

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2005-0040

NPDES NO. CA0085103

MASTER RECLAMATION PERMIT

FOR  
CITY OF LINCOLN

PLACER COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

*BACKGROUND*

1. The City of Lincoln (hereafter Discharger) owns and operates a wastewater collection, treatment and disposal system and provides sewerage service to the City of Lincoln. The Discharger submitted a Report of Waste Discharge, dated 22 June 2003, and applied for a Master Reclamation Permit to reclaim water from the City's wastewater treatment facility (WWTF). The wastewater treatment facility also discharges to surface waters. The surface water discharge from the WWTF is regulated under a separate NPDES permit.
2. The City's WWTF is located at 1245 Fiddymment Road in the City of Lincoln in Assessor's Parcel Number (APN) 021-280-002, with the plant at the point latitude 38° 51' 32" (degrees, minutes, seconds) and longitude 121° 20' 59", as shown on Attachment A, a part of this Order. The storage facilities and current land application areas are located in APNs 021-280-083 and 021-280-140 and are also shown on Attachment A.
3. The facility owned and operated by the Discharger is capable of producing high quality tertiary treated effluent to comply with reclamation criteria. The wastewater treatment system consists of fine screening, biological treatment including nitrification and denitrification in oxidation ditches, and clarification. Tertiary treatment is provided by priority pollutant maturation ponds, dissolved air flotation, chemical coagulation, rapid mix flocculation, granular medium filtration, disinfection with ultraviolet light, and final polishing with effluent reaeration. An emergency storage basin with a 60-mil polyethylene liner with two feet of cover material, capable of holding approximately 79 million gallons, is provided as a long-term storage reliability feature (CCR §60341-60353). The Report of Waste Discharge characterizes the initial actual flow rate from the WWTF as 2.4 million gallons per day (mgd), an initial average design dry weather flow rate of 3.3 mgd and an ultimate average dry weather flow rate of 12.5 mgd.
4. The facility makes use of two tertiary storage basins. Reclamation making use of the disinfected tertiary recycled water can either occur with recycled water as it is being produced or with water that has been stored in one of the tertiary storage basins. The facility has been designed to return tertiary effluent that does not comply with this order to the maturation pond to allow for re-treating through the tertiary facilities. In the event that the tertiary facilities are unable to treat

both process flow and returned water, secondary effluent from the maturation pond will automatically divert to the emergency storage basin where it will require complete re-treating through the entire facility (*i.e.*, both secondary and tertiary treatment). The emergency storage basin can also automatically receive raw sewage in the event of secondary process failure.

5. The Discharger reports that the potential exists for the need to discharge disinfected tertiary effluent to one or both of the tertiary effluent storage basins that may not fully comply with restrictions associated with the use of disinfected tertiary recycled water. An example of such a need would be if it did not appear that either the maturation pond could adequately receive return flow or return of dilute water to the biological process from the emergency storage basin could inhibit the secondary process. Because this quality of effluent does not comply with disinfected tertiary recycled water restrictions, it would be classified as disinfected secondary recycled water and would require appropriate use/disposal.
6. The Discharger currently uses reclaimed water to irrigate fodder crops [CCR §60304(c)(d)], with full tail water return. The Discharger proposes to maintain the fodder crop irrigation areas as an alternative emergency disposal provision [CCR §60341(c)]. In addition to continuing the current reclamation uses, the Discharger has proposed to irrigate rice and has future plans for irrigation, (CCR §60304), impoundments [CCR §60305(2)], industrial process cooling (CCR §60306), and other purposes (CCR §60307) throughout the local community. This Master Reclamation Permit allows for these uses. The irrigation of rice is the only use that will result in reclaimed water being discharged to surface waters, under the conditions that: (1) The discharge from the WWTF to the irrigation area is in full compliance with the California Toxics Rule, National Toxics Rule, Basin Plan Water Quality Objectives and the NPDES permit for that facility; (2) The irrigated rice areas are in full compliance with the Regional Board's agricultural waiver program; (3) The irrigation of rice does not exacerbate vector control problem or cause a nuisance, and; (4) The discharge from the rice fields to surface waters does not cause exceedance of any Receiving Water Limitation contained in this Order.

#### *DISINFECTION USING ULTRAVIOLET (UV) LIGHT*

7. The Discharger utilizes UV to disinfect the wastewater effluent. In a letter dated 15 July 2004, the California Department of Health Services (DHS) outlined the “...*minimum UV disinfection requirements considered appropriate for water recycling projects and wastewater discharges in California.*” DHS recommended, at a minimum, the following permit requirements:
  - a. The system shall be operated to deliver a dose commensurate with the type of filtration treatment being provided (*i.e.*, 100 mJ/cm<sup>2</sup> for granular media, 80 mJ/cm<sup>2</sup> for membranes, and 50 mJ/cm<sup>2</sup> for reverse osmosis).
  - b. The source water (pre-UV) shall comply with the filtration requirements of the current Water Recycling Criteria.

- c. Operation shall be restricted to a specific flow range as determined by the equipment validation and commissioning tests.
- d. Operation shall be restricted to a minimum transmittance.
- e. Lamps shall be switched out when they have reached the end of their rated life.
- f. An operations and maintenance plan (detailing how compliance with the NWRI guidelines will be assured at all times) shall be developed and on file with the RWQCB and DHS.

These recommendations have been incorporated into this Order and the NPDES permit for the wastewater treatment facility as Effluent Limitations and Provisions.

The Discharger has also proposed to not utilize chlorine within the reclamation distribution system. The absence of chlorine will eliminate a possible source of toxicity and the formation of trihalomethanes from the use of reclaimed water. The limitations and prohibitions in this Order are based on an absence of chlorine in the reclaimed water distribution system.

#### *GENERAL RECLAMATION CRITERIA*

- 8. The California Department of Health Services (DHS) has established statewide reclamation criteria in Chapter 3, Division 4, Title 22, California Code of Regulations (CCR), Section 60301, *et seq.* (hereafter Title 22) for the use of reclaimed water. The DHS has also established Guidelines for Use of Reclaimed Water. These requirements implement the reclamation criteria in Title 22 and utilize the DHS recommendations for safely using reclaimed water.
- 9. This Order is adopted pursuant to Section 13523.1, Chapter 7, Article 2 of the California Water Code, which authorizes issuance of a Master Reclamation Permit to suppliers or distributors, or both, of reclaimed water in lieu of issuing individual water reclamation requirements to each Reclaimed Water User (hereafter User(s)).
- 10. Uses of reclaimed water other than those identified in Title 22 are not regulated by this Order. Any other uses of reclaimed water will be regulated under individual Waste Discharge Requirements.
- 11. Reclaimed water is a waste and, as such, any discharge to surface water must be regulated under the National Pollutant Discharge Elimination System (NPDES). The discharge of wastes may not cause degradation of groundwater in accordance with the State Board's antidegradation policy. Reclaimed Water Prohibitions have been included in this Order to assure that

- a. with the exception of tailwater from rice irrigation using disinfected tertiary recycled water, reclaimed water is not discharged to surface waters;
- b. the by-pass or overflow of untreated or partially treated reclamation water is prohibited;
- c. excessive irrigation does not result in excessive runoff;
- d. overspray or runoff is minimized; and
- e. reclaimed water is not used or stored within 50 feet of any well used for domestic water supply.

Groundwater Limitations have been included in this Order to assure that the use of reclaimed water does not degrade groundwater quality.

12. On 6 January 1977, the State Water Resources Control Board (State Board) adopted Resolution No. 77-1, which resolved to encourage water reclamation projects.
13. In 1996, the State Board and the DHS set forth principles, procedures, and agreements to which the agencies committed themselves, relative to the use of reclaimed water in California, in a document titled *Memorandum of Agreement Between the Department of Health Services and The State Water Resources Control Board On The Use of Reclaimed Water* (MOA). This Order is consistent with the MOA.
14. Reclaimed Water limitations have been included in this Order to assure compliance with requirements contained in Title 22 and the DHS-State Board MOA.
15. The Discharger has developed, and the DHS has approved, an Engineer's Report for the use of reclaimed water. The Discharger is required to comply with the Engineer's Report.
16. This use of reclaimed water is exempt from the requirements of Title 23, CCR, Section 2510, *et seq.* (hereafter Chapter 15) and Title 27, CCR, pursuant to Section 2511(b) based on the following:
  - a. The Regional Board is issuing a Master Reclamation permit, and
  - b. The reclamation complies with the Basin Plan, and
  - c. The reclaimed water does not need to be managed according to 22 CCR, Division 4.5, Chapter 11, as a hazardous waste.

17. Regional Board staff consulted with the DHS, the Placer County Environmental Health Department, and the Placer Mosquito Abatement District and considered any recommendations regarding public health aspects for this use of reclaimed water.
18. In a memorandum to Regional Board Executive Officers dated 24 February 2004, State Water Resources Control Board Executive Director Celeste Cantú stated that "...[t]he 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 exceeding an applicable water quality objective in the receiving water."

*RECLAMATION WITH "SECONDARY-23" RECYCLED WATER*

19. CCR, Title 22, Section 60304, Reclamation Criteria, allows surface irrigation of cemeteries, freeway landscaping, restricted access golf courses, ornamental nurseries, sod farms, pasture land for lactating animals, nonedible vegetation (fodder and fiber) croplands, vineyards and orchards (with limitations) with reclaimed water treated to disinfected secondary levels, with a total coliform level not to exceed 23 MPN/100 ml as a 7-day median. The Discharger has utilized reclaimed water from the now abandoned secondary wastewater treatment plant to irrigate fodder crops. The Discharger's WWTF provides a disinfected tertiary recycled level of treatment. The Discharger does not intend to produce a lesser quality of effluent, however has requested that the "secondary-23" reclamation criteria be maintained for emergencies [CCR §60341(c)].
20. The Discharger currently owns the reclamation sites listed in Attachment B. According to the Report of Waste Discharge, these reclamation sites have been designed to accommodate disinfected secondary-23 recycled water. All tailwater is returned. Once treated wastewater leaves the WWTF, these sites do not utilize pipelines that will be used to distribute disinfected tertiary recycled water to other locations. The Discharger stated in the Report of Waste Discharge that it intends, as a contingency, to continue to operate these sites as though they are being irrigated with disinfected secondary-23 recycled water even when they are actually being irrigated with disinfected tertiary recycled water.
21. Field F6 (Attachment B) is also used as a regional flood control basin. The Discharger reports that the irrigation use of the field will not coincide with the use of the field for stormwater control. This Order contains Prohibitions against the discharge of recycled water to surface waters in a manner not specified in this Order. The commingling of recycled water with stormwater in the regional flood control basin is prohibited by this Order. Release of stormwater from the fields is regulated under the NPDES General Industrial Activity Permit (Waste Discharge Identification No. 5S31S016850).

