This draft regulation reflects the California Department of Public Health's (CDPH's) Drinking Water Program's current thinking on the regulation for replenishing groundwater with recycled municipal wastewater. To assist readability, this draft does not include some information and formatting required by the Administrative Procedures Act.

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Title 22, CALIFORNIA CODE OF REGULATIONS
DIVISION 4. ENVIRONMENTAL HEALTH
CHAPTER 3. RECYCLING CRITERIA
ARTICLE 1. DEFINITIONS

Section 60301.050. 24-hour Composite Sample.

"24-hour composite sample" means an aggregate sample derived from no fewer than eight discrete samples collected at equal time intervals or collected proportional to the flow rate over the compositing period. The aggregate sample shall reflect the average source water quality covering the composite of sample period.

Section 60301.080. Added Tracer.

"Added Tracer" means a non-reactive substance, either foreign to the receiving groundwater or at concentrations at least three orders of magnitude greater than the receiving groundwater, intentionally added to the water applied at a GRRP such that the first two percent of the tracer can be identified in the groundwater downgradient of the GRRP to determine the underground retention time of the water.

Section 60301.180. Department.

"Department" means the California Department of Public Health.

Section 60301.190. Diluent Water.

"Diluent water" means water, meeting the diluent requirements of this Chapter, used for reducing the recycled municipal wastewater contribution over time.

Section 60301.370. Groundwater.

"Groundwater" means water below the land surface in a saturated zone.

Section 60301.390. Groundwater Replenishment Reuse Project (GRRP).

"Groundwater Replenishment Reuse Project (GRRP)" means a project involving the planned use of recycled municipal wastewater that is operated for the purpose of replenishing a groundwater basin designated in the Water Quality Control Plan [as defined in Water Code section 13050(j)] for use as a source of municipal and domestic water supply, or a project determined as a GRRP by the RWQCB based on a project's existing or projected replenishment of the affected groundwater basin.

Section 60301.450. Indicator Compound.

"Indicator Compound" means an individual chemical in a GRRP's municipal wastewater that represents the physical, chemical, and biodegradable characteristics of a specific family of trace organic chemicals; is present in concentrations that provide information relative to the environmental fate and transport of those chemicals; is used to monitor the efficiency of trace organic compounds removal by treatment processes; and provides an indication of treatment process failure.

Section 60301.455. Intrinsic Tracer.

"Intrinsic Tracer" means a substance present in the recharge water at concentrations greater than the receiving groundwater such that the substance in the water applied at the GRRP can be readily detected at low concentrations in the groundwater downgradient of the GRRP and can be used to determine the underground retention time of the water.

Section 60301.575. Maximum Contaminant Level or MCL.

"MCL" means the maximum permissible concentration of a contaminant, as defined by the section 116275(c) and (d) of the Health and Safety Code or established by the U.S. Environmental Protection Agency.

Section 60301.625. Notification Level or NL.

"NL" means the concentration of a contaminant established by the Department pursuant to section 116455 of the Health and Safety Code.

Section 60301.670. Project Sponsor.

"Project sponsor" means an entity subject to water recycling requirements for a GRRP from a RWQCB and is, in whole or part, responsible for complying with the requirements of this Chapter.

Section 60301.680. Public Water System.

"Public Water System" has the same meaning as defined in section 116275(h) of the Health and Safety Code.

Section 60301.685. Recharge Water.

"Recharge Water" means recycled municipal wastewater or the combination of recycled municipal wastewater and diluent water that is applied at a GRRP facility.

Section 60301.690. Recycled Municipal Wastewater.

"Recycled Municipal Wastewater" means recycled water that is the effluent from the treatment of a wastewater of municipal origin.

Section 60301.705. Recycled Municipal Wastewater Contribution (RWC).

"Recycled Municipal Wastewater Contribution (RWC)" means the fraction equivalent to the quantity of recycled municipal wastewater applied at the GRRP divided by the sum of the quantity of recycled municipal wastewater and credited diluent water applied at the GRRP.

Section 60301.770. RWQCB.

"RWQCB" means Regional Water Quality Control Board.

Section 60301.780. Saturated Zone.

"Saturated zone" means an underground region or regions in which all interstices in, between, and below natural geologic materials are filled with water, with the uppermost surface of the saturated zone being the water table.

Section 60301.810. Spreading Area.

"Spreading area" means a natural or constructed impoundment with a depth equal to or less than its widest surface dimension used by a GRRP to replenish a groundwater basin with recharge water infiltrating and percolating through a zone that, in the absence of a GRRP, would be an unsaturated zone.

Section 60301.840. Subsurface Application.

"Subsurface Application" means the controlled application of recharge water to a groundwater basin(s) by a means other than surface application.

Section 60301.850. Surface Application.

"Surface Application" means the controlled application of recharge water to a spreading area.

Section 60301.855. Surrogate Parameter.

"Surrogate parameter" means a measurable physical or chemical property that has been demonstrated to provide a direct correlation with the concentration of an indicator compound, is used to monitor the efficiency of trace organic compounds removal by a treatment process, and/or provides an indication of a treatment process failure.

Section 60301.860. Total Nitrogen.

"Total nitrogen" means the sum of concentrations of nitrogen in ammonia, nitrite, nitrate, and organic nitrogen-containing compounds, expressed as nitrogen.

Section 60301.870. Total Organic Carbon (TOC).

"Total organic carbon (TOC)" means the concentration of organic carbon present in water.

Section 60301.910. Unsaturated Zone.

"Unsaturated Zone" means the volume between the land surface and the uppermost saturated zone.

ARTICLE 5.1. INDIRECT POTABLE REUSE: GROUNDWATER REPLENISHMENT - SURFACE APPLICATION WITHOUT FULL ADVANCED TREATMENT

~~**Section 60320. Groundwater Recharge.**~~

~~(a) Reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health. The State Department of Health Services' recommendations to the Regional Water Quality Control Boards for proposed groundwater recharge projects and for expansion of existing projects will be made on an individual case basis where the use of reclaimed water involves a potential risk to public health.~~

~~(b) The State Department of Health Services' recommendations will be based on all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; and distance to withdrawal.~~

~~(c) The State Department of Health Services will hold a public hearing prior to making the final determination regarding the public health aspects of each groundwater recharge project. Final recommendations will be submitted to the Regional Water Quality Control Board in an expeditious manner.~~

Note: ~~Authority cited: Section 208, Health and Safety Code; and Section 13521, Water Code. Reference: Sections 13520 and 13521, Water Code.~~

Section 60320.100. General Requirements.

(a) A Groundwater Replenishment Reuse Project (GRRP) project sponsor utilizing surface application without continuous full advanced treatment of the entire recycled municipal wastewater stream prior to application shall meet the requirements of this Article. For the purpose of this Article, advanced treatment means treatment meeting the reverse osmosis and advanced oxidation process criteria in section 60320.201 of Article 5.2.

(b) Prior to operation of a new GRRP, or prior to permit renewal for an existing GRRP, the GRRP's project sponsor shall have a Department-approved plan describing the steps the project sponsor will take to provide an alternative source of potable water supply to all users of a producing drinking water well, or a Department-approved treatment mechanism the project sponsor will provide to all owners of a producing drinking water well, that as a result of the GRRP's operation, as determined by the Department:

(1) violates a California or federal drinking water standard;

(2) has been degraded to the degree that it is no longer a safe source of drinking water; or

(3) receives water that fails to meet section 60320.108.

(c) Prior to operating a new GRRP, the project sponsor shall collect at least two samples from each monitoring well approved pursuant to section 60320.126.

The samples shall be representative of water in each aquifer, taking into consideration seasonal variations, and be analyzed for the chemicals, contaminants, and characteristics in sections 60320.110, 60320.112, 60320.118 and 60320.120.

(d) A GRRP's recycled municipal wastewater shall be retained underground for a period of time no less than the retention time required pursuant to section 60320.108 and 60320.124. The GRRP shall be designed and operated in a manner that ensures water treated pursuant to this Article, beyond the boundary described in (e)(2), meets the recycled municipal wastewater contributions (RWC) requirements in section 60320.116.

(e) A GRRP's project sponsor shall provide the Department, RWQCB, and local well-permitting authorities a map of the GRRP site at a scale of 1:24,000 or larger (1 inch equals 2,000 feet or 1 inch equals less than 2,000 feet) or, if necessary, a site sketch at a scale providing more detail, that clearly indicates:

(1) the location and boundaries of the GRRP;

(2) the boundary representing the greatest of the horizontal and vertical distances reflecting the retention times required pursuant to section 60320.108 and section 60320.124; and

(3) the location of all monitoring wells established pursuant to section 60320.126, and drinking water supply wells within two years of the GRRP based on groundwater flow directions and velocities expected under GRRP operating conditions.

(f) Prior to operating a new GRRP, the project sponsor shall demonstrate to the Department and RWQCB that the project sponsor possesses adequate managerial and technical capability to assure compliance with this Article.

(g) Prior to replenishing a groundwater basin or an aquifer with recycled municipal wastewater, a new GRRP's project sponsor shall demonstrate that all treatment processes have been installed and can be operated by the project sponsor to achieve their intended function. A protocol describing the actions to be taken to meet this subsection shall be included in the engineering report submitted pursuant section 60323.

(h) In the engineering report required pursuant to section 60323, the project sponsor for a new GRRP shall include a hydrogeological assessment of the proposed GRRP's setting. The assessment shall include the following:

(1) the qualifications of the individual(s) preparing the assessment;

(2) a general description of geologic and hydrogeological setting of the groundwater basin(s) potentially directly impacted by the GRRP;

(3) a detailed description of the stratigraphy beneath the GRRP, including the composition, extent, and physical properties of the affected aquifers; and

(4) based on at least four rounds of consecutive quarterly monitoring to capture seasonal impacts;

(A) the existing hydrogeology and the hydrogeology anticipated as a result of the presence of the GRRP, and

(B) maps showing quarterly groundwater elevation contours, along with vector flow directions and calculated hydraulic gradients.

Section 60320.102. Public Hearing.

(a) A public hearing for a GRRP shall be held by the project sponsor prior to the Department's submittal of its recommendations to the RWQCB for the GRRP's initial permit and any time an increase in maximum RWC has been proposed but not addressed in a prior public hearing. Prior to a public hearing, the project sponsor shall provide the Department, for review and approval, the information the project sponsor intends to present at the hearing. The information shall also be provided on the Internet. Following the Department's approval of the information, the project sponsor shall place the information on the Internet and in a repository that provides at least thirty days of public access to the information prior to the public hearing.

(b) Prior to placing the information required pursuant to subsection (a) in a repository, the project sponsor shall:

(1) Notify the public of the following;

(A) the location and hours of operation of the repository,

(B) the Internet address where the information may be viewed,

(C) the purpose of the repository and public hearing,

(D) the manner in which the public can provide comments, and

(E) the date, time, and location of the public hearing; and

(2) At a minimum, notify the first downgradient potable water well owner and well owners whose drinking water source is within 10 years from the GRRP based on groundwater flow directions and velocities.

