

Supporting Document 4

Item No. 12

August 12, 2020

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
TENTATIVE ORDER NO. R9-2020-0108**

**MASTER RECYCLING PERMIT
FOR SADBERRY DEVELOPMENT, INC. AND PERCWATER,
CIVITA WATER RECLAMATION FACILITY, SAN DIEGO COUNTY**

Sudberry Development, Inc. and PERCWATER, as described in the following table, are subject to waste discharge and water recycling requirements set forth in this Order:

Discharger Information

Discharger:	- Sudberry Development, Inc. and PERCWATER
Name of Facility:	- Civita Water Reclamation Facility
Facility Address:	- Friars Road and Russell Parkway (Northeast Corner), San Diego, CA 92108, San Diego County
Facility Contact Information:	- Mark Radelow, Sudberry Development, Inc., 858-546-3000; Steve Owen, PERCWATER, 714-352-7750
Mailing Address:	- 5465 Morehouse Drive, Suite 260, San Diego, CA 92121
Type of Facility:	- Wastewater Treatment Plant
Tertiary Treatment Capacity:	- 0.33 million gallons per day maximum; 0.26 million gallons per day annual average

Discharge Location

Discharge Point:	- Recycled Water Use Areas
Effluent Description:	- Disinfected Tertiary Recycled Water
Hydrologic Area of Discharge:	- Mission San Diego Hydrologic Subarea (HSA) (907.11) of the San Diego Hydrologic Unit

Effective Date

This Order was adopted by the California Regional Water Quality Control Board, San Diego Region and is effective on: **August 12, 2020**

I, David W. Gibson, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on August 12, 2020.

TENTATIVE
David W. Gibson, Executive Officer

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I. FINDINGS

The California Regional Water Quality Control Board, San Diego Region (San Diego Water Board), finds:

- A. **Background.** The Sudberry Development, Inc. and PERCWater (Discharger) submitted a Report of Waste Discharge (ROWD), dated December 2017 requesting the development of a master recycling permit for the Civita Water Reclamation Facility (Facility). The Facility is a scalping plant with a daily maximum total tertiary treatment capacity of 0.33 million gallons per day (mgd). Recycled water produced at the Facility will serve irrigation sites as shown on Attachment A. The treatment process includes influent diversion and pumping, screening, an aeration tank, a membrane bioreactor process which combines activated sludge with membrane filtration, and a chlorine disinfection system.
- B. **Legal Authorities.** This Order is issued pursuant to sections 13263 and 13523.1 of the Water Code. This Order serves as a Master Recycling Permit and includes Waste Discharge Requirements (WDRs) issued pursuant to article 4, chapter 4, division 7 of the Water Code. The Order establishes WDRs for the production and Water Recycling Requirements (WRRs) for the production, distribution, and use of recycled water from the Facility, which together serve as a Master Recycling Permit.
- C. **Rationale for Requirements.** The San Diego Water Board developed the requirements in this Order based on information in the ROWD, *Engineering (Title 22) Report for the Civita Water Reclamation Facility*, water quality control plans and policies,¹ observations made during inspections and site visits, and other available information. An Information Sheet, Attachment C, was prepared for this Order, which contains background information and rationale for permit Requirements. The Information Sheet is hereby incorporated into and constitutes findings for this Order.
- D. **Antidegradation Policy.** The State Water Resources Control Board (State Water Board) established California's Antidegradation Policy in Resolution No. 68-16, *the Statement of Policy with Respect to Maintaining High Quality of Waters in California* (Resolution No. 68-16). Resolution No. 68-16 requires existing quality of waters be maintained unless degradation is justified based on specific findings. The San Diego Water Board's *Water Quality Control Plan for the San Diego Basin (9)* (Basin Plan) implements and incorporates by reference both the State and federal antidegradation policies. As discussed in section V of the Information Sheet, the discharge regulated by this Order is consistent with the Basin Plan and Resolution No. 68-16.
- E. **Notification of Interested Persons.** The San Diego Water Board notified the Discharger and interested agencies and persons of its intent to adopt a Master Recycling Permit that also prescribes WDRs. The San Diego Water Board also provided stakeholders with an opportunity to submit their written comments and

¹ Including the State Water Board's *Recycled Water Policy* (2009, as modified in 2013): http://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/draft_amendment_to_policy.shtml

recommendations. Details of the notification are provided in section IX of the Information Sheet.

F. **Consideration of Public Comment.** The San Diego Water Board, in a public meeting, considered all comments pertaining to the discharge. Details of the schedule for the Public Hearing are provided in section IX of the Information Sheet.

G. **California Environmental Quality Act.** The San Diego Water Board is a responsible agency under the California Environmental Quality Act (CEQA) for the adoption of this Master Recycling Permit. The environmental impacts associated with the construction and operation of the Facility were analyzed within the Environmental Impact Report filed for the entire residential development.

As a responsible agency under CEQA, the San Diego Water Board considered the EIR, and the project's environmental effects as described in those documents. The San Diego Water Board concurs ***that, with the mitigation measures incorporated into the project as described in the environmental documents, the project will not have a significant impact on water quality or the environment.***

IT IS HEREBY ORDERED, that, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and applicable regulations adopted thereunder, the Discharger shall comply with the requirements in this Order.

II. DISCHARGE PROHIBITIONS

- A. Discharge of waste to land, other than incidental runoff, which has not been specifically described in this Order or in the Report of Waste Discharge, and for which valid WDRs are not in force is prohibited.
- B. Discharges of treated or untreated solid or liquid waste to waters of the United States are prohibited unless as authorized by a National Pollutant Discharge Elimination System (NPDES) permit issued by the San Diego Water Board.
- C. Discharges of treated or untreated solid or liquid waste directly or indirectly to any waters of the State (including ephemeral streams and vernal pools) are prohibited.
- D. The treatment, storage, or disposal of waste in a manner that creates pollution, contamination, or nuisance, as defined by Water Code section 13050, is prohibited.

III. DISCHARGE SPECIFICATIONS

- A. The average annual flow from the Facility shall not exceed a daily average of 0.26 mgd and a daily maximum flowrate of 0.33 mgd.
- B. Discharges of recycled wastewater from the Facility shall not contain constituents in excess of the discharge specifications in Table 1.

Table 1. Discharge Specifications

Constituent	Units	Daily Maximum ¹	Monthly Average ²	Annual Average ³
Biological Oxygen Demand (BOD ₅ @ 20°C)	mg/L	45	30	-
Total Suspended Solids (TSS)		45	30	-
pH	pH units	6.5-9.0	6.5-9.0	6.5-9.0
Total Dissolved Solids (TDS)	mg/L	3,000	-	-
Chloride (Cl)	mg/L	800	-	-
Sulfate (SO ₄)	mg/L	600	-	-
Total Nitrogen (N)	mg/L	10	-	-
Sodium (Na) Hazard ⁴	%	60	-	-
Iron (Fe)	mg/L	0.3	-	-
Manganese (Mn)	mg/L	0.05	-	-
Methylene Blue-Activated Substances (MBAS)	mg/L	0.5	-	-
Boron (B)	mg/L	2.0	-	-
Fluoride (F)	mg/L	1.0	-	-
Aluminum	mg/L	1.0	-	-
Antimony	mg/L	0.006	-	-
Arsenic	mg/L	0.05	-	-
Barium	mg/L	1.0	-	-
Beryllium	mg/L	0.004	-	-
Cadmium	mg/L	0.005	-	-
Cyanide	mg/L	0.2	-	-
Mercury	mg/L	0.002	-	-
Nickel	mg/L	0.1	-	-
Selenium	mg/L	0.05	-	-
Thallium	mg/L	0.002	-	-
Perchlorate	mg/L	0.006	-	-

¹ The daily maximum discharge specification shall apply to the results of a single composite or grab sample representing non-overlapping 24-hour periods.

² The monthly average discharge specification shall apply to the arithmetic mean of the results of all samples collected during each calendar month.

³ The 12-month average discharge specification shall apply to the arithmetic mean of the results of all samples collected in a calendar year period.

⁴ See the Sodium Hazard Discharge Specification Alternative Compliance section below this table.

C. Sodium Hazard Discharge Specification Alternative Compliance. If the percent sodium value of the effluent exceeds 60 percent, compliance with the Sodium Hazard discharge specification may be evaluated by calculating the adjusted sodium adsorption ratio (SAR) and the electrical conductivity of the effluent. If the adjusted SAR and electrical

conductivity values indicate the degree or restriction of use of the effluent falls within or below the slight to moderate range, as indicated in Basin Plan Table 3-1, the effluent will comply with the sodium hazard discharge specification.

Adjusted SAR is calculated using the following equation:

$$SAR = \frac{Na}{\sqrt{\frac{(Ca_x + Mg)}{2}}}$$

Where *Na*, *Ca*, and *Mg* are in milliequivalents per liter.

Refer to Attachment E to this Order for Ca_x values.

- D. Recycled water produced from the Facility shall comply with the following additional requirements:
1. The chlorine disinfection process must provide a chlorine contact time (CT)² value of no less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow.
 2. The median density of total coliform bacteria measured in the disinfected recycled water effluent from the Facility shall not exceed a Most Probable Number (MPN) of 2.2 organisms per 100 milliliters, utilizing the bacteriological results of the last seven days for which analyses have been completed; and the number of total coliform bacteria shall not exceed an MPN of 23 organisms per 100 milliliters in more than one sample in any 30-day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.
 3. Turbidity measurement of the recycled water effluent from the Facility shall not exceed a daily average value of 2 Nephelometric Turbidity Units (NTU), shall not exceed 0.2 NTU more than 5 percent of the time during a 24-hour period, and shall not exceed 0.5 NTU at any time.
 4. An alternative disinfection processes may be used if, when combined with the filtration process, the alternative disinfection process demonstrates a reduction of the concentration of plaque-forming units of F-specific bacteriophage MS2, or polio virus, per unit volume of water in the wastewater to one hundred thousandths (1/100,000) of the initial concentration in the filter influent throughout the range of qualities of wastewater that will occur during the recycling process. A virus that is at least as resistant to disinfection as the polio virus may be used for purposes of the demonstration.

IV. WATER RECYCLING REQUIREMENTS

- A. The Discharger must develop and make the following information available to the San Diego Water Board, State Water Board Division of Drinking Water (DDW), and County of San Diego Department of Environmental Health (County DEH).

² Defined as the product of total chlorine residual and modal contact time measured at the same point.

1. Rules and Regulations for Recycled Water Users, Attachment B, governing the design and construction of recycled water use facilities and the use of recycled water. Rules and regulations for purveyance of recycled water shall, at a minimum, include the requirements which are contained in Attachment B to this Order.
 2. A program to conduct compliance inspections of recycled water reuse sites. Inspections shall determine the status of compliance with the Discharger's approved rules and regulations for recycled water users.
- B. Prior to providing recycled water to a new use site, the Discharger shall:
1. Submit a *New Reuse Site Report* to the San Diego Water Board, DDW, and County DEH prior to providing recycled water to any new reuse site located within the areas identified in this Order. The report shall include a detailed description of each reuse site and shall include the information below:
 - a) The number, location, and type of facilities within use areas.
 - b) The average number of persons estimated to be served by each facility on a daily basis.
 - c) The specific boundaries of the proposed use area including a map showing the location of each facility to be served.
 - d) The person or persons responsible for operation of the recycled water system at each facility.
 - e) The methods the Discharger will use to assure that the installation and operation of the recycled system will not result in cross connections between the recycled water piping system and the potable water piping system. This shall include a description of pressure, dye, or other test methods to be used to test the system.
 - f) The specific use of the recycled water at each facility. Plans and specifications for new reuse sites and new dual-plumbed sites shall be submitted to DDW and County DEH and must include the following:
 - 1) Proposed piping system to be used.
 - 2) Pipe locations of both the recycled and potable systems.
 - 3) Type and location of the outlets and plumbing fixtures that will be accessible to the public.
 - 4) The methods and devices to be used to prevent backflow of recycled water into the public water system.
 - 5) Provide a domestic water supply well location in a map if the well is within 1,000 feet from the reuse area.

2. Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the Discharger shall ensure that the dual-plumbed system within each type of building or structure, or defined area of specific public use that uses or proposes to use a dual plumbed system and use area is inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross- connections at least once every four years. The testing shall be conducted in accordance with the method described in the report submitted pursuant to title 22, section 60314. The inspection and testing shall be performed by a cross-connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. The County DEH shall be notified 30 days prior to any cross-connection test. A written report documenting the results of the inspection or testing for the prior year shall be submitted to the County DEH and DDW within 30 days of the completion of the inspection or testing.