*RECLAMATION WITH "DISINFECTED TERTIARY" RECYCLED WATER*

22. The Discharger, as the community grows, proposes to use reclaimed water off-site for various types of irrigation (e.g., golf course, landscape median, school, playground, park, commercial

landscape and residential), wetlands maintenance, construction (dust control) and industrial process cooling water. Some reclamation uses, such as dust control, have lesser standards prescribed in Title 22 than uses such as playground irrigation. However, other than the clearly specified and regulated reclamation uses in this Order, the Discharger owns and operates only one reclamation storage and distribution system. Therefore, the uses of reclaimed water with the most stringent treatment standards, nonrestricted recreational impoundments and irrigation of public access facilities, is protective of all of the proposed off-site reclamation uses and the treatment requirements associated with “disinfected tertiary recycled water” of Title 22 (CCR §60301.230) have been applied in this permit.

23. To assure compliance with Title 22 Reclamation Criteria, this Order requires that reclaimed water shall, at a minimum, be adequately oxidized, coagulated, filtered, and disinfected. The 30-day average BOD and total suspended solids shall not exceed 10 mg/l, the 7-day average shall not exceed 15 mg/l and the daily maximum shall not exceed 20 mg/l. The median concentration of total coliform bacteria measured in the disinfected effluent shall not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days and the number of total coliform bacteria shall not exceed an MPN of 23 per 100 milliliters in any 30-day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters. A coagulation system shall be used whenever the plant is producing tertiary treated wastewater for unrestricted use. Disinfected tertiary treated wastewater for unrestricted use shall be continuously sampled for turbidity. The turbidity of the filter effluent shall not exceed 2 NTU as a daily average, nor 5 NTU at any time. Reclaimed water in excess of the turbidity limits shall not be allowed enter the reclamation distribution system. An automated distribution system bypass system has been installed to assure compliance with the reclamation criteria.

*IRRIGATION OF RICE WITH “DISINFECTED-TERTIARY” RECYCLED WATER*

24. In the Report of Waste Discharge, the Discharger requested that the master reclamation permit include language allowing for the irrigation of rice with “disinfected-tertiary” recycled water. Based on a letter from the DHS, dated 23 April 2002, resulting from meetings between the Discharger, Regional Board staff, Placer Mosquito Abatement District, and the DHS, this Order requires the following when the Discharger reclaims water by irrigating rice:
- a. Recycled water must contain no more than 10 mg/l of total nitrogen.
  - b. Monitoring of recycled water applied to rice irrigation fields must include monitoring of nitrogen species, including nitrate, nitrite, ammonia, and total Kjeldahl nitrogen, as well as monitoring of flow, BOD, dissolved oxygen, and temperature.
  - c. Mosquito surveillance and control of the application site(s) must be conducted by Placer Mosquito Abatement District.
  - d. Accessibility must be provided to possible mosquito sources and monitoring sites where “disinfected-tertiary” recycled water is used or stored.

- e. Best Management Practices (BMPs) must be developed for mosquito surveillance and control for possible future permits.
25. The irrigation of rice in California does not typically entail full tailwater return systems. Failure to maintain tailwater on-site will result in discharges to surface waters. Discharges to surface waters are subject to federal regulations under the National Pollutant Discharge Elimination System (NPDES). The irrigation of rice, under this Order, is the only use that will result in reclaimed water being discharged to surface waters, under the conditions that: (1) The discharge from the WWTF to the irrigation area is in full compliance with the California Toxics Rule, National Toxics Rule, Basin Plan Water Quality Objectives and the NPDES permit for that facility; (2) The irrigated rice areas are in full compliance with the Regional Board's agricultural waiver program; (3) The irrigation of rice does not exacerbate vector control problem or cause a nuisance; (4) the reclaimed water is treated to a tertiary level and adequately disinfected, and; (5) The discharge from the rice fields to surface waters does not cause exceedance of any Receiving Water Limitation contained in this Order.
26. The Regional Board has adopted Resolution R5-2003-0105, which is a conditional waiver of waste discharge requirements for discharges from irrigated lands within the Central Valley Region. With adoption of the resolution, owners/operators of irrigated lands that discharge waste that can degrade surface water quality must select to obtain regulatory coverage under the Water Code by: (1) Electing to join a coalition group approved by the Regional Board; (2) Filing for an Individual Conditional Waiver, or; (3) Filing a Report of Waste Discharge for Waste Discharge Requirements. This Order requires any rice irrigation areas using reclaimed water in accordance with this Order to comply with the terms and conditions of Resolution R5-2003-0105 and any successors, amendments, and revisions thereto.
27. This Order requires the Discharger, when reclaiming water to irrigate rice, to discharge water from the WWTF of a quality no less than that required to comply with the NPDES permit for the WWTF (currently Order No. 5-01-242) or immediately cease the reclaimed water use.
28. This Order contains Receiving Water Limitations based on Basin Plan water quality objectives, which are applicable to the discharge of reclaimed water from the rice fields.

#### *BENEFICIAL USES OF THE RECEIVING STREAMS*

29. The Regional Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. These requirements implement the Basin Plan.
30. The Discharger certified an EIR in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21100, *et seq.*) in January 2000 to comply with CEQA, which discussed reclaimed water usage from the wastewater treatment facility. The Regional Board reviewed the CEQA documents and concurred that there were no significant impacts on

water quality. The action to adopt waste discharge requirements for the reclamation discharges is exempt from the provisions of CEQA, in accordance with Title 14, California Code of Regulations (CCR), Section 15301.

31. Major surface water drainage courses in the area include Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine. Ingram Slough is tributary to Orchard Creek, which is tributary to Auburn Ravine. Both Auburn Ravine and Markham Ravine are tributary to East Side Canal, Natomas Cross Canal, and the Sacramento River from the Colusa Basin Drain to the "I" Street Bridge. The Basin Plan at page II-2.00 states: "*Existing and potential beneficial uses which currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams.*" The Basin Plan does not specifically identify beneficial uses for Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine, but the Basin Plan does identify present and potential uses for the Sacramento River from the Colusa Basin Drain to the "I" Street Bridge, to which Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine, via East Side Canal and Natomas Cross Canal, are tributary.

The Basin Plan identifies the following beneficial uses for the Sacramento River from the Colusa Basin Drain to the "I" Street Bridge: municipal and domestic supply; agricultural irrigation; water contact recreation, including canoeing and rafting; non-contact water recreation, including aesthetic enjoyment; warm freshwater habitat; cold freshwater habitat; warm migration; cold migration; warm spawning; cold spawning; navigation; and wildlife habitat. In addition, State Board Resolution No. 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution No. 89-056, requires the Regional Board to assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in Table II-1.

The Basin Plan on page II-1.00 states: "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning...*" and with respect to disposal of wastewaters states that "*...disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses.*"

The federal Clean Water Act, Section 101(a)(2), states: "*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.*" Federal Regulations, developed to implement the requirements of the Clean Water Act, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR Sections 131.2 and 131.10, require that all waters of the State be regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after November 28, 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR Section 131.10, requires that uses be attained by implementing effluent limitations, requires that all downstream uses be protected, and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.



In reviewing whether the existing and/or potential uses of the Sacramento River from the Colusa Basin Drain to the "I" Street Bridge apply to Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine, the Regional Board has considered the following facts:

a. Municipal and Domestic Supply and Agricultural Supply

The Regional Board is required to apply the beneficial uses of municipal and domestic supply to Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine based on State Board Resolution No. 88-63 which was incorporated in the Basin Plan pursuant to Regional Board Resolution No. 89-056. In addition, the State Water Resources Control Board (SWRCB) has issued water rights to existing water users along Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine, East Side Canal, Natomas Cross Canal, and the Sacramento River from the Colusa Basin Drain to the "I" Street Bridge downstream of the discharge for irrigation (including stockwatering) uses. Riparian Rights, for landowners along streams and rivers, may not be recorded with the SWRCB. Staff observed homes and farms along Auburn Ravine, which may use the water for domestic and irrigation purposes. Since Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine are low-flow streams, Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine likely provide groundwater recharge during periods of low flow. The groundwater is a source of drinking water. In addition to the existing water uses, growth in the area, downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine.

b. Water Contact and Noncontact Recreation and Esthetic Enjoyment

The Regional Board finds that the discharge flows through residential areas, there is ready public access to Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine, exclusion of the public is unrealistic, contact recreational activities currently exist along Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine and downstream waters, and these uses are likely to increase as the population in the area grows. Regional Board staff have surveyed the downstream water and found ample evidence of contact recreational uses, easy public access, and numerous residential backyards landscaped for waterway access. Prior to flowing into the Sacramento River from the Colusa Basin Drain to the "I" Street Bridge, Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine flows through areas of general public access and residential areas.

c. Groundwater Recharge

In areas where groundwater elevations are below the stream bottom, water from the stream will percolate to groundwater. Since Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine would, without the discharge and the contribution of irrigation flows, at times be dry, it is reasonable to assume that the stream water is lost by

evaporation, flow downstream and percolation to groundwater providing a source of municipal and domestic supply and agricultural water supply.

d. Freshwater Replenishment

When water is present in Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine, there is hydraulic continuity between Auburn Ravine, East Side Canal, Natomas Cross Canal, and the Sacramento River from the Colusa Basin Drain to the "I" Street Bridge. During periods of hydraulic continuity, Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine adds to the water quantity and may impact the quality of water flowing down stream in East Side Canal, Natomas Cross Canal, and the Sacramento River from the Colusa Basin Drain to the "I" Street Bridge.

e. Warm and Cold Freshwater Habitats (including preservation or enhancement of fish and invertebrates) and Wildlife Habitat

Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine flow to East Side Canal, Natomas Cross Canal, and the Sacramento River between the Colusa Basin Drain and the "I" Street Bridge. The California Department of Fish and Game (DFG) has verified that the fish species present in Auburn Ravine and downstream waters are consistent with both cold and warm water fisheries and that rainbow and brown trout, both cold water species, have been found in Auburn Ravine to its headwaters in Auburn. The Basin Plan (Table II-1) designates the Sacramento River from the Colusa Basin Drain to the "I" Street Bridge as being both a cold and warm freshwater habitat. The habitat designation for the upstream waters is appropriate since DFG has verified the presence of both salmon and steelhead (an anadromous species) in Auburn Ravine. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to Auburn Ravine, East Side Canal, and Natomas Cross Canal. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/l.

Upon review of the flow conditions, habitat values, and beneficial uses of Auburn Ravine, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Sacramento River from the Colusa Basin Drain to the "I" Street Bridge are applicable to Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine.