(c) Unless directed otherwise by the Department, the public notification made pursuant to subsection (b)(2) shall be by direct mail and the notification made pursuant to (b)(1) shall be by one or more of the following methods delivered in a manner to reach persons whose source of drinking water may be impacted by the GRRP:

(1) local newspaper(s) publication;

(2) mailed or direct delivery of a newsletter;

(3) conspicuously placed statement in water bills; or

(4) television and/or radio.

Section 60320.104. Lab Analyses.

(a) Analyses for contaminants having primary or secondary MCLs shall be performed by laboratories approved to perform such analyses by the Department utilizing Department-approved drinking water methods.

(b) Analyses for chemicals other than those having primary or secondary MCLs shall be described in the GRRP's Operations Plan prepared pursuant to section 60320.122.

Section 60320.106. Wastewater Source Control.

A project sponsor shall ensure that the recycled municipal wastewater used for a GRRP shall be from a wastewater management agency that:

(a) administers an industrial pretreatment and pollutant source control program;

(b) implements and maintains a source control program that includes, at a minimum;

(1) an assessment of the fate of Department-specified and RWQCB-specified chemicals and contaminants through the wastewater and recycled municipal wastewater treatment systems,

(2) chemical and contaminant source investigations and monitoring that focuses on Department-specified chemicals and contaminants,

(3) an outreach program to industrial, commercial, and residential communities within the portions of the sewage collection agency's service area that flows into the water reclamation facility subsequently supplying the GRRP, for the purpose of managing and minimizing the discharge of chemicals and contaminants at the source, and

(4) a current inventory of chemicals and contaminants identified pursuant to this section, including new chemicals and contaminants resulting from new sources or changes to existing sources, that may be discharged into the wastewater collection system; and

(c) is compliant with the effluent limits established in the RWQCB permit for the GRRP.

Section 60320.108. Pathogenic Microorganism Control.

(a) A project sponsor shall design and operate a GRRP such that the recycled municipal wastewater used as recharge water for a GRRP receives treatment that achieves at least 12-log enteric virus reduction, 10-log Giardia cyst reduction, and 10-log Cryptosporidium oocyst reduction. The treatment train shall consist of at least three separate treatment processes. For each pathogen (i.e., virus, Giardia cyst, and Cryptosporidium oocyst), a separate treatment process may be credited with no more than 6-log reduction and shall achieve at least 1-log reduction.

(b) Except for those portions treated with advanced treatment meeting the requirements of section 60320.201, the wastewater used as recycled municipal wastewater shall receive treatment to meet:

(1) the definition of filtered wastewater, pursuant to section 60301.320; and

(2) the definition of disinfected tertiary recycled water, pursuant to section 60301.230.

(c) For each month retained underground as demonstrated in subsection (f), the recycled municipal wastewater or recharge water will be credited with 1-log virus reduction. A GRRP meeting subsection (b)(1) and (2) or providing advanced treatment complying with section 60320.201, that also demonstrates at least six months retention underground pursuant to subsection (f), will be credited with 10-log Giardia cyst reduction and 10-log Cryptosporidium oocyst reduction.

(d) With the exception of log reduction through retention time underground, the project sponsor shall validate each of the treatment processes used to meet the requirements in subsection (a) for their log reduction by submitting a report for the Department's review and approval, or by using a challenge test approved by the Department, that provides evidence of the treatment process's log reduction. The report and/or challenge test shall be prepared by engineer licensed in California with at least five years of experience, as a licensed engineer, in wastewater treatment and public water supply, including the evaluation of treatment processes for pathogen control. With the exception of retention time underground and a soil treatment process, the project sponsor shall propose and include in its Operations Plan prepared pursuant to section 60320.122, on-going monitoring that verifies the performance of each treatment process's ability to achieve its credited log reduction.

(e) The project sponsor of a GRRP whose permit was issued prior to *[insert effective date]* shall demonstrate compliance with subsection (d) prior to the renewal of the GRRP's permit. The project sponsor of a new GRRP shall demonstrate compliance with subsection (d) prior to being issued a permit.

(f) To demonstrate the retention time underground in subsection (c), a tracer study utilizing an added tracer shall be implemented under hydraulic conditions representative of normal GRRP operations. The retention time shall be the time representing the difference from when water is applied at the GRRP to when the first two percent (2%) of such water arrives at the downgradient endpoint. The project sponsor for a new GRRP shall initiate the tracer study prior to the end of the third month of operation. The project sponsor for existing GRRP that hasn't already performed such a tracer study shall complete a tracer study demonstrating retention time underground prior to the renewal of the GRRP's permit.

(g) For the purpose of siting a GRRP location during project planning and until a GRRP's project sponsor has met the requirements of subsection (f), for each month of retention time estimated using the method in column 1, the recycled municipal wastewater or recharge water shall be credited with no more than the corresponding virus log reduction in column 2 of Table 60320.108.

Table 60320.108

Column 1	Column 2
Method used to estimate the retention time to the nearest downgradient drinking water well	**Virus Log Reduction Credit per Month**
Tracer study utilizing an intrinsic tracer, based on T_{10} (i.e. The time representing the difference from when water is applied at the GRRP to when the first ten percent arrives at the downgradient endpoint.)	0.67 logs
Numerical modeling consisting of calibrated finite element or finite difference models using validated and verified computer codes used for simulating groundwater flow.	0.50 logs
Analytical modeling using existing academically-accepted equations such as Darcy's Law to estimate groundwater flow conditions based on simplifying aquifer assumptions.	0.25 logs

(h) The protocol(s) used to establish the retention times in subsections (f) and (g) shall be approved by the Department.

(i) Based on changes in hydrogeological or climatic conditions since the most recent demonstration, the Department may require a GRRP's project sponsor to demonstrate that the underground retention times required in this section are being met.

(j) If the pathogen reduction in subsection (a) is not met based on the on-going monitoring required pursuant to subsection (d), within 24 hours of being aware the project sponsor shall immediately investigate the cause and initiate corrective actions. For failing to meet the pathogen reduction criteria longer than 4 consecutive hours or more than a total of 8 hours during any 7-day period, the Department and RWQCB shall be immediately notified. Failures of shorter duration shall be reported to the RWQCB no later than 10 days after the month in which the failure occurred.

(k) If the effectiveness of a treatment train's ability to reduce enteric virus is less than 9-logs, or Giardia cyst or Cryptosporidium oocyst reduction is less than 8-logs, the project sponsor shall immediately notify the Department and RWQCB, and discontinue application of recycled municipal wastewater at the GRRP.

Section 60320.110. Nitrogen Compounds Control.

(a) To demonstrate control of the nitrogen compounds, the project sponsor shall:

(1) Each week, at least three days apart as specified in the GRRP's Operations Plan, collect at least two samples (grab or 24-hour composite) representative of the recycled municipal wastewater or recharge water applied throughout the spreading area. Samples may be collected before or after surface application;

(2) Have the samples collected pursuant to paragraph (1) analyzed for total nitrogen, with the laboratory being required by the project sponsor to complete each analysis within 72 hours and have the result reported to the project sponsor within the same 72 hours if the result of any single sample exceeds 10 mg/L;

(3) If the average of the results of two consecutive samples collected pursuant to paragraph (1) exceeds 10 mg/L total nitrogen;

(A) notify the Department and the RWQCB within 48 hours of being notified of the exceedance by the laboratory,

(B) investigate the cause for the exceedances and take actions to reduce the total nitrogen concentrations such that continued and future exceedances don't occur, and

(C) initiate additional monitoring for nitrogen compounds as described in the GRRP's Operations Plan, including locations in the groundwater basin and spreading area, to identify elevated concentrations and determine whether such elevated concentrations exceed or may lead to an exceedance of a nitrogen-based MCL; and

(4) If the average of the results of four consecutive samples collected pursuant to paragraph (1) exceeds 10 mg/L total nitrogen, suspend the surface application of recycled municipal wastewater. Surface application shall not resume until corrective actions have been taken and at least two consecutive total nitrogen sampling results are less than 10 mg/L.

(b) Based on a GRRP's operation, including but not limited to the time the spreading area is out of service and utilization of a denitrification process, the project sponsor shall initiate additional monitoring for nitrogen compounds to identify elevated concentrations in the groundwater and determine whether such elevated concentrations exceed or may lead to an exceedance of a nitrogen-based MCL.

(c) The GRRP's project sponsor may apply for reduced monitoring frequencies for total nitrogen, nitrate, or nitrite if, for the most recent 24 months:

(1) the average of all results did not exceed 5 mg/L total nitrogen or one-half the nitrate, nitrite, and nitrate plus nitrite MCLs; and

(2) a result did not exceed 10 mg/L total nitrogen or 80 percent of the nitrate, nitrite, and nitrate plus nitrite MCLs.

(d) If the results of reduced monitoring conducted pursuant to subsection (c) exceed the total nitrogen, nitrate, nitrite, and nitrate plus nitrite concentrations in paragraph (c), the project sponsor shall revert to the GRRP's monitoring frequencies for total nitrogen, nitrate, and nitrite prior to implementation of the reduced frequencies. Reduced frequency monitoring shall not resume unless the requirements of subsection (c) are met.

Section 60320.112. Regulated Contaminants and Physical Characteristics Control.

(a) Each calendar quarter, as specified in the GRRP's Operations Plan, the GRRP's project sponsor shall collect grab samples representative of the applied recycled municipal wastewater and have the samples analyzed for:

(1) the inorganic chemicals in Table 64431-A, except for nitrogen compounds;

(2) the radionuclide chemicals in Tables 64442 and 64443;

(3) the organic chemicals in Table 64444-A;

(4) the disinfection byproducts in Table 64533-A; and

(5) lead and copper.

(b) Recharge water may be monitored in lieu of recycled municipal wastewater to satisfy the monitoring requirements in paragraph (a)(4) if the fraction of recycled municipal wastewater in the recharge water is equal to or greater than the average fraction for the quarter. If the fraction of recycled municipal waste water in the recharge water being monitored is less than the average fraction applied for the quarter, the reported value shall be amended to account for any dilution.

(c) Each year, the GRRP's project sponsor shall collect at least one representative grab sample of the recycled municipal wastewater and have the sample(s) analyzed for the secondary drinking water contaminants in Tables 64449-A and 64449-B.

(d) If a result of the monitoring performed pursuant to subsection (a) exceeds a contaminant's MCL or action level (for lead and copper), within 72 hours of notification of the result the project sponsor shall collect another sample and have it analyzed for the contaminant as confirmation.

