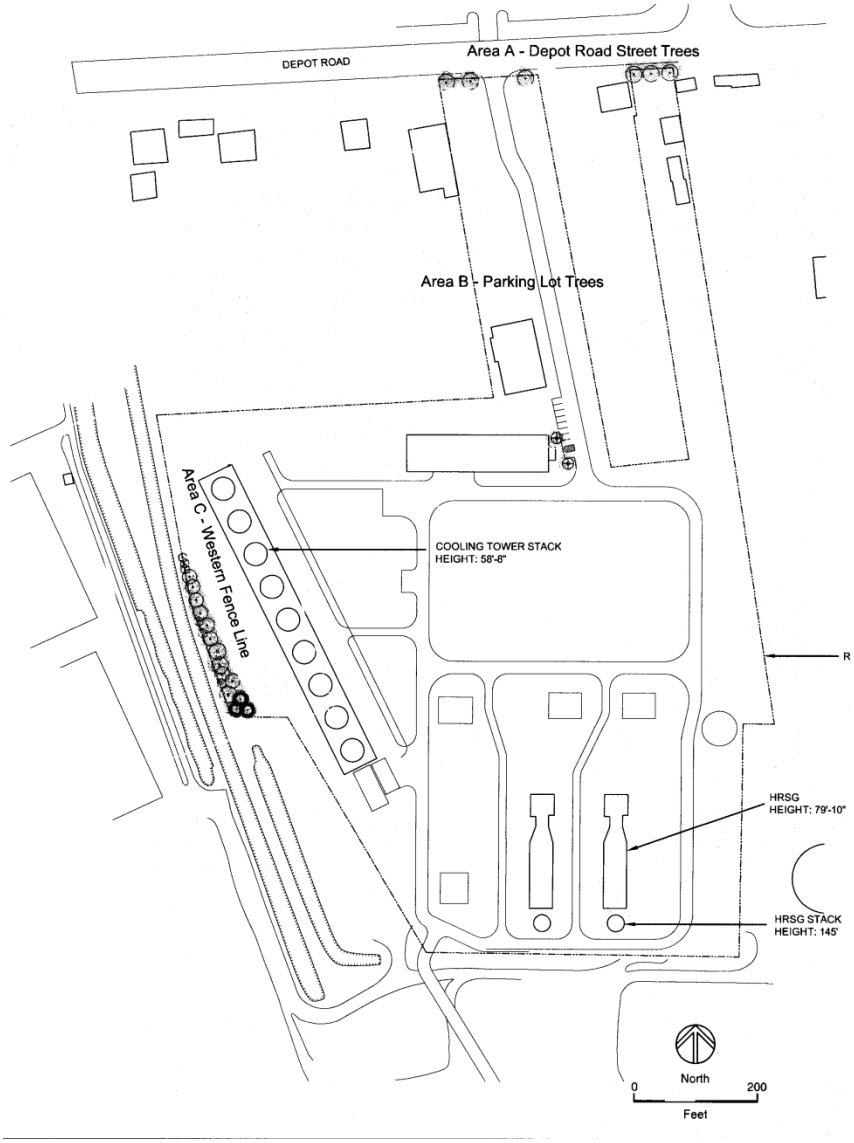

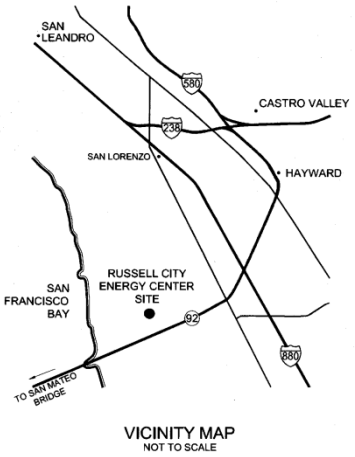

FIGURE 1. RUSSELL CITY ENERGY CENTER - LOCATION MAPS

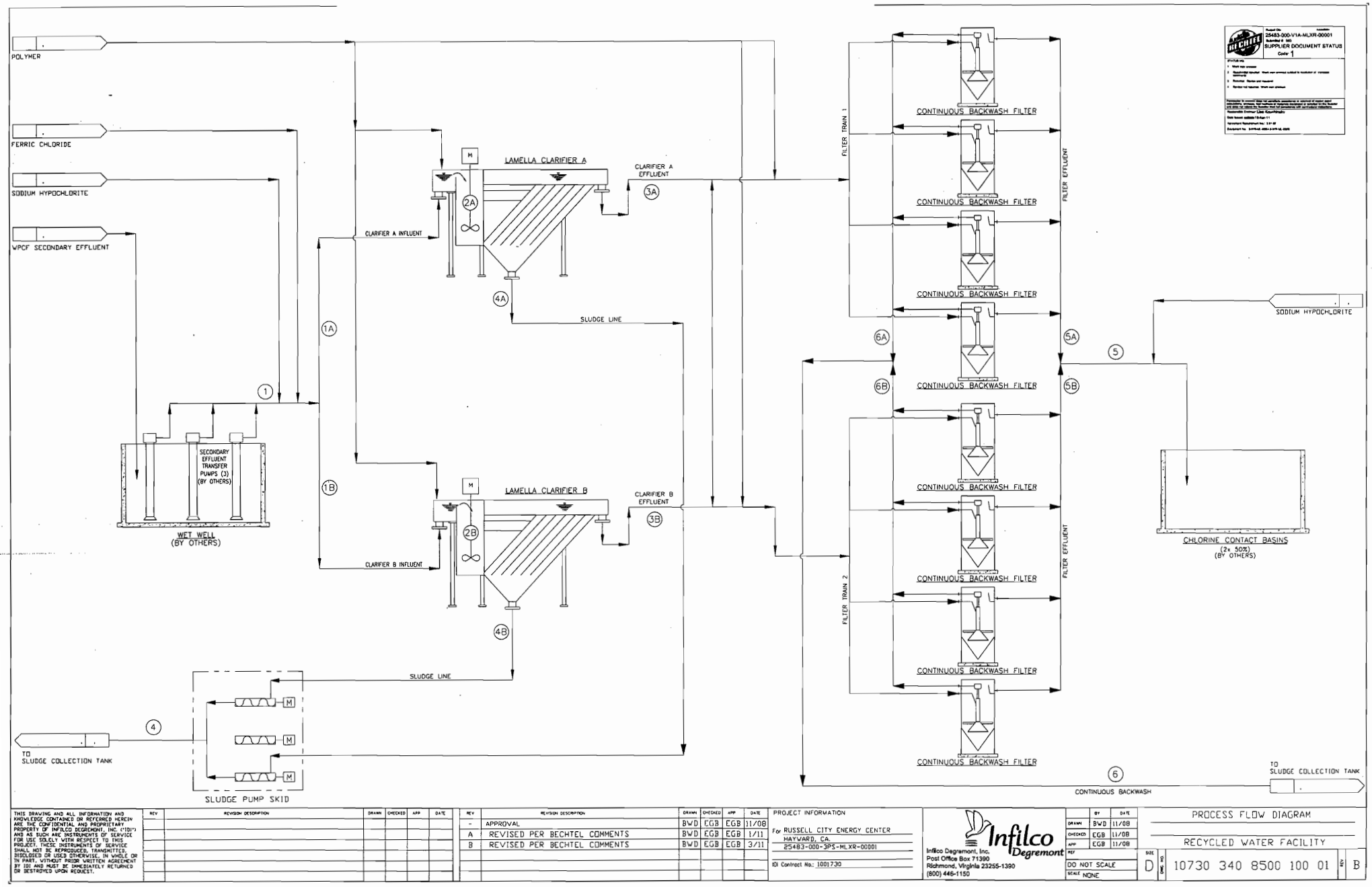

FIGURE 2. RUSSELL CITY ENERGY CENTER - Recycled Water Facility - Flow Diagram

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

REVISED TENTATIVE
MONITORING and REPORTING PROGRAM

of

ORDER No. R2-2013-0001

WATER RECYCLING REQUIREMENTS
for
RUSSELL CITY ENERGY COMPANY, LLC
RUSSELL CITY CENTER RECYCLED WATER FACILITY,
HAYWARD, ALAMEDA COUNTY

January 2013

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I. PURPOSE

1. This monitoring and reporting program (Program) is for water recycling requirements adopted by the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board).

2. The principal purposes of a monitoring and reporting program are to guide a waste discharger in doing the following:

   a. Document compliance with water recycling requirements and prohibitions established by the Water Board; and
   b. Prevent and abate, in a self-directed manner, pollution or potential threats to water quality arising from water recycling.

3. Reporting responsibilities of waste dischargers are specified in sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code, and Water Board Resolution No. 73-16.

