

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION**

**ATTACHMENT B TO ORDER R5-2014-XXXX
MONITORING AND REPORTING PROGRAM**

**WASTE DISCHARGE REQUIREMENTS GENERAL ORDER
FOR**

**SAN LUIS & DELTA-MENDOTA WATER AUTHORITY
AND
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION**

**SURFACE WATER DISCHARGES FROM THE
GRASSLAND BYPASS PROJECT**

FRESNO AND MERCED COUNTIES

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I. Introduction

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code (Water Code) section 13267 which authorizes the California Regional Water Quality Control Board, Central Valley Region (hereafter Central Valley Water Board or “board”), to require preparation and submittal of technical and monitoring reports. This MRP includes requirements for the U.S. Bureau of Reclamation and the San Luis & Delta-Mendota Water Authority (hereafter “Dischargers”) operating under Order R5-201X-XXXX (hereafter referred to as the “Order”). The requirements of this MRP are necessary to determine whether state waters receiving discharges are meeting discharge and receiving water limitations. Additional discussion and rationale for this MRP’s requirements are provided in Attachment A of the Order.

This MRP Order addresses the discharge of subsurface agricultural drainage from the Grassland Drainage Area (GDA) by member districts within the San Luis & Delta-Mendota Authority that use a portion of the San Luis Drain (SLD), owned by the U.S. Bureau of Reclamation, to Mud Slough (north), a point six miles upstream of the San Joaquin River confluence. This is known as the Grassland Bypass Project which has removed subsurface agricultural drainage from wetlands water supply channels in the Grasslands watershed.

The MRP Order establishes specific surface water monitoring, reporting, and electronic data deliverable requirements for the Dischargers that are required to determine compliance with the limitations set in the Order. Additional monitoring under the Use Agreement¹ between the Dischargers requires more monitoring than specified in this MRP Order.

II. General Provisions

To the extent feasible, all technical reports required by this MRP must be submitted electronically in a format specified by the Central Valley Water Board that is reasonably available to the Dischargers.

A. Surface Water Monitoring

Surface water monitoring shall be conducted at the sites listed in Table 1. Locations of these monitoring stations are shown in Figure 1.

¹ The *Agreement for Continued Use of the San Luis Drain* for the Period January 1, 2010 through December 31, 2019 (Use Agreement) contains the terms and conditions for operation of the Grassland Bypass Project. An extensive, multi-agency monitoring program was established as part of the Use Agreement to provide water quality data to determine compliance with selenium and salinity load values.

Table 1: Monitoring Stations

Feature	CEDEN Code	Station	Location	Latitude	Longitude
San Luis Drain	NA	B2**	Terminus at Mud Slough	37.26100 N	-120.90520 W
	541SLDGCR	B3	Gun Club Road	37.23159 N	-120.87599 W
Mud Slough (north)	541MER542	D	Downstream of SLD	37.26374 N	-120.90627 W
Wetlands channels	541MER505	J*	Camp 13 Drain, headworks	36.94117 N	-120.75685 W
	541AGCHWK	K2*	Agatha Canal, headworks	36.93399 N	-120.70258 W
San Joaquin River	541SLRACI	R	China Island Unit	37.33622 N	-120.96763 W
	NA	H2**	Above Merced River (Hills Ferry)	27.34737 N	-120.97500 W
	535STC504	N	Crows Landing	37.43149 N	-121.01341 W

SLD = San Luis Drain

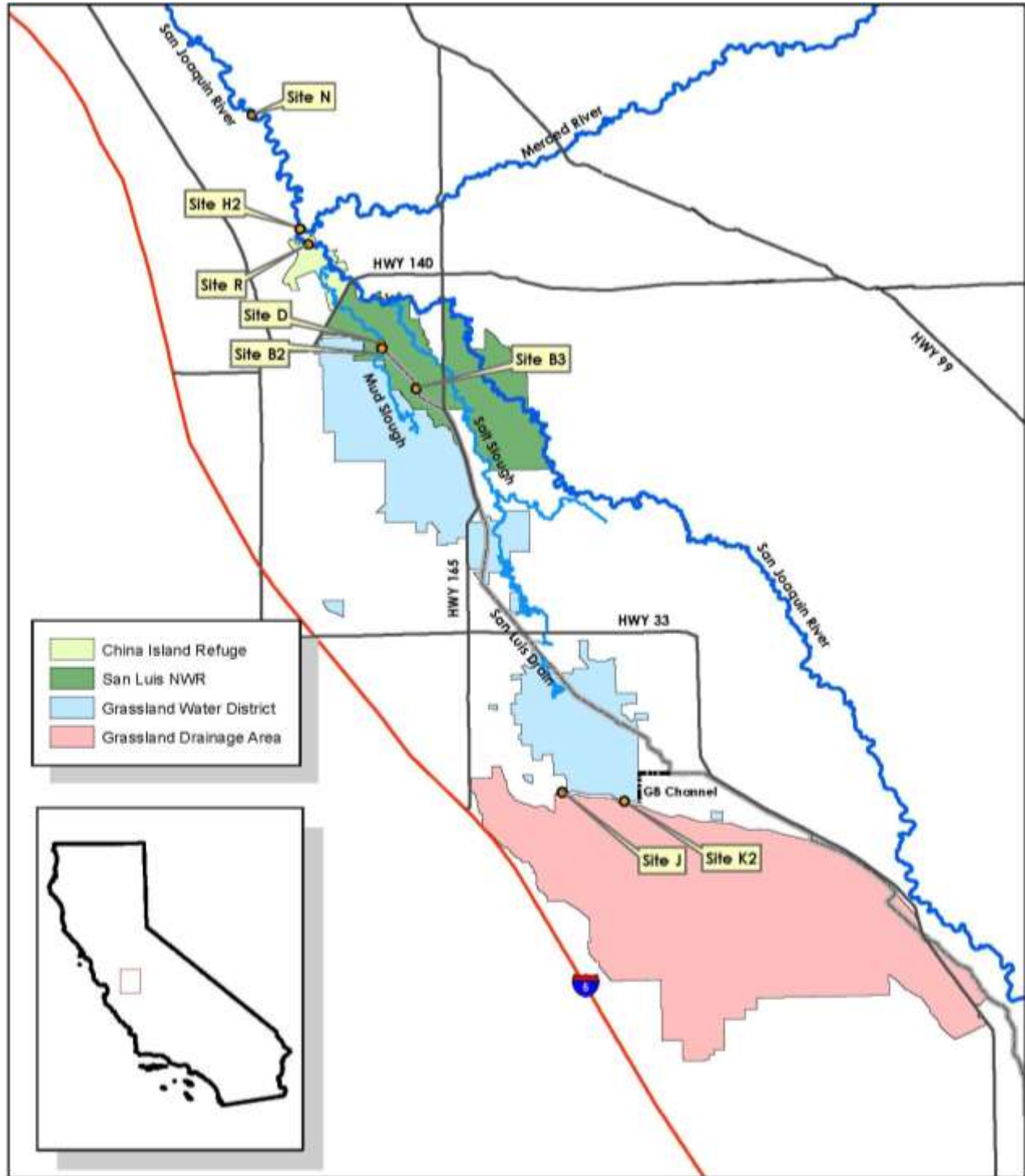
*=Samples will be collected when water is passing site during a storm event.

