

Enclosure

Report to the Legislature
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Statewide Electronic Submission of Reports for the Underground Storage Tank Program

State Water Resources Control Board

Division of Water Quality

Underground Storage Tank Program

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1.0 Executive Summary

Beginning in 2001, AB 2886 (Kuehl, 2000) required electronic reporting of water quality compliance data for the State Water Resources Control Board's (SWRCB) Underground Storage Tank (UST) Program. The legislation also required the SWRCB to report to the Legislature and the Governor on the feasibility and appropriateness of extending the UST electronic reporting project to all SWRCB programs.

This innovative e-government program is the largest electronic compliance reporting system nationally. In the 15 month period ending December 2002, greater than six million records of environmental data have been submitted by the regulated community and two to three million records of compliance data are being submitted each quarter. Based on the successful implementation of the electronic compliance reporting in the UST program, the SWRCB can readily leverage this system as the foundation for capturing the vast majority of water quality data at the SWRCB.

The SWRCB strives to comprehensively measure water quality in many programs to evaluate ambient conditions in surface water and groundwater bodies and to monitor restoration efforts. By requiring the submission of standardized electronic water quality data throughout these programs the SWRCB will increase the amount of usable quantitative data and information, while leveraging current investments in the training of thousands of environmental consultants for regulated businesses, and hundreds of analytical laboratories throughout the State that are now participating in the AB 2886 program. The collection of standardized electronic water information would have the following important benefits:

1. Help regulators to be more effective, innovative, and responsive;
2. Help regulators safeguard groundwater and ensure that water quality is comprehensively measured; and
3. Dramatically increases possibilities to coordinate the collection and reporting of water quality information among programs, agencies and stakeholders.

The proposed final regulations for implementation of AB 2886 are a first step in leveraging the success of the AB 2886 program. These regulations, if adopted by the SWRCB, will expand mandatory electronic submittal of compliance information to all of SWRCB's groundwater cleanup programs.

2.0 Introduction

Beginning in 2001, AB 2886 (Kuehl, 2000) required electronic reporting of water quality compliance data for the State Water Resources Control Board's (SWRCB's) underground storage tank (UST) program. This report is intended to fulfill the requirements of AB 2886 that requires the SWRCB to report to the Legislature and the Governor on the feasibility and appropriateness of extending the electronic reporting project to all SWRCB programs.

3.0 Evaluating the AB 2886 Electronic Reporting Program

3.1 Challenges and Opportunities for Electronic Reporting in the UST Program

A main mission of the SWRCB is to help ensure that groundwater is safe for drinking and other beneficial uses. The SWRCB is responsible for ensuring compliance with a number of state and Federal laws regulating the cleanup and monitoring of waste discharges to land that may affect the state's groundwaters. A strategic focus of these efforts is the safety of drinking water. The SWRCB works with the Regional Water Quality Control Boards (RWQCBs) and county and city agencies throughout the state to oversee the cleanup of groundwater and soils at locations where contaminants have been released into the environment. The goal of these cleanup efforts is to restore these impaired groundwater bodies, which is key to preventing and/or reducing threats to drinking water wells.

Each year thousands of businesses and individuals responsible for waste discharge to land collectively spend hundreds of millions of dollars to obtain and report water quality compliance data (laboratory and field data) from contamination sites. Previous to AB 2886, all of this data – tens of millions of records annually – was reported and stored in various paper reports and distributed among the filing cabinets of over a hundred offices of regulatory agencies throughout California. Non-standardized reporting of compliance data in paper reports resulted in obvious inefficiencies and limitations including lack of timely access to data for staff and citizens, limited means to share data, no way to easily examine data over a region, the need for manual reentry of data for analysis purposes, and limited quality assurance review.

3.2 The AB 2886 Electronic Reporting System

AB 2886 requires electronic reporting of UST program water quality compliance data in standardized published formats via an e-government¹ application supported by the SWRCB's Internet-accessible Geotracker data management system. The UST program involves environmental contractors for thousands of responsible parties, hundreds of certified analytical laboratories, and hundreds of regulators in RWQCBs and county and city agencies. Presently the AB 2886 e-government program is the largest electronic reporting compliance program nationally for environmental data. For example, in one quarter of 2002, electronic data for approximately two million laboratory samples were submitted.

The SWRCB's Geotracker data management system provides a one-stop Internet portal for electronic reporting of laboratory data and site-specific compliance data for cleanup sites. This one-stop electronic reporting portal approach optimizes access to information and communication among regulatory agencies, responsible parties, the public and other stakeholders, supports streamlined business processes, and provides tools and processes so the staff overseeing cleanup and enforcement of regulations can manage and analyze compliance information.