C. The Discharger shall ensure the following requirements are met for all reuse sites:

1. Enforce recycled water rules and regulations.
2. Conduct recycled water reuse site compliance inspections in accordance with the program developed as required by section IV.A.2 of this Order.
3. Notify the DDW and County DEH of any incidence of recycled water backflow into the potable water system as soon as possible, but in no case later than 24 hours after the incident is identified.
4. Maintain a current list of all on-site recycled water supervisors.

V. PROVISIONS

A. The Discharger shall comply with all the following Standard Provisions:

1. The Discharger must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the Water Code and is grounds for (a) enforcement action; (b) termination, revocation and reissuance, or modification of this Order; or (c) denial of a report of waste discharge (ROWD) in application for new or revised WDRs.
2. The Discharger shall allow the San Diego Water Board, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this Order.
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order.

- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this Order.
 - d. Sample or monitor, at reasonable times for the purposes of assuring compliance with this Order or as otherwise authorized by the Water Code, any substances or parameters at any location.
- B. The Discharger shall report any noncompliance that may endanger human health, safety or the environment. Pursuant to section 5411.5 of the Health and Safety Code, any sewage overflow or spill shall be immediately reported to the California Office of Emergency Services (OES) and County DEH. In addition, any such information shall be provided verbally to the San Diego Water Board within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided to the San Diego Water Board within 5 days of the time the Discharger becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The San Diego Water Board may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

Discharger verbal and written notifications for spills completed in compliance with Order No. R9-2017-0007 (NPDES Permit No. CA0107409 or revised or amended NPDES permit) shall be deemed as complying with the requirements of this section. In the event the NPDES permit lapses then the Discharger shall comply with the following requirements:

The following occurrence(s) must be reported to the San Diego Water Board within 24 hours:

1. Any bypass from any portion of the treatment facility.
 2. Any discharge of treated or untreated wastewater resulting from sewer line breaks, obstruction, surcharge, or any other circumstances.
 3. Any treatment plant upset which causes the discharge specifications of this Order to be exceeded.
 4. Failure of disinfection system.
 5. Disinfected tertiary effluent total coliform bacteria greater than 240 MPN/100 milliliters (mL).
 6. Any known direct cross-connection between recycled water and potable water systems.
- C. The Discharger shall report all overflow events that occur at the Facility. For purposes of this reporting requirement, an overflow event is defined as a discharge of treated or untreated wastewater at a location onsite or other lands owned by the Discharger not

authorized by WDRs which results from a pump station failure, line break, obstruction, surcharge, or any other operational dysfunction. This reporting requirement applies to all overflow events other than those events subject to regulation under the State Board Order No. 2006-0003-DWQ, *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems* and San Diego Water Board Order No. R9-2007-0005, *Waste Discharge Requirements for Sewage Collection Agencies in the San Diego Region*. The types of overflow identified under this provision shall be reported to the San Diego Water Board within the corresponding monthly monitoring report.

- D. If the Discharger or end user, without regard to intent or negligence, causes or permits an unauthorized discharge of 50,000 gallons or more of recycled water that has been treated to at least disinfected tertiary recycled water³ or 1,000 gallons or more of recycled water that is treated at a level less than disinfected tertiary recycled water in or on any waters of the State, or causes or permits such unauthorized discharge to be discharged where it is, or probably will be, discharged in or on any waters of the State, shall immediately notify the San Diego Water Board in accordance with reporting requirements in Provision V.B of this Order as soon as (1) that person has knowledge of the discharge, (2) notification is possible, and (3) notification can be provided without substantially impeding cleanup or other emergency measures.
- E. The incidental discharge of recycled water to waters of the State is not a violation of these requirements if the incidental discharge does not unreasonably affect the beneficial uses of the water and does not result in the receiving water exceeding an applicable water quality objective.
- F. If a need for a discharge bypass is known in advance, the Discharger shall submit prior notice stating, at a minimum, the purpose, anticipated dates, duration, level of treatment, and volume of bypass. If possible, the San Diego Water Board shall be made aware of such notices at least 10 days prior to the date of the bypass. "Bypass" means the intentional diversion of waste streams from any portion of the treatment facility other than a sewer system.
- G. The Discharger shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncompliance.
- H. Upon reduction, loss, or failure of the treatment facility the Discharger shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the treatment facility is restored, or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power to the treatment facility has failed, is reduced, or is lost.

³ Disinfected tertiary recycled water is defined in section 60301.230 of title 22, California Code of Regulations.

- I. Except for a discharge which is in compliance with this Order, any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the State, shall immediately notify the County DEH and California OES of the discharge as soon as (a) it has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, in accordance with Health and Safety Code section 5411.5, and the spill reporting provision of the State toxic disaster contingency plan adopted pursuant to title 2, Government Code, division 1, chapter 7, article 3.7 (commencing with section 8574.17). This provision does not require reporting of any discharge of less than a reportable quantity as provided for under Water Code, section 13271, subdivisions (f) and (g), unless the Discharger is in violation of a prohibition in the *Water Quality Control Plan for the San Diego Basin* (Basin Plan).
- J. Except for a discharge which is in compliance with this Order, any person who without regard to intent or negligence, causes or permits any oil or petroleum product to be discharged in or on any waters of the State, or discharged or deposited where it is or probably will be discharged in or on any waters of the State shall immediately notify the California OES of the discharge as soon as (a) such person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, in accordance with the spill reporting provision of the State oil spill contingency plan adopted pursuant to Government Code title 2, division 1, chapter 7, article 3.7 (commencing with section 8574.1). This requirement does not require reporting of any discharge of less than 42 gallons unless the discharge is also required to be reported pursuant to Clean Water Act section 311, or the discharge is in violation of a Basin Plan prohibition.
- K. A copy of this Order shall be maintained at the Facility and shall always be available to operating personnel.
- L. The Discharger shall furnish to the San Diego Water Board, within a reasonable time, any information which the San Diego Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Discharger shall also furnish to the San Diego Water Board, upon request, copies of records required to be kept by this Order.
- M. This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to:
 1. Violation of any terms or conditions of this Order.
 2. Obtaining this Order by misrepresentation or failure to disclose fully all relevant facts.
 3. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
 4. The reduction or cessation of the discharge for any reason at any time. The Discharger shall provide written notification of the change in action to the San Diego Water Board, DDW, and County DEH.

- N. The filing of a request by the Discharger for the modification, revocation, reissuance, or termination of this Order, or notification of planned changes or anticipated noncompliance does not stay any condition of this Order.
- O. The Discharger shall file a new ROWD stamped or signed by a licensed professional,⁴ at least 120 days prior to the following:
1. Addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the wastes.
 2. Significant change in the treatment or disposal method (e.g., change in the method of treatment which would significantly alter the nature of the waste).
 3. Change in the disposal area from that described in the findings of this Order.
 4. Increase in flow beyond that specified in this Order.
 5. Other circumstances that result in a material change in character, amount, or location of the waste discharge.
 6. Any planned change in the regulated facility or activity which may result in noncompliance with this Order.
- P. This Order is not transferable to any person except after notice to the San Diego Water Board. The notice must be in writing and received by the San Diego Water Board at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Discharger containing a specific date for the transfer of this Order's responsibility and coverage between the current Discharger and the new discharger. This agreement shall include an acknowledgement that the existing Discharger is liable for violations up to the transfer date and that the new discharger is liable from the transfer date and thereafter. The San Diego Water Board may require modification or revocation and reissuance of this Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the Water Code.
- Q. Where the Discharger becomes aware that it failed to submit any relevant facts in a ROWD or submitted incorrect information in a ROWD or in any report to the San Diego Water Board, it shall promptly submit such facts or information.
- R. All applications, reports, or information submitted to the San Diego Water Board shall be signed and certified as follows:

⁴All reports, plans, and documents required under this Order must be prepared under the direction of appropriately qualified professionals. California Business and Professions Code sections 6735, 7835, and 7835.1 require that engineering and geologic evaluations and judgments be performed by or under the direction of licensed professionals. The lead professional shall sign and affix their license stamp to the report, plan, or document.

1. The ROWD shall be signed as follows:
 - a. For a corporation by either a principal executive officer or ranking elected official.
 - b. For a municipality, State, federal or other public agency by either a public Executive Officer or ranking elected official.
 - c. By direction of the person designated in paragraph "a." or "b." of this provision, only if:
 - i. The authorization is made in writing by a person described in paragraph 1.a or 1.b of this provision.
 - ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.
2. All other reports required by this Order and other information required by the San Diego Water Board shall be signed by a person designated in Provision R.1 of this Order or a duly authorized representative of that person. An individual is a duly authorized representative only if all the following are true:
 - a. The authorization is made in writing by a person described in Provision R.1 of this Order.
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.
 - c. The written authorization is submitted to the San Diego Water Board.
3. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment."
- S. The Discharger shall submit reports required under this Order in text searchable PDF format via email to sandiego@waterboards.ca.gov. Email submittals must include a signed cover/transmittal letter that includes the facility name, facility contact information, and reference code (GPU: 849194), unless directed otherwise by the Executive Officer.

VI. SPECIAL PROVISIONS: FACILITY DESIGN AND OPERATION SPECIFICATIONS.

- A. The Discharger shall always properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed or used by the Discharger to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including

appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Order.

- B. The Discharger must implement the following to ensure that recycled water and fertilizer are applied in use sites at agronomic rates:⁵
1. Monitor nutrient concentrations in recycled water supplies and notify recycled water site supervisors of the nutrient concentrations of recycled water. In the case of recycled water fill stations, customers must be notified of the nutrient concentrations in the recycled water.
 2. Conduct periodic inspections of end use sites.
- C. Prior to any changes in the treatment facilities, the Discharger shall prepare an engineering report conforming to title 22, section 60323 of the California Code of Regulations. The engineering report shall be submitted to the DDW, County DEH, and San Diego Water Board for review and response.
- D. A copy of the facility operations manual shall be maintained at the Facility at all times and shall be available to operation personnel and San Diego Water Board staff. The following portions of the operations manual shall be posted at the treatment plant as a quick reference for treatment plant operators:
1. Alarm set points for secondary turbidity, tertiary turbidity, and chlorine residual.
 2. Levels at which flow will be diverted for secondary turbidity, tertiary turbidity, and chlorine residual.
 3. When to divert flow for high daily and weekly median total coliform.
 4. When the authorities (DDW, County DEH, San Diego Water Board) must be notified of a diversion.
 5. Names and numbers of the authorities to be notified in case of a diversion.
 6. Frequency of calibration for turbidity meters, flow meters, and chlorine residual analyzers.
- E. The Facility shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to title 23, California Code of Regulations (title 23), chapter 3, subchapter 14.

⁵Agronomic rates refer to the rates of application of recycled water to plants necessary to satisfy the plants' evapotranspiration requirements, considering allowances for supplemental water (e.g., effective precipitation), irrigation distribution uniformity, and leaching requirement, thus minimizing the movement of nutrients below the plants' root zone.