** = Flow measured at these locations only; no monitoring required by MRP.

Table 2 lists the effluent and receiving water monitoring parameters and frequency for stations in the San Luis Drain, Mud Slough (north), and the San Joaquin River. Monitoring at each station will consider the safety of the sampling crew. If the sampling crew is unable to sample a location due to safety concerns, photos and/or field sheets shall be provided to document the reason for no samples taken.

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Figure 1: Monitoring Stations for Phase III



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Grassland Bypass Project

2014 Monitoring and Reporting Plan Sites



Grassland Bypass Project
NAD 1983 California Zone 10
U.S. Bureau of Reclamation

Table 2: Effluent and Receiving Water Monitoring Stations, Parameters and Frequency

<u>Station</u>	<u>Description</u>
B2	San Luis Drain -- terminus
B3	San Luis Drain - Gun Club Road siphon
D	Mud Slough (north) below San Luis Drain discharge
R	San Joaquin River at China Island Unit
N	San Joaquin River at Crows Landing

Parameter (unit)	Type of Sample	Station	Frequency
Flow (cfs)	Daily average	B2*, D, H2*	Daily
Field measurements²			
pH (pH units)	Grab	B3, D, R, N	Weekly
Electrical conductivity (µmhos/cm)	Grab	B3, D, R, N	Weekly
Temperature (°C)	Grab	B3, D, R, N	Weekly
General physical			
Total organic carbon (mg/L)	Grab	D	Weekly
Selenium (total) (µg/L)	Grab	B3, D, R, N	Weekly
Boron (mg/L)	Grab	D, R, N	Weekly
Molybdenum (µg/L)	Grab	B3, D, R, N	Monthly
Nutrients			
Nitrate as N (mg/L)	Grab	B3, D	Monthly
Ammonia as N (mg/L)		B3, D	Monthly
Pesticides			
To be determined	Grab	B3, D, R	To be determined
Chronic Aquatic Toxicity			
<i>Selenastrum capricornutum</i> (growth)	Grab	D	Monthly
Acute Aquatic Toxicity			
<i>Daphnia magna</i> (survival)	Grab	D	Monthly
<i>Pimephales promelas</i> (survival)		D	Monthly

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* Flow measurement only

Table 3 lists the requirements for sediment tests, including sediment toxicity, for this MRP.

² Field measurements shall be noted on the Field Sheet, as well as any physical and/or visual observations regarding the water body, the environment, or surrounding area.

Table 3: Sediment Monitoring Stations, Parameters and Frequency

Sediment Toxicity <i>Hyalella azteca</i> (survival) Total organic carbon (mg/L) Grain size	Grab	D	Biannual
Sediment³ To be determined	Grab	B3	Annual

B. Stormwater Monitoring

Storm and flood event monitoring will be required when flows are expected to exceed the capacity of the San Luis Drain as a result of rainfall events. Actions to be taken are specified in the Stormwater Plan.⁴ At a minimum, the following components of the Stormwater Plan shall be done when heavy rains or storm events are predicted for the region and the Regional Drainage Coordinator determines that the Grassland Bypass will be unable to accommodate all of the surface runoff, stormwater flows and agricultural drainage water from the event, and thereby allowing commingled water to enter Grassland channels:

1. Notification:

The following individuals are to be informed of the possible diversion to Grassland channels:

- the main contact at the Central Valley Water Board in Sacramento;
- the Manager of the Grassland Water District;
- the Manager of the Central California Irrigation District;
- the Manager of the San Luis Canal Company;
- personnel at the State and Federal Wildlife Ares that use the water supply channels in the region;
- managers of the irrigation and drainage districts participating in the Grassland Drainage Area;
- the Manager of the San Joaquin River Exchange Contractors Water Authority; and
- the Area Manager, South-Central California Area Office, Bureau of Reclamation.

2. Criteria and Associated Actions

Criteria	Action
Anticipated flow through Station A >100 cfs AND threat of precipitation	-- Notification process initiated -- Gates to Camp13 Ditch and/or Agatha Canal opened by Grassland Water District -- Proportional amounts of flow diverted estimated by operators of the Grassland Bypass in consultation with Grassland Water District personnel -- Stormwater monitoring program initiated
flow through Station A falls below 100 cfs and no threat of precipitation	-- Flow of water to Grassland Water District terminated -- Stormwater monitoring program continued for 1 week

Station A is the point where the Grassland Bypass Channel discharges into the San Luis Drain. The Regional Drainage Coordinator measures the flows at Station A and will determine if the storm event notifications and monitoring need to be initiated.