The AB 2886 electronic reporting program is a large-scale e-government system. Unlike other e-commerce or e-government transactions, the AB 2886 program focuses on the exchange of scientific field and laboratory measurements and associated quality control information. These are unusually complex datasets requiring extensive quality control data for each sample. Successful implementation required training sessions for thousands of parties responsible for contamination sites, environmental contractors, and regulators, and hundreds of analytical laboratories throughout the state. Successful implementation also demanded extensive user support including detailed user documentation and online help materials, a robust help desk service that has handled over 12,000 interactions, and continued stakeholder outreach.

3.3 Applicability to Other SWRCB Programs

Many programs within the SWRCB rely on the collection of water or soil samples and the subsequent analysis of these samples by an analytical laboratory. The SWRCB strives to comprehensively measure water quality in several programs to evaluate protection and restoration efforts. For example water quality data are used to:

¹ Electronic Government (e-government) generally relates to the use of the Internet as a medium to transact business between public or private organizations or citizens. It is distinct from simply posting information that may be read, downloaded, etc.

1. Make remediation decisions at waste discharge sites where groundwater may be affected including UST sites (UST Program), aboveground tank and non-petroleum sites (Spills, Leaks, Investigation & Cleanup Program), and military facility sites (Department of Defense Program).
2. Set permit limits and monitor discharges. Water quality data are key to defining Total Maximum Daily Loads (TMDLs) and in setting effluent limits for waste discharges to land (Land Disposal Program) and surface waters (National Pollutant Discharge Elimination System Program).
3. Monitor ambient water quality. Measuring and assessing water quality is the focus of the SWRCB's Groundwater Ambient Monitoring and Assessment (GAMA) Program and Surface Water Ambient Monitoring Program.

The proposed final regulations for the implementation of AB 2886 extend electronic submittal requirements to all of the SWRCB's groundwater cleanup programs. By requiring the submission of standardized electronic water quality data the SWRCB will increase the amount of usable quantitative data and information regarding water quality throughout many of the SWRCB programs, while leveraging current investments in the training of thousands of participants in the AB 2886 program. The collection of standardized electronic water information throughout the SWRCB programs offers new possibilities to coordinate the collection, sharing, and assessment of water quality information among programs, agencies and stakeholders.

4.0 AB 2886 Program Accomplishments

Accomplishment 1 Helps regulators overseeing UST cleanup sites to be more effective, innovative, and responsive

1a Helps to increase the efficiency and effectiveness of regulatory staff

Regulators overseeing cleanup of UST sites must ensure that tank owners and operators (collectively referred to as responsible parties) are in compliance with Federal and state laws. UST regulations require routine reporting of site data describing the extent of contamination and cleanup activities. Regulators overseeing cleanup must verify the timely submission of site-specific compliance data, review the submitted data, and make cleanup decisions based on this dataset. Previously, all of this data was received only in hard copy reports. The hard copy material was manually distributed to project staff for their review.

Receipt of electronic data and documentation is resulting in both significant time and effort savings. The AB 2886 electronic reporting system combined with the Geotracker compliance assurance module gives regulators new tools and automated reports to manage compliance data. UST regulators now have efficient access to compliance data, quality assurance reports, and analysis tools allowing them to more easily answer the following questions:

- What compliance documentation is pending review?
- Which facilities are out of compliance or delinquent in reporting site data?
- What are the contamination trends in groundwater monitoring wells?
- Does the compliance data meet quality assurance standards?
- What is the history of contamination in soil and groundwater at each site?
- What is the history of enforcement actions and compliance responses at a cleanup site?
- What risk does contamination at a site pose to nearby drinking water resources?

1b Improves services to the regulated community

The SWRCB offers extensive support for electronic compliance reporting via a robust help desk. The help desk primarily answers questions from responsible parties and their consultants concerning the reporting process. The help desk has handled over twelve thousand user interactions submitted by email or by calling the toll free number. The help desk also functions as a mechanism for collecting user input to further streamline the reporting process.

1c Improves consistency among RWQCBs, and over one hundred city and county agencies by standardizing the reporting process

The electronic reporting program has transformed a complex and varied paper-driven process with a streamlined standardized electronic reporting system. Thus, reporting of UST compliance data is now standardized across all nine RWQCBs and among over one hundred county and city agencies regulating cleanup and monitoring at leaking UST sites.

1d Improves data sharing and access to information for citizens and stakeholders

In the past, environmental consultants, real estate brokers, lawyers, and public citizens routinely called the SWRCB, RWQCBs, or a city or county agency that regulated a specific leaking UST site to obtain information on site-specific contamination. For example, regulatory staff typically received many calls from

the public involved in property transfers to verify whether a leaking UST site was located nearby or on a specific property. Regulatory oversight staff at each agency would locate and pull files, look up data, and return phone calls. This was a cumbersome and costly process. Either the regulator or the citizen can now answer these questions simply by accessing data on-line at the SWRCB's Geotracker web site.