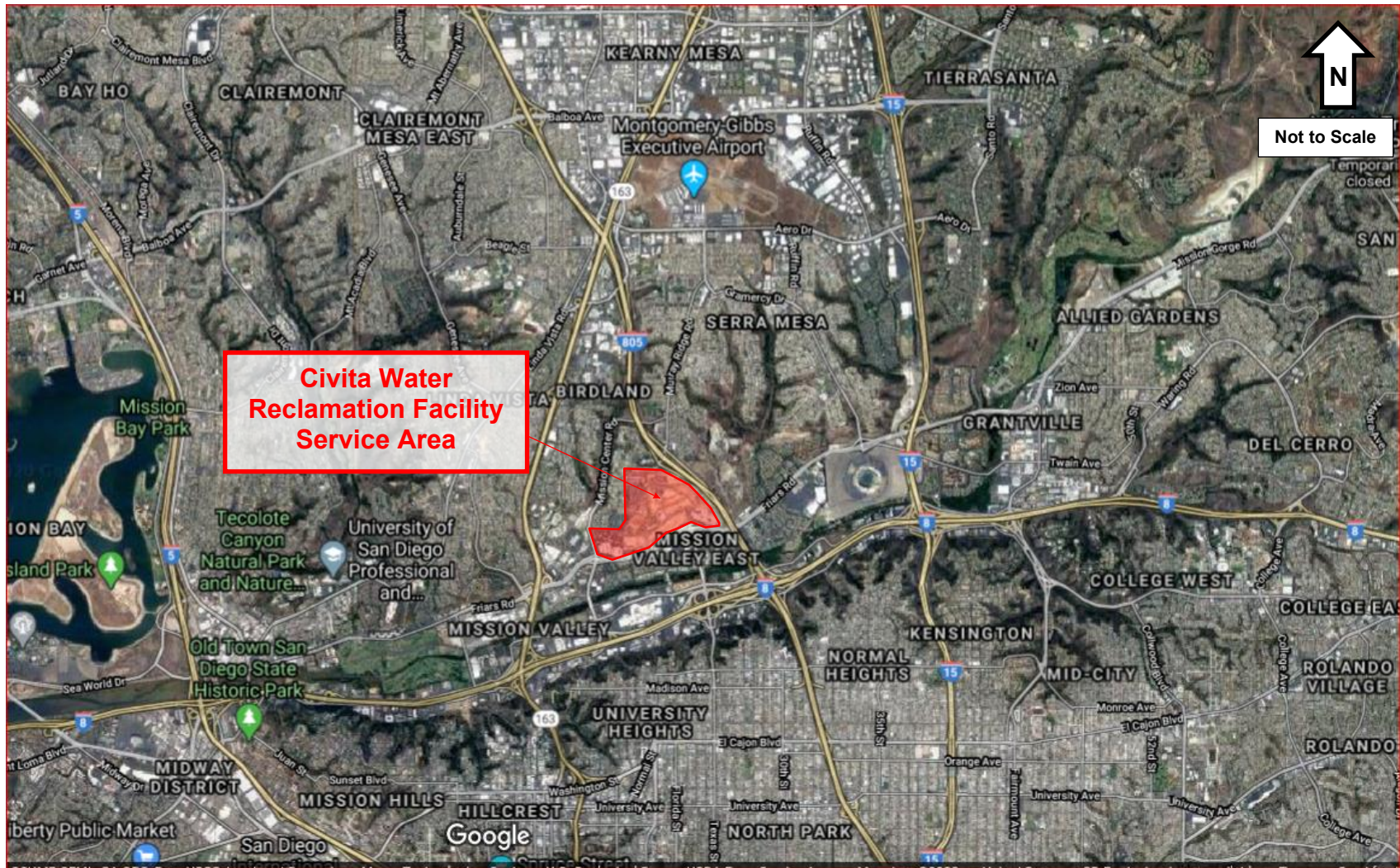
- F. All waste treatment, storage, and purveyance facilities shall be protected against 100-year peak stream flows as defined by the County of San Diego, Department of Public Works, Flood Control Section.
- G. All wastewater and recycled water storage facilities shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour frequency storm.
- H. The Discharger shall comply with the Monitoring and Reporting Program No. R9-2020-0108, Attachment D, and any future revisions specified by the San Diego Water Board. Monitoring results shall be reported at the frequency specified in Monitoring and Reporting Program No. R9-2020-0108.

VII. NOTIFICATIONS

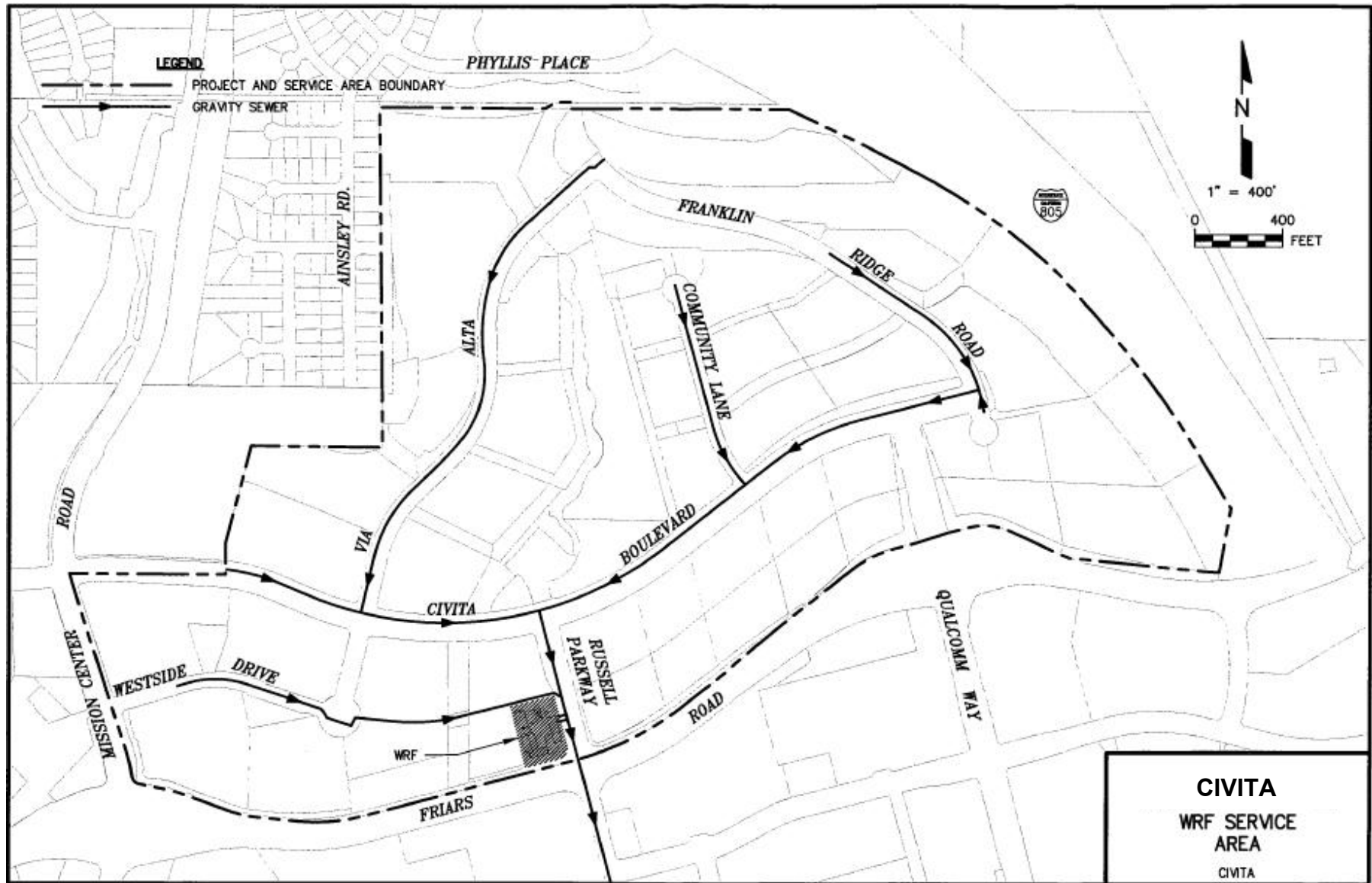
- A. If any person uses, transports, or stores recycled water in a manner which creates, or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code section 13050, the San Diego Water Board may initiate enforcement action against the Discharger, which may result in the termination of the recycled water discharge.
- B. This Order does not convey property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Discharger from liability under federal, State or local laws, nor create a vested right for the Discharger to continue the waste discharge.
- C. These requirements have not been officially reviewed by the United States Environmental Protection Agency and are not issued pursuant to Clean Water Act section 402.
- D. Any person aggrieved by this action of the San Diego Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and title 23, sections 2050 and following of the California Code of Regulations. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or State holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.
- E. This Order becomes effective on the date of adoption by the San Diego Water Board.

ATTACHMENT A - LOCATION MAP
TENTATIVE ORDER NO. R9-2020-0108

MASTER RECYCLING PERMIT
FOR SUDBERRY DEVELOPMENT, INC. AND PERCWATER,
CIVITA WATER RECLAMATION FACILITY, SAN DIEGO COUNTY



ATTACHMENT A - CIVITA WATER RECLAMATION FACILITY SERVICE AREA



**ATTACHMENT B - RULES AND REGULATIONS FOR RECYCLED WATER USE
TENTATIVE ORDER NO. R9-2020-0108**

**MASTER RECYCLING PERMIT
FOR SUDBERRY DEVELOPMENT, INC. AND PERCWATER,
CIVITA WATER RECLAMATION FACILITY, SAN DIEGO COUNTY**

Pursuant to Water Code section 13523.1(b)(3), this Order requires Sudberry Development, Inc. and PERCWater (Discharger) to establish and enforce rules and regulations governing the design, construction and use of recycled water distribution and disposal systems by its customers. The rules and regulations shall be consistent with the following criteria:

- Title 22, California Code of Regulations (title 22), division 4, chapter 3 Wastewater Reclamation Criteria.
- Title 17, California Code of Regulations (title 17), division 1, chapter 5, group 4, article 1 and 2.
- The State Water Board Division of Drinking Water (DDW) *Guidelines for Use of Recycled Water, Guidelines for Use of Recycled Water for Construction*¹.
- Any measures that are deemed necessary for protection of public health, such as the American Water Works Association (AWWA) California/Nevada Section, *Guidelines for the Distribution of Non-Potable Water and Guidelines for Retrofitting to Recycled Water*² or alternate measures that are acceptable to the DDW.

I. STANDARD RULES AND REGULATIONS

At a minimum, the rules and regulations shall notify the users that:

- A. The use of recycled water shall not cause a condition of pollution, contamination or nuisance, as defined by Water Code section 13050.
- B. The Discharger, the San Diego Water Board, the DDW, and the County Department of Environmental Health (County DEH), or an authorized representative of these parties, upon presentation of proper credentials, shall have the right to enter upon the recycled water use site during reasonable hours, to verify that the user is complying with the Discharger's rules and regulations.

¹ Referenced material can be found at the following webpage:
https://www.waterboards.ca.gov/sandiego/water_issues/programs/ground_water_basin/recycled_subsurface/docs/Guidelines_for_the_Distribution_of_Nonpotable_Water.pdf

² Referenced material can be found at the following webpage:
https://www.waterboards.ca.gov/sandiego/water_issues/programs/ground_water_basin/recycled_subsurface/docs/Guidelines_for_the_On-Site_Retrofit_of_Facilities_Using_Disinfected_Tertiary.pdf

- C. The recycled water user shall provide written notification, in a timely manner, to the Discharger of any material change or proposed change in the character of the recycled water use.
- D. Prior to the initiation of recycled water service, the recycled water user shall submit plans and specifications for recycled water distribution facilities to the Discharger.
- E. The recycled water user shall designate a recycled water supervisor who is responsible for the recycled water system at each use area under the user's control. Specific responsibilities of the recycled water supervisor include the proper installation, operation, and maintenance of the irrigation system; maintaining project compliance with the Discharger's rules and regulations; prevention of potential hazards; and preservation of the recycled water distribution system plans in "as built" form. Designated recycled water supervisors shall obtain instruction in the use of recycled water from an institution approved by the DDW and County DEH, as required.
- F. The Discharger may terminate service to a recycled water user who uses, transports, or stores such water in violation of the Discharger's rules and regulations.
- G. All recycled water storage facilities owned and/or operated by recycled water users shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour frequency storm unless the San Diego Water Board approves alternative storm protection measures for the facility.
- H. All recycled water storage facilities owned and/or operated by recycled water users shall be protected against 100-year frequency peak stream flows as defined by the San Diego County flood control agency unless the San Diego Water Board approves alternative storm protection measures for the facility.
- I. The San Diego Water Board may initiate enforcement action against any recycled water user who discharges recycled water in violation of any applicable discharge requirement prescribed by the San Diego Water Board or in a manner which creates or threatens to create conditions of pollution, contamination or nuisance, as defined in Water Code section 13050.
- J. A copy of the recycled water rules and regulations, irrigation system layout map, and recycled water system operations manual shall be maintained at the use area. These documents shall always be available to operating personnel.
- K. Irrigation with disinfected tertiary recycled water shall not take place within 50 feet of any domestic water supply well unless all the following conditions have been met:
 - 1. A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
 - 2. The well contains an annular seal that extends from the surface into the aquitard.
 - 3. The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.