³ Provision II.B.4 of the WDR prohibits hazardous waste levels for any constituent.

⁴ Grassland Area Farmers and San Luis & Delta-Mendota Water Authority. "A Storm Event Plan for Operating the Grassland Bypass Project". August 25, 1997.

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Monitoring shall occur immediately prior to diversion of stormwater into the Grassland channels at Camp-13 Ditch and Agatha Canal. Table 4 lists the monitoring stations and parameters that are to be monitored during a stormwater event; Monitoring shall occur daily during the water diversion and for one week after the diversion ceases.

Table 4: Stormwater Monitoring Stations, Parameters and Frequency

<u>Station</u>	<u>Description</u>
J	Camp 13 ditch headworks
K2	Agatha Canal headworks

<u>Parameter (unit)</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow	Daily average	Daily
pH	Grab	Daily
Electrical conductivity	Grab	Daily
Temperature	Grab	Daily
Selenium	Grab	Daily
Boron	Grab	Daily

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C. Pesticides

The pesticides to be monitored will be identified as part of a process that includes input from the Central Valley Water Board, qualified scientists and coordination with the Department of Pesticide Regulation. The process will assess and evaluate the potential for the pesticide to be present in stormwater run-off, from drift during application, or subsurface drainage. Based on the evaluation factors identified in this process, the Executive Officer will provide the Discharger with a list of pesticides⁵ that must be evaluated by the Discharger for inclusion in the monitoring program. The Discharger shall apply the evaluation factors to the relevant conditions in each site sub-watershed and propose the pesticides to be monitored.

D. Toxicity Testing

The purpose of toxicity testing is to: 1) evaluate compliance with the Basin Plan narrative toxicity water quality objective; 2) identify the causes of toxicity when and where it is observed (e.g. metals, pesticides, ammonia, etc.); and 3) evaluate any additive toxicity or synergistic effects due to the presence of multiple constituents.

1. Aquatic Toxicity

Aquatic toxicity testing shall include *Daphnia magna*, *Pimephales promelas*, and *Selenastrum capricornutum* in the water column. Testing for *Daphnia magna* and *Pimephales promelas* shall follow the USEPA acute toxicity testing methods, Method 2012.0 and 2000.0, respectively.⁶

Testing for *Selenastrum capricornutum* shall follow the USEPA short-term chronic toxicity testing

⁵ Pesticides to be monitored may include environmentally stable degradates of the registered active ingredient. The evaluation factors applied to degradates will be the same as those applied to the registered active ingredient and will include consideration of the commercial availability of analytical methods to detect the degradate. Potential degradates to evaluate will be identified through Central Valley Water Board and Discharger consultation with the Department of Pesticide Regulation.

⁶ USEPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. Office of Water, Washington, D.C. USEPA-821-R-02-012.

method, Method 1003.0.⁷ Toxicity test endpoints are survival for *Daphnia magna* and *Pimephales promelas*, and growth for *Selenastrum capricornutum*.

Water column toxicity analyses shall be conducted on 100% (undiluted) sample for the initial screening. A sufficient sample volume must be collected to allow for renewal during the toxicity test and for any additional testing as specified below.

If within the first 96 hours of the initial toxicity screening, the mortality reaches 100%, a multiple dilution test shall be initiated. The dilution series must be initiated within 24 hours of the sample reaching 100% mortality, and must include a minimum of five (5) sample dilutions in order to quantify the magnitude of the toxic response. For the fathead minnow test, the laboratory must take the steps to procure test species within one working day, and the multiple dilution tests must be initiated the day fish are available.

Daphnia magna and *Pimephales promelas* Media Renewal

Daily sample water renewals shall occur during all acute toxicity tests to minimize the effects of rapid pesticide losses from test waters. A feeding regime of 2 hours before test initiation and 2 hours before test renewal shall be applied. Test solution renewal must be 100% sample water as defined in the freshwater toxicity testing manual.

Selenastrum capricornutum Pre-Test Treatment

Algae toxicity testing shall not be preceded with treatment of the chelating agent EDTA. The purpose of omitting this agent is to ensure that metals used to control algae in the field are not removed from sample aliquots prior to analysis or during the initial screening.

2. Sediment Toxicity

Sediment toxicity analyses shall be conducted according to EPA Method 600/R-99/064. Sampling and analysis for sediment toxicity testing utilizing *Hyalella azteca* shall be conducted at the sites specified in Table 3, if appropriate sediment (i.e. silt, clay) is present at the site. If appropriate sediment is not present at the designated water quality monitoring site, an alternative site with appropriate sediment shall be designated for all sediment collection and toxicity testing events. Sediment samples shall be collected and analyzed for toxicity twice per year, with one sample collected between 15 August and 15 October, and one sample collected between 1 March and 30 April, during each year of monitoring. The *Hyalella azteca* sediment toxicity test endpoint is survival. The Executive Officer may request different sediment sample collection timing and frequency under a SQMP.

All sediment samples must be analyzed for total organic carbon (TOC) and grain size. Analysis for TOC is necessary to evaluate the expected magnitude of toxicity to the test species. Note that sediment collected for grain size analysis shall not be frozen. If the sample is not toxic to the test species, the additional sample volume can be discarded.

