviewed by the Air Quality Board.

2. Following a suspension of three months or more, a complete and thorough investigation by quality assurance personnel will be conducted to determine if the applicant qualifies for relicensing under the requirements of the Air Quality Board. Other applications for relicensing are subject to investigation at the discretion of the Air Quality Board.

J. Appeal for Hearing

1. Requests for an Air Quality Board hearing following a notice of suspension or revocation of license must be made in writing to the Air Quality Board within five (5) days of the date of the notice. The right to appeal and a hearing shall be considered relinquished if the request is not made within the above allotted time period.

2. Upon receipt of an appeal, a Hearing Committee consisting of at least three members will be selected from regular members of the Air Quality Board.

a. Notice of hearing will be furnished to the appellant in writing within five (5) working days of receipt of the request. The Hearing Committee will normally meet within five (5) working days of the notice, at which time the parties may present evidence, cross-examination or argument. The Hearing Committee, after considering all evidence, will determine if sufficient grounds for suspension or revocation exists, and if so, the Hearing Committee will evaluate the imposed penalty. The Hearing Committee shall have the authority to approve, amend, delete, or otherwise change the imposed penalty as they see fit. The decision of the Hearing Committee is final.

b. Notice of decision will be made to the appellant in writing within five (5) working days of the hearing. The notice will include the findings of fact that form the basis for the Hearing Committee's decision. A record of the hearing shall be maintained for a period of one year.

c. The Air Quality Board or its agents shall not be held liable for any loss of revenue as the result of a suspension or revocation.

VI. EMISSIONS TEST PROCEDURE

A. General

1. The Emissions Test must be performed by a licensed Emissions Technician.

2. The Emissions Test must be performed at a licensed AIR Program Station or AIR Program Retest Station, as described in Section IV, and operated in accordance with procedures established in Section V, "Air Program Station Operation".

3. The maximum test charge, including the cost of the Certificate of Compliance, shall be fifteen dollars ($20.00).

4. The Air Quality Board will set the cost of Certificates of Compliance as part of its annual budgeting process. The cost will be calculated to cover all aspects of the operation of the Air Quality Board office but shall not exceed $3.50 per Certificate of Compliance.

5. The maximum a station can charge for a failed emissions test is $20.00 minus the currently established cost of Certificates of Compliance.

6. No repairs or adjustments will be done at AIR Program Stations. (Stations may do air conditioning service if they meet Federal and State equipment requirements for repairs on such systems.)

7. AIR Program Retest Stations can only test vehicles which have failed an emissions test at a licensed AIR Program Station.

8. AIR Program Retest Stations can only charge for Certificates of Compliance. (It may not charge the emissions test labor charge.)

B. Applicability

All nonexempt motor vehicles must be inspected biennially on or before the end of its AIR Program required inspection month and year. The purpose of this inspection is to verify compliance with the emission standards established by the Air Quality Board and published in paragraph VI.D below. Non-exempt vehicles will have their required inspection month established as the second month following the month in which the vehicle is registered/re-registered. The established inspection year will be even calendar years for even model year vehicles and odd calendar years for odd model year vehicles. Once the AIR Program required inspection month is established, it will not normally be changed unless the vehicle registration is allowed to expire (in which case a new AIR Program required inspection month may be established when the vehicle is again re-registered as a non-exempt vehicle.) In cases where the inspection has been delayed for any reason, the test will not satisfy the next appropriate test cycle requirement unless it is performed within six months of that cycle's due month.

C. Identification of Motor Vehicles Complying With the Automotive Inspection and Readjustment Program.

Motor vehicles that are required to comply with the AIR Program will be identified by review of Idaho Transportation Department motor vehicle registration records and tracked for compliance by the Air Quality Board. Vehicle owners will be given a Certificate of Compliance when their vehicle is emissions tested. It is recommended, though not required, that the owner keep the Certificate of Compliance with the vehicle as proof of compliance with emissions testing requirements.

D. Standards

1. Tampering: Motor vehicles of the model years 1984 and newer are to be inspected for the presence of the catalytic converter, and air injection system. Motor vehicles which have had those systems removed or defeated are to be denied a Certificate of Compliance until the motor vehicle owner restores them to their original or operating condition. (The systems are not required to be installed on motor vehicles which at the time of production did not have the system installed by the manufacturer.) WAIVERS UNDER SECTION VI.F. DO NOT APPLY. However, the cost of repairs to vehicle emission systems may be included for waiver requirements for additional repairs after the tampered emissions system is fully functional.

2. Emissions Standards:

LIGHT DUTY GASOLINE VEHICLES	*CO*	*HC*
Model Years 1981 to 1995	1.2%	220 ppm
Model Years 1996 & Newer	must meet OBDII test requirements	

HEAVY DUTY GASOLINE VEHICLES	(over 8.500 lbs GVW')	
Model Years 1981 to 1995	3.0%	500 ppm
Model Years 1996 & Newer	must meet OBDII test requirements	

DIESEL FUELED VEHICLES

55% opacity for 1981 to 1991 vehicles
40% opacity for 1992 and newer

E. Emissions Test Procedure

1. General

a. The inspections are to be performed at licensed AIR Program Station or AIR Program Retest Station by licensed Emissions Technician.

b. Emissions test will be performed using the approved analyzer's emissions test sequence. This is a menu driven, step by step procedure insuring proper procedures are followed. The 30 second preconditioning is intended to assure that the vehicle is warmed up, however, a cold vehicle may require additional warm-up for proper testing. If a vehicle engine appears to be cold, have the owner drive the vehicle around for 2 to 5 minutes to adequately warm up the engine.

c. AIR Program Stations will record and charge the appropriate emissions test fee for all tests performed including vehicles failing visual checks.

d. AIR Program Retest Stations cannot perform initial emissions tests on vehicles, i.e. they can only perform emissions tests on vehicles which have failed (either gas check or visual check) an emissions test at a licensed test only station.

2. First Test Procedure

a. Select the appropriate menu item to begin a certified emissions inspection and type in the identifying vehicle information.

b. Follow the step by step test procedures established by the analyzer.

c. If the motor vehicle is of the model year 1984 or newer a visual inspection will have to be performed. Open the motor vehicle hood and check for the presence and operation of the air injection system. Examine the exhaust system for the presence of the catalytic converter. If any of the systems have been tampered with, the inspection station will take the following actions:

1) Select "F" in the appropriate blank on the "visual inspection" screen during the test sequence.

2) Complete the test, sign the printout from the analyzer and give it to the motor vehicle owner. (Stations may, at their option, keep a copy of the test data printout.) Inform the vehicle owner he/she has thirty (30) days to restore the emission systems to the original operating condition and comply with the AIR Program model year CO and/or HC standards. (If additional time is required, contact the AQB.)

d. Complete the test in accordance with the computer directed test sequence. (If the exhaust pipe is baffled, a tailpipe probe extender at least 12 inches long must be inserted in the exhaust prior to the emissions test.)

e. At the completion of the test sequence the analyzer will print a result of the test. The emissions technician will sign the printout and give it to the motor vehicle owner. If the vehicle fails the first test, the vehicle owner has thirty (30) days to perform or have performed adjustments/repairs. If the vehicle is brought back within the thirty (30) days, it must be given another emissions test without charging an additional labor charge. (The only additional charge allowed is the Certificate of Compliance fee for a completed test.)

f. Should the motor vehicle owner wish to challenge the analyzer readings, the motor vehicle owner must notify the AQB within 72 hours. The Board will either immediately perform an audit of the analyzer or arrange for an audit in the presence of the motor vehicle owner, station representative and AQB auditor according to the procedure described in Section VII, "Air Station Audit Procedure".

3. Repair Procedures

a. Vehicles exceeding the model year CO and/or HC standards have thirty (30) days to have adjustments and/or repairs performed and return for a free re-inspection at original place of inspection. Vehicle owners of vehicles which fail an emissions test will be given a list of AIR Program Retest Stations where the vehicle can be repaired and receive a free retest.

b. Failed vehicles covered by 2 year/24,000 mile, Section 207(b) "Performance Warranty" provisions of the Federal Clean Air Act.

1) Vehicles covered by the 207(b) warranty should be repaired or adjusted by an authorized warranty repair facility to protect the entitlements granted by the motor vehicle warranty and to protect the motor vehicle owner from any charges that may be covered by the 207(b) warranty.

2) The only fees that the motor vehicle owner is required to pay are the maximum Emissions Test fee and the Certificate of Compliance fee as specified in paragraph VI.A.

3) The warranty provisions of Section 207(b) of the Clean Air Act specify that the repairs or adjustments are to be performed at no cost to the vehicle owner and must lower the CO percentage emission level to the specified model year CO percentage standard.

c. Failed motor vehicles covered by the 5 year/50,000 mile Section 207(a), "Defect Warranty Provisions" of the federal Clean Air Act.

1) The motor vehicle owner may have to pay a diagnostic fee to identify faulty emissions control components in addition to the maximum Emissions Test fee and Certificate of Compliance fee as specified in paragraph VI.A. If the faulty component is covered under the 207(a) Warranty provision and the diagnosis was performed at an authorized warranty repair facility, the diagnosis fee is to be refunded or not charged to the motor vehicle owner.

2) If the component(s) are not covered under the Section 207(a) warranty, the vehicle owner is required to have repairs or adjustments performed until either the vehicle is in compliance with emission standards or the repair costs have met or exceeded the maintenance waiver amounts shown in Section VI.F.

d. Vehicles that fail the emissions standards and do not qualify for warranty repairs must receive repairs until either the vehicle is in compliance with inspection standards or the applicable waiver amount has been exceeded (see paragraph VI.F.).

4. Retest Procedures

a. Test Only Station - re-analyze the motor vehicle's exhaust gas according to the procedures specified in Section VI.E.2, "First Test Procedures" and proceed according to the results of the retest as follows:

1) Vehicle passes retest. Sign test results and give copy to vehicle owner. Charge Certificate of Compliance fee.

2) Vehicle fails retest and maintenance costs have exceeded maintenance waiver amount.

Fill out the data blocks for Name, VIN and License on the Request for Waiver form and have the vehicle owner sign the form. Give the long copy of the form to the vehicle owner and hold the short copy until picked up by Air Quality Board personnel. Charge the vehicle owner for the completed test including the Certificate of Compliance fee. (The test data results page and Request for Waiver together comprise the Certificate of Compliance.)

3) Vehicle fails retest but repair costs have not exceeded maintenance waiver amounts.

The owner must seek additional repairs and adjustments and retest, however, the station is only required to give one free retest. DO NOT collect the Certificate of Compliance fee.

b. Repair and Retest Station

1) Before performing any retest, be sure the vehicle has failed an emissions test at a licensed AIR Program "test only" station.

2) After repairs have been performed, re-analyze the motor vehicle's exhaust in accordance with paragraph E.4.a. above.

3) Do not charge for the emissions test itself. If the vehicle passes the retest or a waiver is granted collect the Certificate of Compliance fee and remit the fee to the AQB.

F. Waiver of AIR Program Emission Standards

1. Any vehicle which fails to pass an emissions test must receive repairs in a sincere effort to fix whatever malfunction(s) are causing the high level(s) of pollutants. It is recognized that some mechanical problems may be difficult to diagnose and fix and that open ended, expensive repairs could pose a hardship. Therefore, provisions for granting a waiver of the AIR Program emission standards are established in the following paragraphs. In all cases where a waiver is granted, the Emissions Technician will explain to the vehicle owner that failure of the

emissions test means the vehicle is not running properly, excess fuel is being burned, and, in the worst case, damage may occur to engine components.

2. Procedures

a. The owner of a vehicle which fails its emissions test must show proof that a minimum of $300.00 has been spent on emissions related repairs subsequent to the failure of the emissions test.

b. A vehicle whose owner has spent in excess of the above amount in attempting to adjust and repair the emissions system of a vehicle qualifies for a waiver to the AIR Program emissions standards.

c. The Emissions Technician will fill out a Request for Waiver form and have the vehicle owner sign it. The vehicle owner will be given the long copy of the form (which explains the waiver policy) and the short copy will be held until picked up by Air Quality Board personnel.

d. The Emissions Technician will collect copies of receipts for parts and repairs which demonstrate that the required minimum amount has been spent attempting to fix the vehicles problems. The copies of the receipts will be submitted to the Air Quality Board with the short copy of the Request for Waiver form.

3. A vehicle which has had its emissions system tampered with (parts missing or intentionally defeated) will not be granted a waiver under this paragraph unless the emissions equipment has been made fully functional. If, after repairing the tampered emissions equipment, the vehicle requires further repairs to be brought within emissions standards, the cost required to repair the emissions equipment can be considered for waiving further repairs.

4. All cases where the technician is uncertain as to whether the repairs qualify towards the waiver minimums should be referred to the Air Quality Board Quality Assurance office.

5. The intent of the waiver provisions of this section is to avoid financial hardship on vehicle owners who would otherwise have to spend excessive amounts in order to bring their vehicles into AIR Program compliance. If repairs required under this paragraph pose a financial hardship on a vehicle owner(s), the Air Quality Board shall have the authority to issue waivers without requiring the expenditure of the amounts listed in paragraph VI.F. 1 above. Such determination of hardship shall be made on a case-by-case basis by the Air Quality Board staff.

6. A waiver under this paragraph is only valid until the vehicle's next required inspection cycle.

VII. AIR PROGRAM STATION AUDIT PROCEDURE

A. Applicability

1. Each AIR Program Station and AIR Program Retest Station is required to follow the Quality Control Procedures described in Section V.F. "Quality Control".

2. The AQB will perform a monthly audit of each AIR Program Station and AIR Program Retest Station to certify that the quality assurance procedures are being followed.

3. Should a test given by the station be challenged, the AQB will resolve the complaint using the procedure in paragraph B below.

B. Audit Procedure

1. Analyzer Audit - The Air Quality Board's auditor will review the current analyzer calibration data stored in the computer and may ask to observe the station's Emissions Technician perform a three day calibration and/or a leak check on the station's analyzer. The computer keeps a record of all calibrations done and these will be reviewed for any developing trends.

2. Emissions Test Audit Procedures

a. The Air Quality Board's auditor may, during the monthly station audit, observe one or all of the station's Emissions Technicians perform either the Automotive Emissions Procedure, First Test Procedure Section VI E.2. or the Retest Procedure Section VI E.4.

b. Should a vehicle owner request a challenge test, the Air Quality Board's auditor will arrange a time for performance of both the station Audit Procedure (Section VII B) and the Automotive Exhaust Emissions Test Audit.

If it is determined that the station's analyzer is out of calibration or if the exhaust emission analysis was not performed in accordance with the requirements of Section VI, the station will be required to refund to the vehicle owner any collected moneys and have the analyzer repaired or the procedure corrected. A summary report describing the result of the challenge test and audits along with the audit checklist will be prepared for AQB review.

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Ada County Ordinance

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Ada County Ordinance

6-1-3: MOTOR VEHICLE EMISSIONS CONTROL:

6-1-3-1: SHORT TITLE:
This section 6-1-3 may be cited as the *1999 MOTOR VEHICLE EMISSIONS CONTROL ORDINANCE*. (Ord. 130, 8-28-1984; amd. Ord. 145, 2-18-1985; amd. Ord. 206, 8-10-1989; amd. Ord. 228,11-29-1990, eff. 1-1-1991; amd. Ord. 374, 6-15-1999)

6-1-3-2: LEGISLATIVE FINDINGS AND PURPOSE OF ORDINANCE:
It is found and declared that exhaust emissions from motor vehicles are a major source of air pollution throughout Ada County and such air pollution is a health hazard to all residents of the county and its incorporated cities;

It is further found and declared that an effective system of periodic motor vehicle inspection and maintenance will reduce the level of vehicular based air pollution;

It is further found and declared that the federal government has mandated to the several states and local entities the ultimate responsibility for periodic motor vehicle inspection and maintenance;

It is further found and declared that Ada County has been designated as a nonattainment area for both carbon monoxide and small particulate matter (PM_{10}) and as such is mandated under the federal clean air act to reduce emissions so that the national ambient air quality standards will be attained and maintained;

It is further found and declared that Ada County and its incorporated cities will be monitored for $PM_{2.5}$ and ozone in the immediate future, and that the primary source of both of these pollutants in Ada County is exhaust emissions from motor vehicles;

It is further found and declared that fuel economy is a legitimate legislative purpose and that an efficient emissions control program will result in motor vehicle fuel savings for the residents of Ada County and its incorporated cities;

It is further found and declared that Ada County and its incorporated cities are duly authorized to enact and enforce this section 6-1-3 under Idaho Code section 31-714;

The purposes of this section 6-1-3, therefore, are to protect the health and welfare of the citizens of Ada County and its incorporated cities, to provide for the continued control and management of exhaust emissions above certain levels as determined by the federal clean air act, as amended, as well as rules for the control of air pollution in the state of Idaho (IDAPA 16.01.01 et seq.), and to empower the air quality board to design and implement required periodic inspection of certain motor vehicles. (Ord. 130, 8-28-1984; amd. Ord. 145, 2-18-1985; amd. Ord. 206, 8-10-1989; amd. Ord. 228, 11-29-1990, eff. 1-1-1991; amd. Ord. 374, 6-15-1999)

6-1-3-3: DEFINITIONS:
AUTOMOTIVE INSPECTION PROGRAM: That program established by the board in accordance with this section 6-1-3 and whose purpose is to implement the requirements of this section 6-1-3.

