Secondary Data Assessment and Evaluation, San Gabriel Valley Area 3

PREPARED FOR: Lisa Hanusiak/EPA Region IX
Carl Brickner/EPA Region IX Quality Assurance Office

PREPARED BY: Victoria Taylor/CH2M HILL/BAO

COPIES: File

DATE: June 12, 2006

1.0 Introduction

The objective of the Secondary Data Assessment and Evaluation (SDAE) is to increase the likelihood that the conclusions and recommendations presented in the forthcoming San Gabriel Valley Area 3 (SGV-A3) remedial investigation (RI) report are supported by chemical data of suitable quality. The SDAE is limited to data collected by secondary data sources (i.e., data collected by individuals and agencies other than EPA). These secondary data source organizations have responsibility for data collection and sampling and analysis throughout the San Gabriel Basin, as well as Area 3. While the SDAE will have as its primary focus data associated with locations within Area 3, the collected information is considered to be representative of the quality systems in place for data collection activities throughout the San Gabriel Basin. Thus, this SDAE is considered to be applicable throughout the basin.

The SDAE is based on review of the quality systems in place during data collection, analysis, and reporting. The primary emphasis of the SDAE is to establish that the documented quality assurance (QA) activities associated with chemical (environmental) data collection would result in usable data, in terms of the current RI data quality objectives (DQOs). The QA systems presented in the *Quality Assurance Project Plan (QAPP) (*EPA, 2003a) and the *Field Sampling Plan (FSP) for San Gabriel Valley NPL Area 3 Remedial Investigation Field Activities* (EPA, 2003b) will provide guidelines for the review of the QA systems associated with the secondary data sources. The SDAE is being conducted to support the preparation of the RI report and the scope is limited to review of QA systems. The SDAE does not include a review of individual samples or quality control results. Rather, the SDAE will survey the procedures and systems employed by the secondary data collectors to assess the quality of discrete sample results.

2.0 Data Quality Objectives

The DQOs and quality control requirements for environmental data acquisition are documented in QAPP and FSP (EPA, 2003). The DQOs, as applied to chemical data collection, have been refined and revised to include the following components related to use of chemical data:

- DQO Component 1: Source Identification and Characterization;
- DQO Component 2: Nature and Extent Evaluation of Regional Contamination;
- DQO Component 3: Human Health and Ecological Risk Assessments.

Secondary data will be specifically assessed for usability in terms of the three DQO components listed above. A tiered approach will be used and secondary data will be evaluated in terms of the project objectives in keeping with the principle that "…data quality, as a concept, is meaningful only when it relates to the intended use of the data."[1] That is, if the intention of sample analysis is to determine the presence or absence of an analyte, use of rapid screening procedures may produce qualitative data of acceptable quality. However, if the intention of sample analysis is to perform a risk assessment, such qualitative data would be considered unacceptable.

Figure 1 presents a qualitative description of general data usability considerations. As the acceptability of the QA system increases, the usability of the data produced should also increase, resulting in a data set considered usable for the most critical applications such as risk assessments. Conversely, as the acceptability of the QA system decreases, the usability of the data also decreases. In other words, the *risk* of using the associated data increases. In such cases, the data may be used only in situations where the consequences of making an incorrect decision are considered minor.

3.0 Secondary Data Sources

The major sources of secondary chemical data for SGV-A3 are the Main San Gabriel Basin Watermaster, including individual water purveyors, the Los Angeles Regional Water Quality Control Board (LARWQCB), and the California Department of Health Service (DHS). The members of the SDAE planning and implementation team are:

Secondary Data Users

Lisa Hanusiak: EPA Remedial Project Manager (RPM)

Carl Brickner: EPA Quality Assurance Office (QAO) Representative

Victoria Taylor: CH2M HILL Project Chemist

Robert Collar: CH2M HILL Site Manager

Secondary Data Collectors

Los Angeles Regional Water Quality Control Board

Main San Gabriel Basin Watermaster

California Department of Health Services

Although not specifically identified as a collector of significant quantities of data in SGV-A3, the California Department of Toxic Substances Control is also included on the SDAE planning and implementation team.

[1] EPA, 2000. Guidance for Data Quality Assessment, Practical Methods for Data Analysis, EPA QA/G-9

The SDAE survey team will primarily include the EPA QAO representative, with support from CH2M HILL. Since the SDAE is not a project oversight activity, but rather an information collection activity, the survey team has independent authority for conducting the SDAE and reporting on the evaluation. The independence is assured, because the QAO representative reports directly to the EPA QAO and functions independently of the SGV-A3 project team. The SDAE survey team will summarize information obtained from the secondary data collectors and will prepare a final technical memorandum with usability recommendations for the project. For these reasons, the SDAE will represent an unbiased survey and evaluation of the secondary data.