E. Surface Water Data Management Requirements

All surface water field and laboratory data (including sediment) must be submitted electronically to the Central Valley Water Board in the required templates. The Dischargers shall ensure that the most current version of the templates is being utilized. Required formatting and business rules for field, chemistry and toxicity data are detailed within the respective template instruction manuals (see below). These manuals are maintained in collaboration with the Central Valley Regional Data Center (CV RDC) to ensure comparability with the California Environmental Data Exchange Network (CEDEN). In addition to the use of required templates for field, chemistry, and toxicity data, the Discharger shall maintain an electronic

⁷ USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition. Office of Water, Washington, D.C. USEPA-821-R-02-013.

version of its approved Quality Assurance Project Plan (eQAPP). Detailed electronic water quality data submittal requirements are provided in section II.E of this MRP Order. Note that electronic copies (e.g. PDF) of all original field sheets, field measurement instrumentation calibration logs, chain of custody forms and laboratory reports must be included in the electronic data submittal

Once data have been submitted to the Central Valley Water Board, it will undergo a series of reviews for adherence to the required formatting and business rules. The data will also be reviewed for the required quality control elements as detailed within the Dischargers' eQAPP. The Dischargers will be notified of any changes made to the dataset to successfully load the data. If significant changes are found to be needed, the dataset will be returned to the Dischargers for revision. Once any needed review and/or correction of the data sets are complete, data will be uploaded by the Central Valley Water Board into a CV RDC CEDEN comparable database. The dataset will then undergo a final set of reviews to ensure completeness and then be transferred to CEDEN for public access.

A narrative describing each required template is provided below. Links to the required templates, instruction manuals and optional tools are available on the ILRP Electronic Water Quality Monitoring Data Submission Resources webpage:

http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/electronic_data_submission/

Field Data Template (Required)

The Dischargers shall input all site visit information and field measurement results into the field data template, which is an Excel workbook. Site visit information (Location and Habitat) must be recorded for any site visit conducted to comply with the requirements in this Order, including events when a site is dry. The field data template contains three required worksheets (Locations, FieldResults, HabitatResults) and four optional worksheets (Stations, FundingCode, GroupCode and Personnel). An instruction manual for the template is available on the ILRP Electronic Data Submission webpage.

Chemistry Data Template (Required)

The Dischargers shall input all chemistry analysis and associated quality control information into the chemistry data template, which is an Excel workbook. The chemistry data template contains two required worksheets: Results and LabBatch. An instruction manual for the template is available on the ILRP Electronic Data Submission webpage.

Toxicity Data Template (Required)

The Dischargers shall input all toxicity analysis and associated quality control information, with the exception of reference toxicity analyses, into the toxicity data template, which is an Excel workbook. The toxicity data template contains three required worksheets: Results, Summary, and ToxBatch. An instruction manual for the template is available on the ILRP Electronic Data Submission webpage.

Electronic Quality Assurance Program Plan (eQAPP) (Required)

The eQAPP is an Excel workbook containing a worksheet of the quality control requirements for each analyte and method as detailed in the most current version of the Dischargers' approved QAPP. The eQAPP workbook will also include additional worksheets containing references for applicable codes, CEDEN retrieval information, and other project specific information. The Dischargers shall be responsible for updating the Quality Control worksheet to the most current approved QAPP. Each analyte, method, extraction, units, recovery limits, QA sample requirement, etc. is included in this document using the appropriate codes required for the CEDEN comparable database. This information should be used to conduct a quality control review before submission. Data that does not meet the project quality assurance acceptance requirements must be flagged accordingly and include applicable comments.

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The Central Valley Water Board and CV RDC have also developed several optional tools to assist the Dischargers. Links to these tools, unless otherwise noted, are available on the ILRP Electronic Data Submission webpage.

Field Sheet Template (Optional)

An example of a CEDEN comparable field sheet can be found on the ILRP webpage. This field sheet was designed to match the entry user interface within the CEDEN comparable database to allow for easier data entry of all sample collection information.

CV RDC Field Entry Shell Database (Optional)

The CV RDC Field Entry Shell Database is a copy of the CV RDC database infrastructure that provides a user interface for site visit and field measurements data entry only. The shell database may be used by those who prefer to enter field data through a user interface rather than directly into the required Excel template. The database provides an export function that can populate the required CV RDC field data template with the data entered. The populated template is then required to be submitted to the Central Valley Water Board. The shell database may not be used for entry of chemistry or toxicity data. A custom field entry shell database may be obtained by contacting the CV RDC:

<http://mlj-llc.com/contact.html>.

Format Quick Guide (Optional Tool)

The Format Quick Guide is a guidance document developed to aid the Dischargers with data entry and can be used as a reference tool for commonly used codes necessary for populating the required data entry templates. The Central Valley Water Board will provide this document, and updates to it, upon request.

EDD Checklist with example Pivots (Optional Tool)

The electronic data deliverable (EDD) checklist provides for a structured method for reviewing data deliverables from data entry staff or laboratories before loading. Example pivot tables are provided to assist with the review of the data. Documentation on how to use the checklist and associated pivot tables is available on the ILRP Electronic Data Submission webpage.

Online Data Checker (Optional Tool)

An online data checker was developed to automate the checking of the datasets against many of the format requirements and business rules associated with CEDEN comparable data. The data checker can be accessed through the ILRP Electronic Data Submission webpage. Please note that data submission will not be accepted through this tool; however, the checker can still be used to check data for formatting and business rule compliance.

III. Reporting Requirements

Reports and notices shall be submitted in accordance with section VI of the Order, Reporting Provisions.

A. Semi-annual Submittals of Surface Water Monitoring Results

Each quarter, the Dischargers shall submit the previous quarter's surface water monitoring results in an electronic format. The deadlines for these submittals are listed in Table 5 below.