II. SAMPLING and ANALYTICAL METHODS

1. Sample collection, storage, and analyses shall be performed according to Code of Federal Regulations Title 40, Section 136 (40 CFR 136), or other methods approved and specified by the Executive Officer of the Water Board (Executive Officer).

2. Water and waste analyses shall be performed by a laboratory approved for these analyses by the California Department of Public Health (CDPH), or by a laboratory waived by the Executive Officer from obtaining such certification for these analyses, or as otherwise specified in this Program.

3. The director of the laboratory whose name appears on the certification, or the laboratory supervisor who is directly responsible for the analytical work performed, shall supervise all analytical work. This includes supervising all appropriate quality assurance/quality control procedures in the laboratory. The laboratory director (or directly responsible supervisor) shall sign all reports submitted to the Water Board.

4. Measurements by the use of portable analytical equipment such as field instruments are acceptable for selected parameters, given the following conditions:

   a. The analytical equipment is appropriate for the given analysis and water or waste;
   b. The analytical equipment is properly maintained and calibrated;
   c. The equipment user is knowledgeable of proper sampling and equipment use practices; and
   d. Written notification of the intended use has been provided in advance to Water Board staff, and Water Board staff voices no objections.

5. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

III. DEFINITIONS

The following are definitions and explanations of terms used in this monitoring program:

A. DISCHARGER and FACILITY

NOTE: The following are simplified descriptions, for reference purposes. Additional, more complete, descriptions are given in the findings of this Order.

1. Discharger
The Discharger subject of this Program is Russell City Energy Company, LLC. The Discharger is the producer, distributor and user of recycled water for the Russell City Energy Center recycled water project. The Discharger is responsible for implementing this Program.

2. Facility
The Facility is the Russell City Energy Center Recycled Water Facility, which produces disinfected tertiary recycled water, and associated recycled water distribution and use equipment and areas located within the Russell City Energy Center property.

B. TYPES OF SAMPLES

1. Flow Measurement
Flow measurement is the accurate measurement of the rate—flow volume over time elapsed—by a properly calibrated and maintained flow-measuring device. Flow measurement from a properly calibrated and maintained automated pump-use recording device, such as a pump dose event counter, for a properly calibrated and maintained pump, is acceptable.

2. Grab Sample
A grab sample is defined as an individual sample collected in a short period of time not exceeding 15 minutes. Grab samples are used primarily in determining compliance with instantaneous maximum or minimum limits and also for bacteriological limits. Grab samples represent only the condition that exists at the time the sample is collected.

3. Composite Sample
A composite sample is defined as a sample composed of individual grab samples. In a flow-weighted composite, the grab samples are mixed in proportions varying not more than plus or minus five percent from the instantaneous rate of flow corresponding to each grab sample. The grab samples used for the composite must be collected at regular intervals not greater than one hour. Alternatively, the grab samples may be collected with a continuous automatic sampling device capable of attaining the proportional accuracy stipulated above throughout the sampling period. In a time-sequenced composite sample, individual grab samples of specified volume, typically uniform, are obtained at specified time intervals, typically uniform. The sampling period for all composite samples is 24 hours unless specified otherwise in writing by the Executive Officer.

4. Observations
Observations are primarily visual observations and inspection of conditions. Observations may include recording measurements from monitoring devices, for example, determining freeboard from a water-level staff gauge, or determining precipitation from a rain gauge.

C. SAMPLING FREQUENCY

	Term	Meaning
1.	Continuous	Continuous monitoring.
2.	Daily	One time each calendar day.
3.	Weekly	One time per calendar week, with sampling interval of at least five days.
4.	Monthly	One time per calendar month, with sampling interval of at least four weeks.
5.	Quarterly	One time per calendar quarter, at intervals of about three months.

D. MONITORING and REPORTING TIME PERIODS

1. Daily — The Daily time period is a 24-hour period associated with a calendar day. The 24-hour period may overlap calendar days (e.g., 8 am of one day to 8 am of the next) but shall be consistent from one sampling event to the next.
2. Weekly — The Weekly period is a 7-day calendar week.
3. Monthly — The Monthly time period is each respective calendar month.
4. Annual — The calendar year.

