

SECTION 6

QUALITY ASSURANCE/QUALITY CONTROL POLICY STATEMENT

INVENTORY PURPOSE:

The objective of this emission inventory was to compile an accurate and comprehensive inventory of carbon monoxide emissions and facility data from all significant sources within the Truckee Meadows non-attainment area for the year 2002. Emissions inventory information is relied upon by Air Programs to meet a variety of needs. This information:

- Supports aspects of the air quality planning function.
- Helps determine the trends in emission levels, past and future.
- Is an indicator for measuring progress in attaining ambient standards.
- Assists in evaluating the effect of transportation control measures on the region's emissions.
- Satisfies other regulatory needs such as evaluating the effects of emission controls and meeting emissions reporting requirements.

The 2002 Washoe County CO NAA emissions inventory meets the periodic inventory requirements of the Clean Air Act Amendments of 1990 (CAAA) for CO emission estimates. A separate periodic inventory was compiled for the Washoe County O₃ NAA for VOC, CO, and NO_x emissions.

To ensure that the inventory was as accurate as possible, the Air Quality Management Division of the Washoe County District Health Department implemented certain quality assurance procedures at various points in the inventory process. This agency, to the best of its ability, followed the procedures outlined in Guidance for the Preparation of Quality Assurance Plans for CO/O₃SIP Emission Inventories¹¹.

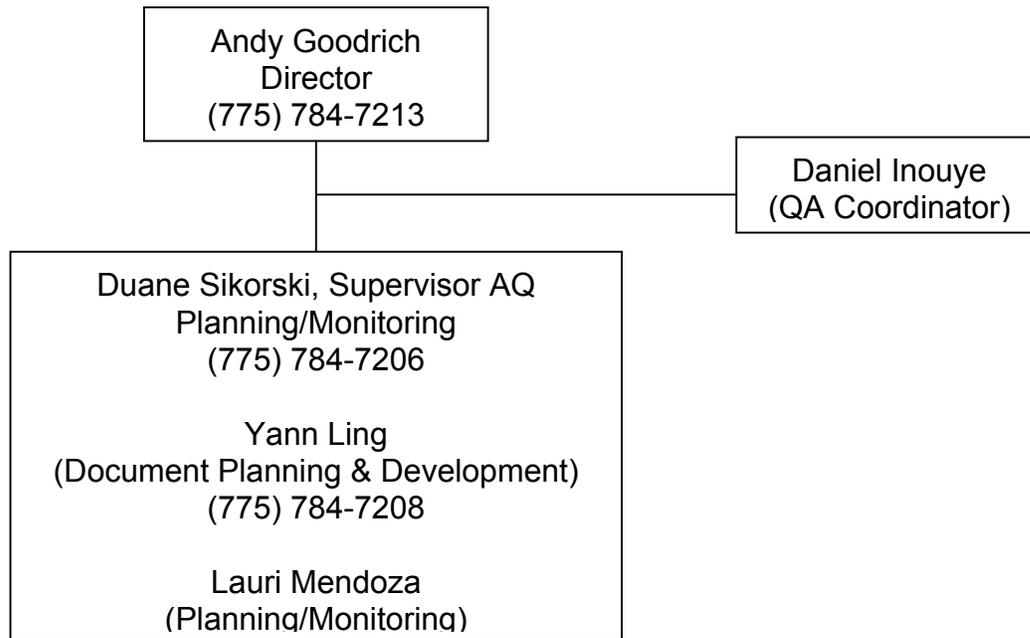
PROGRAM SUMMARY:

The Washoe County District Health Department is the federally designated air pollution control agency for Washoe County. The Air Quality Management Division of the Health Department is responsible for preparing air quality planning documents for Washoe County. All plans are reviewed by the Truckee Meadows Regional Planning Agency (TMRPA) to ensure consistency with the regional master plan and the associated air quality element of that plan. Once adopted by the District Board of Health, plans are then submitted, through Nevada Division of Environmental Protection to EPA Region IX.

The Air Quality Management Division has 20 full time employees consisting of: 1 Director, 2 Program Supervisors, 3 Environmental Engineers, 10 Air Quality Specialists, 1 Public Information Officer, and 3 Clerical/Staff.