32. The Clean Water Act, Section 303(a-c), required states to adopt numeric criteria where they are necessary to protect designated uses. The Regional Board adopted numeric criteria in the Basin Plan. The Basin Plan is a regulatory reference for meeting the state and federal requirements for water quality control (40 CFR 131.20). State Board Resolution No. 68-16, the Antidegradation Policy, does not allow changes in water quality less than that prescribed in Water Quality Control Plans (Basin Plans). The Basin Plan states that: *"The numerical and narrative water quality objectives define the least stringent standards that the Regional Board will apply to*

*regional waters in order to protect the beneficial uses.”*

33. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

#### *RECEIVING WATER LIMITATIONS*

34. This Order contains Receiving Water Limitations based on the Basin Plan numerical and narrative water quality objectives for Biostimulatory Substances, Chemical Constituents, Color, Dissolved Oxygen, Floating Material, Oil and Grease, pH, Pesticides, Salinity, Sediment, Settleable Material, Suspended Material, Tastes and Odors, Temperature, Toxicity and Turbidity. The Basin Plan includes numeric water quality objectives for various beneficial uses and water bodies. Numeric Basin Plan objectives that are applicable to this discharge and which have been included as Receiving Water Limitations are:
- a. *Bacteria*—The Basin Plan includes a water quality objective that “[i]n waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.” The Sacramento River is designated as having a beneficial use of contact recreation. As described in Finding 31.b, the beneficial use of water contact recreation is applicable to Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine. A numeric Receiving Water Limitation for bacteria is included in this Order and is based on the Basin Plan objective for bacteria.
  - b. *Dissolved Oxygen*—The Basin Plan includes a water quality objective that “[f]or surface water bodies outside the legal boundaries of the Delta, the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent saturation.” In addition, for water bodies designated as having the beneficial uses of cold freshwater habitat or spawning, reproduction, and/or early development, the Basin Plan includes an objective that the dissolved oxygen concentration not fall below 7.0 mg/l at any time. The Sacramento River is designated as having the beneficial uses of warm freshwater habitat and a cold fish migration and spawning habitat. As described in Finding 31.e, the beneficial uses of cold fish migration and spawning habitat are applicable to Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine. Numeric Receiving Water Limitations for minimum dissolved oxygen concentration and percent saturation are included in this Order and are based on the Basin Plan objectives.
  - c. *pH*—The Basin Plan includes water quality objectives that the pH “...not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.” The Sacramento

River is designated as having both COLD and WARM beneficial uses. As described in Finding 31.e, the beneficial uses of cold fish migration and spawning habitat are applicable to Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine. The change in pH of 0.5 (standard pH units) is not included as necessary to protect aquatic life in U.S. EPA's Ambient Criteria for the Protection of Freshwater Aquatic Life as long as pH does not fall below 6.5 or exceed 8.5 units. Therefore, an averaging period of 30 days has been applied to the Basin Plan receiving water objective for changes in pH. Numeric Receiving Water Limitations for pH are included in this Order and are based on the Basin Plan objectives for pH.

- d. *Temperature*—The Basin Plan includes a water quality objective that “[a]t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature.” The Sacramento River is designated as having both COLD and WARM beneficial uses. As described in Finding 31.e, the beneficial uses of cold fish migration and spawning habitat are applicable to Ingram Slough, Orchard Creek, Auburn Ravine, and Markham Ravine. A numeric Receiving Water Limitation for temperature is included in this Order and is based on the Basin Plan objective for temperature.
- e. *Turbidity*—The Basin Plan includes a water quality objective that “[i]ncreases in turbidity attributable to controllable water quality factors shall not exceed the following limits:
- *Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.*
  - *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*
  - *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
  - *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.”*

A discharge from a rice irrigation area is a controllable water quality factor. In high quality ephemeral or low-flow streams, the natural turbidity may be less than 5 NTU. Turbidity at these levels is based on antidegradation and is not expected to have any impact on aquatic life. A numeric Receiving Water Limitation for turbidity is included in this Order and is based on the Basin Plan objective for turbidity.

#### GROUNDWATER

35. The beneficial uses of the underlying groundwater include municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.
36. This Order regulates the discharge of reclaimed water. The reclaimed water has been treated to a tertiary level, with the limited exception for emergency discharges, as specified in the “secondary disinfected” section of this Order. With the limited exception for emergency situations, only tertiary treated wastewater will be applied to land where it may percolate to groundwater. There is an existing groundwater monitoring well network, presented in Attachment B, at the reclamation areas that would potentially accept “secondary-23” water, which will continue to be monitored.
37. State Board Resolution No. 68-16 (“Statement of Policy with Respect to Maintaining High Quality of Waters of the State”) (hereafter Resolution 68-16) requires the Regional Board in regulating the discharge of waste to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board’s policies (*e.g.*, quality that does not conform to water quality objectives). Resolution 68-16 characterizes “high quality waters” as waters that are of higher quality than that established in policies “*as of the date on which such policies become effective.*” In addition, Resolution 68-16 requires that discharges of waste to high quality waters “*be required to meet waste discharge requirements which will result in the best practicable treatment or control (BPTC) of the discharge necessary to assure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.*” Based on the available information, it appears that the Discharger provides BPTC and the discharge will not degrade groundwater quality, will not unreasonably affect beneficial uses or cause exceedance of water quality objectives. If ongoing sampling of the groundwater reveals a threat to groundwater quality, this permit may be reopened and specific groundwater limitations added. This Order requires the discharge to not degrade groundwater quality.
38. The Basin Plan encourages recycling on irrigated crops wherever feasible and indicates that evaporation of recyclable wastewater is not an acceptable permanent disposal method where the opportunity exists to replace an existing use or proposed use of fresh water with recycled water. The use of municipal wastewater for irrigation at agronomic rates will have a comparable impact on groundwater as fresh water extracted and used for irrigation of the same crop with separate wastewater infiltration. Beneficial reuse of wastewater conserves freshwater resources and is encouraged by the Basin Plan and agronomic application rates of wastewater cause comparable impact as widespread freshwater irrigation practices. Accordingly, benefits of groundwater monitoring in wastewater reuse areas do not justify the cost, provided the rates of wastewater applications do not exceed reasonable agronomic rates.

*GENERAL*

39. Pursuant to CWC Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.
40. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 *et seq.* (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:
  - a. The waste consists primarily of domestic sewage and treated effluent;
  - b. The waste discharge requirements are consistent with water quality objectives; and
  - c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.
41. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the state to assure protection of beneficial uses and compliance with Regional Board plans and policies, including Resolution 68-16.
42. Monitoring is required by this Order for the purposes of assessing compliance with permit limitations and water quality objectives and gathering information to evaluate the need for additional limitations.
43. This permit, and the Monitoring and Reporting Program which is a part of this permit, requires that certain parameters be monitored on a continuous basis. The Wastewater Treatment Facility is not staffed 24 hours per day. The Discharger has established an electronic system for operator notification and automatic diversion from the reclamation distribution system for continuous recording device alarms.
44. Section 13267 of the California Water Code states, in part, “(a) A regional board, in establishing...waste discharge requirements... may investigate the quality of any waters of the state within its region” and “(b) (1) In conducting an investigation..., the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring these reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify evidence that

*supports requiring the person to provide the reports.” The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.* The attached Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267. The technical reports required by this Order and the attached Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The City of Lincoln is responsible for the discharges of waste at the facility subject to this Order and is, therefore, subject to CWC Section 13267(b).

45. The California Department of Water Resources set standards for the construction and destruction of groundwater wells, as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the State or county pursuant to CWC Section 13801, apply to all monitoring wells.
46. The Regional Board has considered the information in the attached Fact Sheet in developing the Findings of this Order. The Fact Sheet, Monitoring and Reporting Program No. R5-2005-0040, and Attachment A are a part of this Order.
47. The U.S. Environmental Protection Agency (U.S. EPA) and the Regional Board have classified this discharge as a major discharge.
48. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, *et seq.*), requiring preparation of an environmental impact report or negative declaration in accordance with Section 13389 of the California Water Code.
49. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
50. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
51. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon **1 April 2005**, provided U.S. EPA has no objections.

**IT IS HEREBY ORDERED** that the City of Lincoln, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted

thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

**A. Reclaimed/Recycled Water Prohibitions:**

1. The discharge of recycled water to surface waters in a manner not specified by this Order is prohibited.
2. By-pass or overflow of untreated or partially treated recycled water from the wastewater treatment plant, any intermediate unit processes, or the reclamation distribution system to the point of use is prohibited.

The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Standard Provision A.13. [See attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)"].

3. Excessive irrigation with recycled water that results in excessive runoff of recycled water, or continued irrigation of recycled water during periods of rain is prohibited. Overspray or runoff associated with normal sprinkler use shall be minimized.
4. Application of recycled water within 50 feet of any well used for domestic water supply is prohibited.
5. Impoundment of recycled water within 100 feet of any well used for domestic water supply is prohibited.
6. Use of recycled water that is conducted without using proper Best Management Practices and that would result in either direct or indirect discharges to surface waters or a surface water drainage course is prohibited.
7. Spray irrigation with recycled water when wind velocities exceed 30 mph is prohibited.
8. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes degradation of groundwater quality.
9. The use of recycled water shall not cause pollution or a nuisance as defined by Section 13050 of the California Water Code (CWC).



**B. Secondary-23 Recycled Water Limitations:**

1. Reclaimed water shall only be discharged to the specified “secondary-23” reclamation areas on an “emergency basis” and shall not exceed the following limits when discharging to areas where secondary-23 quality water is allowed (see Attachment B):

<u>Constituents</u>	<u>Units</u>	<u>Average Monthly</u>	<u>7-Day Median</u>	<u>Average Daily</u>	<u>Instantaneous Maximum</u>
BOD <sup>1</sup>	mg/l	40 <sup>2</sup>	--	--	--
Settleable Solids	m//l·hr	--	--	0.5	--
Total Coliform Organisms <sup>3</sup>	MPN/100ml	--	23	--	240 <sup>4</sup>

- 
- 1 5-day, 20°C biochemical oxygen demand (BOD)
  - 2 To be ascertained by a 24-hour composite
  - 3 Compliance to be documented immediately following disinfection process.
  - 4 Not to be exceeded more than once in a 30-day period.

2. Reclaimed water shall be treated to a secondary level and adequately disinfected.
3. The discharge from the WWTF to the storage ponds shall not have a pH less than 6.5 nor greater than 8.5.
4. All tailwater from the irrigation areas shall be returned.
5. Reclaimed water used for the surface or spray irrigation of fodder, fiber, and seed crops shall have a level of quality no less than secondary-23 recycled water as specified in No. B.1 above.
6. Direct or windblown spray and mist shall be confined to the area designated for reclamation.
7. Public contact with reclaimed water shall be minimized by fences, setbacks, and signs warning of the use of reclaimed water.