E. ABBREVIATIONS USED IN THIS PROGRAM

1. Type of Sample Abbreviations
   a. C-24 = Composite Sample over 24-hours
2. Parameter Abbreviations
   a. BOD_5 = Biochemical Oxygen Demand, 5-day, at 20 ^{o}C
   b. TSS = Total Suspended Solids
   c. CT = The mathematical product of total chlorine residual concentration in mg/L and modal contact time in minutes
3. Unit Abbreviations
   a. mg/L = milligrams per liter
   b. MPN/100 ml = Most Probable Number per 100 milliliters
   c. NTU = Nephelometric Turbidity Units
   d. mg-min/L = Milligram-minutes per Liter, the units for CT values
4. Sampling Frequency Abbreviations
   a. Cont. = Continuous
   b. D = Daily
   c. W = Weekly
   d. 3/W = three times per week
   e. M = Monthly
   f. Q = Quarterly

F. STANDARD OBSERVATIONS

1. Signs
   Inspect for proper condition of signs warning the public, employees and other persons that recycled water is being used.

2. Control
   Inspect for evidence of loss of control of the recycled water, such as recycled water escaping the use area through surface runoff or airborne spray (show affected area on a sketch).

IV. MONITORING STATIONS

A sketch showing locations of all stations described below shall accompany the first monitoring report, and subsequent reports when locations are added or changed, or whenever a violation is reported:

STATION	DESCRIPTION
A. RECYCLED WATER FACILITY	
1. Influent	Influent to the Recycled Water Facility.
2. Filtered Water	Recycled water within the Recycled Water Facility, following filtration, prior to disinfection.
3. Disinfection	Recycled water in the disinfection process suitable for monitoring disinfection process performance including chlorine residual concentration, modal contact time, and CT values.
4. Recycled Water	Disinfected tertiary recycled water following all required treatment and disinfection processes and representative of the recycled water to be distributed and used.
B. RECYCLED WATER USE AREAS	
1. Power Plant	At the power plant where recycled water is used.
2. Landscape	Areas within the Facility where recycled water is used to irrigate landscape plants.

V. MONITORING SCHEDULE

The Discharger is required to sample, analyze, and observe according to the schedule tabulated below in Table 3:

Table 3 - Schedule for Recycled Water Monitoring

Parameter	**Units**	**Sample Type**	**Monitoring Station**				
			Influent	**Filtered Water**	**Disin-fection Process**	**Recycled Water**	**Use Areas**
Flow	gallons	cont.	cont.		cont.	cont.	cont.
Turbidity	NTU	cont.	cont.	cont.		cont.	
Chlorine residual	mg/L	cont.			cont.		
Contact Time	minutes	Determined by special study. See part VI.A.6.					
Disinfection CT	mg-min/L	cont.			cont.		

Total Coliform	MPN/100 ml	grab				Daily	
Dissolved Oxygen	mg/L	grab				3/W	
pH	pH units	grab				3/W	
Total Dissolved Solids	mg/L	C-24				M	
Biochemical Oxyge Demand	mg/L	C-24				M	
Total Suspended Solids	mg/L	C-24				M	
Total Nitrogen	mg/L as N	C-24				M	
Standard Observations							W

VI. MONITORING SPECIFICATIONS

A. MONITORING and REPORTING DETAILS

1. Continuous Monitoring
   Continuous monitoring means that the required observations, sampling or analyses are conducted on an ongoing basis. Data obtained from continuous monitoring shall be recorded and stored appropriately. For purposes of reporting the data in routine monitoring reports submitted to the Water Board, the data shall be presented as maximum, minimum and average values for each day of monitoring.

2. Flow Monitoring and Reporting
   Flows shall be monitored continuously during active use, and reported as Daily Flow, in million gallons per day (or gallons per day if more appropriate) for each day when flow occurs, and Monthly Total, in million gallons.

3. Sampling
   a. Sampling for monitoring analyses is required only when the identified part(s) or component(s) of the wastewater system associated with a given monitoring station is (are) in use.
   b. Sampling for the following parameters shall be conducted by means of 24-hour flow-weighted or time-sequenced composite samples: BOD, TSS, and Nitrogens.

4. Nitrogens
   a. The parameter 'Nitrogens' in this Program means all of the following parameters:
      (1) Ammonia Nitrogen,
      (2) Nitrate Nitrogen, and
      (3) Total Kjeldahl Nitrogen.
   b. Analytical results for the nitrogen parameters shall be reported as "mg/L as nitrogen".

5. Precipitation
   Precipitation (rainfall) monitoring shall be continuous and recorded and reported as total rainfall for each calendar month. Precipitation monitoring shall be representative of

precipitation falling on recycled water use areas. The use of data from a certified weather monitoring station in the vicinity of the Facility and representative of rainfall at the Facility is acceptable.