(1) For a contaminant whose compliance with its MCL or action level is not based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL or action level, or the confirmation sample is not collected and analyzed pursuant to this subsection, the GRRP's project sponsor shall notify the Department and RWQCB within 24 hours and initiate weekly monitoring until four consecutive weekly results are below the contaminant's MCL or action level. If the running four-week average exceeds the contaminant's MCL or action level, the GRRP's project sponsor shall notify the

Department and RWQCB within 24 hours and, if directed by the Department or RWQCB, suspend application of the recycled municipal wastewater.

(2) For a contaminant whose compliance with its MCL is based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the GRRP shall initiate weekly monitoring for the contaminant until the running four-week average no longer exceeds the contaminant's MCL.

(A) If the running four-week average exceeds the contaminant's MCL, the project sponsor shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in the next quarterly report submitted to RWQCB pursuant to section 60321, with a copy provided to the Department.

(B) If the running four-week average exceeds the contaminant's MCL for sixteen weeks, the project sponsor shall notify the Department and RWQCB within 48 hours and, if directed by the Department or RWQCB, suspend application of the recycled municipal wastewater.

(e) With the exception of color, if an annual result of the monitoring performed pursuant to (c) exceeds a contaminant's secondary MCL in Table 64449-A or the upper limit in Table 64449-B, the project sponsor shall initiate quarterly monitoring of the recycled municipal wastewater for the contaminant and, if the running annual average of quarterly results exceeds a contaminant's secondary MCL or upper limit, describe the reason(s) for the exceedance and any corrective actions taken in the next quarterly report submitted to RWQCB pursuant to section 60321, with a copy provided to the Department. The annual monitoring in (c) may resume if the running annual average of quarterly results does not exceed a contaminant's secondary MCL or upper limit.

(f) If four consecutive quarterly results for asbestos are below the detection limit for asbestos, monitoring for asbestos may be reduced to one sample every three years. Quarterly monitoring shall resume if asbestos is detected.

Section 60320.114. Diluent Water Requirements.

To be credited with diluent water used in calculating an RWC pursuant to section 60320.116, the GRRP shall comply with the requirements of this section and receive Department approval. For diluent water that is a Department-approved drinking water source, the GRRP's project sponsor is exempt from subsections (a) and (b). The GRRP's project sponsor shall:

(a) Monitor the diluent water quarterly for nitrate and nitrite and, within 72 hours of being informed by the laboratory of a nitrate, nitrite, or nitrate plus nitrite result exceeding an MCL, collect a confirmation sample. If the average of the two samples is greater than an MCL;

(1) notify the Department and the RWQCB within 48 hours of receiving the confirmation sample result,

(2) investigate the cause(s) and implement corrective actions, and

(3) each week, collect and analyze two grab samples at least three days apart as specified in an Operations Plan. If the average of the results for a two-week period exceeds the MCL, surface application of the diluent water shall not be used in the calculation of RWC until corrective actions are made. Quarterly monitoring may resume if four consecutive results are below the MCL.

(b) Conduct a source water evaluation per California-Nevada Section of American Water Works Association watershed sanitary survey handbook, or other Department approved evaluation, of the diluent water for Department review and approval that includes, but is not limited to:

(1) a description of the source of the diluent water;

(2) delineation of the origin and extent of the diluent water;

(3) the susceptibility of the diluent water to contamination;

(4) the identification of known or potential contaminants; and

(5) an inventory of the potential sources of diluent water contamination.

(c) Ensure diluent water does not exceed primary MCLs or notification levels and implements a Department-approved water quality monitoring plan for Department-specified contaminants to demonstrate compliance with the primary MCLs and notification levels. The plan shall also include:

(1) monitoring of any chemicals or contaminants in section 60320.120, based on the source water evaluation performed in (b); and

(2) actions to be taken in the event of non-compliance with a primary MCL or exceedance of a notification level.

(d) Develop a method for determining the volume of diluent water to be credited and demonstrate that the diluent water will be introduced in a manner such that the diluent water volume will not result in the GRRP's 120-month running monthly average RWC exceeding its maximum RWC at or beyond the boundary established pursuant to 60320.100(e)(2). The method shall be submitted to the Department for review and approval, and be conducted at a frequency specified in the engineering report prepared pursuant to section 60323. The method shall address all conditions that influence how and when the recycled municipal wastewater and diluent water arrive at all points along the boundary. The conditions must include, but are not limited to, temporal variability in the diluent water supply and regional groundwater gradients, the difference in the distribution of the recycled municipal wastewater and diluent water between individual aquifers where more than one aquifer is replenished, and the difference in travel-time when recycled municipal wastewater and diluent water are introduced at different locations and/or times.

(e) For credit prior to the operation of the GRRP, but not to exceed 120 months:

(1) demonstrate that the diluent water met the nitrate, nitrite, and nitrate plus nitrite MCLs, notification levels, and the water quality requirements in section 60320.112;

(2) provide evidence that the quantity of diluent water has been accurately determined and was distributed such that the proposed or permitted maximum RWC would not have been exceeded; and

(3) conduct a source water evaluation of the diluent water pursuant to subsection (c).

(f) In the Operations Plan prepared pursuant to 60320.122, include a description of:

(1) how the diluent water will be distributed in a manner that ensures that the maximum RWC will not be exceeded during normal operations; and

(2) the actions to be taken in the event the diluent water is curtailed or is no longer available.

Section 60320.116. Recycled Municipal Wastewater Contribution (RWC) Requirements.

(a) Each month, for each surface application facility used for replenishing a groundwater basin, the GRRP's project sponsor shall calculate the running monthly average (RMA) RWC based on the total volume of the recycled municipal wastewater and credited diluent water for the preceding 120 calendar months. For GRRPs in operation less than 120 months, calculation of the RMA RWC shall commence after 30 months of recycled water application, based on the total volume of the recycled municipal wastewater and credited diluent water introduced during the preceding months.

(b) The GRRP's RMA RWC, as determined in (a), shall not exceed the maximum RWC specified by the Department.

(c) The initial maximum RWC, based on the Department's review of the engineering report and information obtained as a result of the public hearing, shall not exceed 0.20.

(d) A GRRP may increase its maximum RWC, provided that:

(1) the increase has been approved by the Department and RWQCB;

(2) for the previous 52 weeks, the TOC 20-week running average, as monitored pursuant to section 62320.118, has not exceeded 0.5 mg/L divided by the proposed maximum RWC; and

(3) the GRRP has received a permit from the RWQCB that allows operation of the GRRP at the increased maximum RWC.

(e) In addition to the requirements in subsection (d), prior to operating a GRRP at an RWC greater than 0.50 or 0.75, which must be achieved sequentially, the project sponsor shall:

(1) provide a proposal to the Department prepared and signed by an engineer licensed in California with at least three years of experience in wastewater treatment and public water supply;

(2) submit an updated engineering report and Operations Plan; and

(3) provide evidence of compliance with section 60320.126(a).

(f) If the RMA RWC exceeds its maximum RWC, the GRRP's project sponsor shall:

(1) notify the Department and RWQCB in writing within 7 days of exceedance; and

(2) within 60 days, implement corrective action(s) and submit a report to the Department and RWQCB describing the reason(s) for the exceedance and the corrective action(s) taken to avoid future exceedances.

Section 60320.118. Total Organic Carbon and Soil Treatment Process Requirements.

(a) For each surface application facility used for replenishing a groundwater basin, the GRRP's project sponsor shall monitor TOC as follows:

(1) For recycled municipal wastewater, at least one 24-hour composite sample each week prior to application; or

(2) At least one sample each week in a manner yielding TOC values representative of the recycled municipal wastewater TOC concentrations after infiltration and percolation, and not influenced by diluent water, native groundwater, or other source of dilution as determined by;

(A) measuring undiluted percolating recycled municipal wastewater,

(B) measuring diluted percolating recycled municipal wastewater and adjusting the value for the diluent water effect, or

(C) using replenishment demonstration studies to develop a soil treatment factor that can be applied weekly to recycled municipal wastewater measurements leaving the treatment plant.

(b) Grab samples may be taken in lieu of the 24-hour composite samples required in subsection (a) if:

(1) the GRRP demonstrates that a grab sample is representative of the water quality throughout a 24-hour period; or

(2) the entire recycled municipal wastewater stream has been treated by reverse osmosis meeting the criteria in section 60320.201(a) and (b).

(c) Analytical results of the TOC monitoring performed pursuant to subsection (a) shall not exceed 0.5 mg/L divided by the RMA RWC based on:

(1) the 20-week running average of all TOC results; and

(2) the average of the last four TOC results.

(d) If the GRRP exceeds the limit in (c)(1), or its approved increased TOC limit obtained pursuant to section 60320.130(c), based on a 20-week running average, the GRRP's project sponsor shall:

(1) immediately suspend the addition of recycled municipal wastewater until at least two consecutive results, 3 days apart, are less than the limit;

(2) notify the Department and RWQCB within 7 days of suspension; and

(3) within 60 days, submit a report to the Department and RWQCB describing the reasons for the exceedance and the corrective actions to avoid future exceedances. At a minimum, the corrective actions shall include;

(A) a reduction of RWC sufficient to comply with the limit, and/or

(B) additional treatment demonstrated to the Department to remove TOC and chemicals or contaminants of concern to public health.

(e) If the GRRP exceeds the limit in (c)(2) or its approved increased TOC limit obtained pursuant to section 60320.130(c) based on the last four results, the GRRP shall, within 60 days, submit a report to the Department and RWQCB describing the reasons for the exceedance and the corrective actions taken to avoid future exceedances.

(f) Quarterly, a project sponsor shall monitor the GRRP's recycled municipal wastewater or recharge water prior to the soil treatment process and the water after the soil treatment process, but at a point no farther than 30 days downgradient of the treatment process. The monitoring shall include at least three indicator compounds based on the results of an occurrence study approved by the Department. If the monitoring results do not indicate a reduction of at least 90 percent in the concentration of indicator compounds by the soil treatment process, excluding the effects of dilution from diluent water that may be present, the project sponsor shall investigate the reason for the low reduction and report the indicator compound and investigative results within 90 days of receipt of the analytical results.

(g) If the result of the investigation in subsection (f) concludes that the 90 percent reduction could not be demonstrated because the concentration of indicator compounds prior to the soil treatment process wasn't sufficient, the project sponsor shall consult with the Department and comply with an alternative monitoring plan approved by the Department.

(h) To use one or more wastewater chemicals in lieu of TOC, approval from the Department shall be obtained. At a minimum, the chemical(s) used in lieu of TOC shall:

(1) be quantifiable in the wastewater, recycled municipal wastewater, groundwater, and throughout the treatment processes; and

(2) have identifiable treatment performance standards as protective of public health as the TOC standards in this Article.

Section 60320.120. Additional Chemical and Contaminant Monitoring.