Table 5: Semi-annual Surface Water Monitoring Data Reporting Schedule

Due Date	Type	Reporting Period
1 January	Semi-annual Monitoring Data Report	1 January through 30 June of previous calendar year
30 June	Semi-annual Monitoring Data Report	1 July through 31 December of previous calendar year

Exceptions to due dates for submittal of electronic data may be granted by the Executive Officer if good cause is shown. The Quarterly Surface Water Monitoring Data Report shall include the following for the required reporting period:

1. An Excel workbook containing an export of all data records uploaded and/or entered into the CEDEN comparable database (surface water data). The workbook shall contain, at a minimum, those items detailed in the most recent version of the Dischargers' approved QAPP.
2. The most current version of the Dischargers' eQAPP.
3. Electronic copies of all field sheets.
4. Electronic copies of photos obtained from all surface water monitoring stations, clearly labeled with the CEDEN comparable station code and date.
5. Electronic copies of all applicable laboratory analytical reports on a CD.
6. For toxicity reports, all laboratory raw data must be included in the analytical report (including data for failed tests), as well as copies of all original bench sheets showing the results of individual replicates, such that all calculations and statistics can be reconstructed. The toxicity analyses data submittals must include individual sample results, negative control summary results, and replicate results. The minimum in-test water quality measurements reported must include the minimum and maximum measured values for specific conductivity, pH, ammonia, temperature, and dissolved oxygen.
7. For chemistry data, analytical reports must include, at a minimum, the following:
 - a. A lab narrative describing QC failures,
 - b. Analytical problems and anomalous occurrences,
 - c. Chain of custody (COCs) and sample receipt documentation,
 - d. All sample results for contract and subcontract laboratories with units, RLs and MDLs,
 - e. Sample preparation, extraction and analysis dates, and
 - f. Results for all QC samples including all field and laboratory blanks, lab control spikes, matrix spikes, field and laboratory duplicates, and surrogate recoveries.

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Laboratory raw data such as chromatograms, spectra, summaries of initial and continuing calibrations, sample injection or sequence logs, prep sheets, etc., are not required for submittal, but must be retained by the laboratory in accordance with the requirements of section VII of the Order, Record-keeping Requirements.

If any data are missing from the quarterly report, the submittal must include a description of what data are missing and when they will be submitted to the Central Valley Water Board. If data are loaded into the CEDEN comparable database, this shall also be noted with the submittal.

B. Annual Monitoring Report

The Monitoring Report shall be submitted by 30 June of each year. The report shall cover the monitoring periods for the previous calendar year (1 January through 31 December). The report shall include the following components:

1. Signed transmittal letter;
2. Title page;
3. Table of contents;
4. Executive summary;
5. Monitoring objectives and design;
6. Sampling site descriptions and rainfall records for the time period covered under the Monitoring Report;
7. Location map(s) of sampling sites;
8. Results of all analyses arranged in tabular form so that the required information is readily discernible;

9. Discussion of data relative to water quality objectives, limitations and water quality management plan milestones, where applicable;
10. Sampling and analytical methods used;
11. Summary of Quality Assurance Evaluation results (as identified in the most recent version of the approved QAPP for Precision, Accuracy and Completeness);
12. Specification of the method(s) used to obtain estimated flow at each surface water monitoring site during each monitoring event;
13. Summary of exceedances of water quality objectives/trigger limits occurring during the reporting period.
14. Any storm event monitoring performed during the reporting period.
15. Actions taken to address water quality exceedances that have occurred, including but not limited to, revised or additional management practices implemented;
16. Evaluation of monitoring data to identify spatial and temporal trends and patterns;
17. Status of implemented measures to meet water quality objectives and/or limits;
18. Conclusions and recommendations.

Additional requirements and clarifications necessary for the above report components are described below.

Report Component (1) —Signed Transmittal Letter

A transmittal letter shall accompany each report. The transmittal letter shall be submitted and signed in accordance with the requirements of section VI of the Order, Reporting Provisions.

Report Component (7) — Location Maps

Location map(s) showing the sampling stations within the project area must be updated (based on available sources of information) and included in the Monitoring Report. An accompanying GIS shapefile or geodatabase of monitoring site information must include the CEDEN comparable site code and name and Global Positioning System (GPS) coordinates. The map(s) must contain a level of detail that ensures they are informative and useful. GPS coordinates must be provided as latitude and longitude in the decimal degree coordinate system (at a minimum of five decimal places). The datum must be either WGS 1984 or NAD83, and clearly identified on the map. The source and date of all data layers must be identified on the map(s). All data layers/shapefiles/geodatabases included in the map shall be submitted with the Monitoring Report.

Report Component (8) – Tabulated Results

In reporting monitoring data, the Dischargers shall arrange the data in tabular form so that the required information is readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with the data collection requirements of the MRP. The results of any monitoring done more frequently than required at the locations specified in this MRP Order shall be reported to the Board in the AMR.

Report Component (9) — Data Discussion to Illustrate Compliance

The report shall include a discussion of the compliance with the data collection requirements of the MRP. If a required component was not met, an explanation for the missing data must be included. Results must also be compared to water quality objectives and trigger limits. Discussion shall include visual observations noted on the field sheets regarding the sampling station (e.g., film noted on surface of water, debris in the channel).

Report Component (11) — Quality Assurance Evaluation (Precision, Accuracy and Completeness)

A summary of precision and accuracy results (both laboratory and field) is required in the report. The required data quality objectives are identified in the most recent version of the approved QAPP;

acceptance criteria for all measurements of precision and accuracy must be identified. The Dischargers must review all QA/QC results to verify that protocols were followed and identify any results that did not meet acceptance criteria. A summary table or narrative description of all QA/QC results that did not meet objectives must be included. Additionally, the report must include a discussion of how the failed QA/QC results affect the validity of the reported data. The corrective actions to be implemented are described in the QAPP Guidelines.

In addition to precision and accuracy, the Dischargers must also calculate and report completeness. Completeness includes the percentage of all quality control results that meet acceptance criteria, as well as a determination of project completeness. The Dischargers may ask the laboratory to provide assistance with evaluation of their QA/QC data, provided that the Dischargers prepare the summary table or narrative description of the results for the Monitoring Report.