6. Disinfection Contact Time
   The disinfection contact time is to be determined and documented by a tracer study of the chlorine contact basin flows. This study will be conducted during initial startup of the Recycled Water Facility and prior to distribution of recycled water to end uses. The Discharger will submit to the Water Board a completed report of the tracer study no later than thirty days after completion of the study test procedures.

B. CROSS CONNECTION CONTROL PRACTICES

1. Prior to the initial operation of the recycled water system and annually thereafter, the Facility shall be surveyed for potential cross-connection hazards that have not previously been identified and abated by cross-connection control devices.

2. All cross-connection control devices shall be tested on an annual basis by a certified Backflow Assembly Tester.

3. The results of the above testing shall be reported in the annual monitoring report to the Water Board.

C. INCREASED MONITORING FREQUENCY

1. The Discharger is required to increase monitoring frequency to at least twice the normal frequency if either of the following happens:
   a. Any monitoring indicates a violation of water recycling requirements or unstable wastewater system operation or performance; or
   b. Any specified samplings or analyses are not completed as required.

2. If either scenario given as 1.a or 1.b. above occurs, monitoring for the parameter(s) and monitoring station(s) in concern shall immediately and henceforth be conducted at the increased frequency. This increased monitoring frequency shall be maintained for the following periods of time:
   a. At least two sampling events; and
   b. Until such time as the results of monitoring indicate violations are no longer occurring or the problem has been corrected and the recycled water system has returned to stable operation and performance.

D. MONITORING BY USE OF AUTOMATED INSTRUMENTS

Monitoring by the use of automated analytical instruments is acceptable under the following conditions: the instruments are capable of providing the required data, properly maintained, periodically calibrated to ensure accurate measurements, and their use is documented in the Operation and Maintenance Manual.

E. MODIFICATION OF MONITORING PRACTICES

Modifications of the monitoring practices specified in this Program may be authorized by the Executive Officer in consideration of acceptable accumulated data and acceptable alternate means of monitoring. Factors to be considered include: data quality, adequate characterization of the identified recycled water system process, consistency of system performance, compliance with water recycling requirements, and acceptable means for providing equivalent and adequate monitoring of the identified recycled water system process. Requests for modification of monitoring practices must be submitted to the Executive Officer in writing, with a technical report that includes evaluation of accumulated data, and a complete description of proposed alternate means of monitoring. Proposed modifications of monitoring practices must be approved in writing by the Executive Officer prior to implementation.

VII. REPORTS to be SUBMITTED to the WATER BOARD

A. MONITORING REPORTS

The Discharger shall submit to the Water Board monitoring reports documenting the recycled water treatment, distribution and use systems operation and performance, and compliance with requirements, in accordance with the following:

1. Report Schedule
   a. Quarterly Reports
      Written reports shall be prepared for each calendar quarter and shall be submitted to the Water Board by the last day of the month following the monitoring period.

   b. Annual Reports
      Written reports shall be prepared for each calendar year monitoring period and shall be submitted to the Water Board by February 28 following the monitoring period.

2. Transmittal Letter
   A letter of transmittal shall accompany each monitoring report submitted to the Water Board. The transmittal letter shall include the following:

   a. Facility, Monitoring Period and Contact Information.
      Identification of the following:

      (1) The discharge facility by name and address;
      (2) The monitoring period being reported;
      (3) The name and telephone number of a person familiar with the report and the current status of the recycled water system, for follow-up discussions as may be needed; and
      (4) The name of the Water Board staff case handler.

   b. Operation and Maintenance Activities
      Discussion of all major operation and maintenance activities that occurred during the reporting period (e.g., repair or replacement of system equipment) including dates and completion status of actions taken.

c. Violations or Problems
Discussion of any violations of water recycling requirements, and any problems or unusual conditions that occurred during the reporting period. This shall include reporting the following information:

(1) Date and time of occurrence;
(2) Location of occurrence shown on a scaled plan drawing of the facility site;
(3) Description of the violation, problem or unusual condition; and
(4) Corrective actions taken or planned to correct the violation, problem, or unusual condition and a time schedule for implementation of these actions. Actions may include increased monitoring and any changes to recycled water system equipment or operations.

If a report describing corrective actions and/or a time schedule for implementation of those actions was previously submitted to the Water Board, then reference to that report is satisfactory. References to previously submitted reports shall include the date, title or subject, and author of the report, and date submitted to the Water Board.

d. Transmittal Letter Signature(s)
(1) The transmittal letter shall be signed by:

(a) The Discharger's principal executive officer, ranking elected official or duly authorized representative, and
(b) The Russell City Energy Center plant manager.