(a) Each quarter, the GRRP's project sponsor shall sample and analyze the recycled municipal wastewater and the downgradient monitoring wells specified by the Department for the following:

(1) Priority Toxic Pollutants [chemicals listed in the Water Quality Standards, Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, and 40 CFR Part 131, Federal Register 65(97), May 18, 2000, p. 31682] specified by the Department, based on the Department's review of the GRRP's engineering report;

(2) Chemicals with notification levels that the Department has specified, based on a review of the GRRP's engineering report and the affected groundwater basin(s); and

(3) Chemicals that the Department has specified, based on a review of the GRRP's engineering report, the affected groundwater basin(s), and the results of the assessment performed pursuant to subparagraph 60320.106(a)(2)(A).

(b) The project sponsor may reduce monitoring for the chemicals in subsection (a) to once each year following Department approval based on the Department's review of the most recent two years of results of the monitoring performed pursuant to subsection (a).

(c) Annually, the project sponsor shall monitor the recycled municipal wastewater for indicator compounds specified by the Department and RWQCB based on the following:

(1) a review of the GRRP's engineering report;

(2) the inventory developed pursuant to section 60320.106(a)(2)(D);

(3) the affected groundwater basin(s);

(4) an indicator compound's ability to characterize the presence of pharmaceuticals, endocrine disrupting chemicals, personal care products, and other indicators of the presence of municipal wastewater; and

(5) the availability of a test method for a chemical.

(d) A chemical or contaminant detected as a result of monitoring conducted pursuant to this section shall be reported to the Department and RWQCB no later than the quarter following the quarter in which the results are received by the GRRP's project sponsor. If a detection of a contaminant is from a monitoring well and exceeds a state notification level, the project sponsor shall monitor the well for the contaminant within 7 days of receipt of the initial result. If the average of the initial and the confirmation results exceed the notification level, as soon as possible but no later than 30 days after receipt of the confirmation result, the project sponsor shall notify the Department and RWQCB. Following notification, the Department may require the project sponsor to notify local agencies overseeing private drinking water wells and each public water system immediately downgradient of the GRRP of the notification level exceedance.

Section 60320.122. Operation Optimization and Plan.

(a) Prior to operation, a new GRRP shall have an Operations Plan submitted to and approved by the Department. An existing GRRP shall maintain, and make available to the Department or RWQCB for review upon request, an Operations Plan. At a minimum, the Operations Plan shall identify the operations, maintenance, analytical methods, monitoring necessary for the GRRP to meet the requirements of this Article, and the reporting of monitoring results to the Department and RWQCB. The project sponsor shall be responsible for ensuring that the Operations Plan is, at all times, representative of the current operations, maintenance, and monitoring of the GRRP.

(b) During the first year of operation for a new GRRP, or during the first year of operation after *[insert effective date]* for an existing GRRP, and at all times thereafter, all treatment processes shall be operated in a manner providing optimal reduction of all chemicals and contaminants including:

(1) microbial contaminants;

(2) regulated contaminants identified in section 60320.112 and the nitrogen compounds in section 60320.110; and

(3) nonregulated chemicals identified in section 60320.120.

(c) Within six months of optimizing treatment processes pursuant to (b) and anytime thereafter operations are optimized that result in a change in operation, each GRRP shall update their operations plan to include such changes in operational procedures and submit the operations plan to the Department for review.

Section 60320.124. Response Retention Time.

(a) The recycled municipal wastewater used by a GRRP shall be retained underground for a period of time sufficient to allow the GRRP's project sponsor ample response time to identify treatment failures and implement actions, including those required pursuant to section 60320.100(b), necessary for the protection of public health from inadequately treated recycled municipal wastewater or recharge water.

(b) The response time required in subsection (a) shall be approved by the Department, based on information provided in the engineering report required pursuant to section 60323. Regardless of the minimum response time identified in subsection (a), the retention time shall be no less than two months.

(c) To demonstrate the retention time underground is no less than the response time in subsection (b), a tracer study utilizing an added tracer shall be implemented under hydraulic conditions representative of normal GRRP operations. With Department approval, an intrinsic tracer may be used in lieu of an added tracer. For each month of retention time estimated utilizing the approved intrinsic tracer, the project sponsor shall receive no more than 0.67

months credit. The retention time shall be the time representing the difference from when water is applied at the GRRP to when the first ten percent (10%) of such water arrives at the downgradient endpoint. A project sponsor for new GRRP shall initiate the tracer study prior to the end of the third month of operation. The project sponsor for existing GRRP that hasn't already performed a tracer study shall initiate a tracer study prior to the renewal of the GRRP's permit.

(d) For the purpose of siting a GRRP location during project planning and until a GRRP's project sponsor has met the requirements of subsection (c), for each month of retention time estimated using the method in column 1, the recycled municipal wastewater or recharge water may be credited with no more than the corresponding response time in column 2 of Table 60320.124.

Table 60320.124

Column 1	Column 2
Method used to estimate the retention time	**Response Time Credit per Month**
Tracer study utilizing an intrinsic tracer, based on T_{10} (i.e. the time for ten percent (10%) of tracer concentration to reach the endpoint).	0.67 months
Numerical modeling consisting of calibrated finite element or finite difference models using validated and verified computer codes used for simulating groundwater flow.	0.50 months
Analytical modeling using existing academically-accepted equations such as Darcy's Law to estimate groundwater flow conditions based on simplifying aquifer assumptions.	0.25 months

(e) The protocol(s) used to establish the retention times in subsections (c) and (d) shall be approved by the Department.

(f) The Department may require the GRRP to demonstrate that the underground retention times required in this section are being met based on changes in hydrogeological or climatic conditions since the most recent demonstration.

Section 60320.126. Monitoring Well Requirements.

(a) Prior to operating a GRRP, a project sponsor shall site and construct at least two monitoring wells such that:

(1) at least one monitoring well is located;

(A) no less than two weeks, but no more than six months of travel through the saturated zone of the GRRP, and

(B) at least 30 days upgradient of the nearest drinking water source;

(2) in addition to the well(s) paragraph (1), at least one monitoring well is located between the GRRP and the nearest downgradient domestic water supply well; and

(3) samples from the monitoring wells in paragraphs (1) and (2) can be;

(A) obtained independently from each aquifer, initially receiving the water used as a source of potable water supply, that will receive the GRRP's recharge water, and

(B) validated as receiving recharge water from the GRRP.

(b) From each monitoring well in subsection (a)(1), and each monitoring well in subsection (a)(2) that has recharge water located within one year travel time of the well(s), the project sponsor shall collect two samples prior to GRRP operation (for a new GRRP) and at least one sample each quarter after operation begins. Each sample shall be analyzed for total nitrogen, nitrate, nitrite, the contaminants in tables 64449-A and B of section 64449, and any contaminants and chemicals specified by the Department and RWQCB based on the results of the recycled municipal wastewater monitoring conducted pursuant to this Article.

(c) If a result from the monitoring conducted pursuant to subsection (b) exceeds a nitrate, nitrite, or nitrate plus nitrite MCL, the project sponsor shall, within 24 hours, collect another sample and have it analyzed for the contaminant. If the average of the result of the initial sample and the confirmation sample exceed the contaminant's MCL, the project sponsor shall:

(1) within 24 hours of being notified by the laboratory of the confirmation sample result, notify the Department and RWQCB; and

(2) discontinue surface application of recycled municipal wastewater until corrective actions have been taken or evidence is provided to the Department and RWQCB that the contamination was not a result of the GRRP.

(d) For chemical analyses completed in a calendar month, the project sponsor shall ensure the laboratory submits results no later than the end of the following month using the Electronic Deliverable Format as defined in the Electronic Deliverable Format (EDF) Version 1.2i Guidelines & Restrictions dated April 2001 and Data Dictionary dated April 2001.

(e) The GRRP's project sponsor may reduce monitoring for the chemicals and contaminants in subsection (b) to once each year following Department approval based on the Department's review of the most recent two years of results.

Section 60320.128. Reporting.

(a) Annually, the project sponsor shall provide a report to the RWQCB and the Department. Public water systems having downgradient sources potentially affected by the GRRP and within 10 years groundwater travel time from the GRRP shall be notified by direct mail and/or electronic mail of the availability of the report. The report shall be prepared by an engineer licensed in California and experienced in the fields of wastewater treatment and public water supply. The report shall include the following:

(1) A summary of the GRRP's compliance status with the applicable monitoring requirements and criteria of this Article during the previous calendar year;

(2) For any violations of this Article during the previous calendar year;

(A) the date, duration, and nature of the violation,

(B) a summary of any corrective actions and/or suspensions of surface application of recycled municipal wastewater resulting from a violation, and

(C) if uncorrected, a schedule for and summary of all remedial actions;

(3) Any detections of monitored chemicals or contaminants, and any observed trends in the monitoring wells and diluent water supplies;

(4) Information pertaining to the vertical and horizontal migration of the recharge water plume;

(5) A description of any changes in the operation of any unit processes or facilities;

(6) A description of any anticipated changes, along with an evaluation of the expected impact of the changes on subsequent unit processes;

(7) The estimated quantity and quality of the recycled municipal wastewater and diluent water to be utilized for the next twelve months; and

(8) A summary of the measures taken to comply with section 60320.106 and the effectiveness of the implementation of the measures.

(b) Every five years from the date of the initial approval of the engineering report required pursuant to section 60323, the project sponsor shall update the report to address any project changes and submit the report to the RWQCB and the Department. The update shall include, but not be limited to:

(1) anticipated RWC increases, a description of how the RWC requirements in section 60320.116 will be met, and the expected impact the increase will have on the GRRP's ability to meet the requirements of this Article;

(2) evidence that the requirements associated with retention time in section 60320.108, if applicable, and section 60320.124 have been met; and

(3) a description of any inconsistencies between previous groundwater model predictions and the observed and/or measured values, as well as a description of how subsequent predictions will be accurately determined.

Section 60320.130. Alternatives.

(a) A project sponsor may use an alternative to a requirement in this Article if the GRRP's project sponsor has:

(1) demonstrated to the Department that the proposed alternative would assure at least the same level of protection to public health;

(2) received written approval from the Department prior to implementation of the alternative; and

(3) if required by the Department or RWQCB for the purpose of conducting a public hearing regarding the proposed alternative, disseminated information to the public, and received public comments, pursuant to subsections 60320.102(b) and (c).

(b) Unless specified otherwise by the Department, the demonstration in paragraph (a)(1) shall include the results of a review of the proposed alternative by an independent scientific advisory panel that includes a toxicologist, a registered engineering geologist or hydrogeologist, an engineer licensed in California with at least three years of experience in wastewater treatment and public drinking water supply, a microbiologist, and a chemist.