4. The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
5. The owner of the well approves of the elimination of the buffer zone requirement.
- L. Impoundment of disinfected tertiary recycled water shall not occur within 100 feet of any domestic water supply well.
- M. Irrigation with, or impoundment of, disinfected secondary-2.2³ or disinfected secondary - 2.3⁴ recycled water shall not take place within 100 feet of any domestic water supply well.
- N. Irrigation with, or impoundment of, undisinfected secondary recycled water shall not take place within 150 feet of any domestic water supply well.
- O. Recycled water facilities shall be operated in accordance with best management practices (BMPs) to prevent direct human consumption of reclaimed water and to minimize misting, ponding, and runoff. BMPs shall be implemented that will minimize both public contact and discharge onto areas not under recycled water users' control.
- P. Irrigation with recycled water shall be conducted during periods of minimal human use of the service area. Consideration shall be given to allow a maximum dry-out time before the irrigated area will be used by the public.
- Q. All drinking fountains located within the approved use area shall be protected by location and/or structure from contact with recycled water spray, mist, or runoff. Protection shall be by design, construction practice, or system operation.
- R. Facilities that may be used by the public, including but not limited to eating surfaces and playground equipment, and located within the approved use areas, shall be protected to the maximum extent possible, by siting and/or structure from contact by irrigation with recycled water spray, mist, or runoff. Protection shall be by design, construction practice or system operation.
- S. Spray irrigation with recycled water, other than disinfected tertiary recycled water, shall not take place within 100 feet of the property line of a residence or a place where public exposure could be similar to that of a park, playground, or schoolyard.
- T. All use areas where recycled water is used and that are accessible to the public shall be posted with conspicuous signs, in a size no less that includes the following wording in a size no less than 4 inches high by 8 inches wide: "RECYCLED WATER - DO NOT DRINK." The sign(s) shall be of a size easily readable by the public.
- U. No physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.

³ Disinfected secondary-2.2 recycled water is defined in, title 22, chapter 3, section 60301.220

⁴ Disinfected secondary-2.3 recycled water is defined in title 22, chapter 3, section 60301.225

- V. The recycled water piping system shall not include any hose bibs. Quick couplers that are different from that used on the potable water system may be used.
- W. The public water supply shall not be used as a backup or supplemental source of water for a recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of sections 7602(a) and 7603(a) of the title 17 and the approval of the public water system has been obtained. If a "Swivel-ell" type connection is used it must be used in accordance with the provisions of the State Water Board Division of Drinking Water Policy Memo 95-004. Approved backflow prevention devices shall be provided, installed, tested, and maintained by the recycled water user in accordance with the applicable provisions of title 17, division 1, chapter 5, group 4, article 2.
- X. No person other than the Discharger shall make a connection to the recycled water distribution system.
- Y. All recycled water piping and appurtenances in new installations and appurtenances in retrofit installations shall be colored purple or distinctively wrapped with purple tape in accordance with Health and Safety Code, chapter 7.9, section 4049.54.
- Z. Reuse site shut down tests and inspections shall be monitored by the DDW.
- AA. Customer complaints concerning recycled water use that may involve public illness shall be reported to the County DEH, DDW, and to the Discharger who shall maintain a log of all customer complaints regarding recycled water.
- BB. Any backflow prevention device installed to protect the public water system shall be inspected and maintained in accordance with title 17, section 7605.
- CC. Recycled water and fertilizer shall be applied to landscapes at agronomic rates.
- DD. Overwatering of landscapes and runoff are prohibited.
- EE. Recycled water supervisors are responsible for determining onsite fertilizer needs, ensuring recycled water is applied to landscapes at agronomic rates, and completing training and education in compliance with recycled water agency rules and regulations to: (1) Minimize the potential for runoff or over-irrigation and, (2) Determine the fertilizer needs of the landscape considering the nutrient value of recycled water.

II. GENERAL REQUIREMENTS FOR HAULING OR TRANSPORTATION OF RECYCLED WATER

The Discharger's Rules and Regulations for Recycled Water Use must include requirements that ensure use and transport of recycled water from the fill stations will be protective of public health and the environment. At a minimum, the Rules and Regulations for Recycled Water Use must include the following requirements.

- A. The Discharger or hauler must comply with the requirements in sections II-IV of this attachment, unless the DDW or County DEH determine that alternative criteria provide equivalent or better protection of public health and the environment.
- B. Haulers interested in participating in this program must apply for a Recycled Water Use Permit issued by the Discharger.
- C. Use areas receiving hauled recycled water must meet the same requirements of titles 17 and 22 as a similar use area receiving traditionally piped recycled water. These requirements must be addressed in the Discharger's permitting process.
- D. Before trucks or containers can be filled for the first time, haulers are required to attend a brief on-site orientation or training to learn about using the filling station and proper handling and safe use of recycled water. Annual refresher training must be required. Records of training should be maintained by the Discharger.
- E. Once the hauler completes the on-site orientation or training and a Recycled Water Program inspector verifies the tanker truck or containers meet the recycled water use requirements, the inspector will issue a signed Recycled Water Use Permit. The Recycled Water Use Permit must always be available for inspection. The hauler must always carry a copy of the permit in the vehicle while hauling recycled water.
- F. Recycled water must not be introduced into any potable water piping system and no connection shall be made between the tank and any part of a potable water system.
- G. If the hauler requests to supply recycled water to a use area that uses any plumbed potable or recycled water distribution systems, the Discharger must ensure the end use complies with all applicable requirements of titles 17 and 22, including cross-connection control testing and backflow prevention device installation, prior to allowing pick up of recycled water. Dual plumbed use areas can only receive recycled water from a recycled water agency that has been granted approval under title 22, section 60313(a).
- H. The hauler must keep a log book for each vehicle, tank, or container used to transport recycled water. The log book must be available for inspection at all times. The hauler must always carry a copy in the vehicle while hauling recycled water. The log book must include:
 - 1. Date of delivery and use,
 - 2. Volume of water delivered and used,
 - 3. Intended use of water, and
 - 4. Name and address of the recipient/customer.
- I. The hauler or Recycled Water Site Supervisor must notify workers and the public when recycled water is used at a use site and inform workers and the public not to drink recycled water or use it for food preparation.

- J. Precautions must be taken to avoid contact between food and recycled water while the use site is wet.
- K. No irrigation or impoundment of recycled water is allowed within a minimum of 50 feet of any domestic drinking water well.

The hauler shall take adequate measures to prevent overspray, ponding, or run off of recycled water from the authorized recycled water use area.

- L. No connection shall be made between a tank or container of recycled water and any part of a potable water system.
- M. The Recycled Water Use Permit issued by the Discharger must always be available for inspection.
- N. Recycled water shall not be applied where it could spray on external drinking water fountains, passing vehicles, buildings, or areas where food is handled or eaten.
- O. Tank trucks, containers, and appurtenances must be clearly identified as “non-potable,” equipped with a legally sized air gap, and must not be used to provide potable water. Containers and hoses associated with hauling recycled water must not be used for potable water. Commercial hauling trucks that may be filled with potable water for non-potable uses must have two separate filling systems, one dedicated to potable water and one dedicated to recycled water. When the truck is filled from a potable water source, there must be a water agency or municipality provided meter and backflow device between the truck fill line and the potable source.
- P. Vehicles, tanks, and containers must have water-tight valves and fittings, must not leak or spill contents during transport, and must be cleaned of contaminants. This must be checked by the hauler before each use. Water-containing vessels that are open to the atmosphere during hauling are prohibited.
- Q. Haulers should not overfill containers or trucks.
- R. Hoses used for the application of recycled water shall be removable and shall be stored in a disconnected condition during transport. Hoses must be inspected prior to filling to ensure that they are in serviceable condition and free of leaks.
- S. In the event of an emergency concerning the recycled water hydrant, meter, fill pipe or hose (spillage, leaks, etc.), the hauler must call the emergency contact number listed on the filling station sign for further instructions.
- T. The Discharger may conduct use area visits to ensure proper use of recycled water according to all applicable requirements of titles 17 and 22, and Recycled Water Use Permit conditions. This may include follow up phone calls or surveys of end users about completion of the hauling process and recycled water application.
- U. Conditions under which haulers may lose their permits must be clearly communicated by the Discharger. Those conditions must specify that failure to follow program

requirements, including adhering to applicable State, County or local codes, will result in suspension of the hauler's permit. Violations of such codes may also result in agencies levying fines and applicable administrative fees.

- V. Residential hauling programs shall have fill stations staffed at all times by a representative from the Discharger to ensure proper handling and filling procedures are followed.
- W. Residential hauling programs must limit one-time hauls to 300 gallons.
- X. The permitted hauler shall notify the Discharger prior to using recycled water for a use not approved by the Discharger.
- Y. The Discharger, San Diego Water Board, DDW, and County DEH have the right to enter any recycled water use site during reasonable hours to ensure the user is complying with these requirements and the Discharger's Rules and Regulations for Recycled Water Use.

III. RULES AND REGULATIONS FOR HAULING OR TRANSPORTATION OF RECYCLED WATER FROM COMMERCIAL VEHICLE FILL STATIONS

- A. Trucks hauling recycled water that may also be filled with potable supplies for non-potable purposes shall have a dedicated potable use fill line through an air gap separation. The fill lines shall be properly labeled as potable or recycled water. As an alternative, the water supplier may install a reduced pressure principle backflow device on the potable system for filling trucks with potable water. Vehicles used to transport recycled water shall not be used to carry water for potable purposes.
- B. The risers, hoses, and fittings for each supply shall be color coded or painted blue for potable and purple for recycled water.
- C. The hoses, hydrants, and risers for each supply shall have separate and unique fittings (e.g., 2-1/2-inch diameter on the potable system and 2-inch diameter on the recycled water system) to ensure the potable system cannot accidentally be used on the recycled system and vice versa.
- D. All vehicles used in transporting recycled water must be clearly marked with signage that reads: "CAUTION: RECYCLED WATER - DO NOT DRINK" in English and Spanish. The Discharger shall conduct annual inspections of the trucks to ensure that all requirements in this Order are being met and that recycled water is being used in compliance with the requirements of this Order.
- E. Vehicles used for transportation or distribution of recycled water, or for street sweeping must be equipped with an air gap to ensure backflow protection.
- F. The use of recycled water for street sweeping or construction shall comply with the appropriate local storm water ordinance. Typical compliance measures include preventing overspray, ponding, or runoff of recycled water from the use area.

- G. During each visit, haulers are required to enter the date, amount collected, locations the recycled water will be used, and approximate amounts on the fill stations log sheet.
- H. For Hydrant Meter Filling Stations, ensure the meter is shut off before disconnecting the fill line and no water is leaking from the meter or hydrant.
- I. For Gate Access Filling Stations ensure no water is leaking from the fill pipe or hose and securely re-lock the gate after leaving the filling station.
- J. A truck or tank that has contained material from a septic tank or cesspool shall not be used to distribute recycled water.

IV. RULES AND REGULATIONS FOR USE OF RECYCLED WATER FOR FIRE FIGHTING

- A. Unused recycled water must not be released into streams, rivers, or waterways.
- B. Fire hydrants supplied with recycled water must be clearly identified by purple paints, signs, tags, stencils or other such labeling, in order to notify firefighters that the fire hydrants are supplied with recycled water.
- C. Fire truck tanks must be disinfected following the use of recycled water for firefighting because fire trucks could be used to distribute drinking water during civil emergencies.
- D. Firefighting personnel must be adequately trained in safe use of recycled water. New and current firefighting personnel must receive periodic refresher courses regarding proper handling and use of recycled water.

ATTACHMENT C
INFORMATION SHEET
TENTATIVE ORDER NO. R9-2020-0108

MASTER RECYCLING PERMIT
FOR SADBERRY DEVELOPMENT, INC. AND PERCWATER,
CIVITA WATER RECLAMATION FACILITY, SAN DIEGO COUNTY

This Information Sheet includes background information, legal requirements, and technical rationale that serves as the basis for the requirements of Tentative Order No. R9-2020-0108 (Order) and the directives in Monitoring and Reporting Program No. R9-2020-0108 (MRP). This Information Sheet is hereby incorporated into and constitutes findings for the Order and MRP.

I. INTRODUCTION

The Order establishes Waste Discharge Requirements (WDRs) for the production and Water Recycling Requirements (WRRs) for the production, distribution, and use of recycled water from the Civita Water Reclamation Facility (Facility), which together serve as a Master Recycling Permit.

- Permits the new tertiary treatment facility at the Facility.
- Permits the Mission San Diego Hydrologic Subarea (HSA) (907.11) for use of recycled water from the Facility for approved uses.
- Adds requirements of the *State Policy for Water Quality Control for Recycled Water (Recycled Water Policy)*.¹

The MRP (Attachment D to the Order) requires the Discharger to furnish monitoring reports to demonstrate compliance with the requirements of the Order. The San Diego Regional Water Quality Control Board (San Diego Water Board) developed the requirements in the Order and the directives in the MRP based on information in the report of waste discharge, water quality control plans and policies, and other available information.

For the purposes of this Information Sheet, the Order, and MRP, references to the “discharger” in applicable state laws, regulations, plans, or policy are held to be equivalent to references to the “Discharger”.