AUTOMOTIVE INSPECTION STATION: A facility licensed in accordance with board specifications or operating under a contract with the board for the purpose of performing exhaust emissions inspections.

BOARD: The air quality board, chartered under the automotive inspection and readjustment program joint powers agreement and this section 6-1-3.

CARBON MONOXIDE (CO): An inorganic chemical compound containing one atom of carbon and one atom of oxygen.

CERTIFICATE OF COMPLIANCE: A board-approved certificate verifying that the motor vehicle described thereon is in compliance with the requirements of this section 6-1-3 and the rules and regulations adopted pursuant to this section 6-1-3.

EMISSIONS INSPECTION MECHANIC: An individual who performs exhaust emissions inspections on behalf of the board in compliance with a formal written agreement with the board.

EMISSIONS REPAIR MECHANIC: An individual who performs exhaust emissions repairs to motor vehicles on behalf of the board in compliance with a formal written agreement with the board.

EXHAUST ANALYZER: A device for calculating the proportion of various gases, vapors and particles present in the exhaust emissions of a motor vehicle, specifically including carbon monoxide, hydrocarbon, oxides of nitrogen, sulfur dioxide, volatile organic compounds and any other gases, vapors and particles as required by the board.

EXHAUST EMISSIONS: Substances emitted into the atmosphere from any opening downstream of the exhaust port(s) of any motor vehicle engine.

EXHAUST EMISSIONS CONTROL DEVICE: Equipment designed by the manufacturer for installation on a motor vehicle for the purpose of reducing pollutants emitted from the motor vehicle, or a system or engine modification of a vehicle which causes a reduction of pollutants emitted from the motor vehicle, as required by federal law.

EXHAUST EMISSIONS INSPECTION AND EXHAUST EMISSIONS REINSPECTION: That test, performed at an automotive station or a repair and reinspection station by an emissions inspection mechanic, which determines whether a motor vehicle's exhaust emissions meet or do not meet applicable pass-adjust criteria.

FINE PARTICULATE MATTER ($PM_{2.5}$): All particulate matter, including condensable particulates, with an aerodynamic diameter of less than or equal to a nominal two and one-half (2.5) micrometers.

GROSS VEHICLE WEIGHT: The weight in pounds of a fully fueled empty motor vehicle plus any additional carrying capacity specified by the vehicle manufacturer.

HYDROCARBON (HC): An organic compound consisting exclusivelyof the elements carbon and hydrogen.

INSPECTION PERIOD: That period, determined according to applicable rules and regulations, during which a nonexempt motor vehicle is scheduled to be presented for an exhaust emissions inspection.

JOINT POWERS AGREEMENT: That agreement entered into pursuant to the joint powers provisions of Idaho Code chapter 23, title 67, among and between the incorporated cities of Ada County, the county of Ada, and the Ada County highway district, which creates the board.

MODEL YEAR: The year of origin of a motor vehicle so designated by that vehicle's certificate of registration filed with the Idaho department of transportation.

MOTOR VEHICLE: Any self-propelled motor vehicle with four (4) or more wheels in contact with the ground.

MOTOR VEHICLE OWNER: An individual, partnership, firm, public, private, or municipal corporation, association, trust, estate, agency, lessee, political subdivision of the state of Idaho or the government of the United States or any other legal entity or their legal representatives, agents or assigns whose name appears as owner of a motor vehicle on its certificate of registration.

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS): Standards developed by the U.S. environmental protection agency in accordance with its responsibilities under the federal clean air act, as amended, and its implementing regulations.

NONEXEMPT MOTOR VEHICLE: A motor vehicle which is subject to the automotive inspection program and its exhaust emissions inspections.

OXIDES OF NITROGEN (NO_x): A group of chemical compounds formed by the combination of oxygen and nitrogen.

OZONE (O_3): A molecule composed of three (3) atoms of oxygen.

PARTICULATE MATTER (PM_{10}): All particulate matter, including condensable particulates, with an aerodynamic diameter of less than or equal to a nominal ten (10) micrometers.

PASS-ADJUST CRITERIA: Those standards set forth in the rules and regulations adopted by the board pursuant to this section 6-1-3 which specify the maximum allowable components which may exist in exhaust emissions of a nonexempt motor vehicle.

PUBLIC NOTICE: A statement of the board's intent to modify the rules and regulations, including a summary of the proposed modifications, published in at least one newspaper of general circulation within Ada County, posted at the offices of the air quality board, and mailed to all participants in the jointpowers agreement and all automotive inspection stations.

REPAIR AND REINSPECTION STATION: A facility licensed in accordance with board specifications or operating under a contract with the board for the purpose of repairing nonexempt motor vehicles which have failed an exhaust emissions inspection and to perform a reinspection of exhaust emissions in a manner specified by the board.

RULES AND REGULATIONS: Specific written provisions governing the automotive inspection program, as adopted and amended by the board from time to time.

SULFUR DIOXIDE (SO_2): A chemical compound consisting exclusively of the elements sulfur and oxygen.

TAMPERING: Removal of or rendering wholly or partially inoperative an exhaust emissions control device, including, but not limited to, the catalytic converter, air injection system, fuel inlet restrictor or other subsequent systems and devices designed and installed to reduce exhaust emissions.

VOLATILE ORGANIC COMPOUND (VOC): Any organic compound which readily evaporates in the atmosphere and, through its participation in atmospheric photochemical reactions, contributes to the formation of ozone. (Ord. 130, 8-28-1984; amd. Ord. 145, 12-18-1985; amd. Ord. 168, 8-24-1987; amd. Ord. 228, 11-29-1990, eff. 1-1-1991; amd. Ord. 374, 6-15-1999)

6-1-3-4: CREATION OF AN INSPECTION-MAINTENANCE PROGRAM:
A. An air quality board is hereby created pursuant to the joint powers provisions of Idaho Code chapter 23, title 67 in a joint powers agreement executed by the participating public agencies. The composition and organization of the board shall be as set forth in the joint powers agreement.

B. The board shall design and implement an automotive inspection program for the mandatory exhaust emissions analysis, inspection, maintenance and repair of nonexempt motor vehicles to ensure continued compliance with national ambient air quality standards and in accordance with applicable rules and regulations of the U.S.

environmental protection agency, the state of Idaho division of environmental quality and the Ada planning association board.

C. The exhaust emissions of each nonexempt motor vehicle will be measured and evaluated periodically and the owner of any such vehicle is required to present the vehicle at an automotive inspection station for an exhaust emissions inspection unless specifically exempted from this requirement by the board or by this section 6-1-3. Failure to do so within the inspection period constitutes prima facie evidence of a violation of this section 6-1-3. The frequency and timing ofthe inspection period will be determined by the board.

D. The owner of a nonexempt motor vehicle which passes an exhaust emissions inspection as provided herein shall be presented with a certificate of compliance. The owner shall maintain the certificate in a place and manner specified by the board in the rules and regulations and present it to the board or other authority upon demand. Failure to do so constitutes prima facie evidence of a violation of this section 6-1-3.

E. A motor vehicle is classified as a nonexempt motor vehicle if all of the following are true:
1. The certificate of registration has "ADA COUNTY" entered upon it as the county of residence or would be required to have "ADA COUNTY" entered upon it as the county of residence pursuant to Idaho Code section 49-401B;
2. The gross vehicle weight equals or exceeds one thousand five hundred (1,500) pounds; and
3. The model year is 1965 or newer.

F. The following are hereby specifically exempted from compliance with the automotive inspection program, subject to verification in a manner specified by the board and included in the rules and regulations:
1. Motorcycles as defined in Idaho Code section 40-114;
2. "Idaho Old Timers" as defined in Idaho Code section 49-406;
3. Farm tractors as defined in Idaho Code section 49-107;
4. Motor vehicles registered under the prorated registration provisions of Idaho Code section 49-437 for a period of less than six (6) months;
5. Idaho classic vehicles as defined in Idaho Code section 49-406A;
6. Motor vehicles for which an alternate fuel type has been established according to rules and regulations adopted by the board; and
7. Such other motor vehicles as may be exempted by rules and regulations adopted by the board.

G. An exhaust emissions inspection may only be performed by and in a manner consistent with rules and regulations adopted by the board. An exhaust emissions inspection shall include all of the following:
1. A measurement of exhaust emissions using an approved exhaust analyzer or other procedure or device approved by theboard to sample the motor vehicle's exhaust emissions, specifically including carbon monoxide and hydrocarbon content of the

exhaust emissions and any other gases, vapors and particles as adopted by the board to comply with the purposes of this section 6-1-3 as expressed in section 6-1-3-2 of this chapter; and
2. A determination as to whether exhaust emissions meet the pass-adjust criteria; and
3. A visual inspection, for model year 1984 and newer, to verify presence of the catalytic converter, air injection system, size of the fuel restrictor and any other visual inspection component(s) specified by the board in the rules and regulations; and
4. Any other inspection adopted by the board in the rules and regulations; and
5. Where exhaust emissions do not meet the pass-adjust criteria, an indication to a motor vehicle owner of the repair and reinspection provisions of the automotive inspection program.

H. It is the responsibility of the owner of a nonexempt motor vehicle which was found not to comply with the pass-adjust criteria to have the motor vehicle brought into compliance at the owner's expense and to have it reinspected within ten (10) calendar days of the failed exhaust emissions inspection according to procedures and criteria established by the board and included in the rules and regulations.

I. Each nonexempt motor vehicle shall bear a share of the cost of the automotive inspection program regardless of whether the board elects to waive one or more exhaust emissions inspections for that vehicle. The motor vehicle owner for each nonexempt motor vehicle is required to submit payment to the board or other authorized representative under terms and conditions specified in the rules and regulations.

J. An emissions inspection mechanic who performs an exhaust emissions inspection on a motor vehicle shall, when the motor vehicle is found to comply with the pass-adjust criteria, immediately issue a certificate of compliance in accordance with procedures adopted by the board in the rules and regulations. The certificate of compliance will expire on the last day of the next inspection period for that motor vehicle. (Ord. 130, 8-28-1984; amd. Ord. 145, 12-18-1985; amd. Ord. 168, 8-24-1987; amd. Ord. 228, 11-29-1990, eff. 1-1-1991; amd. Ord. 374, 6-15-1999)
6-1-3-5: DUTIES AND POWERS OF THE BOARD:

A. The board shall conduct regular monthly meetings at such time and place as the board shall determine. Meetings are opento the public.

B. The board, in accordance with the criteria expressed herein, shall adopt rules and regulations for the implementation and operation of the automotive inspection program and amend those rules and regulations from time to time as it deems necessary. Rules and regulations and amendments to same may only be adopted at an air quality board meeting with a minimum of fourteen (14) days' public notice of the board's intent to amend the rules and regulations.

C. Rules and regulations shall include, but not be limited to, the following:

1. Determining Exempt, Nonexempt Status: Procedures for determining the exempt or nonexempt status of any motor vehicle and releasing exempt motor vehicles from further compliance with the automotive inspection program;
2. Inspection Period: Procedures for establishing the inspection period for a nonexempt motor vehicle;
3. Structure Of Program: Structure of the automotive inspection program, specifically including whether repairs and adjustments to motor vehicles failing to comply with the pass-adjust criteria may or may not be made by emissions inspection mechanics who perform the original exhaust emissions inspection;
4. Licensing, Contracting Procedures: Procedures for licensing or contracting for automotive inspection stations, repair and reinspection stations, emissions inspection mechanics and emissions repair mechanics and for the potential termination thereof;
5. Pass-Adjust Criteria: Pass-adjust criteria for all nonexempt motor vehicles;
6. Nature And Display Of Certificates: Nature and display of certificates of compliance on nonexempt motor vehicles which successfully comply with the pass-adjust criteria;
7. Exhaust Analyzer Specifications: Specifications for approved exhaust analyzers or other emissions measurement devices or systems;
8. Determination Of Fee: Procedures by which the fee to be charged each motor vehicle owner for each nonexempt motor vehicle is determined, or, alternatively, the fee itself;
9. Waiver: Circumstances under which a waiver may be granted to exempt a nonexempt motor vehicle from the provisions of this section 6-1-3, either temporarily or permanently;
10. Noncomplying Vehicles: Minimum effort(s) which will be required of the owner of a nonexempt motor vehicle which failsto comply with the pass-adjust criteria in order to bring the failing vehicle into compliance with the pass-adjust criteria, as well as procedures by which such minimum effort provisions may be amended from time to time. This effort shall generally be the minimum necessary to accommodate typical repair and reinspection needs and may be different for different model years;
11. Cost Of A Certificate Of Compliance: This shall be the minimum necessary to provide for the ongoing operation, administration, maintenance and enforcement of the automotive inspection program and shall not exceed four dollars ($4.00) without concurrence of all parties to the joint powers agreement;
12. Processing Fee: The processing fee which may be assessed upon owners of nonexempt motor vehicles who fail to present their nonexempt motor vehicle for inspection within the inspection period and the procedure by which this fee is established. This fee shall be sufficient to recover costs of processing notices of violation for all nonexempt motor vehicles which do not comply with the provisions of this section 6-1-3 within the inspection period;
13. Contracting And Licensing Procedures: Procedures governing the contracting for or licensing of automotive inspection stations, repair and reinspection stations and emissions inspection mechanics and the suspension, revocation, or termination of those contracts or licenses when appropriate;
14. Schedules And Deadlines For Data: Schedules and deadlines for the flow of data, paperwork and information pertaining to exhaust emissions inspections among automotive inspection stations, repair and reinspection stations, exhaust emissions mechanics and the automotive inspection program staff; and

15. Other Matters: Any other matters deemed to be within the authority of the board.

D. The board may, at its discretion, employ the full power and authority of law to ensure that motor vehicle owners comply fully and completely with Idaho Code section 49-401B, specifically including correct designation of the county of residence as provided therein.

E. The board shall conduct an ongoing quality assurance program to determine that all automotive inspection stations, repair and reinspection stations and exhaust emission mechanics perform automotive inspection program tasks in conformance with the adopted rules and regulations.

F. The board or its authorized representative, upon written notice and an opportunity for a hearing, may suspend, revoke and/or require the surrender and forfeiture of any license granted by the board which is not utilized in accordance with this section 6-1-3 or the rules and regulations. The procedureand grounds for suspension or revocation shall be set forth in the rules and regulations and shall comply with current Idaho law.

G. The board shall have the authority to undertake any additional actions reasonably necessary to the operation of the automotive inspection program, including, but not limited to:
1. Employing necessary staff;
2. Executing necessary contracts and documents;
3. Authorizing deposits into and expenditures from the motor vehicle emissions inspection fund;
4. Acquiring and disposing of personal property;
5. Establishing an annual budget for the automotive inspection program;
6. Operating the automotive inspection program in accordance with standard fiscal practice; and
7. Providing for an annual audit of both financial and management practices of the automotive inspection program.