**C. Disinfected Tertiary Recycled Water Limitations:**

1. Wastewater shall be oxidized, coagulated, filtered, and disinfected, or equivalent treatment provided.
2. Disinfection of tertiary treated wastewater by ultraviolet light shall be accomplished by the following:
  - a. The system shall be operated to deliver a dose commensurate with the type of filtration treatment being provided (*i.e.*, 100 mJ/cm<sup>2</sup> for granular media, 80 mJ/cm<sup>2</sup> for membranes, and 50 mJ/cm<sup>2</sup> for reverse osmosis).

- b. The source water (pre-UV) shall comply with the filtration requirements of the current Water Reclamation criteria contained in the California Code of Regulations, Title 22, Chapter 3, §13485.
  - c. Operation shall be restricted to a specific flow range as determined by the equipment validation and commissioning tests.
  - d. Lamps shall be switched out when they have reached the end of their rated life.
3. The coagulation system shall be used whenever the facility is producing tertiary treated wastewater for unrestricted use. For the purpose of maintenance and repair of the system, the Discharger is allowed to have the coagulation system off-line for short periods of time (up to 30 minutes for each occurrence), when the turbidity of the influent to the tertiary treatment plant is less than 5 NTU.
4. Disinfected tertiary treated wastewater for unrestricted use shall be continuously sampled for turbidity using a continuous turbidity meter and recorder at a point prior to filtration and again following filtration. Turbidity measurements shall be based on a reading and recording of the turbidity strip charts or computer records at four-hour intervals at least once per day. The results of the daily average turbidity determination shall be reported to the Regional Board.
5. The turbidity of the filter effluent shall not exceed 2 NTU as a daily average, nor 5 NTU at any time. Reclaimed water in excess of the turbidity limitations shall not enter the reclamation distribution system. An automated reclaimed water distribution system bypass is required to assure that water in excess of the turbidity limit does not enter the system.
6. Water in the surface layer of any pond or earthen reservoir containing reclaimed water shall meet the following limitations at all times:
  - a. Dissolved oxygen shall not be less than 1.0 mg/l.
  - b. pH shall not be less than 6.0 or greater than 9.0.
  - c. The freeboard shall not be less than 2 feet.
7. Effluent shall, at a minimum, be of the same quality as that required to comply with the surface water discharge requirements of the NPDES permit for the WWTF (Order No. 5-01-242 and its successors). Reclaiming shall cease if the effluent is of a lesser quality.
8. The average daily concentration of total nitrogen in effluent used to irrigate rice shall not exceed 10 mg/l and the total nitrogen loading to the irrigation area shall not exceed agronomic rates.

**D. Reclaimed Water Specifications**

1. Neither the treatment nor the use of reclaimed water shall cause a pollution or nuisance as defined by Section 13050 of the California Water Code.
2. The use of reclaimed water shall not cause degradation of any water supply.
3. Reclaimed water shall be managed in conformance with the regulations contained in Title 22, Division 4, Chapter 3, California Code of Regulations.
4. All reclamation equipment, pumps, piping, valves, and outlets shall be appropriately marked to differentiate them from potable facilities. All reclamation distribution system piping shall be purple or adequately wrapped with purple tape.
5. Reclaimed water controller, valves, and similiary appurtenances shall be affixed with reclaimed water warning signs, and shall be equipped with removable handles, locking mechanisms, or some other means to prevent public access or tampering. The contents of the signs shall conform to Section 60310 of Title 22. Quick couplers and sprinkler heads, if used, shall be of a type, or secured in a manner, that permits operation only by authorized personnel. Hose bibs that the public could use shall be eliminated.
6. Perimeter warning signs indicating that reclaimed water is in use shall be posted as prescribed in the Users Reclamation Plan, which is subject to approval by the Regional Board and the DHS.
7. Reclaimed water shall not be allowed to escape from the authorized use areas by airborne spray or by surface flow except in minor amounts such as that associated with good irrigation practices.
8. Direct or windblown spray of reclaimed water shall be confined to the designated land application area and shall be prevented from entering outdoor eating areas, dwellings, drinking water facilities, food handling facilities, and other locations where the public may be present. In addition, direct or windblown spray of reclaimed water shall not enter surface watercourses.
9. A 15-foot buffer zone shall be maintained between any watercourse and the wetted area produced during land application of effluent.
10. Application of wastewater to land shall not be performed within 24 hours before a forecasted storm, during precipitation, or within 24 hours after any precipitation event, nor when the ground is saturated.

11. A minimum freeboard of two (2) feet shall be maintained at all times in any reservoir or pond containing reclaimed water, except with prior written authorization by the Regional Board' Executive Officer.
12. All reservoirs and ponds shall be adequately protected from erosion, washout, and flooding from a rainfall event having a predicted frequency of once in 100 years.
13. There shall be at least a ten-foot horizontal and one-foot vertical separation at crossings between all pipelines transporting reclaimed water and those transporting domestic supply, with the domestic supply above the reclaimed water pipeline, unless approved by the DHS.
14. There shall be no cross-connections between potable water supply piping and piping containing reclaimed water. Supplementing reclaimed water with potable water shall not be allowed except through an air-gap separation or, if approved by the DHS, a reduced-pressure principle backflow device.
15. Areas irrigated with reclaimed water shall be managed to prevent ponding and conditions conducive to the proliferation of mosquitoes and other disease vectors, and to avoid creation of a public nuisance or health hazard. The following practices shall be implemented, at a minimum:
  - a. All applied irrigation water must either infiltrate within a 48-hour period, or a mosquito abatement plan, approved by the Placer Mosquito Abatement District, must be implemented when water is not infiltrated within a 48-hour period.
  - b. Ditches receiving irrigation runoff, not serving as wildlife habitat, shall be maintained free of emergent, marginal, and floating vegetation.
  - c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.
16. The reclaimed water piping system shall not include any hose bibs, except at the treatment facility.
17. The Discharger shall arrange for the provision of mosquito surveillance and control by Placer Mosquito Abatement District when reclaiming by irrigation of rice.
18. The Discharger shall provide accessibility through ways and means to possible mosquito sources and monitoring sites where disinfected tertiary recycled water is stored or used. This should include increased widths to rice contour levees or built-up areas that allow ingress and egress of Placer Mosquito Abatement District personnel and equipment.

**E. Storage Pond Limitations:**

1. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.
2. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas.
3. As a means of discerning compliance with Discharge Specification No.E.1, the dissolved oxygen content in the upper zone (1 foot) of wastewater in ponds shall not be less than 1.0 mg/l.
4. Basin freeboard shall never be less than two feet (measured vertically to the lowest point of overflow).
5. Ponds shall not have a pH less than 6.5 or greater than 8.5 as a daily average.
6. Ponds shall be managed to prevent breeding of mosquitoes. In particular,
  - a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
  - b. Weeds shall be minimized.
  - c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

**F. Receiving Water Limitations:**

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit.

The discharge of rice irrigation tailwater shall not cause the following in receiving waters:

1. The fecal coliform concentration in any 30-day period to exceed a geometric mean of 200 MPN/100 ml or cause more than 10 percent of total samples to exceed 400 MPN/100 ml.
2. Biostimulatory substances that promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
3. Esthetically undesirable discoloration.

4. Concentrations of dissolved oxygen to fall below 7.0 mg/l. The monthly median of the mean daily dissolved oxygen concentration shall not fall below 85 percent of saturation in the main water mass, and the 95<sup>th</sup> percentile concentration shall not fall below 75 percent of saturation.
5. Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
6. Oils, greases, waxes, or other materials to accumulate in concentrations that cause nuisance or adversely affect beneficial uses.
7. The ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units. A one-month averaging period may be applied when calculating the pH change of 0.5 units.
8. Deposition of material that causes nuisance or adversely affects beneficial uses.
9. Taste or odor-producing substances to impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.
10. The ambient temperature to increase more than 5°F.
11. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental physiological responses in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health or wildlife.
12. The turbidity to increase as follows:
  - a. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.
  - b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.
  - c. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.
  - d. More than 10 percent where natural turbidity is greater than 100 NTUs.
13. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.

**G. Groundwater Limitations:**

The discharge of reclaimed water shall not cause groundwater quality to be degraded.

**H. Provisions:**

1. The Discharger shall establish and enforce rules and/or regulations for Users governing the design and construction of reclaimed water use facilities and the use of reclaimed water in accordance with the criteria established in Title 22 and this Order.
2. The Discharger shall develop administrative procedures and User Agreements requiring compliance with Title 22 criteria, this Order, and the DHS Guidelines for the Use of Reclaimed Water. Upon approval of the Discharger's procedures and Agreement, the Discharger may authorize specific additional reclamation projects on a case-by-case basis in accordance with the approved program and Agreements.
3. The Discharger shall be responsible for ensuring that reclaimed water meets the quality standards of this Order and for the operation and maintenance of transport facilities and associated appurtenances. The Discharger shall hold the Users responsible for the application and use of reclaimed water on their designated use areas and associated operations and maintenance in accordance with all applicable Title 22 requirements and this Order.
4. The Discharger shall conduct periodic inspections of the Users' facilities and operations to monitor and assure compliance with conditions of the Discharger's permit and this Order. The Discharger shall take whatever actions are necessary, including termination of delivery of reclaimed water to the User, to correct any User violations. The Discharger shall maintain a right-of-entry for all properties where reclaimed water is used and shall conduct regular inspections to assure cross connections are not made with potable water systems and that air-gap devices are installed and operable. The Discharger shall produce, maintain, and comply with Engineer's Reports, in accordance with Title 22, Sections 60323 and 60314, which must be approved by the California Department of Health Services.
5. The Discharger shall submit a notice to the Regional Board in anticipation of reclaiming water at a new location, prior to the commencement of reclamation activities at the new location. The notice shall include the following: the site location, the County Assessor Parcel Number(s), the name of the property owner, the name of the User, and a User Reclamation Plan. The User Reclamation Plan shall include the anticipated volume of reclaimed water to be used, identify the on-site supervisor who is knowledgeable of the User Reclamation Plan, describe the reclaimed water management facilities and operations plan, reflect consultation with state and local health departments, and explain in detail how compliance with the User Reclamation Plan, Title 22 criteria, and the requirements of the Master Reclamation Permit will be achieved.

6. The Discharger shall develop and submit to the Regional Board, Placer Mosquito Abatement District, and the Department of Health Services (Vector-Borne Disease Section) Best Management Practices (BMPs) concerning mosquito surveillance and control measures within the rice fields no later than **1 April 2005**. The BMPs shall be reviewed at least annually and revisions shall be made as necessary.
7. The Regional Board has adopted Resolution R5-2003-0105, which is a conditional waiver of waste discharge requirements for discharges from irrigated lands within the Central Valley Region. The Discharger shall require any rice irrigation user of reclaimed water from the WWTF that discharges to a surface water to comply with the terms and conditions of Resolution R5-2003-0105 and any successors, amendments, and revisions thereto.
8. If, in the opinion of the Executive Officer, reclamation at proposed new locations cannot be adequately regulated under the Master Reclamation Permit, a Report of Waste Discharge may be requested and individual Water Reclamation Requirements may be formulated.
9. In the event the Discharge does not comply, or will be unable to comply for any reason, with any prohibition, limitation, specification, or receiving water limitation, the Discharger shall notify the Regional Board by telephone within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within five days, unless the Regional Board waives confirmation. The written notification shall state the nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the current noncompliance and prevent recurrence including, where applicable, a schedule of implementation.
10. The Discharger shall comply with both Monitoring and Reporting Program No. 5-01-242 (and any successors, amendments, and revisions thereto) and Monitoring and Reporting Program No. R5-2005-0040, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

When requested by U.S. EPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger Self Monitoring Reports.

11. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.



12. The Discharger shall comply with the criteria established in Title 22. Uses of reclaimed water other than irrigation of rice and those uses identified in Title 22 are not regulated by this Order, are to be considered on a case-by-case basis, and will be regulated under a separate Order.
13. The Regional Board will review this Order periodically and will revise requirements when necessary.
14. The Discharger shall use best practicable treatment and control, including proper operation and maintenance, to comply with terms of this Order.
15. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, Sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, Sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
16. **Operations and Maintenance Plan.** An operations and maintenance plan detailing how compliance with the NWRI guidelines will be assured at all times shall be developed and submitted to the Regional Board and to the DHS.
17. **Ultraviolet Validation Report.** An ultraviolet disinfection validation report shall be prepared and submitted to the Regional Board and to the DHS no later than **31 December 2005**.
18. **Groundwater Monitoring Tasks.** The Discharger shall continue to monitor groundwater in existing monitoring wells in accordance with the MRP unless and until individual existing wells are removed from the approved network and properly closed or the use of the equalization basins is discontinued, in which case the groundwater monitoring may cease. After the first sampling event, the Discharger shall report on its sampling protocol as specified in this Order's MRP. After two years of monitoring, the Discharger shall characterize natural background quality of monitored constituents in a technical report. The report shall present a summary of monitoring data and determine natural background quality for each parameter/constituent identified in the MRP based on data from at least eight consecutive groundwater monitoring events using the methods described in Title 27, Section 20415(e)(10). For each parameter/constituent, the report shall compare measured concentrations in wells used to monitor impacts from the discharge against the calculated natural background concentration.

19. Minimum quantitation levels for monitoring required by this Order shall, unless impracticable, be adequate to demonstrate compliance with permit limitations.
20. The Discharger shall use the best practicable treatment or control technique currently available to limit mineralization to no more than a reasonable increment.
21. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated February 2004, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."
22. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect on **1 April 2005**, provided U.S. EPA has no objections.
23. This Order expires on **31 March 2010** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.
24. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.
25. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 17 March 2005.

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THOMAS R. PINKOS, Executive Officer

MRH

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2005-0040

NPDES NO. CA0085103

FOR

CITY OF LINCOLN  
MASTER RECLAMATION PERMIT  
PLACER COUNTY

Recycled water produced by the WWTF is monitored per Monitoring and Reporting Program No. 5-01-242 (and any successors, amendments, and revisions thereto). This Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267 and 13383. The Discharger shall not implement any changes to this Program unless and until the Regional Board or Executive Officer issues a revised Monitoring and Reporting Program. Specific sample station locations shall be established under direction of the Regional Board's staff, and a description of the stations shall be attached to this Order.

**SECONDARY-23 RECYCLED WATER SUPPLY MONITORING TO STORAGE PONDS**

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the distribution, following the last unit process. Effluent samples should be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded.

Effluent monitoring shall include at least the following:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow	mgd	Meter	Continuous
pH	Number	Meter	Continuous <sup>1</sup>
Turbidity	NTU	Meter	Continuous <sup>1</sup>
Electrical Conductivity @ 25°C	µmhos/cm	Grab	5 Times Weekly
Settleable Solids	m/l	24-hr Composite <sup>2</sup>	5 Times Weekly
Total Coliform Organisms <sup>3</sup>	MPN/100 ml	Grab	3 Times Weekly
20°C BOD <sub>5</sub>	mg/l	24-hr Composite <sup>2</sup>	3 Times Weekly
Total Suspended Solids	mg/l	24-hr Composite <sup>2</sup>	3 Times Weekly

- 1 The continuous monitoring system, or functional equivalent, shall be operational no later than **1 September 2006**. Until that time, grab samples shall be collected and analyzed daily.
- 2 These samples shall be flow-proportional composite samples.
- 3 Total coliform organisms samples may be collected at any point following disinfection, provided that samples are dechlorinated at the time of collection. The Discharger shall report the sampling location(s) in the monthly self-monitoring reports.

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Ammonia, Total (as N) <sup>4, 5, 6, 7</sup>	mg/l	Grab	Twice Weekly
Nitrate (as N) <sup>8</sup>	mg/l	Grab	Twice Monthly
Nitrite (as N) <sup>8</sup>	mg/l	Grab	Twice Monthly
Total Dissolved Solids	mg/l	Grab	Monthly

4 Report as total ammonia.

5 Concurrent with biotoxicity monitoring.

6 In reporting lbs/day, the Discharger shall report both the lbs/day discharged and the calculated lbs/day limitation.

7 Temperature and pH shall be recorded at the time of ammonia sample collection.

8 Nitrate and nitrite must be sampled concurrently.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed above, except for priority pollutants, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

### **DISINFECTED TERTIARY RECYCLED WATER SUPPLY MONITORING TO OFF-SITE USERS**

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the distribution system, following the last unit process. Effluent samples should be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded.

In addition to monitoring that would be required if the discharge were to Auburn Ravine under the NPDES permit for the WWTF (currently Order No. 5-01-242 and Monitoring and Reporting Program No. 5-01-242), effluent monitoring shall include at least the following:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow	mgd	Meter	Continuous
pH	Number	Meter	Continuous
Turbidity <sup>1</sup>	NTU	Meter	Continuous
Total Coliform Organisms <sup>2</sup>	MPN/100 ml	Grab	Daily

1 The turbidity shall be continuously recorded. The recorded charts shall be maintained by the Discharger for at least five years. Disinfected tertiary treated wastewater for unrestricted use shall be continuously sampled for turbidity using a continuous turbidity meter and recorder at a point prior to filtration and again following filtration. The maximum daily peak and daily average turbidity shall be reported on the monthly monitoring reports.

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Dissolved Oxygen	mg/l	Grab	Daily <sup>3</sup>
Nitrate (as N)	mg/l	Grab	Daily
Nitrite (as N)	mg/l	Grab	Daily <sup>3</sup>
Total Ammonia (as N)	mg/l	Grab	Daily
Total Kjeldahl Nitrogen (as N)	mg/l, lbs/day	Grab	Daily <sup>3</sup>

2 The total coliform organisms concentration shall be sampled daily; the results shall be reported on the monthly discharger self-monitoring report as daily maximum, 7-day median, and 30-day maximum.

3 Required only when reclaiming to rice irrigation.

### RECEIVING WATER MONITORING FOR DISCHARGES FROM RICE IRRIGATION RECLAMATION AREAS

All receiving water samples shall be grab samples. Receiving water monitoring shall be conducted when rice irrigation reclamation areas discharge to surface water(s) and shall include at least the following:

<u>Station</u>	<u>Description</u>
R-1	Receiving surface water, as far as possible upstream from the point of discharge while still being below the first downstream agricultural discharge, but no more than 50 feet upstream.
R-2	Receiving surface water, as far as possible downstream from the point of discharge while still being above the first downstream agricultural discharge, but no more than 200 feet downstream

<u>Constituents</u>	<u>Units</u>	<u>Station</u> <sup>1</sup>	<u>Sampling Frequency</u> <sup>2</sup>
Dissolved Oxygen <sup>3</sup>	mg/l <sup>4</sup>	R-1, R-2	Weekly
pH <sup>3</sup>	% saturation <sup>5</sup> Number	R-1, R-2	Weekly

1 For each rice irrigation discharge location.

2 Sampling shall begin on the first day of discharge and proceed at the frequency listed below.

3 A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the WWTF.

4 Temperature shall be determined at the time of sample collection for use in determining saturation concentration. Any additional factors or parameters used in determining saturation concentration shall also be reported.

5 Report both percent saturation and saturation concentration.

<u>Constituents</u>	<u>Units</u>	<u>Station</u> <sup>1</sup>	<u>Sampling Frequency</u> <sup>2</sup>
Turbidity <sup>3</sup>	NTU	R-1, R-2	Weekly
Temperature <sup>3</sup>	°F (°C)	R-1, R-2	Weekly
Electrical Conductivity @ 25°C <sup>3</sup>	µmhos/cm	R-1, R-2	Weekly
Fecal Coliform Organisms	MPN/100 ml	R-1, R-2	Quarterly

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations R-1 and R-2. Attention shall be given to the presence or absence of:

- |                                 |  |
|---------------------------------|--|
| a. Floating or suspended matter | e. Visible films, sheens, or coatings      |
| b. Discoloration                | f. Fungi, slimes, or objectionable growths |
| c. Bottom deposits              | g. Potential nuisance conditions           |
| d. Aquatic life                 |  |

Notes on receiving water conditions shall be summarized in the monitoring report.

### **GROUNDWATER MONITORING**

Groundwater grab samples shall be collected from all groundwater monitoring wells. Prior to collecting samples and after measuring the water level, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging typically does not exceed 3 to 5 volumes of the standing water within the well casing and screen, or additionally the filter pack pore volume. At least quarterly and concurrently with groundwater quality sampling, the Discharger shall measure the water level in each well as groundwater depth (in feet and hundredths) and as groundwater surface elevation (in feet and hundredths above mean sea level). Samples shall be collected from approved monitoring wells and analyzed for at least the following constituents:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Depth to Groundwater <sup>1</sup>	feet	Measured	Quarterly <sup>2</sup>
Groundwater Elevation <sup>1</sup>	feet	Calculated	Quarterly <sup>2</sup>
pH	pH Units	Grab	Quarterly <sup>2</sup>
Chemical Oxygen Demand	mg/l	Grab	Quarterly <sup>2</sup>

1 The groundwater elevation shall be used to calculate the direction and gradient of groundwater flow. Elevations shall be measured to the nearest one-hundredth of a foot from mean sea level. The groundwater elevation and depth to groundwater shall be measured prior to purging the wells.  
 2 January, April, July and October

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Total Coliform Organisms	MPN/100 ml	Grab	Quarterly <sup>2</sup>
Nitrate (as N)	mg/l	Grab	Quarterly <sup>2</sup>
Electrical Conductivity at 25°C	µmhos/cm	Grab	Quarterly <sup>2</sup>
Total Dissolved Solids	mg/l	Grab	Quarterly <sup>2</sup>

### REPORTING

Discharger self-monitoring results shall be submitted to the Regional Board monthly. Monitoring results shall be submitted by the **first day of the second month** following sample collection. Quarterly, semi-annual, and annual monitoring results shall be submitted by the **first day of the second month following each calendar quarter**.