1e Helps regulators conduct fair and equitable enforcement

The AB 2886 electronic reporting system helps regulators work effectively with the regulated community to ensure compliance. Standardized electronic reporting helps UST regulators efficiently identify all sites that are delinquent in reporting compliance data. In addition, electronic reporting coupled with Geotracker tools allows regulators to quickly identify priority sites (For example, all leaking UST sites with concentrations of MTBE in groundwater above a certain threshold). The regulated community benefits because all sites can easily be reviewed by the same standards, helping ensure that regulators conduct fair and equitable enforcement.

Accomplishment 2 Helps regulators safeguard groundwater for drinking and other beneficial uses

2a Enables better decisions

Electronic compliance reporting provides regulators with immediate access to high quality data and reports on a site-by-site or regional basis. Decision-makers now have more accurate, up-to-date, accessible, and complete statewide information concerning leaking UST sites. Efficient access to site-specific data and water quality trends throughout the cleanup effort helps regulators to better understand the level of contamination present at the site and the effectiveness of remediation efforts. Thus, regulators overseeing cleanup efforts are better able to identify long-term threats to groundwater and focus efforts to implement appropriate pollution prevention and remediation activities. Evaluation of site-specific data enables regulators to better focus on prevention and reducing threats to drinking water wells. This helps better protect unimpaired groundwater bodies while remediation efforts restore impaired groundwater bodies. With regards to the UST program, electronic reporting enhances the capabilities of regulatory agencies in assessing and monitoring the threat of MTBE contamination to drinking water wells.

2b Improves long-term stewardship of contaminant sites

Electronic archiving of compliance data in standardized formats allows efficient access to site data over the long-term. Because of technical limitations of all remediation processes, some level of residual contamination will exist in the local

environment (soil and/or groundwater) after cleanup of a polluted site has ended. In some cases, a deed restriction or other land use control will be negotiated at the time of site closure. Therefore, access to site-specific water quality and soil data are critical in making appropriate land-use decisions during a redevelopment process. For example, the future building site of a school can be selected where levels of contamination do not pose a health risk for children.

Historically all compliance data from contaminant sites were contained in tens of thousands of paper reports and stored in filing cabinets or warehouse facilities throughout the state. Long-term access to the information often involved very significant (and sometimes failed) efforts to locate and review hundreds of compliance reports for an individual contaminant site. The effort required to access archived information increased the likelihood that data previously collected and reported to the state during the cleanup process would not be effectively used when making future land-use decisions. Electronic reporting of compliance data coupled with long-term archiving of the electronic data and immediate access to the data resolves these problems and provides a firm foundation for efforts to utilize site-specific data over the long-term to protect human health and the environment.

2c Supports coordination with other agencies that share a role in groundwater resources

Internet access to electronic data storage promotes cross-program communication and data sharing to identify threats to drinking water sources. For example, the Department of Toxic Substances Control (DTSC) often oversees the impact of UST sites on groundwater near a state Superfund site. Another example of a cross-program benefit is that tens of thousands of UST monitoring wells provide a broad characterization of shallow groundwater throughout the state. This ambient water quality data will become an important contribution to the SWRCB's Comprehensive Statewide Groundwater Quality Monitoring Program pursuant to AB 599 (Liu, 2001).

Accomplishment 3 Helps ensure that water quality at contaminant sites is comprehensively measured to evaluate protection and restoration efforts

3a Increases the amount of usable quantitative data and information regarding water quality

Electronic reporting will provide decision-makers with more accurate and up-to-date data for UST sites. Since implementing electronic reporting in September of 2001, approximately six million records of laboratory analysis and field

measurement data (for soil and groundwater) have been submitted by the regulated community. This data can now be available to other agencies or programs, citizens, and other stakeholders.

3b Improves Data Quality

The SWRCB's UST Cleanup Fund program spends over \$100 million annually reimbursing regulated parties for the collection of environmental data for regulatory decision-making. High quality, defensible data suitable for environmental decision-making are a goal of any effort to sample and monitor contamination levels present in water and soil. In order to have confidence in the quality of the environmental data collected, there must be a structured process for quality in place. To that end, the specific data reporting formats adopted for the SWRCB's AB 2886 electronic reporting program require reporting of a very significant amount of quality assurance and quality control (QA/QC) data to help ensure the integrity of the samples and the quality of the data. The QA/QC data required closely follows guidance that the U.S. Environmental Protection Agency (U.S. EPA) has established for the collection, processing and analysis of water, soil and vapor samples.

