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 1999. 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.

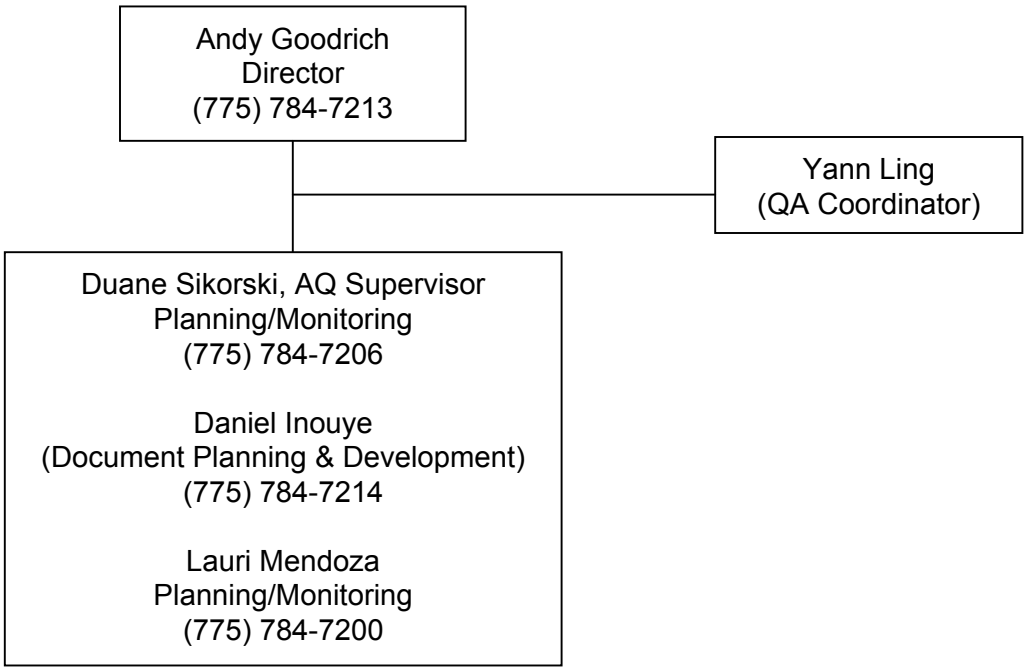
To ensure that the inventory is as accurate as possible, the Air Quality Management Division of the Washoe County District Health Department implemented certain quality assurance procedures at various points in the inventory process.

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 Air Quality 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:



The data-handling structure developed to manage the flow of data from initial reporting to the WCAQMD through inclusion in the PM_{10} inventory is shown in Figure 6-1. That 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 Table 6-1. Optimal checkpoints for 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 6-1 to ensure these were performed properly. Both elements of the QA program were the responsibility of the QA Coordinator.

QA Planning

Because WCAQMD 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 inventories. Staff attempted to use the most current methodology and emission factors and followed guidance documents written for the base year inventories.