In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the reported analytical result are readily discernible. The data shall be summarized in such a manner to clearly illustrate whether the discharge complies with waste discharge requirements. Monthly maximums, minimums, and averages shall be reported for each monitored constituent and parameter. Removal efficiencies (%) for biochemical oxygen demand and total suspended solids and all periodic averages and medians for which there are limitations shall also be calculated and reported.

The Discharger shall report minimum levels and method detection limits as defined in and required by the SIP.

With the exception of flow, all constituents monitored on a continuous basis (metered), shall be reported as daily maximums, daily minimums, and daily averages; flow shall be reported as the total volume discharged per day for each day of discharge.

If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the discharge monitoring report form. Such increased frequency shall be indicated on the discharge monitoring report form.

Quarterly groundwater monitoring reports shall be submitted under separate cover to the Regional Board by the **1<sup>st</sup> day of the second month following each calendar quarter** (*i.e.*, the first quarter report is due by May 1<sup>st</sup>). The Quarterly Report shall include the following:

- a. Tabular summary of groundwater monitoring results.

- b. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum.
- c. An assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends, if any.
- d. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable).
- e. A comparison of the monitoring data during the reporting period to numerical groundwater limitations in the WDRs and an explanation of any exceedances of limitations.
- f. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring (reference to previous submitted report(s) describing standard sampling procedures is acceptable).
- g. Field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged.
- h. Summary data tables of historical and current water table elevations and analytical results.
- i. Copies of laboratory analytical report(s) for groundwater monitoring.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions.

By **1 February** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

- a. *The names, certificate grades, and general responsibilities of all persons employed at the WWTF (Standard Provision A.5).*



- b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.*
- c. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.6).*
- d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment facility as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.*

The Discharger may also be requested to submit an annual report to the Regional Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

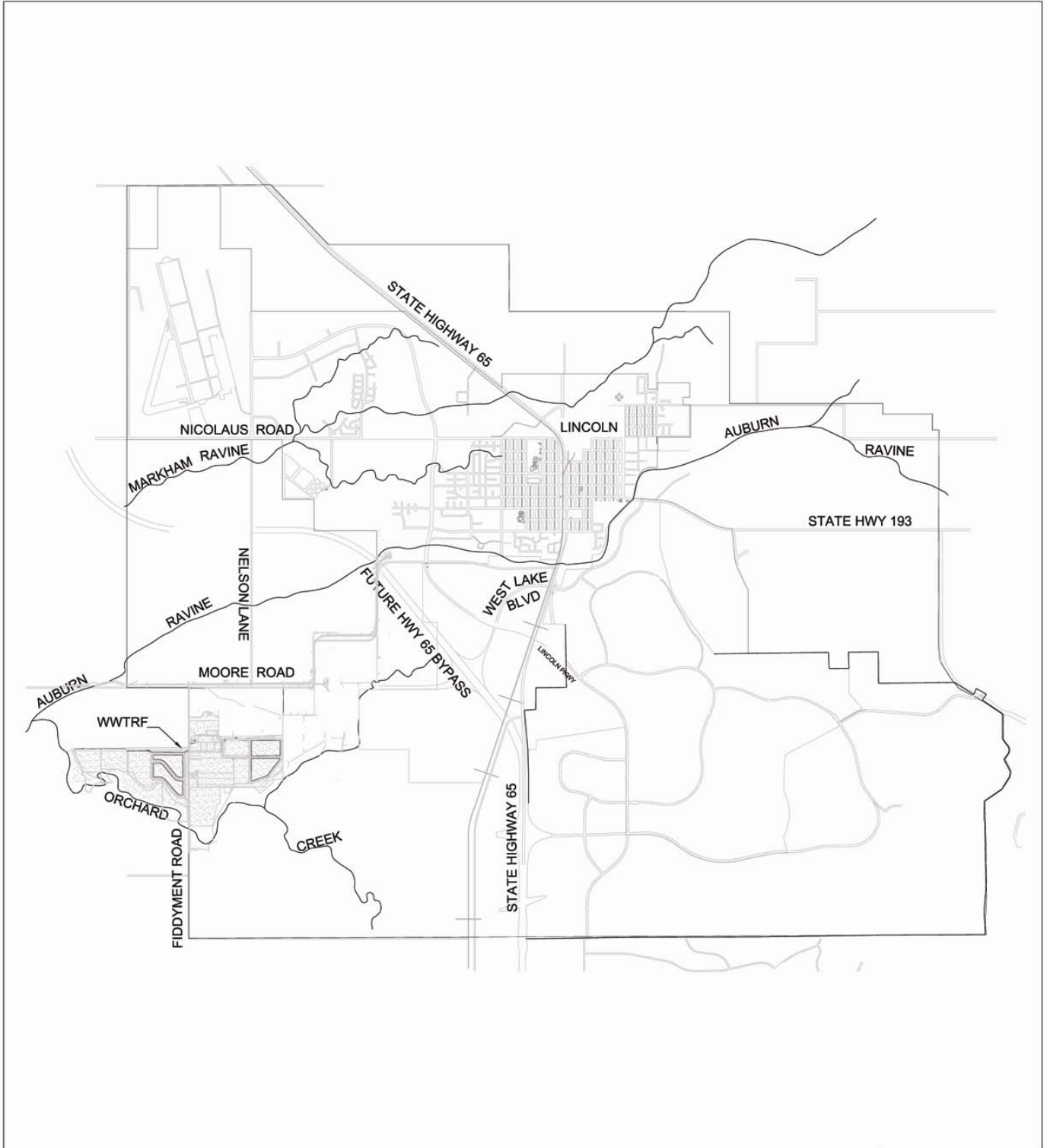
All reports submitted in response to this Order shall comply with the signatory requirements of Standard Provision D.6.

The Discharger shall implement the above monitoring program on the first day of the month following effective date of this Order.

Ordered by: \_\_\_\_\_  
THOMAS R. PINKOS, Executive Officer

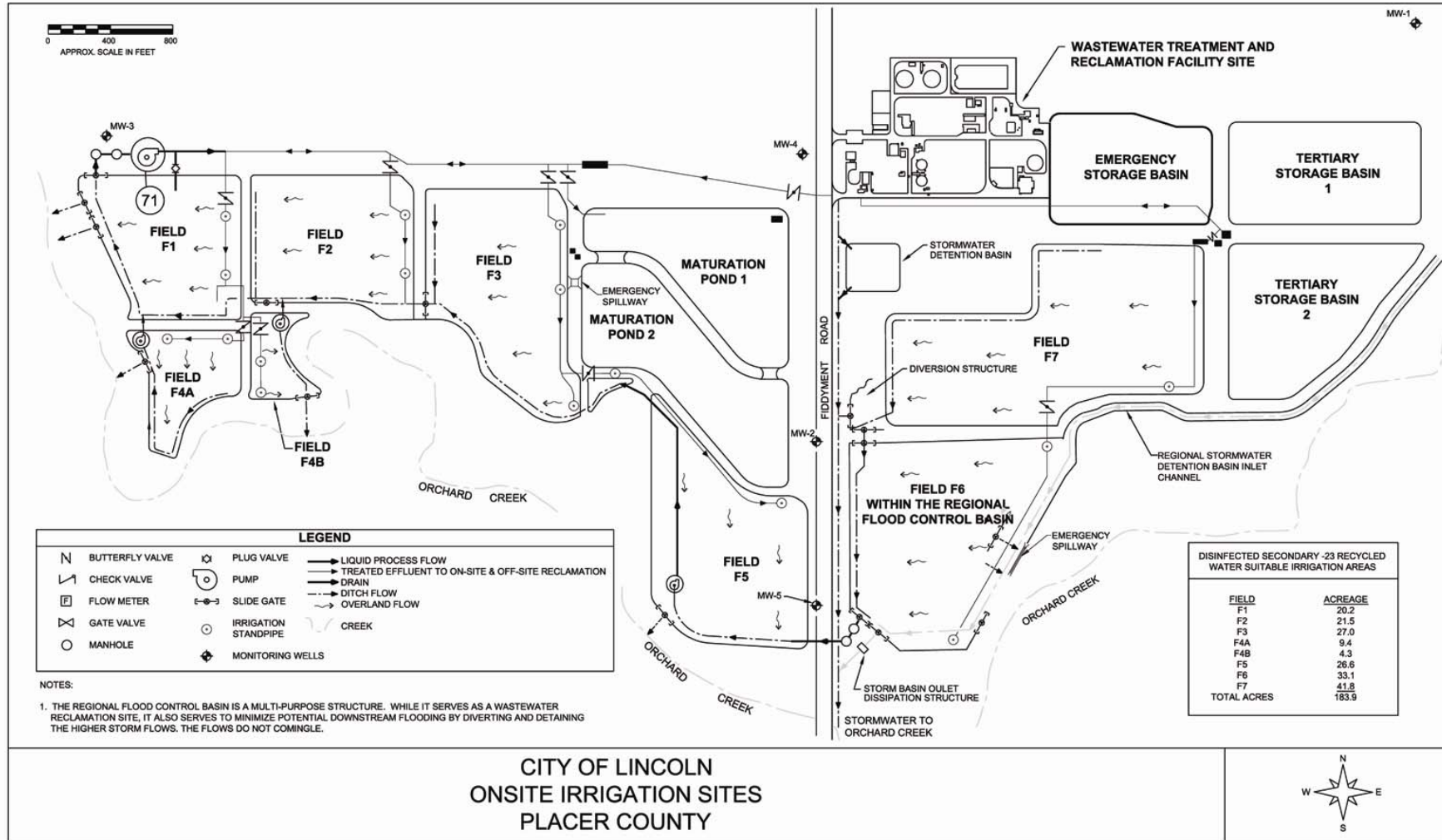
17 March 2005

\_\_\_\_\_  
(Date)



SITE LOCATION MAP  
CITY OF LINCOLN  
WASTEWATER TREATMENT AND RECLAMATION FACILITY  
PLACER COUNTY





CITY OF LINCOLN  
 ONSITE IRRIGATION SITES  
 PLACER COUNTY



## **FACT SHEET**

ORDER NO. R5-2005-0040  
CITY OF LINCOLN  
MASTER RECLAMATION PERMIT  
PLACER COUNTY  
NPDES NO. CA0085103

## **BACKGROUND**

The City of Lincoln (hereafter Discharger) owns and operates a wastewater collection, treatment and disposal system and provides sewerage service to the City of Lincoln. The Discharger submitted a Report of Waste Discharge, dated 22 June 2003, and applied for a Master Reclamation Permit to reclaim water from the City's wastewater treatment facility (WWTF). The wastewater treatment facility also discharges to surface waters. The surface water discharge from the WWTF is regulated under a separate NPDES permit.