- A. The California Legislature has declared that a substantial portion of the future water requirements of the State may be economically met by beneficial use of recycled water (Water Code, section 13511). The Legislature also expressed its intent that the State undertake all possible steps to encourage development of water recycling facilities so

¹ Water Quality Control Policy for Recycled Water, adopted December 11, 2018, Effective April 8, 2019,
https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2018/121118_7_final_amendment_oal.pdf

that recycled water may be made available to help meet the growing water requirements of the State (Water Code, section 13512). The Order is consistent with the legislature's declaration because it facilitates the use of recycled water in place of potable water supplies.

- B. The *Recycled Water Policy* promotes the use of recycled water to achieve sustainable local water supplies and reduce greenhouse gas emissions. This Order is consistent with the *Recycled Water Policy* because it requires the Facility to conduct priority pollutant monitoring, implement nutrient management measures, and implement nutrient management planning elements of the 2019 Integrated Regional Water Management Plan (2019 IRWMP)², which addresses the Tier D and E basins in the San Diego Region.

Recycled water use can help to reduce the scarcity of local water supplies. It is not the only option for bringing supply and demand into a better balance, but it is a viable cost effective solution that is appropriate in many cases. The feasibility of recycled water use depends on local circumstances, which affect the balance of costs and benefits. In drought conditions, recycled water can be particularly valuable given the scarcity of alternative potable water supplies. In normal precipitation years recycled water use may reduce groundwater extraction. Broader and more effective uses of recycled water are consistent with the goals and objectives of the *Recycled Water Policy* and the San Diego Water Board's Practical Vision strategy for achieving a sustainable local water supply.³

- A. The discharge of disinfected tertiary treated recycled water from the Facility will occur at reuse sites in the Mission San Diego HSA. The use of recycled water in the approved HAs has the potential to offset potable water demands.
- B. The Order has provisions for the safe transport and use of recycled water from proposed recycled water fill stations. The Order requires the Discharger to develop *Rules and Regulations for Recycled Water Use* and implement measures to ensure the use and transport of recycled water from the fill stations complies with the Uniform Statewide Recycling Criteria⁴ and is protective of public health and the environment.

II. FACILITY DESCRIPTION

A. Description of Civita Water Reclamation Facility.

The Facility is located at the northeast corner of Friars Road and Russell Parkway in the City of San Diego, California, Attachment A, and is being constructed as part of the

² The City of San Diego, County of San Diego, and San Diego County Water Authority's 2019 San Diego Integrated Regional Water Management Plan, https://sdirwmp.org/pdf/SDIRWM_Final_2019_IRWM_Plan_compiled_2Jul19.pdf

³ See Practical Vision for "Strategy for Achieving a Sustainable Local Water Supply" http://www.waterboards.ca.gov/sandiego/water_issues/Practical_Vision/index.shtml

Civita Development. The Facility will be a scalping plant with no solids treated onsite, and sludge processing occurring offsite at downstream City of San Diego facilities. The projected average wastewater flow from the entire Civita Development at buildout is 1.684 mgd of raw sewage treated to secondary effluent standards. The Facility will be designed to produce a daily maximum of 0.33 mgd and a daily average of 0.26 mgd of disinfected tertiary recycled water. The disinfected tertiary recycled water will be produced from secondary treated effluent which will be approximately 15% of the Civita build out wastewater flow. The treatment processes will include influent diversion and pumping, screening, an aeration tank, a membrane bioreactor process, and a chlorine disinfection system. The headworks will be designed to divert and pump flow to the start of the treatment process. A drum screen will be installed to provide primary treatment and protection of downstream processes. The membrane bioreactor process combines activated sludge (secondary treatment) with membrane filtration (tertiary treatment), with the membrane units installed within the activated sludge reactor membrane tank. Within the activated sludge reactor membrane tank clean water will be separated from sludge and extracted through flat plate membranes. Disinfection will be accomplished utilizing a chlorine disinfection system consisting of two dosing pumps installed on a chemical feed skid which will provide each pump with a calibration column, pressure relief valve, and a pulsing damper. A 480,000-gallon storage tank will serve as effluent storage, a forebay for the effluent pumps, and provide for in-plant water needs.

B. Recycled Water Use.

Recycled water produced at the Facility will be used onsite for landscape irrigation on the Civita Development Project.

The Facility will be designed to produce disinfected tertiary recycled water in accordance with the requirements of Title 22 of the California Code of Regulations (title 22). The effluent use and disposal system will have a pump station and storage for use before the ultimate disposal of recycled water from the Facility to either onsite landscape irrigation or the existing offsite public sewer system and City of San Diego Point Loma Wastewater Treatment plant. Due to seasonal variations in demand, the Facility will dispose of excess recycled water to the existing City of San Diego sewer system during wet months and will need to be supplemented with potable water to meet peak demands during dry months. The Facility will provide an average of 260,000 gallons per day of recycled water to the Civita Development. In addition to offsetting the required water demands of the Development, the Facility could potentially be expanded to provide a new recycled water supply to the City of San Diego to serve potential recycled water customers in the Civita service area (Attachment A) who are not in the Civita Development Home Owners Association. A future public elementary school has been identified as a potential recycled water user in the Civita service area. The Facility could provide the City of San Diego with a recycled water source much closer to future users in the Civita service area since presently the nearest potential recycled water source in the City of San Diego is the North City Water Reclamation Plant, more than seven miles away.

C. Disposal.

The Facility intends to dispose of excess recycled water that does not meet regulatory requirements for use as onsite landscape irrigation to the existing City of San Diego Sewer system. The discharge of excess recycled water from the Facility will occur through the Point Loma Ocean Outfall via the E. W. Blom Point Loma Wastewater Treatment Plant pursuant to National Pollutant Discharge Elimination System Permit No. CA 0107409, Order No. R9-2017-0007.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the Order are based on the requirements and authorities described in this section.

A. Legal Authorities.

The Order is issued pursuant to sections 13263 and 13523.1 of the Water Code. The Order serves as a Master Recycling Permit which also includes WDRs issued pursuant to article 4, chapter 4, division 7 of the Water Code.

B. California Environmental Quality Act.

The San Diego Water Board is a responsible agency under the California Environmental Quality Act (CEQA) for the adoption of this Master Recycling Permit. The environmental impacts associated with the Facility's construction and operation were analyzed and approved by the City of San Diego Council in the Quarry Falls Project's Environmental Impact Report (EIR).

As a responsible agency under CEQA, the San Diego Water Board considered the EIR, and the Facility project's environmental effects as described in the EIR. The San Diego Water Board concurs that with the mitigation measures related to the construction and operation of the Facility as described in the EIR, that the Facility project will not have significant effects on water quality and resources within the San Diego Water Board's jurisdiction.

C. Water Quality Control Plans.

The *Water Quality Control Plan for the San Diego Basin* (Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. This Order implements the Basin Plan by prescribing requirements for the production, reuse, and disposal of recycled water that will not adversely impact water quality, beneficial uses, human health, or the environment.

D. Recycled Water Policy.

The *Recycled Water Policy* establishes criteria for recycled water projects, recycling requirements, and WDRs. The intent of the *Recycled Water Policy* is to protect

designated beneficial uses and protect water quality while increasing recycled water use, allowing for streamlined permitting for appropriate landscape irrigation projects, and allowing basin-wide management of salts and nutrients. The *Recycled Water Policy* states that the appropriate way to address salts and nutrients is through development of regional and sub-regional salt/nutrient management plans (SNMPs).

The Mission Valley Basin located in the central region of the City of San Diego and is located in the Mission San Diego HSA (907.11) of the San Diego Hydrologic Unit is designated as a low priority Tier D-1 basin in Table 7-9 of 2019 IRWMP. Under these guidelines, Tier D basins have high concentrations of TDS in the groundwater and have TDS groundwater quality objectives that exceed 1,200 milligrams/liter (mg/L). The guidelines conclude that SNMPs are not required within Tier D basins, as more than adequate TDS assimilative capacity exists within the Tier D basins to support existing and future recycled water use and ensure that recycled water use is protective of groundwater quality and meets the stated objectives of the *Recycled Water Policy*.

Individual SNMPs have not been prepared for the Tier D basins, however, the San Diego County Water Authority included salt and nutrient management planning elements in its 2019 IRWMP which addresses the Tier D and E basins in the San Diego Region.

Recycled water use can help to reduce the scarcity of local water supplies. It is not the only option for bringing supply and demand into a better balance, but it is a viable cost-effective solution that is appropriate in many cases. The feasibility of recycled water use depends on local circumstances, which affect the balance of costs and benefits. In drought conditions, recycled water can be particularly valuable given the scarcity of alternative potable water supplies. In normal precipitation years recycled water use may reduce the need for groundwater extraction. Broader and more effective uses of recycled water are consistent with the goals and objectives of the *Recycled Water Policy* and the San Diego Water Board's Practical Vision strategy for achieving a sustainable local water supply.⁵

E. Antidegradation Policy.

The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (Resolution No. 68-16). Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. As discussed in section V of this Information Sheet, regulation of the discharges of recycled water from the Facility will result in receiving water quality that is consistent with the State and federal antidegradation policies.

⁵ See Practical Vision for "Strategy for Achieving a Sustainable Local Water Supply"
https://www.waterboards.ca.gov/sandiego/water_issues/programs/practical_vision/docs/PV_5_Sustainable_Local_Water_Supply_Dec2013.pdf

IV. RATIONALE FOR DISCHARGE SPECIFICATIONS

The Order establishes technology and water quality-based discharge specifications, and discharge specifications based on the title 22, for the discharge of recycled water from the Facility.

A. Technology-Based Discharge Specifications.

The technology-based discharge specifications are for biological oxygen demand, total suspended solids, and pH. These discharge specifications are based on design criteria for removal of these constituents by secondary wastewater treatment technology.

B. Water Quality-Based Discharge Specifications.

The water quality-based discharge specifications are derived from the basin-specific water quality objectives listed in Table 1 (from Table 3-3 of the Basin Plan). The water quality objectives for Hydrologic Areas (HAs)/HSAs in which recycled water from the Facility is currently being used or could potentially be used are listed in Table 1.

Table 1. Basin-Specific Groundwater Water Quality Objectives

Hydrologic Area	CONSTITUENT (mg/L or as noted)												
	(Concentrations not to be exceeded more than 10% of the time during any one-year period)												
	TDS	Cl ⁻	SO ₄	%Na	NO ₃ ^{-b}	Fe	Mn	MBAS	B	ODOR	TURB (NTU)	COLOR (UNITS)	F ⁻
Mission San Diego HSA 907.11	3,000	800	600	60	45	0.3	0.05	0.5	2.0	none	5	15	1.0

Endnotes for Table 2

mg/L = milligrams per liter, TDS = Total Dissolved Solids, Cl⁻ = Chloride, SO₄ = Sulfate, % Na = Percent Sodium, NO₃⁻ = Nitrate, Fe = Iron, Mn = Manganese, MBAS = Methylene Blue Activated Substances, B = Boron, TURB = Turbidity, NTU = Nephelometric Turbidity Units, F⁻ = Fluoride

C. Total Nitrogen Discharge Specification.

This Order establishes a daily maximum total nitrogen effluent discharge specification of 10 mg/L, which is more appropriate to protect water quality. A recent Basin Plan amendment raised the groundwater quality objective for nitrate to the drinking water standard of 45 mg/L or 10 mg/L as total nitrogen for all basins in the Region except the Warner Basin.

D. Sodium Hazard Discharge Specification.

The Basin Plan establishes a groundwater quality objective for percent sodium that protects agricultural supply beneficial uses from the potential hazard due to sodium in irrigation waters. The Basin Plan sets water quality objectives and this Order establishes a sodium hazard discharge specification because excess concentrations of sodium in irrigation water reduce soil permeability to water and air. The percent sodium

objective is expressed as the ratio of sodium to the sum of sodium, calcium, magnesium, and potassium (expressed in milliequivalents per liter).

This Order sets the discharge specification for sodium hazard set at the percent sodium water quality objective of 60 percent. However, the Basin Plan provides an alternative to the percent sodium water quality objective to determine the potential sodium hazard of irrigation water. The alternative objective determines the sodium hazard using a methodology that evaluates the adjusted sodium adsorption ratio (SAR) and the electrical conductivity of the water. The water quality objective is met if the adjusted SAR and electrical conductivity values indicate that the “degree or restriction on use” of the water is within or below the “slight to moderate” range in Table 3-1 of the Basin Plan.