Sampling is a key component of the entire process, as the analysis can only represent the contents of the sample received. In the field, information on the sample chain of custody records how the sample was collected, handled, and transported to the laboratory to ensure the quality of the sample received by the laboratory². Improper preservation or handling of the sample may produce results that do not reflect the actual conditions of the soil or groundwater at the contaminant site. In the laboratory, numerous quality control samples and checks are used to assess the entire sampling and analytical process³. Failed quality control measures can mean that the data are unusable and must be flagged to identify analytical deficiencies to document the analytical uncertainty of the sample.

The SWRCB's AB 2886 electronic reporting program enforces data quality requirements by two methods. First, hundreds of automatic error-checks are incorporated into the Internet upload tools for each compliance data format. These error-checks include:

²For example, preservation methods, handling of sample during shipment (i.e., darkened container on ice), dates to ensure that U.S. EPA defined laboratory and technical times are met.

³ For example, quality control samples such as trip blanks and equipment blanks can be used to determine if the sampling process has potentially impacted the data. Laboratory blanks are used to determine if contamination of the sample occurs in the laboratory during analysis. Matrix spikes are used to give an indication as to whether there are matrix interferences in the sample that prevent the accurate determination of contaminant levels. Laboratory control samples are used to indicate accuracy of the analysis and that the method is producing accuracies within the control limits specified by U.S. EPA reference methods.

- Check that required fields have data
- Check for validity of the order of fields in the file
- Check that reference values for each field are valid
- Check that data type and field limit for each entry is valid
- Cross-checking of each record to ensure completeness
- Cross-checking of dates for logic.

A second level of quality assurance reports is now being implemented in the SWRCB's electronic reporting program. These quality assurance reports are based on guidance from U.S. EPA methods and further documentation provided in the AB 2886 guidance letters (See <http://geotracker.swrcb.ca.gov> and click on AB 2886 Electronic Reporting). These reports flag the data for analytical and sample collection handling deficiencies such as:

- Accuracy (out of control limits)
- Sample holding times (exceedance of laboratory and technical contract laboratory procedures)
- Matrix interference (lowered recovery in matrix spike)
- Laboratory contamination (positive laboratory blank)
- Sample collection deficiencies (i.e.,improper preservation or transport)
- Laboratory processing deficiencies (i.e.,improper extraction)
- Completeness reporting of analytes specified by method.

Accomplishment 4 Helps the SWRCB meet e-government objectives

4a Dramatically increases the number of government to business (G2B) transactions conducted over the Web

The SWRCB implementation of electronic reporting pursuant to AB 2886 supports the largest e-reporting system for environmental data nationally.

The following are summary statistics demonstrating the success of the SWRCB's AB 2886 electronic reporting program for the 15 month period from program startup on September 1, 2001, to December 31, 2002:

- 6 million electronic records
- 64,000 monitoring wells with water or soil samples
- 9,000 reporting contaminant sites
- 1,150 regulated parties reporting data electronically

5.0 Recommendations

The AB 2886 requirement for electronic reporting of water quality compliance for the SWRCB UST program has been a huge success in California, and within a short time period has become one of the largest electronic compliance reporting programs in the nation. Based on the successful implementation of electronic reporting in the UST program, the SWRCB can readily leverage this system as the foundation for storing the vast majority of water quality data at the SWRCB. Requiring the submission of standardized electronic water quality data will increase the amount of usable quantitative data and information regarding water quality throughout many of the SWRCB programs, while leveraging current investments in the training of thousands of participants in the AB 2886 program.

The proposed final regulations for the implementation of AB 2886 are a first step in leveraging the success of the AB 2886 program. These regulations, if adopted by the SWRCB, will expand mandatory electronic submittal of compliance information to all of the SWRCB's groundwater cleanup programs. Extending the electronic reporting requirements to other SWRCB groundwater cleanup programs will increase the amount of water quality data and environmental information that is available to regulators, citizens and stakeholders from a single, easily-accessible location. For example, the SWRCB may extend the electronic reporting requirements for the electronic submission of all soil or water chemistry analysis by a certified laboratory⁴ throughout all SWRCB programs. This would significantly improve the access to and reliability of water quality data received in the National Pollutant Discharge Elimination System, Total Maximum Daily Load, and other surface water monitoring programs.

In conclusion, it is feasible and appropriate to extend the electronic reporting project to all SWRCB programs. Expanding the electronic compliance reporting requirements to the SWRCB's other groundwater cleanup programs and ultimately to all of the SWRCB's programs are the next logical steps. The compilation of standardized electronic water quality information throughout the SWRCB programs offers new possibilities for coordinating the collection, sharing, and assessment of water quality information among programs, agencies and stakeholders that share a role in groundwater resources.

⁴ Certified or accredited pursuant to Article 3 (commencing with section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code