The City's WWTF is located at 1265 Fiddymont Road in the City of Lincoln in Assessor's Parcel Number (APN) 021-280-002, with the plant at the point latitude 38° 51' 32" (degrees, minutes, seconds) and longitude 121° 20' 59", as shown on Attachment A, a part of this Order. The storage facilities and current land application areas are located in APNs 021-280-083 and 021-280-140 and are also shown on Attachment A.

The facility owned and operated by the Discharger is capable of producing high quality tertiary treated effluent to comply with reclamation criteria. The wastewater treatment system consists of fine screening, biological treatment including nitrification and denitrification in oxidation ditches, and clarification. Tertiary treatment is provided by priority pollutant maturation ponds, dissolved air flotation, chemical coagulation, rapid mix flocculation, granular medium filtration, disinfection with ultraviolet light, and final polishing with effluent reaeration. An emergency storage basin with a compacted clay liner, capable of holding approximately 79 million gallons, is provided to hold all effluent that does not meet discharge or reclamation standards. The Report of Waste Discharge characterizes the initial actual flow rate from the WWTF as 2.4 million gallons per day (mgd), an initial average design dry weather flow rate of 3.3 mgd and an ultimate average dry weather flow rate of 12.5 mgd.

The Discharger currently uses reclaimed water to irrigate fodder crops, with full tail water return. In addition to continuing the current reclamation uses, the Discharger has proposed to irrigate rice and has future plans for landscape irrigation throughout the local community. This Master Reclamation Permit allows for these uses. The irrigation of rice is the only use that will result in reclaimed water being discharged to surface waters, under the conditions that: 1.) The discharge from the WWTF to the irrigation area is in full compliance with the California Toxics Rule, National Toxics Rule, Basin Plan Water Quality Objectives and the NPDES permit for that facility; 2.) The irrigated rice areas are in full compliance with the Regional Board's agricultural waiver program; 3.) The irrigation of rice does not exacerbate vector control problem or cause a nuisance, and; 4.) The discharge from the rice fields to surface waters does not cause exceedance of any Receiving Water Limitation contained in this Order.

DISINFECTION USING ULTRAVIOLET (UV) LIGHT

The Discharger utilizes UV to disinfect the wastewater effluent. In a letter dated 15 July 2004, the California Department of Health Services (DHS) outlined the “...*minimum UV disinfection requirements considered appropriate for water recycling projects and wastewater discharges in California.*” DHS recommended, at a minimum, the following permit requirements:

- The system shall be operated to deliver a dose commensurate with the type of filtration treatment being provided (*i.e.*, 100 mJ/cm<sup>2</sup> for granular media, 80 mJ/cm<sup>2</sup> for membranes, and 50 mJ/cm<sup>2</sup> for reverse osmosis).
- The source water (pre-UV) shall comply with the filtration requirements of the current Water Recycling Criteria.
- Operation shall be restricted to a specific flow range as determined by the equipment validation and commissioning tests.
- Operation shall be restricted to a minimum transmittance.
- Lamps shall be switched out when they have reached the end of their rated life.
- An operations and maintenance plan (detailing how compliance with the NWRI guidelines will be assured at all times) shall be developed and on file with the RWQCB and DHS.

These recommendations have been incorporated into this Order and the NPDES permit for the wastewater treatment facility as Effluent Limitations and Provisions.

The Discharger has also proposed to not utilize chlorine within the reclamation distribution system. The absence of chlorine will eliminate a possible source of toxicity and the formation of trihalomethanes from the use of reclaimed water. The limitations and prohibitions in this Order are based on an absence of chlorine in the reclaimed water distribution system.

GENERAL RECLAMATION CRITERIA

The California Department of Health Services (DHS) has established statewide reclamation criteria in Chapter 3, Division 4, Title 22, California Code of Regulations (CCR), Section 60301, *et seq.* (hereafter Title 22) for the use of reclaimed water. The DHS has also established Guidelines for Use of Reclaimed Water. These requirements implement the reclamation criteria in Title 22 and utilize the DHS recommendations for safely using reclaimed water.

This Order is adopted pursuant to Section 13523.1, Chapter 7, Article 2 of the California Water Code, which authorizes issuance of a Master Reclamation Permit to suppliers or distributors, or both, of reclaimed water in lieu of issuing individual water reclamation requirements to each Reclaimed Water User (hereafter User(s)).

Uses of reclaimed water other than those identified in Title 22 are not regulated by this Order. Any other uses of reclaimed water will be regulated under individual Waste Discharge Requirements.

Reclaimed water is a waste and, as such, any discharge to surface water must be regulated under the National Pollutant Discharge Elimination System (NPDES). The discharge of wastes may not cause degradation of groundwater in accordance with the State Board's antidegradation policy. Reclaimed Water Prohibitions have been included in this Order to assure that

- with the exception of tailwater from rice irrigation using disinfected tertiary recycled water, reclaimed water is not discharged to surface waters;
- the by-pass or overflow of untreated or partially treated reclamation water is prohibited;
- excessive irrigation does not result in excessive runoff;
- overspray or runoff is minimized; and
- reclaimed water is not used or stored within 50 feet of any well used for domestic water supply.

Groundwater Limitations have been included in this Order to assure that the use of reclaimed water does not degrade groundwater quality.

In 1996, the State Board and the DHS set forth principles, procedures, and agreements to which the agencies committed themselves, relative to the use of reclaimed water in California, in a document titled *Memorandum of Agreement Between the Department of Health Services and The State Water Resources Control Board On The Use of Reclaimed Water* (MOA). This Order is consistent with the MOA. Reclaimed Water limitations have been included in this Order to assure compliance with requirements contained in Title 22 and the DHS-Sate Board MOA.

Reclaimed Water limitations have been included in this Order to assure compliance with requirements contained in Title 22 and the DHS-Sate Board MOA.

The Discharger has developed, and the DHS has approved, an Engineer's Report for the use of reclaimed water. The Discharger is required to comply with the Engineer's Report.

Regional Board staff consulted with the DHS, the Placer County Environmental Health Department, and the Placer Mosquito Abatement District and considered any recommendations regarding public health aspects for this use of reclaimed water.

#### RECLAMATION WITH "SECONDARY-23" RECYCLED WATER

CCR, Title 22, Section 60304, Reclamation Criteria, allows surface irrigation of cemeteries, freeway landscaping, restricted access golf courses, ornamental nurseries, sod farms, pasture land for lactating animals, nonedible vegetation (fodder and fiber) croplands, vineyards and orchards (with limitations) with reclaimed water treated to disinfected secondary levels, with a total coliform level not to exceed 23

MPN/100 ml as a 7-day median. The Discharger has utilized reclaimed water from the now abandoned secondary wastewater treatment plant to irrigate fodder crops. The Discharger's WWTF provides a tertiary level of treatment. The Discharger does not intend to produce a lesser quality of effluent, however has requested that the "secondary-23" reclamation criteria be maintained for emergencies and for on-site use.

The Discharger currently owns the reclamation sites listed in Attachment B. According to the Report of Waste Discharge, these reclamation sites have been designed to accommodate disinfected secondary-23 recycled water. These sites do not utilize pipelines that will be used to distribute disinfected tertiary recycled water. The Discharger stated in the Report of Waste Discharge that it intends, as a contingency, to continue to operate these sites as though they are being irrigated with disinfected secondary-23 recycled water even when they are actually being irrigated with disinfected tertiary recycled water.

#### RECLAMATION WITH "DISINFECTED TERTIARY" RECYCLED WATER

The Discharger, as the community grows, proposes to use reclaimed water for golf course, landscape median, school, playground, park, commercial landscape and residential irrigation, wetlands maintenance, construction (dust control) and industrial process water. Some reclamation uses, such as dust control, have lesser standards prescribed in Title 22 than uses such as playground irrigation. However, other than the clearly specified and regulated reclamation uses in this Order, the Discharger owns and operates only one reclamation storage and distribution system. Therefore, the uses of reclaimed water with the most stringent treatment standards, nonrestricted recreational impoundments and irrigation of public access facilities, is protective of all of the proposed reclamation uses and the treatment requirements of Title 22 have been applied in this permit.

To assure compliance with Title 22 Reclamation Criteria, this Order requires that reclaimed water shall, at a minimum, be adequately oxidized, coagulated, filtered, and disinfected. The 30-day average BOD and total suspended solids shall not exceed 10 mg/l, the 7-day average shall not exceed 15 mg/l and the daily maximum shall not exceed 20 mg/l. The median concentration of total coliform bacteria measured in the disinfected effluent shall not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days and the number of total coliform bacteria shall not exceed an MPN of 23 per 100 milliliters in any 30-day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters. A coagulation system shall be used whenever the plant is producing tertiary treated wastewater for unrestricted use. Disinfected tertiary treated wastewater for unrestricted use shall be continuously sampled for turbidity. The turbidity of the filter effluent shall not exceed 2 NTU as a daily average, nor 5 NTU at any time. Reclaimed water in excess of the turbidity limits shall not be allowed enter the reclamation distribution system. An automated distribution system bypass system shall be installed to assure compliance with the minimum turbidity requirements.

#### IRRIGATION OF RICE WITH "DISINFECTED-TERTIARY" RECYCLED WATER

In the Report of Waste Discharge, the Discharger requested that the master reclamation permit include language allowing for the irrigation of rice with "disinfected-tertiary" recycled water. Based on a letter from the DHS, dated 23 April 2002, resulting from meetings between the Discharger, Regional Board

staff, Placer Mosquito Abatement District, and the DHS, this Order requires the following when the Discharger reclaims water by irrigating rice:

- Recycled water must contain no more than 10 mg/l of total nitrogen.
- Monitoring of recycled water applied to rice irrigation fields must include monitoring of nitrogen species, including nitrate, nitrite, ammonia, and total Kjeldahl nitrogen, as well as monitoring of flow, BOD, dissolved oxygen, and temperature.
- Mosquito surveillance and control of the application site(s) must be conducted by Placer Mosquito Abatement District.
- Accessibility must be provided to possible mosquito sources and monitoring sites where “disinfected-tertiary” recycled water is used or stored.
- Best Management Practices (BMPs) must be developed for mosquito surveillance and control for possible future permits.

The irrigation of rice in California does not typically entail full tailwater return systems. Failure to maintain tailwater on-site will result in discharges to surface waters. Discharges to surface waters are subject to federal regulations under the National Pollutant Discharge Elimination System (NPDES). The irrigation of rice, under this Order, is the only use that will result in reclaimed water being discharged to surface waters, under the conditions that: (1) The discharge from the WWTF to the irrigation area is in full compliance with the California Toxics Rule, National Toxics Rule, Basin Plan Water Quality Objectives and the NPDES permit for that facility; (2) The irrigated rice areas are in full compliance with the Regional Board’s agricultural waiver program; (3) The irrigation of rice does not exacerbate vector control problem or cause a nuisance; (4) the reclaimed water is treated to a tertiary level and adequately disinfected, and; (5) The discharge from the rice fields to surface waters does not cause exceedance of any Receiving Water Limitation contained in this Order.