H. The board shall conduct ongoing evaluations of the automotive inspection program sufficient to satisfy requirements of the U.S. environmental protection agency, the Ada planning association board and other applicable rules and statutes. (Ord. 130, 8-28-1984; amd. Ord. 145, 12-18-1985; amd. Ord. 168, 8-24-1987; amd. Ord. 228, 11-29-1990, eff. 1-1-1991; amd. Ord. 374, 6-15-1999)

6-1-3-6: FINANCING:
A. There is hereby established a motor vehicle emissions inspection fund which shall consist of the following:
1. Money appropriated thereto by the board or any local entity;
2. Money remitted by automotive inspection stations and repair and reinspection stations which is collected as fees;
3. Money received by the board from private grants or donations;

4. Money received by the board from processing fees assessed to owners of nonexempt motor vehicles who do not present their vehicle for an exhaust emissions inspection during the inspection period;
5. Federal or state funds received by the board for theautomotive inspection program; and
6. Any other funds received by the board from any source.

B. Monies in the motor vehicle emissions inspection fund may be used to pay all costs incurred by the board in administering any aspect of the automotive inspection program.

C. The board shall appropriate and budget on a fiscal year basis, indicating expenditures to be made in implementing and administering the automotive inspection program and sources of income to be used for such expenditures. (Ord. 130, 8-28-1984; amd. Ord. 145, 12-18-1985; amd. Ord. 168, 8-24-1987; amd. Ord. 228, 11-29-1990, eff. 1-1-1991; amd. Ord. 374, 6-15-1999)

6-1-3-7: INSPECTION CRITERIA AND COSTS:
A. A nonexempt motor vehicle's exhaust emissions must be less than or equal to the approved pass-adjust criteria in order for a certificate of compliance to be issued without further repair, adjustment or testing.

B. Nonexempt motor vehicles of the model year 1984 and newer must have a fully operational catalytic converter, air injection system, fuel restrictor and any other component(s), devices or systems specified by the board in the rules and regulations. The owner of a nonexempt motor vehicle is required to see that these systems are fully operational. An exhaust emissions inspection will not be performed on any vehicle on which one or more of these components have been subject to tampering. The owner of any nonexempt motor vehicle which has been subject to tampering must bring all components into compliance and have the vehicle inspected within the inspection period.

C. A certificate of compliance may be issued by an emissions inspection mechanic who personally has performed an exhaust emissions inspection and found the nonexempt motor vehicle to be in full compliance with the automotive inspection program or by an emissions repair mechanic who has personally performed repairs and adjustments to a motor vehicle which bring such vehicle into full compliance with the automotive inspection program or by the board.

D. No person shall represent himself or herself as an emissions inspection mechanic unless he or she has a current license issued by the board or is operating under a current contract with the board.

E. No person shall demand or collect a fee for the exhaust emissions inspection of a nonexempt motor vehicle unless authorized by this section 6-1-3. (Ord. 130, 8-28-1984; amd. Ord. 145, 12-18-1985; amd. Ord. 168, 8-24-1987; amd. Ord. 228, 11-29-1990, eff. 1-1-1991; amd. Ord. 374, 6-15-1999)
6-1-3-8: ACQUISITION OF PROPERTY; CERTIFICATES PROPERTY OF BOARD:

A. The board may acquire by purchase, donation, dedication, or other lawful means any special equipment, tools, materials or facilities needed to adequately administer, investigate or enforce the provisions of this section 6-1-3 or the rules and regulations adopted pursuant hereto, provided, however, any acquisition made by the board shall comply with all statutory requirements imposed upon the county of Ada for the purpose of receipt of property.

B. All certificates of compliance are the property of the board until such time as they are issued to properly inspected motor vehicles. (Ord. 130, 8-28-1984; amd. Ord. 145, 12-18-1985; amd. Ord. 228, 11-29-1990, eff. 1-1-1991; amd. Ord. 374, 6-15-1999)

6-1-3-9: FALSIFICATION OF CERTIFICATES:
A. No person shall wilfully make, issue, display, sell or possess any imitation, counterfeit, or alteration of a certificate of compliance. Such activities so constitute prima facie evidence of a violation of this section 6-1-3.

B. No person shall display upon nor carry within any nonexempt motor vehicle a certificate of compliance knowing it to be issued without compliance with this section 6-1-3. Such activities so constitute prima facie evidence of a violation of this section 6-1-3. (Ord. 130, 8-28-1984; amd. Ord. 145, 12-18-1985; amd. Ord. 228, 11-29-1990, eff. 1-1-1991; amd. Ord. 374, 6-15-1999)

6-1-3-10: ENFORCEMENT:
Any owner who fails to present a nonexempt motor vehicle for an exhaust emissions inspection during the inspection period is in violation of this section 6-1-3 and will be subject to a board processing fee and any and all other enforcement mechanisms available through Idaho Code (including, but not limited to, the provisions of Idaho Code section 4-202(12)(9)), this section 6-1-3, and other applicable municipal or county ordinances. Nothing in this section 6-1-3 shall be construed to prevent the board from requesting or utilizing any and all enforcement mechanisms granted by law. (Ord. 130, 8-28-1984; amd. Ord. 145, 12-18-1985; amd. Ord. 228, 11-29-1990, eff. 1-1-1991; amd. Ord. 374, 6-15-1999)

6-1-3-11: PENALTIES:
A. Any person who violates any provision of this section 6-1-3 shall be deemed guilty of an infraction and, upon judgment thereof, shall be subject to the penalties set forth in Idahoinfraction rule 9(b), (other infractions). Failure to satisfy judgment as ordered by the court pursuant to this section 6-1-3 shall be deemed in contempt of court punishable as a misdemeanor pursuant to Idaho Code section 18-1801.

B. In addition to the penalties set forth in subsection A of this section, pursuant to Idaho Code section 49-202(12)(g), a motor vehicle subject to emissions inspection as required by this section 6-1-3, which has not been inspected, shall have its registration revoked. The owner of such vehicle shall be subject to the misdemeanor penalty provisions of Idaho Code section 49-236 for violation of the registration and inspections requirements.

(Ord. 130, 8-28-1984; amd. Ord. 145, 12-18-1985; amd. Ord. 206, 8-10-1989; amd. Ord. 374, 6-15-1999)

6-1-3-12: EFFECTIVE DATES:
This section 6-1-3 shall be effective upon publication. (Ord. 130, 8-28-1984; amd. Ord. 145, 12-18-1985; amd. Ord. 206, 8-10-1989; amd. Ord. 228, 11-29-1990, eff. 1-1-1991; amd. Ord. 228-1-95, 12-26-1995; amd. Ord. 322, 12-17-1996; amd. Ord. 350, 12-23-1997; amd. Ord. 372, 5-25-1999; amd. Ord. 374, 6-15-1999)

6-1-3-13: SEVERABILITY:
If any section, sentence, clause, word or phrase of this section 6-1-3 is for any reason held to be unconstitutional or otherwise invalid or unenforceable by any court of competent jurisdiction, such shall not affect the validity and enforceability of the remaining portions of this section 6-1-3, all of which shall remain in full force and effect. (Ord. 374, 6-15-1999)

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Chapter 8-13

MOTOR VEHICLE EMISSIONS CONTROL

Sections:

Section 8-13-01SHORT TITLE

This Ordinance may be cited as The 1999 Motor Vehicle Emissions Control Ordinance.
(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-02LEGISLATIVE FINDINGS AND PURPOSE OF ORDINANCE

A. It is found and declared that exhaust emissions from Motor Vehicles are a major source of air pollution throughout Ada County and such air pollution is a health hazard to all residents of the County and its incorporated cities;

B. It is further found and declared that an effective system of periodic motor vehicle inspection and maintenance will reduce the level of vehicular-based air pollution;

C. It is further found and declared that the federal government has mandated to the several states and local entities the ultimate responsibility for periodic motor vehicle inspection and maintenance;

D. It is further found and declared that Ada County has been designated as a non-attainment area for both carbon monoxide and small particulate matter (PM_{10}) and as such is mandated under the Federal Clean Air Act to reduce emissions so that the National Ambient Air Quality Standards will be attained and maintained;

E. It is further found and declared that Ada County and its incorporated cities will be monitored for $PM_{2.5}$ and ozone in the immediate future, and that the primary source of both of these pollutants in Ada County is exhaust emissions from motor vehicles;

F. It is further found and declared that fuel economy is a legitimate legislative purpose and that an efficient emissions control program will result in motor vehicle fuel savings for the residents of Ada County and its incorporated cities;

G. It is further found and declared that Ada County and its incorporated cities are duly authorized to enact and enforce this Ordinance under Idaho Code §31-714 and §50-302, respectively;

H. The purposes of this Ordinance, therefore, are to protect the health and welfare of the citizens of Ada County and its incorporated cities, to provide for the continued control and management of exhaust emissions above certain levels as determined by the Federal Clean Air Act, as amended, as well as Rules for the Control of Air Pollution in the State of Idaho (IDAPA 16.01.01, et seq), and to empower the Air Quality Board to design and implement required periodic inspection of certain motor vehicles in order to comply with the Federal Clean Air Act, as amended.

(Ord. No. 5661, Amended, 09/26/95)
(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-03DEFINITIONS

A. AUTOMOTIVE INSPECTION PROGRAM: That program established by the Board in accordance with this Ordinance and whose purpose is to implement the requirements of this Ordinance.

B. AUTOMOTIVE INSPECTION STATION: A facility licensed in accordance with Board specifications or operating under a contract with the Board for the purpose of performing Exhaust Emissions Inspections.

C. BOARD: The Air Quality Board, chartered under the Automotive Inspection and Readjustment Program Joint Powers Agreement and this Ordinance.

D. CARBON MONOXIDE (CO): An inorganic chemical compound containing one atom of carbon and onc atom of oxygcn.

E. CERTIFICATE OF COMPLIANCE: A Board-approved certificate verifying that the Motor Vehicle described thereon is in compliance with the requirements of this Ordinance and the Rules and Regulations adopted pursuant to this Ordinance.

F. EMISSIONS INSPECTION MECHANIC: An individual who performs Exhaust Emissions Inspections on behalf of the Board in compliance with a formal written agreement with the Board.

G. EMISSIONS REPAIR MECHANIC: An individual who performs exhaust emissions repairs to Motor Vehicles on behalf of the Board in compliance with a formal written agreement with the Board.

H. EXHAUST ANALYZER: A device for calculating the proportion of various gases, vapors and particles present in the Exhaust Emissions of a Motor Vehicle, specifically including Carbon Monoxide, Hydrocarbon, Oxides of Nitrogen, Sulfur Dioxide, Volatile Organic Compounds and any other gases, vapors and particles as required by the Board.

I. EXHAUST EMISSIONS: Substances emitted into the atmosphere from any opening downstream of the exhaust port(s) of any Motor Vehicle engine.

J. EXHAUST EMISSIONS CONTROL DEVICE: Equipment designed by the manufacturer for installation on a Motor Vehicle for the purpose of reducing pollutants emitted from the Motor Vehicle, or a system or engine modification of a vehicle which causes a reduction of pollutants emitted from the Motor Vehicle, as required by federal law.

K. EXHAUST EMISSIONS INSPECTION AND EXHAUST EMISSIONS RE-INSPECTION: That test, performed at an Automotive Inspection Station or a Repair and Re-Inspection Station by an Emissions Inspection Mechanic, which determines whether a Motor Vehicle's Exhaust Emissions meet or do not meet applicable Pass-Adjust Criteria.

L. FINE PARTICULATE MATTER (PM2.5): All particulate matter, including condensable particulates, with an aerodynamic diameter of less than or equal to a nominal two and one half (2.5) micrometers.

M. GROSS VEHICLE WEIGHT: The weight in pounds of a fully-fueled empty Motor Vehicle plus any additional carrying capacity specified by the vehicle manufacturer.

N. HYDROCARBON (HC): An organic compound consisting exclusively of the elements carbon and hydrogen.

O. INSPECTION PERIOD: That period, determined according to applicable Rules and Regulations, during which a Non-Exempt Motor Vehicle is scheduled to be presented for an Exhaust Emissions Inspection.

P. JOINT POWERS AGREEMENT: That agreement entered into pursuant to the joint powers provisions of Idaho Code Chapter 23 Title 67, among and between the incorporated cities of Ada County, the County of Ada, and the Ada County Highway District, which creates the Board.

Q. MODEL YEAR: The year of origin of a Motor Vehicle so designated by that vehicle's Certificate of Registration filed with the Idaho Department of Transportation.

R. MOTOR VEHICLE: Any self-propelled Motor Vehicle with four or more wheels in contact with the ground.

S. MOTOR VEHICLE OWNER: An individual, partnership, firm, public, private, or municipal corporation, association, trust, estate, agency, lessee, political subdivision of the State of Idaho or the Government of the United States or any other legal entity or their legal representatives, agents or assigns whose name appears as owner of a Motor Vehicle on its Certificate of Registration.

T. NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS): Standards developed by the U.S. Environmental Protection Agency in accordance with its responsibilities under the Federal Clean Air Act, as amended, and its implementing regulations.

U. NON-EXEMPT MOTOR VEHICLE: A motor vehicle which is subject to the Automotive Inspection Program and its Exhaust Emissions Inspections.

V. OXIDES OF NITROGEN (NO_x): A group of chemical compounds formed by the combination of oxygen and nitrogen.

W. OZONE (O_3): A molecule composed of three atoms of oxygen.

X. PARTICULATE MATTER (PM_{10}): All particulate matter, including condensable particulates, with an aerodynamic diameter of less than or equal to a nominal ten (10) micrometers.

Y. PASS-ADJUST CRITERIA: Those standards set forth in the Rules and Regulations adopted by the Board pursuant to this Ordinance which specify the maximum allowable components which may exist in Exhaust Emissions of a Non-Exempt Motor Vehicle.

Z. PUBLIC NOTICE: A statement of the Board's intent to modify the Rules and Regulations, including a summary of the proposed modifications, published in at least one newspaper of general circulation within Ada County, posted at the offices of the Air Quality Board, and mailed to all participants in the Joint Powers Agreement and all Automotive Inspection Stations.

AA. REPAIR AND RE-INSPECTION STATION: A facility licensed in accordance with Board specifications or operating under a contract with the Board for the purpose of repairing Non-Exempt Motor Vehicles which have failed an Exhaust Emissions Inspection and to perform a re-inspection of Exhaust Emissions in a manner specified by the Board.

BB. RULES AND REGULATIONS: Specific written provisions governing the Automotive Inspection Program, as adopted and amended by the Board from time to time.

CC. SULFUR DIOXIDE (SO_2): A chemical compound consisting exclusively of the elements sulfur and oxygen.

DD. TAMPERING: Removal of or rendering wholly or partially inoperative an Exhaust Emissions Control Device, including but not limited to the catalytic converter, air injection system, fuel inlet restrictor or other subsequent systems and devices designed and installed to reduce exhaust emissions.

EE. VOLATILE ORGANIC COMPOUND (VOC): Any organic compound which readily evaporates in the atmosphere and, through its participation in atmospheric photochemical reactions, contributes to the formation of Ozone.

(Ord. No. 5661, Amended, 09/26/95)
(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-04CREATION OF AN INSPECTION-MAINTENANCE PROGRAM

A. An Air Quality Board is hereby created pursuant to the joint powers provisions of Idaho Code Chapter 23 Title 67 in a Joint Powers Agreement executed by the participating public agencies. The composition and organization of the Board shall be as set forth in the Joint Powers Agreement.

B. The Board shall design and implement an Automotive Inspection Program for the mandatory Exhaust Emissions analysis, inspection, maintenance and repair of Non-Exempt Motor Vehicles to insure continued compliance with National Ambient Air Quality Standards and in accordance with applicable rules and regulations of the U.S. Environmental Protection Agency, the State of Idaho Division of Environmental Quality and the Ada Planning Association Board.

C. The Exhaust Emissions of each Non-Exempt Motor Vehicle will be measured and evaluated periodically and the Owner of any such vehicle is required to present the vehicle at an Automotive Inspection Station for an Exhaust Emissions Inspection unless specifically exempted from this requirement by the Board or by this Ordinance. Failure to do so within the Inspection Period constitutes prima facie evidence of a violation of this Ordinance. The frequency and timing of the Inspection Period will be determined by the Board.