This Order includes the adjusted SAR alternative to assess the sodium hazard if the percent sodium is above the 60 percent discharge specification. In that situation the Discharger may demonstrate that the recycled water’s sodium hazard is within or below the slight to moderate range for the “degree of restriction or use” determined by an evaluation of the adjusted SAR and the electrical conductivity of the recycled water.

E. Title 22 Specifications.

The Order contains discharge specifications for chlorine residual, turbidity, chlorine contact time, and total coliform bacteria. Title 22 specifications are included in this Order because the Facility will provide recycled water from the Facility to recycled water use areas. These specifications are based upon concentration limits found in title 22, and upon recommendations from the State Water Board Division of Drinking Water (DDW) for the protection of human health at use sites. Recycled water from the Facility discharged to reuse sites must meet the definitions of “disinfected tertiary recycled water” in title 22, section 60301.230; and “filtered wastewater” in title 22, section 60301.320 incorporated by reference, including future changes to the incorporated provisions as the changes take effect.

V. COMPLIANCE WITH THE ANTIDegradation POLICY

A. State Water Board Resolution No. 68-16 requires that disposal of waste into the waters of the State be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the State. The quality of some waters is higher than established by adopted policies and that higher quality water must be maintained to the maximum extent possible consistent with the Antidegradation Policy. The Antidegradation Policy requires the following.

- Higher quality water will be maintained until it has been demonstrated to the State that any change will be consistent with the maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of the water, and will not result in water quality less than that prescribed in the Basin Plan.
- Any activity that produces a waste or may produce waste or increased volume or concentration of waste, and discharges to existing high quality waters will be

required to meet waste discharge requirements that will result in the best practicable treatment or control of the discharge necessary to assure pollution or nuisance will not occur, and the highest water quality consistent with the maximum benefit to the people of the State will be maintained.

- B. Maximum Benefit to the People of the State.** In a semi-arid climate, such as that of the San Diego Region, the maximum benefit to the people of the State can only be achieved by ensuring long and short-term protection of economic opportunities, human health, and environmental protection. In order to do that, water uses must be better matched to water quality, and use of local supplies must be encouraged to the extent possible, including reusing treated wastewater that would otherwise flow to the ocean or other salt sinks without supporting beneficial uses during transmission.⁶ The use of recycled water in place of both raw and potable water supplies for the non-potable uses allowed under this Order improves water supply availability and helps to ensure that higher quality water will continue to be available for human uses and for in stream uses for fish and wildlife.
- C. Present and Anticipated Uses of Water and Water Quality Prescribed in the Basin Plan.** Constituents associated with recycled water that have the potential to degrade groundwater quality include TDS, nutrients, pathogens (represented by coliform bacteria), disinfection by-products (DBPs), and manganese. The use of recycled water permitted under the Order will not unreasonably affect present and anticipated beneficial uses or result in water quality that is less than that prescribed in the Basin Plan because of the following characteristics and requirements applicable policies associated with each of the recycled water constituents of concern.
- 1. Total Dissolved Solids.** TDS can be present in recycled water at a concentration that can degrade groundwater quality. Use of recycled water with high TDS concentrations can impact receiving water TDS levels. The TDS groundwater quality objective is 3,000 mg/L in the Mission San Diego HSA, where recycled water from the Facility is planned to be used in the future. TDS concentrations in recycled water are not expected to adversely affect groundwater quality because recycled water TDS concentrations according to the *Engineering (Title 22) Report for the Civita Water Reclamation Facility* are proposed to be equivalent or below the TDS groundwater quality objectives in the HA/HSA in which recycled water will be used.
 - 2. Sulfates.** Sulfates can be present in recycled water at concentrations that can degrade groundwater quality. The groundwater quality objective for sulfate in the Mission San Diego HSA is 600 mg/L. The discharge specification for sulfate is the daily maximum of 600 mg/L. This concentration of sulfate is not expected to cause receiving groundwater to violate water quality objectives.

⁶ The Legislature also expressed its intent that the State undertake all possible steps to encourage development of water recycling facilities so that recycled water may be made available to help meet the growing water requirements of the State (Water Code section 13512).

3. **Nitrogen.** Nitrogen is a nutrient that may be present in recycled water at a concentration that can degrade groundwater quality. The Order requires end users to take into consideration nutrient levels in recycled water and nutrient demand by plants when using recycled water for landscape irrigation. Application of recycled water at agronomic rates considers nutrient and water demand and minimizes the movement of nutrients below the plant's root zone. When applied to cropped or landscaped land, some of the nitrogen in recycled water will be taken up by the plants and lost to the atmosphere through volatilization of ammonia or denitrification. Applying recycled water at agronomic rates will prevent the use of recycled water from impairing an existing and/or potential beneficial use of groundwater.
4. **Pathogens.** Pathogens and other microorganisms may be present in recycled water depending upon the disinfection status of the recycled water. Coliform bacteria are used as a surrogate (indicator) because they are present in untreated wastewater, survive in the environment similar to pathogenic bacteria, and are easy to detect and quantify. Pathogens are generally limited in their environmental mobility when applied to land. The use of recycled water permitted under the Order will not unreasonably affect present and anticipated beneficial uses or result in water quality that is less than that prescribed in the Basin Plan.

Setbacks from recycled water use areas are required in, title 22, as a means of reducing pathogenic risks by coupling pathogen inactivation rates with groundwater travel time to a well or other potential exposure route (e.g. water contact activities). In general, a substantial unsaturated zone reduces pathogen survival compared to saturated soil conditions. Fine grained soil particles, like silt or clay, reduce the rate of groundwater transport and therefore are generally less likely to transport pathogens. Setbacks also provide attenuation of other recycled water constituents through physical, chemical, and biological processes. Attachment B of the Order requires the Discharger to implement and maintain adequate setback distances in the end use areas from drinking water wells. These requirements must be specified in the Discharger's Rules and Regulations for Recycled Water Use. The Order also requires the Discharger to treat recycled water to meet disinfection requirements for tertiary treated recycled water specified in title 22.

5. **Disinfection by-products.** Disinfection by-products (DBPs) consisting of organic and inorganic substances may be present in recycled water. These by-products may be produced by the interaction of chemical disinfectants with naturally occurring substances in the water source. Common DBPs include trihalomethanes, haloacetic acids, bromate, and chlorite. DBPs present in recycled water receive additional treatment when applied to land. Biodegradation, adsorption, volatilization, and other attenuative processes that occur naturally in soil will reduce the concentrations and retard migration of DBPs in the subsurface and will not unreasonably affect present and anticipated beneficial uses or result in water quality that is less than that prescribed in the Basin Plan.
6. **Manganese.** Manganese may be present in recycled water at a concentration that can degrade groundwater quality. When present in domestic water supplies at high concentrations can cause unpleasant tastes, deposits on food during cooking, stains

on laundry and plumbing fixtures, and could lead to regrowth of some microorganisms in reservoirs, filters, and distribution systems. Most of the HAs in the San Diego Region have a groundwater quality objective of 0.05 mg/L, which is also the secondary drinking water standard for manganese. Secondary drinking water standards are guidelines regulating contaminants that may cause cosmetic or aesthetic effects in drinking water. The use of recycled water permitted under the Order will not unreasonably affect present and anticipated beneficial uses or result in water quality for manganese that is less than that prescribed in the Basin Plan.

VI. RATIONALE FOR WATER RECYCLING REQUIREMENTS

Water Recycling Requirements are included in this Order pursuant to Water Code section 13523 and based on recommendations from the DDW. In accordance with title 22, the DDW reviews engineering reports for the production, distribution, and use of recycled water. The San Diego Water Board relies on the expertise of the DDW and includes recommendations from DDW in WDRs to ensure recycled water is treated and used in a manner that protects human health. The Discharger must certify that the Facility and other existing purveyance facilities meet DDW's requirements or must update the title 22 engineering report to comply with DDW's requirements. The Order also requires the Discharger to maintain Rules and Regulations for Recycled Water Use (Attachment B) that comply with DDW's requirements. The Rules and Regulations must include an inspection and cross-connection testing program. The Order also requires the Discharger to update its Rules and Regulations to include requirements to ensure use and transport of recycled water from recycled water fill stations will be protective of public health and the environment if, in the future, the Discharger operates recycled water fill stations.

VII. RATIONALE FOR STANDARD PROVISIONS, SPECIAL PROVISIONS, AND NOTIFICATIONS

A. Standard Provisions.

The standard provisions contain language that allows the San Diego Water Board to enforce the Order. Provisions include need for inspection, spill and emergency reporting, records maintenance, and reporting of changes. Standard provisions apply to all WDRs and are consistent with San Diego Water Board findings.

B. Special Provisions- Facility Design and Operation Specifications

The Facility was designed and constructed in accordance with title 22 engineering reports reviewed by the DDW. The Design and Operation Specifications in the Order require that the plant be operated by appropriately certified wastewater operators, require application of recycled water and fertilizer in end use sites at agronomic rates, require maintenance of a facility operation manual and appropriate references, and require implementation of best management practices for protection of human health.

C. Notifications

Notifications are included in the Order to inform the Discharger of administrative issues regarding this Order.

VIII. RATIONALE FOR MONITORING AND REPORTING PROGRAM REQUIREMENTS

- A. The purpose of the MRP is to determine and ensure compliance with effluent discharge specifications and other requirements established in this Order, assess treatment efficiency, characterize effluents, and to minimize the effects of the discharge on the receiving water quality. The MRP also specifies requirements concerning the proper use, maintenance, methods, and the monitoring type intervals and frequency necessary to provide data that are representative of the activities and discharges regulated under this Order.
- B. The MRP is issued pursuant to Water Code section 13267, which authorizes the San Diego Water Board to require dischargers to submit technical and monitoring reports. The use of laboratories certified for federally standardized test methods, and quality assurance and control procedures ensure the reliability and validity of the data as well as consistency and comparability with regulations.
- C. Consistent with the *Framework for Monitoring and Assessment in the San Diego Region*,⁷ the monitoring required by the Order answers the two specific monitoring questions below.
1. Will the production, conveyance, and end use of recycled water regulated by this Order be done in a manner that protects public health and the environment?
 2. Is groundwater designated for municipal and domestic use safe to drink in irrigation end use areas regulated by this Order?
- D. This monitoring program has basic two components, effluent quality monitoring and recycled water production/distribution monitoring. Specific monitoring questions related to the questions above for each component are provided below.
1. Effluent monitoring consists of the basic site-specific monitoring necessary to measure compliance with individual effluent discharge specifications and/or assess potential impacts to receiving water quality. Effluent monitoring is typically conducted at the end of the treatment process and prior to distribution of recycled water to use sites. Effluent monitoring will answer the following questions.
 - a. Does the effluent comply with permit discharge specifications and other requirements of this Order, thereby ensuring that water quality objectives are achieved in the groundwater?

⁷ California Regional Water Quality Control Board, San Diego Region, Staff Report, November 2012.

- b. Does the effluent comply with the statewide treatment standards for recycled water, as required by title 22?
 - c. Is the Facility being properly operated and maintained to ensure compliance with the conditions of the Order?
 2. Recycled water distribution monitoring provides information necessary to track the distribution of recycled water in the San Diego Region. This information provides an essential part of a cumulative picture of the distribution and use of recycled water within the San Diego Region. Collection and analysis of recycled water production and use site data will help answer the following.
 - a. What is the total volume of recycled water produced from the facility?
 - b. Where are the recycled water use sites located?
 - c. What is the volume of recycled water delivered to each use site?
 - d. What is the level of compliance with Rules and Regulations at recycled water reuse sites?

IX. PUBLIC PARTICIPATION

Two of the four values of the San Diego Water Board espoused in its Practical Vision are communication and transparency. Participation of the public in the decision-making process of the Board is a hallmark of the board governmental structure in California and essential to this Board's success. The San Diego Water Board has taken the following steps to encourage public participation in the Master Recycling Permit adoption process.

A. Notification of Interested Parties

Consistent with Water Code section 13167.5, the San Diego Water Board has notified the Discharger and interested agencies and persons of its intent to adopt a Master Recycling Permit for the discharge and made Tentative Order No. R9-2020-0108 available on its website. Furthermore, the San Diego Water Board has provided the public with an opportunity to submit written comments and recommendations. Notification was provided through the San Diego Water Board website and board meeting agenda publication.

B. Written Comments

The staff determinations are tentative. Interested persons were invited to submit written comments concerning the Order. Comments submitted via email to sandiego@waterboards.ca.gov in Portable Document Format (PDF) or Microsoft Word format by **5:00 p.m. on June 12, 2020** and addressed to Ms. Sherrie Komeylyan were received at the San Diego Water Board offices by **5:00 p.m. on June 12, 2020** and were fully responded to by staff and considered by the San Diego Board.