To compile the mandated state implementation plans, emission inventories and related

documents, the following organizational responsibilities were followed:



With this the third comprehensive inventory done for carbon monoxide, staff knew where problems arose with the previous inventories and was able to avoid those problems and mistakes. Overall quality assurance can be considered improved over the 1990 base year inventory.

The data-handling structure developed to manage the flow of data from initial reporting to the Air Quality Management Division through inclusion in the carbon monoxide SIP is shown in Figure 6-1. The Figure also shows the critical points within the process where QA was applied. The implementation of QC procedures was not indicated in Figure 6-1 because these procedures were performed as an integral part of the inventory process.

The main elements of the quality control program are listed in Figure 6-2. Checkpoints for optimal problem detection are noted with an asterisk in the Figure. All QC requirements were the responsibility of staff compiling the inventory. A complete description of each of these elements is given in the following subsections.

There are two main elements in the QA program. The first element involved auditing all Data Error Reports to ensure the appropriate corrective action was performed. The second element involved a random audit of a percentage of the inventory data. The random audits included checking the QC procedures listed in Figure 6-2 to ensure these were performed properly. Both elements of the QA program were the responsibility of the QA coordinator.

DATA FLOW CHART

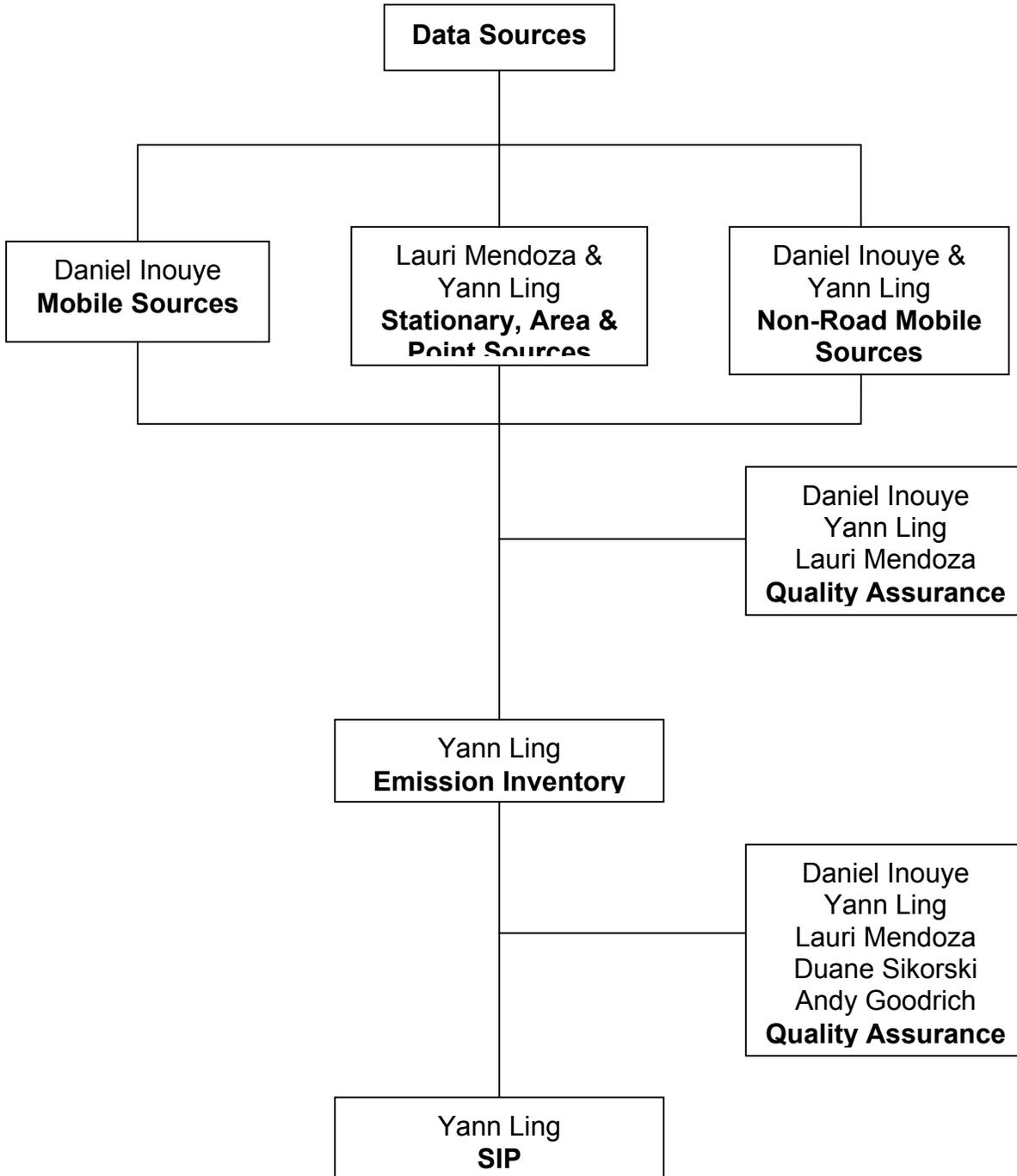


FIGURE 6-1

PRINCIPLES OF THE QC PROGRAM

QA PLANNING:

- Allocate resources for optimal QA.
- Prepare a checklist of sources to be evaluated.
- Identify critical data elements and impacts on results and utility of the inventory.
- Review questionnaire design.
- Schedule routine checking of calculations and data entry.
- Prepare data checking programs incorporating standard range and missing data checks.
- Plan audit procedures.

DATA COLLECTION AND ANALYSIS:

- Crosscheck identification of all major sources with permitting database to ensure inclusion.
- Check questionnaire responses and re-contact where necessary.
- * - Check data collected for missing information.
- Check emission estimation methods and consistency of application.
- * - Check calculated results against historical data for standard range check.

DATA HANDLING:

- Track data flow from raw data sheets to spreadsheet entry.
- Correct data errors - complete Data Error Report and file with QA coordinator.
- Check data after conversion to inventory format.
- * - Check individual data entries for missing emissions, SIC codes, implausible operating data, etc.