Report Component (13) — Summary of Exceedances

A summary of the exceedances of water quality objectives or triggers that have occurred during the monitoring period is required in the Monitoring Report.

Report Component (14) – Storm Event Monitoring

The Dischargers shall report if any stormwater from the GDA is discharged into the wetlands water supply channels and the monitoring performed for the event.

Report Component (16) — Evaluation of Monitoring Data

The Dischargers must evaluate the monitoring data in the Monitoring Report in order to identify potential trends and patterns in surface quality that may be associated with waste discharge from irrigated lands. As part of this evaluation, the Dischargers must analyze all readily available monitoring data that meet program quality assurance requirements to determine deficiencies in monitoring for discharges from the Grassland Bypass Project and whether additional sampling locations are needed. If deficiencies are identified, the Dischargers must propose a schedule for additional monitoring or source studies. Upon notification from the Executive Officer, the Dischargers must monitor any parameter in a watershed that lacks sufficient monitoring data (i.e., a data gap should be filled to assess irrigated agriculture's effects on water quality).

The Dischargers should incorporate pesticide use information, as needed, to assist in its data evaluation. Wherever possible, the Dischargers should utilize tables or graphs that illustrate and summarize the data evaluation.

Report Component (17) – Status of Implemented Measures

As part of the Monitoring Report, the Dischargers shall report on the implemented measures (control or treatment) specified in the Use Agreement, and update the activities and measures implemented for the year to meet water quality objectives and/or limits. The update shall include an evaluation of the effectiveness of the control or treatment measures implemented, as well as a cost analysis. Any milestones set in the Long Term Drainage Management Plan (now incorporated in this component of the Annual Monitoring Report) shall be identified and the status reported.

C. Surface Water Exceedance Reports

The Dischargers shall provide surface water exceedance reports if monitoring results show exceedances of adopted numeric water quality objectives or trigger limits, which are based on interpretations of narrative water quality objectives or other limitations established in this Order. For each surface water quality objective exceeded at a receiving water monitoring location, the Dischargers shall submit an Exceedance Report to the Central Valley Water Board. The estimated flow at the monitoring location must be submitted in addition to the exceedance report but do not need to be submitted more than once. The Dischargers shall evaluate all of its monitoring data and determine exceedances no later than five

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(5) business days after receiving the laboratory analytical reports for an event. Upon determining an exceedance, the Dischargers shall send the Exceedance Report by email to the designated Central Valley Water Board staff contact by the next business day. The Exceedance Report shall describe the exceedance, the follow-up monitoring, and analysis or other actions the Dischargers may take to address the exceedance. Upon request, the Dischargers shall also notify the agricultural commissioner of the county in which the exceedance occurred and/or the director of the Department of Pesticide Regulation.

D. Drainage Management Plan (DMP)

By 30 June of each year, The Dischargers shall prepare and submit to the Central Valley Water Board updates to the Drainage Manage Plan (DMP) for the Grassland Bypass Project. The DMP may be submitted as part of the AMR. The DMP shall address how the Dischargers propose to meet water quality objectives. The plan shall contain the following information:

- Updates on specific control or treatment methods for selenium and/or salts that have or will be implemented to meet water quality objectives and goals for subsurface drainage discharges from the Grassland Watershed. The DMP shall include on-farm and district level activities and the time schedule/update for implementation.
- Identify critical milestones the control program will address, including deadlines in the Basin Plan compliance timetable. If the schedule to reduce selenium and/or salt loads is not being met, identify options available to achieve immediate reductions in discharges.
- Any plans to deal with stormwater from outside the GDA so as to reduce the threat of flooding.

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IV. Water Quality Triggers for Development of Management Plans

This Order requires that the Dischargers comply with all adopted water quality objectives and established federal water quality criteria applicable to their discharges. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan) contains numeric and narrative water quality objectives applicable to surface water and groundwater within the Order's watershed area. USEPA's 1993 National Toxics Rule (NTR) and 2000 California Toxics Rule (CTR) contain water quality criteria which, when combined with Basin Plan beneficial use designations constitute numeric water quality standards. Table 6 of this MRP lists Basin Plan numeric water quality objectives and NTR/CTR criteria for constituents of concern that may be discharged.

Table 6 does not include water quality criteria that may be used to interpret narrative water quality objectives, which shall be considered trigger limits. Trigger limits will be developed by the Central Valley Water Board staff through a process involving coordination with the Department of Pesticide Regulation (for pesticides) and stakeholder input. The trigger limits will be designed to implement narrative Basin Plan objectives and to protect applicable beneficial uses. The Executive Officer will make a final determination as to the appropriate trigger limits.

V. Modifications to MRP

The Dischargers may submit written requests for the removal or addition of monitoring sites or parameters, or to modify the monitoring schedule and frequency, for approval by the Executive Officer. Any proposed changes will first be submitted to the Grassland Bypass Project Data Collection and Reporting Team (DCRT) for review and comment. The Dischargers shall continue monitoring pursuant to this Order until the Executive Officer has approved any proposed changes.

Monitoring requirements for surface waters will be periodically reassessed to determine if changes should be made to better represent discharges to state waters. The monitoring schedule will also be reassessed so that constituents are monitored during application and/or release timeframes when constituents of concern are most likely to affect water quality. The Dischargers shall not implement any changes to this MRP unless the Central Valley Water Board or the Executive Officer issues a revised MRP.

VI. Quality Assurance Project Plan (QAPP)

Monitoring data collected to meet the requirements of the Order must be collected and analyzed in a manner that assures the quality of the data. The Dischargers must follow sampling and analytical procedures as specified in the Quality Assurance Program Plan. An updated QAPP that address the monitoring requirements of this Order must be provided by XXXXXX.