D. The Owner of a Non-Exempt Motor Vehicle which passes an Exhaust Emissions Inspection as provided herein shall be presented with a Certificate of Compliance. The Owner shall maintain the certificate in a place and manner specified by the Board in the Rules and Regulations and present it to the Board or other authority upon demand.. Failure to do so constitutes prima facie evidence of a violation of this Ordinance.

E. A Motor Vehicle is classified as a Non-Exempt Motor Vehicle if all of the following are true:

1. The Certificate of Registration has 'ADA COUNTY' entered upon it as the county of residence or would be required to have 'ADA COUNTY' entered upon it as the county of residence pursuant to Idaho Code 49-401B;

2. The Gross Vehicle Weight equals or exceeds 1500 pounds; and

3. The Model Year is 1965 or newer.

F. The following are hereby specifically exempted from compliance with the Automotive Inspection Program, subject to verification in a manner specified by the Board and included in the Rules and Regulations:

1. Motorcycles as defined in Idaho Code 40-114;

2. "Idaho Old Timers" as defined in Idaho Code 49-406;

3. Farm tractors as defined in Idaho Code 49-107;

4. Motor vehicles registered under the pro-rated registration provisions of Idaho Code 49-437 for a period of less than six (6) months;

5. Idaho Classic vehicles as defined in Idaho Code 49-406A;

6. Motor Vehicles for which an alternate fuel type has been established according to Rules and Regulations adopted by the Board; and

7. Such other Motor Vehicles as may be exempted by Rules and Regulations adopted by the Board.

G. An Exhaust Emissions Inspection may only be performed by and in a manner consistent with Rules and Regulations adopted by the Board. An Exhaust Emissions Inspection shall include all of the following:

1. A measurement of Exhaust Emissions using an approved Exhaust Analyzer or other procedure or device approved by the Board to sample the Motor Vehicle's Exhaust Emissions, specifically including the Carbon Monoxide and Hydrocarbon content of the Exhaust Emissions and any other gases, vapors and particles as adopted by the Board to comply with the purposes of this Ordinance as expressed in Section 8-13-02; and.

2. A determination as to whether Exhaust Emissions meet the Pass-Adjust Criteria; and

3. A visual inspection, for Model Years 1984 and newer, to verify presence of the catalytic converter, air injection system, size of the fuel restrictor and any other visual inspection component(s) specified by the Board in the Rules and Regulations; and.

4. Any other inspection adopted by the Board in the Rules and Regulations.

H. Where Exhaust Emissions do not meet the Pass-Adjust Criteria, an indication to a Motor Vehicle Owner of the repair and Re-Inspection provisions of the Automotive Inspection Program.

I. It is the responsibility of the Owner of a Non-Exempt Motor Vehicle which was found not to comply with the Pass-Adjust Criteria to have the Motor Vehicle brought into compliance at the Owner's expense and to have it re-inspected within ten (10) calendar days of the failed Exhaust Emissions Inspection according to procedures and criteria established by the Board and included in the rules and Regulations.

J. Each Non-Exempt Motor Vehicle shall bear a share of the cost of the Automotive Inspection Program regardless of whether the Board elects to waive one or more Exhaust Emissions Inspections for that vehicle. The Motor Vehicle Owner for each Non-Exempt Motor Vehicle is required to submit payment to the Board or other authorized representative under terms and conditions specified in the Rules and Regulations.

K. An Emissions Inspection Mechanic who performs an Exhaust Emissions Inspection on a Motor Vehicle shall, when the Motor Vehicle is found to comply with the Pass-Adjust Criteria, immediately issue a Certificate of Compliance in accordance with procedures adopted by the Board in the Rules and Regulations. The Certificate of Compliance will expire on the last day of the next Inspection Period for that Motor Vehicle.
(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-05DUTIES AND POWERS OF THE BOARD

A. The Board shall conduct regular monthly meetings at such time as the Board shall determine. Meetings are open to the public.

B. The Board, in accordance with the criteria expressed herein, shall adopt Rules and Regulations for the implementation and operation of the Automotive Inspection Program and amend those Rules and Regulations from time to time as it deems necessary. Rules and Regulations and amendments to same may only be adopted at an Air Quality Board meeting with a minimum of fourteen (14) days Public Notice of the Board's intent to amend the Rules and Regulations.

C. Rules and Regulations shall include but not be limited to the following:

1. Procedures for determining the exempt or non-exempt status of any Motor Vehicle and releasing exempt Motor Vehicles from further compliance with the Automotive Inspection Program;

2. Procedures for establishing the Inspection Period for a Non-Exempt Motor Vehicle;

3. Structure of the Automotive Inspection Program, specifically including whether repairs and adjustments to Motor Vehicles failing to comply with the Pass-Adjust Criteria may or may not be made by Emissions Inspection Mechanics who perform the original Exhaust Emissions

Inspection;

4. Procedures for licensing or contracting for Automotive Inspection Stations, Repair and Re-Inspection Stations, Emissions Inspection Mechanics and Emissions Repair Mechanics and for the potential termination thereof;

5. Pass-Adjust Criteria for all Non-Exempt Motor Vehicles;

6. Nature and display of Certificates of Compliance on Non-Exempt Motor Vehicles which successfully comply with the Pass-Adjust Criteria:

7. Specifications for approved Exhaust Analyzers or other emissions measurement devices or systems;

8. Procedures by which the fee to be charged each Motor Vehicle Owner for each Non-Exempt Motor Vehicle is determined, or, alternatively, the fee itself;

9. Circumstances under which a waiver my be granted to exempt a Non-Exempt Motor Vehicle from the provisions of this Ordinance, either temporarily or permanently;

10. Minimum effort(s) which will be required of the Owner of a Non-Exempt Motor Vehicle which fails to comply with the Pass-Adjust Criteria in order to bring the failing vehicle into compliance with the Pass-Adjust Criteria, as well as procedures by which such minimum effort provisions may be amended from time to time. This effort shall generally be the minimum necessary to accommodate typical repair and reinspection needs and may be different for different Model Years;

11. Cost of a Certificate of Compliance. This shall be the minimum necessary to provide for the on-going operation, administration, maintenance and enforcement of the Automotive Inspection Program and shall not exceed $4.00 without concurrence of all parties to the Joint Powers Agreement;

12. The processing fee which may be assessed upon Owners of Non-Exempt Motor Vehicles who fail to present their Non-Exempt Motor Vehicle for inspection within the Inspection Period (and the procedure by by which this fee is established. This fee shall be sufficient to recover costs of processing notices of violation for all Non-Exempt Motor Vehicles which do not comply with the provisions of this Ordinance within the Inspection Period);

13. Procedures governing the contracting for or licensing of Automotive Inspection Stations, Repair and Re-Inspection Stations and Emissions Inspection Mechanics and the suspension, revocation, or termination of those contracts or licenses when appropriate;

14. Schedules and deadlines for the flow of data, paperwork and information pertaining to Exhaust Emissions Inspections among Automotive Inspection Stations, Repair and Re-Inspection Stations, Exhaust Emissions Mechanics and the Automotive Inspection Program staff; and

15. Any other matters deemed to be within the authority of the Board.

D. The Board may, at is discretion, employ the full power and authority of law to insure that Motor Vehicle Owners comply fully and completely with Idaho Code 49-401B, specifically including correct designation of the county of residence as provided therein.

E. The Board shall conduct an on-going quality assurance program to determine that all Automotive Inspection Stations, Repair and Re-Inspection Stations and Exhaust Emission Mechanics perform Automotive Inspection Program tasks in conformance with the adopted Rules and Regulations.

F. The Board or its authorized representative, upon written notice and an opportunity for a hearing, may suspend, revoke and/or require the surrender and forfeiture of any license granted by the Board which is not utilized in accordance with this Ordinance or the Rules and Regulations. The procedure and grounds for suspension or revocation shall be set forth in the Rules and Regulations and shall comply with current Idaho law.

G. The Board shall have the authority to undertake any additional actions reasonably necessary to the operation of the Automotive Inspection Program, including but not limited to:

1. Employing necessary staff;

2. Executing necessary contracts and documents;

3. Authorizing deposits into and expenditures from the Motor Vehicle Emissions Inspection Fund;

4. Acquiring and disposing of personal property;

5. Establishing an annual budget for the Air Inspection Program;

6. Operating the Automotive Inspection Program in accordance with standard fiscal practice; and

7. Providing for an annual audit of both financial and management practices of the Automotive Inspection Program.

H. The Board shall conduct ongoing evaluations of the Automotive Inspection Program sufficient to satisfy requirements of the US Environmental Protection Agency, the Ada Planning Association Board and other applicable rules and statutes.

(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-06FINANCING

A. There is hereby established a Motor Vehicle Emissions Inspection Fund which shall consist of the following:

1. Money appropriated thereto by the Board or any local entity;

2. Money remitted by Automotive Inspection Stations and Repair and Re-Inspection Stations which is collected as fees;

3. Money received by the Board from private grants or donations;

4. Money received by the Board from processing fees assessed to Owners of Non-Exempt Motor Vehicles who do not present their vehicle for an Exhaust Emissions Inspection during the Inspection Period;

5. Federal or state funds received by the Board for the Automotive Inspection Program; and

6. Any other funds received by the Board from any source.

B. Moneys in the Motor Vehicle Emissions Inspection Fund may be used to pay all costs incurred by the Board in administering any aspect of the Automotive Inspection Program.

C. The Board shall appropriate and budget on a fiscal year basis, indicating expenditures to be made in implementing and administering the Automotive Inspection Program and sources of income to be used for such expenditures.

(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-07INSPECTION CRITERIA AND COSTS

A. A Non-Exempt Motor Vehicle's Exhaust Emissions must be less than or equal to the approved Pass-Adjust Criteria in order for a Certificate of Compliance to be issued without further repair, adjustment or testing.

B. Non-Exempt Motor Vehicles of the Model Year 1984 and newer must have a fully operational catalytic converter, air injection system, fuel restrictor and any other component(s), devices or systems specified by the Board in the Rules and Regulations. The Owner of a Non-Exempt Motor Vehicle is required to see that these systems are fully operational. An Exhaust Emissions Inspection will not be performed on any vehicle on which one or more of these components have been subject to Tampering. The Owner of any Non-Exempt Motor Vehicle which has been subject to Tampering must bring all components into compliance and have the vehicle inspected within the Inspection Period.

C. Certificate of Compliance may be issued by an Emissions Inspection Mechanic who personally has performed an Exhaust Emissions Inspection and found the Non-Exempt Motor Vehicle to be in full compliance with the Automotive Inspection Program or by an Emissions Repair Mechanic who has personally performed repairs and adjustments to a Motor Vehicle which bring such vehicle into full compliance with the Automotive Inspection Program or the Board.

D. No person shall represent himself or herself as an Emissions Inspection Mechanic unless he or she has a current license issued by the Board or is operating under a current contract with the Board.

E. No person shall demand or collect a fee for the Exhaust Emissions Inspection of a Non-Exempt Motor Vehicle unless authorized by this Ordinance.

(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-08ACQUISITION OF PROPERTY; CERTIFICATES PROPERTY OF BOARD

A. The Board may acquire by purchase, donation, dedication, or other lawful means any special equipment, tools, materials or facilities needed to adequately administer, investigate or enforce the provisions of this Ordinance or the Rules and Regulations adopted pursuant hereto provided, however, any acquisition made by the Board shall comply with all statutory requirements imposed upon the City of Boise for the purpose of receipt of property.

B. All Certificates of Compliance are the property of the Board until such time as they are issued to properly inspected Motor Vehicles.
(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-09FALSIFICATION OF CERTIFICATES

A. No person shall willfully make, issue, display, sell or possess any imitation, counterfeit, or alteration of a Certificate of Compliance. Such activities so constitute prima facie evidence of a violation of this Ordinance.

B. No person shall display upon any Non-Exempt Motor Vehicle a Certificate of Compliance knowing it to be issued without compliance with this Ordinance. Such activities so constitute prima facie evidence of a violation of this Ordinance.
(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-10ENFORCEMENT

Any Owner who fails to present a Non-Exempt Motor Vehicle for an Exhaust Emissions Inspection during the Inspection Period is in violation of this Ordinance and will be subject to a Board processing fee and any and all other enforcement mechanisms available through Idaho Code, this Ordinance, and other applicable municipal or county ordinances. Nothing in this Ordinance shall be construed to prevent the Board from requesting or utilizing any and all enforcement mechanisms granted by law.
(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-11PENALTIES

Any person who violates any provision of this Ordinance shall be deemed guilty of an infraction and, upon judgment thereof, shall be subject to the penalties set forth in Idaho Infraction Rule 9(b) (Other Infractions). Failure to satisfy judgment as ordered by the Court pursuant to this Ordinance shall be deemed contempt of court punishable as a misdemeanor pursuant to Idaho Code 18-1801.
(5925, Amended, 07/20/1999; 5831, Amended, 01/20/1998)

Section 8-13-12EFFECTIVE DATES

This Ordinance shall be effective beginning on the date on which the Joint Powers Agreement is adopted and continuously thereafter through and including December 31, 2002.
(5925, Amended, 07/20/1999; 5832, Amended, 02/03/1998; 5831, Repealed, 01/20/1998; 5774, Amended, 12/17/1996)

Section 8-13-13SEVERABILITY

If any section, sentence, clause, word or phrase of this Ordinance is for any reason held to be unconstitutional or otherwise invalid or unenforceable by any court of competent jurisdiction, such shall not affect the validity and enforceability of the remaining portions of this Ordinance, all of which shall remain in full force and effect. (Ord. 5273, 11-20-90)
(5831, Amended, 01/20/1998)

Meridian City Code

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Meridian, Idaho City Code

Title 7 MOTOR VEHICLES AND TRAFFIC

Chapter 3 MOTOR VEHICLE EMISSIONS CONTROL

7-3-1: SHORT TITLE:

This Chapter may be cited as the *1999 MOTOR VEHICLE EMISSIONS CONTROL ORDINANCE.* (Ord. 814, 6-1-1999)

7-3-2: LEGISLATIVE FINDINGS AND PURPOSE:

A. It is found and declared that exhaust emissions from motor vehicles are a major source of air pollution throughout Ada County and such air pollution is a health hazard to all residents of the County and its incorporated cities.

B. It is further found and declared that an effective system of periodic motor vehicle inspection and maintenance will reduce the level of vehicular-based air pollution.

C. It is further found and declared that the Federal Government has mandated to the several states and local entities the ultimate responsibility for periodic motor vehicle inspection and maintenance.

D. It is further found and declared that Ada County has been designated as a nonattainment area for both carbon monoxide and small particulate matter (PM_{10}) and such is mandated under the Federal Clean Air Act to reduce emissions so that the national ambient air quality standards will be attained and maintained.

E. It is further found and declared that Ada County and its incorporated cities will be monitored for $PM_{2.5}$ and ozone in the immediate future, and that the primary source of both of these pollutants in Ada County is exhaust emissions from motor vehicles.

F. It is further found and declared that fuel economy is a legitimate legislative purpose and that an efficient emissions control program will result in motor vehicle fuel savings for the residents of Ada County and its incorporated cities.

G. It is further found and declared that Ada County and its incorporated cities are duly authorized to enact and enforce this Chapter under Idaho Code sections 31-714 and 50-302, respectively.

H. The purposes of this Chapter, therefore, are to protect the health and welfare of the inhabitants of the City, to provide for the continued control and management of exhaust emissions above certain levels as determined by the Federal Clean Air Act, as amended, as well as rules for the control of air pollution in the State of Idaho (IDAPA 16.01.01 et seq.), and to empower the Air Quality Board to design and implement required periodic inspection of certain motor vehicles. (Ord. 814, 6-1-1999)

7-3-3: DEFINITIONS:

AUTOMOTIVE INSPECTION PROGRAM: That program established by the Board in accordance with this Chapter and whose purpose is to implement the requirements of this Chapter.

AUTOMOTIVE INSPECTION STATION: A facility licensed in accordance with Board specifications or operating under a contract with the Board for the purpose of performing exhaust emissions inspections.

BOARD: The Air Quality Board, chartered under the automotive inspection and readjustment program joint powers agreement and this Chapter.

CARBON MONOXIDE (CO): An inorganic chemical compound containing one atom of carbon and one atom of oxygen.