- Assign agency estimates for missing data on a consistent and documented basis.
- * - Review tabulated data for quality and identification of outliers.

DATA REPORTING:

- Check aggregate emissions.
- Check disaggregation of emissions.
- Compare results with other inventories.

* Logical checkpoints.

FIGURE 6-2

QA PLANNING:

Because Washoe County is such a small agency it is difficult to find additional qualified staff to review the work of the staff actually performing the inventory; therefore, staff members who prepared the various source categories were also responsible for performing the appropriate quality control measures. There have been no workshops or training courses offered in recent years addressing periodic inventories. However, staff is aware of the Emission Inventory Improvement Program (EIIP), and has reviewed the documents that are the products of that group. The most current methodologies listed in the EIIP documents¹² or in the guidance documents written for the base year inventories were used.

DATA COLLECTION AND ANALYSIS:

All source categories that exist in the non-attainment area and which have been shown to be significant contributors (at least 0.01 percent of total) are addressed in this inventory. Given limited staff resources, priority was given to the most significant source categories first. The 1990, 1993, and 1996 CO emission inventories were utilized in making these decisions. A sort of the Division's permitting database was performed to generate a list of individual sources for a given source category. As a result only seven sources were removed from consideration: slash burning, frost control, forest fires, open refuse burning, electric utility fuel combustion, aircraft engine testing, and marine vessels.

As with the 1990, 1993, 1996 and 1999 inventory, the goal was the inclusion of all sources contributing at least 0.01 percent of total carbon monoxide emissions. This goal was not only met but also exceeded. The smallest source included in the inventory (Waste Disposal, Treatment, and Recovery) accounted for less than 0.01 percent (4 tons/yr) of total emissions.

Area sources, which are not represented in the permitting database (residential wood combustion, prescribed burning, etc.), were assessed using activity data compiled in the following manner:

- Mail and Phone surveys
- Utility Records
- Public Service Commission/State Energy Office
- State Tax Records

For those source categories that are difficult because of limited resources or for which it was not possible to determine precise level(s) of activity or emission characteristics, estimation techniques were used. Estimation methods, used in the inventory, such as per capita emission factors, are documented and follow established procedures whenever possible.