(2) The transmittal letter signatures shall be accompanied by the following statement:

"I certify under penalty of law that this document and all attachments have been prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

3. Results of Analyses and Observations
Each report shall include results of analyses and observations in accordance with the following specifications:

a. Monitoring Results
Each monitoring report shall include tabulations of results from all required analyses, measurements and observations specified in this Program for the reporting period, including the following details:

(1) Date of sampling or observation;
(2) Location of sampling or observation (sample station);
(3) Parameter of analysis (e.g., pH, Dissolved Oxygen, etc.); and
(4) The result of the analysis, measurement or observation.

b. Data Presentation
In reporting monitoring data, the data shall be arranged in tabular form so that the data are clearly discernible. The data shall be summarized in a manner to illustrate clearly whether the discharge is in compliance with water recycling requirements and this Program. Reporting shall include maximum, minimum and monthly average values for each parameter for which more than one sample result is obtained during the monitoring period.

c. Sample Analysis Data
For all sample analyses, include the following information:

(1) Date of analysis;
(2) Individual or contract laboratory conducting the analysis;
(3) Analytical procedure or method used, and test method detection level; and
(4) Copies of laboratory analysis result reports for all analyses conducted by a contract laboratory.

d. Reporting Results Below Detection Limits
For all analytical characterizations (laboratory tests) for which results are identified as below limits of detection of the test procedure, data reporting shall include the limit of detection. In other words, reporting a sample test result as only “ND”, or “not detected” or similar, is not acceptable; the actual numeric value of the detection limit must also be reported. It is acceptable to use notations of non-detection ("ND” or similar) in data tables, provided that the corresponding limit of detection is clearly identified elsewhere in the table, or as a footnote of the table.

e. Additional Monitoring Results
If any parameter is monitored more frequently than is required by this Program, then the results of such monitoring shall be included in the monitoring reports and in any calculations of statistical values.

4. Identification of Monitoring Stations
Each report shall include a scaled and legible plan view drawing of the facility site showing the locations of all monitoring stations at which monitoring is required by this Program.

5. Annual Monitoring Report
The annual monitoring report shall include the following:

a. Tabular and graphical summaries of the monitoring data obtained during the period being reported.

b. A discussion of recycled water system performance and record of compliance with the requirements specified by this Order, including monitoring and reporting requirements.

c. For any event of non-compliance with requirements specified by this Order, including monitoring and reporting requirements, the report shall include description of

corrective actions taken or planned to achieve full compliance, and a time schedule of when those actions were or will be taken.

B. REPORTS OF VIOLATIONS

1. The Discharger shall notify the Water Board immediately whenever the Discharger violates or threatens to violate requirements of this Order or Program or an adverse condition occurs in the production, distribution or use of the recycled water. An adverse condition includes but is not limited to a release of recycled water other than as allowed by the Order. An adverse condition also includes any other non-compliance event.

2. The initial notification shall be conducted by telephone, email, fax transmittal, or in person, and shall be completed within 24 hours of discovery.

3. A follow-up report shall be submitted, in print or electronically, within two weeks after the initial notice or as directed otherwise by Water Board staff in writing. The report must include, but shall not be limited to, the following information:

   a. The reasons for the non-compliance;
   b. Actions taken to correct the problem and the dates thereof; and
   c. Actions that have been or will be taken to prevent the problem from recurring.

C. WATER BOARD ADDRESS and PHONE NUMBER

The Water Board's current office mailing address and phone number are given below. This is the address to be used for submittal of reports and correspondence to the Water Board:

1. Address: California Regional Water Quality Control Board,
   San Francisco Bay Region
   1515 Clay Street, Suite 1400
   Oakland, CA 94612

2. Phone: (510) 622 - 2300

VIII. MONITORING PROGRAM CERTIFICATION

I, Bruce H. Wolfe, Executive Officer, hereby certify that this Monitoring and Reporting Program:

1. Has been developed in accordance with the procedure set forth in the Water Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements for the subject wastewater systems.
2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Discharger, and revisions will be ordered by the Executive Officer.
3. Is effective on the following date: January 9, 2013.

Digitally signed by Bruce H. Wolfe
Date: 2013.01.17 10:13:19 -08'00'

BRUCE H. WOLFE
Executive Officer

CIWQS Place No. 785242