CERTIFICATE OF COMPLIANCE: A Board-approved certificate verifying that the motor vehicle described thereon is in compliance with the requirements of this Chapter and the rules and regulations adopted pursuant to this Chapter.

EMISSIONS INSPECTION MECHANIC: An individual who performs exhaust emissions inspections on behalf of the Board in compliance with a formal written agreement with the Board.

EMISSIONS REPAIR MECHANIC: An individual who performs exhaust emissions repairs to motor vehicles on behalf of the Board in compliance with a formal written agreement with the Board.

EXHAUST ANALYZER: A device for calculating the proportion of various gases, vapors and particles present in the exhaust emissions of a motor vehicle, specifically including carbon monoxide, hydrocarbon, oxides of nitrogen, sulfur dioxide, volatile organic compounds and any other gases, vapors and particles as required by the Board.

EXHAUST EMISSIONS: Substances emitted into the atmosphere from any opening downstream of the exhaust port(s) of any motor vehicle engine.

EXHAUST EMISSIONS CONTROL DEVICE: Equipment designed by the manufacturer for installation on a motor vehicle for the purpose of reducing pollutants emitted from the motor vehicle, or a system or engine modification of a vehicle which causes a reduction of pollutants emitted from the motor vehicle, as required by Federal law.

EXHAUST EMISSIONS INSPECTION AND EXHAUST EMISSIONS REINSPECTION: That test, performed at an automotive inspection station or a repair and reinspection station by an emissions inspection mechanic, which determines whether a motor vehicle's exhaust emissions meet or do not meet applicable pass-adjust criteria.

FINE PARTICULATE MATTER ($PM_{2.5}$): All particulate matter, including condensable particulates, with an aerodynamic diameter of less than or equal to a normal two and one-half (2.5) micrometers.

GROSS VEHICLE WEIGHT: The weight in pounds of a fully fueled empty motor vehicle plus any additional carrying capacity specified by the vehicle manufacturer.

HYDROCARBON (HC): An organic compound consisting exclusively of the elements carbon and hydrogen.

INSPECTION PERIOD: That period, determined according to applicable rules and regulations, during which a nonexempt motor vehicle is scheduled to be presented for an exhaust emissions inspection.

JOINT POWERS AGREEMENT: That agreement entered into pursuant to the joint powers provisions of Idaho Code title 67, chapter 23, among and between the incorporated cities of Ada County, the County of Ada, and the Ada County Highway District, which creates the Board.

MODEL YEAR: The year of origin of a motor vehicle so designated by that vehicle's certificate of registration filed with the Idaho Department of Transportation.

MOTOR VEHICLE: Any self-propelled motor vehicle with four (4) or more wheels in contact with the ground.

MOTOR VEHICLE OWNER: An individual, partnership, firm, public, private, or Municipal corporation, association, trust, estate, agency, lessee, political subdivision of the State of Idaho or the government of the United States or any other legal entity or their legal representatives, agents or assigns whose name appears as owner of a motor vehicle on its certificate of registration.

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS): Standards developed by the U.S. Environmental Protection Agency in accordance with its responsibilities under the Federal Clean Air Act, as amended, and its implementing regulations.

NONEXEMPT MOTOR VEHICLE: A motor vehicle which is subject to the automotive inspection program and its exhaust emissions inspections.

OXIDES OF NITROGEN (NO_x): A group of chemical compounds formed by the combination of oxygen and nitrogen.

OZONE(0_3): A molecule composed of three (3) atoms of oxygen.

PARTICULATE MATTER (PM_{10}): All particulate matter, including condensable particulates, with an aerodynamic diameter of less than or equal to a normal ten (10) micrometers.

PASS-ADJUST CRITERIA: Those standards set forth in the rules and regulations adopted by the Board pursuant to this Chapter which specify the maximum allowable components which may exist in exhaust emissions of a nonexempt motor vehicle.

PUBLIC NOTICE: A statement of the Board's intent to modify the rules and regulations, including a summary of the proposed modifications, published in at least one newspaper of general circulation within Ada County, posted at the offices of the Air Quality Board, and mailed to all participants in the joint powers agreement and all automotive inspection stations.

REPAIR AND REINSPECTION STATION: A facility licensed in accordance with Board specifications or operating under a contract with the Board for the purpose of repairing nonexempt motor vehicles which have failed an exhaust emissions inspection and to perform a reinspection of exhaust emissions in a manner specified by the Board.

RULES AND REGULATIONS: Specific written provisions governing the automotive inspection program, as adopted and amended by the Board from time to time.

SULFUR DIOXIDE ($S0_2$): A chemical compound consisting exclusively of the elements sulfur and oxygen.

TAMPERING: Removal of or rendering wholly or partially inoperative an exhaust emissions control device, including but not limited to the catalytic converter, air injection system, fuel inlet restrictor or other subsequent systems and devices designed and installed to reduce exhaust emissions.

VOLATILE ORGANIC COMPOUND (VOC): Any organic compound which readily evaporates in the atmosphere and, through its participation in atmospheric photochemical reactions, contributes to the formation of ozone. (Ord. 814, 6-1-1999)
7-3-4: INSPECTION-MAINTENANCE PROGRAM; AIR QUALITY BOARD:

A. Board Created: An Air Quality Board is hereby created pursuant to the joint powers provisions of Idaho Code title 67, chapter 23 in a joint powers agreement executed by the participating public agencies. The composition and organization of the Board shall be as set forth in the joint powers agreement.

B. Implement Automotive Inspection Program: The Board shall design and implement an automotive inspection program for the mandatory exhaust emissions analysis, inspection, maintenance and repair of nonexempt motor vehicles to ensure continued compliance with national ambient air quality standards and in accordance with applicable rules and regulations of the U.S. Environmental Protection Agency, the State Division of Environmental Quality and the Ada Planning Association Board.

C. Inspection Required: The exhaust emissions of each nonexempt motor vehicle will be measured and evaluated periodically and the owner of any such vehicle is required to present the vehicle at an automotive inspection station for an exhaust emissions inspection unless specifically exempted from this requirement by the Board or by this Chapter. Failure to do so within the inspection period constitutes prima facie evidence of a violation of this Chapter. The frequency and timing of the inspection period will be determined by the Board.

D. Certificate Of Compliance: The owner of a nonexempt motor vehicle which passes an exhaust emissions inspection as provided herein shall be presented with a certificate of compliance. The owner shall maintain the certificate in a place and manner specified by the Board in the rules and regulations and present it to the Board or other authority upon demand. Failure to do so constitutes prima facie evidence of a violation of this Chapter.

E. Nonexempt Classification: A motor vehicle is classified as a nonexempt motor vehicle if all of the following are true:
1. The certificate of registration has "Ada County" entered upon it as the county of residence or would be required to have "Ada County" entered upon it as the county of residence pursuant to Idaho Code section 49-401B.
2. The gross vehicle weight equals or exceeds one thousand five hundred (1,500) pounds.
3. The model year is 1965 or newer.

F. Exemptions: The following are hereby specifically exempted from compliance with the automotive inspection program, subject to verification in a manner specified by the Board and included in the rules and regulations:
1. Motorcycles as defined in Idaho Code section 40-114.
2. Idaho Old Timers as defined in Idaho Code section 49-406.
3. Farm tractors as defined in Idaho Code section 49-107.
4. Motor vehicles registered under the prorated registration provisions of Idaho Code section 49-437 for a period of less than six (6) months.
5. Idaho classic vehicles as defined in Idaho Code section 49-406A.
6. Motor vehicles for which an alternate fuel type has been established according to rules and regulations adopted by the Board.
7. Such other motor vehicles as may be exempted by rules and regulations adopted by the Board.

G. Inspection Requirements: An exhaust emissions inspection may only be performed by and in a manner consistent with rules and regulations adopted by the Board. An exhaust emissions inspection shall include all of the following:
1. A measurement of exhaust emissions using an approved exhaust analyzer or other procedure or device approved by the Board to sample the motor vehicle's exhaust emissions, specifically including carbon monoxide and hydrocarbon content of the exhaust emissions and any other gases, vapors and particles as adopted by the Board to comply with the purposes of this Chapter as expressed in Section 7-3-2 of this Chapter.
2. A determination as to whether exhaust emission meet the pass-adjust criteria.
3. A visual inspection, for model years 1984 and newer, to verify presence of the catalytic converter, air injection system, size of the fuel restrictor and any other visual inspection component(s) specified by the Board in the rules and regulations.
4. Any other inspection adopted by the Board in the rules and regulations. (Ord. 814, 6-1-1999)

H. Notify Vehicle Owner Of Noncompliance: Where exhaust emissions do not meet the pass-adjust criteria, the motor vehicle owner shall be notified of the repair and reinspection provisions of the automotive inspection program. (Ord. 814, 6-1-1999; amd. 1999 Code)

I. Remedy Of Noncompliance; Reinspection: It is the responsibility of the owner of a nonexempt motor vehicle which was found not to comply with the pass-adjust criteria to have the motor vehicle brought into compliance at the owner's expense and to have it reinspected within ten (10) calendar days of the failed exhaust emission inspection according to procedures and criteria established by the Board and included in the rules and regulations.

J. Payment Of Inspection Fee: Each nonexempt motor vehicle shall bear a share of the cost of the automotive inspection program regardless of whether the Board elects to waive one or more exhaust emissions inspections for that vehicle. The motor vehicle owner for each nonexempt motor vehicle is required to submit payment to the Board or other authorized representative under terms and conditions specified in the rules and regulations.

K. Issuance Of Certificate Of Compliance: An emissions inspection mechanic who performs an exhaust emissions inspection on a motor vehicle shall, when the motor vehicle is found to comply with the pass-adjust criteria, immediately issue a certificate of compliance in accordance with procedures adopted by the Board in the rules and regulations. The certificate of compliance will expire on the last day of the next inspection period for that motor vehicle. (Ord. 814, 6-1-1999)

7-3-5: DUTIES AND POWERS OF BOARD:

A. Meetings: The Board shall conduct regular monthly meetings at such time and place as the Board shall determine. Meetings are open to the public.

B. Adoption Or Amendments Of Rules And Regulations: The Board, in accordance with the criteria expressed herein, shall adopt rules and regulations for the implementation and operation of the automotive inspection program and amend those rules and regulations from time to time as it deems necessary. Rules and regulations and amendments to same may only be adopted at an Air Quality Board meeting with a minimum of fourteen (14) days' public notice of the Board's intent to amend the rules and regulations.

C. Requirements For Rules And Regulations: Rules and regulations shall include but not be limited to the following:

1. Procedures for determining the exempt or nonexempt status of any motor vehicle and releasing exempt motor vehicles from further compliance with the automotive inspection program.
2. Procedures for establishing the inspection period for a nonexempt motor vehicle.
3. Structure of the automotive inspection program, specifically including whether repairs and adjustments to motor vehicles failing to comply with the pass-adjust criteria may or may not be made by emissions inspection mechanics who perform the original exhaust emissions inspection.
4. Procedures for licensing or contracting for automotive inspection stations, repair and reinspection stations, emissions inspection mechanics and emissions repair mechanics and for the potential termination thereof.

5. Pass-adjust criteria for all nonexempt motor vehicles.
6. Nature and display of certificates of compliance on nonexempt motor vehicles which successfully comply with the pass-adjust criteria.
7. Specifications for approved exhaust analyzers or other emissions measurement devices or systems.
8. Procedures by which the fee to be charged each motor vehicle owner for each nonexempt motor vehicle is determined, or, alternatively, the fee itself.
9. Circumstances under which a waiver may be granted to exempt a nonexempt motor vehicle from the provisions of this Chapter, either temporarily or permanently.
10. Minimum effort(s) which will be required of the owner of a nonexempt motor vehicle owner which fails to comply with the pass-adjust criteria in order to bring the failing vehicle into compliance with the pass-adjust criteria, as well as procedures by which such minimum effort provisions may be amended from time to time. This effort shall generally be the minimum necessary to accommodate typical repair and reinspection needs and may be different for different model years.
11. Cost of a certificate of compliance. This shall be the minimum necessary to provide for the ongoing operation, administration, maintenance and enforcement of the automotive inspection program and shall not exceed four dollars ($4.00) without concurrence of all parties to the joint powers agreement.
12. The processing fee which may be assessed upon owners of nonexempt motor vehicles who fail to present their nonexempt motor vehicle for inspection within the inspection period and the procedure by which this fee is established. This fee shall be sufficient to recover costs of processing notices of violation for all nonexempt motor vehicles which do not comply with the provisions of this Chapter within the inspection period.
13. Procedures governing the contracting for or licensing of automotive inspection stations, repair and reinspection stations and emissions inspection mechanics and the suspension, revocation, or termination of those contracts or licenses when appropriate.
14. Schedules and deadlines for the flow of data, paperwork and information pertaining to exhaust emissions inspections among the automotive inspection stations, repair and reinspection stations, exhaust emissions mechanics and the automotive inspection program staff.
15. Any other matters deemed to be within the authority of the Board.

D. Compliance With Idaho Code: The Board may, at its discretion, employ the full power and authority of law to ensure that motor vehicle owners comply fully and completely with Idaho Code section 49-401B, specifically including correct designation of the county of residence as provided therein.

E. Quality Assurance Program: The Board shall conduct an on-going quality assurance program to determine that all automotive inspection stations, repair and reinspection stations and exhaust emission mechanics perform automotive inspection program tasks in conformance with the adopted rules and regulations.

F. Suspension Or Revocation Of License: The Board or its authorized representative, upon written notice and an opportunity for a hearing, may suspend, revoke and/or require the surrender and forfeiture of any license granted by the Board which is not utilized in accordance with this

Chapter or the rules and regulations. The procedure and grounds for suspension or revocation shall be set forth in the rules and regulations and shall comply with current Idaho law.

G. Additional Actions: The Board shall have the authority to undertake any additional actions reasonably necessary to the operation of the automotive inspection program, including but not limited to:
1. Employing necessary staff;
2. Executing necessary contracts and documents;
3. Authorizing deposits into and expenditures from the Motor Vehicle Emissions Inspection Fund;
4. Acquiring and disposing of personal property;
5. Establishing an annual budget for the air inspection program;
6. Operating the automotive inspection program in accordance with standard fiscal practice; and
7. Providing for an annual audit of both financial and management practices of the automotive inspection program.

H. Evaluation Of Program: The Board shall conduct ongoing evaluations of the automotive inspection program sufficient to satisfy requirements of the U.S. Environmental ProtectionAgency, the Ada Planning Association Board and other applicable rules and statutes. (Ord. 814, 6-1-1999)
7-3-6: FINANCING:

A. Fund Established: There is hereby established a Motor Vehicle Emissions Inspection Fund which shall consist of the following:
1. Money appropriated thereto by the Board or any local entity;
2. Money remitted by automotive inspection stations and repair and reinspection stations which is collected as fees;
3. Money received by the Board from private grants or donations;
4. Money received by the Board from processing fees assessed to owners of nonexempt motor vehicles who do not present their vehicle for an exhaust emissions inspection during the inspection period;
5. Federal or State funds received by the Board for the automotive inspection program; and
6. Any other funds received by the Board from any source.

B. Disposition Of Funds: Monies in the Motor Vehicle Emissions Inspection Fund may be used to pay all costs incurred by the Board in administering any aspect of the automotive inspection program.

C. Appropriation And Budget: The Board shall appropriate and budget on a fiscal year basis, indicating expenditures to be made in implementing and administering the automotive inspection program and sources of income to be used for such expenditures. (Ord. 814, 6-1-1999)
7-3-7: INSPECTION CRITERIA AND COSTS:

A. Approved Criteria: A nonexempt motor vehicle's exhaust emission must be less than or equal to the approved pass-adjust criteria in order for a certificate of compliance to be issued without further repair, adjustment or testing.

B. Vehicle Requirements: Nonexempt motor vehicles of the model year 1984 and newer must have a fully operational catalytic converter, air injection system, fuel restrictor and any other component(s), devices or systems specified by the Board in the rules and regulations. The owner of a nonexempt motor vehicle is required to see that these systems are fully operational. An exhaust emissions inspection will not be performed on any vehicle on which one or more of these components have beensubject to tampering. The owner of any nonexempt motor vehicle which has been subject to tampering must bring all components into compliance and have the vehicle inspected within the inspection period.