(c) The TOC limit specified in section 60320.118(c) may be increased if:

(1) The increased TOC limit is approved by the Department and RWQCB;

(2) The GRRP has been in operation for the most recent ten consecutive years;

(3) The project sponsor submits a proposal to the Department prepared and signed by an engineer licensed in California and experienced in the fields of wastewater treatment and public water supply. The proposal shall include the following, based on the most recent ten consecutive years of operation;

(A) GRRP operations, monitoring, and compliance data,

(B) Evidence that the GRRP has a history of compliance with the requirements of their RWQCB permit,

(C) Evidence that the water collected at all downgradient drinking water wells and monitoring wells impacted by the GRRP has met the primary drinking water standards specified pursuant to section 60320.126(b),

(D) Analytical or treatment studies requested by the Department to make the determination in subparagraph (C),

(E) Validation of appropriate construction and siting of monitoring wells pursuant to section 60320.126, and

(F) A study defining the water quality changes, including organic carbon characterization, as a result of the impact of the GRRP;

(4) The project sponsor has performed a health effects evaluation that assesses the health risks to consumers of water impacted by the GRRP, including any anticipated water quality changes resulting from the proposed increased TOC limit. The evaluation shall include the following;

(A) An exposure assessment that characterizes the quality of the water consumed and the quantity of contaminants and chemicals consumed,

(B) All available human epidemiologic studies of the population that has consumed water impacted by the GRRP,

(C) The results of laboratory animal studies and health risk assessments available in peer-reviewed literature pertaining to water impacted by the GRRP and anticipated water quality changes resulting from the proposed increased TOC, including studies or assessments where extrapolation of data may be relevant,

(D) A health risk assessment of the potential individual and cumulative effects of the regulated contaminants described in section 62320.112, and the chemicals or contaminants monitored pursuant to subsections 60320.120(a) and (c), that includes;

1. lifetime risks of cancer, and
2. risks of non-cancer effects, and

(E) A report detailing comments, questions, concerns, and conclusions of a review by an independent scientific peer review advisory panel that includes, as a minimum, a toxicologist, an epidemiologist, an engineering geologist or hydrogeologist registered in California, an engineer licensed in California with at least three years of experience in wastewater treatment and public water supply, a microbiologist, and a chemist.

ARTICLE 5.2. INDIRECT POTABLE REUSE: GROUNDWATER REPLENISHMENT - SUBSURFACE APPLICATION

Section 60320.200. General Requirements.

(a) A Groundwater Replenishment Reuse Project (GRRP) project sponsor utilizing subsurface application shall meet the requirements of this Article and continuously treat, with full advanced treatment meeting the criteria in section 60320.201, the entire recycled municipal wastewater stream prior to application.

(b) Prior to operation of a new GRRP, or prior to permit renewal for an existing GRRP, the GRRP's project sponsor shall have a Department-approved plan describing the steps the project sponsor will take to provide an alternative source of potable water supply to all users of a producing drinking water well, or a Department-approved treatment mechanism the project sponsor will provide to all owners of a producing drinking water well, that as a result of the GRRP's operation, as determined by the Department:

(1) violates a California or federal drinking water standard;

(2) has been degraded to the degree that it is no longer a safe source of drinking water; or

(3) receives water that fails to meet section 60320.208.

(c) Prior to operating a new GRRP, the project sponsor shall collect at least two samples from each monitoring well approved pursuant to section 60320.226. The samples shall be representative of water in each aquifer, taking into consideration seasonal variations, and be analyzed for the chemicals, contaminants, and characteristics in sections 60320.210, 60320.212, 60320.218 and 60320.220.

(d) A GRRP's recycled municipal wastewater shall be retained underground for a period of time no less than the retention time required pursuant to section 60320.208 and 60320.224. The GRRP shall be designed and operated in a manner that ensures water treated pursuant to this Article, beyond the boundary described in (e)(2), meets the recycled municipal wastewater contributions (RWC) requirements in section 60320.216.

(e) A GRRP's project sponsor shall provide the Department, RWQCB, and local well-permitting authorities a map of the GRRP site at a scale of 1:24,000 or larger (1 inch equals 2,000 feet or 1 inch equals less than 2,000 feet) or, if necessary, a site sketch at a scale providing more detail, that clearly indicates:

(1) the location and boundaries of the GRRP;

(2) the boundary representing the greatest of the horizontal and vertical distances reflecting the retention times required pursuant to section 60320.208 and section 60320.224; and

(3) the location of all monitoring wells established pursuant to section 60320.226 and drinking water supply wells within two years of the GRRP based

on groundwater flow directions and velocities expected under GRRP operating conditions.

(f) Prior to operating a new GRRP, the project sponsor shall demonstrate to the Department and RWQCB that the project sponsor possesses adequate managerial and technical capability to assure compliance with this Article.

(g) Prior to replenishing a groundwater basin or an aquifer with recycled municipal wastewater, a new GRRP's project sponsor shall demonstrate that all treatment processes have been installed and can be operated by the project sponsor to achieve their intended function. A protocol describing the actions to be taken to meet this subsection shall be included in the engineering report submitted pursuant section 60323.

(h) In the engineering report required pursuant to section 60323, the project sponsor for a new GRRP shall include a hydrogeological assessment of the proposed GRRP's setting. The assessment shall include the following:

(1) the qualifications of the individual(s) preparing the assessment;

(2) a general description of geologic and hydrogeological setting of the groundwater basin(s) potentially directly impacted by the GRRP;

(3) a detailed description of the stratigraphy beneath the GRRP, including the composition, extent, and physical properties of the affected aquifers; and

(4) based on at least four rounds of consecutive quarterly monitoring to capture seasonal impacts;

(A) the existing hydrogeology and the hydrogeology anticipated as a result of the presence of the GRRP, and

(B) maps showing quarterly groundwater elevation contours, along with vector flow directions and calculated hydraulic gradients.

Section 60320.201. Advanced Treatment Criteria.

Full advanced treatment is the treatment of an oxidized wastewater, as defined in section 60301.650, using a reverse osmosis and an oxidation treatment process that, at a minimum, meets the criteria of this section.

(a) A project sponsor shall select for use a reverse osmosis membrane that:

(1) has been determined, utilizing ASTM method D4194-03 (2008), that it achieves an average rejection of sodium chloride greater than or equal to 99.5 percent, with a 15 percent recovery; and

(2) through bench-scale testing, initially produces a permeate having TOC concentrations of 0.25 mg/L or less when using reverse osmosis influent consistent with the GRRP's expected influent.

(b) For the reverse osmosis treatment process, a project sponsor shall propose, for Department review and approval, on-going performance monitoring (e.g. conductivity or TOC) that indicates when the integrity of the process has been compromised. The proposal shall include at least one form of continuous

monitoring, as well as the associated surrogate and/or operational parameter limits and alarm settings that indicate when the integrity has been compromised.

(c) To demonstrate a sufficient oxidation process has been designed for implementation, a project sponsor shall:

(1) Perform an occurrence study on the project's municipal wastewater to identify indicator compounds and select a total of at least nine indicator compounds, with at least one from each of the functional groups in subparagraphs (A) through (I) below. The project sponsor shall submit an occurrence study protocol, as well as the subsequent results and chosen indicator compounds, to the Department for review and approval.

(A) Hydroxy Aromatic
(B) Amino/Acylamino Aromatic
(C) Nonaromatic with carbon double bonds
(D) Deprotonated Amine
(E) Alkoxy Polyaromatic
(F) Alkoxy Aromatic
(G) Alkyl Aromatic
(H) Saturated Aliphatic
(I) Nitro Aromatic

(2) Utilize an oxidation process that achieves optimal removal of the indicator compounds selected in paragraph (1) such that removal is no less than;

(A) 0.5-log (69 percent) for each indicator compound representing the functional groups in paragraph (1)(A) through (1)(G), and

(B) 0.3-log (50 percent) for each indicator compound representing the functional groups in paragraph (1)(H) and (1)(I).

(3) Establish at least one surrogate or operational parameter that reflects the removal of at least five of the nine indicator compounds selected pursuant to paragraph (1) such that;

(A) at least one of the five indicator compounds represents at least one functional group in paragraph (1)(A) through (1)(G),

(B) at least one of the five indicator compounds represents at least one functional group in paragraph (1)(H) or (1)(I),

(C) at least one surrogate or operational parameter is capable of being monitored continuously, recorded, and have associated alarms, and

(D) a surrogate or operational parameter, including the parameter in (C), is identified that indicates when the process may no longer meet the criteria established in paragraph (2).

(4) Conduct pilot testing that includes confirmation the findings of the occurrence study in paragraph (1) and provides evidence that the requirements of paragraphs (2) and (3) can be met with a full-scale oxidation process. The pilot testing shall include challenge or spiking tests conducted to determine the removal differential under normal operating conditions utilizing, at minimum, the nine indicator compounds identified in paragraph (1). The project sponsor shall submit a pilot testing protocol, as well as the subsequent results, to the Department for review and approval.

(d) In lieu of demonstrating that a sufficient oxidation process has been designed for implementation pursuant to subsection (c), a project sponsor may conduct pilot testing demonstrating that the oxidation process will provide a 0.5-log (69 percent) reduction of 1,4-dioxane.

(1) The project sponsor shall submit a pilot testing protocol, as well as the subsequent results, to the Department for review and approval. The pilot testing shall include challenge or spiking tests, using 1,4-dioxane, to demonstrate the proposed oxidation process has been designed and will achieve the 0.5-log reduction under normal operation of the oxidation process.

(2) The project sponsor shall establish surrogate and/or operational parameters that reflect whether the 0.5-log 1,4-dioxane design criteria is being met. At least one surrogate or operational parameter shall be capable of being monitored continuously, recorded, and have associated alarms that indicate when the process no longer operates as designed.

(e) During the full-scale operation of the oxidation process designed pursuant to subsections (c) or (d), the project sponsor shall continuously monitor the surrogate and/or operational parameters established pursuant to (c)(3)(C) or (d)(2), as applicable. The project sponsor shall implement, in full-scale operation, the oxidation process as designed pursuant to subsections (c) or (d).

(f) Within 60 days after completing the initial 12-months of monitoring pursuant to subsection (e), the project sponsor shall submit a report to the Department and RWQCB that includes:

(1) the results of the monitoring performed in subsection (e);

(2) the removal differential of the indicator compounds;

(3) a description of the efficacy of the surrogate and/or operational parameters to reflect the removal differential of the indicator compounds; and

(4) a description of actions taken, or those that would be taken, if the indicator compound removal didn't meet the associated design criteria in (c) or (d), the continuous surrogate and/or operational parameter monitoring in (c)(3)(C) or (d)(2) failed to correspond to the differential indicator compound removal, or the surrogate and/or operational parameter established in (c)(3)(D) or (d)(2) was not met.

(g) Within 60 days after completing 12 months of operation of the reverse osmosis process, the project sponsor shall submit a report to the Department and RWQCB describing the effectiveness of the treatment, process failures, and actions taken in the event the on-going monitoring in subsection (b) indicated that process integrity was compromised.