The Dischargers must develop and/or maintain a QAPP that includes watershed and site-specific information, project organization and responsibilities, and the quality assurance components in the QAPP Guidelines. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the recognized state agency for water quality analyses. Alternate methods⁸ may be used for chemical analyses if the laboratory has submitted the required validation package⁹ as specified by USEPA for approval by the Executive Officer.

Attachment 1 to the MRP Order lists the analytical methods and required reporting limit (RL) for each method. Analytical methods shall conform to the Quality Assurance Program Plan (QAPP) requirements approved by the Regional Board Quality Assurance Officer. QA/QC requirements for duplicate and spike recovery ranges, and acceptable replicate percent difference (RPD) for each parameter should be outlined in the QAPP.

The Central Valley Water Board may conduct an audit of the Dischargers' contracted laboratories at any time in order to evaluate compliance with the most current version of the QAPP Guidelines. Quality control requirements are applicable to all of the constituents listed in the QAPP Guidelines, as well as any additional constituents that are analyzed or measured, as described in the appropriate method. Acceptable methods for laboratory and field procedures as well as quantification limits are described in the QAPP Guidelines.

This MRP Order becomes effective XX [Month] 2014 and remains in effect unless rescinded or revised by the Central Valley Water Board or the Executive Officer.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region on XX [Month] 2014.

PAMELA C. CREEDON, Executive Officer

⁸ "Alternate methods" is defined as laboratory methods not EPA-approved for the constituent analyzed.

⁹ USEPA, 1999. Protocol for EPA Approval of Alternate Test Procedures for Organic and Inorganic Analytes in Wastewater and Drinking Water. Office of Water, Washington, D.C. EPA 821-B-98-002

Table 6: Basin Plan Numeric Water Quality Objectives for the San Joaquin River Watershed.

*** Where more than one objective is applicable, the most stringent shall be applied.**

Constituent / Parameter (Synonym)	Basin Plan Water Quality Objective	Source of Numeric Threshold <i>(footnotes in parentheses are at bottom of table)</i>	Numeric Threshold (a)	Units	IS= Inland Surface Water	Numeric Threshold Protects Designated Beneficial Use(s) in the Water Body:						
						Inland Surface Waters					CAS Number	
									MUN- MCL	MUN- Toxicity		Aquatic Life & Consump
Boron, total	Chemical Constituents	Basin Plan. SJR, mouth of Merced R to Vernalis (15 Mar – 15 Sep; maximum)	2,000	µg/L	IS						X	7440-42-8
		Basin Plan. SJR, mouth of Merced R to Vernalis (15 Mar – 15 Sep; monthly mean)	800 (b)	µg/L	IS						X	
		Basin Plan. SJR, mouth of Merced R to Vernalis (16 Sep – 14 Mar; maximum)	2,600	µg/L	IS						X	
		Basin Plan. SJR, mouth of Merced R to Vernalis (16 Sep – 14 Mar)	1,000 (b)	µg/L	IS						X	
		Basin Plan. SJR, mouth of Merced R to Vernalis (critical year, monthly mean) (c)	1,300 (b)	µg/L	IS						X	
		Basin Plan. SJR from Sack Dam to mouth of Merced River (maximum)	5,800	µg/L	IS						X	
		Basin Plan. SJR from Sack Dam to mouth of Merced River (monthly mean)	2,000 (b)	µg/L	IS						X	
Chlorpyrifos	Pesticides	Basin Plan. SJR from Mendota Dam to Vernalis; 1-hour average	0.025	µg/L	IS					X	2921-88-2	
		Basin Plan. SJR from Mendota Dam to Vernalis; 4-day average	0.015	µg/L	IS					X		
Conductivity at 25 C (Electrical conductivity)	Salinity	Basin Plan. SJR, Friant Dam to Mendota Pool	150	µmhos/cm	IS							--
		California Secondary MCL	900-1600	µmhos/cm	IS			X	X			
Copper	Chemical Constituents	California Secondary MCL (total copper)	1,000	µg/L	IS			X	X			7440-50-8
		Toxicity	California Toxics Rule (USEPA), (g) (dissolved copper)	variable	µg/L	IS					X	
Diazinon	Pesticides	Basin Plan. SJR from Mendota Dam to Vernalis (1-hour average)	0.16	µg/L	IS					X	50-29-3	
		Basin Plan. SJR from Mendota Dam to Vernalis (4-day average)	0.10	µg/L	IS					X		
Dissolved Oxygen, minimum	Dissolved Oxygen	Basin Plan. Merced R from Cressy to New Exchequer Dam, all year	8.0	mg/L	IS					X	7782-44-7	
		Basin Plan. Tuolumne R, Waterford to La Grange (15 Oct – 15 Jun)	8.0	mg/L	IS					X		
		Basin Plan. Waters designated WARM	5.0	mg/L	IS					X		
		Basin Plan. Waters designated COLD and/or SPWN	7.0	mg/L	IS					X		
Lead	Chemical Constituents	California Primary MCL (total lead)	15	µg/L	IS			X			7439-92-1	
		Toxicity	California Toxics Rule (USEPA) (g) (dissolved lead)	variable	µg/L	IS					X	
Molybdenum, total	Chemical Constituents	Basin Plan. SJR, mouth of Merced R to Vernalis (maximum)	15	µg/L	IS						X	7439-98-7
		Basin Plan. SJR, mouth of Merced R to Vernalis (monthly mean)	10	µg/L	IS						X	
		Basin Plan. SJR, Sack Dam to mouth of Merced R., Mud Slough (north); (maximum)	50	µg/L	IS						X	
		Basin Plan. SJR, Sack Dam to mouth of Merced R., Mud Slough (north); (monthly mean)	19	µg/L	IS						X	