C. Issuance Of Certificate Of Compliance: A certificate of compliance may be issued by an emissions inspection mechanic who personally has performed an exhaust emissions inspection and found the nonexempt motor vehicle to be in full compliance with the automotive inspection program or by an emissions repair mechanic who has personally performed repairs and adjustments to a motor vehicle which bring such vehicle into full compliance with the automotive inspection program or by the Board.

D. License Or Contract Required By Inspection Mechanic: No person shall represent himself or herself as an emissions inspection mechanic unless he or she has a current license issued by the Board or is operating under a current contract with the Board.

E. Authorization Required: No person shall demand or collect a fee for the exhaust emissions inspection of a nonexempt motor vehicle unless authorized by this Chapter. (Ord. 814, 6-1-1999)
7-3-8: PROPERTY ACQUISITION; CERTIFICATES PROPERTY OF BOARD:

A. Authority To Acquire Property: The Board may acquire by purchase, donation, dedication, or other lawful means any special equipment, tools, materials or facilities needed to adequately administer, investigate or enforce the provisions of this Chapter or the rules and regulations adopted pursuant hereto; provided, however, any acquisition made by the Board shall comply with all statutory requirements imposed upon the County for the purpose of receipt of property.

B. Certificate Property Of Board: All certificates of compliance are the property of the Board until such time as they are issued to properly inspected motor vehicles. (Ord. 814, 6-1-1999)
7-3-9: FALSIFICATION OF CERTIFICATES:

A. Issuance: It shall be unlawful for any person to willfully make, issue, display, sell or possess any imitation, counterfeit, or alteration of a certificate of compliance. Such activities so constitute prima facie evidence of a violation of this Chapter.

B. Display: It shall be unlawful for any person to display upon nor carry within any nonexempt motor vehicle a certificate of compliance knowing it to be issued without compliance with this Chapter. Such activities so constitute prima facie evidence of a violation of this Chapter. (Ord. 814, 6-1-1999)
7-3-10: ENFORCEMENT:

Any owner who fails to present a nonexempt motor vehicle for an exhaust emissions inspection during the inspection period is in violation of this Chapter and will be subject to a Board processing fee and any and all other enforcement mechanisms available through Idaho Code, this Chapter, and other applicable Municipal or County ordinances. Nothing in this Chapter shall be construed to prevent the Board from requesting or utilizing any and all enforcement mechanisms granted by law. (Ord. 814, 6-1-1999)

7-3-11: PENALTIES:

Any person who violates any provision of this Chapter shall be deemed guilty of an infraction and, upon judgment thereof, shall be subject to the penalties set forth in Idaho Infraction Rule 9(b) (Other Infractions). Failure to satisfy judgment as ordered by the court pursuant to this Chapter shall be deemed contempt of court punishable as a misdemeanor pursuant to Idaho Code section 18-1801. (Ord. 814, 6-1-1999)

Eagle City Code

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Eagle, Idaho City Code

Chapter 4
MOTOR VEHICLE EMISSIONS CONTROL

4-4-1: SHORT TITLE:

This chapter may be cited as the *1999 MOTOR VEHICLE EMISSIONS CONTROL ORDINANCE.* (Ord. 346, 4-27-1999)
4-4-2: LEGISLATIVE FINDINGS AND PURPOSE:

It is found and declared that exhaust emissions from motor vehicles are a major source of air pollution throughout Ada County and such air pollution is a health hazard to all residents of the county and its incorporated cities.

A. It is further found and declared that:

1. An effective system of periodic motor vehicle inspection and maintenance will reduce the level of vehicular based air pollution;

2. The federal government has mandated to the several states and local entities the ultimate responsibility for periodic motor vehicle inspection and maintenance;

3. Ada County has been designated as a nonattainment area for both carbon monoxide and small particulate matter (PM_{10}) and as such is mandated under the federal clean air act to reduce emissions so that the national ambient air quality standards will be attained and maintained;

4. Ada County and its incorporated cities will be monitored for $PM_{2.5}$ and ozone in the immediate future, and that the primary source of both of these pollutants in Ada County is exhaust emissions from motor vehicles.

5. Fuel economy is a legitimate legislative purpose and that an efficient emissions control program will result in motor vehicle fuel savings for the residents of Ada County and its incorporated cities;

6. The city is duly authorized to enact and enforce this chapter under Idaho Code 31-714 and 50-302, respectively.

B. The purposes of this chapter, therefore, are to protect the health and welfare of the citizens of Ada County and its incorporated cities, to provide for the continued control and management of exhaust emissions above certain levels as determined by the federal clean air act, as amended, as well as rules for the control of air pollution in the state of

Idaho (IDAPA 16.01.01 et seq.), and to empower the air quality board to design and implement required periodic inspection of certain motor vehicles. (Ord. 346, 4-27-1999)

4-4-3: DEFINITIONS:

AUTOMOTIVE INSPECTION PROGRAM: That program established by the board in accordance with this chapter and whose purpose is to implement the requirements of this chapter.

AUTOMOTIVE INSPECTION STATION: A facility licensed in accordance with board specifications or operating under a contract with the board for the purpose of performing exhaust emissions inspections.

BOARD: The air quality board, chartered under the automotive inspection and readjustment program, joint powers agreement and this chapter.

CARBON MONOXIDE (CO): An inorganic chemical compound containing one atom of carbon and one atom of oxygen.

CERTIFICATE OF COMPLIANCE: A board approved certificate verifying that the motor vehicle described thereon is in compliance with the requirements of this chapter and the rules and regulations adopted pursuant to this chapter.

EMISSIONS INSPECTION MECHANIC: An individual who performs exhaust emissions inspections on behalf of the board in compliance with a formal written agreement with the board.

EMISSIONS REPAIR MECHANIC: An individual who performs exhaust emissions repairs to motor vehicles on behalf of the board in compliance with a formal written agreement with the board.

EXHAUST ANALYZER: A device for calculating the proportion of various gases, vapors and particles present in the exhaust emissions of a motor vehicle, specifically including carbon monoxide, hydrocarbon, oxides of nitrogen, sulfur dioxide, volatile organic compounds and any other gases, vapors and particles as required by the board.

EXHAUST EMISSIONS: Substances emitted into the atmosphere from any opening downstream of the exhaust port(s) of any motor vehicle engine.

EXHAUST EMISSIONS CONTROL DEVICE: Equipment designed by the manufacturer for installation on a motor vehicle for the purpose of reducing pollutants emitted from the motor vehicle, or a system or engine modification of a vehicle which causes a reduction of pollutants emitted from the motor vehicle, as required by federal law.

EXHAUST EMISSIONS INSPECTION AND EXHAUST EMISSIONS

REINSPECTION: That test, performed at an automotive inspection station or a repair and reinspection station by an emissions inspection mechanic, which determines whether a motor vehicle's exhaust emissions meet or do not meet applicable pass-adjust criteria.

FINE PARTICULATE MATTER ($PM_{2.5}$): All particulate matter, including condensable particulates, with an aerodynamic diameter of less than or equal to a nominal two and one-half (2.5) micrometers.

GROSS VEHICLE WEIGHT: The weight in pounds of a fully fueled empty motor vehicle plus any additional carrying capacity specified by the vehicle manufacturer.

HYDROCARBON (HC): An organic compound consisting exclusively of the elements carbon and hydrogen.

INSPECTION PERIOD: That period, determined according to applicable rules and regulations, during which a nonexempt motor vehicle is scheduled to be presented for an exhaust emissions inspection.

JOINT POWERS AGREEMENT: That agreement entered into pursuant to the joint powers provisions of Idaho Code chapter 23 title 67, among and between the incorporated cities of Ada County, the county of Ada, and the Ada County highway district, which creates the board.

MODEL YEAR: The year of origin of a motor vehicle so designated by that vehicle's certificate of registration filed with the Idaho department of transportation.

MOTOR VEHICLE: Any self propelled motor vehicle with four (4) or more wheels in contact with the ground.

MOTOR VEHICLE OWNER: An individual, partnership, firm, public, private, or municipal corporation, association, trust, estate, agency, lessee, political subdivision of the state of Idaho or the government of the United States or any other legal entity or their legal representatives, agents or assigns whose name appears as owner of a motor vehicle on its certificate of registration.

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS): Standards developed by the U.S. environmental protection agency in accordance with its responsibilities under the federal clean air act, as amended, and its implementing regulations.

NONEXEMPT MOTOR VEHICLE: A motor vehicle which is subject to the automotive inspection program and its exhaust emissions inspections.

OXIDES OF NITROGEN (NO_x): A group of chemical compounds formed by the combination of oxygen and nitrogen.

OZONE (O_3): A molecule composed of three (3) atoms of oxygen.

PARTICULATE MATTER (PM_{10}): All particulate matter, including condensable particulates, with an aerodynamic diameter of less than or equal to a nominal ten (10) micrometers.

PASS-ADJUST CRITERIA: Those standards set forth in the rules and regulations adopted by the board pursuant to this chapter which specify the maximum allowable components which may exist in exhaust emissions of a nonexempt motor vehicle.

PUBLIC NOTICE: A statement of the board's intent to modify the rules and regulations, including a summary of the proposed modifications, published in at least one newspaper of general circulation within Ada County, posted at the offices of the air quality board, and mailed to all participants in the joint powers agreement and all automotive inspection stations.

REPAIR AND REINSPECTION STATION: A facility licensed in accordance with board specifications or operating under a contract with the board for the purpose of repairing nonexempt motor vehicles which have failed an exhaust emissions inspection and to perform a reinspection of exhaust emissions in a manner specified by the board.

RULES AND REGULATIONS: Specific written provisions governing the automotive inspection program, as adopted and amended by the board from time to time.

SULFUR DIOXIDE (SO_2): A chemical compound consisting exclusively of the elements sulfur and oxygen.

TAMPERING: Removal of or rendering wholly or partially inoperative an exhaust emissions control device, including, but not limited to, the catalytic converter, air injection system, fuel inlet restrictor or other subsequent systems and devices designed and installed to reduce exhaust emissions.

VOLATILE ORGANIC COMPOUND (VOC): Any organic compound which readily evaporates in the atmosphere and, through its participation in atmospheric photochemical reactions, contributes to the formation of ozone. (Ord. 346, 4-27-1999)

4-4-4: CREATION OF AN INSPECTION-MAINTENANCE PROGRAM:

A. An air quality board is hereby created pursuant to the joint powers provisions of Idaho Code chapter 23 title 67 in a joint powers agreement executed by the participating public agencies. The composition and organization of the board shall be as set forth in the joint powers agreement.

B. The board shall design and implement an automotive inspection program for the mandatory exhaust emissions analysis, inspection, maintenance and repair of nonexempt motor vehicles to ensure continued compliance with national ambient air quality standards and in accordance with applicable rules and regulations of the U.S.

environmental protection agency, the state of Idaho division of environmental quality and the Ada planning association board.

C. The exhaust emissions of each nonexempt motor vehicle will be measured and evaluated periodically and the owner of any such vehicle is required to present the vehicle at an automotive inspection station for an exhaust emissions inspection unless specifically exempted from this requirement by the board or by this chapter. Failure to do so within the inspection period constitutes prima facie evidence of a violation of this chapter. The frequency and timing of the inspection period will be determined by the board.

D. The owner of a nonexempt motor vehicle which passes an exhaust emissions inspection as provided herein shall be presented with a certificate of compliance. The owner shall maintain the certificate in a place and manner specified by the board in the rules and regulations and present it to the board or other authority upon demand. Failure to do so constitutes prima facie evidence of a violation of this chapter.

E. A motor vehicle is classified as a nonexempt motor vehicle if all of the following are true:

1. The certificate of registration has "Ada County" entered upon it as the county of residence or would be required to have "Ada County" entered upon it as the county of residence pursuant to Idaho Code 49-401B;

2. The gross vehicle weight equals or exceeds one thousand five hundred (1,500) pounds; and

3. The model year is 1965 or newer.

F. The following are hereby specifically exempted from compliance with the automotive inspection program, subject to verification in a manner specified by the board and included in the rules and regulations:

1. Motorcycles as defined in Idaho Code 49-114;

2. "Idaho Old Timers" as defined in Idaho Code 49-406;

3. Farm tractors as defined in Idaho Code 49-107;

4. Motor vehicles registered under the prorated registration provisions of Idaho Code 49-437 for a period of less than six (6) months;

5. Idaho classic vehicles as defined in Idaho Code 49-406A;

6. Motor vehicles for which an alternate fuel type has been established according to rules and regulations adopted by the board; and

7. Such other motor vehicles as may be exempted by rules and regulations adopted by the board.

G. An exhaust emissions inspection may only be performed by and in a manner consistent with rules and regulations adopted by the board. An exhaust emissions inspection shall include all of the following:

1. A measurement of exhaust emissions using an approved exhaust analyzer or other procedure or device approved by the board to sample the motor vehicle's exhaust emissions, specifically including carbon monoxide and hydrocarbon content of the exhaust emissions and any other gases, vapors and particles as adopted by the board to comply with the purposes of this chapter as expressed in section 4-4-2 of this chapter; and

2. A determination as to whether exhaust emissions meet the pass-adjust criteria; and

3. A visual inspection, for model years 1984 and newer, to verify presence of the catalytic converter, air injection system, size of the fuel restrictor and any other visual inspection component(s) specified by the board in the rules and regulations; and

4. Any other inspection adopted by the board in the rules and regulations.

H. Where exhaust emissions do not meet the pass-adjust criteria, an indication to a motor vehicle owner of the repair and reinspection provisions of the automotive inspection program.

I. It is the responsibility of the owner of a nonexempt motor vehicle which was found not to comply with the pass-adjust criteria to have the motor vehicle brought into compliance at the owner's expense and to have it reinspected within ten (10) calendar days of the failed exhaust emissions inspection according to procedures and criteria established by the board and included in the rules and regulations.

J. Each nonexempt motor vehicle shall bear a share of the cost of the automotive inspection program regardless of whether the board elects to waive one or more exhaust emissions inspections for that vehicle. The motor vehicle owner for each nonexempt motor vehicle is required to submit payment to the board or other authorized representative under terms and conditions specified in the rules and regulations.

K. An emissions inspection mechanic who performs an exhaust emissions inspection on a motor vehicle shall, when the motor vehicle is found to comply with the pass-adjust criteria, immediately issue a certificate of compliance in accordance with procedures adopted by the board in the rules and regulations. The certificate of compliance will expire on the last day of the next inspection period for that motor vehicle. (Ord. 346, 4-27-1999)

4-4-5: DUTIES AND POWERS OF THE BOARD:

A. The board shall conduct regular monthly meetings at such time and place as the board shall determine. Meetings are open to the public.

B. The board, in accordance with the criteria expressed herein, shall adopt rules and regulations for the implementation and operation of the automotive inspection program and amend those rules and regulations from time to time as it deems necessary. Rules and regulations and amendments to same may only be adopted at an air quality board meeting with a minimum of fourteen (14) days' public notice of the board's intent to amend the rules and regulations.