(h) Each quarter, the project sponsor shall tabulate the percent of the quarter's monitoring, conducted pursuant to subsection (b) and (e), that did not meet the surrogate and/or operational parameter limits established to assure proper on-going performance of the reverse osmosis and oxidation processes. If

the value is more than ten percent, within 30 days after the end of the quarter the project sponsor shall:

(1) submit a report to the Department and RWQCB describing the corrective actions planned or taken to reduce the percent to ten percent or less; and

(2) consult with the Department and, if required, comply with an alternative monitoring plan approved by the Department.

(i) Each month the project sponsor shall collect grab samples representative of the effluent of the advanced treatment process and have the samples analyzed for contaminants having MCLs and notification levels. After 12 consecutive months with no results exceeding an MCL or notification level, the project sponsor may apply for reduced monitoring frequency. The reduced monitoring frequency shall be no less than quarterly. Monitoring conducted pursuant to this subsection may be used in lieu of the monitoring (for the same contaminants) required pursuant to section 60320.212. The effluent of the advanced treatment process shall not exceed an MCL or notification level.

Section 60320.202. Public Hearing.

(a) A public hearing for a GRRP shall be held by the project sponsor prior to the Department's submittal of its recommendations to the RWQCB for the GRRP's initial permit and any time an increase in maximum RWC has been proposed but not addressed in a prior public hearing. Prior to a public hearing, the project sponsor shall provide the Department, for review and approval, the information the project sponsor intends to present at the hearing. The information shall also be provided on the Internet. Following the Department's approval of the information, the project sponsor shall place the information on the Internet and in a repository that provides at least thirty days of public access to the information prior to the public hearing.

(b) Prior to placing the information required pursuant to subsection (a) in a repository, the project sponsor shall:

(1) Notify the public of the following;

(A) the location and hours of operation of the repository,

(B) the Internet address where the information may be viewed,

(C) the purpose of the repository and public hearing,

(D) the manner in which the public can provide comments, and

(E) the date, time, and location of the public hearing; and

(2) At a minimum, notify the first downgradient potable water well owner and well owners whose drinking water source is within 10 years from the GRRP based on groundwater flow directions and velocities.

(c) Unless directed otherwise by the Department, the public notification made pursuant to subsection (b)(2) shall be by direct mail and the notification made pursuant to (b)(1) shall be by one or more of the following methods delivered in a

manner to reach persons whose source of drinking water may be impacted by the GRRP:

(1) local newspaper(s) publication;
(2) mailed or direct delivery of a newsletter;
(3) conspicuously placed statement in water bills; or
(4) television and/or radio.

Section 60320.204. Lab Analyses.

(a) Analyses for contaminants having primary or secondary MCLs shall be performed by laboratories approved to perform such analyses by the Department utilizing Department-approved drinking water methods.

(b) Analyses for chemicals other than those having primary or secondary MCLs shall be described in the GRRP's Operations Plan prepared pursuant to section 60320.222.

Section 60320.206. Wastewater Source Control.

A project sponsor shall ensure that the recycled municipal wastewater used for a GRRP shall be from a wastewater management agency that:

(a) administers an industrial pretreatment and pollutant source control program;

(b) implements and maintains a source control program that includes, at a minimum;

(1) an assessment of the fate of Department-specified and RWQCB-specified chemicals and contaminants through the wastewater and recycled municipal wastewater treatment systems,

(2) chemical and contaminant source investigations and monitoring that focuses on Department-specified chemicals and contaminants,

(3) an outreach program to industrial, commercial, and residential communities within the portions of the sewage collection agency's service area that flows into the water reclamation facility subsequently supplying the GRRP, for the purpose of managing and minimizing the discharge of chemicals and contaminants at the source, and

(4) a current inventory of chemicals and contaminants identified pursuant to this section, including new chemicals and contaminants resulting from new sources or changes to existing sources, that may be discharged into the wastewater collection system; and

(c) is compliant with the effluent limits established in the RWQCB permit for the GRRP.

Section 60320.208. Pathogenic Microorganism Control.

(a) A project sponsor shall design and operate a GRRP such that the recycled municipal wastewater used as recharge water for a GRRP receives treatment

that achieves at least 12-log enteric virus reduction, 10-log Giardia cyst reduction, and 10-log Cryptosporidium oocyst reduction. The treatment train shall consist of at least three separate treatment processes. For each pathogen (i.e., virus, Giardia cyst, and Cryptosporidium oocyst), a separate treatment process may be credited with no more than 6-log reduction and shall achieve at least 1-log reduction.

(b) For each month retained underground as demonstrated in subsection (e), the recycled municipal wastewater or recharge water will be credited with 1-log virus reduction.

(c) With the exception of log reduction through retention time underground, the project sponsor shall validate each of the treatment processes used to meet the requirements in subsection (a) for their log reduction by submitting a report for the Department's review and approval, or by using a challenge test approved by the Department, that provides evidence of the treatment process's log reduction. The report and/or challenge test shall be prepared by engineer licensed in California with at least five years of experience, as a licensed engineer, in wastewater treatment and public water supply, including the evaluation of treatment processes for pathogen control. With the exception of retention time underground, the project sponsor shall propose and include in its Operations Plan prepared pursuant to section 60320.222, on-going monitoring that verifies the performance of each treatment process's ability to achieve its credited log reduction.

(d) The project sponsor of a GRRP whose permit was issued prior to *[insert effective date]* shall demonstrate compliance with subsection (c) prior to the renewal of the GRRP's permit. The project sponsor of a new GRRP shall demonstrate compliance with subsection (c) prior to being issued a permit.

(e) To demonstrate the retention time underground in subsection (b) a tracer study utilizing an added tracer shall be implemented under hydraulic conditions representative of normal GRRP operations. The retention time shall be the time representing the difference from when water is applied at the GRRP to when the first two percent (2%) of such water arrives at the downgradient endpoint. The project sponsor for new GRRP shall initiate the tracer study prior to the end of the third month of operation. The project sponsor for existing GRRP that hasn't already performed such a tracer study shall complete a tracer study demonstrating retention time underground prior to the renewal of the GRRP's permit.

(f) For the purpose of siting a GRRP location during project planning and until a GRRP's project sponsor has met the requirements of subsection (e), for each month of retention time estimated using the method in column 1, the recycled municipal wastewater or recharge water shall be credited with no more than the corresponding virus log reduction in column 2 of Table 60320.208.

Table 60320.208

Column 1	Column 2
Method used to estimate the retention time to the nearest downgradient drinking water well	**Virus Log Reduction Credit per Month**
Tracer study utilizing an intrinsic tracer, based on T_{10} (i.e. The time representing the difference from when water is applied at the GRRP to when the first ten percent arrives at the downgradient endpoint.)	0.67 logs
Numerical modeling consisting of calibrated finite element or finite difference models using validated and verified computer codes used for simulating groundwater flow.	0.50 logs
Analytical modeling using existing academically-accepted equations such as Darcy's Law to estimate groundwater flow conditions based on simplifying aquifer assumptions.	0.25 logs

(g) The protocol(s) used to establish the retention times in subsections (e) and (f) shall be approved by the Department.

(h) Based on changes in hydrogeological or climatic conditions since the most recent demonstration, the Department may require a GRRP's project sponsor to demonstrate that the underground retention times required in this section are being met.

(i) If the pathogen reduction in subsection (a) is not met based on the on-going monitoring required pursuant to subsection (c), within 24 hours of being aware the project sponsor shall immediately investigate the cause and initiate corrective actions. For failing to meet the pathogen reduction criteria longer than 4 consecutive hours or more than a total of 8 hours during any 7-day period, the Department and RWQCB shall be immediately notified. Failures of shorter duration shall be reported to the RWQCB no later than 10 days after the month in which the failure occurred.

(j) If the effectiveness of a treatment train's ability to reduce enteric virus is less than 9-logs, or Giardia cyst or Cryptosporidium oocyst reduction is less than 8-logs, the project sponsor shall immediately notify the Department and RWQCB, and discontinue application of recycled municipal wastewater at the GRRP.

Section 60320.210. Nitrogen Compounds Control.

(a) To demonstrate control of the nitrogen compounds, the project sponsor shall:

(1) Each week, at least three days apart as specified in the GRRP's Operations Plan, collect at least two samples (grab or 24-hour composite) representative of the recycled municipal wastewater or recharge water applied. Samples may be collected before or after subsurface application;

(2) Have the samples collected pursuant to paragraph (1) analyzed for total nitrogen, with the laboratory being required by the project sponsor to complete each analysis within 72 hours and have the result reported to the project sponsor within the same 72 hours if the result of any single sample exceeds 10 mg/L;

(3) If the average of the results of two consecutive samples collected pursuant to paragraph (1) exceeds 10 mg/L total nitrogen;

(A) notify the Department and the RWQCB within 48 hours of being notified of the exceedance by the laboratory,

(B) investigate the cause for the exceedances and take actions to reduce the total nitrogen concentrations such that continued and future exceedances don't occur, and

(C) initiate additional monitoring for nitrogen compounds as described in the GRRP's Operations Plan, including locations in the groundwater basin, to identify elevated concentrations and determine whether such elevated concentrations exceed or may lead to an exceedance of a nitrogen-based MCL; and

(4) If the average of the results of four consecutive samples collected pursuant to paragraph (1) exceeds 10 mg/L total nitrogen, suspend the subsurface application of recycled municipal wastewater. Subsurface application shall not resume until corrective actions have been taken and at least two consecutive total nitrogen sampling results are less than 10 mg/L.

(b) The GRRP's project sponsor may apply for reduced monitoring frequencies for total nitrogen, nitrate, or nitrite if, for the most recent 12 months:

(1) the average of all results did not exceed 5 mg/L total nitrogen or one-half the nitrate, nitrite, and nitrate plus nitrite MCLs; and

(2) a result did not exceed 10 mg/L total nitrogen or 80 percent of the nitrate, nitrite, and nitrate plus nitrite MCLs.

(c) If the results of reduced monitoring conducted pursuant to subsection (b) exceed the total nitrogen, nitrate, nitrite, and nitrate plus nitrite concentrations in paragraph (b), the project sponsor shall revert to the GRRP's monitoring frequencies for total nitrogen, nitrate, and nitrite prior to implementation of the reduced frequencies. Reduced frequency monitoring shall not resume unless the requirements of subsection (b) are met.

Section 60320.212. Regulated Contaminants and Physical Characteristics Control.

(a) Each calendar quarter, as specified in the GRRP's Operations Plan, the GRRP's project sponsor shall collect grab samples representative of the applied recycled municipal wastewater and have the samples analyzed for:

(1) the inorganic chemicals in Table 64431-A, except for nitrogen compounds;

(2) the radionuclide chemicals in Tables 64442 and 64443;

(3) the organic chemicals in Table 64444-A;

(4) the disinfection byproducts in Table 64533-A; and

(5) lead and copper.