C. Public Hearing

The San Diego Water Board held a public hearing on the tentative Master Recycling Permit during its regular Board meeting on the following date and time and at the following location:

Date: **August 12, 2020**
Time: **9:00 am**
Location: **Board Room, San Diego Water Board
2375 Northside Drive, Suite 100
San Diego, CA 92108**

Interested persons were invited to attend. At the public hearing, the San Diego Water Board heard testimony, if any, pertinent to the discharge, and the tentative Master Recycling Permit. Oral testimony was heard; however, for accuracy of the record, important testimony was requested to be submitted in writing.

Please be aware that dates and venues may have changed. Our Web address is http://www.waterboards.ca.gov/sandiego/board_info/agendas/ where you can access San Diego Water Board Meetings, Agenda, and Minutes for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the San Diego Water Board regarding the final Master Recycling Permit. The petition must be submitted within 30 days of the San Diego Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge (ROWD), related documents, tentative Master Recycling Permit, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the San Diego Water Board by calling (619) 516-1990.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the Order should contact Ms. Sherrie Komeylyan at (619) 521-3366 or at Chehreh.Komeylyan@waterboards.ca.gov, reference this facility, and provide a name, address, phone number, and email address.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to contact Ms. Sherrie Komeylyan at (619) 521-3366 or at Chehreh.Komeylyan@waterboards.ca.gov.

ATTACHMENT D

TENTATIVE MONITORING AND REPORTING PROGRAM NO. R9-2020-0108

MASTER RECYCLING PERMIT FOR SUDBERRY DEVELOPMENT, INC. AND PERCWATER, CIVITA WATER RECLAMATION FACILITY, SAN DIEGO COUNTY

This Monitoring and Reporting Program No. R9-2020-0108 (MRP) is issued to Sudberry Development, Inc. and PERCWATER pursuant to Water Code section 13267, which authorizes the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) to require technical and monitoring reports. The San Diego Water Board Executive Officer can modify the MRP as appropriate.

I. GENERAL MONITORING PROVISIONS

- A. Samples and measurements collected as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be collected at the monitoring points specified in this MRP and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notifying and receiving approval from the San Diego Water Board for the proposed monitoring location change.
- B. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10 percent from true discharge rates throughout the range of expected discharge volumes.
- C. Monitoring must be conducted according to United States Environmental Protection Agency (USEPA) test procedures approved in 40 Code of Federal Regulations (CFR), part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants as amended, unless other test procedures have been specified in this MRP.
- D. Unless otherwise permitted by the San Diego Water Board, all analyses shall be conducted at a laboratory certified to perform such analyses by the State Water Board Resources Control Board, Division of Drinking Water (DDW). The Discharger must use a laboratory capable of producing and providing quality assurance and quality control (QA/QC) records for San Diego Water Board review. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports submitted to the San Diego Water Board.
- E. Any report presenting new analytical data is required to include the complete laboratory and analytical report(s). The laboratory analytical report must be signed by the laboratory director and contain.
 1. A complete sample analytical report.
 2. A complete laboratory QA/QC report.

3. A discussion of the QA/QC data.
 4. A transmittal letter indicating whether or not all the analytical work was supervised by the director of the laboratory, and containing the following statement, "All analyses were conducted at a laboratory certified for such analyses by the DDW in accordance with current USEPA procedures."
- F. Specific methods of analysis must be identified in the Discharger's monitoring reports. If the Discharger proposes to use methods or test procedures other than those included in the most current version of the USEPA Guidelines, the exact methodology must be submitted for review and must be approved by the San Diego Water Board prior to use.
- G. If the Discharger monitors any pollutants more frequently than required by this MRP, using test procedures approved in 40 CFR, part 136, or as specified in this MRP, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharger's monitoring report. The increased frequency of monitoring shall also be reported.
- H. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records including all original strip chart and/or electronic recordings for continuous monitoring instrumentation and copies of all reports required by this MRP, and records of all data used to complete the application for this MRP. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when required by the San Diego Water Board. Records of monitoring information shall include the following:
1. The date, exact place, and time of sampling or measurements.
 2. The individual(s) who performed the sampling or measurements.
 3. The date(s) analyses were performed.
 4. The individual(s) who performed the analyses.
 5. The analytical techniques or methods used.
 6. The results of such analyses.
- I. All monitoring instruments and devices that are used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.
- J. All applications, reports, or information submitted to the San Diego Water Board shall be signed and certified as follows:
1. The Report of Waste Discharge (ROWD) shall be signed as follows.

- a. For a corporation-by a principal Executive Officer of at least the level of Vice President.
 - b. For a partnership or sole proprietorship-by a general partner or the proprietor, respectively.
 - c. For a municipality, State, federal or other public agency-by either a public Executive Officer or ranking elected official.
2. All other reports required by this MRP and other information required by the San Diego Water Board shall be signed by a person designated in Monitoring section J.1 or a duly authorized representative of that person. An individual is a duly authorized representative only if all the following are true:
- a. The authorization is made in writing by a person described above.
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.
 - c. The written authorization is submitted to the San Diego Water Board.
3. Any person signing a document under this section shall make the following certification:
- "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment."
- K. A composite sample is defined as a combination of at least eight sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period. For volatile pollutants, aliquots must be combined in the laboratory immediately before analysis. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically.
- L. A grab sample is an individual sample of at least 100 milliliters collected at a randomly selected time over a period not exceeding 15 minutes.
- M. The Discharger shall identify all missing or non-valid monitoring or sampling results in monitoring reports submitted. All instances of missing or non-valid results must be accompanied by an explanation of their root cause and the steps the Discharger has or will take to prevent future instances. Missing or non-valid results may be considered violations of MRP No. R9-2020-0108 that could result in enforcement action depending

on the frequency of such instances and efforts by the Discharger to prevent such failures.

II. Effluent Monitoring Requirements

Effluent that will be discharged to landscape irrigation sites or reuse sites subject to Water Recycling Criteria specified in title 22, California Code of Regulations shall be monitored downstream from the chlorine contact basin. Required effluent monitoring is shown in Table 1.

Table 1. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency ^{a,b}	Reporting Frequency
Flow Rate	mgd	Continuous	Continuous	Monthly
Chlorine Residual ^c	mg/L	Continuous	Continuous	Monthly
Chlorine-Contact Time (CT) ^c	mg-min/L	Continuous	Continuous	Monthly
Total Coliform Bacteria ^d	MPN/ 100 mL	Grab	Daily	Monthly
Turbidity ^e	NTU	Continuous	Continuous	Monthly
Biological Oxygen Demand (BOD ₅ @ 20°C)	mg/L	Composite	Weekly	Monthly
Total Suspended Solids	mg/L	Composite	Weekly	Monthly
pH	pH units	Grab	Weekly	Monthly
Chloride (Cl)	mg/L	Composite	Quarterly	Quarterly
Sulfate (SO ₄)	mg/L	Composite	Quarterly	Quarterly
Percent Sodium (% Na)	%	Composite	Quarterly	Quarterly
Electrical Conductivity	mmho/cm or dS/m	Grab	Quarterly	Quarterly
Adjusted SAR	-	Calculated	Quarterly	Quarterly
Nitrate (NO ₃)	mg/L	Composite	Quarterly	Quarterly
Total Nitrogen	mg/L	Composite	Quarterly	Quarterly
Iron (Fe)	mg/L	Composite	Quarterly	Quarterly
Manganese (Mn)	mg/L	Composite	Quarterly	Quarterly
Methylene Blue-Activated Substances (MBAS)	mg/L	Composite	Quarterly	Quarterly
Boron (B)	mg/L	Composite	Quarterly	Quarterly

Parameter	Units	Sample Type	Minimum Sampling Frequency ^{a,b}	Reporting Frequency
Fluoride (F)	mg/L	Composite	Quarterly	Quarterly
Total Dissolved Solids (TDS)	mg/L	Composite	Quarterly	Quarterly
Aluminum	mg/L	Composite	Annually	Annually
Barium	mg/L	Composite	Annually	Annually
Beryllium	mg/L	Composite	Annually	Annually
Cadmium	mg/L	Composite	Annually	Annually
Cyanide	mg/L	Composite	Annually	Annually
Mercury	mg/L	Composite	Annually	Annually
Nickel	mg/L	Composite	Annually	Annually
Thallium	mg/L	Composite	Annually	Annually
Selenium	mg/L	Composite	Annually	Annually
Perchlorate	mg/L	Composite	Annually	Annually

a. The Discharger shall increase the sampling frequency from weekly to daily, from quarterly to monthly, and from annually to monthly for any constituent that exceeds the Discharge Specifications of the Order. The increased frequency of monitoring shall continue until the Discharger achieves compliance with the Specification for three consecutive periods, at which point the Discharger shall resume sampling at the specified frequency.

b. Weekly is defined as a calendar week (Sunday through Saturday). Monthly is defined as a calendar month. Quarterly is defined as a period of three consecutive calendar months beginning on January 1, April 1, July 1, or October 1. Annually is defined as a period of 12 consecutive calendar months beginning on January 1.

c. Calculated CT (chlorine concentration multiplied by modal contact time) values shall be determined and recorded continuously. The daily minimum CT value shall be reported monthly. The Discharger shall report monthly the date(s), value(s), time and duration when the CT value falls below 450 mg-min/L, and/or the modal contact time falls below 90 minutes.

d. Samples for total coliform bacteria shall be collected at least daily and at a time when wastewater characteristics are most demanding on the treatment facilities and disinfection procedures. Results of daily coliform bacteria monitoring, running 7-day median determination shall be reported monthly.

e. Effluent samples collected to determine turbidity (when required) shall be collected after the media filters. Effluent tertiary turbidity analyses shall be conducted continuously using a continuous monitoring and recording turbidity meter. Compliance with the daily average operating filter effluent turbidity limit of 2 Nephelometric Turbidity Units (NTU) shall be determined using levels of recorded turbidity levels at a minimum of four-hour intervals over a 24-hour period. Compliance with the turbidity standard of not exceeding 5 NTU more than 5 percent of the time over a 24-hour period shall be determined using the levels of recorded turbidity taken at intervals of no more than 1.2 hours over a 24-hour period. Should the continuous turbidity meter and/or recorder fail, grab sampling at a minimum frequency of 1.2 hours may be substituted for a period of up to 24 hours. The Discharger shall report quarterly results

Parameter	Units	Sample Type	Minimum Sampling Frequency ^{a,b}	Reporting Frequency
of four-hour turbidity readings, average effluent turbidity (24-hours), 95 percentile effluent turbidity (24-hours), and daily maximum turbidity readings.				

III. SAMPLING AND ANALYSIS PLAN

A. The Discharger shall submit a Sampling and Analysis Plan that incorporates the standard monitoring provisions and describes the sampling and analysis protocols for groundwater and effluent monitoring. The Sampling and Analysis Plan must be received by the San Diego Water Board within 90 days of the adoption of this Order.

1. **Methods of Analysis.** Specific methods of analysis shall be identified in the Sampling and Analysis Plan. If the Discharger proposes to use methods or test procedures other than those included in the most current version of the U.S. Environmental Protection Agency’s (USEPA) SW-846 or methods specified in General Provision C of this MRP, the Sampling and Analysis Plan must explain the rationale for the change. The change must be approved by the San Diego Water Board prior to implementation.
2. **Sampling Frequency.** If the Discharger monitors any sampling point or constituent of concern more frequently than required by this MRP, the results shall be included in the monitoring reports in compliance with General Provision G of this MRP. The Discharger shall also report the increased frequency of monitoring and specific monitoring locations to the San Diego Water Board.
3. **Protocols.** Sample collection, storage, and analysis shall be performed in accordance with protocols included in the USEPA protocols specified in General Provision C of this MRP, and in accordance with a written Sampling and Analysis Plan, approved by the San Diego Water Board.
4. **Calibration.** All monitoring instruments and equipment shall be properly calibrated and maintained as required by General Provision I of this MRP.
5. **Record Retention.** The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, and copies of all reports required by this MRP. Records shall be maintained and retained as required by General Provision H of this MRP.
6. **Sample Records.** Records of monitoring information shall include:
 - a. The date, identity of sample, monitoring point from which the sample was collected, and time of sampling or measurement.
 - b. The name of the individual(s) who performed the sampling or measurements.
 - c. The date and time that analyses were started and completed.