The EPA RPM will contact the secondary data sources to introduce the types of information being collected and the need for the SDAE. The EPA RPM will also identify contacts for follow-up interviews by the SDAE survey team. Follow-up interviews with the secondary data collectors will take place via teleconferences and/or face to face meetings. A predefined set of quality metrics developed using the DQOs for the RI will be used to obtain relevant information regarding the quality systems applied to secondary data collection.

The schedule will be consistent with the overall schedule for preparation of the baseline risk assessments and the Remedial Investigation (RI) report. The secondary data evaluation will be conducted parallel to preparation of both the baseline risk assessment and the RI report.

4.0 Secondary Data Assessment and Evaluation

Information from secondary data collectors will be obtained through:

- Review of existing quality assurance project plans or other documentation related to quality systems associated with data collection and analysis;
- Completion of quality systems review checklists through interviews with key personnel;
- Review and evaluation of split sample analytical results associated with collection of groundwater samples within SGV-A3.

Available quality systems documentation will be reviewed for comparability with the EPA quality systems, as represented by the QAPP (EPA, 2003a) and FSP (EPA, 2003b). The review will include identification of the key elements presented in Table 1. Where differences between the quality systems are identified, the potential impact on use of the data for the RI will be evaluated.

Figure 2 presents a checklist developed to document the secondary data sources' quality systems. The checklist elements were selected to obtain objective, comparable information from disparate sources, relative to this SDAE.

5.0 Qualitative Analysis

Based on the information obtained during the interviews, the comparability of the quality systems will be ranked by applying a numerical value to each quality system element surveyed (see Figure 2) as follows:

- Category 3: The quality system element is comparable with that employed during collection and analysis of primary samples and the data are usable for all purposes, including risk assessment.
- Category 2: The quality system element is generally comparable with that employed during collection and analysis of the primary samples, although some differences which may affect data usability were noted.
- Category 1: The quality system element is not considered sufficiently comparable to produce data usable for critical decisions, although it may be suitable for limited uses, for example, qualitative identification of detected chemicals.

Each individual element will be assigned a numeric ranking based on the assigned category. The average of these rankings will be used to assign a preliminary overall usability category. As discussed in the following section, split sample results, where available, will be used together with the quality systems evaluation to fully characterize the usability of the secondary data. The SDAE survey team will use all of the information obtained, including split sample results, to assess the potential data quality impacts. The outcome of the SDAE will be a technical memorandum summarizing the procedures used to evaluate the secondary data, the specific information gathered, and final secondary data usability category recommendations in terms of the RI DQOs.

6.0 Split Samples

In addition to the qualitative evaluation of the secondary data sources' quality systems, split sample data are available for evaluation from some potential contamination sources in SGV-A3. The split groundwater samples were collected by the LARWQCB at facilities where VOCs may be present in the subsurface. Analytical results from the split sample pairs will be compared as follows:

ANALYTICAL RESULTS	CRITERIA	CONCLUSION
Both results not detected	reporting limits differ by more than±25%	Disagreement
One positive result, one non-detected	>5x difference >10x difference	Disagreement Major Disagreement
One positive result above the RL, one positive result between the MDL and RL	>3x difference >5x difference	Disagreement Major Disagreement
Both results above the RL, calculate RPD	>50% >75%	Disagreement Major Disagreement

Agreement between these interlaboratory split samples will provide a basis for evaluating both the accuracy and precision of the secondary data. Where available, split sample results will be used along with the quality systems evaluation to estimate the overall usability of the secondary data.

7.0 References

CREEL Special Report No. 96-9, *Comparison Criteria for Environmental Chemical Analyses of Split Samples Sent to Different Laboratories*, USACE Cold Regions and Environmental Research Laboratory. May, 1996.

Environmental Protection Agency (EPA), 2002, *Guidance for Quality Assurance Project Plans*, EPA QA/G-5, Final.

EPA, 2003a. Quality Assurance Project Plan for San Gabriel Valley NPL Area 3 Remedial Investigation Field Activities.

EPA, 2003b. Field Sampling Plan for San Gabriel Valley NPL Area 3 Remedial Investigation Field Activities.