(b) Recharge water may be monitored in lieu of recycled municipal wastewater to satisfy the monitoring requirements in paragraph (a)(4) if the fraction of recycled municipal wastewater in the recharge water is equal to or greater than the average fraction for the quarter. If the fraction of recycled municipal waste water in the recharge water being monitored is less than the average fraction applied for the quarter, the reported value shall be amended to account for any dilution.

(c) Each year, the GRRP's project sponsor shall collect at least one representative grab sample of the recycled municipal wastewater and have the sample(s) analyzed for the secondary drinking water contaminants in Tables 64449-A and 64449-B.

(d) If a result of the monitoring performed pursuant to subsection (a) exceeds a contaminant's MCL or action level (for lead and copper), within 72 hours of notification of the result the project sponsor shall collect another sample and have it analyzed for the contaminant as confirmation.

(1) For a contaminant whose compliance with its MCL or action level is not based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL or action level, or the confirmation sample is not collected and analyzed pursuant to this subsection, the GRRP's project sponsor shall notify the Department and RWQCB within 24 hours and initiate weekly monitoring until four consecutive weekly results are below the contaminant's MCL or action level. If the running four-week average exceeds the contaminant's MCL or action level, the GRRP's project sponsor shall notify the Department and RWQCB within 24 hours and, if directed by the Department or RWQCB, suspend application of the recycled municipal wastewater.

(2) For a contaminant whose compliance with its MCL is based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the GRRP shall initiate weekly monitoring for the contaminant until the running four-week average no longer exceeds the contaminant's MCL.

(A) If the running four-week average exceeds the contaminant's MCL, the project sponsor shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in the next quarterly report submitted to RWQCB pursuant to section 60321, with a copy provided to the Department.

(B) If the running four-week average exceeds the contaminant's MCL for sixteen weeks, the project sponsor shall notify the Department and RWQCB within 48 hours and, if directed by the Department or RWQCB, suspend application of the recycled municipal wastewater.

(e) With the exception of color, if an annual result of the monitoring performed pursuant to (c) exceeds a contaminant's secondary MCL in Table 64449-A or the upper limit in Table 64449-B, the project sponsor shall initiate quarterly monitoring of the recycled municipal wastewater for the contaminant and, if the running annual average of quarterly results exceeds a contaminant's secondary MCL or upper limit, describe the reason(s) for the exceedance and any corrective actions taken in the next quarterly report submitted to RWQCB pursuant to section 60321, with a copy provided to the Department. The annual monitoring in (c) may resume if the running annual average of quarterly results does not exceed a contaminant's secondary MCL or upper limit.

(f) If four consecutive quarterly results for asbestos are below the detection limit for asbestos, monitoring for asbestos may be reduced to one sample every three years. Quarterly monitoring shall resume if asbestos is detected.

Section 60320.214. Diluent Water Requirements.

To be credited with diluent water used in calculating an RWC pursuant to section 60320.216, the GRRP shall comply with the requirements of this section and receive Department approval. For diluent water that is a Department-approved drinking water source, the GRRP's project sponsor is exempt from subsections (a) and (b). The GRRP's project sponsor shall:

(a) Monitor the diluent water quarterly for nitrate and nitrite and, within 72 hours of being informed by the laboratory of a nitrate, nitrite, or nitrate plus nitrite result exceeding an MCL, collect a confirmation sample. If the average of the two samples is greater than an MCL;

(1) notify the Department and the RWQCB within 48 hours of receiving the confirmation sample result,

(2) investigate the cause(s) and implement corrective actions, and

(3) each week, collect and analyze two grab samples at least three days apart as specified in an Operations Plan. If the average of the results for a two-week period exceeds the MCL, subsurface application of the diluent water shall not be used in the calculation of RWC until corrective actions are made. Quarterly monitoring may resume if four consecutive results are below the MCL.

(b) Conduct a source water evaluation per California-Nevada Section of American Water Works Association watershed sanitary survey handbook, or other Department approved evaluation, of the diluent water for Department review and approval that includes, but is not limited to:

(1) a description of the source of the diluent water;
(2) delineation of the origin and extent of the diluent water;
(3) the susceptibility of the diluent water to contamination;
(4) the identification of known or potential contaminants; and
(5) an inventory of the potential sources of diluent water contamination.

(c) Ensure diluent water does not exceed primary MCLs or notification levels and implements a Department-approved water quality monitoring plan for Department-specified contaminants to demonstrate compliance with the primary MCLs and notification levels. The plan shall also include:

(1) monitoring of any chemicals or contaminants in section 60320.220, based on the source water evaluation performed in (b); and

(2) actions to be taken in the event of non-compliance with a primary MCL or exceedance of a notification level.

(d) Develop a method for determining the volume of diluent water to be credited and demonstrate that the diluent water will be introduced in a manner such that the diluent water volume will not result in the GRRP's 120-month running monthly average RWC exceeding its maximum RWC at or beyond the boundary established pursuant to 60320.200(e)(2). The method shall be submitted to the Department for review and approval, and be conducted at a frequency specified in the engineering report prepared pursuant to section 60323. The method shall address all conditions that influence how and when the recycled municipal wastewater and diluent water arrive at all points along the boundary. The conditions must include, but are not limited to, temporal variability in the diluent water supply and regional groundwater gradients, the difference in the distribution of the recycled municipal wastewater and diluent water between individual aquifers where more than one aquifer is replenished, and the difference in travel-time when recycled municipal wastewater and diluent water are introduced at different locations and/or times.

(e) For credit prior to the operation of the GRRP, but not to exceed 120 months:

(1) demonstrate that the diluent water met the nitrate, nitrite, and nitrate plus nitrite MCLs, notification levels, and the water quality requirements in section 60320.212;

(2) provide evidence that the quantity of diluent water has been accurately determined and was distributed such that the proposed or permitted maximum RWC would not have been exceeded; and

(3) conduct a source water evaluation of the diluent water pursuant to subsection (c).

(f) In the Operations Plan prepared pursuant to 60320.222, include a description of:

(1) how the diluent water will be distributed in a manner that ensures that the maximum RWC will not be exceeded during normal operations; and

(2) the actions to be taken in the event the diluent water is curtailed or is no longer available.

Section 60320.216. Recycled Municipal Wastewater Contribution (RWC) Requirements.

(a) Each month, for each subsurface application facility used for replenishing a groundwater basin, the GRRP's project sponsor shall calculate the running monthly average (RMA) RWC based on the total volume of the recycled municipal wastewater and credited diluent water for the preceding 120 calendar months. For GRRPs in operation less than 120 months, calculation of the RMA RWC shall commence after 30 months of recycled water application, based on the total volume of the recycled municipal wastewater and credited diluent water introduced during the preceding months.

(b) The GRRP's RMA RWC, as determined in (a), shall not exceed the maximum RWC specified by the Department.

(c) The initial maximum RWC will be based on the Department's review of the engineering report and information obtained as a result of the public hearing.

(d) A GRRP may increase its maximum RWC, provided that:

(1) the increase has been approved by the Department and RWQCB;

(2) for the previous 52 weeks the TOC 20-week running average, as monitored pursuant to section 62320.218, has not exceeded 0.5 mg/L; and

(3) the GRRP has received a permit from the RWQCB that allows operation of the GRRP at the increased maximum RWC.

(e) If the RMA RWC exceeds its maximum RWC, the GRRP's project sponsor shall:

(1) notify the Department and RWQCB in writing within 7 days of exceedance; and

(2) within 60 days, implement corrective action(s) and submit a report to the Department and RWQCB describing the reason(s) for the exceedance and the corrective action(s) taken to avoid future exceedances.

Section 60320.218. Total Organic Carbon Requirements.

(a) For each subsurface application facility used for replenishing a groundwater basin, the GRRP's project sponsor shall monitor the applied recycled municipal wastewater for TOC as follows:

(1) Prior to replenishment, at least one 24-hour composite sample each week.

(2) Grab samples may be taken in lieu of the 24-hour composite samples required in paragraph (1) if the GRRP demonstrates that a grab sample is representative of the water quality throughout a 24-hour period.

(b) Analytical results of the TOC monitoring performed pursuant to subsection (a) shall not exceed 0.5 mg/L based on:

(1) the 20-week running average of all TOC results; and

(2) the average of the last four TOC results.

(c) If the GRRP exceeds the limit in (b)(1), or its approved increased TOC limit obtained pursuant to section 60320.230(c), based on a 20-week running average, the GRRP's project sponsor shall:

(1) immediately suspend the addition of recycled municipal wastewater until at least two consecutive results, 3 days apart, are less than the limit;

(2) notify the Department and RWQCB within 7 days of suspension; and

(3) within 60 days, submit a report to the Department and RWQCB describing the reasons for the exceedance and the corrective actions to avoid future exceedances. At a minimum, the corrective actions shall include a reduction of RWC sufficient to comply with the limit.

(d) If the GRRP exceeds the limit in (b)(2), or its approved increased TOC limit obtained pursuant to section 60320.230, based on the last four results, the GRRP shall, within 60 days, submit a report to the Department and RWQCB describing the reasons for the exceedance and the corrective actions taken to avoid future exceedances.

(e) To use one or more wastewater chemicals in lieu of TOC, approval from the Department shall be obtained. At a minimum, the chemical(s) used in lieu of TOC shall:

(1) be quantifiable in the wastewater, recycled municipal wastewater, groundwater, and throughout the treatment processes; and

(2) have identifiable treatment performance standards as protective of public health as the TOC standards in this Article.

Section 60320.220. Additional Chemical and Contaminant Monitoring.

(a) Each quarter, the GRRP's project sponsor shall sample and analyze the recycled municipal wastewater and the downgradient monitoring wells specified by the Department for the following:

(1) Priority Toxic Pollutants [chemicals listed in the Water Quality Standards, Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, and 40 CFR Part 131, Federal Register 65(97), May 18, 2000, p. 31682] specified by the Department, based on the Department's review of the GRRP's engineering report;

(2) Chemicals with notification levels that the Department has specified, based on a review of the GRRP's engineering report and the affected groundwater basin(s); and

(3) Chemicals that the Department has specified, based on a review of the GRRP's engineering report, the affected groundwater basin(s), and the results of the assessment performed pursuant to subparagraph 60320.206(a)(2)(A).

(b) The project sponsor may reduce monitoring for the chemicals in subsection (a) to once each year following Department approval based on the Department's review of the most recent two years of results of the monitoring performed pursuant to subsection (a).