- d. The analytical techniques or method used, including method of preserving the sample and any other details requested by the San Diego Water Board, such as the identity and volumes of reagents used.
 - e. The calculation of results.
 - f. The results of analyses and the method detection limit (MDL) for each parameter.
 - g. The laboratory quality assurance results (e.g. percent recovery, response factor, etc.)
 - h. Chain of custody forms.
7. **Standard Reporting Provisions.** The Sampling and Analysis Plan shall incorporate the following:
- a. The methods of analysis shall be appropriate for the expected concentrations.
 - b. Analytical results falling between the MDL and the practical quantitative limit (PQL) shall be reported as “trace” and shall be accompanied by documents reporting both the MDL and PQL values for that analytical run.
 - c. MDLs and PQLs shall be derived by the laboratory for each analytical procedure, according to the State of California laboratory accreditation procedures. In a relatively interference-free laboratory, derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.
 - d. If the laboratory suspects that, due to a change in matrix or other effects, the MDL or PQL for a particular analytical run differs significantly from historic MDL or PQL values, the results shall be flagged and reported in the QA/QC report.
 - e. The MDL shall always be calculated such that it represents a concentration with a 99 percent reliability of non-zero results.
 - f. The PQL shall represent the lowest concentration at which a numerical value can be assigned with reasonable certainty.
 - g. All QA/QC data shall be reported, along with the sample results to which they apply. The QA/QC information shall include the method, equipment, and analytical detection and quantitation limits, the recovery rates, an explanation for any recovery rate that is less than 80 percent, the results of equipment and method blanks, the results of spiked and surrogate samples, and the frequency of quality control analysis. Sample results shall be reported unadjusted for blank results or spike recovery. In cases where contaminants are detected in field, trip, or laboratory blank samples, the accompanying sample results shall be appropriately flagged in the tabulated data.
 - h. Upon receiving written approval from the San Diego Water Board, a proposed alternative statistical or non-statistical procedure may be used for determining the

significance of analytical results for a constituent that is a common laboratory contaminant (e.g. methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) during any given Reporting Period in which QA/QC samples show evidence of laboratory contamination for that constituent. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by the San Diego Water Board.

IV. RECYCLED WATER SUMMARY REPORTS

- A. The Discharger shall submit a quarterly summary report on recycled water users containing the following information.
 1. Total volume of recycled water supplied to all recycled water users for each month of the reporting period.
 2. Total number of recycled water use sites.
 3. Address of the recycled water use site.
 4. Basin Plan name and number of hydrologic subareas underlying the recycled water use sites.
- B. The Discharger shall submit an annual recycled water user's compliance report containing the following information.
 1. Recycled water use site summary report.
 - a. Name of each recycled water reuse site.
 - b. Owner of each recycled water use facility.
 - c. Address of each reuse site.
 - d. Name of the recycled water on-site user supervisor.
 - e. Phone number of the on-site user supervisor.
 - f. Mailing address of the recycled water on-site use supervisor, if different from site address.
 - g. Volume of recycled water delivered to each reuse site for each of the 12 months in a calendar year.
 - h. A map showing where the recycled water use areas are located within the hydrologic subarea

2. Recycled water user site inspections. The Discharger shall report the number of recycled water reuse site inspections conducted by its staff and identify the sites inspected for the reporting period.
 3. Recycled water user violations of the Discharger's rules and regulations. The Discharger shall identify all recycled water users known to be in violation of its rules and regulations for recycled water users. The report shall include a description of the noncompliance and its cause, including the period of noncompliance, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
- C. The Discharger shall also include the following in the annual recycled water user's compliance report.
1. A list of all approved residential and commercial recycled water haulers. The Discharger's annual list must also indicate any new recycled water haulers that were approved during the calendar year.
 2. A list of users receiving or proposing to receive recycled water from the fill stations (including a list of uses of recycled water for each user).
 3. A list of recycled water end use sites outside the Discharger's recycled water service area.
 4. A summary of the volume of recycled water used (in acre feet) from the fill stations each quarter during the calendar year.
 5. A summary table of all inspections conducted of recycled water use sites which received recycled water from the fill stations during the calendar year and enforcement/corrective actions initiated by the Discharger during the calendar year. Include a discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into compliance with this Order. Copies of any enforcement actions taken by the Discharger shall be provided to DDW, the San Diego Water Board and County DEH.
 6. An evaluation of the performance of the recycled water treatment facility, including discussion of capacity issues, system problems, and a forecast of the flows anticipated in the next year.
 7. The name and contact information for the recycled water operator/staff responsible for overseeing operation, maintenance, and system monitoring of the fill stations.
- D. The Recycled Water Summary Reports shall be submitted as an attachment to the quarterly SMRs.

V. SELF-MONITORING REPORTS

- A. The Discharger shall submit the results of the effluent monitoring required in section II of this MRP in Self-Monitoring Reports (SMRs). SMRs must be received by the San Diego Water Board by 5:00 p.m. on the first day of each month. If the first day of the month falls on a Saturday, Sunday, State or federal holiday, submit the SMR by 5:00 p.m. on the next regular business day.
- B. The monitoring results to be reported in each SMR shall be based on the sampling frequency, monitoring period, and due dates specified in Table 2:

Table 2. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period	SMR Due Date
Continuous	Continuous	By the first day of the second month following sampling (i.e. March 1 for January samples)
Daily	Daily	
Monthly	January, February, March, April, May, June, July, August, September, October, November, December	
Quarterly	January 1 through March 30	May 1
	April 1 through June 30	August 1
	July 1 through September 30	November 1
	October 1 through December 31	February 1
Semiannually	January 1 through June 30	August 1
	July 1 through December 31	February 1
Annually	January 1 through December 31	February 1

Laboratory reporting limits shall be lower than or equal to the discharge specifications and notification limits. Constituents not detected below the method detection limit shall be reported as non-detect with the applicable value (e.g. ND<0.05 mg/L). Constituents detected between the laboratory reporting limit and method detection limit shall be reported as “estimated concentrations” or noted with appropriate laboratory flags.

- C. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final discharge specifications.
- D. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. For identified violations, the letter must include a description of the requirement that was violated and a description of the violation.
- E. SMRs must be submitted in text searchable PDF format to the San Diego Water Board via email. The SMRs file names must contain the facility name and monitoring report

period (CWRF_Month_Year.pdf). The email submittals must include a signed cover/transmittal letter (with the facility name, facility contact information, and reference code), and be sent via email to sandiego@waterboards.ca.gov, unless directed otherwise by the Executive Officer.

VI. ONE TIME REPORTING DUE DATES

This section, and Table 3 below, summarizes all one time reports due to the San Diego Water Board after adoption of the Order and accompanying MRP:

Table 3. One Time Reporting Schedule

Report Type	Reference Section	Report Due Date
Sampling and Analysis Plan	MRP section III	Within 90 days of the adoption of the Order
Rules and Regulations for Recycled Water Users	Order section IV. A. 1	Within 90 days of the adoption of the Order
New Reuse Site Report	Order section IV. B. 1	60 days prior to proposed new reuse
Noncompliance Report	Order section V. B	5 days after noncompliance
Bypass Report	Order section V. F	10 days prior to bypass
Report of Waste Discharge	Order section V. O	120 days prior to proposed major change
Transfer of Ownership	Order section V. P	30 days prior to proposed change

Ordered by: TENTATIVE
David W. Gibson
Executive Officer
 August 12, 2020

ATTACHMENT E

CALCULATION OF ADJUSTED SODIUM ADSORPTION RATIO

MASTER RECYCLING PERMIT FOR SUDBERRY DEVELOPMENT, INC. AND PERCWATER, CIVITA WATER RECLAMATION FACILITY, SAN DIEGO COUNTY

The adjusted sodium adsorption ratio (adj R_{Na}) for the soil surface is calculated from the following equation:

$$Adj R_{Na} = \frac{Na}{\sqrt{\frac{Ca_x + Mg}{2}}}$$

Where Na and Mg milliequivalents per liter (meq/L) are taken from the water analysis and Ca_x is obtained from the table below. To use the table, the applied water salinity (EC_w) in mmho/cm or in dS/m and the bicarbonate to calcium ratio (HCO_3/Ca) using milliequivalents per liter must be known from the water analysis.

Ca_x values for near surface soil-water at various applied water salinities and HCO_3/Ca ratios assuming equilibrium conditions for soil-water, no precipitation of magnesium and a partial pressure of CO_2 (P_{CO_2}) of 0.0007 atmospheres.

Salinity of applied water (EC_w) (mmho/cm or dS/m)	0.1	0.2	0.3	0.5	0.7	1.0	1.5	2.0	3.0	4.0	6.0	8.0
Ratio of HCO_3/Ca												
0.05	13.20	13.61	13.92	14.40	14.79	15.26	15.91	16.43	17.28	17.97	19.07	19.94
0.10	8.31	8.57	8.77	9.07	9.31	9.62	10.02	10.35	10.89	11.32	12.01	12.56
0.15	6.34	6.54	6.69	6.92	7.11	7.34	7.65	7.90	8.31	8.64	9.17	9.58
0.20	5.24	5.40	5.52	5.71	5.87	6.06	6.31	6.52	6.86	7.13	7.57	7.91
0.25	4.51	4.65	4.76	4.92	5.06	5.22	5.44	5.62	5.91	6.15	6.52	6.82
0.30	4.00	4.12	4.21	4.36	4.48	4.62	4.82	4.98	5.24	5.44	5.77	6.04
0.35	3.61	3.72	3.80	3.94	4.04	4.17	4.35	4.49	4.72	4.91	5.21	5.45
0.40	3.30	3.40	3.48	3.60	3.70	3.82	3.98	4.11	4.32	4.49	4.77	4.98
0.45	3.05	3.14	3.22	3.33	3.42	3.53	3.68	3.80	4.00	4.15	4.41	4.61
0.50	2.84	2.63	3.00	3.10	3.19	3.29	3.43	3.54	3.72	3.87	4.11	4.30
0.75	2.17	2.24	2.29	2.37	2.43	2.51	2.62	2.70	2.84	2.95	3.14	3.28
1.00	1.79	1.85	1.89	1.96	2.01	2.09	2.16	2.23	2.35	2.44	2.59	2.71
1.25	1.54	1.59	1.63	1.68	1.73	1.78	1.86	1.92	2.02	2.10	2.23	2.33
1.50	1.37	1.41	1.44	1.49	1.53	1.58	1.65	1.70	1.79	1.86	1.97	2.07
1.75	1.23	1.27	1.30	1.35	1.38	1.43	1.49	1.54	1.62	1.68	1.78	1.86
2.00	1.13	1.16	1.19	1.23	1.26	1.31	1.36	1.40	1.48	1.54	1.63	1.70
2.25	1.04	1.08	1.10	1.14	1.17	1.21	1.26	1.30	1.37	1.42	1.51	1.58
2.50	0.97	1.00	1.02	1.06	1.09	1.12	1.17	1.21	1.27	1.32	1.40	1.47
3.00	0.85	0.89	0.91	0.94	0.96	1.00	1.04	1.07	1.13	1.17	1.24	1.30
3.50	0.78	0.80	0.82	0.85	0.87	0.90	0.94	0.97	1.02	1.06	1.12	1.17
4.00	0.71	0.73	0.75	0.78	0.80	0.82	0.86	0.88	0.93	0.97	1.03	1.07
4.50	0.66	0.68	0.69	0.72	0.74	0.76	0.79	0.82	0.86	0.90	0.95	0.99

5.00	0.61	0.63	0.65	0.67	0.69	0.71	0.74	0.76	0.80	0.83	0.88	0.93
7.00	0.49	0.50	0.52	0.53	0.55	0.57	0.59	0.61	0.64	0.67	0.71	0.74
10.0	0.39	0.40	0.41	0.42	0.43	0.45	0.47	0.48	0.51	0.53	0.56	0.58
20.0	0.24	0.25	0.26	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.35	0.37

- a. Table 3-2 from Irrigation with Reclaimed Municipal Wastewater, A Guidance Manual Calculation of adjusted RNA a,b,c
- b. Adapted from Suarez.
- c. The adjusted sodium adsorption ratio ($adj R_{Na}$) is a modification of the SAR procedure. It has long been recognized that calcium in the soil-water is not constant. The calcium concentration at equilibrium depends on both the concentration in the applied water and the dissolution from soil-calcium or precipitation from soil-water. The effect is by soil-water salinity and the concentration of calcium, bicarbonate, and dissolved carbon dioxide. The effects are reflected in the Ca_x value.
- d. The adjusted sodium adsorption ration includes the effects of the factors noted in the above footnote and more correctly predicts the sodium hazard and potential infiltration problem caused by water quality.