The Regional Board has adopted Resolution R5-2003-0105, which is a conditional waiver of waste discharge requirements for discharges from irrigated lands within the Central Valley Region. With adoption of the resolution, owners/operators of irrigated lands that discharge waste that can degrade surface water quality must select to obtain regulatory coverage under the Water Code by: (1) Electing to join a coalition group approved by the Regional Board; (2) Filing for an Individual Conditional Waiver, or; (3) Filing a Report of Waste Discharge for Waste Discharge Requirements. This Order requires any rice irrigation areas using reclaimed water in accordance with this Order to comply with the terms and conditions of Resolution R5-2003-0105 and any successors, amendments, and revisions thereto.

This Order requires the Discharger, when reclaiming water to irrigate rice, to discharge water of a quality no less than that required to comply with the NPDES permit for the WWTF (currently Order No. 501-242) or immediately cease the reclaimed water use.

This Order contains Receiving Water Limitations based on Basin Plan water quality objectives, which are applicable to the discharge of reclaimed water from the rice fields.



RECEIVING WATER BENEFICIAL USES

Potential receiving streams are Ingram Slough, Orchard Creek, Auburn Ravine, Markham Ravine, East Side Canal, and Natomas Cross Canal, which are tributary to the Sacramento River from the Colusa Basin Drain to the “I” Street Bridge.

The Basin Plan states, on page II-1.00, “*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning...*” and “*disposal of wastewaters is [not] a prohibited use of waters of the state; it is merely a use which cannot be satisfied to the detriment of beneficial uses.*” The existing and beneficial uses that currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1 of the Basin Plan. The beneficial uses of the Sacramento River from the Colusa Basin Drain to the “I” Street Bridge, as identified in Table II-1 of the Basin Plan, are municipal and domestic supply, agricultural irrigation, water contact recreation, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat. Other beneficial uses identified in the Basin Plan apply to the Sacramento River from the Colusa Basin Drain to the “I” Street Bridge, including groundwater recharge and freshwater replenishment.

***General Effluent Limitation Information—***

Selected 40 CFR §122.2 definitions:

*Average monthly discharge limitation* means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.

*Average weekly discharge limitation* means the highest allowable average of “daily discharges” over a calendar week, calculated as the sum of all “daily discharges” measured during a calendar week divided by the number of “daily discharges” measured during that week.

*Continuous discharge* means a “discharge” which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities.

*Daily discharge* means the “discharge of a pollutant” measured during a calendar day or any 24-hour period that reasonable represents a calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the “daily discharge” is calculated as the average measurement of the pollutant over the day.

*Maximum daily discharge limitation* means the highest allowable “daily discharge”.’

The SIP contains similar definitions. These definitions were used in the development of Order No. R5-2005-0040. Alternate limitation period terms were used in the permit for the sake of clarity. Alternates are shown in the following table:

Term Used in Permit	SIP/40 CFR 122.2 Term
Average monthly	Average monthly discharge limitation. 30-day averages may have been converted to monthly averages to conform with 40 CFR §122.45 (see below)
Average daily	Maximum daily discharge limitation. Since the daily discharge for limitations expressed in concentrations is defined as the average measurement of the pollutant over the day, the term ‘Average Daily’ was used in the Order.

40 CFR §122.45 states that:

- (1) “In the case of POTWs, permit effluent limitations...shall be calculated based on design flow.”
- (2) “For continuous discharges all permit effluent limitations...shall unless impracticable be stated as...[a]verage weekly and average monthly discharge limitations for POTWs.”
- (3) “All pollutants limited in permits shall have limitations...expressed in terms of mass except...[f]or pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass...Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations.”

U.S. EPA recommends a maximum daily limitation rather than an average weekly limitation for water quality-based permitting.

RECEIVING WATER LIMITATIONS AND MONITORING

**Fecal coliform—By the tributary rule**, Ingram Slough, Orchard Creek, Auburn Ravine, Markham Ravine, East Side Canal, and Natomas Cross Canal have been designated as having the beneficial use of contact recreation (REC-1). For water bodies designated as having REC-1 as a beneficial use, the Basin Plan includes a water quality objective limiting the “...*fecal coliform concentration based on a minimum of not less than five samples for any 30-day period...*” to a maximum geometric mean of 200 MPN/100 ml. The objective also states that “...[no] *more than ten percent of the total number of samples taken during any 30-day period [shall] exceed 400/100 ml.*” This objective is included in the Order as a receiving water limitation.

**Dissolved Oxygen—By the tributary rule**, Ingram Slough, Orchard Creek, Auburn Ravine, Markham Ravine, East Side Canal, and Natomas Cross Canal have been designated as having the beneficial use of

cold freshwater aquatic habitat (COLD). For water bodies designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/l of dissolved oxygen. Since the beneficial use of COLD do apply to Ingram Slough, Orchard Creek, Auburn Ravine, Markham Ravine, East Side Canal, and Natomas Cross Canal, a receiving water limitation of 7.0 mg/l for dissolved oxygen was included in the Order.

For surface water bodies outside of the Delta, the Basin Plan includes the water quality objective that “...*the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation.*” This objective was included as a receiving water limitation in the Order.

**pH**—For all surface water bodies in the Sacramento River and San Joaquin River basins, the Basin Plan includes water quality objectives stating that “[t]he pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.” The Order includes receiving water limitations for both pH range and pH change.

The Basin Plan allows an appropriate averaging period for pH change in the receiving stream. Since there is no technical information available that indicates that aquatic organisms are adversely affected by shifts in pH within the 6.5 to 8.5 range, an averaging period is considered appropriate and a monthly averaging period for determining compliance with the 0.5 receiving water pH limitation is included in the Order.

**Temperature**—From the tributary rule, Ingram Slough, Orchard Creek, Auburn Ravine, Markham Ravine, East Side Canal, and Natomas Cross Canal have the beneficial uses of both COLD and WARM. The Basin Plan includes the objective that “[a]t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature.” The Order includes a receiving water limitation based on this objective.

**Turbidity**—The Basin Plan includes the following objective: “Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.
- Where natural turbidity is between 5 and 10 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTU.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.”

**Narrative Limitations**—Receiving Water Limitations F.1 (biostimulatory substances), F.2 (color), F.4(floating material), F.5 (oil and grease), F.7 (settleable material), F.8 (tastes and odors), and F.10 (toxicity) are based on narrative Basin Plan objectives. The objectives are located in Chapter III: Water Quality Objectives, under the Water Quality Objectives for Inland Surface Waters heading.

### POND LIMITATIONS AND MONITORING

**Dissolved Oxygen**—Anaerobic (lacking in oxygen) processes tend to produce aesthetically undesirable odors. To minimize production of undesirable odors, the Discharger is required to maintain some (at least 1.0 mg/l) dissolved oxygen in the upper one foot of the pond.

**Freeboard**—The Order contains a limitation for pond freeboard. Pond levees can fail for a variety of reasons, typically, a lack of maintenance or overtopping due to wave action. The Order requires a minimum pond freeboard of two feet be maintained to prevent overtopping.

**pH**—The disposal ponds at the City of Lincoln WWTF are only partially lined, so wastewater may percolate to groundwater. The Basin Plan includes a water quality objective for groundwater that “[g]round waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.” The beneficial uses of groundwater include municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

U.S. EPA has a Secondary Maximum Contaminant Level (or Secondary Standard) for drinking water pH of 6.5 to 8.5 units. The noticeable effects of pH outside of the Secondary Standard range include (a) for a low pH: bitter metallic taste; corrosion and (b) for a high pH: slippery feel; soda taste; deposits [U.S. EPA, Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals, <http://www.epa.gov/safewater>]. A pond pH limitation range of 6.5 to 8.5 helps to ensure that the Discharger’s wastewater treatment activities do not cause the groundwater taste and odor objective to be violated.

Potential corrosion and deposits caused by a pH outside of the 6.5 to 8.5 range would adversely affect the beneficial use of industrial process supply, which is defined in the Basin Plan as: “Uses of water for industrial activities that depend primarily on water quality.”

Low pH values cause metals to dissolve, allowing them to percolate into groundwater. Many metals are priority toxic pollutants. Elevated metal concentrations in the groundwater would violate the groundwater toxicity objective included in the Basin Plan.

### GROUNDWATER

The beneficial uses of the underlying groundwater include municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

This Order regulates the discharge of reclaimed water. The reclaimed water has been treated to a tertiary level, with the limited exception for emergency discharges, as specified in the “secondary disinfected” section of this Order. With the limited exception for emergency situations, only tertiary treated wastewater will be applied to land where it may percolate to groundwater. There is an existing groundwater monitoring well network at the reclamation areas that would potentially accept “secondary-23” water, which will continue to be monitored.

State Board Resolution No. 68-16 (“Statement of Policy with Respect to Maintaining High Quality of Waters of the State”) (hereafter Resolution 68-16) requires the Regional Board in regulating the discharge of waste to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board’s policies (*e.g.*, quality that does not conform to water quality objectives). Resolution 68-16 characterizes “high quality waters” as waters that are of higher quality than that established in policies “*as of the date on which such policies become effective.*” In addition, Resolution 68-16 requires that discharges of waste to high quality waters “*be required to meet waste discharge requirements which will result in the best practicable treatment or control (BPTC) of the discharge necessary to assure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.*” Based on the available information, it appears that the Discharger provides BPTC and the discharge will not degrade groundwater quality, will not unreasonably affect beneficial uses or cause exceedance of water quality objectives. If ongoing sampling of the groundwater reveals a threat to groundwater quality, this permit may be reopened and specific groundwater limitations added. This Order requires the discharge to not degrade groundwater quality.

The Basin Plan encourages recycling on irrigated crops wherever feasible and indicates that evaporation of recyclable wastewater is not an acceptable permanent disposal method where the opportunity exists to replace an existing use or proposed use of fresh water with recycled water. The use of municipal wastewater for irrigation at agronomic rates will have a comparable impact on groundwater as fresh water extracted and used for irrigation of the same crop with separate wastewater infiltration. Beneficial reuse of wastewater conserves freshwater resources and is encouraged by the Basin Plan and agronomic application rates of wastewater cause comparable impact as widespread freshwater irrigation practices. Accordingly, benefits of groundwater monitoring in wastewater reuse areas do not justify the cost, provided the rates of wastewater applications do not exceed reasonable agronomic rates.

**Reopener**—The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. However, information is presently insufficient to develop final groundwater limitations, so the proposed Order contains interim limitations. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. The requirements that apply to this facility may be modified in the future based on new information.

MRH