TABLE 1: Quality Assurance Elements and Data Use Evaluation
San Gabriel Valley Area 3

QA ELEMENT	REFERENCE SOURCE	DESCRIPTION	EVALUATION
Data Collection Method	FSP, Section 6.0, Groundwater Sample Collection	Bladder pump or equivalent Adequate Purging and Stabilization Low-flow Sample Collection for VOCs Appropriate sample containers and preservatives Acceptable decontamination procedures specified	Comparability of procedures presented in the FSP Section 6.0 will improve the representativeness and comparability of the secondary data. If the individual elements listed in the adjacent column are comparable to those used to collect the primary data, the sample results will be considered equivalent in quality to the primary data in terms of data collection methodologies.
Sample Handling	QAPP, Section B.3	Acceptable Chain-of-Custody, storage and shipment procedures specified	Documentation of chain of custody procedures increases confidence in sample integrity. Proper shipping and storage is analyte- and method-specific and adherence to method protocols supports confidence in the analytical results.
Analytical Methods Requirements	QAPP, Section B.4	Required methods comparable All COPCs included in target analyte lists Sensitivity requirements specified	Use of current and standard analytical methodology increases comparability with the primary data set. If the secondary data target analyte lists contain all of the COPCs with reporting limits at or below the applicable RI limits, the comparability with the primary data set and usefulness of the data are improved.
Field Quality Control Requirements	QAPP, Section B.5	Appropriate Field QC procedures specified	Analysis of field QC samples such as field duplicates, equipment blanks, and trip blanks may aid in the evaluation of the representativeness of sample results.
Data Review and Validation	QAPP, Section D	Data Review and Validation specified and performed	Data review and validation increases the confidence that the data are of known and documented quality.

Figure 1: Qualitative Description of Secondary (Chemical) Data Usability

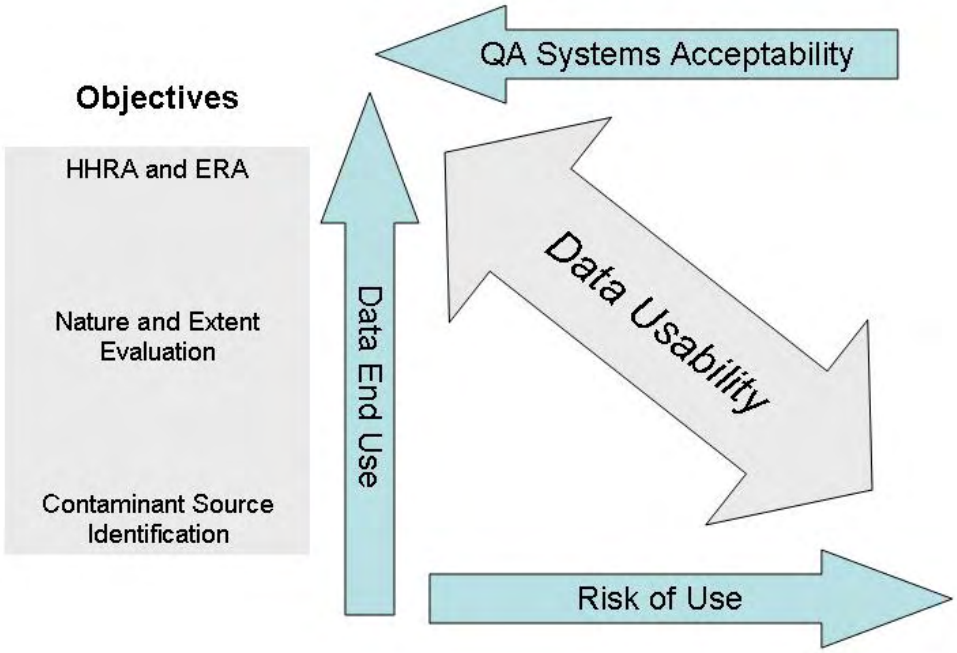

FIGURE 2: Example Checklist for Secondary Data Source Quality Systems Review San Gabriel Valley Area 3

1) Planning Documents

a) QAPP

i) Title

ii) Date Issued ___/___/___

iii) Approved By

b) SAP

i) Title

ii) Date Issued ___/___/___

iii) Approved By

c) FSP

i) Title

ii) Date Issued ___/___/___

iii) Approved By

d) Other

i) Title

ii) Date Issued ___/___/___

iii) Approved By

2) Responsible Agency

a) Description

b) Contact

3) Sampling Purpose-Data End Use

4) Matrix Soil/GW/Other

5) Frequency of Collection

6) External oversight performed Yes/No

a) Type

b) Performed by

c) Frequency

d) External oversight documentation available **Yes/No**

7) Designated individual responsible for implementation of QA Program Yes/No

Identity:

8) Internal oversight performed Yes/No

a) Type

b) Performed by

c) Frequency

d) Internal oversight documentation available Yes/No

9) Sample collection organization(s)

Name **Dates Used**

10) Laboratory(ies) used

Name **Dates Used**

11) Internal data review performed Yes/No

12) External data review performed Yes/No

a.) Performed by

13) Data available electronically Yes/No

14) Final Report

a) Title

b) Date ___/___/___

c) Submitted to

d) Data quality assessment included **Yes/No**