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Constituent / Parameter (Synonym)	Basin Plan Water Quality Objective	Source of Numeric Threshold <i>(footnotes in parentheses are at bottom of table)</i>	Numeric Threshold (a)	Units	IS= Inland Surface Water	Numeric Threshold Protects Designated Beneficial Use(s) in the Water Body:							
						Inland Surface Waters							
									MUN- MCL	MUN- Toxicity	Aquatic Life & Consump	AGR	CAS Number
Nitrate (as nitrogen)	Chemical Constituents	California Primary MCL	10	mg/L	IS				X	X			14797-55-8
pH – minimum	pH	Basin Plan	6.5	units	IS				X	X			--
pH – maximum			8.5	units	IS				X	X			
Selenium, total	Chemical Constituents	Basin Plan. SJR, mouth of Merced R to Vernalis	12	µg/L									7782-49-2
		Basin Plan. SJR, mouth of Merced R to Vernalis (4-day average)	5	µg/L									
		Basin Plan, Mud Slough (north), SJR from the Mud Slough confluence to the Merced River (monthly mean performance goal by 31 December 2015)	15	µg/L									
		Basin Plan, Mud Slough (north), SJR from the Mud Slough confluence to the Merced River (4-day average by 31 December 2019))	5	µg/L									
		Basin Plan. Mud Slough (north), SJR from Mud Slough confluence to the Merced R	20	µg/L									
		Basin Plan. Mud Slough (north), SJR from Mud Slough confluence to the Merced R (4-day mean)	5	µg/L									
	California Primary MCL	50	µg/L	IS				X					
	Toxicity	National Toxics Rule (USEPA), 4-day mean	5	µg/L	IS						X		
Simazine	Chemical Constituents	California Primary MCL	4	µg/L	IS				X	X			122-34-9
Temperature	Temperature	Basin Plan (h)	variable		IS								
Total Dissolved Solids (TDS)	Chemical Constituents	California Secondary MCL, recommended level	500 – 1,000	mg/L	IS				X	X			--
Turbidity	Turbidity	Basin Plan. Where natural turbidity is <1 NTU	2	NTU	IS								
		Where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU.	variable; 2-6	NTU	IS								
		Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20%.	variable; 6 - 70	NTU	IS								
	Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.	variable; 60-110	NTU	IS									
	Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10%.	variable	NTU	IS									
Zinc	Chemical Constituents	California Secondary MCL (total zinc)	5,000	µg/L	IS				X				7440-66-6
	Toxicity	California Toxics Rule (USEPA) (g) (dissolved zinc)	variable	µg/L	IS						X		

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Footnotes to Table 5:

a	Numeric thresholds are maximum levels unless noted otherwise.
b	Monthly mean.
c	See Basin Plan for definition of Critical Year.
d	Applies in waters designated for contact recreation (REC-1).
e	Geometric mean of the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed this number.
f	No more than ten percent of the total number of samples taken during any 30-day period shall exceed this number.
g	These numeric thresholds are hardness dependent. As hardness increases, water quality objectives generally increase.
h	The natural receiving water temperature shall not be altered unless it can be demonstrated to the satisfaction of the Water Board that such alteration does not adversely affect beneficial uses. However, at no time shall the temperature of WARM and COLD waters be increased more than 5 degrees F above natural receiving water temperature.

Abbreviations:

CAS	Chemical Abstracts Service Registry Number
fw	freshwater
MCL	maximum contaminant limit
MUN	municipal and domestic supply

Beneficial Uses:

AGR – Agricultural water uses, including irrigation supply and stock watering
Aquatic Life & Consump – Aquatic life and consumption of aquatic resources
MUN-MCL – Municipal or domestic supply with default selection of drinking water MCL when available
MUN-Toxicity – Municipal or domestic supply with consideration of human toxicity thresholds that are more stringent than drinking water MCLs

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Attachment 1: Analytical Methods and Reporting Limits

Matrix	Parameter	Method ^a	Reporting Limit ^b	Units
	Electrical conductivity	EPA 9050A or EPA 120.1	100	µmhos/cm
Water				
Water	Total dissolved solids	EPA 160.1 or SM2540C	10	mg/L
Water	Total organic carbon	EPA 415.3	0.5	mg/L
Water	Nitrate as N	EPA 300, EPA 300.1, EPA 351.3, EPA 353.2 or SM4500	0.05	mg/L
	Ammonia as N (total)	EPA 350 or SM4500-NH3	0.1	mg/L
Water	Boron	EPA 200.7 or EPA 200.8	10	µg/L
Water	Molybdenum	EPA 200.7, EPA 200.8, EPA 6010, EPA 6020, or EPA 3015A	1	µg/L
Water	Selenium (total)	PA 200.7, EPA 200.8, and EPA 6010B	2.0	µg/L
Water	<i>Selenastrum capricornutum</i>	EPA-1003.0	NA	Cell/mL and % Growth
Water	<i>Pimephales promelas</i>	EPA 2000.0	NA	% Survival and Reproduction
Water	<i>Daphnia magna</i>	EPA 2021.0	NA	% Survival
Sediment	<i>Hyalella azteca</i>	EPA 100.1	NA	% Survival
Sediment	Total organic carbon	EPA 415.1, EPA 9060,	200	mg/kg
Sediment	Grain size	ASTM D-422, EPA 1995, and USACE 1918	1	% sand, % silt, % clay, % gravel

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^a The list shows approved USEPA methods, but modified or alternate methods (e.g., USGS lab method) may be used as long as the EPA requirements for the use of modified¹⁰ or alternate test procedures¹¹ are met.

¹⁰ Letter from Richard Reding, USEPA, dated 20 November 2007 titled “Flexibility to Modify CWA Methods” provides guidance on allowed modifications to EPA methods.

¹¹ Protocol for EPA Approval of Alternate Test Procedures for Organic and Inorganic Analytes in Wastewater and Drinking Water. March 1999: EPA 821-B-96-002. This document lists the requirements for method validation.