(c) Annually, the project sponsor shall monitor the recycled municipal wastewater for indicator compounds specified by the Department and RWQCB based on the following:

(1) a review of the GRRP's engineering report;

(2) the inventory developed pursuant to section 60320.206(a)(2)(D);

(3) the affected groundwater basin(s);

(4) an indicator compound's ability to characterize the presence of pharmaceuticals, endocrine disrupting chemicals, personal care products, and other indicators of the presence of municipal wastewater; and

(5) the availability of a test method for a chemical.

(d) A chemical or contaminant detected as a result of monitoring conducted pursuant to this section shall be reported to the Department and RWQCB no later than the quarter following the quarter in which the results are received by the GRRP's project sponsor. If a detection of a contaminant is from a monitoring well and exceeds a state notification level, the project sponsor shall monitor the well for the contaminant within 7 days of receipt of the initial result. If the average of the initial and the confirmation results exceed the notification level, as soon as possible but no later than 30 days after receipt of the confirmation result, the project sponsor shall notify the Department and RWQCB. Following notification, the Department may require the project sponsor to notify local agencies overseeing private drinking water wells and each public water system immediately downgradient of the GRRP of the notification level exceedance.

Section 60320.222. Operation Optimization and Plan.

(a) Prior to operation, a new GRRP shall have an Operations Plan submitted to and approved by the Department. An existing GRRP shall maintain, and make available to the Department or RWQCB for review upon request, an Operations Plan. At a minimum, the Operations Plan shall identify the operations, maintenance, analytical methods, monitoring necessary for the GRRP to meet the requirements of this Article, and the reporting of monitoring results to the Department and RWQCB. The project sponsor shall be responsible for ensuring

that the Operations Plan is, at all times, representative of the current operations, maintenance, and monitoring of the GRRP.

(b) During the first year of operation for a new GRRP, or during the first year of operation after *[insert effective date]* for an existing GRRP, and at all times thereafter, all treatment processes shall be operated in a manner providing optimal reduction of all chemicals and contaminants including:

(1) microbial contaminants;

(2) regulated contaminants identified in section 60320.212 and the nitrogen compounds in section 60320.210; and

(3) nonregulated chemicals identified in section 60320.220.

(c) Within six months of optimizing treatment processes pursuant to (b) and anytime thereafter operations are optimized that result in a change in operation, each GRRP shall update their operations plan to include such changes in operational procedures and submit the operations plan to the Department for review.

Section 60320.224. Response Retention Time.

(a) The recycled municipal wastewater used by a GRRP shall be retained underground for a period of time sufficient to allow the GRRP's project sponsor ample response time to identify treatment failures and implement actions, including those required pursuant to section 60320.100(b), necessary for the protection of public health from inadequately treated recycled municipal wastewater or recharge water.

(b) The response time required in subsection (a) shall be approved by the Department, based on information provided in the engineering report required pursuant to section 60323. Regardless of the minimum response time identified in subsection (a), the retention time shall be no less than two months.

(c) To demonstrate the retention time underground is no less than the response time in subsection (b), a tracer study utilizing an added tracer shall be implemented under hydraulic conditions representative of normal GRRP operations. With Department approval, an intrinsic tracer may be used in lieu of an added tracer. For each month of retention time estimated utilizing the approved intrinsic tracer, the project sponsor shall receive no more than 0.67 months credit. The retention time shall be the time representing the difference from when water is applied at the GRRP to when the first ten percent (10%) of such water arrives at the downgradient endpoint. A project sponsor for new GRRP shall initiate the tracer study prior to the end of the third month of operation. The project sponsor for existing GRRP that hasn't already performed a tracer study shall initiate a tracer study prior to the renewal of the GRRP's permit.

(d) For the purpose of siting a GRRP location during project planning and until a GRRP's project sponsor has met the requirements of subsection (c), for each month of retention time estimated using the method in column 1, the recycled municipal wastewater or recharge water may be credited with no more than the corresponding response time in column 2 of Table 60320.224.

Table 60320.224

Column 1	Column 2
Method used to estimate the retention time	**Response Time Credit per Month**
Tracer study utilizing an intrinsic tracer, based on T_{10} (i.e. the time for ten percent (10%) of tracer concentration to reach the endpoint).	0.67 months
Numerical modeling consisting of calibrated finite element or finite difference models using validated and verified computer codes used for simulating groundwater flow.	0.50 months
Analytical modeling using existing academically-accepted equations such as Darcy's Law to estimate groundwater flow conditions based on simplifying aquifer assumptions.	0.25 months

(e) The protocol(s) used to establish the retention times in subsections (c) and (d) shall be approved by the Department.

(f) The Department may require the GRRP to demonstrate that the underground retention times required in this section are being met based on changes in hydrogeological or climatic conditions since the most recent demonstration.

Section 60320.226. Monitoring Well Requirements.

(a) Prior to operating a GRRP, a project sponsor shall site and construct at least two monitoring wells such that:

(1) at least one monitoring well is located;

(A) no less than two weeks, but no more than six months of travel time from the GRRP, and

(B) at least 30 days upgradient of the nearest drinking water source;

(2) in addition to the well(s) paragraph (1), at least one monitoring well is located between the GRRP and the nearest downgradient domestic water supply well; and

(3) samples from the monitoring wells in paragraphs (1) and (2) can be;

(A) obtained independently from each aquifer initially receiving the water used as a source of potable water supply that will receive the GRRP's recharge water, and

(B) validated as receiving recharge water from the GRRP.

(b) From each monitoring well in subsection (a)(1), and each monitoring well in subsection (a)(2) that has recharge water located within one year travel time of the well(s), the project sponsor shall collect two samples prior to GRRP operation (for a new GRRP) and at least one sample each quarter after operation begins. Each sample shall be analyzed for total nitrogen, nitrate, nitrite, the contaminants in tables 64449-A and B of section 64449, and any contaminants and chemicals specified by the Department and RWQCB based on the results of the recycled municipal wastewater monitoring conducted pursuant to this Article.

(c) If a result from the monitoring conducted pursuant to subsection (b) exceeds a nitrate, nitrite, or nitrate plus nitrite MCL, the project sponsor shall, within 24 hours, collect another sample and have it analyzed for the contaminant. If the average of the result of the initial sample and the confirmation sample exceed the contaminant's MCL, the project sponsor shall:

(1) within 24 hours of being notified by the laboratory of the confirmation sample result, notify the Department and RWQCB; and

(2) discontinue surface application of recycled municipal wastewater until corrective actions have been taken or evidence is provided to the Department and RWQCB that the contamination was not a result of the GRRP.

(d) For chemical analyses completed in a calendar month, the project sponsor shall ensure the laboratory submits results no later than the end of the following month using the Electronic Deliverable Format as defined in the Electronic Deliverable Format (EDF) Version 1.2i Guidelines & Restrictions dated April 2001 and Data Dictionary dated April 2001.

(e) The GRRP's project sponsor may discontinue monitoring for the chemicals and contaminants in subsection (b) following Department approval based on the Department's review of the most recent two years of results.

Section 60320.228. Reporting.

(a) Annually, the project sponsor shall provide a report to the RWQCB and the Department. Public water systems having downgradient sources potentially affected by the GRRP and within 10 years groundwater travel time from the GRRP shall be notified by direct mail and/or electronic mail of the availability of the report. The report shall be prepared by an engineer licensed in California

and experienced in the fields of wastewater treatment and public water supply. The report shall include the following:

(1) A summary of the GRRP's compliance status with the applicable monitoring requirements and criteria of this Article during the previous calendar year;

(2) For any violations of this Article during the previous calendar year;

(A) the date, duration, and nature of the violation,

(B) a summary of any corrective actions and/or suspensions of subsurface application of recycled municipal wastewater resulting from a violation, and

(C) if uncorrected, a schedule for and summary of all remedial actions;

(3) Any detections of monitored chemicals or contaminants, and any observed trends in the monitoring wells and diluent water supplies;

(4) Information pertaining to the vertical and horizontal migration of the recharge water plume;

(5) A description of any changes in the operation of any unit processes or facilities;

(6) A description of any anticipated changes, along with an evaluation of the expected impact of the changes on subsequent unit processes;

(7) The estimated quantity and quality of the recycled municipal wastewater and diluent water to be utilized for the next twelve months; and

(8) A summary of the measures taken to comply with section 60320.106 and the effectiveness of the implementation of the measures.

(b) Every five years from the date of the initial approval of the engineering report required pursuant to section 60323, the project sponsor shall update the report to address any project changes and submit the report to the RWQCB and the Department. The update shall include, but not be limited to:

(1) anticipated RWC increases, a description of how the RWC requirements in section 60320.216 will be met, and the expected impact the increase will have on the GRRP's ability to meet the requirements of this Article;

(2) evidence that the requirements associated with retention time in section 60320.208, if applicable, and section 60320.224 have been met; and

(3) a description of any inconsistencies between previous groundwater model predictions and the observed and/or measured values, as well as a description of how subsequent predictions will be accurately determined.

Section 60320.230. Alternatives.

(a) A project sponsor may use an alternative to a requirement in this Article if the GRRP's project sponsor has:

(1) demonstrated to the Department that the proposed alternative would assure at least the same level of protection to public health;

(2) received written approval from the Department prior to implementation of the alternative; and

(3) if required by the Department or RWQCB for the purpose of conducting a public hearing regarding the proposed alternative, disseminated information to the public, and received public comments, pursuant to subsections 60320.202(b) and (c).

(b) Unless specified otherwise by the Department, the demonstration in paragraph (a)(1) shall include the results of a review of the proposed alternative by an independent scientific advisory panel that includes a toxicologist, a registered engineering geologist or hydrogeologist, an engineer licensed in California with at least three years of experience in wastewater treatment and public drinking water supply, a microbiologist, and a chemist.

ARTICLE 5.3. INDIRECT POTABLE REUSE: GROUNDWATER REPLENISHMENT - SURFACE APPLICATION WITH FULL ADVANCED TREATMENT

A Groundwater Replenishment Reuse Project (GRRP) project sponsor utilizing surface application with continuous advanced treatment of the entire recycled municipal wastewater stream prior to application shall meet the requirements of Article 5.2, except that after one year of operation, the project sponsor may apply for a reduced monitoring frequency for any monitoring requirement.

ARTICLE 7. ENGINEERING REPORT AND OPERATIONAL REQUIREMENTS

Section 60323[1]. Engineering Report

(a) No person shall produce or supply ~~reclaimed water~~recycled municipal wastewater for ~~direct~~ reuse from a ~~proposed~~ water reclamation plant ~~unless he files an~~ without a Department approved engineering report.

(b) The report shall be prepared by a properly qualified engineer ~~registered~~ licensed in California and experienced in the field of wastewater treatment, and shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with these regulations and any other features specified by the regulatory agency.

(c) The report shall contain a contingency plan which will assure that no untreated or inadequately treated wastewater will be delivered to the use area.

[1] Section 60320 is an existing section. The text reflects the proposed amendments.