FIGURE 6-1
Data Flow Chart

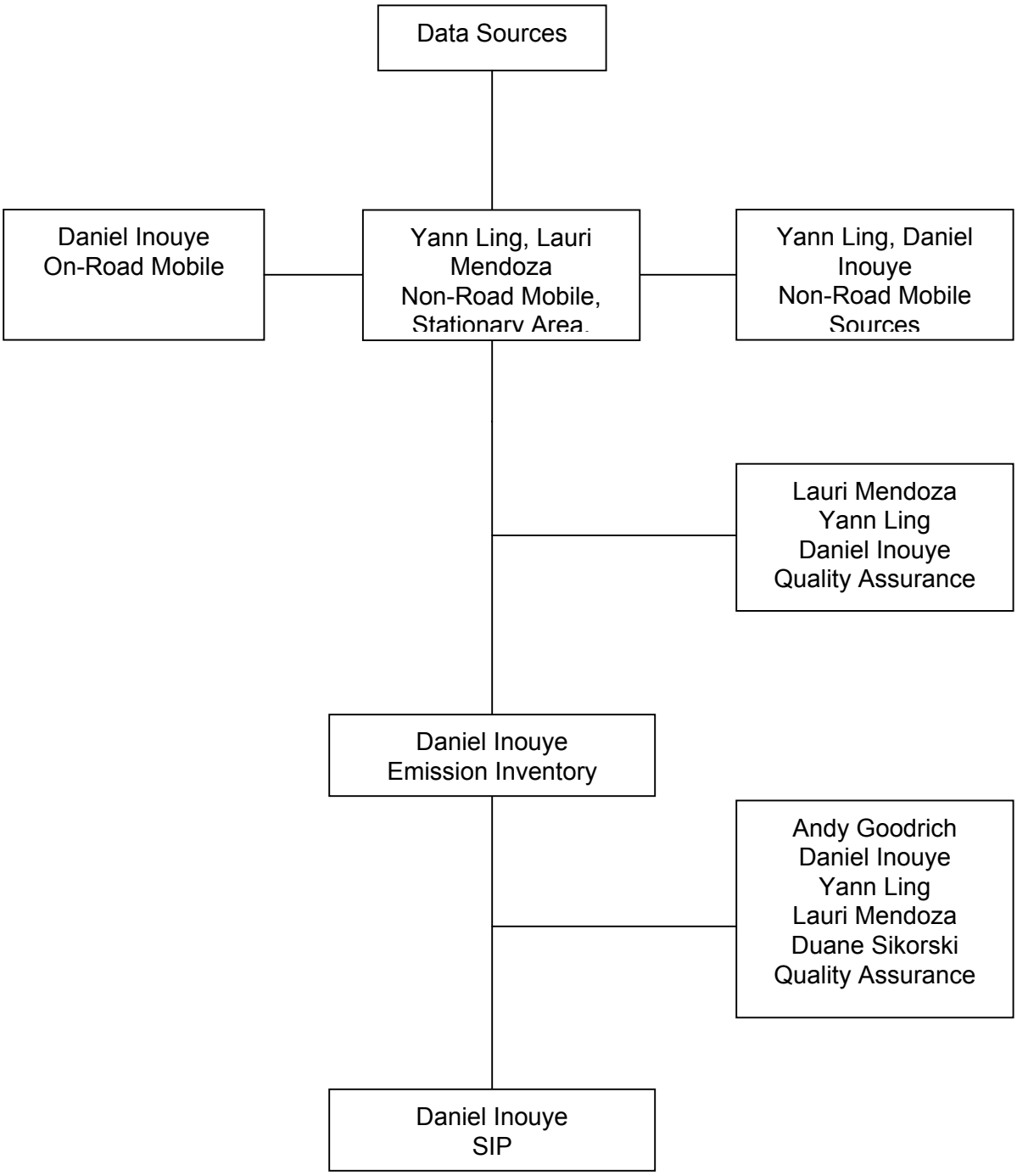


TABLE 6-1
Principles of the QC Program

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.

Data Collection and Analysis

All source categories that exist in the NAA and which have been shown to be significant contributors are addressed in this inventory. Given limited staff resources, priority was given to the most significant source categories. A sort of the Division's permitting database was performed to generate a list of point sources in a given source category.

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 Telephone surveys
Utility Records
Public Service Commission/State Energy Office
State Tax Records
Economic Research Data

For those source categories which are difficult to inventory because of limited resources or the impossibility of establishing 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 Ozone State Implementation Plans[12] 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 PM_{10} emissions from stationary point 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 County for any given year. Emissions were taken from the 1995 emission estimates derived from the permitting database.

The emission calculations performed within the permitting database use emission factors from AP-42[1] 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 MOBILE6 model for the estimation of mobile source emissions. and the NONROAD model for non-road mobile source emissions. 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. Since all point sources were counted as stationary area sources, this eliminated the potential of double counting a given source as both a point source and as a stationary area source. For some categories, source-specific activity data are not available and emissions must be estimated using indirect activity data such as population. If the WCAQMD permitting database was used, the permit numbers which pertained to each area source category were divided up and the emissions totaled and verified. It was confirmed that no permit number was listed in more than one source category.

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.

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. The QA coordinator audited all Data Error Reports to ensure that the appropriate corrective action was taken. Depending on the magnitude of the error, the audit included tracking the data from initial reporting to the Division through final emission calculations.

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 final 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 this QA plan may be audited by the EPA. The Division will make every effort to rectify deficiencies that may be identified by such an audit.