C. Rules and regulations shall include, but not be limited to, the following:

1. Procedures for determining the exempt or nonexempt status of any motor vehicle and releasing exempt motor vehicles from further compliance with the automotive inspection program;

2. Procedures for establishing the inspection period for a nonexempt motor vehicle;

3. Structure of the automotive inspection program, specifically including whether repairs and adjustments to motor vehicles failing to comply with the pass-adjust criteria may or may not be made by emissions inspection mechanics who perform the original exhaust emissions inspection;

4. Procedures for licensing or contracting for automotive inspection stations, repair and reinspection stations, emissions inspection mechanics and emissions repair mechanics and for the potential termination thereof;

5. Pass-adjust criteria for all nonexempt motor vehicles;

6. Nature and display of certificates of compliance on nonexempt motor vehicles which successfully comply with the pass-adjust criteria;

7. Specifications for approved exhaust analyzers or other emissions measurement devices or systems;

8. Procedures by which the fee to be charged each motor vehicle owner for each nonexempt motor vehicle is determined, or, alternatively, the fee itself;

9. Circumstances under which a waiver may be granted to exempt a nonexempt motor vehicle from the provisions of this chapter, either temporarily or permanently;

10. Minimum effort(s) which will be required of the owner of a nonexempt motor vehicle owner which fails to comply with the pass-adjust criteria in order to bring the failing vehicle into compliance with the pass-adjust criteria, as well as procedures by which such

minimum effort provisions may be amended from time to time. This effort shall generally be the minimum necessary to accommodate typical repair and reinspection needs and may be different for different model years;

11. Cost of a certificate of compliance. This shall be the minimum necessary to provide for the ongoing operation, administration, maintenance and enforcement of the automotive inspection program and shall not exceed four dollars ($4.00) without concurrence of all parties to the joint powers agreement;

12. The processing fee which may be assessed upon owners of nonexempt motor vehicles who fail to present their nonexempt motor vehicle for inspection within the inspection period and the procedure by which this fee is established. This fee shall be sufficient to recover costs of processing notices of violation for all nonexempt motor vehicles which do not comply with the provisions of this chapter within the inspection period;

13. Procedures governing the contracting for or licensing of automotive inspection stations, repair and reinspection stations and emissions inspection mechanics and the suspension, revocation, or termination of those contracts or licenses when appropriate;

14. Schedules and deadlines for the flow of data, paperwork and information pertaining to exhaust emissions inspections among automotive inspection stations, repair and reinspection stations, exhaust emissions mechanics and the automotive inspection program staff; and

15. Any other matters deemed to be within the authority of the board.

D. The board may, at its discretion, employ the full power and authority of law to ensure that motor vehicle owners comply fully and completely with Idaho Code 49-401B, specifically including correct designation of the county of residence as provided therein.

E. The board shall conduct an ongoing quality assurance program to determine that all automotive inspection stations, repair and reinspection stations and exhaust emission mechanics perform automotive inspection program tasks in conformance with the adopted rules and regulations.

F. The board or its authorized representative, upon written notice and an opportunity for a hearing, may suspend, revoke and/or require the surrender and forfeiture of any license granted by the board which is not utilized in accordance with this chapter or the rules and regulations. The procedure and grounds for suspension or revocation shall be set forth in the rules and regulations and shall comply with current Idaho law.

G. The board shall have the authority to undertake any additional actions reasonably necessary to the operation of the automotive inspection program, including, but not limited to:

1. Employing necessary staff;

2. Executing necessary contracts and documents;

3. Authorizing deposits into and expenditures from the motor vehicle emissions inspection fund;

4. Acquiring and disposing of personal property;

5. Establishing an annual budget for the air inspection program;

6. Operating the automotive inspection program in accordance with standard fiscal practice; and

7. Providing for an annual audit of both financial and management practices of the automotive inspection program.

H. The board shall conduct ongoing evaluations of the automotive inspection program sufficient to satisfy requirements of the U.S. environmental protection agency, the Ada planning association board and other applicable rules and statutes. (Ord. 346, 4-27-1999)

4-4-6: FINANCING:

A. There is hereby established a motor vehicle emissions inspection fund which shall consist of the following:

1. Money appropriated thereto by the board or any local entity;

2. Money remitted by automotive inspection stations and repair and reinspection stations which is collected as fees;

3. Money received by the board from private grants or donations;

4. Money received by the board from processing fees assessed to owners of nonexempt motor vehicles who do not present their vehicle for an exhaust emissions inspection during the inspection period;

5. Federal or state funds received by the board for the automotive inspection program; and

6. Any other funds received by the board from any source.

B. Monies in the motor vehicle emissions inspection fund may be used to pay all costs incurred by the board in administering any aspect of the automotive inspection program.

C. The board shall appropriate and budget on a fiscal year basis, indicating expenditures to be made in implementing and administering the automotive inspection program and sources of income to be used for such expenditures. (Ord. 346, 4-27-1999)

4-4-7: INSPECTION CRITERIA AND COSTS:

A. A nonexempt motor vehicle's exhaust emissions must be less than or equal to the approved pass-adjust criteria in order for a certificate of compliance to be issued without further repair, adjustment or testing.

B. Nonexempt motor vehicles of the model year 1984 and newer must have a fully operational catalytic converter, air injection system, fuel restrictor and any other component(s), devices or systems specified by the board in the rules and regulations. The owner of a nonexempt motor vehicle is required to see that these systems are fully operational. An exhaust emissions inspection will not be performed on any vehicle on which one or more of these components have been subject to tampering. The owner of any nonexempt motor vehicle which has been subject to tampering must bring all components into compliance and have the vehicle inspected within the inspection period.

C. A certificate of compliance may be issued by an emissions inspection mechanic who personally has performed an exhaust emissions inspection and found the nonexempt motor vehicle to be in full compliance with the automotive inspection program or by an emissions repair mechanic who has personally performed repairs and adjustments to a motor vehicle which bring such vehicle into full compliance with the automotive inspection program or by the board.

D. No person shall represent himself or herself as an emissions inspection mechanic unless he or she has a current license issued by the board or is operating under a current contract with the board.

E. No person shall demand or collect a fee for the exhaust emissions inspection of a nonexempt motor vehicle unless authorized by this chapter. (Ord. 346, 4-27-1999)

4-4-8: ACQUISITION OF PROPERTY; CERTIFICATES PROPERTY OF BOARD:

A. The board may acquire by purchase, donation, dedication, or other lawful means any special equipment, tools, materials or facilities needed to adequately administer, investigate or enforce the provisions of this chapter or the rules and regulations adopted pursuant hereto, provided, however, any acquisition made by the board shall comply with all statutory requirements imposed upon the county for the purpose of receipt of property.

B. All certificates of compliance are the property of the board until such time as they are issued to properly inspected motor vehicles. (Ord. 346, 4-27-1999)

4-4-9: FALSIFICATION OF CERTIFICATES:

A. No person shall wilfully make, issue, display, sell or possess any imitation, counterfeit, or alteration of a certificate of compliance. Such activities so constitute prima facie evidence of a violation of this chapter.

B. No person shall display upon nor carry within any nonexempt motor vehicle a certificate of compliance knowing it to be issued without compliance with this chapter. Such activities so constitute prima facie evidence of a violation of this chapter. (Ord. 346, 4-27-1999)

4-4-10: ENFORCEMENT:

Any owner who fails to present a nonexempt motor vehicle for an exhaust emissions inspection during the inspection period is in violation of this chapter and will be subject to a board processing fee and any and all other enforcement mechanisms available through Idaho Code, this chapter, and other applicable municipal or county ordinances. Nothing in this chapter shall be construed to prevent the board from requesting or utilizing any and all enforcement mechanisms granted by law. (Ord. 346, 4-27-1999)

4-4-11: PENALTIES:

Any person who violates any provision of this chapter shall be deemed guilty of an infraction and, upon judgment thereof, shall be subject to the penalties set forth in Idaho infraction rule 9(b) (other infractions). Failure to satisfy judgment as ordered by the court pursuant to this chapter shall be deemed contempt of court punishable as a misdemeanor pursuant to Idaho Code 18-1801. (Ord. 346, 4-27-1999)

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Appendix F. Rules Establishing State Authority

IDAPA 58.01.01 Rules for the Control of Air Pollution in Idaho

http://adm.idaho.gov/adminrules/rules/idapa58/0101.pdf

IDAPA 58.01.23 Rules of Administrative Procedure before the Board of Environmental Quality

http://adm.idaho.gov/adminrules/rules/idapa58/0123.pdf

Idaho Administrative Code
Title 67 State Government and State Affairs
Chapter 52 Idaho Administrative Procedures Act

http://www.legislature.idaho.gov/idstat/Title67/T67CH52.htm

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Appendix G. Public Comment, Public Hearing and Response

Legal Notification of Public Comment Period

Public Comments Received

Public Hearing Documents

Response to Public Comments

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Legal Notification of Public Comment Period and Public Hearing

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Idaho Department of Environmental Quality

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Public Comment Opportunities

Media Contact

Dave Luft
DEQ Boise Regional Office
(208) 373-0550

Related Documents

Appendices
(pdf 5.5 mb, 418 pages)

Draft CO Maintenance Plan
(pdf 75 kb, 11 pages)

December 20, 2010

DEQ seeks comment on draft air quality maintenance plan for Northern Ada County

BOISE – The Idaho Department of Environment Quality (DEQ) is seeking public comment on a draft air quality maintenance plan for the Northern Ada County carbon monoxide (CO) maintenance area.

The plan demonstrates how the area will remain in compliance with the CO air quality standard for the next ten years.*A public hearing on the plan will be held at 3 p.m., Wednesday, January 26, 2011, at DEQ's State Office, Conference Room B, 1410 N. Hilton, Boise.* Written and oral comments will be accepted at the hearing.

Northern Ada County has been classified in attainment of the CO air quality standard since December 2002.

CO levels in Ada County have dropped since the 1970s due initially to the Vehicle Inspection and Maintenance Program.

In addition, efforts to increase the use of alternative transportation and improvements in traffic flow in downtown Boise have reduced congestion and minimized opportunities for CO pollution to build up in hotspot areas.

The last exceedance of the air quality standard for CO in Northern Ada County was in January 1991. No violations (more than one exceedance of the standard in a single year) have been recorded since 1986.

The plan, entitled "Northern Ada County Air Quality Maintenance Area Second 10-Year Carbon Monoxide Limited Maintenance Plan," is available for review at DEQ's Boise Regional Office and on DEQ's Web site (download at left).

The deadline for submitting written comments on the plan is 5 p.m. MST, Wednesday, January 26, 2011.

Submit comments electronically on DEQ's Web site or by mail or email to:

David Luft
DEQ Boise Regional Office
1445 N. Orchard
Boise, ID 83706
Email: *david.luft@deq.idaho.gov*

Public Comment Form

Name:
Email:
Affiliation:
Comments:

Enter code below: More Info

Submit Reset

Department of Environmental Quality • December 20, 2010 • For Immediate Release

NewsRelease

DEQ seeks comment on draft air quality maintenance plan for Northern Ada County

MEDIA CONTACT

- **Dave Luft**
  DEQ Boise Regional Office
  (208) 373-0201

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The deadline for submitting written comments on the plan is 5 p.m. MST, Wednesday, January 26, 2011.

Submit comments electronically on DEQ's Web site or by mail or email to:

David Luft
DEQ Boise Regional Office
1445 N. Orchard
Boise, ID 83706
Email: *david.luft@deq.idaho.gov*

End

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton, Boise, ID 83706 · (208) 373-0502

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

December 21, 2010

Legal Ads Department

RE: PUBLICATION OF LEGAL NOTICE: Regarding AIR POLLUTION, Department of Environmental Quality.

Enclosed is a legal notice that is to be published ONE TIME ONLY on December 27, 2010 in The Idaho Statesman.

Please confirm by return email that this will publish on that date.

For each separate legal notice, please send the following to the undersigned:

- One affidavit
- One proof of publication
- The billing invoice (our billing guidelines require one legal notice per invoice).

Thank you.

Sincerely,

David Luft
Boise Regional Office
Dept.of Environmental Quality
1445 N. Orchard
Boise, ID 83706
(208) 373-0201

Attachment: Legal Notice

Idaho Statesman

The Newspaper of the Treasure Valley
IDAHOSTATESMAN.COM
PO Box 40, Boise, ID 83707-0040

LEGAL PROOF OF PUBLICATION

Account #	Ad Number	Identification	PO	Amount	Cols	Lines
110715	0000533870	LEGAL NOTICE	CarbonMonoxide	$105.00	2	45

Attention: David Luft

DEQ/BOISE REGIONAL OFFICE
1445 N ORCHARD ST
BOISE ID 83706

LEGAL NOTICE

NOTICE OF 30-DAY PUBLIC COMMENT PERIOD AND PUBLIC HEARING REGARDING INTENT TO AMEND THE STATE IMPLEMENTATION PLAN FOR CARBON MONOXIDE IN NORTHERN ADA COUNTY

Notice is hereby given that the State of Idaho Department of Environmental Quality (DEQ) has scheduled a public comment period from now through January 26, 2011. DEQ will conduct a public hearing on Wednesday, January 26, 2011 at 3:00 p.m. in Conference Room "B" of the DEQ offices at 1410 North Hilton, Boise.

PROPOSED ACTION: DEQ is proposing to submit a Second 10-Year Plan for Maintaining the National Ambient Air Quality Standard (NAAQS) for carbon monoxide in the Northern Ada County Maintenance Area to the U.S. Environmental Protection Agency, for inclusion in the State Implementation Plan, as required by Section 175A of the Clean Air Act. The intent of the Second 10-year maintenance plan is to demonstrate how compliance with the NAAQS will be achieved in the ten year period following the expiration of the first 10-year plan.

AVAILABILITY OF MATERIALS AND PUBLIC HEARING: The draft Northern Ada County Second 10-Year Limited Maintenance Plan is available for public review on the DEQ's Web Site at http://www.deq.idaho.gov. Printed materials will be made available upon request at the Department's Regional Offices in Boise, at 1445 N. Orchard, Boise.

A public hearing will be held at the Department of Environmental Quality, 1410 North Hilton, Boise, Idaho on January 26, 2011, at 3:00 pm. Oral and written testimony will be accepted at that time.

SUBMISSION OF WRITTEN COMMENTS-ASSISTANCE ON TECHNICAL QUESTIONS: Anyone may submit written comment regarding this proposal. To be most effective, comments should address air quality considerations and include support materials where available. Comments, requests, and questions regarding the public comment process should be directed to David Luft, Department of Environmental Quality, 1445 N. Orchard, Boise, ID 83706-1255, david.luft@deq.idaho.gov, or (208) 373-0201. Please reference "CO Maintenance Plan" when sending comments or requesting information.

For technical assistance on questions concerning this project please contact David Luft at (208) 373-0201 or david.luft@deq.idaho.gov.

All written comments concerning this proposal must be directed to and received by the undersigned on or before 5:00, p.m., MST/MDT, January 26, 2011.

DATED this 21st day of December, 2010.
David Luft
Airshed Coordinator
December 21, 2010
Pub. Dec. 27, 2010

0000533870-01

TINA BARTLETT, being duly sworn, deposes and says: That she is the Principal Clerk of The Idaho Statesman, a daily newspaper printed and published at Boise, Ada County, State of Idaho, and having a general circulation therein, and which said newspaper has been continuously and uninterruptedly published in said County during a period of twelve consecutive months prior to the first publication of the notice, a copy of which is attached hereto: that said notice was published in The Idaho Statesman, in conformity with Section 60-108, Idaho Code, as amended, for:

1 Insertions

Beginning issue of: 12/27/2010

Ending issue of: 12/27/2010

Tina Bartlett
(Legals Clerk)

STATE OF IDAHO)
.SS
COUNTY OF ADA)

On this 27 day of December in the year of 2010 before me, a Notary Public, personally appeared before me Tina Bartlett known or identified to me to be the person whose name subscribed to the within instrument, and being by first duly sworn, declared that the statements therein are true, and acknowledged to me that she executed the same.

Heather Harradine
Notary Public for Idaho
Residing at: Boise, Idaho

My Commission expires: 2/08/2014

HEATHER HARRADINE NOTARY PUBLIC STATE OF IDAHO

RECEIVED
DEC 28 2010
DEPARTMENT OF ENVIRONMENTAL QUALITY BOISE REGIONAL OFFICE

marking the Southeast corner of said West half, thence leaving said East line and along the South line of said West half South 89°59'26" West, a distance of 1,325.80 feet to the POINT OF BEGINNING.

John C. Ward, ISB No. 1146
MOFFATT, THOMAS, BARRETT, ROCK & FIELDS, CHARTERED
101 S. Capitol Blvd., 10th Floo, Post Office Box 829 Boise, Idaho 83701
Telephone (208) 345-2000, Facsimile (208) 385-5384
jcw@moffatt.com.
Attorneys for Plaintiff
Pub. Dec. 13, 20, 27, 2010

0000531771-01

LEGAL NOTICE

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LEGAL NOTICE

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January 02, 2011

Ada County residents can comment on carbon monoxide control plan

Statesman staff - Idaho Statesman

The Idaho Department of Environment Quality is seeking public comment on a draft air quality plan for the Northern Ada County carbon monoxide maintenance area.