Mobile source activity levels were estimated using data from the Regional Transportation Commission of Washoe County (RTC), the Nevada Department of Motor Vehicles and Public Safety (DMV), and the Nevada Department of Transportation (NDOT).

The emission inventory document includes a narrative that describes the activity data source for each source category and the capability of that source to provide accurate data. Prior to calculating any emissions, the Division carefully scrutinized all data collected, as outlined in the QA guidance document. The data validation procedures included the following:

- ✓ Checking the date of the data to make sure that the data corresponded with the year being

inventoried.

- ✓ Checking the data sources against other published data including prior inventories to ensure activity data were within a reasonable range.
- ✓ Assessing the professional capabilities and biases (if any) of the agencies supplying the data.
- ✓ Considering the purpose for which the data were compiled.
- ✓ Assessing the collection techniques used to compile the data.

A final check of the data collection phase was performed to determine inclusion of all critical data elements. The list of critical data elements given in Section 4 of the EPA document Emission Inventory Requirements for Carbon Monoxide State Implementation Plans¹³ was used for this check. Missing data identified through this process were compiled through source re-contacts prior to final submission of the data.

The carbon monoxide emissions from stationary sources were determined using the Division's permitting database. The Division maintains an active permitting program which requires all stationary sources that emit more than two (2) pounds per day to be permitted. Activity data are reported annually by these sources as part of the annual permitting process. The database allows the Division to accurately estimate emissions from many of the sources within the air basin for any given year. Emissions were taken from the 2002 emission estimates derived from the permitting database.

The emission calculations performed within the permitting database use emission factors from AP-42⁴ in most cases. Emissions from stationary sources, which are not addressed in AP-42, were estimated using mass balance calculations or engineering judgment. These calculations were subjected to extensive QA while the database program was in the development stages. As the program routines were completed and compiled into executable code, all emission calculations were checked for accuracy and consistency. However, all source data obtained from the database were randomly checked against hard copy permitting files to ensure the proper information was included, the correct year was indicated, etc.

The Division used the EPA MOBILE series model for the estimation of on-road mobile source emissions. For non-road mobile source emissions EPA procedures as outlined in the guidance document⁷ were used. After all emission calculations were performed, a standard range check of all source categories was performed to assess the reasonability of the emissions reported. This check was performed using prior emission inventory data.

Double counting of sources was addressed in two ways. First, the EPA definition of a point source given in Emission Inventory Requirements for Carbon Monoxide State Implementation Plans¹³ (100 tons/year CO emissions) was adhered to strictly. This eliminated the potential of double counting a given source as both a point source and a stationary area source. For categories where source-specific activity data are not available and emissions must be estimated using indirect activity data such as population, if there were any point source emissions which would have been contained in that category, they were subtracted from the area source emissions. Area source categories where information was obtained from the Division's permitting database only used the database information as the activity data. The

permit numbers, which pertained to each area source category, were divided up and the emissions totaled and verified. It was verified that no permit number was listed in more than one source category or as both an area and point source.

DATA HANDLING:

The Division established an organized document management system for handling all data relative to the preparation of the emission inventories. The data were backed up to diskette periodically, particularly when corrections were made.

All raw data were recorded and filed in the inventory file system under the appropriate source category. Data were updated and returned to the file as the inventory process progressed. Information such as activity data source, emission estimation method, calculated emissions, reporting technique, etc. was kept in the file. The files were spot checked for missing information and transcription errors as part of the random data audit performed by the QA coordinator. Much of the information contained in these files is included as appendices to the narrative of this inventory.

All data errors and inconsistencies discovered by staff in the process of performing the QC checks were recorded on standard Data Error Reports. These reports were then filed with the QA coordinator

All text narrative was prepared and edited on a word processor. The final document was saved on diskette.

DATA REPORTING:

All text, tables, and figures included in the inventory document were audited. This audit consisted of ensuring the text, tables, and figures all contained the same data and that the data corresponded to the data contained in the source category inventory files.

SYSTEM AUDITS:

The Air Quality Management Division acknowledges that EPA may audit this QA plan. The Division will make every effort to rectify deficiencies that may be identified by such an audit.