The plan demonstrates how the area will remain in compliance with carbon monoxide standards for the next 10 years.

A public hearing on the plan will be held at 3 p.m. Wednesday, Jan. 26, at DEQ's State Office, Conference Room B, 1410 N. Hilton St., Boise. Written and oral comments will be accepted at the hearing.

Northern Ada County has been classified in attainment of the carbon monoxide air quality standard since December 2002.

Carbon monoxide levels in Ada County have dropped since the 1970s, initially because of the Vehicle Inspection and Maintenance Program.

In addition, efforts to increase the use of alternative transportation and improvements in traffic flow in Downtown Boise have reduced congestion and minimized build up in hot-spot areas.

The last time the pollutant exceeded the air quality standard in Northern Ada County was in January 1991. No violations (exceeding the limit more than once in a single year) have been recorded since 1986.

The plan is available for review at DEQ's Boise Regional Office and on DEQ's website at www.deq.idaho.gov/public/comment.cfm.

The deadline for submitting written comments on the plan is 5 p.m. Wednesday, Jan. 26. Submit comments electronically on DEQ's website or by mail or email to: David Luft, DEQ Boise Regional Office, 1445 N. Orchard St., Boise, ID 83706 or e-mail david.luft@deq.idaho.gov.

... watching from upstairs windows as Deputy Morehouse caught the burglar leaving the garage with stolen items in hand.

The surprised burglar dropped the stolen goods and took off on foot as Deputy Morehouse gave chase and Deputies Helbach and Miller arrived to assist. Detective McCowan interviewed the suspect and as a result was able to solve several other Eagle area burglary cases.

The victim family was so grateful to the ACSO deputies for apprehending the burglar that they asked if they could sponsor a needy family instead of exchanging gifts between 6-8 families of their close friends as they normally do. Victim Coordinator Samantha Westendorf supplied a family name from her caseload, along with a list of things the needy family could use.

Instead of choosing just an item or two from the list, these generous families donated the entire list, amounting to over $4,000 worth of items that filled two patrol cars! The needy family who received the donation was very grateful to have this help.

The mother of the burglarized family who organized the donation e-mailed Samantha: "Thank you again for enabling us to help the family in this way. Not only was it a wonderful experience of giving for our children, it allowed us to 'pay forward' the gratitude we have for the selfless work your team does every day." *(See related story on Page Six.)*

"My green thumb came only as I made mistakes while learning to see things from the plant's point of view." – H. Fred Ale

... Perry, 265 Union, Star ID 83669; Mona Pomraning, 3130 Canada Road, Star ID 83669; Chelsea Pooley, 5713 N. Hill Haven Place, Star ID 83669; John Porter, 10040 Highway 44, Star ID 83669; Jason Reece, P.O. Box 165, Star ID 83669; Michael Richards, 2700 Brandon, Star ID 83669; Sherry Richards, 2700 Brandon, Star ID 83669; Linda Rodda, 2625 Rolling Hills Drive, Star ID 83669; Marquis Ross, 428 S. Main Street, Star ID 83669; Mechele Rudd, P.O. Box 243, Star ID 83669; Nick Ryan, 12310 W. Foxhaven Drive, Star ID 83669; Dixie Saunders, 11233 1st Street, Star ID 83669; and Tiffany Saunders, P.O. Box 64, Star ID 83669.

"VALLEY NEWS" JANUARY 10, 2011

DEQ seeks comment on N. Ada County draft air quality maintenance plan

BOISE – The Idaho Department of Environment Quality (DEQ) is seeking public comment on a draft air quality maintenance plan for the Northern Ada County carbon monoxide (CO) maintenance area.

The plan demonstrates how the area will remain in compliance with the CO air quality standard for the next ten years.A public hearing on the plan will be held at 3 p.m., Wednesday, January 26, 2011, at DEQ's State Office, Conference Room B, 1410 N. Hilton, Boise. Written and oral comments will be accepted at the hearing.

Northern Ada County has been classified in attainment of the CO air quality standard since December 2002.

CO levels in Ada County have dropped since the 1970s due initially to the Vehicle Inspection and Maintenance Program.

In addition, efforts to increase the use of alternative transportation and improvements in traffic flow in downtown Boise have reduced congestion and minimized opportunities for CO pollution to build up in hotspot areas.

The last exceedance of the air quality standard for CO in Northern Ada County was in January 1991. No violations (more than one exceedance of the standard in a single year) have been recorded since 1986.

The plan, entitled "Northern Ada County Air Quality Maintenance Area Second 10-Year Carbon Monoxide Limited Maintenance Plan," is available for review at DEQ's Boise Regional Office and on DEQ's web site (download at left).

The deadline for submitting written comments on the plan is 5:00 p.m. MST, Wednesday, January 26th, 2011. Submit comments electronically on DEQ's web site or by mail or e-mail to David Luft, DEQ Boise Regional Office, 1445 N. Orchard, Boise, ID 83706 or david.luft@deq.idaho.gov.

Someone considered 'beetle-browed' does not necessarily have anything to do with insects. The word comes from the Anglo-Saxon beot-ian, meaning 'to menace.'

NEW RULES OF THE GAME

Compiled by Bill Roberts, broberts@idahostatesman.com

IRRIGATION

Idaho Power proposes change to voluntary water program

THE ISSUE: Extending down times for irrigation pumps and changing the pay structure for irrigators involved in the program.

WHO'S AFFECTED: Irrigators.

THE RULEMAKER: Idaho Public Utilities Commission.

WHAT'S PROPOSED: Idaho Power Co. turns off some irrigation pumps during peak electric loads from June 15 to Aug. 15. Irrigators who participate in the program get a credit on their bills during those months. Idaho Power wants to expand by one hour the length of time it can shut down the pumps to 1 to 9 p.m. from 1 to 8 p.m. Irrigators in the program would receive a higher credit. Idaho Power also proposes changing the payment structure to include a variable payment based on how much an irrigator uses it.

HOW YOU CAN BE HEARD: The utilities commission will take public comments on the proposal through Feb. 9. You can go to www.puc.idaho.gov and click on "Comments and Questions About A Case." Put in the case number, which is IPC-E-10-46, and enter your comments.

TO LEARN MORE: Go to www.puc.idaho.gov and click on "File Room" and then "Electric Cases" and scroll to the case number.

WATER QUALITY

DEQ proposes ways to meet planned water quality regulations

THE ISSUE: Keeping water quality from declining in Idaho.

WHO'S AFFECTED: New and expanded projects by companies that treat their own waste water, such as food processors and pulp mills.

THE RULEMAKER: Idaho Department of Water Quality

WHAT'S PROPOSED: A guide that outlines how proposed rules to protect water quality will be implemented. Proposals include monitoring, reporting and analysis of the socio-economic impact of some activities before they are allowed.

HOW YOU CAN BE HEARD: A public meeting is planned for 8:30 a.m. to 12:30 p.m. Thursday, Jan. 27, at the Department of Environmental Quality, 1410 N. Hilton St., Boise.

TO LEARN MORE: Read the proposals at idahostatesman.com or go to www.deq.idaho.gov/rules/water/antidegradation_guidance_development.cfm.

ON THE AGENDA

AIR QUALITY PLAN FOR BOISE

Idaho Department of Environmental Quality, 3 p.m. Wednesday, Jan. 26 in Conference Room "B" of the DEQ offices, 1410 N. Hilton St., Boise.

DEQ will hold a public hearing on its proposed second 10-Year Plan for maintaining the national ambient air quality standard for carbon monoxide in the northern Ada County maintenance area to the U.S. Environmental Protection Agency, for inclusion in the State Implementation Plan as required by the Clean Air Act. For information, contact David Luft at david.luft@deq.idaho.gov, or (208) 373-0201.

WEATHERIZATION OF HOMES

Idaho Department of Health and Welfare, 10:30 a.m. Monday, Jan. 31 at Community Action Partnership Association of Idaho, 5400 W. Franklin Road, Suite G, Boise.

The state will hold a public hearing on the U.S. Department of Energy's Low-Income Weatherization Assistance Program, which helps low-income families install weatherization measures in their homes. Send or deliver comments by Jan. 30 to: Idaho Department of Health [illegible] Welfare, Genie Sue Weppner, 450 W. State St., [illegible]or, Boise 83720-0036.

WHOLE FOODS, WALGREENS

Boise City Council, 6 p.m. Tuesday, Feb. 1, City Hall

BOISE BUILDING, LAND USES

City Planning and Zoning Commission, 6 p.m. Monday, Feb. 7, City Council chambers, 3rd Floor, City Hall, 150 N. Capitol Blvd.

Susan Langley requests approval of a conditional-use permit to add one unit to an existing planned residential development at 3748 W. Rose Hill St. in an L-OD (Limited Office with Design Review) zone.

Lytle Signs Inc. requests approval of a conditional-use permit to install a monument sign with electronic message display at 4262 N. Eagle Road in an L-OD (Limited Office with Design Review) zone.

Scott Soelberg requests approval of a conditional-use permit to reduce parking for an existing duplex from two spaces per unit to one at 3606 W. Normandie Drive in an R-1C (Single Family Residential) zone.

Elizabeth Straker requests approval of a special exception to operate a salon within a 600-square-foot existing tenant space at 999 S. Federal Way in an L-OD (Limited Office with Design Review) zone.

John Kirtland requests approval to annex 2 acres at 8787 W. Victory Road and 3010 S. Victory View Circle with a zoning designation of R-1A (Single Family Residential-2.1 Dwelling Units/Acre).

Kinnick Place Subdivision is proposed with 12 buildable lots and three common lots on the north side of Iowa Street, between Illinois and Gekeler.

HOTEL, FACTORY AND WAREHOUSE

to construct a single-story cosmetic manufacturing business at 9976 W. Emerald St. in an M-1D (Limited Industrial with Design Review) zone.

D&A Companies and **Lester and Denise Alter** request approval to construct a two-story warehouse/fabrication/office building at 2667 S. Victory View Way in an M-1D (Limited Office with Design Review) zone.

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Public Comments Received

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David Luft

From: PublicComment@deq.idaho.gov
Sent: Monday, January 03, 2011 8:27 AM
To: David Luft
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on draft air quality maintenance plan for Northern Ada County
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=3166#comments

Name: Jeanine Schlauch
Email Address: jeanines@cableone.net
Affiliation: none
Comments: I would like to know why has the testing been changed from reading exhaust to downloading computer codes. I would also like to know how this change actually improves the air, since the computer codes quite often have nothing to do with the exhaust system, yet still generate a disqualification.

David Luft

From: PublicComment@deq.idaho.gov
Sent: Monday, January 03, 2011 10:50 AM
To: David Luft
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on draft air quality maintenance plan for Northern Ada County
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=3166#comments

Name: George Gunn
Email Address: ggunn@cableone.net
Affiliation:
Comments: Public transportation should also be part of the management plan.

David Luft

From: PublicComment@deq.idaho.gov
Sent: Monday, January 17, 2011 11:41 AM
To: David Luft
Subject: Public Comment

You have received a public comment on:
DEQ seeks comment on draft air quality maintenance plan for Northern Ada County
http://www.deq.idaho.gov/Applications/NewsApp/shownews.cfm?news_id=3166#comments

Name: Jay Witt
Email Address: jay.witt@urs.com
Affiliation: Transportation and Air Quality Consultant
Comments: Nice job on the Maintenance Plan. A couple of quick comments:

- Figure 2: There are a set of bars after 2008. I assume these are the average CO concentrations for 2009? If so they are trending higher than the previous 4 years. Why is this the case?
- Section 5.5 (Conformity): There is no mention of the Air Screening Policy established by the ICC through ITD in conjunction with the Idaho Office of FHWA. This policy is widely used to "screen out" transportation projects from providing a quantitative analysis of CO emissions/concentrations. Will this continue to be used as a tool in the maintenance area? Will it require modification based on the new CO design values? I think it would be good to describe the screening tool in the conformity section of the maintenance plan.

Thanks!

Jay Witt, P.E.
URS - CCM Boise Engineering Office
[illegible]20 Park Blvd.
Boise, ID 83729
Work: (208) 386-5219
Cell: (208) 585-1854

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Public Hearing Documents

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CERTIFICATE OF HEARING

SUBJECT: Northern Ada County CO Maintenance Area SIP Revision

LOCATION: DEQ State Office Conference Center, 1410 N. Hilton, Boise, Idaho

HEARING DATE: January 26, 2011

The undersigned designated hearing officer hereby certifies that on the 26th day of January 2011, a public hearing was held on on the Northern Ada County Carbon Monoxide Maintenance Area SIP Revision, at the DEQ state office conference center in Boise, Idaho. The hearing commenced at 3 p.m. and was adjourned at 3:30 p.m. No members of the public attended the hearing.

Notice of this hearing appeared in the Idaho Statesman on December 27, 2011.

DATED this 26th day of January, 2011.

Diane Tappen
Diane Tappen
Hearing Officer

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Response to Public Comments

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Idaho Department of Environmental Quality Responses to Comments and Questions Submitted During a Public Comment Period for the Second 10-Year Limited Maintenance Plan for the Northern Ada County Carbon Monoxide Maintenance Area

Introduction

The public comment period for the Limited Maintenance Plan was held from December 20^{th}, 2011 through January 26, 2011, as required by IDAPA 58.01.01578.04 (*Rules for the Control of Air Pollution in Idaho*) and federal requirements. A public hearing was held on January 26, 2011, in accordance with these rules.

The Maintenance Plan was made available at the Idaho Department of Environmental Quality, Boise Regional Office, and on line. The opportunity to provide public comments was made available through postal mail, electronic mail and verbal testimony at the public hearing.

Public comments regarding the air quality aspects of the Limited Maintenance Plan have been summarized below.

Public Comments and DEQ Responses

Comment 1: Why has the vehicle inspection and maintenance program been changed from a tailpipe test, to a computer (on-board diagnostic- OBDII) test. Further, how does this change improve air quality when some codes don't specifically involve the exhaust system?

DEQ Response 1: Since 1996, every vehicle has been required to have an Onboard Diagnostic (OBD II system) which is a self-diagnostic system for monitoring vehicle emissions every time it's driven. It checks all the components that affect both tailpipe emissions and evaporative emissions every time the engine is started, reaches operating temperature and the vehicle is driven long enough for all the self-checks to be completed. The check engine light will illuminate to alert the driver when an emissions problem occurs. The light will come on and remain on if the system has detected a problem and recorded a fault code. Regulations require OBD II systems to set a fault code anytime a detected fault causes a vehicle's emissions to exceed 150 percent of a federal emission standard. Furthermore, regulations require that the check engine light will only be illuminated for emission-related malfunctions which will result in a failed emissions test.

Because of the efficiency of the OBD II system, conducting emissions tests utilizing this system meets the Inspection and Maintenance (I/M) regulations and is very efficient for inspectors and motorists. This process is the required testing method for 1996 and newer vehicles nationwide.

Comment 2: Public transportation should be included as part of the management plan.

DEQ Response 2: Public transportation relies on voluntary participation. Control measures must be enforceable. The purpose of the maintenance plan is to document that air pollution levels have been brought below the standard, and to commit to continuing the control measures, listed in the existing plan, that resulted in the improvements in air quality. No additional controls or improvements are required.

While DEQ advocates the use of public transportation as a valuable method to reduce carbon monoxide and other pollutants, it is not appropriate as a control measure due to the voluntary nature of public transportation.

Comment 3: CO appears to be trending higher in the last year of data based on the graph in Section 5.2.A. Why is this the case?

DEQ Response 3: While the first and second highest readings for 2008 were somewhat higher than the previous 4 years, the overall trend continues to be downward. The monitored levels were still less than 1/3 of the National Ambient Air Quality Standard. The EPA considers areas that are at 85% of the standard, or lower to be eligible for a limited maintenance plan, based on the belief that continued application of existing programs should result in continued attainment of the standard. Northern Ada County is also well below this 85% threshold.

Comment 4: The Idaho Transportation Department (ITD) Air Screening Policy is not mentioned. Will its use for conformity be continued?

DEQ Response 4: The ITD Air Screening Policy is guidance – it is very useful, and is a tool that is used as part of the process. This update makes no changes to the conformity process, and as such does not affect the use of the Air Screening Policy.